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Mrs. Leopold's
scrapbook.
early clippings
1923-1934
Leopold activities,
biographical

Burlington Hawkeye - 1932 THE

Aldo Leopold Speaks Here Thursday Under Ike Walton Auspices

Sportsmen and Farmers Are Urged to Attend Free Public Lecture by Former Local Man, Now Nationally Known Authority on Outdoor Life.

Aldo Leopold, former Burlington man, now engaged in a survey of Iowa for the state fish and game commission, studying quail, pheasants, hungarian partridges, prairie chicken and all other upland game, will give an address in the city hall auditorium next Thursday night, under the auspices of the local chapter of the Izaak Walton league, it was announced today. The lecture will be open to the public and all sportsmen in this vicinity are urged to attend and farmers also are earnestly invited by the Izaak Walton league.

Mr. Leopold has made a life study of game, forestry, and conservation. He was born and raised in Burlington, studying forestry at college, after which he engaged in his hobby nature study and conservation. For two years he was employed by ammunition and gun manufacturers in making a survery of middle western states. That survery has been completed and is published in book form. For the past six months he has been conducting a survey in Iowa in connection with Mr. Crane who holds the contract for the entire state fish and game survey. Dr. Boone, of Ottumwa, one of the game commissioners, recently told R. O. Ewinger, vice-president of the local Walton chapter that the state of Iowa is indeed fortunate in securing Mr. Leopold for the work.

Mr. Leopold's mother, Mrs. Clara Leopold, and two brothers, Carl and Frederick Leopold still live in Burlington and are well known residents here. Mr. Leopold is the author of a number of articles which have appeared in sporting magazines on game problems and is on the advisory board of the magazine "Outdoor Life." He is also one of the most proficient archers in the country.

The Walton league feels that his appearance here Thursday night, February 11, at 7:45 o'clock offers a rare opportunity for residents in this vicinity to hear one of the best posted men in the country on the wild life situation and the steps needed to bring game back.



ALDO LEOPOLD.

On, Wisconsin

Game as Side Crop

Wisconsin's college of agriculture wants farmers to raise game birds as a side crop.

To help them it has created a professorship of "game management." Aldo Leopold, nationally known game authority, will occupy the chair.

His idea is that farmers raise pheasants, quail, grouse, rabbits, ducks or other wild creatures for release on their farms. The farmers then would permit hunting for a fee.

The plan might help farmers. Perhaps their marginal acres, or their woodlots and some of their fields and pastures could be made to produce substantial revenue from hunting fees.

Sportsmen ought to be even more interested. Obviously, hunting must come to an end unless game breeding is much accelerated. The wilderness creatures cannot stand the barrage of fire that they are getting; the species cannot survive the slaughter.

Continued reliance on "natural" reproduction can mean only extinction for many kinds of birds and other creatures. But, certainly, with enough farms engaged in first raising game and only then permitting shooting, the situation would change.

That this ultimately will change Wisconsin's hunting system is clear. No longer will it be "free," with any number of hunters overrunning almost anybody's land. It will be restricted to those who pay a fee and, presumably, to those who hunt with some care and regard for property and wild life values.

Hunting cannot remain "free" in any event. The game will be shot out; the end of hunting will come, in many communities. So it is well to begin now to get farmers interested and stocking their acres with birds and other creatures.

Once they have a supply, there probably will be little trouble about marketing it. The market will come to the farmers. There may be other troubles, such as poaching, trespassing or movements of game off the home farm.

To encourage the raising of game birds and other wilderness creatures, and then to adjust hunting and conservation laws, is the probable ultimate solution of the hunting problem.

FARM-HUNTER RELATIONSHIP

Subject Now Prominent in Iowa—Discussed by Game Authority.

1932

BY ALDO LEOPOLD
Former Resident of Burlington, Game Authority, in Charge of Iowa Game Survey.

"The Iowa fish and game commission has been asked to states its attitude toward organizations which offer their services in furnishing hunters with lists of farms open to hunting, and in furnishing farmers with hunters willing to pay for hunting privileges.

"The commission is convinced that the present relationship between farmers and hunters is increasingly unsatisfactory to all concerned, and that some more orderly system or systems must be developed. It doubts, however, whether any intermediary is necessary, and it cannot sponsor or recommend any private agency which collects any fee, in the form of memberships or otherwise, for its services are intermediary. It believes that such intermediary services, if needed at all, should be performed either by the state, or by voluntary public organizations with officers elected by the members.

"The commission suggests that the conditions under which farm lands are open to hunting be decided on, without any go-between, by direct negotiation and agreement between farmers and sportsmen, acting either as individuals or as groups.

"The American Game Conference has recommended a "scoring system" for judging the merit of various ways of organizing hunting on farms. The commission suggests that it contains food for thought by Iowa farmers and sportsmen. The "points" in this scoring system are:

1. The farmer's compensation, if any, for hunting privileges should be in proportion to his game crop; the greater the crop the greater the compensation. This may offer the farmer a personal incentive to improve the game range, and to prevent overkilling of the seed stock.

2. There should be nothing to prevent the farmer from putting a stop to all shooting as soon as he thinks enough game has been killed on his place.

3. The farmer should determine the maximum number of hunters to be allowed on his place and should be free to reject whoever he judges irresponsible. All hunters should be required to check in and out, so that the responsibility for damage can be fixed, and the total amount of game killed can be determined.

4. Operating pools consisting of groups of farms reduce the necessary routine of asking and giving permission to hunt.

5. The state should retain authority to close any operating unit for overshooting, killing of protected or non-game species, excessive charges, or other practices subversive of the public interest.

SCIENTISTS TO MEET, HEAR ALDO LEOPOLD

LAS CRUCES, N. M., March 23 (AP) — The thirteenth annual meeting of the southwest division of the Association for the Advancement of Science will be held at the New Mexico State college May 1 to 4.

Plans for the convention are being completed by Dr. D. S. Roobins of the New Mexico A. and M. college. Delegates from Arizona, New Mexico, Colorado, West Texas, Chihuahua and Sonora, Mexico, will attend.

The John Wesley Powell lecture, a highlight of the convention each year, will be delivered by Aldo Leopold, consulting forester of Madison, Wis., formerly of the Albuquerque office.

Aldo Leopold Heads U. of Wisconsin Dep't.

Aldo Leopold of Madison, Wis., son of Mrs. Carl Leopold of 100 Clay street, has been chosen head of the a new department to be installed at the University of Wisconsin to handle research work in game and conservation. Activities in the new department will commence this fall and Mr. Leopold has accepted and will take up his duties in August.

Recently Mr. Leopold has been engaged in laying out programs for the C. C. C. work in the southwest.

1932

K-EYE, SUNDAY MORN

GAME COMMISSION LISTS PLANS FOR HUNTING ON FARM

By ALDO LEOPOLD

Iowa's fish and game commission has been asked to state its attitude toward organizations which offer their services in furnishing hunters with lists of farms open to hunting, and in furnishing farmers with hunters willing to pay for hunting privilege. "The commission is convinced that the present relationship between farmers and hunters is increasingly unsatisfactory to all concerned, and that some more orderly system or systems must be developed. It doubts, however, whether any intermediary is necessary, and it cannot sponsor or recommend any private agency which collects any fee, in the form of memberships or otherwise, for its services as intermediary. It believes that such intermediary services, if needed at all, should be performed either by the state, or by voluntary public organizations with officers elected by the members.



ALDO LEOPOLD

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TERN 1086

the blouse may be worn as sketched

42, 44, 46, 48 and 50. Size 16 requires 2⅞
it of crepe de Chine in rose, flesh or tan.
del consists of just two pieces, simply but
nd sheer fabrics. It need not be elaborate-
dergarment is a neat, moulded slip to be

TERN 1071

nd inexpensively made at home.
ging ensembles make delightful gifts the
se that are useful as well as decorative.
st suitable background. Pajamas, too, are
well fitted slip, tailored, lace trimmed or
t the right type of under garments to be
coupled with soft clinging fabrics have
s has the selection of lingerie been more

LEOPOLD'S GAME MANAGEMENT

IT is not the province of this bulletin to call attention to books of any kind but we are impelled to make an exception in the case of Aldo Leopold's new book on "Game Management", available through the American Game Association at the publisher's price of $5.00.

This book, the first of its kind in America, was prepared to serve as a text for those practicing game management or studying it as a profession, to interpret for the thinking sportsman or nature-lover the significance of things he sees afield, and to explain to the naturalist, biologist, agricultural expert and forester how his own science relates to game management.

Game management is defined as "the art of making land produce sustained annual crops of wild game for recreational use." It would help the wildlife restoration movement mightily if every man who takes a gun afield could study and apply the contents of this fine volume.

Now the next job is to get some capable chap to prepare a like treatise on fish management.

Leopold is now directing erosion control activities in connection with the emergency conservation work in New Mexico and Arizona, which gives him an excellent opportunity to put his experience to the test on a large scale, especially the benefit of such work to wildlife.

Hunter - Trader - Trapper · Sept. '33

WALLACE APPOINTS 3 TO AID WILD LIFE PLAN

Committee Will Develop Proposal for Using Waste Lands for Game Birds.

WASHINGTON, Jan. 2 (AP).—Secretary Wallace today announced appointment of a committee to develop and supervise a nation-wide plan for promoting and protecting wild life.

With the approval of President Roosevelt, he named Thomas H. Beck of Wilton, Conn., editorial director of Collier's Magazine, chairman; J. N. Darling of Des Moines, newspaper cartoonist, and Professor Aldo Leopold of the University of Wisconsin.

The wild life conservation plan was originally suggested to President Roosevelt by Mr. Beck. Under it Federal conservation agencies would be concentrated under an administrator with two assistants.

The plan would link up with both the National Recovery and the Agricultural Adjustment Acts by making use of provisions in both measures.

It was estimated that employment would be provided for 2,000 to 10,000 men in improving drained lands formerly used by wild fowl as nesting and breeding areas.

The Civilian Conservation Corps already has done extensive work to reclaim land for wild game use.

Drives Car Through

back. Included in the fleet crew are Schereschewsky, Mays and White

ALDO LEOPOLD WINS HONOR FOR GAME SURVEY; RECOMMENDED PRIZE GO TO ANOTHER MAN

Aldo Leopold, formerly of Santa Fe, at one time editor of "The Pine Cone", New Mexico conservation journal, now a leading conservationist of Madison, Wisconsin, has won the Outdoor Life Conservation eastern award for 1930, as a result of his game survey of the north central states.

The award is announced in a recent number of the Outdoor Life-Recreation magazine. This award is given annually in east and west for the most worthwhille work done during the year in conservation. Dr. Carl Frederick Meyer receives the western award.

In 1928 the Sporting Arms and Ammunition Manufacturers' institute asked Leopold to survey game conditions in Wisconsin, Minnesota, Michigan, Indiana, Illinois, Ohio, Iowa and Missouri and it was this work which brought him the 1930 honor. Game management by the individual farmer, he reported, is the only possible remedy for the prevailing shortage of game in that part of the country. He recommended that sportsmen pay farmers for hunting privileges, so that the farmers would be encouraged to provide food and shelter for wild game.

Leopold has been a game enthusiast all his life, since his boyhood in Iowa, where he became an amateur ornithologist and botanist. He studied forestry at Yale, gained experience in the Carson forest in New Mexico, and his articles on game, watersheds and forestry brought him national recognition.

RECOMMENDED ANOTHER

It is interesting to learn that Leopold had meanwhile written to the magazine strongly recommending for the award a man who had been doing useful work in the conservation of waterfowl.

THIRD NEW MEXICAN

The western award was won in 1923 by the late Col. G. S. Turner of Silver City, N. M., and in 1927 by J. Stokley Ligon of Santa Fe, whose game survey of this state is well known.

Leopold's last visit here was a year or so ago when he took another whirl at his favorite sport of hunting deer with a bow and arrows. He married Miss Bergere of Santa Fe. His innumerable friends here will be much interested in news of his latest honor.

EASY WAY TO RAISE QUAIL.

Expert Says Game Will Take Care of Itself on Farm Lands.

A great many people think growing game means putting it in a pen and taking care of it like chickens. Game can be grown in this way, but it costs money, it requires lots of care, and the birds may die of disease. There is another way to grow game which is more interesting, much cheaper, takes less care and involves less risk of loss, says Aldo Leopold in the Wisconsin Arbor and Bird Day Annual and reported in the American Game Protective Association news service. This other way is to fix up the farm so the game will grow itself. It will work on any farm where there is little "seed stock" to start with, and where the farm boy or girl has enough judgment to know what to do.

"One may not have much confidence in this method until it is realized that a dozen pairs of quail will increase to over 3,000 in three years if given ideal protection, cover and food," says Mr. Leopold. "It is impossible and unnecessary to give ideal protection, cover and food, but these figures show why even a slight improvement in protection, cover and food will greatly increase the number of quail on the farm.

"Do away with all hunting cats, kill the sharp-shinned hawks, reduce the skunks and nesting crows, if abundant, and if possible keep down the foxes.

"Cover and food is what is most often lacking on northern farms.

"Any farm has plenty of cover and food in Summer and Fall. It is the Winter and Spring cover which counts. The time to prepare for Winter is the previous Summer.

"First of all, don't burn the grassy swamps, or the weedy bushy fence rows and thickets unless the crops or cattle require it. Usually they do not. If they do, save an unburned corner here and there for the birds. Don't mow every fence corner.

"Secondly, select a few definite places, preferably on land that is too steep or rocky to plow, on which to grow grapevines and other plants for Winter cover. We will call these places refuge covers. There should be at least one refuge cover on every forty acres. Each cover should be on at least as much ground as an ordinary house. The shape doesn't matter. Creek banks, old gravel pits, gully banks, rocky knolls and potholes offer good locations without using up good land. Refuge covers located on the edge of woods or in the open are better for quail than in the deep woods.

"If the places you select are grazed by cattle, see if you can get permission to enclose them with a gateless fence. Cattle thin out the cover and destroy its value.

"In each refuge cover plant a few wild grapevines. Let them run over the bushes and form tangles. Each tangle is a house for quail when deep snow comes, and the dried grapes are food.

"Also plant in each refuge cover several groups of Norway spruce or white pine of half a dozen trees each. If you can plant these under locust trees they will grow twice as fast as elsewhere because the locust puts nitrogen into the soil just like alfalfa. These groups of evergreens are for Winter cover.

"If there are no locusts, plant some. The locust beans are a dependable Winter food for quail. Next to grapes, they are the best standby in storms.

"In severe weather hang ears of corn under the grape tangles in each refuge cover, tying them by their own shucks out of reach of rabbits. The quail will get them.

"If possible, leave weedy, bushy fence rows connecting the refuge cover with the grainfields and with the barnyard. These fence-lines are 'streets' for the quail to travel on.

"If you can build one refuge cover each year you will soon have lots of quail. They will benefit the farm crops and furnish you enough music and pleasure to amply repay your trouble."

Chicago Tribune

** 27

1930

DENUDED LANDS TAKE THEIR TOLL OF WILD GAME

Authority Finds Birds Die Out in Barren Areas.

BY BOB BECKER.

"Michigan is the only state so far to apply game management in her public holdings," claims Aldo Leopold, wild life investigator, in a report just published on his two years survey of game conditions in eight north central states. Illinois, Wisconsin and Michigan were included in this survey, which in many respects is comparable to the intensive searching study of southern quail conducted by Herbert Stoddard, formerly with the U. S. biological survey. In fact, Leopold's survey is by far the most comprehensive and practical investigation of our wild game resources that has been conducted in Chicagoland and adjacent territory.

In view of the acute situation which faces the American sportsmen with respect to a supply of game birds, Leopold's findings are of especial interest. Here is one of his conclusions:

Birds Need Cover.

"More game would be produced by paying the farmer a bonus on hedges and brush covers than by spending thousands of dollars a year, as at present, on foreign game birds." In other words, expensive purchases of Mexican quail and costly bird farms are not nearly so efficient as going to the landowner and having him provide natural cover for birds.

As the most important factors in the destruction of wild life in the north central region, Leopold pointed out the debrushing of woodlands, the cutting away of timber, the cleaning up of game cover in the belief that it shelters insect pests, and the removal of osage orange hedges formerly used as fences. At present we are expecting quail and pheasants to thrive on barren ground, denuded fields and concrete pavements. It can't be done. They must have cover.

Landowner Is Key.

Bringing the farmer into game production is the chief remedy proposed by the investigator for game restoration in the north central states. In other words, recognize the landholder as custodian of public game, protect him from the irresponsible shooter, poacher and pothunter, and compensate him for putting his land into productive condition.

This whole question of farmer relationships will be covered by Mr. Leopold next week in Chicago when he addresses a session of the game conference and the annual convention of the Izaak Walton league, which opens the morning of April 23. Conservationists, game breeders and sportsmen will be on hand to hear details about a possible game policy which will assure good hunting in the future.

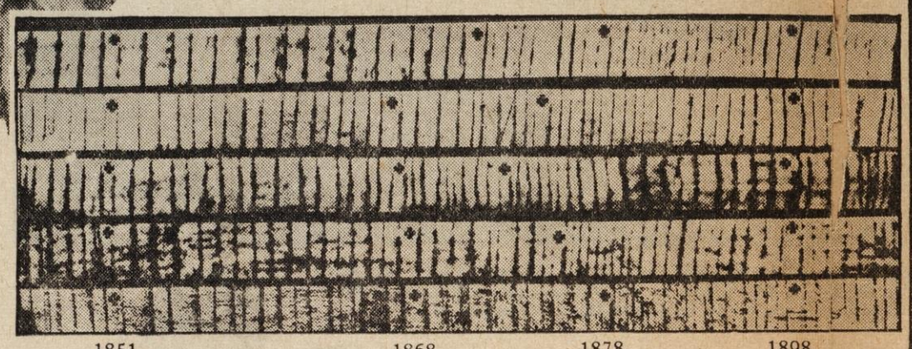
New York Times - 1931

Science Finds Everything Goes Up and Goes Down Once Every 10 Years

Birds, Beasts, Fishes, Insects and Even Trees and Plants Have Regular Cycles of Abundance and Hardship, Similar to Man's Prosperity and Panics; and Perhaps the Sunspots Are to Blame for It All



The Result of Three Days' Trapping in a Year of Abundant Animals.



1851. 1868. 1878. 1898.

Shavings From Five Pine Trees Showing the Irregular Cycle of Wide and Thin Growth Rings. Wide Rings Mean Years of Fast Growth.



Joseph Interpreting Pharaoh's Dream of the Lean and Fat Cattle and Ears of Wheat. Joseph's Knowledge of the Regular Variations in the Flood of the Nile Enabled Him to Predict Seven Prosperous Years, Followed by Seven Lean Years.

ABOUT every ten years some sort of vital impulse seems to spread through the entire world, affecting every living creature, from microbe to man.

Science finds that birds, beasts, fishes, insects and even plants and trees are subject to periods of growing prosperity that become booms, ending in crashes and followed by depressions, succeeding each other in regular cycles, dependent on some vital impulse, more or less as the tides depend on the moon. These cycles, in different living things, occupy from 9 to 11 years, but average about ten.

As everyone knows to his sorrow just now, the world is in a business depression—at the bottom of one of those economic cycles which seem to follow each other almost as regularly as the ebb and flow of the tides. Economists the world over are striving to find a way not only to pull the human race out of the depression but to flatten out these cycles and keep us on a level course of prosperity without the heights and depths, the booms and crashes.

The first step in curing an evil is to find its cause, and everyone had supposed that these periodic bad times, preceded by stock market panics, were the result of man's blundering. There didn't seem to be anyone else to blame and it was supposed that if all the countries of the world would agree on some plan for limiting production to just as much food, raw materials and manufactured goods as were needed there would be no more unemployment, labor shortage, gluts or famines.

But, as usual when Science really studies a problem, it turns out more complicated than it looked. These good and bad time cycles have been going on regularly since long before man appeared, and they keep right on occurring in parts of the world where man has no control of the situation, such as the depths of the ocean.

The question is whether man can manage to balance himself on a level plane while all the rest of the world is bobbing up and down. It may be that he can never stop these waves from hitting him nor control them any more than he does the tides or weather and that the best he can do is to predict them and prevent them from surprising him and knocking him flat, as they do at present. Being dependent for his life on the animal and vegetable kingdoms, it is doubtful if man can ever be very prosperous while the plant and animal inhabitants are in trouble.

Anyone can see that when something happens to the fur-bearing animals of the North, the Canadian trappers and hunters are bound to have hard times, and when whales and fish have become scarce, fishermen suffer and anyone who eats fish may feel it. But who would suppose that the whole world, including man, would be upset by booms and crashes in the lives of some of the rat family, such as the northern field mouse and the little rat-like lemming?

Man has no use for either of these little creatures, who mean to keep away from him, too, and yet when they have their ups and downs they upset the rhythm of Nature and affect human history.

A few weeks ago, at a remote trading post in Canada, a group of scientific men from all over the world gathered for a conference on these remarkable animal cycles. About every ten years, they decided, the numbers, activity and general success of many animals wax and wane. Dr. Aldo Leopold of the University of Wisconsin, told the conference of the nine or ten-year cycle in abundance of grouse and of rabbits in Wisconsin. A similar cycle, although not a perfectly regular one, was described by Dr. Charles Elton of Oxford University, England, in the numbers of Canadian rabbits. The year 1906 was a "rabbit year," as were 1917 and 1924—one interval of eleven years and another of seven.

The profits of the Hudson Bay Company rise and fall in a cycle which averages 9.7 years, corresponding to the ebb and flow in the numbers of the various fur-bearing animals which trappers catch in Canada and sell to that company's stores.

Professor William Rowan of the University of Alberta reported that in Western Canada the numbers of rabbits, lynx and many birds and other animals rise and fall in about the same ten-year cycle. Rabbits in Europe suffer ten-year waves of a notorious disease called coccidiosis, it was reported by Dr. Aurel Comsia of Hungary.

A ten-year cycle of tree growth, marked by thicker or thinner annual rings, was reported by Professor Elsworth Huntington of Yale, and a similar eleven-year cycle by Professor Hans Mayer-Wegelin of Hanover, Germany. Another German savant, Professor Hermann Eidmann, finds an eleven-year cycle of numbers of insects that damage the forest trees, and believes that perhaps the ups and downs of tree growth are due merely to the downs and ups of the insects.

Finally, Professor A. G. Huntsman of the University of Toronto has examined the records of catches of salmon and of profits made year by year by fishermen and fish canners. He finds the same cycle of a little less than ten years which is evident among the other creatures. Even the fish in the sea feel somehow or other, it seems, the influence of this great pulse of good times and bad that beats unceasingly among the earth's animal inhabitants. The scientists themselves seem to have been surprised by the multitude and variety of the evidence indicating that something of this kind is going on.

Professor Huntington, in reporting the conference, suggested that a mysterious wave of vitality of some kind sweeps over the world about every ten years. Plants and animals grow faster and increase in numbers. After a few years the wave ebbs, the species return to their former numbers. In North America the mysterious "up" wave seems to begin in the far northwest of the continent, on the border line of Canada and Alaska. From there the wave sweeps slowly to the southwest, reaching Eastern Canada and New England in about three years after the start.

Now science is confronted by the important task of finding an explanation for these remarkable facts, because these mysterious ups and downs of the plant and animal population have far greater importance for mankind than the mere numbers of furs caught in the Arctic or the profits made by Canadian trappers. That human affairs show similar ups and downs is unquestionable, although these human cycles are perhaps not precisely at the same times or in the same periods as the ebbs and flows of plants or animals.

Until quite recently plagues and pestilences used to start from China and India and pass around the world, devastating its human population as they do now among rats, mice, rabbits and probably most other animals. The most dreadful of the plagues have been stopped at their sources, but there are still others that remain, such as influenza and infantile paralysis, that come from nobody knows where, ebbing and flowing for unknown reasons.

If the world were a perfectly smooth sphere, the tides would flow it with exact regularity, the winds ld be constant and weather could redicted years in advance with as-omical accuracy. But the irregu-es of the surface throw the forces ature into so many eddies that the t is beyond exact computation. In such way the vital impulse wave isted and confused. For instance, have a cycle of close to four s, thus getting in two cycles within normal one of about ten years. . A. O. Gross, of Bowdoin Col- reported that in Eastern Canada umbers of mice increase and de- every four years, with the sec-ondary result of causing an invasion of New England by the Arctic snow owl at these same four-year intervals. When there are plenty of mice in the fields to the north, the owls find ample food there and stay at home. Two years later, when the numbers of mice are at the down point of their cycle, the owls almost starve and great numbers of them fly southward, even to New England and New York. Ultimately this does the owls no good, for most of them starve just the same in their new locations and even the ones that survive cannot breed so far south and finally perish. So the owls have their ups and downs, too, in addition to the field mice.

In the Norse countries the lemming exhibits behavior similar to the Canadian mice, but once in many cycles, for some reason, he has an extraordinary boom and a proportionately terrific crash. The starving little animals form moving armies, laying waste vegetation as they go, crossing rivers, marching through towns and even houses in their way, finally swimming out to sea till the last one drowns or is eaten by fish or bird. These periodic outbursts of lemmings eating the Norsemen out of house and home, are believed to have been the first cause that sent the Vikings plundering the coasts of all Europe.

Similar causes may have set the hordes of Asia into those irruptions into Europe, such as that of Genghis Khan or Attila the Hun. Back of the suicidal drives of the medieval crusades may have been a mouse, a rat or an insect, or that wave of vitality may have caught man himself then and in 1914 and in many other fatal crises.

Prosperity for mice means prosperity for some other creatures, but not all. Professor Elton says that 1905 was a "mouse year" in Eastern Canada. This caused the owl to multiply and also was a blessing to the Arctic grouse or ptarmigan. Ordinarily these birds are eaten in great numbers by foxes, wolverenes and other animals. But in mouse years the carnivora find it less bother to make a meal on the rodents and let the birds go.

At the same time, however, the mice ate so much of the grass that the grazing lands were spoiled, causing herds of caribou to desert Labrador. The Labrador Indians were thus deprived of their usual source of meat and supply of skins for the next Winter's clothes. Besides this, the mice devoured all the young shoots of the crowberry on which the natives depend for their main source of vitamin-rich food. The result was a skin disease called kalak and with this and their last year's worn-out clothes they were a sad and mangy looking lot that next Winter, all on account of too much prosperity among the field mice.

The cause of these vital impulses that shoot out about once every ten years remains to be found, though it may be connected with the eleven-year sun-spot cycle. The sun-spot cycle of eleven years already has been traced in a vast number of earthly weather conditions, like the periodic rise and fall of the undrained lakes in Central Africa or the variations in the annual quantity of the flood of the Nile. It is probable that ancient Egyptian priests observed these periodic ups and downs of the Nile flood and used this cycle to predict times of good harvests or bad, for the annual flood of the Nile is the thing that means prosperity or hard times for Egyptian farmers. The Bible story of how Joseph predicted an up and down cycle of seven good years and seven lean ones for Egypt probably is an account of how this knowledge of rainfall and flood cycles was used.

The sun-spot cycle has been traced, too, in the variations of the amount of ice in the Arctic Ocean from year to year, in what might be called the ups and downs of icebergs. M. H. Memery of Bordeaux has found that the sun-spot cycle affects both the quality and the quantity of French wines from year to year, a very important factor in the ups and downs of the wine growers.

A French physician, Dr. Maurice Faure, has collected data tending to prove that the sun-spot cycle is reflected in the number of sudden deaths of human beings from year to year and in the occurrence of relapses or other accidents to people who are suffering from chronic disease. Dr. Faure believes the relation is due to some electric effect of the sun-spots on the earth's air.

These human effects are not entirely certain, but there can be no doubt at all, as has been proved, among others, by Professor C. C. Wylie of the University of Iowa, that the eleven-year ups and downs of the sun-spots are paralleled by variations in the American corn crop and probably in other crops as well.



An Arctic White Owl Caught on Martha's Vineyard, to Where It Had Migrated Owing to the Scarcity of Northern Mice, Which Occurs Every Four Years.

Two of the Mysterious "Spots" on the Sun Which Are Believed to Exert a Tremendous Influence on the Earth. The Size of the Sun Spots Is Shown by the Drawings to Scale of the Earth at the Side.



The Periodica Homes Led O and Sprang

Migrations of Lemmings From Their Norseland Ancestors to Believe They Dropped From the Skies p From the Earth, as This Old Woodcut Pictures.

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Behold, he travaileth with iniquity, and hath conceived mischief, and brought forth falsehood.—Psalms, 7:14.

EDUCATE THE WORLD FOR PEACE

Peace, justice, and international cooperation must rest on mutual protection of national rights in an international world federation; arbitration, conference, and limitation of armaments are all means to the end of international law and order and the reign of peace.

"BY THEIR WORKS SHALL YE KNOW THEM"

IF it be true, as rumor has it, that the services of Mr. Aldo Leopold, assistant director of the United States Forest Products laboratory, could be had by the new Wisconsin conservation commission as its executive, that fact ought to arrest further action in other directions, and settle the issue.

We have not committed the error of hasty acceptance of this rumor, which seems too good to be true. Certainly, were the matter based merely on financial incentive, one must doubt that Mr. Leopold would accept such a commission. But men who give their lives to a cause often see much more in the job than its salary. The opportunity for service presented to any technical experienced conservationist of the first magnitude, might in his mind far transcend the mere question of personal emollument. This may be so in the case of Mr. Leopold, and if that is a fact, it presents to the conservation commission and to Governor Zimmerman an opportunity to leave in Wisconsin a record of achievement that would have its page in history no matter what fate befell the state in other fields of endeavor.

Unless there are in the field for this post other outstanding conservationists, it is difficult to see why the commission should have any difficulty in selecting its commissioner. To begin with, Mr. Leopold has been educated as a conservationist for some seventeen years at the expense of the government of the United States. Seventeen years as an active conservationist is in itself a sizable record against which other candidates would have to measure their qualifications.

During his employment by the government, Mr. Leopold was in charge of 22,000,000 acres of forest in New Mexico and Arizona, which was financed by a million dollar budget, and in the conduct of which he was in charge of 300 employes. In addition to the qualities required by such an activity, there was the duty of dealing with the various problems that arose through the conflicting interests of lumber men and cattle men.

Aside from that, Mr. Leopold has been actively interested in conservation in the broadest sense, and has been a personal associate of outstanding leaders of conservation. He is, for instance, a member of the Boone and Crocket club, composed of one hundred conservationists of national note, among whom is listed Gifford Pinchot, recognized as the father of American conservation. As an author, Mr. Leopold's writings include discussions of the forest as a game cover, game protection and fish propagation, stream pollution viewed both from the standpoint of the public and of the necessities of industry. He is especially posted on the needs of the woodworking industries, and is recognized as the father of the "wilderness area movement," of which the central idea is the preservation of typical areas in forests that are being logged. The thought met with considerable opposition in many quarters, but is now generally accepted by conservationists as well as industries.

So here we have, as though made to order, a technical conservationist of seventeen years' experience, schooled in the handling of large funds and in the employment of large numbers of people, prepared for his work from both the practical and the research viewpoint, his life definitely committed to the great task of conservation which our Wisconsin conservation commission has been entrusted with by the state.

When the conservation law was conceived, drafted upon the best information obtainable and based upon practical experience, the legislature merely set up the machinery for the administration of a real conservation program in Wisconsin. The essential requirement of success is a technical head equipped by experience and training to apply in Wisconsin the best policies and methods known to the conservationist. A good deal has been said upon this subject. The people of Wisconsin understand the contest that has been in progress. Those who have been entrusted with the work have a splendid opportunity to leave their favorable impress upon the state. If this task is placed in inexperienced hands, there will be no "pointing with pride" in the future. "By their works ye shall know them."

1923

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SAVING THE WILDERNESS

The November number of Outdoor Life contains a most interesting article, profusely illustrated, from the pen of Aldo Leopold, formerly attached to the district headquarters of the Forest Service at Albuquerque, and one of the prime movers in the protection of wild life in New Mexico and the conservation of our natural resources.

Mr. Leopold's article is entitled: "A Plea for Wilderness Hunting Grounds." He proposes the establishment in each of the Rocky Mountain states at least one area in which there shall be a permanent closed season on roads. In New Mexico, Mr. Leopold favors the area embraced in the Gila National Forest for such a wilderness. We quote from his article as follows:

"There was—and is—the head of the Gila, in the Gila National Forest. The Creator must have foreseen the present plight of the wilderness hunter, for in this precious remnant of the old frontier he piled up the hills "high, wide and handsome." At every point where roads might enter is set a rugged mountain. Wherever a foaming trout-stream has cut its way through the mountain wall a jagged box canyon says, "They shall not pass." Agricultural valleys are few and these the merest shoe-strings, from which present woods have torn out the little fields as if to say, "This is the best stand—these hills are meant to play in, not to live in." There are three or four frontier cow-ranches tucked away in the Gila hills—but somehow they decorate the wilderness, rather than detract from it. The dedication of the Gila headwaters as a wilderness hunting ground need in no wise interfere with the continuance of their grazing privileges.

"To sum up: Our six big wilderness areas of a decade ago have been, for good and sufficient reasons, reduced to one. Are those reasons good and sufficient to "develop" that one also? I say no reason is good enough to justify opening up the Gila. I say that to open up the Gila wilderness is not development, but blindness. The very fact that it is the last wilderness is in itself proof that its highest use is to remain so.

"What I am trying to make clear is that if in a city we had six vacant lots available to the youngsters of a certain neighborhood for playing ball, it might be "development" to build houses on the first, and the second and the third, and the fourth, and even the fifth, but when we build houses on the last one, we forget what houses are for. The sixth house would not be development at all, but rather it would be mere short-sighted stupidity. "Development" is like Shakespeare's virtue, 'which grown into a pleurisy, dies of its own too-much.'

"In objection to the dedication of the Gila as a permanent wilderness hunting ground, it has been truly said that a part of the area which would be 'locked up' bears valuable stands of timber. I admit that this is true. Likewise might our sixth lot be a corner lot, and hence very valuable for a grocery store or a filling station. I still insist it is the last lot for a needed playground, and this being the case, I am not interested in grocery stores or filling stations, of which we have a fair to middling supply elsewhere.

"It has been likewise objected that to keep roads out of the Gila would cripple the fire control system. The Gila fire fighting organization was put to a pretty severe test in the big fires of 1922, and the result would seem to indicate that the present system of Forest Service trails, telephone lines, and lookout towers will handle the fire situation, even in a bad year. In fact, to build roads into this kind of country might introduce quite as much new fire risk as they would help combat.

"Now the question is this: Why should not the Gila area, and other similar areas, if possible one in each western state, be declared permanently roadless, and dedicated to that particular form of public recreation beloved by the wilderness hunter? The necessary authority would seem already to exist, the Forest Service now having discretionary power to determine what constitutes the highest use of each resource in the National Forest, and if any area has its highest use in wilderness hunting, the Service should dedicate it to that purpose, just as it dedicates particular areas for millsites, summer-home sites, and public camping grounds. It certainly would require no additional appropriations; the wilderness is the one thing on earth which was furnished us complete and perfect."

Albuquerque Morning Journal
March 27 1925

COLIN NEBLETT ELECTED HEAD OF STATE G. P. A.; FAVOR WILDERNESS AREA

Game Association Asks Forest Service to Create Fish and Game Department; Wants Bag Limit Reduced on Ducks and Geese; Recommends La Joya Shooting Grounds

Judge Colin Neblett, of Santa Fe, was elected president of the New Mexico Game Protective association at the final session of the annual convention of that organization here Thursday afternoon. Fred Sherman, of Deming, was elected first vice president; C. A. Whited, of Raton, second vice president; and K. C. Kartchner, of Albuquerque, treasurer. Earl W. Loveridge was re-elected secretary. These officers will serve until September, 1926, as the next convention will be held at that time.

An amendment to the by-laws was passed changing the date of the annual convention to the first Tuesday and Wednesday in September instead of March in order that recommendations can be made by the association to the legislature soon after the conventions. The selection of the next place of meeting was left to the executive committee.

The convention voted unanimously to reaffirm its stand of last year in favor of having an area of about 300,000 acres on the head of the Gila river in southwestern New Mexico retained as a wilderness hunting ground, free from roads, summer resorts or other civilized trimmings. This is the only place left in New Mexico offering a considerable area of attractive big game and fishing country where the man who likes to make a real pack trip can be accommodated. A committee of three will be appointed by Judge Neblett to look into the legal aspects of the matter and find out if President Coolidge has the power to set aside an area of this kind, action which would establish a precedent.

Ask New Department

An important step taken by the convention, which may have far reaching results, was the adoption of a resolution asking the forest service to create a department exclusively for the administration of fish and game matters within the forests.

After considerable discussion the convention decided to send a message to Dr. E. W. Nelson, head of the biological survey, asking that the bag limit for ducks be reduced from 25 to 15 and for geese from eight to five. Delegates were of the opinion that if the bag limit is not reduced the open season will be shortened, and they were unanimously in favor of a smaller bag limit in preference to a shorter season.

A resolution was adopted recommending that the state game commission attempt to purchase a public shooting ground near La Joya. The area in question is one that Dr. R. F. Pettit and Aldo Leopold selected several years ago as being the best possible refuge in the middle Rio Grande valley. In discussing this resolution it was brought out that public shooting grounds are urgently needed before all the good shooting spots have been placed under the control of wealthy private owners.

Discuss Big Game

In discussing the big game policy it was brought out by various delegates that the big problem is to prevent non-residents from obtaining resident licenses. Several suggestions for meeting this problem were offered to the game commission. Fred Sherman of the Deming association told the convention of the effective patrol made of the Gila forest big game section last year, the second year in which the plan had met with success. The Silver City, Mogollon and Hot Springs local associations co-operated with the Deming association, hired deputy wardens from the association funds, obtained the assistance of twelve or more forest rangers and, with the additional help of ten deputies who were paid by the state game commission, practically all of the hunters who entered this territory, which comprises about two and a half million acres, were checked in, their licenses examined, plans for game management obtained from them and their co-operation in game protection obtained. That the hunters believe this patrol is for the good of the sport is shown by the fact that no one has ever protested at being checked in and that every one has assisted in furnishing figures as to numbers killed and numbers seen, the effectiveness of the game refuges and similar information.

Thank Leopold

A resolution was passed asking the state game commission to arrange for the publication at regular intervals of a game bulletin to be called "The Pine Cone." Aldo Leopold, former secretary of the association, edited a publication of this nature for some time. The convention also adopted a resolution thanking Mr. Leopold for the splendid service he rendered the organization during the eight years he served as secretary. A telegram of thanks was sent Mr. Leopold at Madison, Wis.

The by-laws of the association were amended to allow each local association one delegate to the state convention for each 25 members or fraction of 25 members, as shown by paid up dues to the state organization. The by-laws formerly gave each association one delegate regardless of the number of members it might have.

Arthur Sisk of Albuquerque and Charles Proebstel of Santa Fe, members of the game commission, and Tom Delgado of Santa Fe, new game warden, all made brief talks assuring the association of their hearty co-operation.

Delegates were guests of the Albuquerque association at its annual rabbit dinner at the Y. M. C. A. Thursday evening.

Men's Ox

Dec. 15 - 1930

TIME

ASCERTAINED AND MEASURES PLANNED IN ACCORDANCE WITH THEM AND WITH THE EQUALLY IMPORTANT FACTS OF HUMAN NATURE.

Chairman of the planning committee, Aldo Leopold of Madison, Wis., chief of the American Game Survey, submitted the new program. The committee had found that American farmers can do more toward increasing game than any other agency by making game a secondary farm crop. Six years of compensating game-wise farmers in Texas, for example, have increased good shooting preserves to 2,500,000 acres. They recommended that the farmer be protected from lawless hunters, be amply rewarded for his work.* Quail, pheasants, Hungarian partridge, rabbits, squirrels all thrive on the farmer's cultivated land. Other game lives better in forests, wildernesses, land which is cheap enough to be maintained as public hunting grounds. The committee advised



American Game

ALDO LEOPOLD

"Let farmers be game-keepers."

that public ownership of these lands be extended as fast as possible, that Game Administration & Management be made a profession like Forestry or Agriculture.

The Game Conference approved the Leopold committee's plan. It also: adopted a resolution to bring about laws stopping the sale of black bass in the ten states which permit it; recommended to the Secretary of Agriculture that beginning February 1932 repeating shotguns be restricted to three shots per loading. Gun

HAMY

ALL-ELECTRI

Game Conference

Annually for 16 years U. S. and Canadian game officials, game breeders, scientists, sportsmen have met to talk over conservation problems at the American Game Conference held under the auspices of the American Game Protective & Propagation Association. Last week in Manhattan they met for the 17th time. This time, they had important work to do. Two years ago they had appointed a committee to study game conditions, to draw up a constructive plan for increasing North American game. The committee had its report ready for consideration.

President Hoover, fisherman-author of *A Remedy for Disappearing Game Fishes*, acknowledged the importance of the occasion by sending a telegram: THE PROTECTION AND PROPAGATION OF THE USEFUL WILD LIFE OF THE COUNTRY IS OF MUCH GREATER IMPORTANCE THAN IS GENERALLY REALIZED. . . . THE BIOLOGICAL FACTS SHOULD BE FIRST

*James John Davis, retiring Secretary of Labor, calls Secretary Doak the "handsomest Secretary of Labor in American history" (TIME, Dec. 8). There have been but two others: short, stocky, purse-lipped James John Davis; short, slight, white-haired William Bauchop Wilson.

Time Dec 15 - 1930

The Game Survey. During the past year a nation-wide survey of game conditions was inaugurated by the Sporting Arms and Ammunition Manufacturers' Institute and Aldo Leopold, formerly of the U. S. Forest Service, was placed in charge of this survey. Mr. Leopold made a report to the Conference of work done by him up to that time, which included surveys of game conditions in Minnesota, Iowa, Wisconsin and Ohio. Extension of state surveys are to be made by him as rapidly as possible. Mr. Leopold has found some conditions regarding the effect of stocking of pheasant and Hungarian partridge not heretofore known and not understood. Further research may disclose the reasons why these birds are successfully established in some localities and not in others when conditions are apparently similar. One fact that appears to be disclosed by Mr. Leopold's survey is that the pheasant thrives best in the states covered by glacial drift soil; in fact, it is not found elsewhere to any extent except on certain river bottoms. Following Mr. Leopold's investigations regarding quail, the Institute has established a series of fellowships which are offered to state universities and other educational institutions for the purpose of encouraging practical demonstrations in the north central states in the care and development of quail. Several institutions have already accepted this proposition and the U. S. Bureau of Biological Survey has agreed to co-operate by supplying the services of Mr. Herbert L. Stoddard, for supervisory purposes, Mr. Stoddard having been engaged for several years in the well known quail research work in northern Florida and

American Game 1928



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Our Platform

More state game refuges.
Save the last of our grizzly bears—our antelope—our sage grouse.
Better protection for all bears.
Stop needless pollution of fishing waters.
More of state game funds used to rear feathered game.
Stop diversion of state moneys from game fund to general fund.
Stop wanton drainage of wild fowl areas.
More fish fry, and more state and Federal nursery ponds in which it can attain proper growth.
Safeguard our forests by widespread reforestation.
Limited open season on all birds and animals, up to danger limit of their extinction, in preference to protracted closed seasons.
More funds, both state and federal, for game law enforcement.

"The Outdoor Life Conservation Award for 1930

Report of the Committee

IN MAKING the award for last year, the general condition in regard to the conservation of fish and game must be considered. Never before in the history of the world has a country so quickly changed from a primeval wilderness to a closely-settled country in which all available land was tilled, the forests were cut, and the industries putting into the streams an immense amount of industrial waste.

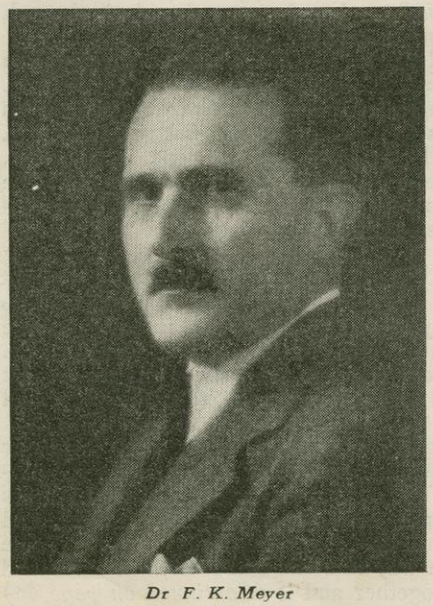
The management of the fish and game departments of the various states was too often in the hands of men who had no adequate training for the duties and responsibilities of their position, and were selected solely from the standpoint of their political value. Too few people were giving any care or attention to the serious question of the existence of fish and game, and the clean, wholesome sport of the out-of-doors, which had contributed so materially to the welfare and happiness of a large portion of our people, was entirely neglected.

Only recently has there been any concerted movement towards the awakening of the public to the advisability and the necessity of retaining and augmenting such natural resources. It becomes necessary to study the conditions as they now exist, with the thought of assisting industry in the disposal of its wastes, of the proper reforestation of certain lands, and the proper and scientific methods of breeding and propagating of fish and game. The acquisition and the dissemination of such facts as will aid not only those engaged in the propagation of fish and game, but the public generally, in understanding the problems, are of prime importance. With this thought in mind, the Eastern award has been made to Aldo Leopold, whose interest in conservation began in boyhood, under the tutelage of a father who had a clean and wholesome interest in the questions affecting fish and game. Mr. Leopold was educated at the Yale Forest School, and was for a time in the U. S. Forest Service. He was supervisor of the Carson National Forest in New Mexico, and, since his school days, has been connected in one way or another with some form of conservation. During the last few years he has been engaged in making a game survey of the North Central states, and in the publication of this work has gathered together scientific data and facts concerning the propagation of game, the suitability of certain coverts, and the proper approach to such projects, all of which will be invaluable to this work.

For the Western award, the committee has selected Dr. Carl Frederick Meyer, who was born and educated in Switzerland and in Germany. His experience along the line of preventive medicine and public health has been wide. He served

Previous recipients of the OUTDOOR LIFE Award:

1923	John M. Phillips, Pittsburgh, Pa. Col. G. Soulard Turner (deceased), Silver City, N. M.
1924	Arthur A. Allen, Cornell University. Arthur M. Hyde, ex-Governor of Missouri, now U. S. Secretary of Agriculture.
1925	William C. Adams, Mass. Isador Zellerbach, San Francisco, Calif.
1926	W. B. Coleman, Boulevard, Va. A. P. Bigelow, Ogden, Utah.
1927	Allen Green, Oakville, Iowa. J. Stokley Ligon, Santa Fe, N. M.
1928	W. J. Dawe, Elko, Nev. Herbert L. Stoddard, Washington, D. C.
1929	Jack Miner, Kingsville, Ontario, Can. 'Gene Simpson, Corvallis, Ore.



Dr F. K. Meyer



Aldo Leopold

An American Game Policy

THE National Game Conference held in New York, December 1 and 2, under the auspices of the American Game Protective Association, accomplished a very remarkable thing. It adopted as the final action of a constructive two-day meeting an American game policy, thereby charting a definite and united course of action for the conservation of wild life and the preservation of a sport in which upwards of ten million people in the United States are today participating.

The fact that only a small percentage of the millions interested in wild life or hunting will appreciate the full significance of this action does not lessen its importance. For more than two decades sportsmen and game conservationists in and out of meeting have scrimmaged on the field of controversy trying unsuccessfully to come into common agreement as to what ought to be done to save the vanishing wild life from vanishing faster and faster, year by year. Except for the Migratory Bird Treaty compact, the forty-eight states have gone pretty much their individual ways, making forty-eight game policies all unrelated and uncoordinated by a common charter of national principles and objectives. The adoption of the American game policy, therefore, invests the 17th Annual Game Conference just ended with the historic importance of a constitutional convention.

This constitution of wild life restoration promulgates seven principles as basic to constructive and united action. It calls for an extension of public ownership and management of game lands as fast as land prices and public funds permit; recognition of the landowner as the custodian of public game on privately-owned lands and the right to compensation for protecting and restocking his lands with game; experiments to determine for each state the most practical way of bringing the landowner, the sportsman and the public into productive partnership in game management and game restoration; making game management a profession like forestry and agriculture by training men in the science of animal biology and game administration; scientific research to replace opinions with facts as a basis for game restoration; recognition that the nonshooting protectionist and the scientist share with the sportsmen and the landowners the responsibility for conservation of wild life as a whole; and finally insistence on public funds from general taxation for all betterments serving wild life as a whole, with sportsmen paying for all betterments serving game alone.

The policy was formulated by a committee set up for the purpose in 1928. In submitting its recommendations, the committee said the proposed policy offers no panacea. "We urge frank recognition of the fact," it declared, "that there is no panacea; that game conservation faces a crisis in many states; that it is only a question of time before it does so in all states; that the present order is radically unsatisfactory; and that mild modifications of it will not do. We are convinced that only bold action, guided by as much wisdom as we can muster from time to time, can restore America's game resources. Timidity, optimism, or unbending insistence on old grooves of thought and action will surely either destroy the remaining resources, or force the adoption of policies which will limit their use to a few."

Another highly constructive and encouraging trend in wild-life conservation was reflected by the 1930 game conference. This is the increasing extent to which research and fact-finding is being brought to bear upon wild-life problems and its sobering effect upon prolonged and indecisive debates of controversial theories. Adoption of a clear-cut, national game policy with a vigorous impulse back of it to replace abstract debate with fact finding is a step forward that ought to electrify the whole movement.

Leopold Again Hunts Deer With Bow and Arrow

Aldo Leopold, one of the pioneers of game conservation in New Mexico, for years with the forest service and now conducting a nation-wide game survey for the ammunition industries, is here from Madison, Wis., to pack into the Gila country on a bow-and-arrow deer-hunting trip. Leopold attracted some attention by a stunt of this kind two years ago; he did not get his deer but reported a lot of sport. Leopold went to Madison originally to take charge of a forest service laboratory. One of his hobbies is wilderness areas in the national forests.

"Over grazing is to my mind the menace in the deer country now, which can best be overcome by the states removing the old does," said Leopold today. "Pennsylvania found it required 15 years to recover from such a condition, and if New Mexico does not take care it might take her 25 years to recover."

-1931-

Wisco

Madison Man Awarded Medal for Game Study

Aldo Leopold's Survey Called Outstanding

Aldo Leopold, 2222 Van Hise avenue, who is game survey director for the Arms and Ammunition Institute and considered one of the country's leading authorities on game restoration, has been warded a gold medal for his activities by Outdoor Life magazine, P. K. Whipple, associate editor, has announced. The award was given to Mr. Leopold for the eastern half of the United States for "a lifetime of research in connection with the distribution characteristics and propagation of upland game birds." The recently published survey of game of the north central states is "an outstanding contribution" to the reinforcement of our game bird supply, Mr. Whipple declares.

Game Policy in a Nutshell

By ALDO LEOPOLD

Chairman, American Game Policy Committee

SEVERAL centuries ago a group of doctors got into an argument over the question of whether or no the blood circulates. They banged the table long and mightily, proving to each other it must be so, and that it couldn't be so. When they were nearly worn out, one of them had the brilliant idea of trying an experiment to find out whether it were so or not. Thereupon the argument ended, and the doctors had time to tend their patients.

We conservationists are the doctors of our game supply. We have many ideas as to what needs to be done, and these ideas quite naturally conflict. We are in danger of pounding the table about them, instead of going out on the land and giving them a trial. The only really new thing which this game policy suggests is that we quit arguing over abstract ideas, and instead go out and try them.

The idea of settling mooted questions by experiment is often ridiculously simple as a matter of hindsight, but it is not so simple as a matter of foresight. It seems like a waste of time, and a dangerous example, to give the other fellow's ideas a trial when we know to begin with that they are wrong. Nevertheless there is really grave danger that if we do not make these concessions, nothing at all will be tried, and there will be no progress.

Game conservation is at this moment in a particularly difficult stage of its development. The set of ideas which served to string out the remnants of the virgin game supply, and to which many of us feel an intense personal loyalty, seem to have reached the limit of their effectiveness. Something new must be done. Nearly all of us are agreed what it is, but there are differences of opinion about who should do it, what methods should be used, and who should pay for it, and how. The differences of opinion are not so numerous, however, as to render it at all impracticable to try all of them. This game policy simply enumerates some of these differences, and urges that they be subjected to the test of experience.

The Committee which drafted the tentative document for discussion at the Seventeenth Annual Game Conference included almost as many diverse opinions as any other group of sportsmen. I think that we taught each other a good deal about not to be unduly afraid of the other fellow's proposition. If it is bad, a trial will demonstrate that fact much more quickly than pounding the table. If it is good, the same is true.

The writing of this policy, and its hoped-for adoption, is hardly a beginning of what needs to be done. There remains the much bigger job of organizing and executing the local demonstrations which the policy advocates. This is where the real skill and leadership will be required. The kind of demonstration I have reference to is illustrated by the one now under way in Ingham County, Michigan. It seeks to develop a system of game management executed by organized farmers and supported by organized sportsmen, and to see whether such a system can actually produce game by paying the farmer for labor and materials rather than for shooting privileges. We have argued this question for a decade, but I dare say that the Michigan experiment will convince more people what the answer is than another decade of debate.



Aldo Leopold

A vote for the adoption of this policy is, in my opinion, a vote for the idea of experimentation, rather than a vote for any one of the particular systems to be experimented with. It must be freely admitted, however, that a vote for this policy is an admission that things are not as they should be, and that radical changes are in order. If there be anyone who thinks that game conservation is "progressing splendidly," let him vote no.

A vote for this policy is also an admission that sportsmen are not the only group concerned with game conservation. If there be anyone who thinks that we can solve the game problem without going into full and equal partnership with the landowner and the protectionist, let him vote no.

If there are any hidden meanings in the policy, they are not intended to be there, and the purpose of the discussions is to bring them out into the daylight.

I want to thank the members of the Committee for the hard and often tedious work which they have contributed during the last two years, and for the complete absence of haggling over petty detail which has characterized their negotiations.

There will, of course, be opposition to the policy. This is as it should be. If the opposition can point out enough fallacies and errors to warrant rejection, well and good. I will only add this: that to reject the policy without undertaking to formulate a better one will be akin to suicide.

I have four reasons behind this statement.

The game stock, for one thing, is losing by delay. We are still losing stock, range, and even species.

Second, this drouth allowed grazing and fire to shrink our coverts on intensively used land as much in one year as in five ordinary years. Some mechanism for reversing the continued loss of our richest game ranges must get under way.

Third, the agricultural depression represents a priceless opportunity to plant the idea of game as a secondary farm crop, wholly free from any foreseeable overproduction.

Fourth, we sportsmen are on the carpet. Many other groups are watching us, some with interest, others with something nearing exasperation. I am afraid the farmers, without whom we can do nothing, are among these. Our present position is a defensive one. Our critics are no more reasonable than we are, but they tend to have the public ear. Our whole situation demands a positive program; an offensive strategy. Shouting outworn formulas only makes matters worse. We need a game policy.

New U. W. Department to Apply Farm Methods to Raising Game

1933

Foundation's Grant Finances Project

Establishment of a game management department which during the next five years will endeavor to develop and apply methods of raising "crops" of game birds and animals as part of regular farming operations was announced today by the regents of the University of Wisconsin.

Aldo Leopold, former U. S. forester and conservation authority, will direct the project as tenant of a chair of game management, financed by a grant of the Wisconsin Alumni Research foundation to the college of agriculture, Dean Chris L. Christensen said.

Mr. Leopold also will be director of the new University of Wisconsin arboretum and wild life refuge, adjacent to Lake Wingra.

University and foundation officials today expressed hopes that Mr. Leopold's research, aided by technical cooperation of other university departments, can integrate the best methods of growing game with the best methods of growing other crops, so that every farm can produce game as a by-product of regular farming.



ALDO LEOPOLD

"Game crops grow quickly and require little initial investment," Mr. Leopold said, "and hence can help carry forest lands during the period when young timber is returning no revenue to the owner."

The farmer, who now is natural custodian of state-owned game which ranger his land, will be encouraged deliberately by the plan to become the manager of pheasant, quail, grouse, rabbit, ducks, and other wild life for their recreational and economic value.

Development of game crops eventually is expected to furnish the farmer income through an arrangement by which hunters will pay him a reasonable fee for his part of a triple game-raising partnership of state, land-owner and sportsman. This plan already is being tested. "No Hunting" signs will come to read "Hunters Invited" and misunderstandings between land-owner, hunter, and the game owning state will dissolve to the benefit of all three, university officials indicated, if the plan is accepted generally.

"Wild game," Mr. Leopold commented, "is among the very few things now underproduced, despite the insistent demand of sportsmen and other recreation seekers."

The work will be demonstrated in the arboretum and on typical farms in various areas of the state. Song birds and other wild life will benefit by the food and cover provided for game.

Leopold Will Direct Experiments, Arboretum

KEE JOURNAL 1933.

Want Farmers to Raise Game

U. W. Regents Intend to Provide Another 'Crop'; Select Director

Madison, Wis.—(AP)—A plan for making the raising of wild game a by-product of Wisconsin agriculture will be developed and introduced to farmers during the next five years by the University of Wisconsin.



Aldo Leopold

The aim of the university to give the Wisconsin farmer another "crop" for him to develop was made known here Tuesday by the announcement that the university regents had established Aldo Leopold, former United States forester and nationally known conservation authority, in a professorship of "game management."

Use Alumni Funds

The department of game management will be financed with funds granted the college of agriculture by the Wisconsin Alumni Research Foundation, Chris L. Christensen, dean of the college, said.

Mr. Leopold also will be director of the new university arboretum and wild life refuge, adjoining Lake Wingra, near Madison. The arboretum and wild life refuge will be the scene of experiments for making the raising of game birds and animals another branch of Wisconsin farming.

Dean Christensen and Mr. Leopold pointed out how the farmer may coordinate the raising of wild game with the production of crops, to financial advantage for himself and improvement for his farm.

Marginal and tax reverted lands should provide excellent and economical "pastures" for wild game, Mr. Leopold said.

"Game crops grow quickly and require little initial investment," Mr. Leopold said, "and hence can help carry forest lands during the period when young timber is returning no revenues.

May Levy Fee

"The farmer, who is now natural custodian of state owned game which ranges his land, will be encouraged deliberately by the university's plan to become the manager of pheasant, quail, grouse, rabbit, ducks and other wild life for their recreational and economic value."

Game "crops" may be harvested by hunters who will pay the farmer a reasonable fee for hunting on his premises, Mr. Christensen pointed out.

"Wild game is among the very few things now unproduced, despite the insistent demand of sportsmen and other recreation seekers," Mr. Leopold said.

Tells How Farmers Can Save Game

Leopold Stresses Opportunity of Ag Men to Save Upland Birds

Modern game conservation will prove a profitable venture to farmers if they are given the privilege of charging for hunting rights on well-populated game lands, declared Aldo Leopold, game survey director of the Sporting Arms and Ammunition institute at a meeting of the Technical club at the Park hotel Monday night.

He stressed the responsibility and opportunity of the farmer to undertake nurture of upland birds in waste plots on lands he possesses. Waterfowl development can more efficiently be handled by the state.

Outlining the procedure to be followed for protection of most satisfactory environments for wild animal culture, Leopold stated that provision of cover, and food supplies were essential to attraction of game to artificial coveys.

He showed, by means of diagrams, that proper handling of usable farm lands may result in increase of the number of birds from 400 to 500 per cent. Deserted orchards are in many instances being used with highly favorable results by farmers who have undertaken the advocated voluntary conservation work, the club was told.

Leopold Urges Madison to Finance 10-Year Study of Lakes by U. of W.

Asks New Playgrounds Without Bathing Beauties

Speaking at the annual banquet of the Madison chapter, Izaak Walton league, Friday night, Prof. Aldo Leopold, University of Wisconsin, said he looked to farmers for solution of the game problem in Dane county, where only 10 per cent of land is game productive. Prof. Leopold, a member of the national committee on wild life conservation, outlined a program for the league to follow in Dane county.

New officers announced at the meeting are Fred Runkel, president; Dr. A. S. Heggen, first vice president; Virgil Roick, second vice president; Frank Schultz, secretary-treasurer; and Carl Felton and J. G. Dickson, directors for three and two years respectively.

Suggests Marsh Tax Law

"If we had the whole county at work," Prof. Leopold said, "we could have 100,000 birds annually, or about 12 for every licensed hunter."

He said 50 per cent of the land should be made game productive easily by helping farmers to put idle land to work. One solution he offered was to encourage the farmer to post, fence, and feed, and to compensate himself by a fee from the hunter. He also suggested a marshland tax law, similar to the forest tax law, to permit farmers to keep marshland productive.

After declaring that the conservation situation would have been better in former years if the conservation commission had assumed an aggressive leadership, Prof. Leopold asserted that the commission "is at last blossoming out into a leader of public thought and effort."

Suggests 10-year Study

As a cure for the erosion problem, Prof. Leopold suggested an entire modificating of farming and grazing processes and for the problem of the inter-relation of carp, seines, duck foods, and fish, he advocated a 10-year program in which the question could be thoroughly surveyed.

"Today, Madison lakes get as much management as they did by the Indians," he said. "Why not make a new start, and have Madison endow a 10-year study of this question by the university? Is it more, or less, important to our future than such clownings as the frontier show, for which there is always plenty of money? Why not fence off sections of lake bottom, just as the agricultural college lays out test plots for crops, and subject them to all degrees of carp grazing, and all kinds of seining at all seasons, and measure the results?"

Other conservation difficulties which Prof. Leopold discussed were the near extermination of useful hawks and owls, and the decrease in homely wild nooks where men of pioneer spirit might find surcease from business troubles. For the former he suggested an educational campaign, backed by the league, to teach people to distinguish good species from the bad.

Looks to Farmers for Solution of Dane Problem

Of the latter problem he said, "there should be some new type of public playground, the sole specification of which shall be to be there and to be let alone, and not have signs, uplift, bathing beauties, or pink lemonade."

"The CWA got away with several of our slender remnants and unless the league backs a movement to save them, the rest will be gobbled up as state parks, or some other dolled-up type of recreation service," he added.

Sid Gordon, Oshkosh author and sportsman, concluded the meeting with a brief speech in which he showed how insect life for trout streams might be preserved and trout fishing improved.

Others who spoke shortly were Charles Felton, former president, who handed the gold president's button to Runkel; Frank Graass, state secretary; and William Aberg, toastmaster. Nearly 100 attended the dinner at the Hotel Loraine.



Game Conference

Annually for 16 years U. S. and Cana dian game officials, game breeders, scien tists, sportsmen have met to talk ove conservation problems at the America Game Conference held under the auspice of the American Game Protective & Prop agation Association. Last week in Man hattan they met for the 17th time. Thi time, they had important work to do Two years ago they had appointed a com mittee to study game conditions, to dra up a constructive plan for increasin North American game. The committe had its report ready for consideration.

President Hoover, fisherman-author o *A Remedy for Disappearing Game Fishe* acknowledged the importance of the occa sion by sending a telegram: THE PRO TECTION AND PROPAGATION O THE USEFUL WILD LIFE OF TH COUNTRY IS OF MUCH GREATE IMPORTANCE THAN IS GENERAL LY REALIZED. . . . THE BIOLO ICAL FACTS SHOULD BE FIRS ASCERTAINED AND MEASURES PLANNED IN ACCORDANCE WITH THEM AND WITH THE EQUALLY IMPORTANT FACTS OF HUMAN NATURE.

Chairman of the planning committee, Aldo Leopold of Madison, Wis., chief of the American Game Survey, submitted the new program. The committee had found that American farmers can do more toward increasing game than any other agency by making game a secondary farm crop. Six years of compensating game-wise farmers in Texas, for example, have increased good shooting preserves to 2,500,000 acres. They recommended that the farmer be protected from lawless hunters, be amply rewarded for his work.* Quail, pheasants, Hungarian partridge, rabbits, squirrels all thrive on the farm-er's cultivated land. Other game lives better in forests, wildernesses, land which is cheap enough to be maintained as public hunting grounds. The committee advised



American Game

ALDO LEOPOLD

"Let farmers be game-keepers."

that public ownership of these lands be extended as fast as possible, that Game Administration & Management be made a profession like Forestry or Agriculture.

The Game Conference approved the Leopold committee's plan. It also: adopted a resolution to bring about laws stopping the sale of black bass in the ten states which permit it; recommended to the Secretary of Agriculture that beginning February 1932 repeating shotguns be restricted to three shots per loading. Gun manufacturers are willing to co-operate.

Among famed conservationists at the game conference were Senator Frederic Collin Walcott of Connecticut, chairman of the Senate Committee on Wild Life Resources; Dr. Thomas Gilbert Pearson, president of National Association of Audubon Societies; Senator Harry Bartow Hawes, Senate Commission on Migratory Bird Conservation; Col. Arthur Foran, comptroller of the Port of New York, vice president of More Game Birds in America, Inc.

*James John Davis, retiring Secretary of L bor, calls Secretary Doak the "handsomest S retary of Labor in American history" (TIM Dec. 8). There have been but two others: sho stocky, purse-lipped James John Davis; sho slight, white-haired William Bauchop Wils

*This conclusion and plan are shared by the rich foundation, More Game Birds in America Inc. (TIME, Nov. 24).

"GAME CHAIR" IN UNIVERSITY AIMS TO INCREASE WILD LIFE

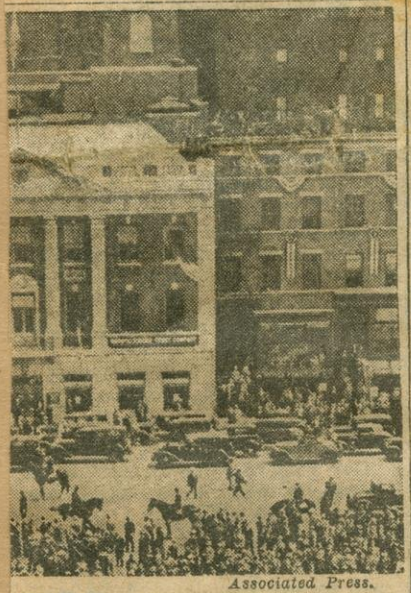
FUNDS supplied by the Wisconsin Alumni Research Foundation have established in the University of Wisconsin the first and only "wild-game chair." To it has been called Dr. Aldo Leopold, an authority on wild game in America and formerly United States Forester. Under his supervision the game department of the College of Agriculture has begun an intensive study, which is to be the basis for the national plan for the restoration of wild life to be worked out by President Roosevelt's committee of three, of which Dr. Leopold is one.

Objectives of the study are threefold. One is the solution of the game cycle and why, every ten years or so, destruction lessens the amount of game and threatens some species with extinction. Discoveries are expected to show the way to a measure of relief for farmers by making it possible for them to conserve and increase the wild game on waste lands for market consumption. The findings also are expected to assist sport in sections where game bags are diminishing.

The university "game chair" is but one of seve[illegible] novel scientific enterprises fur[illegible]ered by the Alumni Research Foundation. It originated the method by which scientific discoveries may be patented and the royalties returned for further research; showed how the scientist may receive reward from discoveries of public value, thus encouraging productive scholarship; and it pointed the way to means for guarding the public from imposition and exploitation in regard to the ingredients of products and the cost charged.

Lately the alumni organization made a grant-in-aid to its alma mater which will relieve thirty-six ranking professors from teaching routine for a semester or a year to enable them to give their whole time to research.

The formation of the foundation was due to the problem raised when Dr. Harry Steenbock of the university discovered that ultra-violet rays so acted upon compounds in certain foods as to cause them to stimulate in the human body processes that are responsible for the absorption and retention of lime salts.



Associated Press.

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New York Times 1934

WILD LIFE POST GIVEN DARLING

Named by Wallace on U. S. Committee.

WASHINGTON, D. C. (AP)—Secretary Wallace Tuesday announced appointment of a committee to develop and supervise a nationwide plan for promoting and protecting wild life.

With the approval of President Roosevelt he named Thomas H. Beck of Wilton, Conn., editorial director of Collier's magazine; J. N. Darling of Des Moines, Ia., newspaper cartoonist; and Prof. Aldo Leopold of the University of Wisconsin, Madison, Wis. Beck will serve as chairman.

"Directing Committee."

Dr. John C. Merriam, president of the Carnegie institution, declined a membership due to other duties.

Wallace said the trio would serve "as a directing committee to outline methods for completing a definite study of the project with the idea that it may be taken up for actual commencement" this year if financial means are obtained.

The first committee meeting has been called in Washington, D. C., Jan. 6.

Suggested By Beck.

The wild life conservation plan was originally suggested to President Roosevelt by Beck, and calls for use of federal funds to improve conditions which have reduced the wild game, particularly waterfowl.

Conservation agencies of the federal government would be concentrated under an administrator with two assistants, one responsible for migratory bird restoration and the other for upland game restoration.

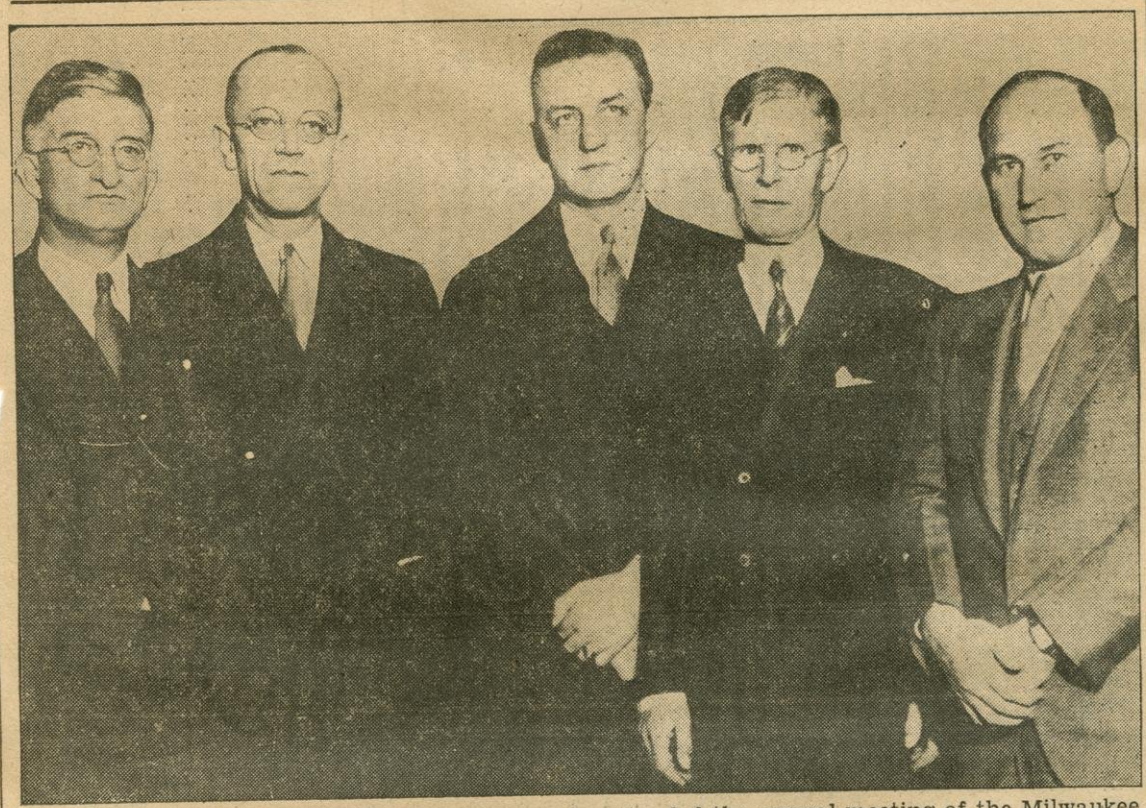
Linked to NIRA, AAA.

The plan would link up with both the national recovery and the agricultural adjustment acts.

Section 202 of NIRA calls for "construction and improvement of publicly-owned instrumentalities and facilities for the conservation and development of natural resources."

At the present time the government owns 55 national wild life reservations comprising about 5,000,000 acres which might be developed into migratory bird refuges.

Leaders at Meeting of Waltonians Here



OUTSTANDING conservationists of Wisconsin attended the annual meeting of the Milwaukee Izaak Walton chapter in the Athletic club Monday night. Some of them are shown here. Left to right are C. F. Culler, La Crosse, first vice president state Walton league and district supervisor United States bureau of fisheries; Aldo Leopold, Madison, member of the Roosevelt committee for the restoration of wild life; Frank M. Graass, Green Bay, state Walton secretary; Municipal Judge Max Nohl, Milwaukee, and Whitney H. Eastman, president, Milwaukee Association of Commerce, and retiring president of the Milwaukee Waltonians. [Journal Staff Photo]

10,000 Men.

For the protection of upland game birds, such as pheasant, quail and patridge, use may be made of acreages taken out of crop production under the farm administration's acreage reduction program.

Farmers will be educated in using production control areas for raising game as a farm crop and in producing and marketing game birds.

It was estimated that employment would be given between 2,000 and 10,000 men in reflooding and improving drained lands formerly used by wild fowl as nesting and breeding areas.

CCC Work.

The civilian conservation corps already has done extensive work in state and federal areas to reclaim land for wild game use.

Funds to finance the plan would come from public works or other federal appropriations, according to preliminary plans, in order to make possible an early start, with provisions for a return of the money through one or more of the following methods:

A federal license of $1 for shooting migratory game birds, a tax of 10 cents per box on ammunition used for field shooting, floating of state bonds, or a return to the federal government of a portion of increased revenues accruing to the state as a result of federal aid.

"Duck Stamp" Bill.

The suggestion for a federal hunting license is incorporated in a bill already presented to congress, called the "duck stamp" proposal, which would require waterfoul hunters to purchase a $1 federal waterfoul hunting license.

Saving the Wilderness

> "I for one am piqued in my sense of national pride. Can we not for once foresee and provide? Must it always be hind sight, followed by hurried educational work, laborious legislative campaigns, and then only partially effective action at huge expense? Can we not for once use foresight, and provide for our needs in an orderly, ample, correlated, economical fashion?

This is the question asked by Aldo Leopold of New Mexico in an arresting article in "American Forests" entitled "The Last Stand of the Wilderness." It is a powerful plea for the arousing and expression of public sentiment to back a move already started tentatively by the forest service, to set apart "wildernesses" or roadless areas in the forests of America. One of the few such places designated by the service for this purpose is the heart of the Gila national forest in New Mexico, a district of rugged peaks and trackless forest, pictured with many other beautiful wilderness views in connection with the article.

Well-to-do sportsmen pay $3,000 to $10,000 for a single big game trip, says Leopold, to the wilderness regions of British Columbia, Alaska, Mexico, Africa and Siberia. The first voice to be lifted in warning against the impending disappearance of all remote places in America, Leopold shows forcibly the absolute need of protecting and preserving the wilderness for the kind of recreation desired by so large a number of our population.

> "The public," he says, "being still so largely unconscious that the end of the wild places is in sight, there is as yet no articulate public expression for or against the wilderness plan. Meanwhile the remaining wild areas in both the forests and parks are being pushed back by road construction at a very rapid rate—so rapid that unless something is done, the large area of wilderness will most disappear within the next decade."

A picture of the Paradise Valley Camp ground, a hundred autos with tourists crowding the edge of the glaciers, tells its own story. Is there a definite demand for saving the wildest spots in America from the flivver? We believe there is. Leopold shows by the experience on the Gila that adequate fire protection is feasible with trails alone, and that lack of roads reduces the number of man-caused fires. The article will make the people of America think.

It is possible that the creation of the Santa Fe Canyon game preserve will be a move in this direction locally. North and east of Santa Fe we have one of the wildest "roadless areas" in the state—the steep, heavily wooded west slope of the Santa Fe range, from the summits half way down a dozen rugged canyons. Roads skirt these slopes, reach part way up the canyons, near the high levels at Truchas and elsewhere. Between the auto and the peaks there is a magnificent country reached only by trails. It will be a great asset to Santa Fe to keep it so.

Santa Fe New Mexican
Nov 25



The Modern Game Breeding.—

EDITO

Otto Byer.

Sept 1933

First Chair of Game Management

A RECENT announcement gives the great University of Wisconsin the distinction of being the first American institution to create a chair of game management. A five-year grant from the Wisconsin Alumni Research Foundation has made such a progressive move possible.

This new sphere of activity will be placed under the control of the College of Agriculture whose Dean, Chris L. Christensen, has outlined the objectives as follows: "to develop game cropping for recreation and income on Wisconsin farms and also on the idle lands of the state since game, it is claimed, can be produced as a by-product of both farming and forestry with little or no additional cost, except the exercise of skill and forethought by the landholder."

No undergraduate courses in game management are contemplated but graduate research studies are to be undertaken as a means of developing a factual basis for a conservation program. The chair carries with it the directorship of the University Arboretum which is also to serve as a demonstration area for new conservation methods.

Those in charge deserve commendation for appointing to this important chair Aldo Leopold, game survey expert, who apparently is so well fitted by education and experience for such a project. Mr. Leopold, a graduate of the Sheffield Scientific School and the Yale Forest School, is the author of a recently published book, "Game Management," an extremely interesting treatise on the theory and practice of increasing and maintaining the game supply through management methods. His work as Chairman of the Game Policy Committee when the "American Game Policy" was adopted at the 1930 American Game Conference will long be remembered.

Game breeders are naturally interested in this chair and the appointee's work since the influence of such pioneering will be felt in the game breeding industry. It is well to remember that any effort in a game management project focuses the spotlight of publicity upon the game birds in question and whets the appetite of the sportsmen directly concerned.

And—just as soon as efficient game management produces more birds more sportsmen automatically appear to shoot them—provided munificent states continue to charge a mere dollar for a license. As a result there will always be a "shortage" of birds in the "public" coverts—and therefore the opportunity for private shooting preserves—if proper laws can be passed.

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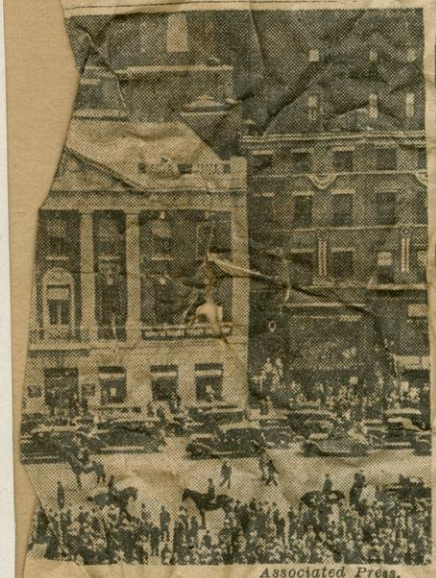

Associated Press.

nmany Hall.

NEW YORK TIMES 1934

Rotary News March 13, 1934

ANOTHER INTERESTING PROGRAM

Aldo Leopold, chairman of the newly created Game Management division of the College of Agriculture, gave another very interesting talk to the Rotary Club last Thursday on "Wild Game Cropping."

He said he could best illustrate game cropping by an analogy. He said imagine a man who is determined to develop a fine garden. He has some exceptionally good soil, which he scrapes up into one corner. Then he gets some good fertilizer and places that over in another corner. He purchases some pedigreed seed and piles that in a third corner and then spends several days making signs which he places in the fourth corner. He has the four things necessary for a fine garden, but raises nothing.

You can ride for hours and hours through Central Wisconsin, he said, and see the finest kind of game "cover" but no food for the game; while in the corn belt is the finest kind of food and no cover. Right around Madison there is little cover and therefore little game. We burn over the marshes every year just when the game needs it most. He said game was abundant in the pioneer times because by pure accident game food and game cover were shuffled together. There were millions of acres about one-half plowed, one-half cover; the woods were half cleared, with the stumps standing, making an ideal place for quail and rough grouse. There were millions of acres of sloughs and marshes, since drained and dried.

He said last Sunday he inspected a 250 acre-dairy farm on which are two covies of quail. By spending three or four dollars for signs, as much for seed and wire and using five acres of practically waste land there will be ten covies of 150 birds in three years. Game cropping is putting food and cover together in such a way as will provide food and protection for game.

Three years ago seven farmers near Riley went together. They found three covies of quail, and by providing a little food now have fifteen covies. He told of other cases and said in Iowa there are now seventy-five groups of farmers cropping game, and one farmer alone sold $75 worth of hunting tickets on his farm last fall.

There are four reasons why game cropping has been slow in Wisconsin, he said. First there has been confusion as to whose business it is and we have literally wasted twenty years on the assumption that only the state could crop game, when in reality only the farmers can. The second reason is because the harvesting season is too short. Third, individual farmers cannot work successfully alone, but must work in groups as the game will not stay on one farm. Twelve groups of farmers were organized in Dane and Jefferson counties this winter. Fourth is the matter of game management, the developing of game cropping technique.

(Continued on page 3)

ANOTHER INTERESTING PROGRAM

(Continued from page 1)

He said the University of Wisconsin is a pioneer in the latter. It is doing research to learn what needs to be done to the land to make it productive of game, what foods the different kinds of game require, and a trained group of skilled men are being developed. But we know very little about the cottontail rabbit, deer, water fowl and shore birds and all of this is being studied. This winter a group of farm boys were brought in who wanted to learn about game cropping. If Wisconsin were properly cropped 3,000,000 game birds could be killed each year without destroying the birds.

THE NE

dustrialists and financiers have recovered sufficiently to fight him with malice and venom, defamation and prevarication."

GERMAN FOREST PLAN IS OFFERED AS MODEL

Wisconsin Educator Cites Steps Adopted to Insure Right Undergrowth for Deer.

Foresters in Germany are trying to undo some of the mistakes their predecessors made, reports Science Service. Earlier forestry in that country "split itself in two" over the conflicting interests of softwood timber and deer. The most profitable cash tree crop is spruce, and the past generation of German foresters planted great solid blocks of spruce, even and ordered as the cornstalks in a cornfield, and almost as tightly set.

But such closed stands of conifers shade out the underbrush on which deer browse in Winter and of course all tenderer Summer herbage as well. Yet the German people, even the vast majority who never go hunting at all, want to have deer about. So the foresters have maintained a heavy deer population artificially, by feeding hay and giving doles of salt.

To restore something like natural conditions, the present school of German foresters is attempting to build what they call "Dauerwald," the word translates rather awkwardly as "permanent forest." This is to be a balanced forest, with hardwoods mixed with the "fields" of spruce. The deer find certain hardwood trees palatable browse in themselves. Moreover, hardwood growth, unlike the softwood, permits extensive development of the kind of undergrowth that deer prefer to eat, such as yew, mountain ash, raspberry, blackberry, wild rose.

Professor Aldo Leopold of the University of Wisconsin believes that American forestry can profitably learn a lesson from the German book, "before we repeat the German mistake too extensively." He would have "money crop" forestry in this country concentrated on the best forest lands, leaving cliffs and rocks to "grow game and scenery."

He would let a reasonable number of predatory animals survive to act as natural control on game population. He would encourage hardwoods, though keeping pure stands of conifers in obviously profitable places. Finally, he would unify game and forest administration, instead of leaving it in its present troublesome dual-control condition, and he would try to keep the food supply always well above the animals' demands upon it. Such is the outline of a good "dauerwald" policy for America.

From Golf Sticks to Rifles

Wisconsin's Wild Life Picture in Process of Radical Change

Shifts Reduce Many Species

But Dr. Aldo Leopold Believes Influx Will Compensate Loss

It is doubtful whether wild life disappears under the impact of civilization.

As long as the soil is there it will grow plants and these plants will feed animals.

The decline of Wisconsin wild life since 1840 is a process of ebb and flow, gain and loss.

The eviction of the buffalo and the passenger pigeon was inevitable, but hindsight shows us that the wolf and cougar should have been retained in the north to keep the deer herd in check.

Those are a few of the high lights in a recent summing up of Wisconsin wild life by Dr. Aldo Leopold, professor of wild life management of the University of Wisconsin. With an authentic wild life chronology for the state as his foundation, Leopold sketches a broad picture of what happened as Wisconsin was settled.



Dr. Leopold

One group of large mammals and birds retreated northward and westward because they could not exist in settled country, he says. Examples of these are the buffalo and the passenger pigeon, which must "live as a wandering horde . . . hordes have no place on the farm." Another group of southern species, including the wild turkey, were exterminated "because they could not retreat . . . climate restricted them." Still another group was pushed out because of its value as fur or meat: "Marten, fisher, wolverine would still be common but for overtrapping and fires."

Hawks, Owls Going

Leopold, whose reputation as a wild life expert is international, offers a few deductions:

"The hawks and owls are now being decimated. . . . They will probably become rare before the public realizes that their main prey consists of rodents. . . . A similar persecution of fish eating birds and mammals is now in full swing. . . . The net effect of all retreats and invasions is clearly this: Fewer total species, more foreign species, larger numbers of small birds and rodents, smaller numbers of game, fur and predators; general replacement of forest and marsh species by open upland forms, and more frequent pestlike behavior . . . less internal balance in the wild life community."

Tracing the history of conservation, Leopold points out—"Conservation began with the idea of prohibitions. Prohibitions have no end; they give bulk to our statutes and recurrent hope to wishful thinkers, but after a century of trial it seems apparent that they give more aid and comfort to wild lifers than to wild life. Prohibitions are necessary . . . but in and of themselves they accomplish little."

Cropping Local Idea

Most recent idea in the chronology of conservation, he continues, is that of scientific cropping, or management. The idea of cropping Wisconsin birds "was conceived in so many minds that it is difficult to assign and date its beginnings." He cites H. L. Stoddard, former Milwaukeean, as a leading authority on the bobwhite quail who "envisaged such a system between 1910 and 1924 but carried it to another state (Georgia) before it emerged from his pen as public property."

Cites the Landmarks

Following are a few of the landmarks of conservation in Wisconsin which, while not giving the whole picture of change as Leopold has traced it, mark many interesting dates:

1832—Last buffalo east of Mississippi killed in Trempealeau county. Perhaps buffalo on St. Croix river to 1833.

1840—Last woodland caribou seen at La Pointe, Ashland county. Drifters from north reported in Burnett and Price counties in 1910.

1851—First game laws. Deer closed Feb. 1-July 1; prairie chicken, quail, woodcock and ruffed grouse Feb. 1-Aug. 1.

1864—First closed season for fur animals.

1875—English sparrow planted at Milwaukee.

1876—Barbed wire fencing first available in quantity. This marks the demise of the rail fence and the reduction of fence row wild life.

1879—First carp planted in Wisconsin by United States fish commission.

1897—First bag limits established. Resident license established. Killing deer in water or on ice prohibited.

1908—Worst fire year; 1,435 fires reported; 1,209,432 acres burned.

1908—Last Wisconsin cougar killed in Douglas county.

1921—First open season on pheasants and Hungarians.

1923—Starling arrives in Wisconsin.

1932—Peak population on all grouse.

1940—State and federal governments buy Horicon marsh.

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State Science Parley Starts

U. W. Expert Tells Appleton Audience of Conservation Plans

Appleton, Wis.–(AP)–A new Wisconsin game conservation program, based upon the theory that the environmental features of game birds and animals are essential for game restoration and preservation, is under way, Aldo Leopold, nationally prominent conservationist, connected with the University of Wisconsin, told the general assembly of the Wisconsin Academy of Sciences, Arts and Letters here Friday.

Herbert L. Stoddard, Sauk City, Wis., naturalist who for years was taxidermist and collector for the Milwaukee public museum, was credited by Leopold with originating this theory. He called it the foundational theory and said it is based upon the premise that wild life can be decimated by destroying the balance of its environment and may be restored by readjusting this balance.

Two investigations, one on prairie chickens by the state conservation commission, and the other on quail under the auspices of the state university, have been conducted on this concept of conservation, he said.

Explains Alfalfa Burn

"To accomplish conservation, game research must not stop with its biological facts," Prof. Leopold said. "There remains the problem of economic adjustments to encourage their use by landowners. Wild life research offers a new field for service to the state, not only to larger universities and colleges, but also to colleges, agricultural high school teachers, county agents, forest officers, game officials and private naturalists throughout the state."

A commonly accepted belief that the yellowing and stunting of the second growth of alfalfa in Wisconsin last year was caused by "sun burn" was dispelled by I. F. Graber, an alfalfa authority at the University of Wisconsin. Graber said that his investigations revealed that the injury to the alfalfa was caused by the leaf hopper. The best remedy against infection by this insect, he said, is to delay cutting the growth for 6 to 12 days.

Explains Dust Storm

The cultivation of beetle repelling legumes such as alfalfa, sweet clover and red clover has been found by university researchers to be the best method of combating the destructive grub worm that ravaged Wisconsin grains and pastures last year, Prof. Graber said.

The unusually dense dust storm that blew over Wisconsin from the Missouri valley last Nov. 12 and 13 was described by Eric Miller, meteorologist at the United States weather bureau at the university. He said the dust was carried as far as New York and Alabama.

"All across the country," he said, "the southern half of the storm was unusually clear. The downcast winds of Chinook character along the front of the Rocky mountains and the divergence of winds following the storm caused this phenomena by subsiding and warming and drying the wind on the southern side of the storm as it swept through the country."

ies funds find out what the breeding grounds need?

"Rare species present the next most urgent wildlife question. Except for the mountain sheep studies recently undertaken by the Audubon Society and the Biological Survey and the Cornell ivory-bill study, rare species are still without benefit of science.

"Fish questions have a huge accumulation of basic science, but no management except the recent start in Michigan. The Bureau of Fisheries does not favor management projects in universities.

"Songbird and wildflower techniques do not yet have names. No bureau, school, chair or fellowship is dedicated to their study; no technician avows their care as his profession. Is it any less important to find out the specifications of a favorable environment for the prairie flowers than for the prairie game birds which ride with them on the toboggan?"

Observational Studies.

Prof. Leopold said that observational studies seldom yield enough information about any species to guide policy for any length of time. Observational research has yet to lead to any understanding of the population-behavior of even a single species in a single state, he added.

"If the unraveling of population problems is going to take longer, more intensive work," he continued, "then it becomes more than ever important that donors of funds learn to wait for results, that research personnel be more stringently weeded; that projects be attached to really versatile institutions able and willing to follow where the clews lead and that research areas be protected against upsets."

New Deal bureaus have created a boom market for wildlife managers, he pointed out. "Dozens of institutions have responded by offering full-blown professional courses," he said. "In those institutions which had previously accumulated some expert personnel and some research knowledge, this vigorous response to the new need was sound and commendable.

"But often no local knowledge existed and the expert personnel had arrived on the previous train. Such ill-prepared ventures would have done better to first do some research, give some non-professional courses, establish some study areas and form a speaking acquaintance with their local problems.

Danger in Situation.

"Selling professional courses without a research base is like selling securities without a property base. The right to teach must be earned, not seized. The ultimate danger lies in an oversupply of mediocre, half-trained wildlife managers, an under-supply of highly trained wildlife ecologists, an under-supply of vocational field workers and an under-supply of non-professional courses for future citi-

There is a growing public zeal for conservation, he continued. "But the zeal is so uncritical—so devoid

Laura. Pearley sent this to me from the New York Times - Polly

UESDAY, DECEMBER 3, 1929.

SEEKS FARMER'S AID TO SHIELD WILD LIFE

Aldo Leopold Tells Sportsmen of Survey Showing Agriculture Destroys Coverts.

SUGGESTS GAME AS A CROP

Says It Would Pay to Protect Quail and Grouse—Conference Will Continue Here Today.

The economic trend toward intensive farming is leading to the destruction of game bird life in the United States through the destruction of game covert, Aldo Leopold, chairman of a special committee on the formulation of an American wild-life conservation policy, said yesterday at the sixteenth annual American Game Conference at the Hotel Pennsylvania. Some method whereby it would be profitable for farmers to leave covert on their land should be developed for the protection of game life, he said.

The establishment of game preserves on existing public lands or the purchase of additional lands for this purpose could not meet the problem, Mr. Leopold said. To meet the situation he urged that a plan be devised to show farmers that "game crops as well as farm crops can be revenue producing."

He recommended the establishment of public areas in which the practicability of "combined crop and game management" could be demonstrated. Legislation could supplement these schemes but not replace them, he said.

Mr. Leopold also reported on a study of the mortality among bird game life. He said this survey showed mortality traveled in cycles of about nine years in the case of grouse and certain other birds. In some cases he found the death rate to be as high as 95 per cent.

His survey covered Michigan, Iowa, Minnesota, Mississippi, Illinois, Indiana and Wisconsin. At the session of the game conference today, Mr. Leopold will present specific recommendations on conservation policy on behalf of his special committee.

I. T. Quinn, Alabama State Fish and Game Commissioner, who is presiding at the conference, recommended a program of education to develop a conservation policy in the United States under which sportsmen would kill only the annual increase in game as it had been scientifically determined and no more.

Dr. T. Gilbert Pearson, in a report, recommended that certain hunters be instructed not to kill certain types of hawks which eat vermin. In another report, however, Alex MacVicar, head gamekeeper at the Hempstead House Estates, recommended the extermination of all hawks because of their predatory habits toward game.

Frederick C. Lincoln of the United States Biological Survey reported on the discovery of the nesting grounds of the blue goose, which, he said, had been found to be in the Baffin Bay region of Canada.

More than 200 sportsmen and conservationists from all parts of the United States and Canada were present. The conference will be concluded today under the auspices of the American Game Protective Association.

Capital Times
March, 1934

Q. Is any American university engaged in fostering the increase of wild game? R. M.

A. The Alumni Research Foundation of the University of Wisconsin has established the first wild-game chair at that college. Dr. Aldo Leopold, an authority on wild game in America, is in charge of the department and an intensive study has begun which is to be the basis for the national plan for the restoration of wild life to be worked out by President Roosevelt's committee of three, of which Dr. Leopold is a member.

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Bruce R. McCoy, business manager of the Wisconsin Press association and lecturer in the school of journalism at the University of Wisconsin, addressed the recent annual convention of the association meeting in Milwaukee. Mr. McCoy, who is administration manager of the Regional Code Authority, spoke on "What the Graphic Arts Code Means to Wisconsin."

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More than 8,000 persons
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club, student dramatic organization
the University of Wisconsin, give their 1934 production, "Dictated — Not Red," in six Wisconsin cities recently. Cities in which the show was produced included Richland Center, La Crosse, Eau Claire, Menasha, Wisconsin Rapids, and Milwaukee.

U. W. Aids Wild Life Research to Help Preserve State's Game Resources

Wild life research investigations now being carried on in Wisconsin, designed to place conservation of wild game in the state on a scientific basis, were described recently by Aldo Leopold, professor of wild life management and research director of the newly established 500-acre arboretum at the University of Wisconsin.

Prof. Leopold, who is nationally recognized for his scientific work in the field of game conservation, reviewed the history of wild life research in the state from the 1840s up to the present time.

Leopold Tells New Theory

He credited Herbert L. Stoddard, young **Sauk City** naturalist, who became taxidermist and collector for the Milwaukee public museum, with originating the present-day foundational theory behind modern wild life management. This theory maintains that a species of wild life can be decimated by throwing its environment out of balance, and conversely, it can be restored by restoring the balanced assortment of environmental features required for its welfare.

Two investigations, one on prairie chickens in the state under the auspices of the state conservation commission, and the other on quails under a grant of funds to the State University, have been carried on under this modern concept of conservation, Leopold said.

Results of various research investigations on wild life conservation are now being tested in several parts of the state, he explained. These tests are taking place in **Coon Valley**, in central Wisconsin, and in **Jefferson, Adams, and Dane counties.** Another study has also been inaugurated by the University under a grant of funds by Wisconsin sportsmen.

"To accomplish conservation, game research must not stop with its biological facts," Prof. Leopold said. "There remains the problem of economic adjustments to encourage their use by landowners. Wild life research offers a new field for service, not only to the larger universities and colleges, but also to colleges, agricultural high school teachers, county agents, forest officers, game officials, and private naturalists throughout the state.

"If any competent investigator has the willingness to take on a problem but is in doubt about a selection, I can promise him not only the initial advice of the State University, but also, if desired, a current consulting service up to the limit of our time and personnel," he asserted.

St Louis Post Dispatch
March 2, 1937 -

Complains of Neglect Of Wildlife Research

Prof. Aldo Leopold of Wisconsin U. Says New Deal Is Spending Millions Without Scientific Basis for Program.

While several New Deal bureaus are spending "a score of millions" on wildlife work, "not a red penny" is being spent for research, Prof. Aldo Leopold of the University of Wisconsin, chairman of the Technical Committee of the Wildlife Institute, said today in an address before the North American Wildlife Conference at Hotel Jefferson.

New Deal officials, he said, "come to some research unit whose total budget would not pay their office boys and say: 'Please give us the facts on which to build our program.' Naturally we can't. Nor could we if we stood with them under the financial cloudburst. Facts, like pine trees, take not only rain but time.

Easy Money.

"Why these huge expenditures without at least a percentage for fact-finding? Mainly because easy money is accepted uncritically. Its ardent recipients do not stop to quibble with a generous Congress over whether appropriations are soundly drawn. Research having been forgotten, it, of course, becomes 'fiscally impossible' to do any.

"Another reason is that the bureaus are nervous lest they be accused of treaty-breaking. The Biological Survey is the research agency for the bureaus, but two shows up at hearings to ask the wherewithal in its behalf? Is research, indeed, a mere job which can be delegated? Or is it an organic function—a kind of intellectual endocrine—which must be evolved in and by the organism which is to use it?

"I direct this question to the reorganizers who play chess with bureaus. I don't know the answer. I do know that in any enterprise except government it would be imprudent to spend so rapidly and learn so slowly. Lastly I assert that the private donors who contribute research funds to the institute have now earned the right to ask Congress why it doesn't carry its share of the research job.

Unbalanced Program.

"Farm game was the easiest, quickest, cheapest, most popular research field. Hence everybody studied farm game. Most dollars (or better say pennies) still roll down this same groove. Consequent deformities:

"Waterfowl, the most urgent single wildlife question, still has no research (in the sense of weighing causes of mortality in each species). 'Ducks Unlimited' wants to manage breeding grounds in Canada; [illegible] Canadian univer-

of discrimination—that any nostrum is likely to be gulped with a shout," he said. "No program is too amateurish for public support if it bears the proper label and is backed by ballyhoo.

"Under these conditions is it wise for our universities to focus their teaching on overstocking the market with professionals, instead of stocking their farms and offices with citizens who know what it is all about?

"The history of resources is written not by government, but by the farmers that own the land and the consumers who buy its products. What headway can we make until the public knows what headway is? I fear very little."

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READY TO TEST CONSERVATION BOARD'S POWERS IN COURT

JEFFERSON CITY, March 2.—Representative Hiland D. Kelley of Springfield, who has been preparing enabling legislation concerning the powers and activities of the new Conservation Commission, said today he had abandoned his plans to introduce the legislation because he has been informed by the organization which sponsored the wildlife conservation amendment that it was not interested in having such legislation presented to the Assembly.

It is the opinion of that group, Kelley said, that the commission would have sufficient powers under the provisions of the amendment, without the necessity of having such authority granted to it by the Legislature despite the recent opinion to the contrary by the State Attorney-General's office.

The organization, the Restoration and Conservation Federation, would be content to test the powers of the commission in the courts after the commission has been appointed, he said. If the opinion written by the Assistant Attorney-General Oliver Nolen is upheld in the courts, the new Conservation Commission would have no power to make enforceable regulations, dealing with hunting and fishing, and would have to depend entirely on legislative authority.

The commission would be unable to set up regulations dealing with hunting seasons, the limits of bags, the size and kind of game and fish which may be taken, or any other matters concerning conservation and protection of wildlife. The bare mechanics of administration is the only authority left to the commission, the opinion holds. The opinion was written in answer to questions presented by E. Sydney Stephens of Columbia, president of the federation.

ALDO LEOPOLD ON BOW AND ARROW HUNT IN ROCKIES

Aldo Leopold, of Madison, Wis., a son of Mrs. Carl Leopold, of Burlington is going to spend three weeks hunting with a bow and arrows in the wild parts of New Mexico, according to word from Madison.

He is associate director of the United States forest products laboratory, and will be accompanied on the trip by Howard F. Weiss, treasurer of a battery company in Madison.

Both have had considerable experience with the primitive weapons and have been practicing with targets. They expected to bring home at least a deer apiece.

Lake Mills, Wis
Le Rock Lake Journal
April 5 1934

THE

VOL. 2 No. 18

Faville Grove Game Refuge Is Planned

The airplane that circled and dipped and hung persistently over Faville Grove one snowy Sunday a short time ago held a cameraman who was snapping pictures of various places in the 1,500 acres which make up the new game refuge in Faville Grove. This area includes the farms of Wm. Hildebrandt, Ben Berg, S. W. Faville, W. W. Kinyon, and Milford Meadows.

This game refuge is an experiment being conducted under the direction of Prof. Leopold of the University of Wisconsin. Prof. Leopold is a member of the federal commission appointed by the president to buy up submarginal land which can be made into wild life refuges. He believes that the breeding and raising of game can be carried on profitably on the average farm and the Faville Grove farmers are out to test his theory.

Only birds will be raised in this refuge. Most attention will be given to the Hungarian Partridge and the Bob White quail, with a few pheasants and prairie chickens. The song birds, too, will come in for their share of protection.

At a census taken recently about 150 birds were found. All the breeding is to be done from these with no new stock being imported. A limit is to be set on the number of birds in the refuge and when this has been exceeded restricted hunting will be allowed. Anyone wishing to hunt in this area must pay the farmer on whose land he hunts a certain sum for each bird. Probably no hunting will be allowed for a couple of years, since it will take some time for the birds to reach the number allowed the area. Each spring and fall a census will be taken so that there will be no danger of too many birds being shot.

So far only a few shelters and feeders have been put up, but Professor Leopold with the help of some local men, has given out specfic suggestions about the development of the refuge. Elaborate maps and blue prints of the religion have been made by Mr. Judson Kempton, and on these are indicated places for feeding stations, shelters, windbreaks, and tangles. The plans call for a lot of spruce clumps, pollarded yellow willows, grape tangles and rose clumps. The plantings of these will begin as soon as the frost is out of the ground. The farmers will be able to get these at a fairly inexpensive rate.

Other instructions include the building of fencing around feeding stations and covers, and the use of a flushing bar on mowers during hatching time. The flushing bars will expose the nests and so save both eggs and birds from being destroyed by the mowers.

Prof. Leopold visits the game refug occasionally and personally supervises the work. His suggestions about its development are merely suggestions and the owners are free to do whatever else they would like to. The landscaping of the region is being taken into account in these suggestions, so that by the time the work is completed the owners of the land will have some additional beauty spots on their property as well as another profitable source of income.

Scientists Hear Plea for Wild Life Research, Tales of State Farm Criminals

Leopold Issues Call for Volunteers to Aid Conservation Problem

Insect Blamed for Alfalfa 'Sun Burn', Remedy Revealed; White Grub Indicted as Wisconsin's Worst Pest

[Special to the Journal]

APPLETON, Wis.—Wild life research investigations now being carried on in Wisconsin, designed to place conservation of wild game in the state on a scientific basis, were described at a general session of the Wisconsin Academy of Sciences, Arts and Letters here today by Aldo Leopold, professor of wild life management and research director of the newly-established 500-acre arboretum at the University of Wisconsin.

Prof. Leopold credited Herbert L. Stoddard, young Sauk City naturalist who became taxidermist and collector for the Milwaukee public museum, with originating the present-day foundational theory behind modern wild life management.

This theory, he said, maintains that a species of wild life can be decimated by throwing its environment out of balance, and conversely, it can be restored by restoring the balanced assortment of environmental features required for its welfare.

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Result of various research investigations on wild life conservation are now being tested in Coon Valley, in central Wisconsin, and in Jefferson, Adams, and Dane counties. Another study also has been inaugurated by the university under a grant of funds by Wisconsin sportsmen.

"To accomplish conservation, game research must not stop with its biological facts," Prof. Leopold said. "There remains the problem of economic adjustments to encourage their use by landowners. Wild life research offers a new field for service to the state, not only to larger universities and colleges, but also to colleges, agricultural high school teachers, county agents, forest officers, game officials, and private naturalists throughout the state.

"If any competent investigator has the willingness to take on a problem but is it doubt about a selection, I can promise him advice of the university, and a current consulting service to the limit of time and personel."

Insect Blamed for Alfalfa 'Burn'

[Special to the Journal]

APPLETON, Wis.—The yellowing and stunting of the second growth of alfalfa so prevalent last year was not due to "sun burn" as commonly anticipated, but to an insect foe of alfalfa, according to L. F. Graber, University of Wisconsin authority on alfalfa who presented his findings before the meeting of the Wisconsin Academy of Sciences, Arts, and Letters here today.

"This insect, the leaf hopper," said Graber, "is a tiny but potent foe of alfalfa, causing stunting and marked yellowing of the second growth, yet infestations and injury are easily controlled. Our findings have definitely shown that the simple expedient of delayed cutting of the first crop is the effective remedy.

"It is hard to believe but nevertheless true that a matter of deferring cutting of the first growth from 6 to 12 days will increase the seasonal yields of as much as a ton per acre because it reduces the number of leafhoppers that will appear in the next growth," Graber told the scientists.

White Grub Held Arch-Criminal

[Special to the Journal]

Appleton, Wis.—Responsibility for the destruction or serious injury of more than 600,000 acres of permanent bluegrass pasture, 120,000 acres of corn, 80,000 acres of small grains, strawberry beds, potatoes, gardens, and golf courses in 1933 rests with the common white grub, which may safely be called Wisconsin's worst insect pest, L. F. Graber, professor of agronomy at the University of Wisconsin, told the Wisconsin Academy of Sciences, Arts, and Letters here today.

"But there is hope in the discoveries of the workers at the Wisconsin experiment station for the control of this scourge," Graber told the scientists. "Establishing beetle-repelling legumes, such as alfalfa, sweet clover, and red clover, repairs the damage, and prevents subsequent injury for several years because of their effect on the June beetle's egg-laying."

Miller Describes Great Dust Storm

[Special to the Journal]

APPLETON, Wis.—The great dust storm of November 12 and 13, 1933, was swept from the Missouri valley during the passage of a whirlwind along the Canadian border and gales whole velocities soared as high as 65 to 90 miles an hour in the upper air regions carried the dust east and south as far as New York and Alabama, Eric Miller, meteorologist at the United States weather bureau in Madison, told a sectional meeting of the annual convention of the Wisconsin Academy of Sciences, Arts, and Letters here today.

The dust clouds were so dense in the afternoon of Sunday, Nov. 12, in southern Wisconsin, he said, that motorists were unable to see the road in front of them.

All across the country, however, the southern half of the storm was unusually clear, Mr. Miller said. The downcast winds of Chinook character along the front of the Rocky mountains and the divergence of winds following the storm caused this phenomena by subsiding and warming and drying the wind on the southern side of the storm at it swept through the country.

Shows Food Laws Centuries Old

[Special to the Journal]

APPLETON, Wis.—Proof that pure food laws are not the product of modern civilization, was submitted today to scientists attending the annual joint meeting of the Wisconsin Academy of Sciences, Arts and Letters, the State Archeological society, and the Midwest Museums conference by H. A. Schuette, professor of chemistry at the University of Wisconsin. Prof. Schuette described laws enacted in medieval Germany 500 years ago which regulated the sale and production of honey, milk, and other foods.

'A New Service'



ALDO LEOPOLD

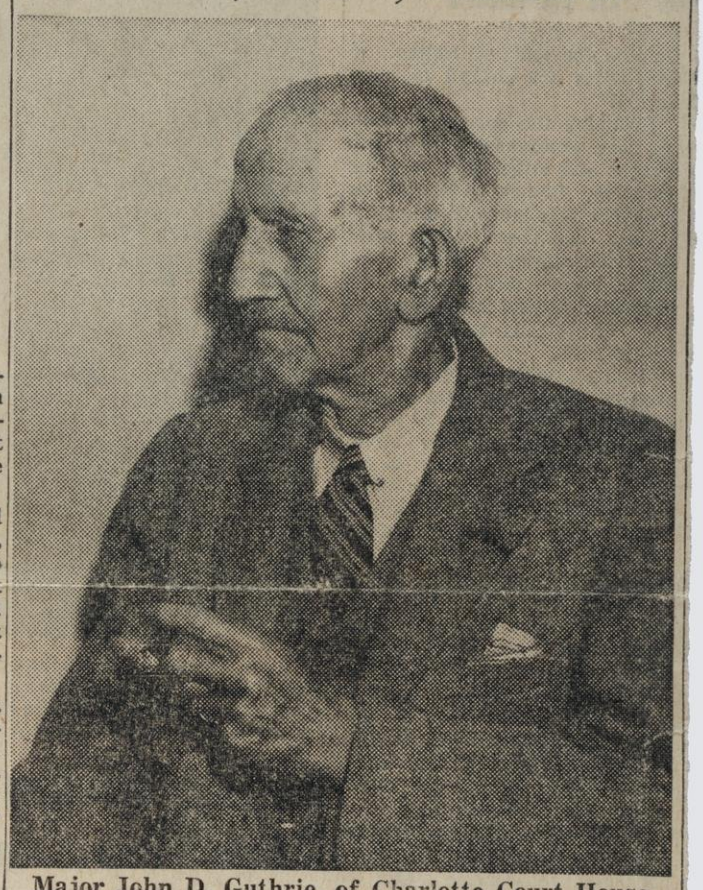
I'm old-- 81 on July 15-1959!
With my love + best wishes
Gus

THE DANVILLE REGISTER

LOCAL NEWS

DANVILLE, VA., SUNDAY MORNING, MAY 17, 1959

Forester, Author, Gentleman



Major John D. Guthrie, of Charlotte Court House

A Lifetime Forester

Maj. Guthrie Could Add Line To Kilmer's Famous 'Trees'

Major John D. Guthrie could add a last line of his own to Joyce Kilmer's famous "But only God can make a tree."

The Major could say, and with conviction; "But it takes man to destroy or conserve that tree."

And the conclusion would carry considerable weight coming as it does from a man who has spent a lifetime with the U. S. Forestry Service and seen the country's policy change from cut, slash and ruin the forests to one of conservation and replanting.

But the Major, who will turn 81 this July, prefers to let actions, not words, do the talking and at his advanced age is supervising his private tree farm at his Charlotte county home, "Villevue".

He took a few days off from his tree farm the past week for a checkup at Memorial hospital and it was there yesterday he reviewed some of the highlights of his long forestry career.

A graduate of Union college, Schenectady, New York, way back in 1898, Major Guthrie became interested in forestry work through summer jobs in upper New York state. He went back to school and obtained a master's degree in forestry from Yale, which had one of the few early forestry schools in the country.

About this time in the west the cattle barons were clearing their lands for grass and forests were held in light regard. They were slashed, cut and ruined. Sheepherders, also after grass, were great offenders too, and what man didn't do for economic reasons, he did through carelessness, and with fire. Thousands of acres of virgin forest perished by fire. There was no program of protection.

President Theodore Roosevelt awoke to the danger that the forests of the west fast were becoming the forests of the past.

He called to Washington, among others, Gifford Pinchot, later governor of Pennsylvania. And thus was born the forestry and conservation program that undoubtedly saved the timberlands of the west.

It was about this time that Major Guthrie entered the picture, also. Having one of the few forestry degrees in the country he was in some demand, he modestly pointed out.

He worked with Pinchot an the Commission he headed and he remembers those early days well.

Recalling them, he observed that Pinchoe was a firm believer in conservation and a man with a "lot of pep."

So it wasn't long befo program was rolling.

But first, said the Major, government had to find what it had. So he was deta to various states in the w more or less cataloguing vast stands of timber. This to him to California, Oregon, N Mexico and Arizona, among ot er states. In Arizona, paused long enough to woo an wed a Miss Pratt, a "Yankee from Massachusetts. She wa on a visit to her brother, a Yal man, in the "cow business."

From this work, the government set up its vast national forests and put into practice conservation of the timberlands.

Along came the first World War and Major Guthrie obtained his title and an understanding of the French.

He was in charge of an engineering company at the beginning, building army barracks. Later he was transferred to Central France and some attempt was made at conservation of the forests not already torn up by war and shells.

He remembers this as "ticklish business," the French being especially irritable toward anyone who was able bodied and not in the front line.

When he came back, he reentered the U. S. Forestry Service. When economic depression befell the country, he was a part and parcel of the famous Civilian Conservation Corps. In his capacity of general inspector he went in for extensive traveling.

He worked with the forestry service until about 12 years ago when he retired. During that service he traveled to Alaska, France, Russia, Mexico, England and Hungary on forestry assignments for the U. S.

In addition to forestry, the Major is an author of some note, his published works all having to do with the work he loves and knows best. There was "The Loop" in 1926, "Forest Ranger and Other Verse", "Forest Fires" and "Saga of the C. C. C.".

Now he has retired to Charlotte Court House, his birth-

Maj. Guthrie

(Continued from Page 1-B)

place. He lives alone with a man servant, and divides his time between the Patrick Henry Foundation, the Presbyterian church, the Ruritan club and his tree farm.

He is a vice-president and trustee of the Foundation, an elder in the church, a past state president of the Ruritan club and he loves trees.

The Wisconsin State Journal

Founded in 1839.

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THURSDAY, SEPTEMBER, 29, 1927

Behold, he travaileth with iniquity, and hath conceived mischief, and brought forth falsehood.—Psalms, 7:14.

EDUCATE THE WORLD FOR PEACE

Peace, justice, and international cooperation must rest on mutual protection of national rights in an international world federation; arbitration, conference, and limitation of armaments are all means to the end of international law and order and the reign of peace.

"BY THEIR WORKS SHALL YE KNOW THEM"

IF it be true, as rumor has it, that the services of Mr. Aldo Leopold, assistant director of the United States Forest Products laboratory, could be had by the new Wisconsin conservation commission as its executive, that fact ought to arrest further action in other directions, and settle the issue.

We have not committed the error of hasty acceptance of this rumor, which seems too good to be true. Certainly, were the matter based merely on financial incentive, one must doubt that Mr. Leopold would accept such a commission. But men who give their lives to a cause often see much more in the job than its salary. The opportunity for service presented to any technical experienced conservationist of the first magnitude, might in his mind far transcend the mere question of personal emollument. This may be so in the case of Mr. Leopold, and if that is a fact, it presents to the conservation commission and to Governor Zimmerman an opportunity to leave in Wisconsin a record of achievement that would have its page in history no matter what fate befell the state in other fields of endeavor.

Unless there are in the field for this post other outstanding conservationists, it is difficult to see why the commission should have any difficulty in selecting its commissioner. To begin with, Mr. Leopold has been educated as a conservationist for some seventeen years at the expense of the government of the United States. Seventeen years as an active conservationist is in itself a sizable record against which other candidates would have to measure their qualifications.

During his employment by the government, Mr. Leopold was in charge of 22,000,000 acres of forest in New Mexico and Arizona, which was financed by a million dollar budget, and in the conduct of which he was in charge of 300 employes. In addition to the qualities required by such an activity, there was the duty of dealing with the various problems that arose through the conflicting interests of lumber men and cattle men.

Aside from that, Mr. Leopold has been actively interested in conservation in the broadest sense, and has been a personal associate of outstanding leaders of conservation. He is, for instance, a member of the Boone and Crocket club, composed of one hundred conservationists of national note, among whom is listed Gifford Pinchot, recognized as the father of American conservation. As an author, Mr. Leopold's writings include discussions of the forest as a game cover, game protection and fish propagation, stream pollution viewed both from the standpoint of the public and of the necessities of industry. He is especially posted on the needs of the woodworking industries, and is recognized as the father of the "wilderness area movement," of which the central idea is the preservation of typical areas in forests that are being logged. The thought met with considerable opposition in many quarters, but is now generally accepted by conservationists as well as industries.

So here we have, as though made to order, a technical conservationist of seventeen years' experience, schooled in the handling of large funds and in the employment of large numbers of people, prepared for his work from both the practical and the research viewpoint, his life definitely committed to the great task of conservation which our Wisconsin conservation commission has been entrusted with by the state.

When the conservation law was conceived, drafted upon the best information obtainable and based upon practical experience, the legislature merely set up the machinery for the administration of a real conservation program in Wisconsin. The essential requirement of success is a technical head equipped by experience and training to apply in Wisconsin the best policies and methods known to the conservationist. A good deal has been said upon this subject. The people of Wisconsin understand the contest that has been in progress. Those who have been entrusted with the work have a splendid opportunity to leave their favorable impress upon the state. If this task is placed in inexperienced hands, there will be no "pointing with pride" in the future. "By their works ye shall know them."

Please returns.

Goodland Ousts Catlin, Adams In Quick Move

Key Men in Conservation Tangle Are Replaced

(from Page 1)

Union in the administration of conservation affairs.

A Trained Forester

"He is a trained forester, a graduate of the Yale Forestry school, who served in the United States forest service for many years, his last position in that service being as associate director of the U. S. Forest Products laboratory. He is, in addition thereto, an outstanding game biologist and game management authority, the author of the monumental work on game management, accepted as authoritative nationally. He is the author of many publications and articles on forestry, wilderness areas, and game.

"Dr. Leopold was one of the authors of the present Wisconsin conservation act and program, and is thoroughly familiar with its history and development.

"By reason of his connection with the university, Dr. Leopold resides in Madison, but by reason of his widespread interests, contacts, and experience, his place of residence is of only passing importance, and his appointment may be treated as one at large. His interests and abilities know no local limits, and are in all respects statewide.

Is Insurance Man

"Mr. Moreland of Hayward is in the insurance business in that city, and has lived his entire life in the Northwest. He has always taken an active and aggressive interest, not only in fish and game matters, but in the development of the reforestation program, and has been active in conservation groups, local, statewide and national. He is alert to the problems confronting the conservation commission, is a man of independent thought and ideas, and recognized as fair minded and judicial in his undertakings.

"Mr. Moreland lives in an area where forestry, fish and game are close to the hearts of all residents, and has had first hand opportunity to study and observe the needs of the state in those fields. He is universally endorsed by conservationists throughout the north, being recognized as a man who has grown up and developed in the important North Woods Areas and learned of its problems from first hand contacts and experience.

"The appointment of both of these men is free from any political implications and is made solely in the interest of continuing uninterruptedly the Wisconsin conservation program.

"In justice to the two men whose terms expire soon, I wish to state that there is no reflection on them personally nor on their services as commissioners."

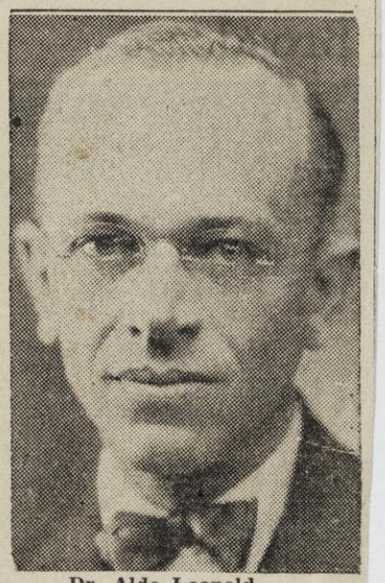
In Conservation Commission Shakeup



MARK CATLIN, SR.



Wally Adams



Dr. Aldo Leopold

State Journal - Tues June 22/43

For Generations to Come

In the appointment of Dr. Aldo Leopold to the state conservation commission, Governor Goodland has taken a long step toward putting the trouble-torn body back on a sound basis. The State Journal knows John Moreland, the other new commissioner, only by reputation, but that reputation is good.

Aldo Leopold may not be a popular commissioner with everyone. He, better than any other man in Wisconsin and probably better than any other man in the entire country, knows what real conservation is and how to achieve it. That will involve stepping on toes, but, fortified by an informed love for nature and having no political axes to grind, he will not be reluctant to step.

In an interview with Dr. Leopold last summer, a State Journal reporter wrote:

> **"He advocates a return to the natural forest from the present 'protection' of certain animals, because he believes the forest is becoming a thing of the past and because he can see in it more than the playground of a striking Babbitt or the supply house of a photographer's trophy case.**
>
> **"The disquieting thing in the modern picture, he finds, is the trophy-hunter who never grows up, in whom the capacity for isolation, perception, and husbandry is undeveloped, or perhaps lost. He is the motorized ant who swarms the continents before learning to see his own back yard, who consumes, but never creates, outdoor satisfactions."**

If the people of Wisconsin allow men like Leopold to direct their conservation program, the generations to come will be blessed.

Body

Key Men In Conservation Tangle Out

Goodland Names Moreland, Leopold; Both Are Confirmed

THE two key figures in the conservation commission controversy for the past few years, Commissioners Mark Catlin, Sr., Appleton, and Wally Adams, Conover, were removed from the commission by Acting Gov. Goodland in a surprise move Thursday night.

Acting swiftly under suspension of the rules, the senate confirmed Goodland's appointment of Dr. Aldo Leopold, Madison, to replace Catlin, and John O. Moreland, Hayward, to replace Adams. Both terms will expire July 1, 1949.

Acts Suddenly

Goodland acted suddenly on the eve of a legislative recess after he had been informed by senators that neither Adams nor Catlin could be confirmed for another term to the commission.

The action of the governor came as a surprise to most persons since he had announced at a press conference recently that unless the legislature approved his bill abolishing the present six-man commission and setting up a new seven-man board he would leave Catlin and Adams on the commission.

Dr. Leopold was confirmed 28 to 2 and Moreland 28 to 3, under suspension of the rules.

Sens. Taylor Brown (R-Oshkosh), and Philip Downing (R-Amberg) voted against Leopold's confirmation, while Brown, Downing and Melvin Olson (R-South Wayne) voted against Moreland.

Ordinarily the appointments would have been laid over 10 days, but because the legislature is contemplating recession at noon today the appointments were considered immediately.

Risser Lauds Leopold

Sen. Fred Risser (P-Madison) praised Leopold as being well qualified and a man whose knowledge would improve the activities of the commission.

Brown stated he was not opposed to Leopold or Moreland but was objecting to the "dictatorial and Hitlerian tactics" in asking that the appointments be confirmed before senators had time to study them.

In a message to the senate accompanying the two appointments, Goodland stated that the conservation commission "was unquestionably one of the most important factors in our state governmental organization."

Goodland said:

"It is a matter of public knowledge that the conservation commission has been torn by factional differences and its work necessarily thereby impeded. Under this condition I believed that the best interests of the state would be served by the creation of a new commission of experienced and high-minded citizens.

Cites Repudiation

"My request for a new commission was summarily defeated in the state senate by a vote of 30-1, a repudiation not only of my plans, but apparently of my motives.

"Regardless of this, I have decided to, so far as possible, strengthen the commission by the appointment of two outstanding conservationists, hoping by this to insure a more united and beneficial administration of the highly important problem of conservation.

"Dr. Leopold is a professor of game management in the university. In his department have been trained scores of outstanding young men who are now in responsible positions in this state and many other states in the

(Continued on page 4, col. 1)

Catlin, Adams Lose Their Jobs

Please return to Bob

Leopold, Moreland Now on Game Body

Gov. Goodland tossed a dramatic bombshell into the Wisconsin senate Thursday night as he nominated two men to the state conservation commission despite his previous statements that he would make no new appointments unless that body were completely reorganized.

Nominated and confirmed overwhelmingly in rapid-fire fashion were Dr. Aldo Leopold, Madison, and John O. Moreland, Hayward. Leopold succeeded Mark S. Catlin, Sr., Appleton, and Moreland replaced Wally Adams, Conover. The terms of both men will expire July 27, 1949.

It was a drastic about-face for the governor, whose demand for a commission reorganization had been rebuffed by a 30 to 1 vote in the senate. After the senate turned down his reorganization plan, Goodland warned that he would reappoint Catlin and Adams unless the senate reconsidered its action.

The senate refused to relent, however, and earlier this week it was reported that Goodland planned to make no appointments until after the legislature adjourned, because of the doubt that either Catlin or Adams would be confirmd if reappointed. There was no intimation that the chief ex-

(Continued on Page 2, Column 5)

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The nominations of Dr. Leopold and Moreland were accompanied by a 750-word message in which Goodland urged their confirmation "to insure a more united and beneficial administration of the highly important problem of conservation."

Brown Objects

Although Sen. Taylor Brown (R—Oshkosh) objected to immediate consideration of the new appointees, his motion to delay the matter was defeated, 26 to 4, with Majority Floorleader John Byrnes (R—Green Bay) spearheading the drive for confirmation.

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Both men received nothing but praise from the senators who arose to discuss their merits. Sen. Fred Risser (P-Madison) lauded Leopold as "an outstanding expert," and said that "I think things will go better in the conservation department in the future." Sen. James Carroll (R-Glidden) also praised Moreland's record.

Lauds Catlin, Adams

"In justice to the two men whose terms expire soon, I wish to state that there is no reflection on them personally nor on their services as commissioners," Goodland's message said.

Both Catlin and Adams were active in the drive they led to the ouster of Conservation Director H. W. MacKenzie 14 months ago.

Appointment of Leopold and Moreland, the governor emphasized, "is free from any political implications and is made solely in the interest of continuing un-interruptedly the Wisconsin conservation program."

The governor's statement said:

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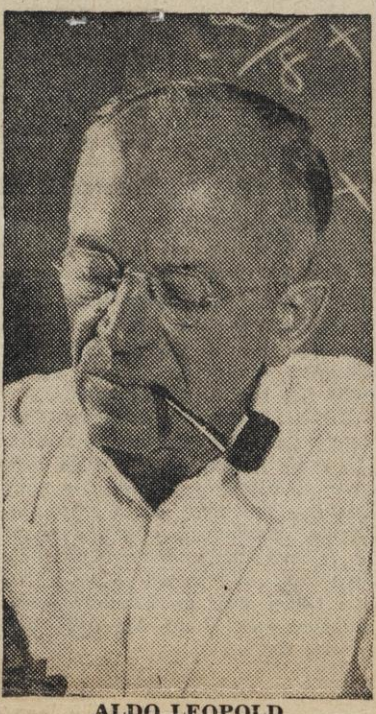

ALDO LEOPOLD

Restore Wilds, Leopold's Desire

New Conservation Official Gives Views

By RUSSELL B. PYRE
(State Journal Staff Writer)

He yearns for restoration of a wilderness free from mechanization, parks, and gadgets that destroy cultural values.

He believes conservation, to be effective, must be practiced everywhere, by everybody.

He offers "wildlife research" as a new sport, replacing some ancient concepts of sport, and favors the training of more amateurs and fewer professionals in research as an essential to a liberal education.

He does not believe in "buying one kind of conservation at the expense of another."

He believes in the restoration and retention of nature's balances and adherence, so far as possible, to nature's ways.

He maintains that conservation will be achieved" when and only when the destructive use of land becomes unethical—punishable by social ostracism."

He, of whom we speak, is Aldo Leopold, professor of wildlife management at the University of Wisconsin, who next month will become a member of Wisconsin's conservation commission.

Hobby Beomes Profession

The new commissioner is a man who has changed a hobby into a profession and a profession into a hobby.

He became interested in ornithology and botany as a high school

(Continued on Page 3, Col. 1)

Please return E B L.

Restore Wilds, Leopold's Desire

New Conservation Official Gives Views

(Continued From Page One)

student in Burlington, Ia., where he was reared. His father, an ardent sportsman, took him as a boy on many fishing and hunting trips.

Madison people know him primarily as a "land ecologist" and land ecology, as defined by Leopold, consists of "putting the sciences and arts together for the purpose of understanding our environment."

What most of them don't know is that he is a Yale-trained forester, and forestry is a significant phase of Wisconsin's conservation program.

Assigned to New Mexico headquarters after completing his work at the Yale forestry school, he began the study of game as a hobby.

New Mexico, at the time was getting nowhere in conservation and a group of organized sportsmen, of which he was a member, took the lead in a movement that resulted in reorganization of the state fish and game department, soon after the close of the first World War.

In Madison a few years later he aided, with another group dominated by Izaak Walton leaguers, in drafting 404-S, the bill that created Wisconsin's present six-man commission and director system in 1927. Leopold takes no personal credit for the bill, but the system it created, curiously enough, is almost a duplicate of New Mexico's.

Leopold, transferred to the Forest Products laboratory here in 1924, continued his game study hobby until 1928, when it became his profession. In that year he was engaged by the Sporting Arms institute to make a game survey in the central states, which was completed in 1932. After that he became a private consultant until 1933 when he was appointed to the newly created game management chair at the university.

Graduates of his course now are carrying on the same kind of work in Wisconsin, New Hampshire, New York, Illinois, Michigan, Iowa, Indiana, and Washington.

In 1935 he was sent to Europe under sponsorship of the Carl Schurz foundation, to study conservation in Germany and Czecho-Slovakia.

Prefers "Natural" Methods

There he found much to be learned, and much to be unlearned, about conservation.

"Europe," he said in an interview Saturday, "bristles with needlessly artificial practices and instances of buying the welfare of one resource by destroying another."

And that, he avers, is not conservation.

Leopold's views of Wisconsin's immediate problems sum up somewhat as follows:

"ONE: We don't know enough yet about conservation to do the things we should. It needs a vast amount of research and it will take the combined efforts of the department and the university to learn as rapidly as we must.

"TWO: Experience has taught throughout the history of conservation that natural methods are the best. When a problem offers two possible solutions, one artificial, one natural, the natural method usually is the more successful and often the cheaper. By that," Leopold explained, "I do not mean that we should discourage fish hatcheries or game farms, but we should rely upon them as little as we can."

"THREE: We have had too narrow a concept of conservation. Wildlife is a good deal more than fish and game, and forestry is a good deal more than trees. There are many aspects of conservation, such as wild flowers, for instance, that are as much in need of action as trout or grouse.

"FOUR: Conservation must be accomplished through the farmer. We can do it only partially through government. State and federal bureaus and commissions are only the indirect instruments. They are the tools to bring conservation to the land owner. Through a bad misconception, federal and state commissions have interpreted themselves as direct agents. They can't do it. The job is too big. For conservation is cropping. If the department of agriculture undertook to do all the cropping in the United States how far would it get? Obviously nowhere."

State's Deer Problem

A good illustration of his belief that natural methods are best and that one resource should not be destroyed protect another, lies in the Wisconsin deer problem.

Much of Leopold's research in game management methods had been centered upon grouse, pheasants, quail and rabbits, and little upon deer before he became a member of the state's special citizen deer investigating committee last fall. However, two years ago he spent all summer investigating a deer "eruption" in Oregon and he was in the Kaibab forest area of Arizona in 1915 when the famous "enuption" occurred there —when the herd that had grown from a few thousand to 100,000 under "protection" died away to little more than 10,000.

"We probably could prevent part of the starvation we know is taking place among Wisconsin deer by a determined feeding campaign," he said. "But I don't like to see the state embark upon such a policy because it would pauperize and artificialize the herd.

"Once started, artificial feeding would have to continue indefinitely. The net experience in Europe and in all states which have tried it, is that once started, artificial feeding can not be stopped.

"And the more you feed the deer, paradoxically, the more damage you will do to the state's timber, because deer will not stop eating browse even when you feed them 'hay and cake.'

"If you maintain the deer herd at the expense of the forests you are buying one kind of conservation at the expense of another."

Opposes Too Much Killing

There are many other instances in so-called conservation, he said, where one kind of a resource is bought by killing another.

He believes, for example, that predators are needed to maintain nature's balances and opposes indiscriminate killing of herons, kingfishers, crows, wolves, and other birds and animals that prey upon game.

"We kill hawks and owls, imagining we thereby help the game, but we are destroying one resource while at the same time harming another," he maintains.

Since 1917 Leopold has been active in campaigns to establish wilderness areas throughout the United States, and he was interested particularly in the move to preserve as much of the Flambeau river in its natural state as possible.

"To run down the Flambeau today," he wrote in a recently published article, "is to be mentally whipsawed between alternating impressions. No sooner have you built up the mental illusion of being in the wilds than you sight a boat-landing, and soon you are coasting past some cottager's peonies."

And below the next pool, he added cynically, you probably will find staring at you "a synthetic log cabin, complete with composition room, 'Bide a Wee' signboard, and rustic pergola for afternoon bridge."

Too Much Fanciness

One of the insidious dangers to public forests, he wrote, is the notion that to control camp sanitation and campfires a chain of camp sites must be "embellished with toilets, fireplaces, rustic gables and trimmings."

"I would as soon dig ditches in a dress suit," he said, "as to so bedeck the Flambeau."

On another occasion he deplored the "needless sacrifice of wild spots" through relief labor development, especially decrying a road built to provide "public access" to a wild and remote river bluff where once the hiker could observe a falcon's eyrie.

"Access to what?" he asked bitterly. "No access to the falcons, for they are gone."

But in his antipathy toward mechanizations and gadgets, Leopold inevitably betrays an irrepressible sense of humor.

Dislikes 'Bad' Gadgets

He pillories the sporting goods dealer as a "gadgeteer" who has draped the American outdoorsman "with an infinity of contraptions all offered as aid to self-reliance, hardihood, woodcraft or marksmanship, but too often functioning as substitutes for them."

And while he decries gadgets, he confesses he does not disdain all of them, particularly the automobile, and he as freely confesses he doesn't know where to draw the line between good gadgets and bad gadgets, though he thinks a happy medium might be found where the outdoorsman could use mechanical aids in moderation, "without being used by them."

He laments the rubber boat that came to invade "the last virgin trout hole" and as an end-case he asked you, in another recent article, "to consider the duck hunter, sitting in a steel boat behind composition decoys."

"A put-put has brought him to the blind without exertion. Canned heat stands by to warm him in case of a chilling wind," Leopold wrote. "He talks to the passing flocks on a factory caller, in what he hopes are seductive tones; home lessons from a phonograph record have taught him how.

"The decoys work, despite the caller; a flock circles in. It must be shot at before it circles twice, for the marsh bristles with other sportsmen, similarly accoutred, who might shoot first. He opens up at 70 yards, for his polychoke is set for infinity, and the ads have told him that Super-Z shells, and plenty of them, have a long reach.

"The flock flares. A couple of cripples scale off to die elsewhere. Is this sportsman absorbing cultural value? Or is he just feeding minks?"

Catlin Replaced



MARK CATLIN, SR.

State Journal Fri. June 18, 1943

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JOURNAL, FRIDAY, JUNE 1

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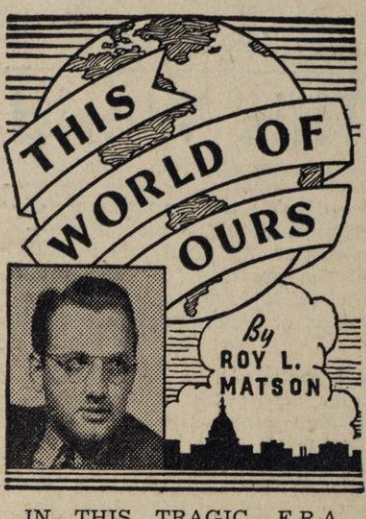
"John O. Moreland of Hayward is in the insurance business in that city, and has lived his entire life in the northwest. He has always taken an active and aggressive interest, not only in fish and game matters, but in the development of the reforestation program, and has been active in conservation groups, local, statewide, and national. He is alert to the problems confronting the conservation commission, is a man of independent though and ideas, and recognized as fair minded and judicial in his undertakings.

Lives in Game Region

"Moreland lives in an area where forestry, fish, and game are close to the hearts of all residents, and has had first hand opportunity to study and observe the needs of the state in those fields. He is universally endorsed by conservationists throughout the north, being recognized as a man who has grown up and developed in the important north woods area and learned of its problems from first hand contacts and experience."



IN THIS TRAGIC ERA, anybody welcomes a few moments in which he figures he may lean back and listen to something far removed from death and destruction.

You may figure to do that when Aldo Leopold, the man of the peaceful forest, the professor of wildlife management at the University of Wisconsin, begins to speak. But instead, you hear, as I heard the other day:

"I have come to report on an impending death, the end of an epoch, the fall of a great symbol."

Then the lights go out and you see pictures as Mr. Leopold talks, pictures to break your heart, the picture of "The Last Stand."

◇ ◇ ◇

MR. LEOPOLD'S STORY IS that of the few remaining acres of the last virgin hardwood forest in the Lakes States. Some day, probably in the winter of 1943, certainly no later than the winter of 1944, an ax will bite into the last giant maple, a crosscut saw will finish the job . . . and the forest will be gone.

On that day, he predicts, the hardwood lumber industry will hand us another crop of ghost towns in northern Wisconsin and upper Michigan. The industry, the livelihood of hundreds, will be done, taken by indiscriminate, wasteful slashing. Gone, too, that day, will be other things:

A hardwood wilderness large enough for a few days skiing without crossing a road. Cheap, abundant, high quality sugar maple and yellow birch for floors and furniture. The best schoolroom for foresters to learn what remains to be learned of hardwood forestry. And finally, "the pious hope" that America has learned from her mistakes in private forest exploitation.

Conservation, again, will have waited until there was little or nothing to conserve.

◇ ◇ ◇

FIFTY YEARS AGO, THE northern hardwoods covered 7,000,000 acres in the lake states. Five years ago the main remnant in the Porcupine region still totaled 170,000 acres. In 1941, this had shrunk to 140,000 acres. Last year, under pressure of war demands, the cutting was heavier than ever. By next year, all will be gone. That fast.

This is the more tragic, Mr. Leopold points out, because with intelligent, selective cutting, the hardwood forest would have survived for ever. It has been proved that the industry could cut a third of the volume of a 200-year stand and come back every 20 years and take as much again. The maple forest is one of the most highly organized communities on earth, a fact which is at once its strength and its weakness.

By gradual cutting, leaving sufficient stand to protect striplings which require shade protection in growth, the forest continues and produces. But once it is dead by indiscriminate slashing, it is dead forever.

Lumber companies, he charges, have refused to recognize this, and, with two or three notable exceptions — one of them in Wisconsin—have insisted on slashing and non-selective cutting.

"Thus, he says, **"industry having failed to act in its own interests, we have turned to government for federal, state, and county forests."**

◇ ◇ ◇

HE IS A LITTLE SKEPtical of the wisdom of governmental operation or public acquisition as a satisfactory substitute for forestry practice by private owners.

But, he holds, it certainly is a function of government to educate, and unless the government buys the remaining stand of forest as an educational exhibit, new generations are going to be unaware of what decent timber looks like.

They will be content with the status quo because they never will know, they never will see anything better . . . unless congress agrees to purchase the Porcupine stand.

The bills to do so still are before congress. But congress, Mr. Leopold explains, "hesitates to buy, fearing catcalls from patriotic constituents who assume that all internal problems can wait. Most of them doubtless can and should, but not this one. The war surely will outlast this remnant of forest.

◇ ◇ ◇

"THE PORCUPINE REMnant is more than timber. It is a symbol. It portrays a chapter in national history which we should not be allowed to forget. When we abolish the last sample of the Great Uncut, we are, in a sense, burning books.

"I would like to see the Porcupine region acquired and preserved as an act of national contrition, as the visible reminder of an unsolved problem, as a token of things hoped for . . .

"A state law requires conservation education in Wisconsin, but how far will we get teaching democracy to youth if

(Continued on Page 2, Column 8)

This World

(Continued from Page 1.)

we didn't have the remnants of democracy with which to demonstrate? We need this sample of the unspoiled to keep alive the spirit of discontent in the minds of generations to come."

◊ ◊ ◊

I WISH I COULD REPRODUCE here some of the colored motion pictures of this area, taken last year by Dr. Harold C. Bradley. They would help emphasize the beauty of the forest . . . and the depth of the tragedy that awaits it.

The number of those bills, in case you write to Washington, are H. R. 3793 and S. 1131.

Rationing of clothing in Great Britain permits only about one-half of pre-war purchases, the department of commerce reports.

way 51, county police reported.

A collision Saturday night on a town of Rutland road between cars driven by Alvie Nelson, Jr., 16, Stoughton, and James F. Richards, Minneapolis, resulted in a cut and bruised face for Jay Richards, 5, Minneapolis, and a bruised head for Nelson, county police said.

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WAY TO RESTORE YOUTHFUL HAIR

Leopold to Serve on UN Conference

(State Journal Washington Bureau)

WASHINGTON—Aldo Leopold, professor of wildlife management at the University of Wisconsin, will serve on an advisory committee on American participation in the international scientific conservation conference sponsored by the United Nations economic and social council.

Interior Secretary J. A. Krug, also from Madison, heads the advisory committee and chose the other members at the direction of Pres. Truman.

The conference, tentatively set May 16—June 3 of next year will concern the importance of the world's natural resources, especially as related to the drain of war and reconstruction, and the further need for continuous development and iwdespread application of conservation and utilization practices.

The conference will be devoted to the exchange of ideas and experience among conservation scientists and related groups.

It will establish no policies nor will its actions be binding on participating governments.

...ight, was found stripped of three tires and lamps at Sandia Thursday night.

G. P. A. GIVES LEOPOLD FAREWELL SMOKER FRIDAY

The Game Protective Association will give a fare-thee-well smoker and feed at the Chamber of Commerce Friday night at 7:30 o'clock at which all Albuquerque and many of the state's sportsmen and admirers of Mr. Leopold will wish him luck in his new position with the Forest service in its Madison, Wisconsin, laboratory.

The members of the association here are to bring guests.

The Association feels that New Mexico has lost its most valuable sportsman in Mr. Leopold.

Henry Transfer Co. Phone 939.

Is This Conservation?

By FRANK SINCLAIR
Sports Editor

THE CONSERVATION commission of Wisconsin has gone and done it! On Saturday, it appointed Louis B. Nagler, secretary to Gov. Fred R. Zimmerman, as director of the commission at a salary of $5,000 and with complete authority to function as the executive head of the commission.

Thus, it would seem that all the work of the Izaak Walton league and other conservation organizations in Wisconsin has not led Wisconsin out of the political wilderness in matters of conservation. The conservationists of the state studied long and framed a more modern system of conservation practice for Wisconsin, submitted the plan to the legislators and after a strenuous fight the bill became law.

It provided for a six man commission of unpaid men who in turn were to choose a director.

* * *

THE FIRST setback came when Governor Zimmerman appointed six men to the commission known more for their political activities than for their interest in conservation. There were any number of men in the state, dead in earnest and of proven ability in conservation work, from whom the governor could have made a better selection.

And now comes the appointment of Mr. Nagler.

* * *

IT WAS rumored on Aug. 14 that Nagler was slated for the job. On that Sunday evening, the writer talked with William Mauthe, Fond du Lac, chairman of the commission, over the telephone and put the question to him. It is interesting to repeat now what Mr. Mauthe said then.

When asked whether Mr. Nagler had been appointed director of the commission, Mr. Mauthe answered that he did not know that Mr. Nagler was being considered.

He said: "If he has been considered, I know nothing about it."

Yet a statement issued by the commission, Saturday night, says:

"After two months of careful consideration and investigation of the qualifications required in a conservation director, the commission unanimously selected Mr. Nagler for that position and is satisfied that he is fully fitted and qualified to discharge the duties of that office without fear or favor."

* * *

OF COURSE, this statement does not say that the commission was considering Nagler, but the indications are that it was. Why?

Because if it were following the design of the law, it would have chosen either Aldo Leopold of the forest laboratories at Madison or Seth Gordon, Chicago, field secretary of the Izaak Walton League of America. Again, why? Because, either of these men could qualify under the conditions of the conservation law and Mr. Nagler does not. And both of these men were on the list considered by the commission.

The law specifically states, and it was a big point with its framers that it should so state, that the director must be trained for the work. Section 6 of chapter 426, laws of 1927, says in part: "Said director shall be a person having executive ability and experience, special training and skill in conservation work." Mr. Nagler does not qualify under that clause.

* * *

WHEN THE WRITER asked Mr. Mauthe on Aug. 14, in discussing the rumor relative to Mr. Nagler's consideration, if the director would not have to be a technically trained man, Mr. Mauthe replied, "I wouldn't say he had to be technically trained. He should be a man with common sense. Of course, he must have some experience in conservation."

* * *

UP AND DOWN the state, in the press and in conservation circles, there have been very plain statements made that the commission would be considered as playing politics if it appointed Mr. Nagler. But, the commission paid no heed. Mr. Nagler is the new director.

The commission, however, does make reply. In its statement of Saturday, it said: "While Mr. Nagler is not a technically trained forester or fish man, his familiarity with these subjects and the work of the department will, in the opinion of the commission, enable him to successfully administer the duties of the office."

No such apology would be necessary if the commission did its duty.

There is no denying that Mr. Nagler is a very capable executive. There is no denying that he has been quite capable as a politician.

But how the commission can appoint him when the law says the director must be "specially trained." and how Mr. Nagler can accept is beyond the conservationists.

* * *

TURNING to the matter of politics. It would not be fair to say that Mr. Nagler will play politics as director of the commission. Unfortunately, however, in view of his past close connections with things political, there will be many who will always question his actions. But if Aldo Leopold, a graduate of Cornell's school of forestry, an expert of long experience in conservation in Pennsylvania, author of New Mexico's fine conservation system—if he were director, for instance, there could be no conjecture on politics because he has no political history. Furthermore, a man like Mr. Leopold, who is right in Madison and knows Wisconsin, is a scientist and he works for conservation and nothing else.

* * *

GRANTING that in time, by diligent application, Mr. Nagler may become an expert in conservation, it will take some years for him to reach the knowledge that Mr. Leopold possesses now. And when Mr. Nagler absorbs that experience, Mr. Leopold will be years ahead of him in the knowledge of conservation, for with Mr. Leopold, it is his life work.

Aside from wanting to take conservation out of politics, it was this scientific angle that the Waltons and others insisted upon including in the new conservation law. Man works havoc rapidly with nature, but nature requires time and lots of it to reclaim what it has lost. Again, man can help nature to restore what other men have destroyed, and the man who can do the most is the man who knows at the start what to do and how to do it and who has no hinderance from politicians, but is given a clear way with plenty of scientific and financial help to support him.

Mr. Nagler may be able to give Wisconsin a new era in conservation, but while he is learning how to do it, much precious time will be lost, at the expense of the out-of-doors, recreation and the tax payer.

The state has had its experience with untrained men as conservation directors, but apparently the new conservation commission has not learned the lesson.

* * *

THE COMMISSION asks that Mr. Nagler be given every help. If he is permitted to accept the office, conservationists will help, because he will need it, and because the great out-of-doors never will be deserted by them so long as they can hear posterity call, "Save something for us!" and so long as the fish and game cry out, "We cannot vote."

The Wisconsin State Journal

Founded in 1839.

cealed ground that for the governor to appoint the six commissioners would give him substantial additional political power. The true inwardness of that situation, however, never fully appeared, for the supporters of the measure neglected to elab-it, and of course the La Follette pro-ve opponents of the measure did not it emphasized. The real bone of con-on there, handled for the La Follette ip by Major Alvin C. Reis, was the pos-ion of roughly five hundred state ap-ntees who could be made a political wer in Wisconsin. If the bill had not assed, and had Elmer Hall remained in power as director of conservation, that great field force would have been in the possession of the foes of Governor Zimmerman. With the bill passed, Major Reis and his associates conjectured with what appears to have been admirable accuracy, they would remain a political power, but would be in the Zimmerman ranks.

In other words, the contest between Governor Zimmerman and the La Follette group headed by Major Reis, as distinguished from the real conservationists of Wisconsin, was purely a political fight for a political advantage.

With the appointment by Governor Zimmerman of six commissioners among whom was not a single outstanding conservationist, although all were men of standing in their communities, the La Follette group chuckled. They had lost a political battle, Governor Zimmerman had won one. But they were pleased that the governor had not been able even to disguise the advantage which he had taken of his victory.

And then came up the appointment of Colonel Nagler, cut and dried before the new commission had had its first meeting. No matter what they may say, the public will always feel that the one thing which they decided in the more than a month in which they were constantly considering the matter, was not what to do about a director, but how to do it. For Mr. Nagler had announced to the public that he could have any office he chose in the gift of the state while Governor Zimmerman remained governor, and that he had chosen to be director of conservation. And so it was not whether to appoint him, but how the appointment best could be handled, that was the bone of contention.

And one observes that no newspaper of the anti-Zimmerman progressive group assailed the appointment of Mr. Nagler, until it had been made. Then the hammers fell. The reason was obvious, and if politics is the most important consideration, it was sound. They had been praying for the appointment of Mr. Nagler as another nail in Governor Zimmerman's coffin. That he drove it himself pleased them all the more. The matter will be a political issue against the governor, of the first magnitude, in the ensuing campaign.

However, we're not at all certain that, if politics really is the most important thing, the governor erred. The fight on this measure if it remains a political and never becomes a court fight, will array the Isaak Walton league against five hundred game wardens. Of the Isaak Walton league a few score really are active. Every game warden and other attache of the conservation department is something of a "guy" in his own home town. He has his job at stake. He has his own circle of friends and their influence to wield. He'll be on the political job, and he'll tell when the polls are counted. He would be a rash prophet who predicts that Governor Zimmerman has lost more than he has won if contemporary politics is the first consideration. What he has lost is the difference between a bright and gloomy page in Wisconsin history.

* * * *

The matter is closed, probably irrevocably. Colonel Nagler is a man of more than ordinary resource and intelligence. The governor can bank on the political assets of the program he has set up. Whether Wisconsin can feel equally assured of the results affecting conservation, which might have been the main issue, remains to be seen. There is only one course open to intelligent people, if we abandon the idea of asking the supreme court to decide whether or not it is impossible for the legislature to prescribe qualifications for a public official. It is to bring the resources and ideas of all conservationists to Mr. Nagler, to help him in that education on the practical and research side which he utterly lacks, and to depend upon his intelligence and his motives to bring to him and to the department the greatest possible measure of efficiency within the shortest possible time.

The average man's belief is that if the accused isn't guilty of the thing with which he is charged, he's probably guilty of something else just as bad.

A plausible liar is a pleasanter companion than an implausible truth-teller.

When it takes a procession 20 minutes to pass a given point, nowadays, the given point is usually occupied by a green traffic cop.

Somehow the wives who have "no business sense," nearly always get along surprisingly well as widows.

FINIS

ONE of the best evidences of what anti-Zimmerman progressives think of the governor's political judgment can be found in their attitude, as expressed in the La Follette press, regarding the appointment of Col. L. B. Nagler to be director of conservation.

It will be remembered that the progressives fought the conservation bill upon the obvious, and indeed poorly con-

The Janesville Gazette

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Clear It Up

The militant conservationists and the politicians have tried to lie down together and be at peace after a war of years in Wisconsin. But the conservationists have found the politician not a bedfellow to their liking and the long contest is on again.

The issue between the state conservation commission and the conservationists, the spokesmen for whom are the Izaak Waltons, is not complicated. It is quite simple, after all the fancy phrases have been extracted.

The new conservation commission appointed Louis B. Nagler as director of conservation. The conservationists declare he is not qualified for the post.

Mr. Nagler has a political past. Charges fly that he was promised the post. Charges fly that Governor Zimmerman has broken faith with the conservationists and, instead of helping to take conservation out of politics, has forgotten he ever made a promise.

Meantime, the public is curious to know the truth and is entitled to know it. It has its own powerful court, that of public opinion.

The conservationists say they fought to take conservation out of politics and to place it under the guidance of experts. They say that it is elemental that an expert be the conservation director.

The law calls for a man "specially trained and skilled" in conservation. So long as there is doubt as to Mr. Nagler having such qualifications, let the courts decide. If the courts find that he is qualified, all doubts will have been erased. If the courts find that he is not qualified, a man who is qualified will have to be named.

Good government demands that the law be carried out and that the man who holds this office have the qualifications outlined in the law.

Mr. William Mauthe, chairman of the commission, says he welcomes court action. So does Mr. Nagler.

Governor Zimmerman not only should fall in line with Mr. Mauthe and Mr. Nagler, but he should discuss the situation frankly.

The Izaak Waltons should start the court proceedings.

The Izaak Walton league has promised a statement that it says is "implicating." In justice to the commission, to Mr. Nagler and to the governor there should be little delay in informing the public what that information is.

If the governor has broken faith, the public is entitled to know it. The very eminence of the office makes it essential. In matters of this kind, the executive at Madison is not Mr. Zimmerman. He is the Governor of Wisconsin.

Mr. Zimmerman as an individual should welcome it to keep his name clear.

Those things involved in the issue are:

1. Honest government.
2. Obedience to the law.
3. Conservation practice that will be of the greatest good to Wisconsin, recreationally, economically and scientifically.

All else is beside the point.

What we would like to see is an avenue of shade trees between Janesville and Beloit soldier memorial.

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THE CAPITAL TIMES

ABERG "RAZZES" ZIM IN CONSERVATION ROW

Says Governor's Attitude Reflected in Director Choice

WILLIAM J. P. ABERG, president of the Madison chapter of the Izaak Walton League, today issued a statement severely criticising Gov. Fred R. Zimmerman for his general attitude on conservation matters.

He charges that the governor's stand on conservation matters is reflected in the choice of the new conservation director, Louis B. Nagler. Mr. Aberg practically alleges that the governor "double crossed" the Izaak Walton League.

His statement follows:

"I have been asked repeatedly for some expression of opinion of the actions of the conservation commission in the selection of a director.

"The Izaak Walton League is not concerned with individuals, but is vitally concerned with the carrying out of those principles which look to educating the people of the State of Wisconsin in conservation matters. This interest is purely unselfish and fortunately is also entirely non-political. To succeed, it must of necessity disregard the political fortunes of any man or set of men.

Had Hopes in Governor

"The precepts of the Waltonian movement were preached very earnestly all over this state by the governor during his campaign for office. The same principles were also advocated by other candidates for office, but none with the zeal and fervor and apparent sincerity displayed by the governor. There was great hope among all the conservation interests of the state that the governor was in harmony and sympathy with these interests, and that he would use every effort to remove conservation from the political quagmire it had been in these many years, and assist in placing it in non-political hands. It was the ambition of conservationists not only to remove conservation from factional politics, but to place it in charge of technically trained men whose interest in the work is to see it progress.

"The machinery to do this was provided by the new conservation law, and the entire responsibility of carrying out the intent of the legislature and the crusading spirit of all of the conservation organizations of the state was placed upon the governor's shoulders.

Zimmerman Failed

"From the moment the new law was [illegible] it became apparent that the spirit responsible for its passage was a secondary matter with the result that a group of very excellent and high-minded individuals were selected who, with the possible exception of one, had never been heard of in connection with any phase of conservation work, and certainly had had no connection with the crusading spirit which was responsible for the passage of the law.



William J. P. Aberg

"It was but natural that the intentions and attitude of the governor in this regard should be further manifested in the selection made by the governor's commission for the all important position of director.

"It is only a fair and frank statement of the fact to say that the law contemplates a man with 'experience, special training and skill in conservation work', and that this phase of the law has been utterly disregarded. This is no personal reflection on the character of the man selected. It is, however, an indictment of the entire spirit prevading the governor's actions in carrying out the mandate from the people of this state—to remove conservation from politics and to put it in charge of trained, experienced and high-minded men without political interests, connections or motives.

Time Will Tell

"Whether the governor's failure is the result of deliberate trickery and deception, or a complete lack of sympathetic understanding with the splendid, spontaneous and state-wide movement, time alone can tell.

Leo.

Think it was
decided yesterday
to fight the case
in court.

I have seen J. Clifford
but am sending
you only a cross
section of them.

EGW

Nagler Wants to

Plan Would Add Beauty to Highways

Newly-Named Conservation Director Addresses A. B. Club

(Following is the complete address given by Louis B. Nagler, newly named director of the Wisconsin conservation commission, before the Monday noon luncheon meeting of the American Business club at the Loraine hotel.—Editor's Note.)

By LOUIS B. NAGLER

"CONSERVATION" is a word that has been juggled with for a long time by many persons for various reasons.

It means one thing to one person, or group of persons, and something entirely different to another. As a national issue, the term "conservation of national resources" is generally understood to refer to coal, oil and waterpower. To some people it means little more than better fishing and more game.

The new Wisconsin conservation commission is confronted by many greatly diversified problems, such as the prevention of forest fires, reforestation, waterpowers, water pollution, game and fish propagation and distribution, supervision of state parks and the eradication of wild animal pests, such as wolves, foxes, bobcats and weasels, and certain species of hawks and owls.

Fire Prevention Important

Activities under many of these heads must be carried on simultaneously and continuously, but the first named, fire prevention, is by far the most important as well as the most difficult. Fortunately the danger is confined to dry seasons, but it is always grave and until the logger or woodsman is induced to dispose of the timber refuse and until the thousands of acres of slashings, which want only a spark to set off a conflagration, are eliminated or effectively isolated, a large part of the funds available for conservation purposes must be devoted to fire prevention.

Fire Destroys Game

Forest fires destroy more game than all the sportsmen, and more timber than all the woodsmen. Large numbers of birds and mammals, especially the young ones, perish in the flames while many of those that escape are forced into unfamiliar surroundings where they fall easy victims to their natural enemies.

In his native haunts every rabbit knows where there are hollow trees or sheltering log piles in which it may hide from the pursuing fox, coyote or bobcat, but away from home he knows not where to go for protection and is lost. This is true of all creatures that are hunted by beasts and birds of prey. Moreover, many forest creatures are monogamous and if they are separated just before, or during the mating season, they will not reproduce during the year.

Wipes Out Vegetable Mold

In addition to the forests and their inhabitants, the fire destroys the rich vegetable mould which has accumulated on the ground during hundreds, or perhaps thousands of years. In every dry season this mould is entirely consumed by the fire and nothing but the barren sand remains.

This makes reforestation more difficult and materially retards the growth of a new crop of timber. Fire prevention will always occupy a prominent place on any conservation program.

Game and fish propagation and protection constitute two separate and unrelated problems of major importance. They are related only in the minds of sportsmen. It is possible to have a wilderness filled with game even while the lakes and streams are without fish. On the other hand it is possible to have good fishing without a wilderness.

Game Needs Protection

But Wisconsin is adapted to both kinds of sports and it would be unpardonable to neglect either. The problems are very unlike, scientifically, but they are similar from an administrative point of view. Game needs suitable cover and protection against its enemies, such as fire, predatory animals, poachers and pot-hunters. Game fish need suitable water and protection against pollution, predatory rough fish and illegal fishermen.

Wisconsin now has 24 fish hatcheries under the supervision of an experienced fish-culturist who has been in the state service eighteen years.

The Northern Forest State park in Vilas county is an exceptionally fine game refuge. It is sixteen miles long by thirteen miles wide, covering 208 square miles, or more than 130,000 acres They will soon become an excellent breeding ground from which the surrounding country, which is open to sportsmen during the hunting season, will be repopulated with deer and other game. The commission has authority to establish additional preserves and it has already exercised this authority in the case of the Horicon marsh.

Need More Money

Obviously the small amount of funds available for these purposes is utterly insufficient to carry out a reforestation program on a large scale, and the success of the venture will depend largely upon the degree of cooperation, which the department will receive from counties, communities, societies and individuals. If the several counties will take advantage of the present law to establish county forest reserves, and if loggers and other timber-workers hereafter will clean up the slashings to prevent fires and exercise greater care in their operations so as to dstroy as little of the young timber as possible, much can be accomplished in a few years.

We have a good example before us. Who could have dreamed in 1911, when the first state highway fund was appropriated that within fifteen years Wisconsin could boast of third place among the states of the Union in the number of miles of paved roads?

Would Plant Roadside Trees

It may not be out of place here to suggest that our highway commission should cooperate with the conservation commission by planting trees along every mile of paved road in the state, the state nursery to furnish the young trees. Not only the roadside, but many an unsightly and otherwise unproductive nook and angle can be made attractive and useful by planting a few trees or shrubs.

Every rod of waste land, whether publicly or privately owned, should be utilized in the same way. Such a policy, followed consistently for a decade, will add much to the attractiveness of the state and, by 1950, when our population will be approaching the five million mark, these trees will possess a money value a thousand fold greater than the cost of planting them.

A Thankless Job

The conservation commissioners have a thankless job; they receive no compensation only reimbursement for their actual and necessary expenses. Their duties involve a multitude of detail, not all of which can be delegated to subordinates. Interested citizens and societies can render invaluable assistance by making timely suggestions and in many other ways. The degree of success that is attained will depend largely upon the support and cooperation of the general public, but this, as you all know, is true of every public undertaking.

Idle Lands Costly

Gov. Gifford Pinchot estimates that the unproductive lands of Pennsylvania cost that state $100,000,000 a year. He means that if these lands had been properly forested and cared for after the original timber was removed, they would now yield lumber and other forest products worth $75,000,000 each year, and would save $25,000,000 which is now spent annually for freight charges on importations.

On the same basis Wisconsin's nonproductive lands cost us a tidy sum every year and it behooves us to proceed with all the diligence our means will permit to retrieve the loss. We must not fail to take advantage of our opportunity to set a worthy example for our children and leave them the priceless heritage of a living forest.

The legislature has outlined a comprehensive program which indicates that the people are no longer unfamiliar with the problem. This is a good beginning. Since the people know what they want they can be depended upon to secure it, and when they tackle this problem in the good old Wiscon-

WHAT? WALT JOHNSON



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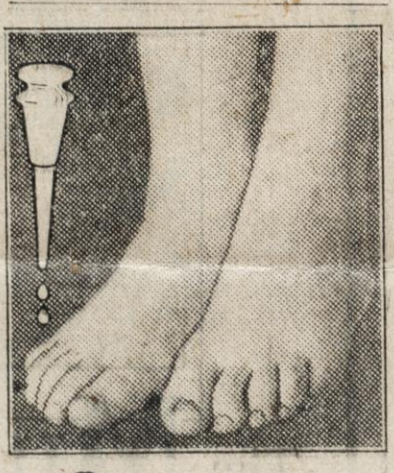

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—Adv.



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MONDAY, OCTOBER 3, 1927

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COURTS SHOULD DECIDE

THE appointment of Col. L. B. Nagler, Gov. Fred R. Zimmerman's private secretary, to be director of the conservation commission is most disappointing, notwithstanding that those who know him must concede to Mr. Nagler both intelligence and resourcefulness. The choice of Mr. Nagler was a purely political reaction to the demands of a scientific problem.

It is not difficult to understand why Governor Zimmerman should have chosen the political course. Since its inception as a purely game and fish organization, this department has been used as a political instrument, and in fairness to Governor Zimmerman it must be admitted that with the possible exception of the late Emmanuel Philipp his predecessors have found the department, with its upwards of five hundred employes, a fruitful instrument for political propaganda and control. All factions in politics have been conscious of the fact that the conservation department could not function to the best advantage while the inception of its personnel sprung from political reason. Sentiment had been growing for a new deal, and that sentiment brought the first substantial result when the last legislature adopted the new conservation law in which it definitely named special training and experience as fundamental in the qualifications of the director of conservation.

The portion of the law relating to the qualifications of the director reads as follows: "shall be a person having executive ability and experience, special training and skill in conservation work." Obviously, in electing Mr. Nagler, the conservation commission ignored the express command of the legislature, requiring "executive ability and experience, special training and skill."

Mr. Nagler may have executive ability. In the sense of the word employed by the legislature, the term must have intended to convey the qualities that would enable a man to direct to the best advantage the work of a staff of several hundred people. While we do not know of Mr. Nagler's ever having exercised such authority, we're much inclined to think that he will prove competent in this particular.

If the word "experience" in the statute was employed in the general way, Colonel Nagler can be said to have had a great deal of it. He has been actively engaged in matters of state administration for a great many years. But since the legislature was defining the qualifications of a man whose business it was to deal with conservation in all of its wide ramifications, it seems an inescapable conclusion, a comma notwithstanding, that the legislature meant, not experience in general, but experience in matters of conservation.

As to the third requirement, no question exists at all. It was the plain intent of the legislature that the director of conservation should have had special training for conservation work. To say that Mr. Nagler has had this is not to state the fact. It is said in his behalf that he has been interested in the subject, read much about it, and that in his library are many works dealing with conservation. That does not answer the requirement at all, which is for a technically trained man who is a practical conservationist qualified to deal with it in matters of policy, administration, and research.

The fourth and last requirement conveys an inescapable meaning. It is that the director shall have "skill" in conservation. Where in the world did the commission go to decide that Colonel Nagler has "skill" in conservation. "Skill" comes only with the practical use of a thing, with its actual application. We challenge the commission to produce the evidence of Colonel Nagler's "skill."

To say that Mr. Nagler's having read upon the subject, as have hundreds of other citizens, makes him a specially trained conservationist is absurd. The task he has been elected to assume requires the services of the very best of our practical technical conservationists. It is the biggest conservation job in the entire state of Wisconsin. To choose Mr. Nagler as filling this want upon the ground that he is interested in the subject and has read about it is on a parallel with picking a man who has read law in a law office but never has been in court, to be attorney general.

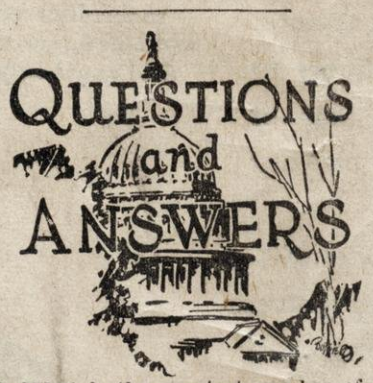
These facts are admitted by the conservation commission in the surprising statement which it issued in the defense of Mr. Nagler's election. The second paragraph of that statement begins, "While Mr. Nagler is NOT a technically trained forester or fish man * * *". In the third paragraph the commission further acknowledges the truth by pointing out that Mr. Nagler will have under him "a technically trained forester" and "a technically trained superintendent of fisheries." Here is a candid admission by the commission that in effect it is amending the law requiring the director to be "specially trained," and substituting therefor the provision that he shall have under him "technically trained" men.

There is a good deal of talk about a legal proceeding to test whether a commission established by state law can, in the performance of its duties, ignore the plain intent of the very statute that brought it into existence. That test should be applied, because if the conservation commission can ignore the mandate of the legislature in one matter, it can in all matters, and so can all state commissions.

Probably a man of Colonel Nagler's endowment can make of himself a practical and technical conservationist in the course of a few years, but that is mere speculation. The state is paying for "training," "experience" and "skill," which, if the Nagler appointment stands, it will not get until it has trained him at its own expense.

However, Colonel Nagler is to be congratulated upon one thing. When recently he made public a letter in which he said he could have had any appointment in the gift of Governor Zimmerman, the state indulged in a broad grin in expectancy of the governor's denial that his private secretary occupied the position of "Warwick." The denial was not forthcoming, and now Mr. Nagler has practically demonstrated, not only that his assertion was correct, but that he has at his command the commissioners as well as the governor. Hereafter the wise citizen who wants what he wants will understand where to go in order to get it.

The whole affair is most unfortunate. The legislature placed in Governor Zimmerman's hands an opportunity to perform a public service that would have made his administration outstanding regardless of whether the rest of his record was good or bad. Of that opportunity, his greatest asset, he has made a liability.



Q. What is the greatest number of runs ever made by one team in a major league baseball game?

A. Thirty-six, made by the Chicago team of the National league against Louisville, June 29, 1897.

Q. Is Alice Terry married?

A. In private life Alice Terry, the motion picture actress, is Mrs. Rex Ingram. Her maiden name was Alice Taafe. She was born in Vincennes, Indiana, in 1896.

POOR PA



"I know I wasn't br
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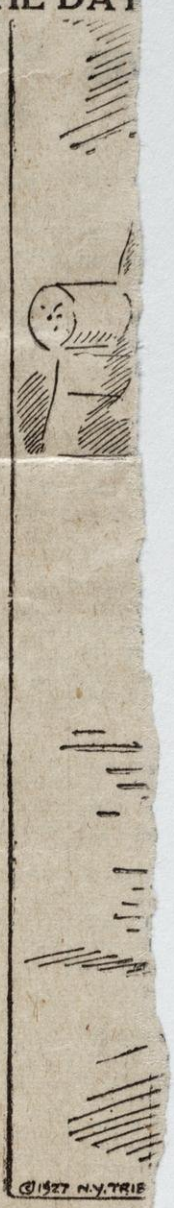
was like 'em."

THE DAY



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New Conservation Commission's Usefulness At An End

THE new conservation commission is, at the outset, discredited and the cause of conservation in Wisconsin has been done an incalculable injury by the election of Louis B. Nagler to the position of conservation director. The announcement of Mr. Nagler's selection came late Saturday afternoon after the board had been in secret session throughout the day.

* * *

THE new conservation commission was created by the last session of the legislature in response to a statewide demand for a constructive policy centering around the forests, streams and wild life of Wisconsin. The Izaak Walton league took an important part in this campaign and asked that the conservation commission should be reorganized and removed from the influence of politics. The present governor campaigned on the same issue.

"Take conservation out of politics" was a slogan which resounded throughout the last campaign and nearly every candidate from governor to coroner pledged his devotion to the cause.

The new conservation commission emerged as the instrument which was to formulate and shape a new program of conservation and the thousands of people in Wisconsin, honestly interested in the protection of the natural resources and the wild life of the state, were greatly encouraged when Gov. Zimmerman named a number of outstanding men to the commission.

It is appalling to think that men such as were named to the commission have so dismally failed to sense the situation and that they were unable to see that the election of a politician, without qualifications and without special training for the job, has ended the usefulness of the commission as an agency in which people honestly interested in conservation will have any further confidence. When the conservation commission on Saturday elected Gov. Zimmerman's political man Friday as the executive director of the commission the immediate reaction which will follow is that the cause of conservation in Wisconsin has been plunged deeper into politics than ever before. The new commission has not even been honest with the law creating the new state agency, —the law providing that the director "shall be a person having executive ability and experience, special training and skill in conservation work." Will the conservation commission kindly give the people of Wisconsin some information as to where Mr. Nagler ever qualified as a person having "special training and skill in conservation work?"

* * *

AN ugly feature of this whole transaction for which there is much corroborative evidence is that the cards were stacked from the very outset and that men were given appointments on the commission with the understanding that Nagler would be given the job.

The Capital Times recently learned of a conference which was attended by several members of the commission, a state senator and others in which the frank admission was made that the conservation commission offered wonderful opportunities for the upbuilding of the Zimmerman political machine. It was further stated that the conservation commission would give Nagler an opportunity to build himself up to proportions where he could become a candidate for secretary of state on the Zim slate within the next few years.

The delay in electing Nagler tells another story:

From the day of their appointments a majority of the commission was committed to the election of Nagler as director. When the first inkling of the deal reached the public a statewide protest arose against the selection of Nagler and the prostitution of the new commission to the purposes of politics. The protest became so voluble that the members of the commission got cold feet. They wavered. Sensing the fact that the commission was bucking and showed hesitancy in going through with the deal, Gov. Zimmerman entered the picture and began exerting pressure in Nagler's behalf. Saturday, the commission marshalled enough nerve to go through with the deal.

* * *

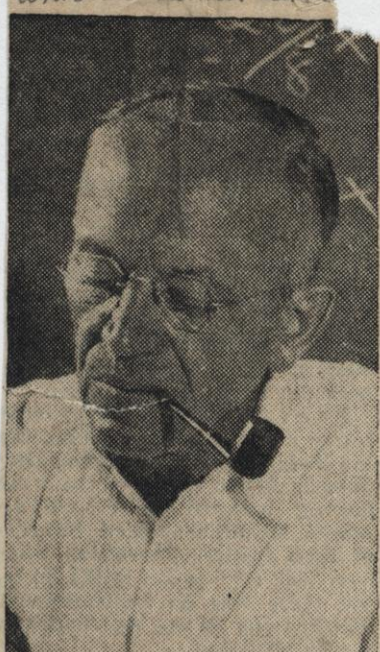
THE responsibility for this conservation fiasco rests squarely with the governor of this state and the members of the commission. At the very beginning of its work the conservation commission has become discredited and its usefulness is ended. It will continually be on the defensive. It will continually be faced with the statewide feeling that the election of Nagler has added the conservation commission to the Zimmerman political machine and that Nagler, and not the members of the commission, is the boss of the works.

The men who must bear the responsibility for having betrayed the thousands of people in Wisconsin who were genuinely and wholeheartedly interested in a conservation program for Wisconsin are the following members of the commission:

William Mauthe, chairman, Fond du Lac.
Frank L. Gilbert, Madison.
Eugene E. Wengert, Milwaukee.
O. C. Lemke, Wausau.
E. M. Dahlberg, Ladysmith.
A. W. Icks, Green Bay.

It was announced on Saturday tha the action in electing Mr. Nagler wa unanimous. The entire commissic therefore, bears the responsibility.

Wis. State Journal June 2



ALDO LEOPOLD

Restore Wilds, Leopold's Desire

New Conservation Official Gives Views

By RUSSELL B. PYRE
(State Journal Staff Writer)

He yearns for restoration of a wilderness free from mechanization, parks, and gadgets that destroy cultural values.

He believes conservation, to be effective, must be practiced everywhere, by everybody.

He offers "wildlife research" as a new sport, replacing some ancient concepts of sport, and favors the training of more amateurs and fewer professionals in research as an essential to a liberal education.

He does not believe in "buying one kind of conservation at the expense of another."

He believes in the restoration and retention of nature's balances and adherence, so far as possible, to nature's ways.

He maintains that conservation will be achieved" when and only when the destructive use of land becomes unethical—punishable by social ostracism."

He, of whom we speak, is Aldo Leopold, professor of wildlife management at the University of Wisconsin, who next month will become a member of Wisconsin's conservation commission.

Hobby Beomes Profession

The new commissioner is a man who has changed a hobby into a profession and a profession into a hobby.

He became interested in ornithology and botany as a high school

(Continued on Page 3, Col. 1)

Wis State Journal - June 27, 1943

Restore Wilds, Leopold's Desire

New Conservation Official Gives Views

(Continued From Page One)

student in Burlington, Ia., where he was reared. His father, an ardent sportsman, took him as a boy on many fishing and hunting trips.

Madison people know him primarily as a "land ecologist" and land ecology, as defined by Leopold, consists of "putting the sciences and arts together for the purpose of understanding our environment."

What most of them don't know is that he is a Yale-trained forester, and forestry is a significant phase of Wisconsin's conservation program.

Assigned to New Mexico headquarters after completing his work at the Yale forestry school, he began the study of game as a hobby.

New Mexico, at the time was getting nowhere in conservation and a group of organized sportsmen, of which he was a member, took the lead in a movement that resulted in reorganization of the state fish and game department, soon after the close of the first World War.

In Madison a few years later he aided, with another group dominated by Izaak Walton leaguers, in drafting 404-S, the bill that created Wisconsin's present six-man commission and director system in 1927. Leopold takes no personal credit for the bill, but the system it created, curiously enough, is almost a duplicate of New Mexico's.

Leopold, transferred to the Forest Products laboratory here in 1924, continued his game study hobby until 1928, when it became his profession. In that year he was engaged by the Sporting Arms institute to make a game survey in the central states, which was completed in 1932. After that he became a private consultant until 1933 when he was appointed to the newly created game management chair at the university.

Graduates of his course now are carrying on the same kind of work in Wisconsin, New Hampshire, New York, Illinois, Michigan, Iowa, Indiana, and Washington.

In 1935 he was sent to Europe under sponsorship of the Carl Schurz foundation, to study conservation in Germany and Czecho-Slovakia.

Prefers "Natural" Methods

There he found much to be learned, and much to be unlearned, about conservation.

"Europe," he said in an interview Saturday, "bristles with needlessly artificial practices and instances of buying the welfare of one resource by destroying another."

And that, he avers, is not conservation.

Leopold's views of Wisconsin's immediate problems sum up somewhat as follows:

"ONE: We don't know enough yet about conservation to do the things we should. It needs a vast amount of research and it will take the combined efforts of the department and the university to learn as rapidly as we must.

"TWO: Experience has taught throughout the history of conservation that natural methods are the best. When a problem offers two possible solutions, one artificial, one natural, the natural method usually is the more successful and often the cheaper. By that," Leopold explained, "I do not mean that we should discourage fish hatcheries or game farms, but we should rely upon them as little as we can."

"THREE: We have had too narrow a concept of conservation. Wildlife is a good deal more than fish and game, and forestry is a good deal more than trees. There are many aspects of conservation, such as wild flowers, for instance, that are as much in need of action as trout or grouse.

"FOUR: Conservation must be accomplished through the farmer. We can do it only partially through government. State and federal bureaus and commissions are only the indirect instruments. They are the tools to bring conservation to the land owner. Through a bad misconception, federal and state commissions have interpreted themselves as direct agents. They can't do it. The job is too big. For conservation is cropping. If the department of agriculture undertook to do all the cropping in the United States how far would it get? Obviously nowhere."

State's Deer Problem

A good illustration of his belief that natural methods are best and that one resource should not be destroyed protect another, lies in the Wisconsin deer problem.

Much of Leopold's research in game management methods had been centered upon grouse, pheasants, quail and rabbits, and little upon deer before he became a member of the state's special citizen deer investigating committee last fall. However, two years ago he spent all summer investigating a deer "eruption" in Oregon and he was in the Kaibab forest area of Arizona in 1915 when the famous "enuption" occurred there —when the herd that had grown from a few thousand to 100,000 under "protection" died away to little more than 10,000.

"We probably could prevent part of the starvation we know is taking place among Wisconsin deer by a determined feeding campaign," he said. "But I don't like to see the state embark upon such a policy because it would pauperize and artificialize the herd.

"Once started, artificial feeding would have to continue indefinitely. The net experience in Europe and in all states which have tried it, is that once started, artificial feeding can not be stopped.

"And the more you feed the deer, paradoxically, the more damage you will do to the state's timber, because deer will not stop eating browse even when you feed them 'hay and cake.'

"If you maintain the deer herd at the expense of the forests you are buying one kind of conservation at the expense of another."

Opposes Too Much Killing

There are many other instances in so-called conservation, he said, where one kind of a resource is bought by killing another.

He believes, for example, that predators are needed to maintain nature's balances and opposes indiscriminate killing of herons, kingfishers, crows, wolves, and other birds and animals that prey upon game.

"We kill hawks and owls, imagining we thereby help the game, but we are destroying one resource while at the same time harming another," he maintains.

Since 1917 Leopold has been active in campaigns to establish wilderness areas throughout the United States, and he was interested particularly in the move to preserve as much of the Flambeau river in its natural state as possible.

"To run down the Flambeau today," he wrote in a recently published article, "is to be mentally whipsawed between alternating impressions. No sooner have you built up the mental illusion of being in the wilds than you sight a boat-landing, and soon you are coasting past some cottager's peonies."

And below the next pool, he added cynically, you probably will find staring at you "a synthetic log cabin, complete with composition room, 'Bide a Wee' signboard, and rustic pergola for afternoon bridge."

Too Much Fanciness

One of the insidious dangers to public forests, he wrote, is the notion that to control camp sanitation and campfires a chain of camp sites must be "embellished with toilets, fireplaces, rustic gables and trimmings."

"I would as soon dig ditches in a dress suit," he said, "as to so bedeck the Flambeau."

On another occasion he deplored the "needless sacrifice of wild spots" through relief labor development, especially decrying a road built to provide "public access" to a wild and remote river bluff where once the hiker could observe a falcon's eyrie.

"Access to what?" he asked bitterly. "No access to the falcons, for they are gone."

But in his antipathy toward mechanizations and gadgets, Leopold inevitably betrays an irrepressible sense of humor.

Dislikes 'Bad' Gadgets

He pillories the sporting goods dealer as a "gadgeteer" who has draped the American outdoorsman "with an infinity of contraptions all offered as aid to self-reliance, hardihood, woodcraft or marksmanship, but too often functioning as substitutes for them."

And while he decries gadgets, he confesses he does not disdain all of them, particularly the automobile, and he as freely confesses he doesn't know where to draw the line between good gadgets and bad gadgets, though he thinks a happy medium might be found where the outdoorsman could use mechanical aids in moderation, "without being used by them."

He laments the rubber boat that came to invade "the last virgin trout hole" and as an end-case he asked you, in another recent article, "to consider the duck hunter, sitting in a steel boat behind composition decoys."

"A put-put has brought him to the blind without exertion. Canned heat stands by to warm him in case of a chilling wind," Leopold wrote. "He talks to the passing flocks on a factory caller, in what he hopes are seductive tones; home lessons from a phonograph record have taught him how.

"The decoys work, despite the caller; a flock circles in. It must be shot at before it circles twice, for the marsh bristles with other sportsmen, similarly accoutred, who might shoot first. He opens up at 70 yards, for his polychoke is set for infinity, and the ads have told him that Super-Z shells, and plenty of them, have a long reach.

"The flock flares. A couple of cripples scale off to die elsewhere. Is this sportsman absorbing cultural value? Or is he just feeding minks?"

Wisconsin's Wild Life Picture in Process of Radical Change

Shifts Reduce Many Species

But Dr. Aldo Leopold Believes Influx Will Compensate Loss

It is doubtful whether wild life disappears under the impact of civilization.

As long as the soil is there it will grow plants and these plants will feed animals.

The decline of Wisconsin wild life since 1840 is a process of ebb and flow, gain and loss.

The eviction of the buffalo and the passenger pigeon was inevitable, but hindsight shows us that the wolf and cougar should have been retained in the north to keep the deer herd in check.

Those are a few of the high lights in a recent summing up of Wisconsin wild life by Dr. Aldo Leopold, professor of wild life management of the University of Wisconsin. With an authentic wild life chronology for the state as his foundation, Leopold sketches a broad picture of what happened as Wisconsin was settled.



Dr. Leopold

One group of large mammals and birds retreated northward and westward because they could not exist in settled country, he says. Examples of these are the buffalo and the passenger pigeon, which must "live as a wandering horde . . . hordes have no place on the farm." Another group of southern species, including the wild turkey, were exterminated "because they could not retreat . . . climate restricted them." Still another group was pushed out because of its value as fur or meat: "Marten, fisher, wolverine would still be common but for overtrapping and fires."

Hawks, Owls Going

Leopold, whose reputation as a wild life expert is international, offers a few deductions:

"The hawks and owls are now being decimated. . . . They will probably become rare before the public realizes that their main prey consists of rodents. . . . A similar persecution of fish eating birds and mammals is now in full swing. . . . The net effect of all retreats and invasions is clearly this: Fewer total species, more foreign species, larger numbers of small birds and rodents, smaller numbers of game, fur and predators; general replacement of forest and marsh species by open upland forms, and more frequent pestlike behavior . . . less internal balance in the wild life community."

Tracing the history of conservation, Leopold points out—"Conservation began with the idea of prohibitions. Prohibitions have no end: they give bulk to our statutes and recurrent hope to wishful thinkers, but after a century of trial it seems apparent that they give more aid and comfort to wild lifers than to wild life. Prohibitions are necessary . . . but in and of themselves they accomplish little."

Cropping Local Idea

Most recent idea in the chronology of conservation, he continues, is that of scientific cropping, or management. The idea of cropping Wisconsin birds "was conceived in so many minds that it is difficult to assign and date its beginnings." He cites H. L. Stoddard, former Milwaukeean, as a leading authority on the bobwhite quail who "envisaged such a system between 1910 and 1924 but carried it to another state (Georgia) before it emerged from his pen as public property."

Cites the Landmarks

Following are a few of the landmarks of conservation in Wisconsin which, while not giving the whole picture of change as Leopold has traced it, mark many interesting dates:

1832—Last buffalo east of Mississippi killed in Trempealeau county. Perhaps buffalo on St. Croix river to 1833.

1840—Last woodland caribou seen at La Pointe, Ashland county. Drifters from north reported in Burnett and Price counties in 1910.

1851—First game laws. Deer closed Feb. 1-July 1; prairie chicken, quail, woodcock and ruffed grouse Feb. 1-Aug. 1.

1864—First closed season for fur animals.

1875—English sparrow planted at Milwaukee.

1876—Barbed wire fencing first available in quantity. This marks the demise of the rail fence and the reduction of fence row wild life.

1879—First carp planted in Wisconsin by United States fish commission.

1897—First bag limits established. Resident license established. Killing deer in water or on ice prohibited.

1908—Worst fire year; 1,435 fires reported; 1,209,432 acres burned.

1908—Last Wisconsin cougar killed in Douglas county.

1921—First open season on pheasants and Hungarians.

1923—Starling arrives in Wisconsin.

1932—Peak population on all grouse.

1940—State and federal governments buy Horicon marsh.

The Attached Material Will Appear
In The

AUGUST 1928

Issue of

American Forests and Forest Life

The Magazine of

The American Forestry Association

Lenox Building, Washington, D. C.

The Editor

Believes You Will be Interested in It

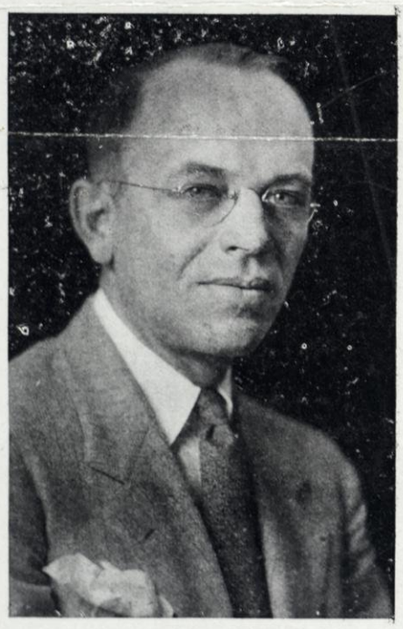
Aldo Leopold Resigns Laboratory Post to Become Consulting Forester

Aldo Leopold, associate director of the United States Forest Products Laboratory, resigned July 1 to engage in private work as consulting forester, specializing in game management.

Mr. Leopold's first private undertaking will be an assignment from the Sporting Arms and Ammunition Manufacturers' Institute to make a survey of American game resources. The purpose of the survey is to collect the experience and ideas of sportsmen and other conservation agencies as to the best ways and means for inducing the sustained production of game crops. By assembling the facts and making them available to the sportsmen, the sponsors of the survey hope to stimulate the formulation of an effective program of game restoration.

Mr. Leopold's departure ends nineteen years of work in various branches of the United States Forest Service. In 1908, following his graduation from the Yale Forestry School, he entered the government service as forest assistant on the Apache National Forest in Arizona. In 1912-13, Mr. Leopold was forest supervisor in charge of the Carson National Forest, in New Mexico. He was given the associate directorship of the Forest Products Laboratory in 1924.

Although Mr. Leopold has devoted himself to organization problems of the Forest Products Laboratory he has never lost touch with forestry afield nor with the science of game management, a specialty to which he is devoted and in which he has long been recognized as an expert. While at the Laboratory he served on the executive council of the Society of American Foresters and the board of directors of the Wisconsin Division of the Izaak Walton League.



ALDO LEOPOLD

e Modified

Aldo Leopold Depicts New Era for Game

Rotary Club Hears Plans for Farm Profits

Wisconsin on the threshold of a new conservation era in which game will multiply for the farmer's profit and the sportsman's pleasure because food and forest cover have been brought together by landowners was outlined by Aldo Leopold to the Madison Rotary club today.

Leopold, the University of Wisconsin's first professor of game management, asserted that Wisconsin's seed crop of game is on game farms, its forest and fields are in the north, and its food in the south, whereas these factors must be brought together to build game supplies.

Purchase Not Solution

Six Dane and Jefferson county farmer groups have been organized in recent months to begin farming game by using otherwise wasted acres of stony and hilly land as game cover, Leopold said. Madison sportsmen in three years on seven farms near Riley have built three coveys of quail to 15 coveys, he revealed.

Purchase of millions of acres of land by the government will not meet the need, said Leopold, who is a member of a three-man national conservation committee named by President Roosevelt.

Pioneers saw more game than the pre-historic Indian ever did, because the early farms set grain fields beside protective woods, Leopold pointed out.

Studies Illness

The mysterious illness which decimates grouse and rabbits of entire North America every 10 years may be connected with a cosmic phenomenon, Leopold suggested, and some time may be discovered to be related to the sun's radiation through lessening of the game's vitality or increasing the virulence of disease germs.

The University of Wisconsin, which is expanding game management studies under a grant from the Wisconsin Alumni Research foundation, this winter held the first game farming classes for farm youths, Leopold said.

All Around the Town

[By ADELIN HOHLFELD]

JACK COLLINS, who has a cottage at Mirror Lake near the proposed nudist camp, has been besieged with telephone calls from people who want to rent his cottage for the summer. They would no doubt come well equipped with field glasses. But the cottage isn't for rent.

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MILEAGE

JUDGE CHARLES D. ROSA, if he had done all his driving straight east or straight west, instead of just going about his business in various directions, he would now be on his 22nd lap around the world. And he's never had an accident.

✣ ✣ ✣

ESQUIRE

ARTHUR SHUMWAY, 28 year old author who sent a bullet through his discouraged heart at Daytona Beach the other day, strangely chose the same setting of which he had written in a recent issue of Esquire, under the ironic title "One Way to Die." His story concerned the many racing drivers who had met their deaths on this famous proving ground for fast cars in an effort to exceed 200 miles an hour.

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ARBORETUM

THE snakes have thawed themselves out and are gliding through the woods once more, and that is one sign of spring. I saw a whole nest of them when I was walking through the oak forest at the arboretum with Mr. Longenecker, who took me on a tour of the place this week. It was one of the most interseting expeditions that I have taken for some time, and so close to home too. This 500 acre outdoor laboratory owned by the state is on Lake Wingra, near the Nakoma Country club and the Seminole highway.

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FLORA AND FAUNA

IT IS planned to have different units representing the flora and fauna of various regions of the U. S. There will be the Green Mountain section with sweet birch, white spruce and red and white pine (15,000 of these trees have already been set out). The Ozark section will have tulip populars and red bud trees. The open meadow will be devoted to prairie grass, fringed gentians, nodding Canada lilies, brown-eyed susans, and purple cone flower, and stocked with prairie chicken.

Then there is the tamarack pool with its pond made from a natural spring. Two thousand tamarack trees were dug up in a swamp near Cambridge and transplanted by C. W. A. labor. They started moving them the day after Christmas when the layers of peat were frozen around the roots, so that they brought not only the trees but the proper soil and many little swamp plants along too. Around the tamarack pool will grow pitcher plants, pink lady slipper, red dogwood, cotton grass and pussy willow. On the hill to the north will be a juniper knoll with pasque flowers and the sandy hill to the south will be planted with jack pine and lupin and birdfoot violets.

WILD LIFE

THEN there are Aldo Leopold's feeding stations for wild life. This past winter he has been feeding them barley and corn out of hoppers, providing shelter with titled wood platforms and brush piles which have been planted with wild grape. The feed plots are also to be sown with rye and vetch for bird food.

The arboretum is swarming with wild life of all kinds: Wild ducks and geese on the ponds; quail, partridge and pheasant in the meadows; and song birds of all kinds in the woods. Last winter when Mr. Longenecker and some of the C. W. A. workers were clearing out dead trees, they moved an old stump and scared out two raccoons. Fixes have been seen there, also skunks, and possoms, and of course, gophers and squirrels galore.

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INDIAN REGION

THIS region around Lake Wingra used to be an old Indian village and there are more Indian mounds here, according to C. E. Brown than in any other section of its size in Wisconsin. These will all be kept intact of course.

When the springs with which the region also abounds were cleared out many arrow heads and Indian relics were found. These springs have been banked with stone terraces to keep the dirt from washing, and one of them has a charming Indian council ring around it to be used by classes or other groups. Right now the springs are full of crisp green watercress, which with hard boiled egg and French dressing makes the best spring salad in the world.

✣ ✣ ✣

REGULATIONS

THIS property belongs to the state and its directors would be glad to have the people of the state enjoy it if they can do so without abusing it. No firearms or dogs are allowed inside, because of the game. You mustn't pick the flowers; they are all there for a purpose. If the public can clean up its refuse, picnics will be allowed, but if the directors find the springs clogged with tin cans and paper bags and the paths strewn with garbage, they will have to exclude all picnickers.

It is a privilege to have the arboretum in our city to watch and enjoy. One has to use one's



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New Conservation Plan Started In Wisconsin, Leopold Tells Meeting

APPLETON, Wis.—(AP)—A new Wisconsin game conservation program is under way based upon the theory that the environmental features of game birds and animals are essential for game restoration and preservation, Aldo Leopold, research director for the 500-acre arboretum at the University of Wisconsin, today told the general assembly of the Wisconsin Academy of Sciences, Arts and Letters, in convention here for two days.

Herbert L. Stoddard, Sauk City, Wis., naturalist who became taxidermist and collector for the Milwaukee public museum, was credited by Mr. Leopold for originating this theory. He called it the foundational theory and said it is based upon the premise that wild life can be decimated by destroying the balance of its environment and may be restored by readjusting this balance.

Two investigations, one on prairie chickens by the state conservation commission, and the other on quail under the auspices of the state university, have been conducted on this concept of conservation, he said.

"To accomplish conservation, game research must not stop with its biological facts," Prof. Leopold said. "There remains the problem of economic adjustments to encourage their use by landowners. Wild life research offers a new field for service to the state, not only to larger universities and colleges, but also to colleges, agricultural high school teachers, county agents, forest officers, game officials and private naturalists throughout the state."

A commonly accepted belief that the yellowing and stunting of the second growth of alfalfa in Wisconsin last year was caused by "sun burn" was dispelled by L. F. Graber, an alfalfa authority at the University of Wisconsin, who addressed the conference.

Mr. Graber said that his investigations revealed that the injury to the alfalfa was caused by the leaf hopper. The best remedy against infection by this insect, he said, is to delay cutting the growth for 6 to 12 days.

The cultivation of beetle-repelling legumes such as alfalfa, sweet clover and red clover has been found by University of Wisconsin researchers to be the best method of combatting the destructive grub worm that ravaged Wisconsin grains and pastures last year, Prof. Graber said.

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so it might be a good idea to get a hair cut. . . . Might as well get them both cut; it won't take much longer. . . . Ted Lapitz and Jit Standiford both jump to attention. Jit had been saving up one. He thought of it himself. It goes—

When an Indian and his squaw had a fight where Weis Bookstore now is, the fight being concluded when the chief jumped behind a plate-glass window.

When a city street sweeper used to stop when he reached the lilac

Conservationist Aldo Leopold Started Young

(This letter was written by Edwin A. Hunger, now of Battle Creek, Mich., who is completing his first visit in Burlington since 1945. Hunger, Cornell university graduate, was a trade publication editor and was with International Harvester for 30 years before his retirement in 1951.—Ed.)

It was the spring of 1903. I had recently become a Hawk-Eye carrier. I would leave the old plant at Main and Washington at 3:45 a.m. with my pack of 160 papers and a half hour later would be climbing up short Clay street to its top where I would cut through the Leopold estate to deliver on Grand street.

Somewhere thereabout I would be seeing Aldo Leopold so early gazing intently with glasses up at the trees. It was my first sight of a serious bird watcher. Aldo was a high-school classmate, but soon he became much more than that — an inspiring fellow bird watcher and, for one who has more often been something of a lone wolf, the finest and most inspiring friend I've ever had.

It was my great misfortune after our sophomore year that Aldo went East to Lawrenceville Prep and later to Yale Forestry school. Then, after college days, our careers became far opposites. Aldo went to the Southwest as a US forester while I stayed East as a news editor on an engineering magazine. Thus, as so often happens with student pals who later go in opposite directions and develop opposite interests, we eventually lost touch of each other.

Now, however, long after Aldo has passed away and I am a retiree, I have had this inspiring friendship revived in most peculiar and memorable fashion.

This revival was sparked in the first place by a review by Lewis Gannett in the New York Herald-Tribune two years ago of a new book, "The American Year," edited by Henry Hill Collins,, Jr., and subtitled "Nature Across America Through the Four Seasons as Observed by the Great Writers and Naturalists Past and Present," (G. F. Putnam Sons).

What immediately bolted me in this review was the following:

"Aldo Leopold's wonderful meditation on the last bit of unspoiled prairie in a Wisconsin graveyard."

I quickly had a $10 check a-going for this hefty anthology of some 110 nature pieces and discovered another delightful piece by Aldo on the far-flung migration of the upland plover entitled, "Back From The Argentine."

From this anthology I learned of the original source, "A Sand County Almanac," published by the Oxford University Press, for which I naturally also sent. I also sent for another volume published by the Oxford University Press entitled "Round River," a postmortem assemblage of Aldo's pieces by his son, Luna Leopold.

Conservationist's Lament

This anthological quoted essay, not much more than a newspaper column in length, is full of Aldo's lament as a conservationist on what is happening to the land.

Picturesquely it tells about the survival in a corner of a country graveyard of a single deeprooted man-high cutleaf Silphinium which has a sunflower-like bloom. In pre-farming days it grew in profusion and provided rich food for great herds of buffalo.

So-called clean farming, woodlot grazing and good roads, it states, is the cause of the shrinkage of such flora.

Then, in his rich-flowing prose Aldo goes on to say, "This is one little episode in the funeral of the native flora which in turn is one episode in the funeral of the flora of the world. Mechanized man, oblivious of floras, is proud of his progress in cleaning up the landscape on which, willy-nilly, he must live out his days."

So it goes, again and again, in so much of his copy in which he details his findings, Aldo Leopold not only proves himself a very keen nature reporter but like keen reporters in all fields he adds something significant to his copy that gives it life and spark and permanence.

Soon I was sending away for another volume, "The Bird Watchers Anthology," by the noted ornithologist, Roger Tory Peterson, published by Bonanza Books and containing another masterpiece by Aldo entitled "Sky Dance." This essay is based on Aldo's keen observations of the nuptial dance of the woodcock and also appeared in "A Sand County Almanac." Especially appropriate is the following by Mr. Peterson introducing this essay:

Aldo Leopold once wrote: "There are two kinds of people: those who can live without wild things and those who cannot." All conservationists fit the second category but many of them find it difficult to explain their views. They feel deeply but grope for words which do not risk triteness.

Also Leopold was always articulate; more than anyone else in wildlife conservation movement, he was able, in translucent prose, to make clear his philosophy. As professor of wildlife management at the University of Wisconsin he had a profund influence on conservation thinking, an influence which his students, now teachers and technicians in their own right, have carried to every part of the land.

Just now (June 10, 1963) I am about to send away for still another anthology, "A Treasury of Birdlore," edited by Joseph Wood Krutch and Paul S. Eriksson (Doubleday). This latest acquisition is being reviewed in my current copy of Audubon Magazine with as one may expect from the above a reference to another of Aldo's pieces, "March: The Geese Return" also from "A Sand County Almanac" as follows:

Even if this book serves only to introduce some readers to the late Aldo Leopold, it will have achieved much. Here is an example of his cadenced words etching a picture and a thought:

One swallow does not make a summer, but one skein of geese, cleaving the murk of a March thaw, is the spring.

A cardinal, whistling spring to a thaw, but later finding himself mistaken, can retrieve his error by resuming his winter silence . . . But a migrating goose, staking 200 miles of black night on the chance of finding a hole in the lake, has no easy chance for retreat. His arrival carries the conviction of a prophet who has burned his bridges.

Significantly, all these pieces have been quoted from a single small volume of essays grouped in three parts:

PART I — Observations on a sandy marginal farm which served as a weekend refuge for Aldo and his family.

PART II — "Sketches Here and There" with thoughts on subjects that have built up his fame as a land and wildlife conservationist.

PART III—"The Upshot," in which as the publisher expressed it, "Leopold as a dissenter rationalized his dissent."

In that first section I could almost see Aldo, the serious and careful observer I knew so well when we were both sixteen-agers.

Way back then, too, Aldo proved himself to me the careful teacher as he did so convincingly as professor at Wisconsin U.

This was especially the case on my first trip with him to the Lone Tree Hunting Club across the river from Burlington to which he belonged and where he quickly identified for me not only a variety of ducks but also numerous other water fowl such as bitterns, grebes, cranes and so on. For me, too, it was quite an outing to go over there and back by train — in the winter when the river was frozen just a fair cross-country walk.

Even in those early days Aldo was very positive in his likes and especially his dislikes in regard to sneaky bird-killing cats and English sparrows which raided his nest boxes, and which he shot with much finesse.

He used a single-barrel shot gun which if I remember correctly he paid only seven dollars and something for (mail order) and which he boasted did the business just as well as the expensive gun his father possessed.

To do the job with the English sparrows, he would lay grain in a long row and then blast away from one end of the row for multiple killings. Years later, I read about this method of destruction in a Government bulletin.

In that sixteen-year-age period, Aldo was already conservation minded. He was especially enraged when a pioneering farmer (probably a squatter) cleared a few acres in the swampy woods directly across the river from the Leopold place and planted corn among the stumps. Later, when a high flood came and drove out the squatter, Aldo was full of glee and became quite disgusted with me when I expressed some pity for the farmer and his big loss.

In those early years of the century when many hunters were mere game slaughterers. Aldo was also opposed to spring shooting of ducks as a conservation measure. In his book, incidentally, he referred sadly to this slaughter business in the early days and quoted some published figures on amount of kill, especially of the now extinct passenger pigeon.

Another dislike, if one would care to call it that, was Aldo's disdain of the women of a local bird club and the way they got stories of their limited activities in the papers. Pleas from them for guidance were ignored with consumate contempt. And did he give me the haw-haw the next year when he was at Lawrenceville and I wrote how I had become involved.

John Dunham, who was carrier boss, had spotted Chapman's Bird Handbook in my bag as he was counting my allotment of papers and spread the word to the ladies without my knowledge that I could expertly guide them to the whereabouts of an early morning hangout of a flock of evening grosbeaks that I had told him about.

So one morning at 6 o'clock, as I was finishing my route near the hangout in Ransom's Hollow near Main Street, John showed up with a group of the ladies and of course as would happen the rare evening grosbeaks were elsewhere.

In the book of rough notes of the time that I still possess is the following on this episode: "The next morning the grosbeaks were again in their usual place so I telephoned from Leopolds, Mrs. Cooper (leader of the party the day before). She came out on the first car and so I was able to show her a flock of these most beautiful birds, fifteen females and three males."

Early Morning Boat Ride

On a following Saturday I met Mrs. Cooper and Mrs. Crapo at 6 a.m. down at the river levee and rowed them across the river where I led them to another washed out clearing where some poor devil had built a shack and had tried to make a go at farming.

It was here I had found the odd-acting yellow-breasted chat a-cavorting. The bird was still there cawing and chuckling his strange notes.

The ladies were greatly impressed by the way I guided them with some luck, of course, to this odd bird's hangout. I was wearing hip boots and I had quite a time leading the ladies around various water holes left over from the big flood several weeks before.

It was then at the time of that flood that I had rowed around and over this clearing and also up the old ferry road as far as the CB&Q railroad bank. And seeing, too, clusters of snakes in various protruding bushes.

Going over, the river was its usual early morning glassy smoothness, but on the return several hours later a sudden wind began to toss up some nasty waves that not only gave me a hard time pulling the oars but also an inward scare because of my important charges. They, however, nonchalantly sat together on the back seat and were so busy discussing their bird-watching finds and making notes thereof that I doubt they even sensed any element of danger in the crossing.

Recently I have been noting the name, A. Starker Leopold, in print, especially in a review of his book, "The Desert" (Time, Inc.) which I read in my copy of Natural History published by the American Museum of Natural History.

Suddenly it dawned on me that Starker was a fine old Burlington family name and was Aldo's mother's maiden name.

When I acquired this new book I learned the author is Dr. Leopold, if you please, and is Professor of Zoology at the University of California and Associate Director of the Museaum of Vertebrate Zoology and also Assistant Chancellor of the University. I assume the A stands for Aldo. Co-incidentally, in that same issue of Audubon Magazine mentioned above in which one of Aldo's pieces is reviewed, A. Starker Leopold is listed as chairman of a distinguished Advisory Board whose findings were quoted in full with the heading "A Startling Report to the Secretary of the Interior on Wild Life Management In the National Parks."

Thus, one can see that a distinguished son is carrying on in the steps of a very distinguished father.

Finally, I was sorry to see nothing either in "A Sand County Almanac" or "Round River" about Aldo's early nature studies in the Burlington area.

In that notebook of mine, I had a crude chart with places for notations on dates, weather, locality, birds, flowers and so on and again and again in the miscellaneous column there was a Saturday note, "Flint Creek by street car with A.L."

A piece by him on birding in that interesting Flint Creek region would really have been something; or something else, pungently expressed on the preservation of a natural area such as the wooded bottom area of Illinois as so desecrated by the crude clearing across from the Leopold place; or even observing the delicate prothonotory warbler while slowly rowing up winding Pinkham Slough or observing this same slough on a later autumn day its surface completely carpeted with vari-colored leavets and tunneled with similarly colored branches.

'Burlington's Most Brilliant'

Nevertheless, it's a continual thrill to see quotes as noted above or mention of Aldo's important work continually appearing such as I have seen in an Atlantic Monthly series on "Our National Parks in Jeopardy" or in the Book-Of-The-Month-Club selection of last March, "Face of North America," by Peter Farb (Harper & Row).

So I say Aldo Leopold can be listed as tops among Burlington's brilliant sons.—**EDWIN A. HUNGER, Route 9, Box 730, Battle Creek, Mich.**

Every Farm in Wisconsin to Be a Game Preserve

Prof. Leopold Finds German Methods Practical Here

By Clifford F. Butcher

OF THE JOURNAL STAFF

WITHOUT taking part in the controversy going on between the federal forest service and the state conservation department over the ability of Wisconsin's forests to provide food for all the deer now grazing in them, Aldo Leopold, professor of game management at the University of Wisconsin, points out the dangers to both deer and forests which result from overstocking. He bases his warning on observations which he made in the fall in Germany and Czecho Slovakia, where he spent three months seeking new ideas applicable to game cropping in Wisconsin.

"What conservationists often fail to realize is that overstocking, where it exists, is no temporary difficulty, "Prof. Leopold says. "An overbrowsed forest takes years of nearly complete rest to recover its carrying capacity, while a starved deer herd deteriorates in antler development, sex ratio and reproductive capacity.

"The German forests are overstocked, not only because they carry too many deer, but because large areas have been planted to pure spruce or pure pine. Such forests contain no deer food. Should Wisconsin foresters and CCC camps make the mistake of planting large solid blocks of pure conifers over large areas, we might readily, after 30 or 40 years, find ourselves unable to carry even a moderate deer population. On the other hand, scattered blocks of conifers will be highly beneficial to many deer ranges by creating additional cover.

"The time to start a rational adjustment between deer and forestry is right now."





German sportsmen at a field trial for deer hounds. These hounds are used not to chase deer but to trail and find wounded animals. The dog shown is a Bavarian "Schweisshund."



Above, Center—Ready for a pheasant drive in Germany. The "guns" stand at one end of this clearing while the pheasants are being driven from the other. Small farmers as well as landed proprietors conduct pheasant drives for their own pleasure.

German game officers inspecting a farmer's food patch. The spruce cover in the background was planted as a shelter for pheasants.



A spruce tree showing the scar of an old injury by deer. Deer bite young spruces when there is a vitamin deficiency in their diet.

Fifteen Years a Forester

As occupant of the chair of game management, endowed two years ago by the Wisconsin Alumni Research Foundation, he is encouraging "game cropping" in Wisconsin. His own interest in the project grew out of his work in the United States forest service. He went to New Mexico as a forester in 1909, after graduating from Yale forestry school. During the 15 years he spent in the service in the southwest he discovered the possibilities of increasing game population by providing cover and food.

From 1924 to 1928 he was associate director of the forest products laboratory at Madison, and then he again took up his studies of wild animals and birds, making a two-year game survey of eight middle western states for an arms and ammunition manufacturers' organization.

During the next two years he helped write the Iowa conservation plan and then he went to the University of Wisconsin to take the newly created professorship of game management.

A few years before Prof. Leopold took up professional game work the study of "game cycles" was started in this country. It had been discovered that periodically, at intervals of about 10 years, certain species of game were subject to diseases which caused their virtual disappearance from vast areas in northern North America. Increase and decrease of game population was found to occur with cyclic regularity, and for 10 years scientists have been seeking the cause.

AN INTERESTING contribution to the research was the observation that periods of high and low mortality seemed to coincide with those of varying intensity of solar radiation. Prof. Leopold and graduate students doing research work in the department undertook to discover whether there was any relationship between "sun spot" activity and game mortality. They assembled data on both solar radiation and fluctuations in game population. Information concerning the latter was meager in the United States; game censuses are a recent development. In Canada, however, the records of the Hudson's Bay Co. revealed the seasons when game was plentiful and when it was scarce over a period of 150 years. But the study still could mean nothing if confined to one continent. Scientists in England, Scotland and Russia undertook similar studies there, and finally, when Prof. Leopold went to Europe in August, he extended the investigation into Germany and Czecho Slovakia, where no work of the kind had been attempted before.

The results of his research were spread out in his office at Madison the other day—tabulated sheets, half the size of the desk top, on which the game kills on Czecho Slovakian estates for 200 years were recorded in German script. The report for one estate went back to 1727.

Those records, kept through two centuries by owners of large estates, may help to explain why game dies off periodically in Wisconsin today. Each generation of proprietors proudly noted in their guest books the number of "hasen," "auerhaehne," "birkhaehne" and "rebhuehner" which their guests killed each day. Light bags throughout an entire season on several estates could not be attributed entirely to the poor marksmanship of the sportsmen. There must have been some good shots among them. Nor, when hunters came in day after day with full bags of hares, grouse and partridges could their success be credited to their marksmanship alone.

Research to Be Work of Years

These records of hunting success and failure are being translated into zigzag lines on graph paper and will be matched against similar graphs for solar activity over the same period. If coincidence between the two is found in a belt encircling the northern hemisphere, support will be added to the theory that solar conditions in some manner affect the life span of animals and birds.

Years must pass before the scientists can say definitely whether there is any relationship between the two. More years would elapse before the knowledge could have practical value, for the nature of the influence still would have to be determined, and also the possibility of counteracting it. Of more immediate significance were the observations which Prof. Leopold made of methods employed on the estates and farms of Germany and Czecho Slovakia to encourage the propagation of game.

"There is an erroneous assumption prevalent in the United States," he says, "that game bird cropping in Europe is highly artificial. Artificial propagation is successful only with pheasants, and in Germany there are few game farms such as we have here where pheasant eggs and live pheasants may be bought. Even on the large estates no more than half the pheasants are hatched in incubators or under hens. Instead of stocking their land with birds produced in that manner, the farmers and estate owners provide facilities to encourage natural propagation—suitable cover for the game and feed to carry it through the winter. The amount of game which an otherwise absolutely bare farm is made to produce through the provision of suitable winter cover and feeding there is astonishing. They are years ahead of the United States in game management.

"Every acre of forest land in Germany, whether state or privately owned, is cropped for game. Not all the farm land is cropped, but most of it is, whether in small farms or in large estates.

"THE small farmers, living in farm villages or communes, frequently crop their land collectively, encouraging the growth of natural cover in suitable locations, sharing the task of winter feeding. Food patches are numerous—small areas where grain is left on the stalks which lift it above the winter snows. Wisconsin farmers in increasing numbers also are planting food patches, but many more of them are needed. Here, where labor is neither so plentiful nor so cheap as in Europe, winter feeding is done through hoppers, which need to be filled no more than once or twice a week. In the German speaking countries of Europe, nearly all winter feeding is in straw piles, where feed may be scattered every day.

"Many German farmers propagate game for their own recreation. They take great pride in being able to invite their friends out for a day's shooting—a privilege once reserved for the wealthy and the landed aristocracy. Such invitations are considered quite an honor by the clerks, salesmen, small business and professional men who receive them. It is a situation quite different from that here, where many city folks seem to look upon privately owned farm land as a public domain where they are free to bang away to their hearts' content.

"It is seldom that the game croppers make any substantial revenue off of the birds on their land. They do, to be sure, often lease their shooting rights to sportsmen, but even then, profit is hardly the impelling motive. The lease revenue simply enables the farm owners to help defray the expense of cropping their land for game.

Movement Shows Love of Soil

"Really, game cropping is a manifestation of that intense love of the soil which is found throughout Germany. It is inspired by the same interest that sends thousands of young folks hiking over the country, and which empties the cities of all who can get out of them every week-end. The roads leading out of the cities are jammed on Saturdays and Sundays with cyclists and hikers. Their interest in nature is real. They know about the vegetation, the birds and the animals they see. Not many of the week-end pilgrims drive automobiles. Even if motoring were less inexpensive, they would probably prefer to hike rather than drive. Those people want to get their feet on the soil. That surging interest in nature impressed me more than anything else in Europe.

"For the farmers, their land is more than merely a source of livelihood. It is a part of them. Many of them are descendants of families which have lived for generations on the same farm. They and their fathers built up its soil. They know every foot of it, and take a personal interest in everything that it produces. They know the habits of the birds and animals that live on it—know about the wild flowers and trees and weeds. Game cropping there probably grew out of that interest—today it helps to keep the interest alive.

"You see the same feeling toward nature growing among the farmers and farm boys who are engaged in game cropping here in Wisconsin. It might come naturally in the course of time, as the farm population became more static, as generation after generation of one family occupied the same plot of ground. But meanwhile we might lose some of our most valuable and interesting native species. Our objective is to hasten its development so that game cropping can get into operation while there is still some native game left to crop.

"IN GERMANY, an interest in nature and the opportunity for shooting that game cropping gives them have helped solve the problem of keeping boys on the farm. They have no desire to leave it for jobs in the city; they leave only when they have to. Even among city boys there is a feeling that one 'graduates' to a farm instead of away from it."

Every applicant for a hunting license in Germany must have a thorough knowledge of natural history. Much more than a dollar and an inclination to shoot is required there. Obtaining a license is an intellectual achievement, and the license has something of the significance of a school diploma. Young Hans and Fritz begin to prepare for it from the time they are able to toddle out to the fields with their fathers. To obtain it, they must be able to recognize every bird and beast that lives in their district—must know their habits. They must know about the vegetation, as well, and must be familiar with every requirement of the game laws. Finally, they must know how to handle guns with safety.

Prof. Leopold watched the examination of one class of applicants for licenses. "Even as a spectator, I was tired out when it was finished," he says. "Most of the applicants were in their early twenties. Since they were boys they had been studying for that test—and the examinations lasted through the entire day.

"The applicants were questioned concerning their knowledge of animals and birds. Their ability to recognize various species at rest and in flight was tested. They were given a stiff examination in botany, as well as biology, and finally they were required to prove that they knew how to handle a gun safely.

Rigid Tests for Licenses

"They fired at clay pigeons to prove their marksmanship, and then they were taken out into the fields and examiners watched how they handled their guns under hunting conditions—how they carried them in the open field, how they handled them when beating through brush and climbing through fences. One 'break' in pointing the gun at another would 'flunk' the applicant."

Prof. Leopold has no statistics on the effect such a thorough test of candidates for hunting licenses has in reducing the number of accidents from guns. It has not eliminated them entirely. "But there is no doubt," he says, "that compelling every hunter to prove his ability to handle a gun before letting him carry one into the field must reduce the number of accidents materially."

The casuality lists which result from every open shooting season in Wisconsin, whether for deer, upland game, rabbits or waterfowl, tell the story of what happens when there is no regulation of any kind. More than 200,000 licenses were issued in the state last year—almost a quarter million persons were turned loose with guns in forests and fields without any assurance that they knew how to use the weapons they carried, or that they could distinguish between a milk cow and an antlered buck at 100 yards—or between a pheasant and a hat on a farmer's head.

Prof. Leopold's trip was sponsored by the Carl Schurz Memorial Foundation for furthering relations between the United States and German speaking countries. Five foresters from the federal forest service were sent over by the foundation at the same time to study methods of forestry in countries which long ago discovered methods to perpetuate the production of forests as well as means to keep game living in a natural state in densely populated farm regions.

"THE 'reich' does not try to do the actual work of game management, as we do in this country," Prof. Leopold says. "Instead, it encourages the individual land owners to do it themselves—to manage the game on their own farms. The reich directs its efforts to devising regulations, enacting laws, sponsoring rewards to stimulate the farmers to raise their own game. It is a more efficient system than ours. State and farmer have their own duties in the project, so well defined that there is little duplication or conflict of effort."

Prof. Leopold sought additional knowledge with which to help Wisconsin farmers develop game crops on their land. "We're trying to get in a position where we can tell farmers how to go about it," he says.

The duties of his department, he explains, are "to conduct research in the life history of Wisconsin birds and mammals; develop cropping methods suitable for their preservation and increase; train men to devise and apply such methods; impart to other students a general understanding of the wild life conservation problem; assist farmers and other land owners in selecting and applying cropping methods; integrate game with other uses of land, and advise conservation officers on questions of wild life management and policy."

His is a graduate department. Graduate students carry on research there, get actual experience in game management on state lands, and the privately owned lands where the university co-operates with farmers in game cropping. After two to four years of graduate work, the student receives his degree as master of science or doctor of philosophy. In addition to such research direction, Prof. Leopold gives a five-week lecture course in methods of game cropping to the farm boys who attend the 15-week short course at the college of agriculture.

Control of Environment

"We give no courses in artificial propagation or game farming," he says. "We are interested primarily in the preservation and increase of wild populations by control of their environment. The methods are simple: Restoring adequate winter and nesting cover and providing winter feed. Evergreens and grape vine tangle reaching above the snow provide excellent winter cover. Nesting cover may be low, not necessarily dense, weed growth, last year's grass and the like, left standing for the birds. It is extremely necessary, as without it the birds nest in hay meadows and their nests are destroyed by the mowing machines. Feed hoppers and food patches furnish feed through the winter. Many farmers and farm boys as well as sportsmen have become interested in feeding, but the practise of leaving cover grows more slowly. The motive for such activity that we emphasize is that of farm recreation. It fills the farm with birds and provides good hunting for the farmers and their friends."

Game cropping is being practised more or less extensively today on 620,000 acres of state and privately owned land, as well as on the almost 2,000,000 acres of national forests in Wisconsin. The soil erosion service, in co-operation with farmers in the Coon valley soil erosion project, is conducting one of the largest of Wisconsin's cropping ventures in La Crosse, Vernon and Monroe counties. There the natural propagation of quail and ruffed grouse is being encouraged on 92,000 acres.

THE university is co-operating with farmers at Riley, in Dane county, on a 2,000-acre project for pheasant and quail, and with farmers near Faville Grove, in Jefferson county, to encourage Hungarian partridges and quail on 1,600 acres. In addition, it is cropping pheasant and quail on the 1,200 acres included in its farms and arboretum in Dane county.

The state conservation department is carrying on work for waterfowl, grouse and deer, in co-operation with the agricultural adjustment administration and the United States biological survey, on 150,000 acres in Juneau, Wood and Jackson counties, the central Wisconsin conservation district. The conservation department also is carrying on game cropping work in 49 private refuges, 16 state refuges and 43 licensed shooting preserves in various counties.

The United States biological survey is co-operating with the state in improving conditions for waterfowl on 30,000 acres in the Horicon marsh, in Dodge county, as well as conducting waterfowl projects on 50,000 acres in the upper Mississippi refuge.

The United States forest service is in charge of the work in the 2,000,000 acres of national forests, where particular attention is being given to the requirements of deer and grouse.

The five public agencies above mentioned are co-operating in the effort to protect and increase the game population of Wisconsin. Prof. Leopold believes, however, that in the last analysis the game population of the state will be determined, not by government activities, but by the extent to which the farmers themselves practise game cropping.



Prof. Aldo Leopold, who holds the chair of game management at the University of Wisconsin and who has made an intensive study of game methods in Germany and Czecho Slovakia.

Feb. 23 - 1939

WISCONSIN STATE JOURNAL

An Expensive Habit

Conservationists Join Farmers to Chase Birds from Hayfields

Wisconsin farmers and conservationists are trying to get game birds out of the expensive habit of nesting in hayfields. To do it they are trying to furnish natural cover away from hayfields, where the birds run less chance of being killed or having their nests destroyed by mowing machinery.

After examining nearly 500 nests before and after the hay crop was moved in each of the past four years, Aldo Leopold and Arthur Hawkins of the Wisconsin college of agriculture have decided that game birds' choice of nesting places seems to differ somewhat from year to year, depending upon the stage of growth of various types of vegetation—which in turn depends upon the weather. It may be new alfalfa or clover, old fencerow grass, roadside weeds, or even old stubble that looks best to the birds when they are ready to nest.

Hay Attracts Them

It was discovered that in 1938, when Wisconsin produced the largest hay crop in its history and the largest crop of any state, hay attracted unusually great numbers of birds. As high as 16 nests were found on eight acres—all destroyed by the mower. Pheasants or partridges which lost their nests in alfalfa tried again in the oats, where the binder caught them before the new clutch of eggs was hatched.

Leopold and Hawkins have concluded that it is worthwhile to leave fencerow cover, and to protect woodlands and marshes from grazing and burning, even though such cover is only in partial remedy for hayfield nest losses.

"Experience shows that farms with such natural cover will seldom lack a good population of wild birds," observed Leopold, **"even though many birds may still nest in hayfields. The hay will attract the most birds in those years when the hay is early and not too dense."**

In answer to the question "what to do about it in such years?" the Wisconsin gamet specialist admits there is no satisfactory answer at present.

"Flushing rods" attached to the mowers have been tried, and found to do some good. Farmers find, however, that such contrivances are rather troublesome to use, and do not always flush the setting hen in time to save her life or enable the operator to leave an island of uncut hay around the nest. Nor does the hen always come back to a nest left in such an island.

Winter Grain, Too

Regarded by some management specialists as of unusual significance is the fact that winter grain attracts many nesting birds, since it usually grows to a good size in time for the first nesting. Here the eggs usually have time to hatch. Crop specialists have found that winter grains yield better than spring-sown varieties over much of Wisconsin, hence it is thought that it would be to the advantage of farmers as well as game birds if more winter grains were grown.

At all events, it is believed that Wisconsin must face the fact that its popular combination of spring grain and alfalfa probably will result in wholesale destruction of birds' nests in certain years.



ALDO LEOPOLD

Veneer Log Trade Bright Spot in Timber Business

By F. B. TRENK
Extension Forester,
University of Wisconsin

The market for rough forest products has witnessed continued restriction of railroad tie purchases at slightly reduced prices, and an extremely low demand for Wisconsin-cut pulpwood.

Few sales of stumpage have been reported. Saw log prices have remained firm, largely because mills have bought by contract only, with the result there have been few distress sales at abnormally low prices.

The brightest spot in the market is in the veneer log business.

Several price ranges for southern Wisconsin follow:

Timber stumpage—$8-10.

Crosstie stumpage—mixed oaks, 15 cents per tie cut.

Saw logs—f. o. b. siding or on cars—red oak and hard maple, No. 1 logs, $20; No. 2 logs, $10; basswood, No. 1 logs, $25; No. 2 ogs, $10-$12. Delivered at mill—red oak and hard maple, No. 1 logs, $25; No. 2 logs, $15; basswood, No. 1 logs. $25-30; No. 2 logs, $15.00.

Veneer logs—Delivered at mill—river birch, mixed, $25; soft maple, mixed, $20.

State Forest Roads to Get $2,814,400 of U. S. Cash

WASHINGTON, D. C.—Appropriation of $2,814,400 for highways and $1,255,800 for truck roads through federal forests in Wisconsin has been announced by the federal forest service.

The money will be part of a half billion dollar spending program for national forest roads and trails during the next 10 years.

The completed system will include 24,173 miles of first class highway 113,396 miles of truck roads and 152,840 miles of foot trails—all vital to forest administration and protection.

Engraver:
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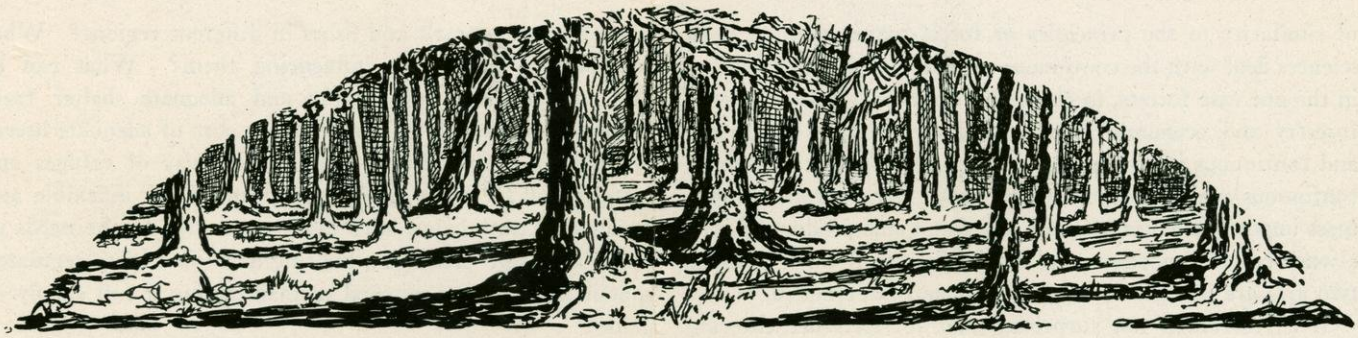
Start folder for "Literary Essays"
and file this in it. Remind me
next April to bring Marjorie an actual fruit specimen

OK.

AS



Amer Forestry Sept 1928



EDITORIAL

Pennsylvania's Forest Bond Issue

WHEN the political smoke of the November elections has cleared, the forest eyes of the nation, figuratively speaking, will be fixed upon Pennsylvania. It is then that the long standing proposal of a forest bond issue of $25,000,000—the largest in the history of state forestry—will have been decided definitely one way or the other by the people of that state. The purpose of the bond issue is to provide money for the immediate acquirement of a system of state forests which will in some measure meet the social and economic requirements of future generations of Pennsylvanians. As is well pointed out by the Pennsylvania Forestry Association, the forest bond issue is one of the most far-reaching propositions that has ever been presented to the people of the state. It is not a fanciful notion of visionary idealists but an investment that will appreciate in value and will assure to all citizens of the state the many gifts that forests, and forests alone, can bring.

That the state is in urgent need of more home forests cannot be questioned. There was a time when Pennsylvania stood first in lumber production among the states of the Union. Today eighty-four per cent of Pennsylvania's lumber and seventy per cent of her pulpwood needs can be supplied only by importations from far distant states. The present per capita consumption of lumber is three hundred board feet annually, of which only fifty-eight board feet can be supplied by the sawmills within the state. In other words, for every ten board feet of lumber now needed by the people of Pennsylvania eight must be obtained from outside sources.

In the face of present needs the situation is bad enough. What it will be for future generations is not pleasant to contemplate. More state forests and more trees growing on Pennsylvania's thirteen million acres of forest land becomes, therefore, an economic necessity of large magnitude. The use of bonds to provide a system of state forests within a reasonable time and before it is too late to provide for future wood needs is strongly supported by the argument that forest restoration benefits future generations more than the present and that, therefore, the taxpayer of tomorrow should help meet the cost of the investment. It seems certain that future generations, if they could speak today, would cry out "Give us forests at any price."

Pennsylvania has long occupied a position of leadership in state forestry. Small though its present system of state forests is compared to the population and wood needs of the state, it has proved the wisdom of the men who initiated the movement twenty-seven years ago. Its state forests at the close of 1927 aggregated 1,132,000 acres purchased at an average price of $2.26 an acre. These lands are today valued at $12.50 an acre. As forest producing properties, they have returned to the state $734,782 of which $427,462 have gone to increase the state school fund.

The state that takes care of the needs of its present citizens and at the same time looks out for its future generations wears the real mark of progress. Its beneficent leadership instills pride of citizenship in its people and enriches their love of man and home and country. As a powerful force of example, its influence spreads outward to other states and gives birth and growth to progress in distant fields. By passage of the forest bond issue, Pennsylvania will seize a rare opportunity to forge its raw forest lands into a cornerstone of future prosperity and social advancement.

Industry and Game

THE decision of the Institute of Sporting Arms and Ammunition Manufacturers to undertake a nation-wide survey of game conditions and the needs of game management is among the significant and promising developments in game protection in recent years. If this survey develops its full promise, it should make a contribution of the first magnitude to the science of game protection and game production. By good fortune, the Institute has retained the services of Mr. Aldo Leopold, a well-known forester who is also one of the foremost authorities in this country in the field of game management. After nearly twenty years' experience in the Forest Service, in research, in administration, and in the practical management of natural resources, Mr. Leopold brings to the field of game research and game management a wealth of knowledge and skill developed in a closely allied field. The principles of game management have many points

of similarity to the principles of forest management. Both sciences deal with the continuous production of living crops—in the one case forests, in the other, animals. Both economic forestry and economic game management imply the steady and continuous harvesting of the mature crop and its equally continuous replacement by a new crop. And forests being a most important haunt of game and fish, game production will always be an important part of the forester's work and the two arts are inextricably interwoven and interrelated.

It is, therefore, not surprising that foresters are entering more and more the field of game management. For many years the Forest Service, both independently and in cooperation with the states, has played an important and successful part in game protection in the National Forests. Before he was called to the head of the Biological Survey, Mr. Paul G. Redington had had a long and distinguished career in forestry and now the calling of Mr. Leopold to undertake a national survey of game management is another proof of the close interrelation of forest and game management.

In undertaking this survey, the Institute of Sporting Arms and Ammunition Manufacturers is performing a valuable public service. Although some promising work has been done in the field of practical game management research, the fact remains that thus far our game protection and game production have been based on rules-of-thumb, guesses, and "hunches." Most of the research on wild life has been in the field of systematic descriptions and classification. But now we are confronted with the practical question, "What shall we do to save our game?" The answer to this question demands a vast amount of research which is only another name for fact finding. What is actually happening to our game birds, mammals and fishes in different regions? What controllable factors are influencing them? What can be done about their food supply and adequate shelter from natural enemies? How can we make sure of adequate breeding stock? What do we need in the way of refuges and rest-grounds? What can we do to make our inflexible and antiquated state game laws more responsive to the needs of living animals? How can hunting as a sport be so regulated that it is no longer inimical to maintaining a full supply of game?

These and a hundred other questions press for an answer. The survey provided by the Institute will answer some of them. Still more important, it promises to establish new principles and procedures in the field of game management. It promises to emphasize game protection as a constructive, productive art in a way it has never been emphasized before. No doubt the backers of this enterprise have a measure of self-interest at stake; for the depletion of the game supply naturally means a decreased market for small arms and ammunition. But this is not the whole story. The modern industrial research institute is not merely a sign of more intense competition; it is also the embodiment of new industrial ideals and a recognition of industrial responsibility toward our natural resources. The growing ideal of public service by industry is no mere gesture to obtain public favor; it is a symbol of the fact that the highly specialized and scientific technique of modern industry has its own interest and fascination for the men engaged in it. So the public will watch with keen interest this scientific enterprise in game management so generously undertaken by an important industry.

Opposition and Opportunity

FORESTERS are so sure that planting and caring for trees is worth while that anything in the nature of opposition or coolness comes as a shock. The answers to a forestry questionnaire recently returned by fifty-two out of sixty-five county agricultural agents in Kansas are a case in point. Eight of these men reported that farmers in their counties have no interest in forestry. Furthermore, they expressed the opinion that windbreaks or shelter-belts are of doubtful value on Kansas farms. Shortly afterwards there came to this office a letter from the Arctic explorer, Vilhjalmur Stefansson, in response to an invitation to join The American Forestry Association.

Mr. Stefansson was born and brought up on the prairies of Manitoba and has spent more than ten years in the Arctic. "It is the one landscape that thrills me," he wrote, "and I would be more likely to contribute money to a defense organization to prevent the encroachment of the forest upon the prairie than to contribute toward the planting of trees. . . . I have no doubt that the tree fans are going to win out."

Contrast this with the following statement credited to Luther Burbank: "You will notice that the substantial, the thrifty, the worthy and the likeable classes of people plant trees, no matter whether they are in a new and treeless country, or in one already well planted, and that the shiftless, the transient, the careless and the selfish are as little likely to set out sheltering trees as they are to be neat, thrifty or good neighbors.

"Show me a developed town with no trees and I will show you a town to avoid as a home for your families. This is not by chance; the planted and the tended tree is as sure a sign of civilization as the revered flag or a church spire or a schoolhouse belfry, and the English, who have carried civilization to every part of their dominions scattered far and wide about the earth, plant shade trees almost before they finish their houses or start their towns."

Dr. Stefansson's good-natured closing phrase—"No doubt the tree fans are going to win out," throws out something of a challenge. No doubt we will win, but with fire and wastage and public apathy, we who admit to the term "tree fans" cannot sit idly by. There is work for every one of us in every part of the country. The Southern Forestry Educational Project of The American Forestry Association is but one example of opportunities before us.

ANIMALS

Doak's Polly

The Old Soak, famed profane parrot belonging to Secretary of State Henry Lewis Stimson, has long been the Cabinet's most publicized pet. Last week the nation learned of a new Cabinet parrot, Polly Doak, pet of scowling William Nuckles Doak, the new Secretary of Labor. Said Mrs. Doak: "She won her way into Mr. Doak's heart. He went shopping for canary seed and Polly, loose in the pet shop, settled on his shoulder and said, 'Pretty boy, I love you so.' "*

Dog Racket

The American Society for the Prevention of Cruelty to Animals last week warned U. S. citizens to be careful in their dog buying. Smart, short-haired, clip-eared brown dogs if not purchased at reputable pet shops, may turn into long-haired, white dogs when taken home. Dogs with becoming black spots may lose them in their first bath. A. S. P. C. A. officials advised dog owners to report all curious happenings at once. Such dogs are probably stolen pets, victims of an organized body of dog racketeers.

Scouts of the dog racket work in wealthy neighborhoods, observing dogs and little boys. They encourage the boys to bring them stray dogs at first, paying small sums. They then offer larger sums for household pets. Sometimes racketeers pose as A. S. P. C. A. officials, snatch up dogs when they are taken out for an airing. Dogs caught in one State are often sent to another State to be sold. Purchasers asking for an expensive dog in unscrupulous shops will almost always get what they want. The pet shop owner will have a scout steal one to order.

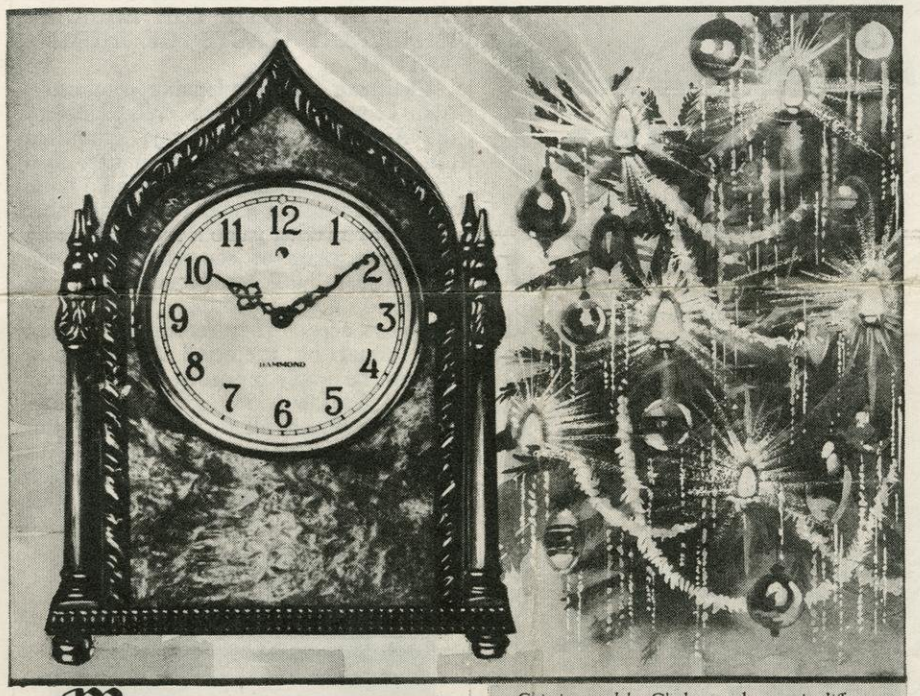
Game Conference

Annually for 16 years U. S. and Canadian game officials, game breeders, scientists, sportsmen have met to talk over conservation problems at the American Game Conference held under the auspices of the American Game Protective & Propagation Association. Last week in Manhattan they met for the 17th time. This time, they had important work to do. Two years ago they had appointed a committee to study game conditions, to draw up a constructive plan for increasing North American game. The committee had its report ready for consideration.

President Hoover, fisherman-author of *A Remedy for Disappearing Game Fishes*, acknowledged the importance of the occasion by sending a telegram: THE PROTECTION AND PROPAGATION OF THE USEFUL WILD LIFE OF THE COUNTRY IS OF MUCH GREATER IMPORTANCE THAN IS GENERALLY REALIZED. . . . THE BIOLOGICAL FACTS SHOULD BE FIRST

*James John Davis, retiring Secretary of Labor, calls Secretary Doak the "handsomest Secretary of Labor in American history" (TIME, Dec. 8). There have been but two others: short, stocky, purse-lipped James John Davis; short, slight, white-haired William Bauchop Wilson.

MASTER TIME - *Electrically*



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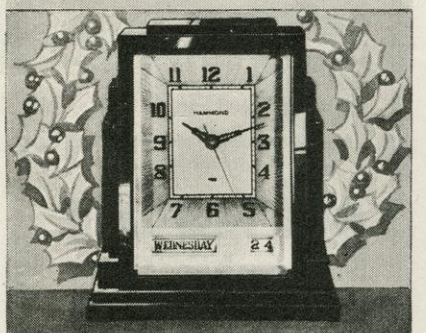
The Ravenswood model 6" high in walnut colored bakelite $9.75, with buzzer alarm $12.50



The Gothic mantel model walnut, spun silver dial—5½" in diameter, 12" high, $29.50



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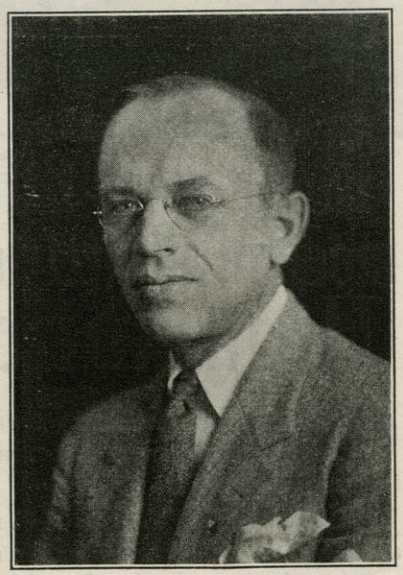
ASCERTAINED AND MEASURES PLANNED IN ACCORDANCE WITH THEM AND WITH THE EQUALLY IMPORTANT FACTS OF HUMAN NATURE.

Chairman of the planning committee, Aldo Leopold of Madison, Wis., chief of the American Game Survey, submitted the new program. The committee had found that American farmers can do more toward increasing game than any other agency by making game a secondary farm crop. Six years of compensating game-wise farmers in Texas, for example, have increased good shooting preserves to 2,500,000 acres. They recommended that the farmer be protected from lawless hunters, be amply rewarded for his work.* Quail, pheasants, Hungarian partridge, rabbits, squirrels all thrive on the farmer's cultivated land. Other game lives better in forests, wildernesses, land which is cheap enough to be maintained as public hunting grounds. The committee advised



American Game

ALDO LEOPOLD

"Let farmers be game-keepers."

that public ownership of these lands be extended as fast as possible, that Game Administration & Management be made a profession like Forestry or Agriculture.

The Game Conference approved the Leopold committee's plan. It also: adopted a resolution to bring about laws stopping the sale of black bass in the ten states which permit it; recommended to the Secretary of Agriculture that beginning February 1932 repeating shotguns be restricted to three shots per loading. Gun manufacturers are willing to co-operate.

Among famed conservationists at the game conference were Senator Frederic Collin Walcott of Connecticut, chairman of the Senate Committee on Wild Life Resources; Dr. Thomas Gilbert Pearson, president of National Association of Audubon Societies; Senator Harry Bartow Hawes, Senate Commission on Migratory Bird Conservation; Col. Arthur Foran, comptroller of the Port of New York, vice president of More Game Birds in America, Inc.

*This conclusion and plan are shared by the rich foundation, More Game Birds in America Inc. (TIME, Nov. 24).



Nerves and handkerchiefs

WE TRY, in our hostelry, to keep your nerves and handkerchiefs from fraying. We believe our rooms have an atmosphere of quiet restfulness, so that even in the busy center—45th Street—of this busy city—New York—your nerves may be soothed and relaxed at the end of the day. And we launder your handkerchiefs carefully *by hand*, and try to return them to you not ragged and frayed at the edges.

Conveniently located as we are, delicious as our meals may be, efficient as we consider our service to be—still, without our constant attention to little *extra* courtesies such as these, we could not possibly justify the loyalty which our friends continue to show us.

Won't you come and visit us?

The ROOSEVELT

MADISON AVENUE AT 45TH STREET

EDWARD CLINTON FOGG, *Managing Director*

UNITED HOTELS

Naglis just
speech.

Reporter

BIOGRAPHICAL SKETCH

Leopold's interest in wild life conservation began (as is normal) with a boyhood passion for hunting and fishing. With his father and hunting companion, Carl Leopold,he roamed the woods and marshlands of Iowa, Illinois, and Michigan, and from him learned the rudiments of hunting methods and hunting ethics. Leopold recounts his bitter disappointment when, as a boy, his father took him out to see a magnificent flight of spring mallards, but would not shoot any. His father had voluntarily quit spring shooting nearly fifteen years before the law prohibited it.

In his high school days Leopold became an ardent amateur ornithologist and botanist. At this time he decided to become a forester, and in 1906 began his studies at the Yale Forest School. Upon the completion of his course in 1909 he entered the U. S. Forest Service and for two years headed a timber cruising party in the (then) wilds of the White Mountains of Arizona. In this roadless fastness flourished an abundance of big game and the last of the big cattle outfits of the old frontier. His later campaign for the retention of wilderness areas grew out of this experience.

Leopold then was made supervisor of the Carson National Forest in northern New Mexico, which entailed the inauguration of conservative grazing methods on a million acres of sheep range used by hundreds of not-very-peaceful Spanish-Americans and Indians. The gamelessness of this vast region first conveyed to his mind the importance of environmental factors.

His subsequent assignments in the southwest included work on grazing, publicity, recreational uses, and watershed conservation. He

wrote a manual for rangers on how to prevent erosion. About 1918 Paul G. Redington, then District Forester, appointed Leopold as Chief of Operations, which included the direction of all work in fire control, raods and trails, personnel, and finance in the National Forests of Arizona and New Mexico.

During this period Leopold's interest in game conservation as a personal hobby definitely crystalized. Working with a local group of sportsmen and forest officers, the New Mexico Game Protective Association was organized, and soon spread its branches over the state. "The Pine Cone" was published as its official organ. Its program included the reorganization of the state game department and the establishment of a statewide system of refuges. Eastern organizations, including the Permanent Wild Life Protection Fund and the American Game Protective Association, assisted its campaigns, financially and otherwise. The former awarded to Leopold its gold medal "for distinguished service to wild life."

About 1923 Leopold conceived the idea of deliberately retaining a series of roadless wilderness areas in the National Forests and Parks, and in company with Frederic Winn, Ernest Oberholzer, Robert Marshall, and others, wrote a series of papers in behalf of the proposal. Several such areas have since been formally established.

In 1924 Leopold became Associated Director of the Forest Products Laboratory at Madison, Wisconsin, where he made his first contact with scientific research methods and was impressed with their value as a tool for increasing the effectiveness of game management. He became a director of the Wisconsin Izaak Walton League. In 1928 he was offered the direction of the Game Survey about to be undertaken by the Sporting Arms and Ammunition Manufacturers' Institute, which he accepted, and on which he is now engaged.

During 1928-29 Leopold delivered a course of lectures on game

management at the University of Wisconsin, an extension of which he will shortly publish as a text on the subject. His "Report on a Game Survey of the North Central States" was recently published. A system of five game research fellowships, financed by the Institute and administered by the Biological Survey, has been inaugurated and placed in operation at the universities of Minnesota, Wisconsin, Michigan, and Arizona, and at Michigan Agricultural College.

Leopold's hobbies are hunting, fishing, and archery. His principal hobby of former days, conservation, has now become his profession.

April 30, 1931

Feb 11-1932

Y 11, 1932.

ALDO LEOPOLD TELLS SURVEY

Discusses Game Conservation Program—Talks to Waltonites Tonight.

"The last legislature of the state of Iowa appropriated $25,000 for a conservation survey of the entire state of Iowa," said Aldo Leopold, son of Mrs. Clara Leopold, and native Burlingtonian, who came here today. Mr. Leopold, who will have charge of the game survey will address a meeting at 7:45 o'clock this evening at the Hotel Burlington under the auspices of the Izaak Walton league.

"The law directed that the survey be made by a competent city planner and J. L. Crane of Chicago, was engaged by the state and will have charge of the survey," continued Mr. Leopold. "Mr. Crane engaged specialists to handle the various lines of work, one man having charge of the fish plan; one man, pollution; another, park plan; and still another game plans. This latter work will be my part of the plan.

"The game survey started last October and is under the direction of the fish and game commission and conservation board. It is hoped that the work will be completed by April 1. The findings will be published when other lines of work are completed at a later date.

To Be Comprehensive.

"The survey is to be a complete diagnosis of why we don't have any game and what to do about it. It will deal primarily with an appraisal of the condition of game range with respect to food, cover and protection because these factors determine the abundance of wild life. Food and cover are determined by agricultural conditions and practices so the whole problem boils down to finding what conditions are feasible.

"While the stock of pheasants in northern Iowa appears to be as good as in South Dakota the birds seem to be suffering even under the short open season now allowed hunters. The reason is probably that the natural increase is interfered with by the destruction of nests in hay fields. The remedy is to try to induce farmers to leave some grass so the birds won't have to nest in hay fields. The only visible way to get farmers to do this is to get sportsmen to compensate the farmer for the land so left.

ATTENTION

* * *

Notices of women's meetings, church groups, aid societies, lodges, King's Daughters, Parent-Teachers and other organization meetings, which are to appear in the Saturday evening's edition of the Gazette, are kindly requested to be submitted to the society editor not later than Friday at 2 p. m.

reau of fisheries. The park survey will be made by Mr. Crane, most of the work being done this coming summer."

The Duck Problem.

"The duck problem is interstate. One cause in Iowa lies in that the nesting grounds are mostly drained and even those remaining are graized out by livestock. The conservation plan is to recommend the restoration of many of the drained lakes and the fencing off of nesting cover on shores so the normal production capacity can be realized. It will also recommend total prohibition of shooting on many lakes even during the hunting season.

"Many things are being done. In order to get at a definite appraisal of how much game is left we are making a complete census of some 500 farms selected as samples all over the state. The census is being made through the game wardens. It is probably the largest game census ever undertaken. The census shows an average in northern Iowa counties of only one pheasant to 5 or 10 acres. The land should support one bird to the acre. The same figures hold for quail in southern Iowa.

Sanctuaries.

"Prairie chickens are almost exterminated. Only two counties in the state have an excess of 200 chickens left. The plan will recommend that the state set aside a series of sanctuaries to preserve prairie chickens. Food will be bought from farmers to build the birds up to the safe point.

"All sportsmen's organizations have donated an immense amount of work. The census was made by crews of volunteers whose services were donated by various sportsmen organizations.

"One of the most important recommendations will be the establishment of fact finding service at Iowa State college at Ames to advise farmers on game problems. A large part of the ineffectiveness of the past conservation policies has been a lack of facts and a lack of any effort to directly interest the farmer in the problems.

"Whole corps of men are being trained to execute the plan once it has been drawn up. The fish survey has just been started under the direction of Dr. Wiebe, of the bu-

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NEW YORK TIMES

JAN 3 1934

WALLACE APPOINTS 3 TO AID WILD LIFE PLAN

Committee Will Develop Proposal for Using Waste Lands for Game Birds.

WASHINGTON, Jan. 2 (AP).—Secretary Wallace today announced appointment of a committee to develop and supervise a nation-wide plan for promoting and protecting wild life.

With the approval of President Roosevelt, he named Thomas H. Beck of Wilton, Conn., editorial director of Collier's Magazine, chairman; J. N. Darling of Des Moines, newspaper cartoonist, and Professor Aldo Leopold of the University of Wisconsin.

The wild life conservation plan was originally suggested to President Roosevelt by Mr. Beck. Under it Federal conservation agencies would be concentrated under an administrator with two assistants.

The plan would link up with both the National Recovery and the Agricultural Adjustment Acts by making use of provisions in both measures.

It was estimated that employment would be provided for 2,000 to 10,000 men in improving drained lands formerly used by wild fowl as nesting and breeding areas.

The Civilian Conservation Corps already has done extensive work to reclaim land for wild game use.

THE ROTARY NEWS

MADISON WISCONSIN

Vol. XVIII | March 6, 1934 | No. 45

WILD GAME CROPPING

Aldo Leopold, well known conservationist, game hunter and sportsman, lover of the great outdoors, is going to talk to us Thursday on "Wild Game Cropping in Wisconsin."

It was just five years ago last week that Mr. Leopold last addressed the Club, then on "Fact Finding as a Means of Game Conservation." At that time he was engaged in a survey, if such it might be called, of the game conditions in the country. He is a recognized national authority on the subject and is Director of the Arboretum and Wild Life Refuge on Lake Wingra.

The address Thursday will be extremely interesting to everyone. Don't miss it.

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THE UNDERPRIVILEGED CHILD

Speaking on "The Underprivileged Child" before the Rotary Club last Thursday, Arthur H. Taylor, Executive Secretary of the Children's Home and Aid Society of Wisconsin, showed that from a mere monetary viewpoint, the organization which he represents saves the taxpayers many thousands of dollars annually.

Past President Fay Elwell, who for years has been actively interested in the Society and its work, stated that the organization is 45 years old, that it has placed 4,700 children in homes for adoption, 149 of them in Madison homes, while 159 have been taken from Madison into other homes. In introducing Dr. Taylor, Fay said that when he came to Wisconsin six years ago there were but six workers in the state, now there are fifteen, and that the normal "case load" is 1,200.

Forty percent of the fifteen to sixteen million people on relief this winter are children under 16 years of age, said Dr. Taylor. In Wisconsin the infant mortality rate is a barometer of the health conditions. Many children are living in constant fear—fear that their father will lose his job, fear that they will lose their home, fear that they will lose their parents. He said in the United States 4,500,000 young people leave school each year, ready to go to work, and that there is little work for them. This only adds to the problem.

Speaking of the work of his organization Mr. Taylor said there are only one or two places in the state aside from Madison and Chippewa Falls where it is possible to secure the mental examination of children, which is so important. And he said that so many inmates of the penal institutions are mentally ill.

Records were secured of ten feeble-minded women who married normal men. Those women have forty children, 23 of them are feeble-minded, 12 are backward in school, three are too young to be classified as yet, and only two are normal.

He stated that 169 new cases of unmarried mothers were reported to the State Board of Control in January. The Children's Code requires that such cases be reported to the Board of Control within 24 hours. It is one of the duties of his Society to secure the complete records in these cases, determine whether the mother should keep the child, whether it is fit for adoption, etc.

He said it costs the state $3.99 per week for the care of these wards, $207.48 per year, or $3,319.69 for board alone until they become 16 years of age. There were 33 such cases in Madison in 1933, which would mean a cost of $109,549.44 to Dane County if it were not for the Children's Code, and the work of the Children's Home and Aid Society.

In closing, Mr. Taylor cited a number of individual cases which demonstrated the great importance of the work being done.

LEST WE FORGET

BIRTHDAY GREETINGS

Hugh Greeley, March 5.
Ernie Miller, March 7.
Jake Feldman, March 10.
Chev SeCheverell, March 10.

———®———

ROTARY FIVE YEARS AGO

Prof. A. G. Barry, of the University Extension Division, gave an interesting and unusual talk on "The Making and Unmaking of Criminals" and told of the work in the training schools for policemen.

———®———

TEN YEARS AGO

Dr. Thomas E. Green, director of the Speakers' Bureau, American National Red Cross, gave a most enlightening address on "Guarding the Outposts."

———®———

FIFTEEN YEARS AGO

Dr. C. A. Harper, Secretary of the State Board of Health since "away back when", gave a very interesting address on the work of the State Board, which was a revelation to many Rotarians.

———®———

TWENTY YEARS AGO

The minutes stated that twenty-four members were present and twenty-one were absent. The matter of holding meetings every two weeks was discussed. Bill Evjue, then of the State Journal, talked on the organization of a modern daily newspaper.

———®———

VISITING ROTARIAN, MARCH 1

Marvin Frederick, Electric Equipment, Mfg., Schenectady, N. Y.

———®———

ROTATING ROTARIANS

Feb. 21—Jenkins at Lake Worth, Fla.
Feb. 26—Ira Sisk at Sebring, Fla.
Feb. 28—Harloff at Clearwater, Fla.
Jenkins at Lake Worth, Fla.
Kuehl at Washington, D. C.
Pickard at Stoughton, Wis.
Smith at Stoughton, Wis.
Williams at Wisconsin Rapids, Wis.
Mar. 1—Simon at Miami, Fla.
Lunenschloss at Rochester, Minn.

THE VOCATIONAL SERVICE COMMITTEE PRESENTS—

THE BURGESS BATTERY COMPANY C. F. BURGESS LABORATORIES

Rotary Representatives:
Ben Reynolds
Walt Schulte
Howard Weiss

The Burgess Battery Company and its subsidiary companies comprise one of Madison's foremost industrial activities. The company was organized in 1917 and today does business all over the world.

Normally between 1000 and 1500 persons are employed in the Burgess organizations and more than $1,000,000 is paid out each year in payrolls. Today the Burgess Battery company is second in size and volume of sales among battery manufacturers in the country.

An interesting feature of the Burgess Company is that it was started originally by a University of Wisconsin professor.

THE GISHOLT MANUFACTURING COMPANY

Rotary Representative:
Charlie Johnson

The Gisholt is another of Madison's large industrial organizations. It was organized in 1888 and today has grown from small beginnings to one of the largest in its field. Machine tool equipment is furnished to all parts of the industrial world.

The normal number of employees at the Gisholt runs more than 800 and the annual payroll is more than $1,400,000.

Some member of the Gisholt Machine Company has always been a director or a member of an important committee of the National Machine Tool Builder's Association. The most interesting and unique feature of the Gisholt business, according to Charlie Johnson, is the solving of intricate manufacturing problems for all metal working industries.

MADISON BRASS WORKS

Represented by: Henry Vogts

Founded in 1908 the Madison Brass Works employs 8 men and is engaged in the casting of brass, bronze and non ferrous metals. Henry Vogts has been sole owner and manager of the works since 1918. From a small space of 12 x 18 square feet the business has grown to occupy space 80 by 300 feet.

THE ROTARY NEWS

MADISON WISCONSIN

Published weekly by the
ROTARY CLUB OF MADISON,
WISCONSIN

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Club No. 71.....Organized March 20, 1913
Membership 179
Meets 12:15 to 1:45 o'clock every Thursday at the Hotel Loraine

OFFICERS

President ----------William H. Conlin
Vice-President -------Alfred E. Rowlands
Secretary ----------Paul F. Hunter
Treasurer ----------John H. Stephan
Sergeant-at-Arms ------Gordon E. Nelson

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Chester Allen — Walter A. Frautschi
William H. Conlin — Lorraine J. Markwardt
James M. Dorrans — Jerry Simon
Ray V. Fessenden — Fred M. Rentschler
Alfred E. Rowlands

Entered as Second Class Matter, January 15, 1927, at the Post Office at Madison, Wis., under act of March 3, 1879.

March 6, 1934

THE GIFT OF ROTARY

The first and perhaps the greatest gift of Rotary to a Rotarian is the gift of his classification. Rotary grants to each member the privilege of representing his particular vocation in the club, to the exclusion of others in the same classification. This is a mark of esteem which signifies to the community that each individual is a worthy representative of his craft, a man of good standing and ideals.

Another great gift is the gift of thousands of friends, almost anywhere one may travel. By presenting a Rotary membership card, a Rotarian is at once assured of a hearty welcome at any Rotary club anywhere, and is privileged to enjoy an hour of fellowship which otherwise might be impossible to achieve. Rotary also admits a Rotarian to the fellowship of his neighbors of the business world of his own community. Rotary presents the opportunity to make acquaintances and lasting friendships which might otherwise be missed.

Rotary provides the opportunity for each Rotarian to do something to his liking and within his means for his community, along with others of similar inclination. Rotary offers the inspiration and the means to render these services to discharge the obligation which every Rotarian feels to his community. Rotary gives the broader viewpoint which comes with a fuller life.

In return for these great gifts—and there must be some return—Rotary requires an active interest in the club which is indicated by willingness to share in the service, by willingness to renew our inspiration and refresh our contacts each week. Rotary requires us to attend regularly and serve frequently, surely no more than a fair return for all the gifts of Rotary.—Worcester Service.

®

HOW IS ROTARY JUDGED?

Rotary is not judged by the number of members. It is not judged by the percentage of members who attend the luncheons. It is not judged by its many activities. It is not judged by the publicity it receives in the press.

No, Rotary is judged by the service its members render as individuals.

Rotary is not a hospital in which to nurse grudges and grievances—it is an open air sanitarium for doers, not drones. Rotary is not a refuge for snobs and hypocrites, but is a meeting place for live wires, go-getters, and keen thinkers. —Santa Barbara Hub.

®

HEADLINERS IN YOUR MARCH "ROTARIAN"

Diplomats Don't Make Wars (the people do) by Frank H. Simonds.

The Thirty-hour Week (a debate) by William Green and Robert Lund.

A Jam Factory on the Avon (the new Shakespeare Theatre) by Clinton P. Anderson.

Zeppelins Over the Horizon (long-distance flying of tomorrow) by Dr. Karl Arnstein.

Around the World With Mickey Mouse (why such popularity?) by Jack Jamison.

The World Turns the Corner (business on the up-and-up) by Rudolf Holsti.

JUST BETWEEN US

Announcement was made last week that Park Parker has been appointed State Highway Engineer.

———®———

Born, last Tuesday, to Mr. and Mrs. Joseph J. Tobias, a daughter. Toby is just hitting the high spots now. Congratulations.

———®———

Frautschi's, Inc., invite the Rotarians to attend their spring opening and display of fine home furnishings tomorrow from 2 to 6, and from 8 to 10.

———®———

Burnie Chapman, after being confined to the hospital for two weeks was able to be removed to his home last Friday, but will be confined to his bed for about a month longer.

———®———

Bob Nickles has been called to Washington again as Director of the National Association of Electrical Contractors, to confer on the NRA Code. He expects to attend Rotary in Washington tomorrow.

———®———

Bud Jackson has the sympathy of all in the loss of his mother, Madison pioneer, who passed away last Thursday at the age of 85 years. Madison was a village of only a few hundred people when she came here.

———®———

Art Sullivan recently discovered that eight sons and daughters of his former classmates were attending the University and invited them to his home for dinner, and no two of them were acquainted before.

———®———

L. D. Atkinson buried his father, William B. Atkinson, of Stoughton, yesterday. A native of England he came to America as a boy and was the last Civil War veteran in Stoughton. He was 94 years of age and active until a few hours before his death on Friday.

In a letter from Jerry Simon, who, with his family is vacationing in Miami, he tells of taking Ike and Mrs. Sears on a 65 mile drive over to Lake Worth to call on Bob Jenkins. He reports Bob as improving steadily with excellent prospects for complete recovery.

———®———

The speaker scheduled to talk to the Stoughton Club last Wednesday, cancelled his engagement Tuesday night. Leon Smith, who had missed our meeting the week before, was prevailed upon to "pinch hit" and batted 1000 percent. Then he talked to the Real Estate Board Saturday on the CWA projects.

———®———

Gibby Gibson has an idea. He wants to paper the den at his home with stocks, bonds or other securities to be donated by members of the Rotary Club. Let's snow him under. Most of us have such paper which only mean a headache to us but will answer Gibby's purpose. Mail your contribution to Gibby at once.

———®———

The program as it is finally developed and presented at the International convention, is designed to give a well-rounded presentation of the thought of the average Rotarian about his problems and their solution in vocational, community and international service. There will be a wonderful program at the Detroit convention June 25–29.

———®———

The annual dinner of the Madison Service Clubs will be held at the Hotel Loraine at 6:30 o'clock this evening, with the Optimist Club in charge. Ernest Pett will be toastmaster and Douglas Malloch, poet and humorist, will be the speaker. The Club will pay for your dinner but this does not take the place of our regular weekly meeting.

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THE FARMER AS A CONSERVATIONIST

By ALDO LEOPOLD



Reprinted from
AMERICAN FORESTS
June, 1939

The Magazine of
The American Forestry Association
Washington, D. C.

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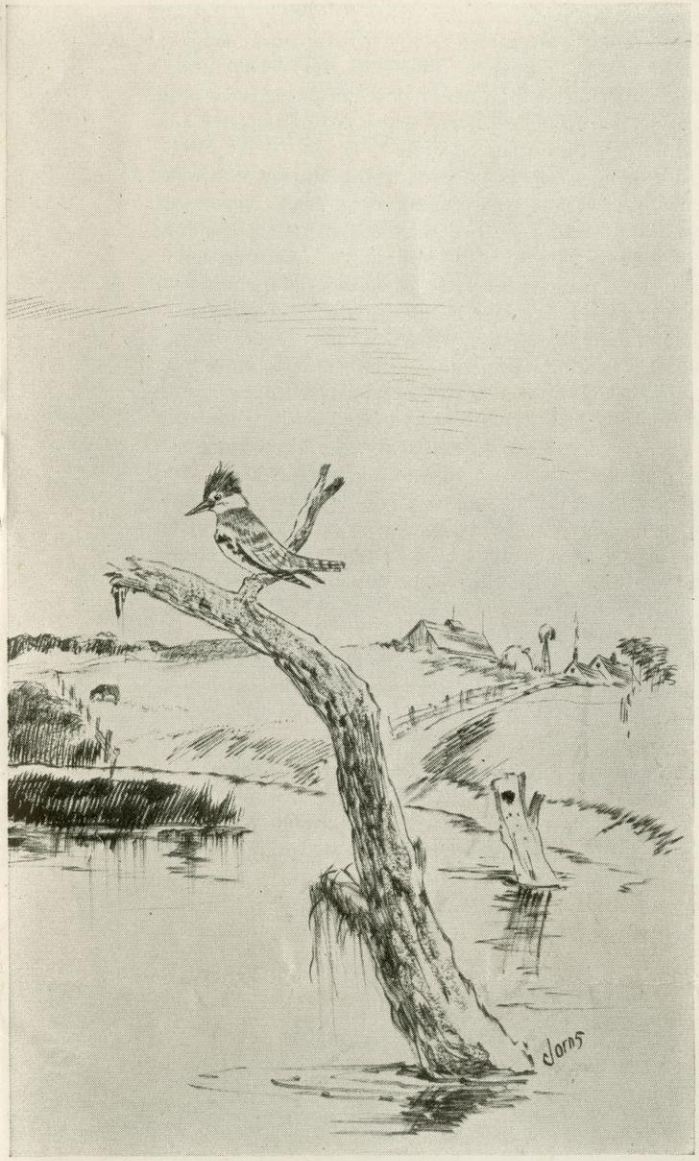
WISCONSIN





The pattern of the rural landscape, says the author, should have a certain wholeness in order to prove that conservation pays certain dividends. Land must be devoted to woods, marsh, pond, prairie or just scenery to meet economic or semi-economic needs and make the picture complete



THE FARMER AS A CONSERVATIONIST

By ALDO LEOPOLD

Drawings by B. C. Jorns

CONSERVATION means harmony between men and land.

When land does well for its owner, and the owner does well by his land; when both end up better by reason of their partnership, we have conservation. When one or the other grows poorer, we do not.

Few acres in North America have escaped impoverishment through human use. If someone were to map the continent for gains and losses in soil fertility, waterflow, flora, and fauna, it would be difficult to find spots where less than three of these four basic resources have retrograded; easy to find spots where all four are poorer than when we took them over from the Indians.

As for the owners, it would be a fair assertion to say that land depletion has broken as many as it has enriched.

It is customary to fudge the record by regarding the depletion of flora and fauna as inevitable, and hence leaving them out of the account. The fertile productive farm is regarded as a success, even though it has lost most of its native plants and animals. Conservation protests such a biased accounting. It was necessary, to be sure, to eliminate a few species, and to change radically the distribution of many. But it remains a fact that the average American township has lost a score of plants and animals through indifference for every one it has lost through necessity.

What is the nature of the process by which men destroy land? What kind of events made it possible for that much-quoted old-timer to say: "You can't tell me about farming; I've worn out three farms already and this is my fourth"?

Most thinkers have pictured a process of gradual exhaustion. Land, they say, is like a bank account: if you draw more than the interest, the principal dwindles. When Van Hise said "Conservation is wise use," he meant, I think, restrained use.

Certainly conservation means restraint, but there is something else that needs to be said. It seems to me that many land resources, when they are used, get out of order and disappear or deteriorate before anyone has a chance to exhaust them.

Look, for example, at the eroding farms of the cornbelt. When our grandfathers first broke this land, did it melt away with every rain that happened to fall on a thawed frost-pan? Or in a furrow not exactly on contour? It did not; the newly broken soil was tough,

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resistant, elastic to strain. Soil treatments which were safe in 1840 would be suicidal in 1940. Fertility in 1840 did not go down river faster than up into crops. Something has got out of order. We might almost say that the soil bank is tottering, and this is more important than whether we have overdrawn or underdrawn our interest.

Look at the northern forests: did we build barns out of all the pineries which once covered the lake states? No. As soon as we had opened some big slashings we made a path for fires to invade the woods. Fires cut off growth and reproduction. They outran the lumberman and they mopped up behind him, destroying not only the timber but also the soil and the seed. If we could have kept the soil and the seed, we should be harvesting a new crop of pines now, regardless of whether the virgin crop was cut too fast or too slow. The real damage was not so much the overcutting, it was the run on the soil-timber bank.

A still clearer example is found in farm woodlots. By pasturing their woodlots, and thus preventing all new growth, cornbelt farmers are gradually eliminating woods from the farm landscape. The wildflowers and wildlife are of course lost long before the woodlot itself disappears. Overdrawing the interest from the woodlot bank is perhaps serious, but it is a bagatelle compared with destroying the capacity of the woodlot to yield interest. Here again we see awkward use, rather than over-use, disordering the resource.

In wildlife the losses from the disordering of natural mechanisms have, I suspect, far exceeded the losses from exhaustion. Consider the thing we call "the cycle," which deprives the northern states of all kinds of grouse and rabbits about seven years out of every ten. Were grouse and rabbits always and everywhere cyclic? I used to think so, but I now doubt it. I suspect that cycles are a disorder of animal populations, in some way spread by awkward land-use. We don't know how, because we do not yet know what a cycle is. In the far north cycles are probably natural and inherent, for we find them in the untouched wilderness, but down here I suspect they are not inherent. I suspect they are spreading, both in geographic sweep and in number of species affected.

Consider the growing dependence of fishing waters on artificial restocking. A big part of this loss of toughness inheres in the disordering of waters by erosion and pollution. Hundreds of southerly trout streams which once produced natural brook trout are stepping down the ladder of productivity to artificial brown trout, and finally to carp. As the fish resource dwindles, the flood and erosion losses grow. Both are expressions of a single deterioration. Both are not so much the exhaustion of a resource as the sickening of a resource.

Consider deer. Here we have no exhaustion; perhaps there are too many deer. But every woodsman knows that deer in many places are exterminating the plants on which they depend for winter food. Some of these, such as white cedar, are important forest trees. Deer did not always destroy their range. Something is out of kilter. Perhaps it was a mistake to clean out the wolves; perhaps natural enemies acted as a kind of thermostat to close the "draft" on the deer supply. I know of deer herds in Mexico which never get out of kilter with their range; there are wolves and cougars there, and always plenty of deer but never too many. There is substantial balance between those deer and their range, just as there was substantial balance between the buffalo and the prairie.

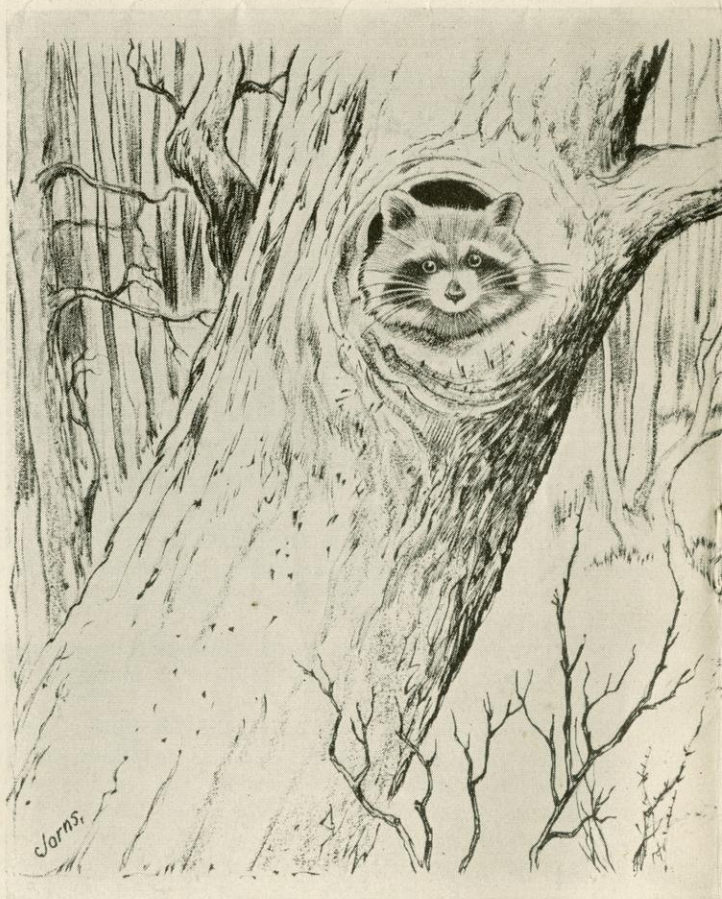
Conservation, then, is keeping the resource in working order, as well as preventing over-use. Resources may get out of order before they are exhausted, sometimes while they are still abundant. Conservation, therefore, is a positive exercise of skill and insight, not merely a negative exercise of abstinence or caution.

What is meant by skill and insight?

This is the age of engineers. For proof of this I look not so much to Boulder Dams or China Clippers as to the farmer boy tending his tractor or building his own radio. In a surprising number of men there burns a curiosity about machines and a loving care in their construction, maintenance, and use. This bent for mechanisms, even though clothed in greasy overalls, is often the pure fire of intellect. It is the earmark of our times.

Everyone knows this, but what few realize is that an equal bent for the mechanisms of nature is a possible earmark of some future generation.

No one dreamed, a hundred years ago, that metal, air, petroleum, and electricity could coordinate as an engine. Few realize today that soil, water, plants, and animals are an engine, subject, like any other, to derangement. Our present skill in the care of mechanical engines did not arise from fear lest they fail to do their work. Rather was it born of curiosity and pride of understanding. Prudence never kindled a fire in the human mind; I have no hope for conservation born of fear. The 4-H boy who becomes curious about why red pines need more acid than white is closer to conservation than he



Public aids to better private land use will accomplish their purpose only as the farmer matches them with his skill. Can a farmer afford *not* to devote land to fencerows for the birds, to snag-trees for the coons and flying squirrels—can he afford to overlook these human qualities requisite to better land use?

who writes a prize essay on the dangers of timber famine.

This necessity for skill, for a lively and vital curiosity about the workings of the biological engine, can teach us something about the probable success of farm conservation policies. We seem to be trying two policies, education and subsidy. The compulsory teaching of conservation in schools, the 4-H conservation projects, and school forests are examples of education. The woodlot tax law, state game and tree nurseries, the crop control program, and the soil conservation program are examples of subsidy.

I offer this opinion: these public aids to better private land use will accomplish their purpose only as the farmer matches them with this thing which I have called skill. Only he who has planted a pine grove with his own hands, or built a terrace, or tried to raise a better crop of birds can appreciate how easy it is to fail; how futile it is passively to follow a recipe without understanding the mechanisms behind it. Subsidies and propaganda may evoke the farmer's acquiescence, but only enthusiasm and affection will evoke his skill. It takes something more than a little "bait" to succeed in conservation. Can our schools, by teaching, create this something? I hope so, but I doubt it, unless the child brings also something he gets at home. That is to say, the vicarious teaching of conservation is just one more kind of intellectual orphanage; a stop-gap at best.

Thus we have traversed a circle. We want this new thing, we have asked the schools and the government to help us catch it, but we have tracked it back to its den under the farmer's doorstep.

I feel sure that there is truth in these conclusions about the human qualities requisite to better land use. I am less sure about many puzzling questions of conservation economics.

Can a farmer afford to devote land to woods, marsh, pond, windbreaks? These are semi-economic land uses, —that is, they have utility but they also yield non-economic benefits.

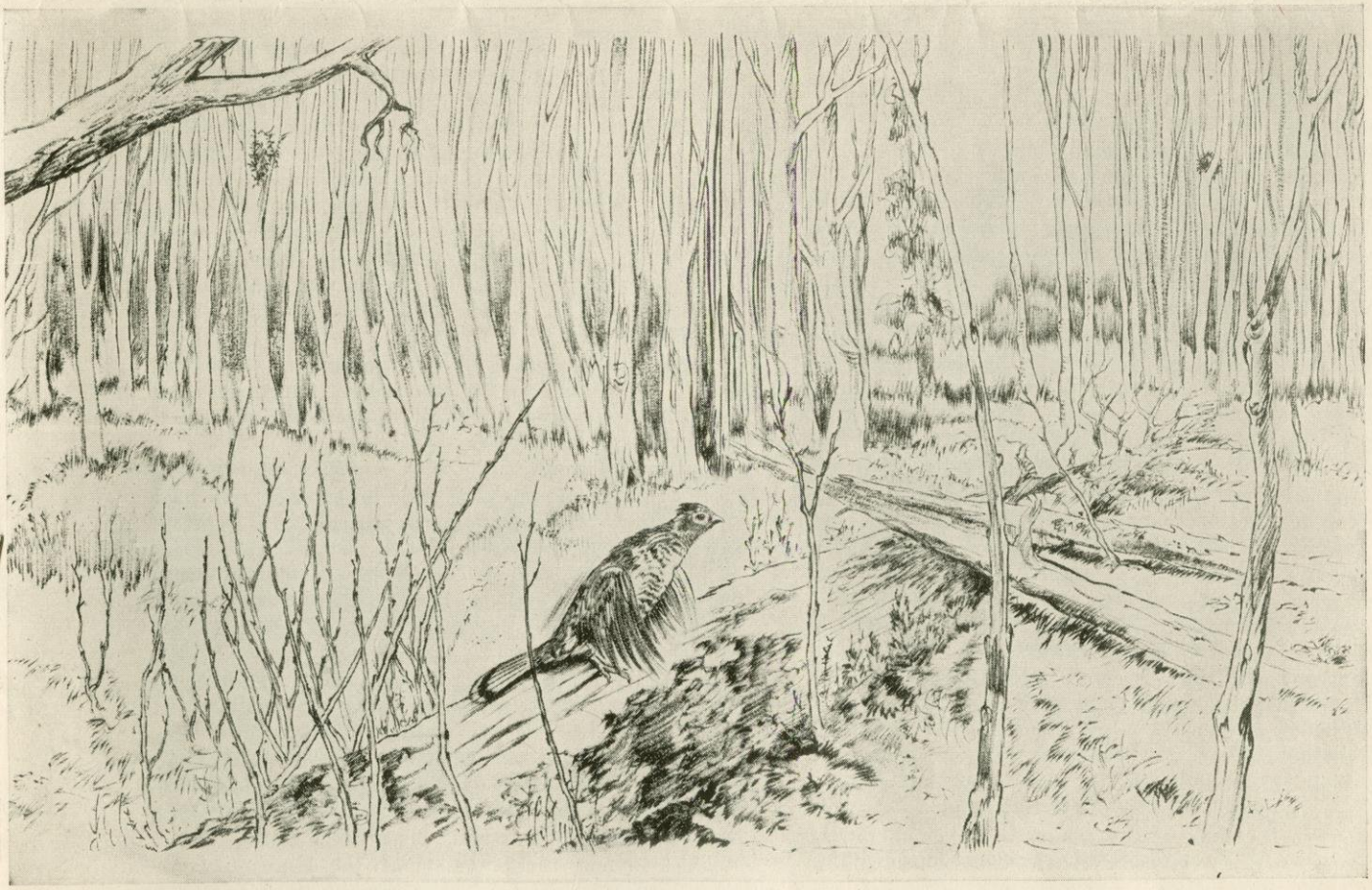
Can a farmer afford to devote land to fencerows for the birds, to snag-trees for the coons and flying squirrels? Here the utility shrinks to what the chemist calls "a trace."

Can a farmer afford to devote land to fencerows for a patch of ladyslippers, a remnant of prairie, or just scenery? Here the utility shrinks to zero.

Yet conservation is any or all of these things.

Many labored arguments are in print proving that conservation pays economic dividends. I can add nothing to these arguments. It seems to me, though, that something has gone unsaid. It seems to me that the pattern of the rural landscape, like the configuration of our own bodies, has in it (or should have in it) a certain wholeness. No one censures a man who loses his leg in an accident, or who was born with only four fingers, but we should look askance at a man who amputated a natural part on the grounds that some other is more profitable. The comparison is exaggerated; we had to amputate many marshes, ponds and woods to make the land habitable, but to remove any natural feature from representation in the rural landscape seems to me a defacement which the calm verdict of history will not approve, either as good conservation, good taste, or good farming.

Consider a single natural feature: the farm pond. Our godfather the Ice-king, who was in on the christening of Wisconsin, dug hundreds of them for us. We have drained ninety and nine. If you don't believe it, look on the original surveyor's plot of your township; in 1840 he probably mapped water in dozens of spots



where in 1940 you may be praying for rain. I have an undrained pond on my farm. You should see the farm families flock to it of a Sunday, everybody from old grandfather to the new pup, each bent on the particular aquatic sport, from water lilies to bluegills, suited to his (or her) age and waistline. Many of these farm families once had ponds of their own. If some drainage promoter had not sold them tiles, or a share in a steam shovel, or some other dream of sudden affluence, many of them would still have their own water lilies, their own bluegills, their own swimming hole, their own redwings to hover over a buttonbush and proclaim the spring.

If this were Germany, or Denmark, with many people and little land, it might be idle to dream about land-use luxuries for every farm family that needs them. But we have excess plowland; our conviction of this is so unanimous that we spend a billion out of the public chest to retire the surplus from cultivation. In the face of such an excess, can any reasonable man claim that economics prevents us from getting a life, as well as a livelihood, from our acres?

Sometimes I think that ideas, like men, can become dictators. We Americans have so far escaped regimentation by our rulers, but have we escaped regimentation by our own ideas? I doubt if there exists today a more complete regimentation of the human mind than that accomplished by our self-imposed doctrine of ruthless utilitarianism. The saving grace of democracy is that we fastened this yoke on our own necks, and we can cast it off when we want to, without severing the neck. Conservation is perhaps one of the many squirmings which foreshadow this act of self-liberation.

The principle of wholeness in the farm landscape involves, I think, something more than indulgence in land-use luxuries. Try to send your mind up in an airplane; try to see the *trend* of our tinkerings with fields and forests, waters and soils. We have gone in for governmental conservation on a huge scale. Government is slowly but surely pushing the cutovers back into forest; the peat and sand districts back into marsh and scrub. This, I think, is as it should be. But the cow in the woodlot, ably assisted by the ax, the depression, the June beetle, and the drouth, is just as surely making southern Wisconsin a treeless agricultural steppe. There was a time when the cessation of prairie fires added trees to southern Wisconsin faster than the settlers subtracted them. That time is now past. In another generation many southern counties will look, as far as trees are concerned, like the Ukraine, or the Canadian wheatlands. A similar tendency to create *monotypes,* to block up huge regions to a single land-use, is visible in many other states. It is the result of delegating conservation to government. Government cannot own and operate small parcels of land, and it cannot own and operate good land at all.

Stated in acres or in board feet, the crowding of all the timber into one place may be a forestry program, but is it conservation? How shall we use forests to protect vulnerable hillsides and riverbanks from erosion when the bulk of the timber is up north on the sands where there is no erosion? To shelter wildlife when all the food is in one county and all the cover in another? To break the wind when the forest country has no wind, the farm country nothing but wind? For recreation when it takes a week, rather than an hour, to get under a pine tree? Doesn't conservation imply a certain interspersion of land-uses, a certain pepper-and-salt pattern in the warp and woof of the land-use fabric? If so, can government alone do the weaving? I think not.

It is the individual farmer who must weave the greater part of the rug on which America stands. Shall he weave into it only the sober yarns which warm the feet, or also some of the colors which warm the eye and the heart? Granted that there may be a question which returns him the most profit as an individual, can there be *any* question which is best for his community? This raises the question: is the individual farmer capable of dedicating private land to uses which profit the community, even though they may not so clearly profit him? We may be over-hasty in assuming that he is not.

I am thinking, for example, of the windbreaks, the evergreen snow-fences, hundreds of which are peeping up this winter out of the drifted snows of the sandy counties. Part of these plantings are subsidized by highway funds, but in many others the only subsidy is the nursery stock. Here then is a dedication of private land to a community purpose, a private labor for a public gain. These windbreaks do little good until many land-owners install them; much good after they dot the whole countryside. But this "much good" is an undivided surplus, payable not in dollars, but rather in fertility, peace, comfort, in the sense of something alive and growing. It pleases me that farmers should do this new thing. It foreshadows conservation. It may be remarked, in passing, that this planting of windbreaks is a direct reversal of the attitude which uprooted the hedges, and thus the wildlife, from the entire cornbelt. Both moves were fathered by the agricultural colleges. Have the colleges changed their mind? Or is an osage windbreak governed by a different kind of economics than a red pine windbreak?

There is still another kind of community planting where the thing to be planted is not trees but thoughts. To describe it, I want to plant some thoughts about a bush. It is called bog-birch.

I select it because it is such a mousy, unobtrusive, inconspicuous, uninteresting little bush. You may have it in your marsh but have never noticed it. It bears no flower that you would recognize as such, no fruit which bird or beast could eat. It doesn't grow into a tree which you could use. It does no harm, no good, it doesn't even turn color in fall. Altogether it is the perfect nonentity in bushes; the complete biological bore.

But is it? Once I was following the tracks of some starving deer. The tracks led from one bog-birch to another; the browsed tips showed that the deer were living on it, to the exclusion of scores of other kinds of bushes. Once in a blizzard I saw a flock of sharp-tail grouse, unable to find their usual grain or weed seeds, eating bog-birch buds. They were fat.

Last summer the botanists of the University Ar-

PATCHWORK FARMS

Here a bit and there a bit
They cleared the woods away,
Here a bit and there a bit,
They tempered stubborn clay.

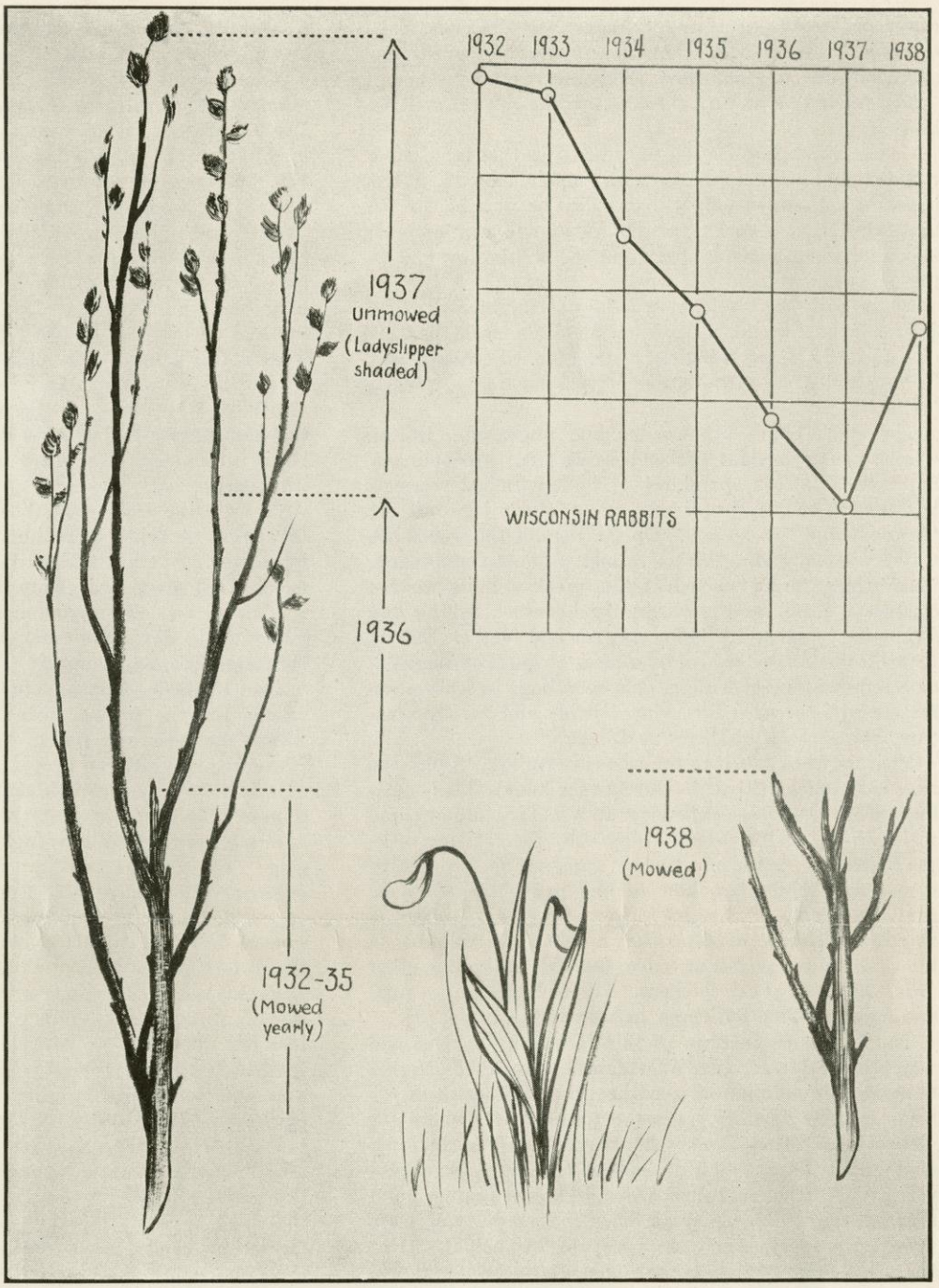
And so the valley patchwork,
In outlines bold and clear,
Tells how our fathers conquered
To make a home out here.

—Caspar G. Dickson

boretum came to me in alarm. The brush, they said, was shading out the white ladyslippers in the Arboretum marsh. Would I ask the CCC crews to clear it? When I examined the ground, I found the offending brush was bog-birch. I cut the sample shown on the left of the drawing. Notice that up to two years ago rabbits had mowed it down each year. In 1936 and 1937 the rabbits had spared it, hence it grew up and shaded the ladyslippers. Why? Because of the cycle; there were no rabbits in 1936 and 1937. This past winter of 1938 the rabbits mowed off the bog-birch, as shown on the right of the drawing.

It appears, then, that our little nonentity, the bog-birch, is important after all. It spells life or death to deer, grouse, rabbits, ladyslippers. If, as some think, cycles are caused by sunspots, the bog-birch might even be regarded a sort of envoy for the solar system, dealing out appeasement to the rabbit, in the course of which a suppressed orchid finds its place in the sun.

The bog-birch is one of hundreds of creatures which the farmer looks at, or steps on, every day. There are 350 birds, ninety mammals, 150 fishes, seventy reptiles and amphibians, and a vastly greater number of plants and insects native to Wisconsin. Each state has a similar diversity of wild things.



THE STORY OF A CYCLE

A mousy, unobtrusive, inconspicuous little bush, the bog-birch, plays an important role in the ups and downs of plant and animal life. Here is illustrated how it spells life or death to deer, grouse, rabbits, and ladyslippers in Wisconsin.

In 1932 to 1935 rabbits were abundant and ate down the bog-birches each winter, giving the ladyslippers the sun. During 1936 and 1937 the cycle decimated the rabbits and the bog-birches grew high and shaded out the ladyslippers. In 1938 the rabbits recovered, mowed down the birches and the ladyslippers regained their place in the sun.

Disregarding all those species too small or too obscure to be visible to the layman, there are still perhaps 500 whose lives we might know, but don't. I have translated one little scene out of the life-drama of one species. Each of the 500 has its own drama. The stage is the farm. The farmer walks among the players in all his daily tasks, but he seldom sees any drama, because he does not understand their language. Neither do I, save for a few lines here and there. Would it add anything to farm life if the farmer learned more of that language?

One of the self-imposed yokes we are casting off is the false idea that farm life is dull. What is the meaning of John Steuart Curry, Grant Wood, Thomas Benton? They are showing us drama in the red barn, the stark silo, the team heaving over the hill, the country store, black against the sunset. All I am saying is that there is also drama in every bush, if you can see it. When enough men know this, we need fear no in-

difference to the welfare of bushes, or birds, or soil, or trees. We shall then have no need of the word conservation, for we shall have the thing itself.

The landscape of any farm is the owner's portrait of himself.

Conservation implies self-expression in that landscape, rather than blind compliance with economic dogma. What kinds of self-expression will one day be possible in the landscape of a cornbelt farm? What will conservation look like when transplanted from the convention hall to the fields and woods?

Begin with the creek: it will be unstraightened. The future farmer would no more mutilate his creek than his own face. If he has inherited a straightened creek, it will be "explained" to visitors, like a pock-mark or a wooden leg.

The creek banks are wooded and ungrazed. In the woods, young straight timber-bearing trees predominate, but there is also a sprinkling of hollow-limbed veterans left for the owls and squirrels, and of down logs left for the coons and fur-bearers. On the edge of the woods are a few wide-spreading hickories and walnuts for nutting. Many things are expected of this creek and its woods: cordwood, posts, and sawlogs; flood-control, fishing and swimming; nuts and wildflowers; fur and feather. Should it fail to yield an owl-hoot or a mess of quail on demand, or a bunch of sweet william or a coon-hunt in season, the matter will be cause for injured pride and family scrutiny, like a check marked "no funds."

Visitors when taken to the woods often ask, "Don't the owls eat your chickens?" Our farmer knows this is coming. For answer, he walks over to a leafy white oak and picks up one of the pellets dropped by the roosting owls. He shows the visitor how to tear apart the matted felt of mouse and rabbit fur, how to find inside the whitened skulls and teeth of the bird's prey. "See any chickens?" he asks. Then he explains that his owls are valuable to him, not only for killing mice, but for excluding other owls which *might* eat chickens. His owls get a few quail and many rabbits, but these, he thinks, can be spared.

The fields and pastures of this farm, like its sons and daughters, are a mixture of wild and tame attributes, all built on a foundation of good health. The health of the fields is their fertility. On the parlor wall, where the embroidered "God Bless Our Home" used to hang in exploitation days, hangs a chart of the farm's soil analyses. The farmer is proud that all his soil graphs point upward, that he has no check dams or terraces, and needs none. He speaks sympathetically of his neighbor who has the misfortune of harboring a gully, and who was forced to call in the CCC. The neighbor's check dams are a regrettable badge of awkward conduct, like a crutch.

Separating the fields are fencerows which represent a happy balance between gain in wildlife and loss in plowland. The fencerows are not cleaned yearly, neither are they allowed to grow indefinitely. In addition to bird song and scenery, quail and pheasants, they yield prairie flowers, wild grapes, raspberries, plums, hazelnuts, and here and there a hickory beyond the reach of the woodlot squirrels. It is a point of pride to use electric fences only for temporary enclosures.

Around the farmstead are historic oaks which are cherished with both pride and skill. That the June beetles once got one is remembered as a slip in pasture management, not to be repeated. The farmer has opinions about the age of his oaks, and their relation to local history. It is a matter of neighborhood debate whose oaks are most clearly relics of oak-opening days, whether the healed scar on the base of one tree is the result of a prairie fire or a pioneer's trash pile.

Martin house and feeding station, wildflower bed and old orchard go with the farmstead as a matter of course. The old orchard yields some apples but mostly birds. The bird list for the farm is 161 species. One neighbor claims 165, but there is reason to suspect he is fudging. He drained his pond; how could he possibly have 165?

His pond is our farmer's special badge of distinction. Stock is allowed to water at one end only; the rest of the shore is fenced off for the ducks, rails, redwings, gallinules, and muskrats. Last spring, by judicious baiting and decoys, two hundred ducks were induced to rest there a full month. In August, yellow-legs use the bare mud of the water-gap. In September the pond yields an armful of waterlilies. In the winter there is skating for the youngsters, and a neat dozen of rat-pelts for the boys' pin-money. The farmer remembers a contractor who once tried to talk drainage. Pondless farms, he says, were the fashion in those days; even the Agricultural College fell for the idea of making land by wasting water. But in the drouths of the thirties, when the wells went dry, everybody learned that water, like roads and schools, is community property. You can't hurry water down the creek without hurting the creek, the neighbors, and yourself.

The roadside fronting the farm is regarded as a refuge for the prairie flora; the educational museum where the soils and plants of pre-settlement days are preserved. When the professors from the college want a sample of virgin prairie soil, they know they can get it here. To keep this roadside in prairie, it is cleaned annually, always by burning, never by mowing or cutting. The farmer tells a funny story of a highway engineer who once started to grade the cutbanks all the way back to the fence. It developed that the poor engineer, despite his college education, had never learned the difference between a silphium and a sunflower. He knew his sines and cosines, but he had never heard of the plant succession. He couldn't understand that to tear out all of the prairie sod would convert the whole roadside into an eyesore of quack and thistle.

In the clover field fronting the road is a huge glacial erratic of pink granite. Every year, when the geology teacher brings her class out to look at it, our farmer tells how once, on a vacation trip, he matched a chip of the boulder to its parent ledge, two hundred miles to the north. This starts him on a little oration on glaciers; how the ice gave him not only the rock, but also the pond, and the gravel pit where the kingfisher and the bank swallows nest. He tells how a powder salesman once asked for permission to blow up the old rock "as a demonstration in modern methods." He does not have to explain his little joke to the children.

He is a reminiscent fellow, this farmer. Get him wound up and you will hear many a curious tidbit of rural history. He will tell you of the mad decade when they taught economics in the local kindergarten, but the college president couldn't tell a bluebird from a blue cohosh. Everybody worried about getting his share; nobody worried about doing his bit. One farm washed down the river, to be dredged out of the Mississippi at another farmer's expense. Tame crops were over-produced, but nobody had room for wild crops. "It's a wonder this farm came out of it without a concrete creek and a Chinese elm on the lawn." This is his whimsical way of describing the early fumblings for "conservation."

THE FARMER AS A CONSERVATIO

By ALDO LEOPOLD

Drawings by B. C. Jorns





rural landscape, says the author, should have a certain whole-
rove that conservation pays certain dividends. Land must be
, marsh, pond, prairie or just scenery to meet economic or
i-economic needs and make the picture complete

CONSERVATION means harmony between men and land.

When land does well for its owner, and the owner does well by his land; when both end up better by reason of their partnership, we have conservation. When one or the other grows poorer, we do not.

Few acres in North America have escaped impoverishment through human use. If someone were to map the continent for gains and losses in soil fertility, waterflow, flora, and fauna, it would be difficult to find

cally the distribution of many. But it
that the average American township has
plants and animals through indifference
it has lost through necessity.

What is the nature of the process by
stroy land? What kind of events made
that much-quoted old-timer to say: "Yo
about farming; I've worn out three far
this is my fourth"?

Most thinkers have pictured a process

Reprinted from THE LIVING WILDERNESS, July, 1941
Publication of the Wilderness Society, Washington, D. C.

Wilderness As a Land Laboratory

BY ALDO LEOPOLD

THE recreational value of wilderness has been often and ably presented, but its scientific value is as yet but dimly understood. This is an attempt to set forth the need of wilderness as a base-datum for problems of land-health.

* * * * *

The most important characteristic of organism is that capacity for internal self-renewal known as health.

There are two organisms in which the unconscious automatic processes of self-renewal have been supplemented by conscious interference and control. One of these is man himself (medicine and public health). The other is land (agriculture and conservation).

The effort to control the health of land has not been very successful. It is now generally understood that when soil loses fertility, or washes away faster than it forms, and when water systems exhibit abnormal floods and shortages, the land is sick.

Other evidences are generally known as facts, but not as symptoms of land-sickness. The disappearance of plant and animal species without visible causes despite efforts to protect them, and the irruption of others as pests, despite efforts to control them, must, in the absence of simpler explanations, be regarded as symptoms of derangement in the land-organism. Both are occurring too frequently to be dismissed as normal evolutionary changes.

The status of thought on these ailments of the land is reflected in the fact that our treatments for them are still prevailingly local.

Thus when a soil loses fertility we pour on fertilizer, or at best alter its tame flora and fauna, without considering the fact that its wild flora and fauna, which built the soil to begin with, may likewise be important to its maintenance. It was recently discovered, for example, that good tobacco crops depend, for some unknown reason, on the pre-conditioning of the soil by wild ragweed. It does not occur to us that such unexpected chains of dependency may have wide prevalence in nature.

When prairie dogs, ground squirrels, or mice increase to pest levels we poison them, but we do not look beyond the animal to find the cause of the irruption. We assume that animal troubles must have animal causes. The latest scientific evidence points to derangements of the *plant* community as the real seat of rodent irruptions, but few or no explorations of this clue are being made.

Many forest plantations are producing one-log or two-log trees on soil which originally grew three-log and four-log trees. Why? Advanced foresters know that the cause probably lies not in the tree, but in the micro-flora of the soil, and that it may take more years to restore the soil flora than it took to destroy it.

Many conservation treatments are obviously superficial. Flood control dams have no relation to the cause of floods. Check dams and terraces do not touch the cause of erosion. Refuges and propagating plants to maintain animals do not explain why the animal fails to maintain itself.

In general, the trend of the evidence indicates that in land, just as in the human body, the symptom may lie in one organ and the cause in another. The practices we now call conservation are, to a large extent, local alleviations of biotic pain. They are necessary, but they must not be confused with cures. The art of land-doctoring is being practiced with vigor, but the science of land-health is a job for the future.

* * * * *

A science of land health needs, first of all, a base-datum of normality, a picture of how healthy land maintains itself as an organism.

We have two available norms. One is found where land physiology remains largely normal despite centuries of human occupation. I know of only one such place: northeastern Europe. It is not likely that we shall fail to study it.

The other and most perfect norm is wilderness. Paleontology offers abundant evidence that wilderness maintained itself for immensely long periods; that its component species were rarely lost, neither did they get out of hand; that weather and water built soil as fast or faster than it was carried away. Wilderness, then, assumes unexpected importance as a land-laboratory.

One cannot study the physiology of Montana in the Amazon; each biotic province needs its own wilderness for comparative studies of used and unused land. It is of course too late to salvage more than a lop-sided system of wilderness remnants, and most of these remnants are far too small to retain their normality. The latest report* from Yellowstone Park, for example, states that cougars and wolves are gone. Grizzlies and mountain sheep are probably going. The irruption of elk following the loss of carnivores has damaged the plant community in a manner comparable to sheep grazing. "Hoofed locusts" are not necessarily tame.

I know of only one wilderness south of the Canadian boundary which retains its full flora and fauna (save only the wild Indian) and which has only one intruded species (the wild horse). It lies on the summit of the Sierra Madre in Chihuahua. Its preservation and study, as a norm for the sick lands on both sides of the border, would be a good neighborly act well worthy of international consideration.

All wilderness areas, no matter how small or imperfect, have a large value to land-science. The important thing is to realize that recreation is not their only or even their principal utility. In fact, the boundary between recreation and science, like the boundaries between park and forest, animal and plant, tame and wild, exists only in the imperfections of the human mind.

*Murie, Adolph. Ecology of the coyote in the Yellowstone. Fauna Series No. 4 of the National Parks of the United States.

The Last Stand

By ALDO LEOPOLD

SOMETIME in 1943 or 1944 an axe will bite into the snowy sapwood of a giant maple. On the other side of the same tree a crosscut saw will talk softly, spewing sweet sawdust into the snow with each repetitious syllable. Then the giant will lean, groan, and crash to earth: the last merchantable tree of the last merchantable forty of the last virgin hardwood forest of any size in the Lake States.

WITH this tree will fall the end of an epoch.

There will be an end of cheap, abundant, high-quality sugar maple and yellow birch for floors and furniture. We shall make shift with inferior stuff, or with synthetic substitutes.

There will be an end of cathedral aisles to echo the hermit thrush, or to awe the intruder. There will be an end of hardwood wilderness large enough for a few days' skiing or hiking without crossing a road. The forest primeval, in this region, will henceforward be a figure of speech.

There will be an end of the pious hope that America has learned from her mistakes in private forest exploitation. Each error, it appears, must continue to its bitter end; conservation must wait until there is little or nothing to conserve.

Finally, there will be an end of the best schoolroom for foresters to learn what remains to be learned about hardwood forestry: the mature hardwood forest. We know little, and we understand only part of what we know.

This last stand of the northern hardwoods is in the Porcupine Mountain region of the Upper Peninsula of Michigan. Fifty years ago northern hardwoods covered seven million acres in the Lake States. Five years ago the main remnant in the Porcupine region still comprised 170,000 acres. By 1941 this had shrunk to 140,000 acres. Last winter's cuttings were extra large due to war demand. At the present rate of cutting, only stands too rocky or poor to repay the operator have much chance to outlive the next two years. After that fires are likely to polish up the slashings, leaving a nice pile of brushy rocks as a monument to our generation.

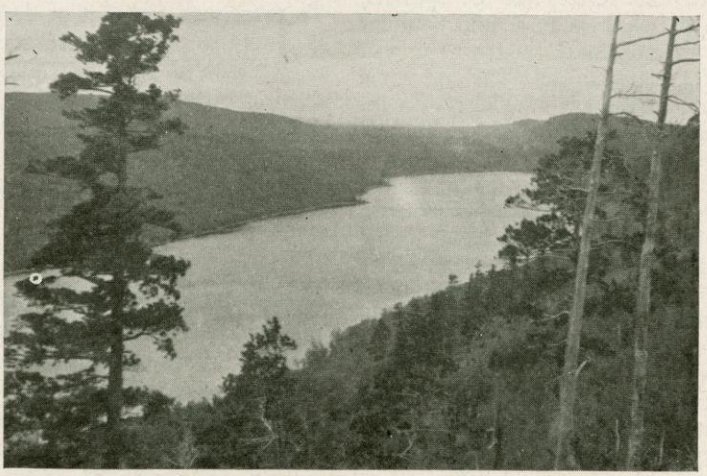
There are, of course, odd bits of uncut hardwoods left elsewhere. The largest bit (10,000 acres) is owned by a private club, and is kept to look at. It is ironical that this club may in the end outscore the combined efforts of the Congress of the United States, the U. S. Forest Service, the sovereign state of Michigan, and the mighty lumber industry as a conserver of virgin forest.

The sugar maple is as American as the rail fence or the Kentucky rifle. Generations have been rocked in maple cradles, clothed from maple spinning wheels, and fed with maple-sweetened cakes served on maple tables before maple fires. Yet the demise of the maple forest brings us less regret than the demise of an old tire. Like the shrew who burrows in maple woods, we take our environment for granted while it lasts. Unlike the shrew, we make shift with substitutes. The poorest is the European "Norway maple", a colorless fast-growing tree persistently used by misguided suburbanites to kill lawns. Wisconsin has used Norway maples to shade its capitol. No governor and no citizen has protested this affront to the peace and dignity of the state.

Maple boards, like maple shade, take time to grow. We have lots of prospective maple lumber in second-growth stands. It is doubtful whether these regrowths will ever achieve the quality or volume of the original stands, first because we shall lack the patience to wait for them to mature; secondly because the maple forest is one of the most highly organized communities on earth; hence the slashing likely injures its future capacity to produce.

• The bills referred to are H. R. 3793 (Hook Bill), now before the House Committee on Agriculture, Hon. Hampton P. Fulmer, chairman; and companion bill S. 1131, now before the Senate Committee on Agriculture and Forestry, Hon. Ellison D. Smith, chairman. They do not specifically provide for the avowed objective, but include incidentally the Porcupine Mountain area in a much vaster area for sustained yield timber management. Furthermore, we seriously question the advisability at the present time, when America must concentrate its resources both financial and material on vigorous prosecution of the war, of pressing for such a large amount of money ($30,000,000) when a small fraction of that amount would suffice for the specific objective.

Ten per cent of the money authorized by the bill would likely be ample for purchasing the Porcupine Mountains and the timbered areas immediately adjacent to the south and west—a solid block of approximately 100,000 acres. Half of that money, or five per cent, might well suffice for the immediately pressing acreage. However, we have told Congress that we are not interested in mechanics. We have stated the objective and urge that Congress, in its wisdom, mold the legislation as needed to attain this objective—and that next year will be too late. You can help save the Porcupine area by making your wishes known to Congressman Fulmer and Senator Smith.



Lake of the Clouds

(Reprinted from the May-June, 1942 issue of Outdoor America)

FEW laymen realize that the penalties of violence to a forest may far outlast its visible evidence. I know a hardwood forest called the Spessart, covering a mountain on the north flank of the Alps. Half of it has sustained cuttings since 1605, but was never slashed. The other half was slashed during the 1600's, but has been under intensive forestry during the last 150 years. Despite this rigid protection, the old slashing now produces only mediocre pine, while the unslashed portion grows the finest cabinet oak in the world; one of those oaks fetches a higher price than a whole acre of the old slashings. On the old slashings the litter accumulates without rotting, stumps and limbs disappear slowly, natural reproduction is slow. On the unslashed portion litter disappears as it falls, stumps and limbs rot at once, natural reproduction is automatic. Foresters attribute the inferior performance of the old slashing to its depleted microflora, meaning that underground community of bacteria, molds, fungi, insects, and burrowing mammals which constitute half the environment of a tree.

The existence of the term microflora implies, to the layman, that science knows all the citizens of the underground community, and is able to push them around at will. As a matter of fact, science knows little more than that the community exists, and that it is important. In a few simple communities like alfalfa, science knows how to add certain bacteria to make the plants grow. In a complex forest, science knows only that it is best to let well enough alone.



Presque Isle Falls

But industry doesn't know this. I fear that the present mistreatment of the northern hardwoods may be pondered more seriously in 2042 than in 1942. Industries wince with pain when fixers and planners lay violent hands on their highly organized economic community, yet these same industries fix their forests to death with never a flicker of recognition that the same principle is involved. In neither case do we understand all the intricacies of internal adjustment. Communities are like clocks, they tick best while possessed of all their cogs and wheels.

WHILE the northern hardwood forest, like the Spessart, is injured by violence, it is known to stand up under gentle intelligent use to an extraordinary degree. You can cut a third of the volume of a 200-year-old stand and come back every 20 years and take as much again. The reason inheres in the extreme shade-tolerance of the sugar maple and its associated species. Under each mature veteran stand a dozen striplings, full-height and ready to lay on wood the year after the felled veteran bequeaths to them his place in the sun. This method of quick turnover utilization is called selective logging. Its technology has been fully explored by the research branch of the Forest Service. It differs from slash logging in that the mature trees are cut periodically instead of simultaneously, and the striplings are left to grow instead of to burn in the next fire.

How has industry, with its ear ever cocked for new technology, received this innovation? The answer is written on the face of the hills. Industry, with the notable exception of a half-dozen companies, is slashing as usual. The reason given is that most mills are so nearly cut out anyhow that they cannot await the deferred returns of selective logging; they prefer to die quickly in their accustomed shower of sawdust, rather than to live forever on a reduced annual budget of boards.

One is apt to make the error of assuming that a corporation possesses the attributes of a prudent person. It may not. It is a new species of animal, created by mutation, with a morphology of its own and a behavior pattern which will unfold with time. One can only say that its behavior pattern as an owner of forests is so far not very prudent.

YEARS ago, when the green robe of the Porcupines still spread over much of upper Michigan, bills were introduced in Congress to buy the area as a National Forest. At that time, the proceeds from selective logging would have paid for the land, and left the growing forest to boot. Nothing was done.

Today, when the green robe of the Porcupines has shrunk to the dimensions of a barely respectable necktie, bills are still before Congress. I suppose Congress hesitates to buy, fearing catcalls from patriotic constituents who assume that all internal problems can wait. Most of them doubtless can and should, but not this one. The war will surely outlast this remnant of forest.

I doubt whether public acquisition, as a means of assuring the national timber supply, is a satisfactory substitute for forestry practice by private owners. The job is too big. When government takes over a small area for decent use, it aims to educate by example, but I fear it also generates a false assurance that things are on the mend. In any event the Porcupine necktie is now too small to be of any consequence as a source of timber. But the Porcupine necktie is more than timber; it is a symbol. It portrays a chapter in national history which we should not be allowed to forget. When we abolish the last sample of the Great Uncut, we are, in a sense, burning books. I am convinced that most Americans of the new generation have no idea what a decent forest looks like. The only way to tell them is to show them. To preserve a remnant of decent forest for public education is surely a proper function of government, regardless of one's views on the moot question of large-scale timber production. Moreover, the Porcupines offer the only steep topography available to the public in the snow-belt of the Lake States; they have a future as a ski area, provided they are not further denuded. The necktie is worth keeping for this purpose alone.

I would like to see the Porcupine region acquired and preserved as an act of national contrition, as the visible reminder of an unsolved problem, as a token of things hoped for. To this end it had best be kept roadless, axeless, hotelless, and open only to ski or foot travel. The mere existence of such a token-forest might hasten the day when the green robe again spreads over the Lake States, and when the cutting and using of mature timber becomes an act of normal land-cropping, rather than an act of land-pillage.

file comments on writings

"Results of second remeasurement of Adirondack cutting plots" did *not* appear in the June issue of the *Journal of Forestry* but is now scheduled for the October issue thereof.

HORACE F. STUDLEY called at the School on September 18. Studley is still dealing in wholesale box shooks but with markets restricted by government purchases. Two of the mills for which he handled the entire product burned this year and were not rebuilt due to difficulty of securing priorities for machinery.

1908

NELSON C. BROWN has been busily engaged through the summer on a number of consulting jobs. He has also been made a member of the consolidated Syracuse and Onondaga County War Council and has been placed in charge of gasoline, sugar and rubber rationing and other phases of the War Council activities.

FREDERICK H. BRUNDAGE is doing a fine job in getting out defense timber as W.P.B. representative on the West Coast.

ELIAS T. CLARK was in Washington recently on matters connected with the defense program.

JOHN A. FERGUSON says he enjoys his winters at St. Petersburg, Fla. One of his avocations is fishing in the inlets and bays; as a practical forester he learned the habitats of the fish by employing a fisherman guide for a few trips, after which he had all the good spots located and thenceforth rowed his own boat.

ROBERT B. MILLER reports that about 45 students who were sent out west to take summer employment with the U. S. Forest Service are expected to return to the College of Mining and Technology at Houghton, Michigan.

HERBERT S. NELSON is now employed by the N. Y., N. H. & H. Railroad.

1909

HUGH G. CALKINS' address is care of the Coordinator, Office of Inter-American Affairs, Department of Commerce Bldg., Washington, D. C.

FREDERICK A. GAYLORD is Liaison Officer, Second Corps Area in the U. S. Forest Service handling all technical services with the Army. He is located at 71 W. 23rd Street, New York City.

EVERETT H. MacDANIELS' son Laurence K. is a 1st Lt. in the U. S. Army. Laurence was granted his M.D. degree at the University of Oregon in 1941.

ALDO LEOPOLD'S article "Cheat takes over" originally appeared in *The Land* and was reprinted in *Conservation*, May-June 1942. It is an instructive account of the invasion of European cheat grass on the western ranges and its significance not only as an evidence of range deterioration but as a vigorous and pernicious competitor of better grasses, a promotor of fires which destroy browse and coniferous reproduction, an invader of alfalfa fields and a bone of contention among stockmen and superficial conservationists.

Leopold compares cheat grass to the English sparrow and the carp and says "conservation I fear is still in large degree a parlor game. The cheat problem reminds me again, how difficult a task has been laid upon the coming generation of technical men. How to join the life of a local community without going native intellectually, how to muster courage to unravel land use problems which are at best only partly soluble, how to become expert in one small technical field without losing the common touch with land as a whole, how to translate technical knowledge into land-use practice without loading the whole job on the government—these are tasks indeed."

WILLARD SPRINGER, JR., sent in the following note on his current activities. "I am still President of the Industrial Trust Company of Wilmington, Delaware. I am also still Liquor Commissioner for the State as well as Chairman of the State Forestry Commission. To add to my difficulties I am also a member of the Board of Trustees of the State Hospital for the Insane and Chairman of the Board of Trustees of one of our district schools."

"I have acquired two grandsons within the last two years, one in January 1941 and the second on the first day of August of this year. They are sons of my oldest daughter, who is the only one married of my crop of three."

1910

ERNEST G. DUDLEY, although a busy raisin grower, continues to take an active part in California forestry matters. He is a member of the Statewide Committee on Natural Resources of the California State Chamber of Commerce.

MAX H. FORESTER is general manager of production for the Consolidated Coal Company which operates about 20 mines in West Virginia and adjoining states and ships about 45,000 tons of coal per day. He says that the activity which occupies more of his time than anything else is settling labor disputes by conferences.

HAROLD P. GILKEY. Mr. and Mrs. Harold P. Gilkey announce the marriage of their daughter Sarah Eugenie to Mr. Frederick Vander Weele on Saturday, July 18, 1942, at Kalamazoo, Michigan.

STEPHEN V. KLEM had a visit with Prof. Chapman at East Lansing on July 21, at a noon luncheon with the forestry faculty of Michigan State College. Steve is sporting quite a bay window. It appears that life insurance agrees with him.

JULIUS A. LARSEN returned to his teaching duties at Ames, Iowa, the latter part of September, after a three months' stay on the Yale Forest at Keene, N. H. Never has the Lodge been kept in as clean and neat condition as this season under Larsen's efficient charge. Future incumbents please take note. Larsen reports a busy summer in establishing a series of plots and taking instrumental readings on climatic and soil factors. Unfortunately the shortage of gas prevented the Faculty from consulting with him during the summer as much as they would have liked.

EDGAR F. WHITE'S son Charles graduated in forestry from the University of Minnesota about three years ago. He has had charge until recently of a cooperative in Winona County, Minnesota, whose principal activity is owning and operating a sawmill and planer to convert the miscellaneous hardwoods of that area into lumber for construction of new farm buildings.

1911

PHILIP L. BUTTRICK'S new book on Forest Finance, to be published by John Wiley and Sons. New York, has been delayed in printing and will not appear until about December 1st.

ARTHUR F. FISCHER. Lieutenant Colonel Arthur Fischer visited Mr. Graves in New Haven in July and called at the School on the 28th. He appeared in good health in spite of his strenuous trip from the Philippines to Australia.

FRED R. JOHNSON has an interesting note on early national forests in the September issue of the *Journal of Forestry*.

MYRON W. THOMPSON recently looked over the territory at the head of the Wind River drainage where he was located in 1914 when the Wyoming Tie and Timber Company started work in that area. They have been operating ever since and have driven an average of about 300,000 railroad ties a year for the last 28 years down the Wind River to Riverton, Wyoming.

1912

VICTOR A. BEEDE and Mrs. Beede held an evening social at their new home for H. H. Chapman on June 19 to which the faculty and wives of the Department of Forestry at Penn State were invited, including Dean Fletcher. The Beedes spent part of their vacation at the seashore, Woodmont, Conn.

J. WILBUR O'BYRNE, extension forester of Virginia contributed some photographs which appear in a publication of the Chesapeake Corporation illustrating forestry practices in a popular way.

1914

HARRISON V. BAILEY. Harry's older son, Putnam, married for five years, is in the Navy as electrician's mate. His second son, John Drew, also is married and has a son, John Payne, born July 21 in Winooski, Vermont.

EMANUEL FRITZ is putting life into a recurring proposal that the State of California set up a system of state forests. The State Board of Forestry has accepted

Saving the Trout Streams

Possibly excepting Green Bay Packer football fans, there is no more devoted class of sports lovers in Wisconsin than that large although uncounted fraternity that derives soulful satisfaction out of casting a fly or dunking live bait in pursuit of that aristocrat of Wisconsin inland fishes—the trout.

In this community and in many others, however, there has been a tacit realization and recognition that trout fishing in Wisconsin has deteriorated and that artificial propagation and planting alone have not succeeded in heading off the deterioration.

The fishermen have known that many of the ancient streams of the state have become "sick," and that the trout fishing of their earlier days would not return without drastic and fundamental curative work.

That is the encouraging thing about the establishment of the Wisconsin Trout Stream Improvement Association. If it proves nothing else, if it accomplishes nothing else, it betrays a growing maturity of view among the plain and fancy fishermen of Wisconsin who are the backbone of that vague entity described in Wisconsin as "the conservationists."

Artificial and mechanical fish planting, given an exaggerated emphasis during an era comprising the last decade, is now being reduced to its proper norm.

The fishermen themselves, with the eager collaboration of the scientists and the biologists who are happy to see public opinion in the conservation movement catching up with them, are now proposing to get down to the essentials of conservation. More power to them. The association may or may not succeed in its immediate objective—trout stream improvement. It has succeeded, and notably, in spearheading a revolution in rank and file conservation beliefs in Wisconsin that will leave permanent and valuable marks.

Nor can we let this subject be concluded without a word of praise for Prof. Aldo Leopold, the University of Wisconsin game management pioneer, whom Gov. Goodland designated for a place on the Wisconsin conservation commission last year. Prof. Leopold's voice has been heard over these many past years, but few were listening. Now his teachings are bearing fruit,

ening, April 17, 1944

among the fishermen in the field, where it will count most. In the past it sometimes seemed that the state conservation department was unaware of Leopold or his teachings. It is good to see that he is now a part of that organization, employing his vast experience and his prestige as a scientist in its everyday administrative problems as well as in the formulation of broader policies and ultimate objectives.

GREEN BAY PRESS-GAZETTE APPLETON POST-CRESCENT

Mrs. Leopold

MADISON NEWS BUREAU

242 WASHINGTON BUILDING
MADISON, WIS.

JOHN WYNGAARD, Manager
Telephone Badger 1518

Dear Mr. Leopold:

Thanks for your comments the other day.

I am enclosing an editorial note which may be of interest to you.

Yours,

John Wyngaard

The Sheboygan Press
THE PAST IS GONE — WE FACE TO-DAY.
SHEBOYGAN, WISCONSIN
July 29, 1944

The following editorial is from the pen of CHARLES E. BROUGHTON, editor. If it is reproduced or commented on, such comment will be appreciated by him.

Saturday, July 29, 1944

Campbell For Gov. Goodland

W. J. Campbell of Oshkosh has volunteered his services in the interests of Governor Goodland and spoke over Radio Station WHBL Thursday evening.

He pointed out that he was doing this work not at the request of the governor, but because of his interest in seeing him elected.

In his address Mr. Campbell explained the vetoes of Governor Goodland and asked questions of candidates Kenny and Murray, and no doubt more questioning will go on as the campaign progresses. Mr. Campbell supports Governor Goodland because he believes that he is eminently qualified for the position and that he has demonstrated his ability in the many tests that have been placed before him. Mr. Campbell refers to his candidate as a conservationist. The only thing we can say is that he does not just talk conservation, he lives it and practiced it when he appointed two of the finest conservationists in the state, Aldo Leopold and John O. Moreland, to succeed two who had brought about an almost entire collapse of the conservation program.

Governor Goodland is not going before conservation groups and talking to them. In fact, that isn't the way to approach the subject. The Izaak Walton league is a non-political organization, and should be, and it places itself in an embarrassing light when it plans meetings with prospective candidates. The Izaak Walton league in Wisconsin will live just as long as it keeps itself free from politics, and when a chapter invites or participates in a political controversy it violates the very essence and foundation upon which the Izaak Walton league was built.

Individual members of the Izaak Walton league have a right to a choice for governor, but the officers have no right to assemble a chapter and turn conservation into politics as was done over in Portage county. The Izaak Walton league membership is supposed to study the platforms and the character of all the candidates and then vote for the one who best exemplifies conservation.

Some people seriously questioned what Acting Governor Goodland would do in the matter of appointments to the commission, but when the real test came he named two outstanding conservationists, thereby placing conservation on a high plane.

January 22, 1947

Dr. H. H. Chapman
School of Forestry
Yale University
New Haven, Connecticut

Dear Herman:

I appreciate your thoughtfullness in mentioning the publication of my erosion paper in Yale Forestry School News. I notice that you speak of it as "suppressed at that time by the Forest Service". I, of course, have no exact recollection of why I did not publish it, but I certainly do not have any recollection of any suppression. I did not at that time have established connections with Journals and maybe I just didn't know where to send it. Anyhow, I think it only fair for me to say I do not recollect any suppression.

Needless to say I am very appreciative of your belief that this old manuscript was worth reviving and I take some pride in the fact that it still seems to fit despite the lapse of twenty-five years.

With personal regards,

Aldo Leopold

Jan. 1947

of the economy of total production. This is to be done by dedicating the land to forest production under a contract with the government, which requires reforestation, a plan approved by the government, skilled supervision and adequate accounting. The government either repays 25 per cent of the net expenditures or grants $30.00 per acre for areas planted. It costs between $50 and $75 per acre to plant successfully, due to fencing against rabbits and their suppression and strong weed competition, so that large stock, deep holes and close spacing are required. Natural seeding is practically never practiced successfully.

Moore was a surprise visitor at the American Forest Congress in Washington. He is spending 6 months in the United States before returning to England.

THORNTON T. MUNGER in *Journal of Forestry* for October has an article on watching a Douglas fir forest for 35 years. The watching was intermittent but resulted in 5-year remeasurements whose results are given. He emphasizes the basic importance of such historical records of growth in acquiring reliable knowledge of silvicultural practices and financial results of forestry. Incidentally the three plots showed a mean annual growth at 80 years of 1234 board feet per acre, international ⅛ inch rule and 847 board feet Scribner. The mean annual growth in cubic volume culminated at 8 years and was 173 cubic feet.

RUTLEDGE PARKER and H. H. Chapman, '04, had their picture taken with Ray Rendall, '20, seated in Ray's new airplane, at Center Lovell, Maine, on October 3. Kienholz, '31, later took a ride in the plane, but his weight reduced the capacity of the plane from 3 to 2.

Parker participated in the discussion on development of state forest practice laws at the December meeting of the Western Forestry and Conservation Association. He covered the state of Montana.

1909

BELKNAP C. GOLDSMITH continues to do some appraisal work for the California state division of forestry on a part-time basis. He completed recently appraisal of a 40,000-acre tract of redwood which is marked for a state forest.

CHAPIN JONES has returned from his travels in South America and has taken up his work again as Professor of Forestry at the University of Virginia, Charlottesville, Virginia. He is teaching a cultural forestry course.

ALDO LEOPOLD'S paper on "Erosion as a menace to the social and economic future of the Southwest," delivered before the New Mexico Association for Science in 1922, and suppressed at that time by the Forest Service, was published for the first time in the *Journal of Forestry* for September 1946. It was the first public recognition of the menace of erosion in that region and correctly assigned its cause as overgrazing of the watersheds and destruction of the vegetative cover. The findings expressed in this pioneer paper are as sound today as they were 25 years ago.

EVERETT H. MACDANIELS spoke at the Western Forestry and Conservation Association meeting on a re-study of the Clark-McNary procedures.

1910

GEORGE A. CROMIE, farm forester for southwestern Connecticut at a recent farm forestry meeting presented newly issued newspaper articles on "Girdling weed trees in economically inaccessible stands," "Compacted brush piling for orderly lumbering" and "Greater use of hemlock in brushland and semi-shaded plantings."

ROBIE M. EVANS was among the participants in a panel discussion of "Is forest regulation the next step in private forest land management" at the summer meeting of the Allegheny Section held at Jackson's Mills, West Virginia, in July. Others participating were E. B. Moore, '26 and M. W. Humphrey, '31. Humphrey was pinch-hitting for Vic Beede, '12.

JAMES L. GOODWIN was married to Miss Genevieve Hancock on Tuesday, the 5th of November, at the Church of the Ascension, New York City. Mr. and Mrs. Goodwin are at home at 10 Woodside Circle, Hartford, Connecticut.

CROSBY A. HOAR recently promoted to full charge of Region 7 branches of state and forest management and protection, has just completed a tour of New England which included an address at a meeting of 46 farm foresters and associates of the district at the Harvard Forest, Petersham, Massachusetts, during the week of October 28.

Crosby states he "is enthused with the progress and possibilities of the farm forestry movement in vitalizing needed improvement to the eastern farm woodlots." He was accompanied on the trip by Mrs. Hoar and daughter, Nancy.

1911

WALTER J. DAMTOFT representing the North Carolina Conservation Commission, in mid-summer attended a meeting in chief forester Watts' office at Washington, along with William A. Wright, Virginia conservation commissioner, and state forester George Dean, '27, and officials of the Federal Forest Service, concerning the establishment of a National Forest in the Great Dismal Swamp of North Carolina and Virginia.

THEODORE W. DWIGHT was called to New Haven on September 27. The Dwight clan of which he is a member possess a lot in Grove Street cemetery in which eleven members of the family are buried. One of Dwight's relatives had signified her wish to be buried there, and Dwight undertook the responsibility.

He and Walter Meyer, '22, had a discussion about the methods which were being taught in construction of volume tables.

ALFRED B. HASTINGS attended the Central States section of the SAF meeting held at Spring Mill Park, Mitchell, Indiana, in November. Other Yale foresters present included: Claud E. Sutton, '14; G. Luther Schnur, '26; Leonard F. Kellogg, '27; Eugene V. Roberts, '30; and Gustaf A. Limstrom, '31.

Hastings has completed the field work of a study of state forest administration in Tennessee made during the summer at the invitation of the Governor. He is now engaged in a similar study in Ohio. These surveys are conducted jointly by the Society of American Foresters and the Charles Lathrop Pack Foundation. Charles F. Evans, '12, is on the steering committee.

SAMUEL R. MACDONALD was elected a member of the Connecticut General Assembly at the November election. Sam will represent the town of Wallingford. Needless to say he was running on the Republican ticket. He has been interested the last few years in town affairs and has served already on several commissions.

SEWARD H. MARSH fell while ice skating at the East Lansdowne, Pennsylvania, rink on December 1 and broke his right arm. Hank is in charge of Clark-McNary inspection for the states of Kentucky, West Virginia, Virginia, Maryland and Delaware in Region 7 of the U. S. F. S.

HAROLD S. NEWINS. Further information in regard to the third grandchild mentioned in the last issue of the NEWS is that the boy born on August 22, 1946, has been named Jack.

EARL S. PEIRCE of the office of state and private coöperation, Forest Service, talked to the association of State Foresters at Center Lovell, Maine, on October 3 on coöperative fire protection.

JOHN W. SPENCER delivered an address on September 25, 1946, before the committee on livestock and agriculture, Denver Chamber of Commerce on the subject "Why Colorado Needs National Forests." The address presents convincing arguments for retaining national forest lands in federal ownership.

1912

SAMUEL E. BOWER wrote from his ranch-o at Lakeside, California, under date of September 11, to his classmate Ben Rice, "Has been some time since I have checked in on the class news. Inasmuch as you sent the letter to Haw-

thorne, Nevada, that must have been the last port of call. Some three years ago I closed out my business there and bought a 13-acre ranch-o about 18 miles inland from San Diego.

"The general idea was to sort-a sit back in the traces and let someone else do the pulling. We were pretty tired and had been so busy that I had gotten away in arrears in my fishing and hammocking and rocking, and I did want to get caught up. But from my experience, this business of so-called retiring is 100% bunk. As a matter of fact one does cancel the old routine of doing certain things at set times for a set gain (or loss); you figure to do what you want to do when you want to do it—that also is the bunk. But why preach a sermon? The only sound basis for retiring seems to me to be when a man starts giving good advice because he has gotten too old to set a bad example.

"Just got back from a 8500 mile trek thru the Canadian Rockies. Got as far north as Athabasca. Fishing was good but they make you throw back everything under twelve pounds. Drove thru much of the forest lands in your district on the way home. Incidentally, lost my high gear unit above Weiser, Idaho, and had to make the trip all the way back to Lakeside in second gear-overdrive. Just could not get repairs.

"In case you know of any of the gang that might live near here, please give me their address so I can look them up."

RAYMOND M. KILLEY is eastern district manager for Koppers Co., Inc. A recent issue of the Company magazine, *Kopper News*, shown him with a group of department heads. The company deals in the manufacture of gas, coke, and wood preservatives. Killey is stationed at Charleston, South Carolina.

J. WILBUR O'BYRNE is busy dashing around the state of Virginia promoting an active educational forestry program among the farmers and other small land owners.

1913

R. BROOKE MAXWELL has been appointed director of Forest and Parks for the city of Baltimore. Judging from newspaper accounts he inherited some difficult personnel and political problems.

1915

WILLIAM L'E. BARNETT, fourth vice president of the Florida Forestry Association writes that the Association has employed a forester at a salary of $5000 per year as executive secretary and has launched a monthly 4-page bulletin, copy of which he enclosed. There is a great field for this association in Florida if for nothing else but working out the problems of handling fires.

BERNARD E. LEETE is now located at 275 Annis Court, Chillicothe, Ohio. He writes about his family: "Mrs. Leete has been teaching 3rd grade in a rural centralized school about 8 miles from town ever since the war started. This is her fifth year. Bill, 17, is finishing high school this year and expects to enter Yale next fall. Bernard Denison, my oldest son, is still with the General Electric Company. He was transferred the first of September from Schenectady to W. Lynn, Massachusetts, where he is now situated. He was graduated from Yale Engineering School in 1942. Barbara was married at Dwight Place Church, New Haven, on June 3 to Karl Henry Stange who was graduated from Yale Divinity School last summer. They are now on their way to Shanghai where Karl will be engaged in International Y. M. C. A. work."

1916

E. STANLEY ATKINSON is still operating his lemon and avocado ranches in the Carpinteria Valley, California, and also helping to run the town water company as secretary-treasurer of the corporation.

BENJAMIN F. AVERY was not able to attend the Harvard-Yale football game in Boston in November due to pressure of work. However, he did the next best thing, namely, to have his eldest daughter, Deborah, who is attending the Modern School of Fashion & Design at Boston, take in the game in his place and got her to telephone him immediately afterwards an account of the contest.

MARINUS WESTVELD delivered a paper on "Forest management as a means of controlling the spruce budworm" at the summer meeting of the Society of American Foresters at Salt Lake City.

West has a comprehensive program of investigation of the forest management aspects of budworm control in progress in northern New England and New York State. The spruce-fir country has been divided into three work centers, and three field parties have been organized, with headquarters at Orono, Maine; Laconia, New Hampshire, and Long Lake, New York. Vic Jensen, '28, is in charge of the party at Laconia, and John S. McGuire, '41, is working with the party at Orono.

The work of these parties consists of developing inexpensive and rapid techniques for making "vulnerability maps" showing areas most susceptible to attack, marking typical stands in the most vulnerable areas for cutting, and checking the economic feasibility of making such cuttings. Several large owners of spruce-fir stands are coöperating actively in this program by providing sites for the work, and labor and equipment to help carry it out.

1917

C. EDWARD BEHRE is senior author of a report entitled "Gaging the Timber Resources of the United States," which is one of a series of reports in which the Forest Service is publishing the results of its reappraisal of the nation's forest situation. In this report Eddie attempts to chart the possible course of growth and drain under a comprehensive program of good forestry that would build up the productivity of the nation's forests to a goal of 72 billion board feet annually. He concludes that the allowable cut for the nation as a whole would need to be held below the current output for several decades before an increase could be sustained. However, output could be increased in the next few decades from every western region except the Pacific Northwest and this would offset in part an apparently inevitable curtailment of output for the South.

ARLIE D. DECKER writes from Spokane, Washington, to Mr. Chapman under date of November 10, 1946.

"I am now with Valentine-Clorn Corporation, a pole company which has done a great deal in the development and promotion of our western larch and lodgepole pine in pole utilization in addition to western red cedar. The larch and lodgepole are machine shaved with the sapwood reduced and treated full length by the open tank process for most areas."

W. STUART MOIR spent October 22 and 23 in Amherst, Massachusetts, on his swing back from the Forest Congress to his office in Portland, Oregon, where he is forester for the Western Pine Association. Moir is a graduate of Massachusetts State and had a good time visiting old friends in and around the college.

Moir spoke on the policies of the western states as they apply to sustained yield programs at the annual forestry conference of the Western Forestry and Conservation Association meeting in Portland.

1918

CORYDON WAGNER discussed the application of the American Forestry Association program to the West at the forestry conference of the Western Forestry and Conservation Association in December.

1920

WILLIAM E. PERKINS entertained his classmate Ray Rendall on November 13. Bill has four daughters and no sons, and has to take some razzing from his classmates, Rendall, Pete Wise, and Bert Claridge all of whom have sons in Yale at present. Bert Claridge's son, Bertram, has entered Yale as a freshman. Bert was down to the Dartmouth game. Pete Wise's son enters Yale as a junior in January.

RAYMOND E. RENDALL was elected Secretary-Treasurer of the Association of State Foresters at the annual meeting October 2-4 at Center Lovell, Maine, at which 34 states were represented. Ray had complete charge of the arrangements for the meeting which was held among luxurious surroundings which did not interfere with concentrated attention to the business at hand.

CARL FELTON, PRES. J. G. DICKSON, VICE-PRES. DR. A. S. HEGGEN, VICE-PRES. F. A. SCHULTZ, SEC'Y-TREAS.
PHONE B-4634



Izaak Walton

Madison Chapter

Izaak Walton League of America

DIRECTORS
WM. J. P. ABERG
THOMAS E. COLEMAN
W. K. COLLINS

OFFICE OF THE SECRETARY
933 E. JOHNSON ST.
MADISON, WIS.

TO MEMBERS OF THE MADISON CHAPTER I. W. L. A. AND THEIR FRIENDS:

The ANNUAL BANQUET of the Madison Chapter I. W. L. A. will be held at the LORAINE HOTEL Friday, April 13, at 6:30 P.M. The banquet tickets are 50 cents. Please make your reservations at once by returning the enclosed postal card.

PROFESSOR ALDO LEOPOLD, who occupies the Chair of "GAME MANAGEMENT" at the University established by the Wisconsin Alumni Research Foundation, will be the principal speaker. He is a member of the President's recently appointed committee of three on "WILD LIFE RESOURCES" and has just completed the first comprehensive textbook on "GAME MANAGEMENT" published in the United States.

Professor Leopold, while a nationally known authority on game, is a resident of Madison and is particularly conversant with Dane County conditions. In his address he will sketch a program of conservation work, not for Wisconsin, or for the country at large, but for Dane County. He will propose a definite Dane County policy for meeting the problem of posted farms, a new way to encourage farmers to develop their marshes instead of draining them, a new system of parks differing radically from the present State and city parks, a new device for preventing the extermination of useful hawks and owls, and a new research project for settling the moot questions of carp-seining and duck-food in the Madison lakes. He will discuss the deterioration of local trout streams by erosion and floods, and what the local Waltonians should do to aid in restoring normal waterflows and greater trout production. The relations between the League and the Conservation Commission will be analyzed, as well as the present activities of each. In general, Leopold will challenge local conservationists to come to grips with their own local problems, instead of merely paying dues and voting yes or no on distant issues which do not directly affect Dane County's outdoor resources and their use by local citizens.

STATE PRESIDENT LOUIS RADKE AND SECRETARY FRANK GRAASS have promised to be with us. SID GORDON - sportsman, author, and fly-casting authority is also expected.

ELECTION OF OFFICERS

Enclosed is the official ballot for the election of officers for the ensuing year as prepared by the Nominating Committee.

Please mail your ballot in the self-addressed envelope enclosed. Polls will close promptly at 6:30 P.M. April 13.

F. A. SCHULTZ,
Secretary.

MARRIAGE CERTIFICATE

State of New Mexico

County of Santa Fe.

I Hereby Certify That on the Ninth day of October, A. D. 1912 at the Cathedral Church of Saint Francis of Santa Fe. N. M. in said County and State, I, the undersigned, a Catholic priest x Rector of the Cathedral did join in the

HOLY BONDS OF MATRIMONY

in accordance with the laws of the State of New Mexico, and the authorization of the foregoing license, Aldo Leopold of tres Piedras, formerly of Burlington, Iowa, and Estella Elvira Bergere of Santa Fe. N. M.

Witness my hand and seal the day and year last above written.

WITNESSES:
Carl Starker Leopold
Anita Lina Bergère

Right Revd. Monsignor Anthony Fourchégu V. G.
(Official Title) Rector of the Cathedral Church

Signed Aldo Leopold Groom.

Signed Estella Elvira Bergère Bride.

Recorded this 10th day of October A. D. 1912 at 11:30 a. M., in Marriage Record Book No. 3 Page No. 1231

M. A. Ortiz County Clerk.

(SEAL)

By V. Abeyta Deputy.

New Mexican Printing Company, Santa Fe, N. M.

No. 1231

MARRIAGE LICENSE.

STATE OF NEW MEXICO, } ss.
County of Santa Fe.

To Any Person Authorized by Law to Perform the Marriage Ceremony, Greeting:

You are hereby authorized to join in marriage Aldo Leopold
of Ires Cruces N.M. and Estella Bergere
of Santa Fe, N. M., and of this license you will make return to my office within the time prescribed by law.

WITNESS my hand and the Seal of said Court at Santa Fe, this 8th day of Oct. 1912.

M. A. Ortiz
County Clerk.
By J. J. Leland Deputy.

[SEAL]

Recorded Oct. 8th 1912 at 3 P. M., in Marriage Record Book No. 3 Page No. 1231.

M. A. Ortiz
County Clerk.
By J. J. Leland Deputy.

Metropolitan
THE LIVEST MAGAZINE IN AMERICA
432 FOURTH AVENUE, NEW YORK

Office of
Theodore Roosevelt

January 18, 1917.

My dear Mr. Leopold:

Through you, I wish to congratulate the Albuquerque Game Protective Association on what it is doing. I have just read the Pine Cone. I think your platform simply capital, and I earnestly hope that you will get the right type of game warden. It seems to me that your association in New Mexico is setting an example to the whole country.

Sincerely yours,

Theodore Roosevelt

Mr. Aldo Leopold, Secretary,
Albuquerque Game Protective Ass'n,
Albuquerque, N. Mex.

6



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Sincerely yours,

Theodore Roosevelt

Mr. Aldo Leopold, Secretary,
Albuquerque Game Protective Ass'n,
Albuquerque, N. Mex.





(Signature of registrant)

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424 University Farm Pl.
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Registration No. 5-211-801

University Club

MADISON WISCONSIN

This is to certify that the Directors, at their meeting of JAN 14 1926, elected Aldo Leopold a Reg. member of the University Club.

O. A. Fried

Secretary

Dated JAN 14 1926

LOCAL BOARD FOR

LOCAL BOARD
FOR THE COUNTY OF BERNALILLO
STATE OF NEW MEXICO
ALBUQUERQUE

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classified and recorded in Class 4-a

FORM 1007.—PMC
(See Sec. 110, S. S. R.)

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This certificate, bearing the corporate seal of the Association, confirms the holder as a patron of science who joined the A.A.A.S. during the one hundredth year of its founding to facilitate cooperation among scientists, to improve the effectiveness of science in human affairs, and to increase general appreciation of the importance and promise of the methods of science in human progress.

(SEAL)

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Prof. Aldo Leopold
424 Univ. Farm Place
Madison, Wisconsin

No. 1065

SIGMA XI

UNIVERSITY OF WISCONSIN

Madison, Wis., Apr 20 X

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A Schnette

Treasurer

IF YOU REQUEST IT, THIS CERTIFICATE WILL BE RETURNED TO YOU FOR FUTURE USE

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WAS ELECTED A MEMBER OF THE Wisconsin CHAPTER OF

SIGMA XI HONOR FRATERNITY

ON April 10 1925 AND THEREFORE ENTITLED TO WEAR ITS OFFICIAL INSIGNIA.

GRADUATED AT Yale

CLASS YEAR 1909 F

H. A. Schmitter
CHAPTER ~~SECRETARY~~ Treas

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4/11/28

WISCONSIN CHAPTER
MADISON

April 10, 1925.

My dear Mr. Leopold:-

I have the honor to inform you that you have been elected a member of Sigma Xi, the society for the promotion of research. It is therefore my pleasure to extend to you in behalf of the Wisconsin Chapter a cordial invitation to become one of its members. The initiation fee, which includes dues for the remainder of the fiscal year, is three dollars.

An early acknowledgment will be appreciated.

Respectfully yours,

W. D. Stovall

Secretary.

Mr. A. Leopold,
2222 Van Hise Avenue,
Madison, Wisconsin.

FLS - pls make me a folder "Sigma Xi"

April 16, 1925.

Dr. W. D. Stovall, Secretary,
Sigma Xi,
South Hall, Univ. of Wis.,
Madison, Wis.

Dear Doctor Stovall:

I highly appreciate the honor of election to Sigma Xi and will be very glad indeed to become a member.

The remittance mentioned in your letter is attached.

Very sincerely yours,

ALDO LEOPOLD.

Enclosure.

F.L.S.

The Society of the Sigma Xi

By This Diploma Certifies

That A. Leopold was

on the Seventh day of April in the year 1925 duly

elected to membership in the Wisconsin Chapter

of the Society of the Sigma Xi, and is fully entitled to all privileges granted

by its constitution

E. J. Kraus
Chapter President

Attest: W. D. Stovall
Chapter Secretary

Due 10-20-43 Madison, Wis., Sept. 20, 1943 Estello B. Leopold $100.00

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Frederick Jackson Turner at the Huntington Library

BY

MAX FARRAND

(see inside cover)

REPRINTED FROM
THE HUNTINGTON LIBRARY BULLETIN
NUMBER 3 · FEBRUARY 1933

Your dear Neighbors
Mr. and Mrs. Aldo Leopold

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FREDERICK JACKSON TURNER

From a photograph taken at the Huntington Library, May, 1927

Frederick Jackson Turner at the Huntington Library

BY MAX FARRAND

WHEN Frederick Jackson Turner read his paper on "The Significance of the Frontier in American History" in June, 1893, before a meeting of the American Historical Association in Chicago, he was not yet thirty-two years old. He had received his Ph.D. degree from Johns Hopkins only three years before, and had recently been made professor of history and then professor of American history at the University of Wisconsin. The paper was less than thirty pages in length, but it has exerted a greater and a more profound influence upon the study and interpretation of American history than any other similar piece of historical writing. The originality and imagination displayed were based upon sound scholarship, and these qualities, combined with a skill in presentation and a charm of style, placed its writer immediately in the forefront of those engaged in the study of American history and later made him their acknowledged leader.

Certain qualities, however, were not revealed, for they only ripened with the years. The eager intellectual curiosity that led him into every related field may have been foreshadowed, but the extent to which it later developed was far from being seen, for his appetite grew with what it fed upon. As early as 1904 he wrote:

> No satisfactory understanding of the evolution of this people is possible without calling into co-operation many sciences and methods hitherto but little used by the American historian. Data drawn from studies of literature and art, politics, economics, sociology, psychology, biology, and physiography, all must be used. The method of the statistician as well as that of the critic of evidence is absolutely essential.

Turner was becoming a student of social evolution, and perhaps his greatest power was the ability to show the relation of the widely

scattered facts he gathered to the political and diplomatic history and to the institutional and social development of the United States.

Other qualities could be appreciated only by those who came into close relations with him. His students saw him at his best, for they were in a position to observe both his personal qualities and his methods. The many tributes that have been paid to Professor Turner in the course of forty years, notably by Carl Becker in *American Masters of Social Science* (edited by Howard W. Odum; New York, 1927) and by Merle E. Curti in *Methods in Social Science* (edited by Stuart A. Rice; Chicago, 1931), are sufficient testimony to the admiration and affection he inspired. They reveal also that his greatest contribution was through teaching, where the charm of his personality helped to arouse enthusiasm even for the rigorous methods of scholarship.

An essential attribute of such an original inquiring mind as Turner's, especially when combined with his innate modesty, is the consciousness that no subject of study is ever exhausted. He realized that every historical interpretation is conditioned by the personal equation and that amid the complexity of factors only tentative conclusions may safely be drawn. The quality was admirable, but it proved to be an obstacle to his finishing any comprehensive work; he might write a brilliant essay or deliver a stimulating address upon some particular phase of his study, but he found it almost impossible to complete a book. The one exception is the *Rise of the New West* (1906), in the "American Nation" series, and, in achieving this volume, almost as much should be credited to the editor's exhortation and goading as to the author's ability. One of his former students has suggested, when discussing this characteristic, that here — as in other respects — Turner showed certain traits of the frontiersmen he interpreted so successfully, because he was akin to them spiritually and by inheritance. His mind moved restlessly forward; exploration appealed to him, and he liked to open new trails. He was willing to break ground, but like so many of the pioneers he then moved on to fresh endeavor, leaving the fields for his followers to cultivate. His students recall how fond he was of reading to them from "The Explorer" by Rudyard Kipling:

'There's no sense in going further — it's the edge of cultivation,'
So they said, and I believed it — broke my land and sowed my crop —
Built my barns and strung my fences in the little border station
Tucked away below the foothills where the trails run out and stop.

Till a voice, as bad as Conscience, rang interminable changes
On one everlasting Whisper day and night repeated — so:
'Something hidden. Go and find it. Go and look behind the Ranges —
'Something lost behind the Ranges. Lost and waiting for you. Go!'

Production of books, however, is expected and even demanded of university professors. In the flush of his first success and with the optimism of a younger man, Turner had signed a contract in 1897 to write a one-volume "college history" of the United States. It was a promise impossible for him to fulfill; his turn of mind and his method of work kept him from it — even from seriously attempting it, although he made a beginning. For inherent in his interpretation of the influence of the frontier was a realization of the important part that the sections have played in the course of American history. His studies, in their sweep, showed him that physical environment and social environment were often determining factors in developing group interests; that these led to group conflicts, and hence affected public policies and political behavior. The germ of this concept may be seen in "The Significance of the Frontier." It developed in successive articles, for the longer he studied the more its significance was impressed upon him. How was it possible to present even an outline of United States history that would approximate the truth until one could estimate more accurately the weight to be assigned to this factor? Yet his contract weighed heavily upon a conscience of traditional New England sensitiveness, and he sometimes whimsically remarked that the only solution he could see was to declare intellectual bankruptcy; and occasionally he would wistfully add that then he would be free to work out his own salvation.

In 1918 he delivered the Lowell Lectures in Boston upon "The United States and Its Sections, 1830–1850," and as a compensation to his publishers he contracted to put these lectures into book form in place of the volume previously promised. The ideas were there and had been formulated. But what Turner never could appreciate was

that they were only the preliminary sketches from which the artist had yet to make the finished portrait. A sketch may be made in a few hours; it often conveys a freshness and a direct impression, as if it had captured something of life. The painting, on the other hand, requires weeks and months of concentrated effort, because it represents both interpretation and design, derived from the study and combination of many sketches, and to be successful it must possess the subtlety and refinement of modeling and color that can be found only in the finished work.

It seemed as if the book might progress more rapidly when Professor Turner retired from Harvard in 1924, before he was quite sixty-three years old. Mr. and Mrs. Turner made their home at Hancock Point in Maine, where they spent long summers, but for the greater part of the academic year they returned to Madison, Wisconsin, the scene of his earlier study and teaching. The winters there, however, proved to be severe for one who was no longer in rugged health, and in 1927 a move was made to California with the definite intention of spending succeeding winters in a warmer climate.

Mr. Huntington and the Trustees of the Huntington Library had recently made provision for the inauguration and development of a program of research. Turner was the very embodiment of the kind and quality of original creative work the institution was seeking to promote. An invitation to become a Research Associate was at once extended to him, and as promptly accepted, his only duty being to carry on his own studies and writing, although he was expected incidentally to advise upon the policies to be adopted by the institution. The Library was not yet equipped for advanced individual workers, yet the conditions were altogether favorable. They were further improved when Merrill H. Crissey, a devoted student of Wisconsin days, came to San Marino to assist his former teacher in the important work upon which he was engaged.

Turner spoke blithely of finishing his book within a few months, for two or three chapters were already written and sketches of other chapters had been made. In reality, hardly a third of the work could be regarded as completed. For a while it seemed as if his expectations would be realized. He set about the task of composition in so determined a fashion that within a comparatively short time several more

chapters were perfected, and one of them was printed in the first number of the *Huntington Library Bulletin*. It was even necessary to warn him against overdoing. Then he encountered the one great obstacle at the Huntington Library to the accomplishment of his immediate purpose. Perhaps he had written all that was ready to be put in final form. At any rate, he paused and began looking up further data. Scarcely a student in the fields of English or American history and literature has ever come to the Huntington Library who has not found something of importance for his researches. The effect upon Turner may well be imagined. Hardly a day and never a week passed but he would excitedly and delightedly report upon discoveries he had made. A reference was to be added here, a sentence must be changed there. Some new material was important enough to modify a conclusion already reached or to demand consideration in the chapters still unfinished. "The book" had reverted to the pioneer stage.

In the summer of 1927, and again in 1928, the Turners went east to Hancock Point. His health had not improved; in fact, his strength was failing, although he was unwilling to admit it. He was troubled by increasing deafness and other ailments that advancing years so often bring. It seemed as if some poison were spreading through his system, and, before the next year was over, symptoms indicative of disturbed organic functions made an operation seem advisable. The operation was successful, but in his weakened condition the shock brought on a slight stroke. He went east again soon afterward. Though he slowly recovered, his powers were reduced and he was under the necessity of conserving his strength and energy. On returning to Pasadena, he came to the Library every day, but limited his work there largely to the morning hours. He met the situation bravely, but feeling the obligation of what was expected of him he realized that it was a race to get his book finished, and the next two summers were spent in California.

In November, 1931 a phlebitis developed in one leg and confined him to the house for several weeks. This had the advantage, so far as composition and writing were concerned, of keeping him from undertaking any further investigations, and with Mr. Crissey's help he made steady progress in finishing the last chapters of his book. When the trouble cleared up, Turner was again at the Library every morning.

On Monday, March 14, he came as usual, and several persons spoke of his high spirits. He went home at noon, and before evening the end had come — just as we all should like to have it come to us.

The stage his work had reached may be inferred from the last historical book he was reading, the second volume of W. M. Meigs's *Life of John Caldwell Calhoun*. And the last memorandum he dictated on Monday morning shows the penetrating insight characteristic of him at his best:

> The correspondence with Calhoun in the summer and fall of 1847 shows that he was being pushed to leadership and advice with regard to protecting the South, and that he was not merely initiating a movement of revolt — although he unquestionably fostered the idea of organizing the South to push the fight against the Wilmot idea, etc.

No one should attempt to complete the unfinished work of a master. The history will remain just as he left it. The manuscript is being prepared for the printer and will be published by Henry Holt and Company, under the author's own title, "The United States, 1830–1850: The Nation and Its Sections." A year may pass before the book appears from the press, for, in addition to the routine editing and copying, several maps must be made ready, and possibly the work will run into two volumes. In the meantime, in accordance with a note Professor Turner made a few months before his death, his several essays upon sectionalism will be brought together and published, also by Henry Holt and Company, with the title suggested in the memorandum: "The Significance of Sections in American History."

Turner was contented in these four and a half years at the Huntington Library, even though his part in social affairs dwindled to the vanishing point. Members of the Library staff saw little of him, and yet he made an impression upon them similar to that he had made upon his students. They observed his sincerity and painstaking perseverance; they spoke wonderingly of the humble-mindedness of so distinguished a scholar. His courtesy and his evident desire to avoid causing anyone trouble won instant favor, while his knowledge was frequently illuminating, and his sympathetic interest and understanding were oftentimes personally helpful. He was pleased with the recognition accorded him and, though never satisfied with what he was

doing, he was conscious of distinct accomplishment in the most considerable piece of writing he had ever attempted. Again some of the credit should be given to another, and this time to his wife. Mrs. Turner assisted him by encouragement and stimulation and by sympathetic criticism, but, more important still, she smoothed the way for his progress. Everything else was sacrificed, and no consideration was allowed any weight in comparison with giving him the opportunity to work and write under the most favorable circumstances possible.

Former students came to pay their respects, and afterwards they would comment upon a difference in his attitude towards them. Once they were his associates, and in his eagerness to interchange ideas with other people he had treated them as equals who might contribute to his own thinking. Now he was more concerned with their productive scholarship, for he knew that they must carry on what he had started; they must build the roads where he had blazed the trails. Their interest has been chiefly in mind in the writing of this sketch, and they can best appreciate the significance of the announcement that Professor Turner presented to the Huntington Library not only his reference books but all of his notes as well. The notes are the accumulations of his years of study and are varied and voluminous beyond belief. The average person would get little from them, for they are heterogeneous and seemingly unorganized. But Turner's students will know how to use them and will find them valuable and full of suggestion.

In his reading of Kipling's verses Turner might well have laid particular emphasis upon certain lines:

> Well I know who'll take the credit — all the clever chaps that followed —
> Came, a dozen men together — never knew my desert fears;
> Tracked me by the camps I'd quitted, used the water-holes I'd hollowed.
> They'll go back and do the talking. They'll be called the Pioneers!

But Turner was himself responsible, for he was generous to the extreme in sharing with others the results of his studies. More than that, he gave of himself freely. He was so interested in what others were doing that he would devote a great deal of time to discussing their problems or to writing in reply to requests for criticism and advice. This was in its way a continuation of his teaching, and constitutes a part of his great contribution. His letters contain many important bits of inter-

pretation, many flashes of insight and inspiration, that will lose the wider influence they might have unless gathered in one place and made available. The bulk of his correspondence has been deposited in the Huntington Library. His own copies of many letters are there, and other letters are being sought, especially those written in his own hand. These will be accessible to those who are competent to use them in the interests of scholarship and, when combined with his notes, the reprinting of his essays, and the publication of his larger work, will serve to carry on the influence of an original, keen, exploring mind.

God took care to hide that country till He judged His people ready,
Then He chose me for His Whisper, and I've found it, and it's yours!

Yes, your 'Never-never country' — yes, your 'edge of cultivation'
And 'no sense in going further' — till I crossed the range to see.
God forgive me! No, *I* didn't. It's God's present to our nation.
Anybody might have found it but — His Whisper came to Me!

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BRITTONS BOWRE OF DELIGHTS (1591)
Edited by Hyder Edward Rollins. Collotype facsimile

HARVARD UNIVERSITY PRESS
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Some personal papers
of Prof Leopolds
found in files by Pat
for Mrs L.

FIRST CLASS MAIL

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RETURN POSTAGE GUARANTEED

Contents

Notebooks - Publications of Leopold

Vol.1 - Forestry, Wilderness Areas, Miscellaneous Ecology

Vol.2 - Game

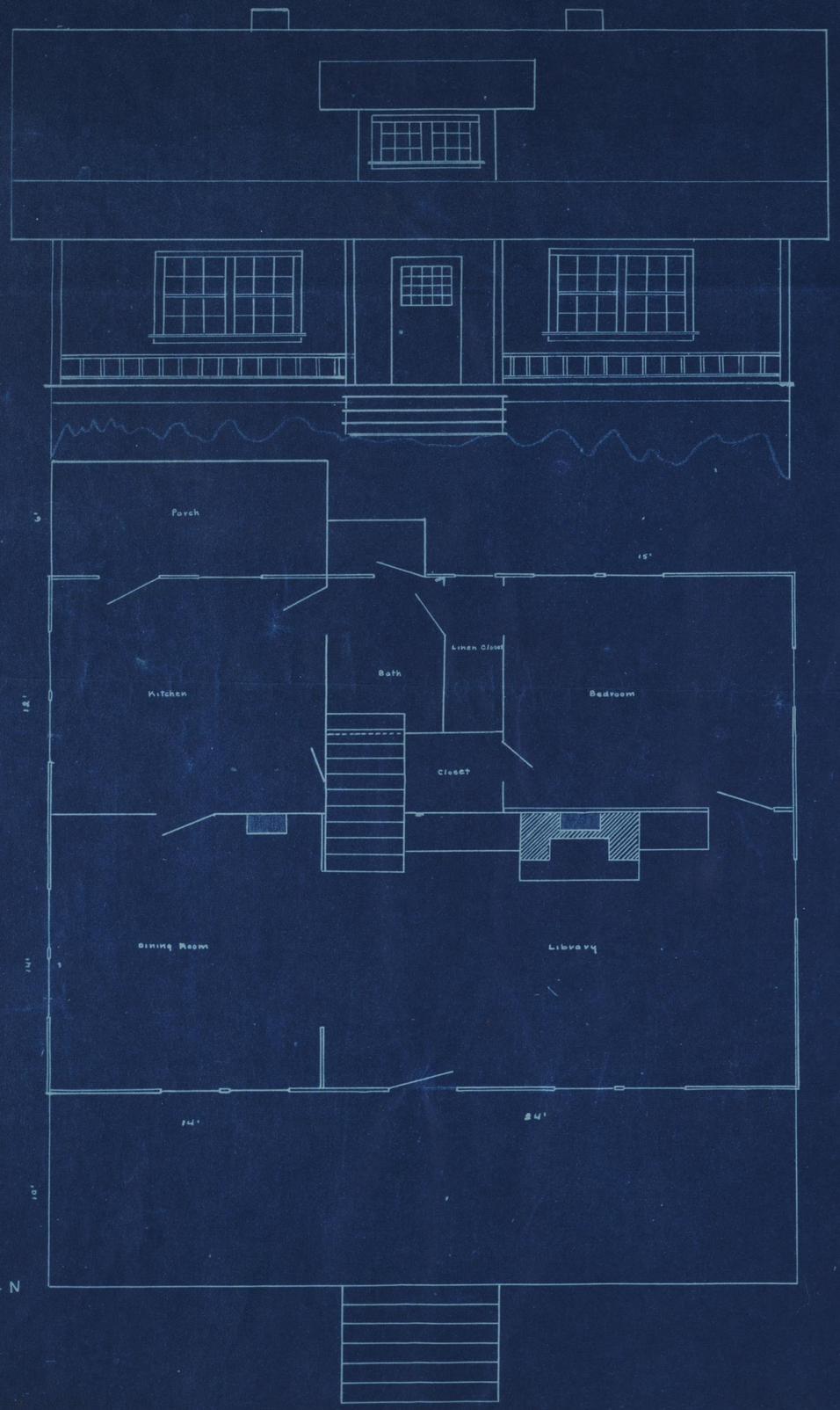
Envelope - containing "Some personal papers of Prof Leopold found in his files by Pat.

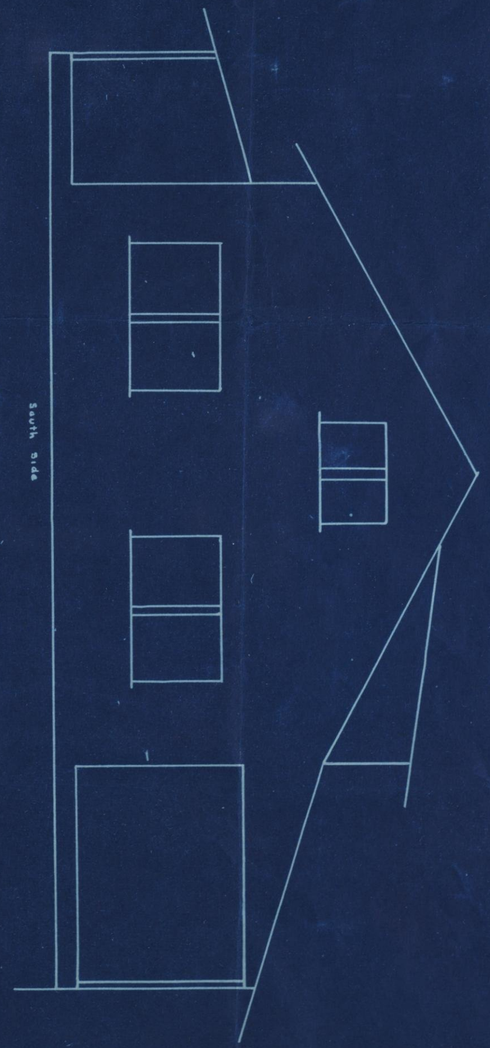
PLAN FOR SUPERVISORS HEADQUARTERS

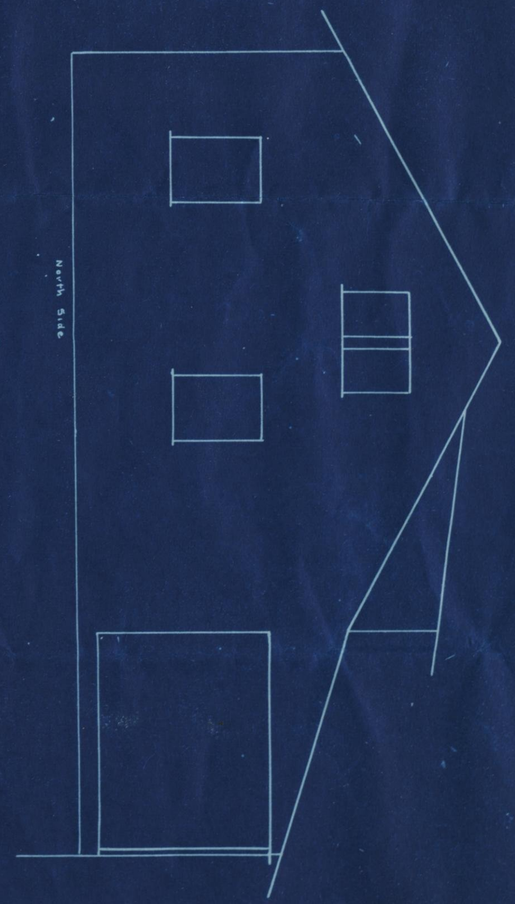
CARSON NATIONAL FOREST — TRES PIEDRAS NEW MEXICO

Scale 1" = 5 feet — Dec. 5, 1911

Aldo Riopfold - Deputy Forest Supervisor









His Excellency.
Adolph Hitler,
Beidam, Germany.

Thor's Day 25
Mens. Julius-1935

Heil! This will introduce Geheimrat Aldo Leopold, sole husband of Dona Estella Hispanola Leopold, née Luna or Ortero (the records are not clear on this point).

Herr Leopold's ancestors dealt many a fell blow to Varus and his legions in the Teutoberger Forest. So martial is the strain that even today his progeny draws a lusty bow. Only recently he did spit Sciurus on a grey goose shaft at four and twenty paces. This alone should commend him to your favor.

He is vastly interested in cycles — game cycles, lunar cycles, bicyles, heterocycles, cyclamens, cyclopedists, and cyclones, but not in tricycles, encyclicals, or ensilage. His political interests are limited to the philosophical observation that the amplitude of the Republican cycles indicates that this party is more disease resistant than the Democratic as shown by their recent presidents. This proves beyond doubt that while he is in residence that he will not spread tularemia among your loyal subjects.

Wilhelm



Spinach from ye druids

Fragment of ye
Brunhilde's true garter



Society of American Foresters

SOCIETY OF AMERICAN FORESTERS 1900

Washington, D. C.

In recognition of outstanding achievement in Forestry

Aldo Leopold

was elected a Fellow of the Society in the year 1946

SOCIETY OF AMERICAN FORESTERS INCORPORATED 1928 DISTRICT OF COLUMBIA

Shirley W. Allen
President

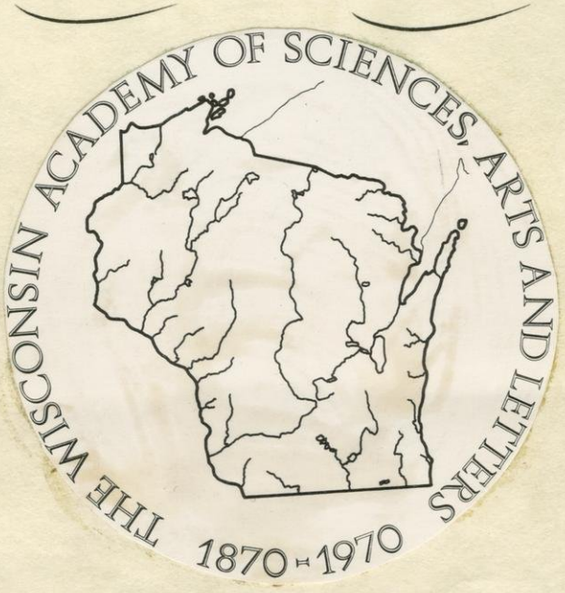
Henry Clepper
Executive Secretary

Wisconsin Academy of Sciences Arts and Letters

Honorary Membership

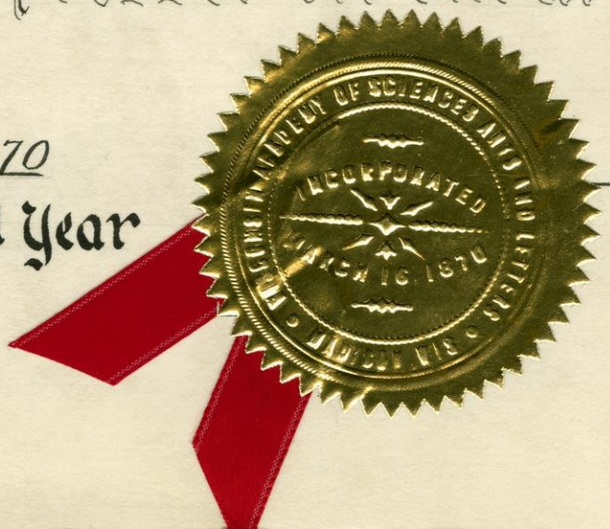
to

Aldo Leopold



For: Pioneering ecological and ethical concepts of natural resource conservation expressed in enduring word pictures.

May 9, 1970
Centennial Year



W. B. Sarles
President

Engrossed by

V. C. Graham
936 W. Highland
Whitewater, Wis.
53190

Iowa Chapter

of

The Wildlife Society

presents the

Iowa Conservation Hall of Fame Award

to

Aldo Leopold

Bestowed for outstanding contributions to conservation

In recognition of his efforts to place game management on a sound ecological basis, his title as "Father of Game Management," in North America, leadership in preparing the Iowa Game Survey and 25-year Conservation Plan, campaigns to free the conservation effort from political expediency, and efforts to educate American people to the importance of an "ecological conscience" in resource management.

Eugene D. Klonglan
President

April 21, 1967
Date

Paul A. Vohs Jr.
Secretary

ALDO LEOPOLD

1886—1948

Aldo Leopold was nature's scholar and in the natural order of our natural world, saw perpetual enrichment of our heritage. By this so humble yet so bold and novel approach, he pioneered a new science for the conservation of land and biological resources and in so doing, improved the birthright of all humanity.

Much of the thought and action which earned an enduring fame for the scientist belongs to his fifteen years on this campus. Wisconsin is more lustrous for that fact. . . . . The Yale-trained forester founded Wisconsin's Department of Wildlife Management in 1933 and remained its chairman until his untimely death in 1948. Nearly a quarter century of field and administrative experience in the U. S. Forest Service and in wildlife research elsewhere was his to draw on as he piloted the Wisconsin department to distinction.

The greater understanding which Professor Leopold found in such allied fields as land use, forestry, game management and wildlife ecology, directed always toward a conservation for the ages, brought into print some two hundred and seventy-five technical and popular works including an exquisitely written collection of nature essays. It also brought the world to his Wisconsin door: foreign, federal, and state agencies to benefit from his counsel; an eager group of students who would emerge from his inspired teaching as brilliant ecologists. Around the globe these former pupils now practice the Leopold ethic, united in the warm shadow of a great logic within a greater poetry.

Indeed all who hold reverence for the natural scene are united with this pioneering mind. Men are civilized, he declared, inasmuch as they shape the environment out of love and appreciation of nature. Without these sentiments, no truly sound conservation can be achieved.

These walls find that civilizing influence in student fellowship. In the possession of a great name, they invite further aspirations for humanity.

March 1959

UNITED STATES OF AMERICA

The State of Wisconsin

FORWARD

EXECUTIVE DEPARTMENT

J. KNAUBER LITHO. CO. MILWAUKEE

To all to whom these Presents shall come, Greeting:

Know Ye, That, reposing special Trust and Confidence in the Integrity and Ability of Dr. Aldo Leopold of Madison, Wisconsin,

I, Walter S. Goodland, Acting Governor of the State of Wisconsin, have appointed and by these presents do constitute and appoint him a member of the State Conservation Commission, to succeed Mark S. Catlin, for the term ending July 27, 1949;

And I do hereby authorize and empower him to exercise and fulfill the duties of that trust according to his best discretion,

unless the Governor of this State for the time being shall think proper sooner to revoke and determine this Commission.

GREAT SEAL OF THE STATE OF WISCONSIN

In Testimony Whereof, I have hereunto set my hand and caused the Great Seal of the State of Wisconsin to be affixed. Done at the City of Madison, this nineteenth day of June in the year of our Lord one thousand nine hundred and forty-three.

Walter S. Goodland

ACTING GOVERNOR

By the Acting Governor.

August E Smith

asst. Secretary of State.

UNITED STATES TREASURY DEPARTMENT



For patriotic cooperation rendered in behalf of the War Finance Program this citation is awarded to

MRS. ALDO LEOPOLD

Given under my hand and seal on MARCH 2 1945

THE SAUR AMER. SEPTENT. SIGIL.

Henry Morgenthau Jr.
SECRETARY OF THE TREASURY

DANE COUNTY CHAIRMAN

STATE CHAIRMAN

THE SEVENTY-NINTH SESSION

of the

Iowa
Academy of Science

and

THE THIRTY-FIFTH CONVENTION

203 Meredith

of the

Iowa
Junior Academy of Science

to be held at

DRAKE UNIVERSITY

DES MOINES, IOWA

April 21, 22

1967

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Notices

The Iowa Academy of Science will convene on Friday and Saturday, April 21 and 22, 1967, at Drake University, Des Moines. General headquarters, information and registration desks will be in the lobby of Meredith Hall. General meetings will be in the Auditorium of Old Main and University Christian Church. The business meeting will be in the Auditorium. Section meetings will be in Meredith, Harvey Ingham and Fitch Halls.

Parking lots available to Iowa Academy of Science visitors are located between Carpenter and Forest streets on 26th and 25th on the west sides, and on the west at University and 26th.

Meals: Noon luncheons on Friday and Saturday will be available in Hubbell Dining Hall and at nearby restaurants. The Academy Dinner on Friday night will be served in University Christian Church at 6:15 p.m. Reservations for the dinner must be made by mailing requests to Dr. W. H. Coppock, Drake University, Des Moines, Iowa before April 19. The cost of the Dinner will be $2.00. The cost of each luncheon will be $1.25.

Overnight lodging: Members who will be staying overnight are urged to make their own reservations at one of the many motels or hotels in Des Moines.

Dues: Members who have not paid their 1967 dues are asked to send their checks to the Secretary-Treasurer or to pay at the registration desk. Payment before May 1 will save the Academy the expense of another notice. New members may make application for membership at the meeting.

Authors of papers: Each person who wishes to have his paper considered for publication in the Proceedings must hand the finished manuscript to his section chairman immediately following presentation. The author's permanent and summer address should be attached to the paper. Information for contributors is printed on pages 674-677 of Volume 67 of the Proceedings or is available from the editor. These manuscript regulations should be observed.

Please bring this program to Des Moines.

Program Summary

FRIDAY, APRIL 21

8:00 a.m.- 2:00 p.m. *Registration,* Meredith Hall.

9:00 a.m.-10:50 a.m. *Section meetings.*

11:00 a.m. *Greetings from Vice-President Huff.* Auditorium.
Invited Address, ROGER M. HERIOTT.

12:30 p.m. *Luncheon,* Hubbell Dining Hall.

2:00 p.m.- 4:00 p.m. *Section meetings.*

4:15 p.m. *General Business Meeting,* Auditorium.

6:15 p.m. *Annual Dinner,* University Christian Church.

8:00 p.m. *Invited Address,* H. A. WILHELM, University Christian Church.

SATURDAY, APRIL 22

8:00 a.m.- 9:00 a.m. *Registration,* Meredith Hall.

8:00 a.m.-10:00 a.m. *Section Meetings.*

10:15 a.m. *Presentation of Awards and Honors,* Auditorium.

11:00 a.m. *Invited Address,* A. P. McKEE, Auditorium.

General Meetings

FRIDAY, APRIL 21

11:00 a.m., AUDITORIUM

Greetings from Vice-President Huff. Invited Address, "Extracellular DNA and Genetic Transformation in Bacteria", DR. ROGER M. HERIOTT.

4:15 p.m. AUDITORIUM

The Call to Order, PRESIDENT JOHN CHELLEVOLD

Announcements

Business Session of the Academy.

Report of the Board of Directors—G. W. PEGLAR, *Secretary*.

Report of the Secretary-Treasurer—G. W. PEGLAR.

Report of the Auditing Committee—C. H. LINDAHL.

Report of the Editor—P. MEGLITCH.

Report of the Membership Committee—W. J. POPPY.

Report of the Resolutions Committee—A. W. SWENSON.

Report of the Nominating Committee—L. P. JOHNSON.

Election of the Board of Directors.

New Business.

Adjournment.

Eugene D Klonglan – Pres

6:15 p.m., UNIVERSITY CHRISTIAN CHURCH

Academy Dinner. Reservations must be made by mail before April 19. Write to Dr. W. H. Coppock, Chemistry Department, Drake University, Des Moines, Iowa.

8:00 p.m., UNIVERSITY CHRISTIAN CHURCH

Invited Address, "Fresh Water from the Seas", DR. HARLEY A. WILHELM.

SATURDAY, APRIL 22

10:15 a.m., AUDITORIUM

Honors

Presentation of the Collins Radio Science Scholarship and introduction of Science Talent Winners by J. D. WOODS.

Four Iowa Science and Mathematics teachers will be honored.

11:00 a.m., AUDITORIUM

Invited Address, "Problems of Adequate Control in Biological Science", DR. ALBERT P. MCKEE.

Section Meetings

BOTANY

Chairman, R. Q. Landers

Room 235, Meredith Hall

Friday, 9:00-10:50 a.m.

1. *An anomalous cell type in radish root.* Gary Collins, Ames.

2. *Morphology of some unusual plant trichomes.* E. L. Thurston, Ames.

3. *The developmental morphology of* Anthostoma gastrinum *(Fr.) Sacc.* James D. Haynes, Ames.

4. *Iowa ascomycetes, V. Additions to the Xylariaceae.* Lois H. Tiffany and James D. Haynes, Ames.

5. *Observations on* Puccinia seymouriana *Arth.* George Knaphus, Ames.

6. *Notes on the lichens of Iowa.* Clifford M. Wetmore, Waverly.

7. *The flora of the Iowan Lobe.* Larry Eilers, Terre Haute, Indiana.

Friday, 2:00-4:00 p.m.

8. *Propylene oxide sterilization of bacterial populations.* Michael J. Naylon and Robert C. Goss, Cedar Falls.

9. *Influence of gibberellic acid and indole-3-acetic acid on the morphology and population dynamics of* Eudorina Elegans. E. Russell Tepaske and Dale R. Frank, Cedar Falls.

10. *Studies on streptomycin effect in* Arabidopsis Thaliana *(L.) Heynh.* Sujit K. Dhar, Iowa Falls.

11. *Fibrillar differentiations and mitosis in the plasmodium of myxomycetes.* Sister Mary Annunciata McManus, Cedar Rapids

12. *The callose wall of higher plane microspores.* N. R. Lersten and H. T. Horner, Ames.

Saturday, 8:00-10:00 a.m.

13. *The role of bumblebee queens in pollination of the southern Wisconsin flora.* LAZARUS W. MACIOR, Dubuque.

14. *A handy community herbarium for field identification of plant species.* R. Q. LANDERS and PAUL A. CHRISTIANSEN, Ames.

15. *Pollen and diatoms from sediments.* JOHN D. DOOD, Ames, and RUTH M. WEBSTER, Cedar Rapids.

16. *Reproductive systems in* Chelone glabra *L. var* glabra. TOM S. COOPERRIDER, Kent, Ohio.

17. *Vegetation for conservation.* MARVIN PETERSON, Larchwood.

18. *Planktonic diatoms from the Coralville Reservoir.* DON SCHMIDT, Iowa City and EVERETT J. FEE, Ames. To be read by title only.

Botany films made at Iowa State University will be shown until 10:00 a.m.

INORGANIC AND PHYSICAL CHEMISTRY

CONCURRENT SECTION I

L. ERICKSON, presiding

Room 102, Meredith Hall

Friday, 9:00-10:50 a.m.

1. *Mass spectrometry of metal carbonyls.* H. J. SVEC and G. A. JUNK, Ames.

2. *Ion-molecule reactions in gaseous benzene.* R. P. CLOW, Grinnell.

3. *The yttrium carbon system.* O. N. CARLSON and W. M. PAULSON, Ames.

4. *The crystal structure of an IC1-metrazole complex.* D. NELSON and N. C. BAENZIGER, Iowa City.

5. *The crystal structure of a complex of 1-methyl tetrazole with zinc chloride.* R. SCHULTZ and N. C. BAENZIGER, Iowa City.

6. *The crystal structure of solid carbon disulfide.* W. DAUX and N. C. BAENZIGER, Iowa City.

CONCURRENT SECTION II

D. EYMAN, presiding

Room 103, Meredith Hall

Friday, 9:00-10:50 a.m.

7. *Hydrogen bonding in some copper (II)- and nickel (II)-vic-dioximes.* J. E. CATON, JR. and C. V. BANKS, Ames.

8. *Mixed ligand complex formation in the solvent extraction of europium(III) by mixtures of thenoyltrifluoroacetone and trioctylphosphine oxide.* M. A. CAREY and C. V. BANKS, Ames.

9. *Heats of solution of several nickel(II)-vic-dioxime complexes in n-heptane.* D. W. SMITH and C. V. BANKS, Ames.

10. *Lewis acidity of trimethylalane.* C. HENDRICKSON and D. P. EYMAN, Iowa City.

11. *Coordination properties of sulfinamides.* K. NYKERK and D. P. EYMAN, Iowa City.

12. *2-Aminoethoxyalanes.* W. RHINE and D. P. EYMAN, Iowa City.

CONCURRENT SECTION I

J. VERKADE, presiding

Room 102, Meredith Hall

Friday, 2:00-4:00 p.m.

13. *P^{31}-P^{31} spin-spin coupling in transition metal complexes.* F. OGILVIE, J. M. JENKINS, and J. G. VERKAD5, Ames.

14. *Stereochemistry of arbuzov products from caged phosphites.* G. MCEWEN, R. D. BERTRAND, and J. G. VERKADE, Ames.

15. *H^1 n.m.r. aromatic solvent shifts arising from novel 1:2 solute-solvent collission complexes.* R. D. BERTRAND, R. D. COMPTON, A. J. VANDENBROUCKE, and J. G. VERKADE, Ames.

16. *Effect of pH on the distribution coefficients of trivalent lanthanide ions with chelating ion-exchange resins.* G. J. SCHROBILGEN and C. E. LANG, Dubuque.

17. *Proton n.m.r. studies of inversion through sulfur in S-methyl cysteine complexes of Pt(II).* J. McDONALD and L. E. ERICKSON, Grinnell.

18. *Determination of isomers in inorganic complexes by computer.* W. E. BENNETT, Iowa City.

19. *Metal ion catalysis of the hydrolysis of ethyl glycinate-N,N-diacetic acid.* B. E. LEACH and R. J. ANGELICI, Ames.

CONCURRENT SECTION II

R. MAATMAN, presiding

Room 103, Meredith Hall

Friday, 2:00-4:00 p.m.

20. *Gas chromatography of some metal chelates of benzoyltrifluoroacetone and thenoyltrifluoroacetone.* W. C. BUTTS and C. V. BANKS, Ames.

21. *Fragmentation gas chromatography as an inorganic analytical tool.* M. R. GUERIN and C. V. BANKS, Ames.

22. *Chemical aspects of industrial preparation of the rare earth metals.* J. L. MORIARTY, Pleasant Valley.

23. *Diffusion of carbon, nitrogen and oxygen in thorium.* T. G. CARNAHAN and D. T. PETERSON, Ames.

24. *A conductometric study of the reaction velocity of halodinitrobenzene with piperidine.* F. E. JACOB and T. R. BERKLAND, Des Moines.

25. *Iodine, tellurium and uranium in canyon diablo graphite.* J. H. BENNETT, Rolla, Missouri.

26. *The excited states of the helium atom.* R. B. STEVENSON and D. SCHRADER, Iowa City.

ORGANIC AND BIOLOGICAL CHEMISTRY

Chairman, DONALD J. BURTON

Room 125, Meredith Hall

Friday, 9:00-10:50 a.m.

1. *The mechanism of the* In Vivo *conversion of caranine to lycorine.* W. C. WILDMAN and N. E. HEIMER, Ames.
2. *The amino acid and alkaloid composition of certain amaryllidaceae.* W. C. WILDMAN and D. T. BAILEY, Ames.
3. *Complexes of halogens with diaryl sulfides.* R. J. MANER and R. E. BUCKLES, Iowa City.
4. *Pyrolysis of 1, 1, 1-trimethyamine-2-carbamoylimides.* S. WAWZONEK and T. H. PLAISANCE, Iowa City.
5. *Tetra-p-anisylethyiene radical-cation.* R. V. MORRIS and R. E. BUCKLES, Iowa City.
6. *Oxidation of organic compounds with Cerium (IV). Oxidation of Norbornanols.* W. S. TRAHANOVSKY, L. M. SMITH, and P. J. FLASH, Ames.
7. *Solvent nucleophilicity of carboxylic acid-nonhydrolylic solvent mixtures. Leaving group studies.* M. P. DOYLE and W. S. TRAHANOVSKY, Ames.

Friday, 2:00-4:00 p.m.

8. *Succinimide derivatives of 3-Methylthiophene.* SISTER RITA FREIBURGER and SISTER M. MARGUERITE NEUMANN, Dubuque.
9. *Semidiones derived from Bicyclo (3.1.0) hexanes. I. Assignment of Hyperfine Splitting Constants.* J. J. MCDONNELL and G. A. RUSSELL, Ames.
10. *Semidiones derived from Bicyclo (3.1.0) hexanes. I. Epimerization and deuterium exchange.* P. R. WHITTLE and G. A. RUSSELL, Ames.
11. *Preparation of substituted pyridazino (4,5-d) pyridazines.* J. M. UNGLAUBE and J. K. STILLE, Iowa City.
12. *Polymers from 1,3-dipolar addition reactions: Nitrileimine dipoles from tetrazoles.* L. D. GOTTER and J. K. STILLE, Iowa City.
13. *Nitrosation of* B-*alkylamino* -α, B-*unsaturated ketones.* J. D. MCCOWN and R. D. CAMPBELL, Iowa City.
14. *Radical and radical ion intermediates in reactions of p-nitrobenzyl compounds with the 2-nitro-2-propyl anion.* W. C. DANEN and G. A. RUSSELL, Ames.

CONSERVATION

Chairman, MARTIN L. GRANT

Room 201, Meredith Hall

Friday, 9:00-10:50 a.m.

1. *The Population of Vulpes fulva in Buena Vista County.* DALE LUETKEMAN, Milford.
2. *Movements and daily activities of the red fox (Vulpes fulva) in northwest Iowa as determined by radio tracking and visual observations.* ROGER A. ALLEN, Storm Lake.
3. *An evaluation of the dental annuli technique for determining age of white-tailed deer in Iowa.* ARNOLD J. SOHN, Ames.
4. *Observations on behavior of lone bull bison.* WAYNE A. FISCHER, Ames.
5. *Incidence of some disease antibodies in Iowa deer.* ARNOLD O. HAUGEN, Ames.

Friday, 2:00-4:00 p.m.

6. *Successful renovation of a small, natural, Iowa lake.* TERRY JENNINGS, Spirit Lake.
7. *The relationship between air temperature and water temperature at Clear Lake, Iowa.* THEODORE V. JACOBSEN, Ames.
8. *Benthic fauna of Clear Lake, Iowa.* ROGER J. MRACHEK, Ames.
9. *Limnological studies of the Iowa Great Lakes.* ROGER W. BACHMANN, Ames.
10. *Movements of pheasants in central Iowa.* DAVID L. LYON, Mt. Vernon.

Saturday, 8:00-10:00 a.m.

11. *Fish distribution in Skunk River drainage above Ames.* LARRY V. ZACK, Ames.
12. *Channel catfish populations in channeled and unchanneled sections of the Little Sioux River, Iowa.* BILL WELKER, Sioux City.
13. Annual meeting of the Iowa Section of the Wildlife Society.

Conservation, Iowa 1966, Conservation Committee report. (Mimeograph copies available from A. O. HAUGEN.)

GEOLOGY

Chairman, CARL R. BUSCH

Room 328, Old Main

Friday, 9:00-10:50 a.m.

1. *Application of the allometric growth model to Iowa drainage patterns.* KEITH W. ANDERSON and R. A. LOHNES, Ames.
2. *The kinderhookian series of Iowa and western Illinois.* JOSEPH STRAKA, Iowa City.
3. *Differentiation of drift topographies by statistical analysis of slope data.* BARBARA THOMAS and SHERWOOD D. TUTTLE, Iowa City.
4. *Seismic refraction surveys in Iowa.* WILLIAM P. STAUB and LYLE V. A. SENDLEIN, Ames.

Friday, 2:00-4:00 p.m.

5. *Quantitative variations in western Iowa loess topography.* R. C. JOSHI and R. A. LOHNES, Ames.
6. *The stratigraphy of the bertram member of the Wapsipinicon formation in east-central Iowa.* NORMAN K. CHURCH, Iowa City.
7. *Stratigraphic leak in Springville quarry.* FRED H. DORHEIM, Iowa City.
8. *Hydrogeology of the Skunk River regolith aquifer supplying Ames, Iowa.* JOHN D. SCHOELL and LYLE V. A. SENDLEIN, Ames.
9. *Pop-outs in a hematite colored concrete floor.* J. H. ELWELL and JOHN LEMISH, Ames.
10. *The eyes of isotelus and nileus.* JEANNETTE N. ROSE, Iowa City.

Saturday, 8:00-10:00 a.m.

11. *Periodic surface oscillations in Lake West Okoboji, Iowa.* EVERETT J. FEE, Ames.
12. *Lacustrine sediments of a drained lake in northwest Iowa* JAMES J. HUNGERFORD, Marshalltown.
13. *Analysis of electrical resistivity measurements of shallow deposits.* DONALD W. TARMAN and LYLE V. A. SENDLEIN, Ames.
14. *Subdrift topography of the Maquoketa River valley region.* JAMES HEDGES, Iowa City.

To be read by title

15. *Application of clay crystallite-size in soil genesis -studies.* RICHARD W. ARNOLD, Ithaca, N. Y.

16. *Fissure caves of the Niagara escarpment in Iowa.* James Hedges, Washington, D.C.

Invited Address. The stratigraphy of the Upper Eocene and Oligocene in the Fayum depression, Egypt. Carl F. Vondra, Ames.

MATHEMATICS

Chairman, William L. Waltmann

Room 102, Harvey Ingham Hall

Friday, 9:00-10:50 a.m.

1. *Karl Menger's contribution to ethics.* Edward S. Allen, Ames.

2. *The reversed upper central series in the polarization process in groups.* Donald Pilgrim, Decorah.

3. *Functions "close" to continuous functions.* A. Irudayanathan, Ames.

Invited Paper. *Estimates of variance in designed experiments.* Fred C. Leone, Iowa City.

Panel. *Problems in the first two years of college mathematics teaching.* John C. Fridell (chairman), Loras College, Dubuque; David Q. Porter, Muscatine Community College, Muscatine; Thomas M. Price, University of Iowa, Iowa City.

Friday, 2:00-4:00 p.m.

Business Meeting. Election of Section Officers.

Contributed papers:

4. *The role of axiomatics and problem solving in mathematics.* Fred W. Lott, Jr., Cedar Falls.

5. *Convergent solutions of ordinary linear homogeneous difference equations in the neighborhood of an irregular singular point.* William J. A. Culmer, Denison.

6. *Eigenvectors by norm reduction.* Robert Lambert and Richard Sincovec, Ames.

Invited Address. *Riemann integration in ordered fields.* John M. H. Olmsted, Southern Illinois University, Carbondale, Illinois.

PHYSICS

Chairman, VERNER JENSEN

Room 29, Harvey Ingham Hall

Friday, 9:00-10:50 a.m.

1. *Critical Field Curves for Gapless Superconductors.* W. R. DECKER, Ames.
2. *Temporal Variation of the Omnidirectional Electron Fluxes Compared with Kp Daily Sun.* HARRY OWENS, Iowa City.
3. *Temperature Variation with Input Power in an Electric Furnace.* VIRGIL BANOWETZ, Dubuque.
4. *The fixed Field Alternating Gradient Accelerator Program at Iowa State.* R. O. HAXBY and H. J. VARGA, Ames.
5. *The Solid State Physics Program at the Ames Lab Reactor.* S. K. SINHA, Ames.
6. *A Look at the RR Lyrae Variable Stars.* KEITH HONEY, Iowa City.

Friday, 2:00-4:00 p.m.

7. *Yield and Angular Distribution of Alpha Particles from* O^{16} $(Li^6,\alpha)F^{18}$ *Reactions at 4.8-13.8 Mev Bombarding Energy.* M. W. GREENE, Iowa City.
8. *NMR Determination of the Activation Volume for Self-diffusion in Aluminum.* RALPH ENGARDT, Cedar Falls.
9. *A Mossbauer Effect Study of the Magnetic Structure of Single Crystal Erbium.* R. A. REESE, Ames.
10. *A Search for Resonances in the Reaction* $N^{14}(\alpha,\gamma)F^{18}$ *in the Energy Range* $E\alpha = 0.63 - 1.63$ *Mev.* P. M. MCCLEAN, Iowa City.
11. *A Magnetometer for a 100 Kilogauss Superconducting Solenoid.* C. M. CORNFORTH and D. B. RICHARDS, Ames.

Saturday, 8:00-10:00 a.m.

12. *Studies of Short-lived Nuclei with an On-line Isotope Separator.* W. L. TALBERT, Ames.
13. *Ion Source Characteristics of the Positive-Negative Ion Mass Spectrometer.* FLESCH, SVEC and TSUCHIYA, Ames.
14. *Do's and Don'ts for the 24 Mev Betatron and You.* ROY L. BUCKROP, Rock Island, Illinois.
15. *Thermal Conductivity of Magnesium Stannide.* J. J. MARTIN, Ames.
16. *High Efficiency Neutron Detector for Photo-Nuclear Research.* C. C. JONES, Ames.

PHYSIOLOGY

Chairman, KENNETH M. COOK

Room 232, Meredith Hall

Friday, 2:00-4:00 p.m.

1. *Effect of thyroidectomy on the mechanics of skeletal and intestinal muscle.* RUSSELL RULON, Decorah.

2. *Factors affecting the performance of frog skeletal and cardiac muscle in the laboratory.* KARL J. EISBACH and DANIEL J. SEXTON, Dubuque.

3. *The effect of body stature and exercise conditioning on the mean electrical axis. P-R intervals, QRS duration and rate of the heart.* JOHN R. IMIG, Cedar Rapids.

4. *The effects of exercise on lung ventilation and breathing rate.* EDWARD SCHWENKE, Cedar Rapids.

5. *Adaptations of the eyes of Arctic and Temperate Zone mammals.* K. COADY, E. E. FOLK, JR., E. O. FRAZIER and L. ALLEN, Iowa City.

6. *Reflections on equipment used in teaching undergraduate physiology.* KENNETH M. COOK, Cedar Rapids.

PSYCHOLOGY

Chairman, LYLE K. HENRY

Room 238, Meredith Hall

Friday, 9:00-10:50 a.m.

1. *Stimulus discriminability as a factor in the learning of paired associates.* MARYHELEN H. POSEY, Iowa City.

2. *Behavioral analysis of cats with lateral midbrain lesions.* VIRGINIA M. LAKSO and WALTER RANDALL, Iowa City.

3. *Discrimination judgment weighting on a multiple choice test.* T. J. GANNON and T. SANNITO, Dubuque.

4. *"Lawfulness" in stuttering an illustration of the need for control groups in behavioral studies.* FRANKLIN H. SILVERMAN and DEAN E. WILLIAMS, Iowa City.

5. *Paired-associates learning of ten random shapes and concrete nouns of two levels of descriptive appropriateness.* Don Lewis, William O. Phinney, Maryhelen H. Posey, and Karen Horr, Iowa City.

Friday, 2:00-4:00 p.m.

Invited Address: *Mediation = Cognition?* Dr. Rudolph W. Schulz, University of Iowa

6. *Functional congruence in cells a measure of neural homogeneity.* Robert J. Norman and Stephen S. Fox, Iowa City.

7. *The effect of different types of music upon the learning of nonsense syllables.* D. Maiers and L. Kraus, Dubuque.

ZOOLOGY

Chairman, Robert L. Calentine

Room 234, Meredith Hall

Friday, 2:00-4:00 p.m.

1. *Certain crustacea of the environs of St. John, New Brunswick, Canada.* Richard W. Coleman, Fayette.

2. *A pH study of four protozoa media, no bacteria, bacteria, and protozoa species.* Robert F. Mote, Des Moines.

3. *The effects of methyl testosterone on the secondary sex traits of two goodeid species of teleosts from Mexico.* G. Mendoza and H. Mullins, Grinnell.

4. *Comfort movements of the sora* Porzana carolina, *and the Virginia rail,* Rallus limicola. Gerald Kaufmann, Minneapolis, Minnesota.

5. *Macroscopic and microscopic response of blackhead infected turkeys to medication with dimetriadazole.* Neal F. Morehouse, Charles City.

Saturday, 8:00-10:00 a.m.

6. *Underwater photography of fish found on the coral reefs of Jamaica.* Edward C. Laird, Storm Lake.

7. *The mutation "blind" in the house mouse.* MARGARET L. WATSON, Indianola.

8. *Studies on the nutrition of the frog lung-fluke,* Haematoloechus medioplexus *(Stafford).* DAROLD M. WOLFF, Waverly.

9. *Some effects of multiple medication on respiratory pattern and oxygen consumption in tranquilized white mice.* LESTER C. SHELL, Decatur, Illinois.

10. *Developmental pattern of various morphological traits during early ontogenesis of chickens and turkeys.* K. L. ARORA, Des Moines.

SCIENCE TEACHING

WARREN CLASSON, Presiding

Room 101, Meredith Hall

Friday, 9:00-10:50 a.m.

1. *"A Program Unit in Statistics for Secondary School Science Students".* BERNARD W. BENSON, Iowa City.

2. Invited Paper *"Development of Drugs for Market".* DR. KATHEL B. KERR, Charles City.

3. *"The Use of TOUS to Measure Understanding of Science".* DONALD J. SMITH, Iowa City.

4. *"A Study of Terminal Science Courses in the Senior High School in the State of Iowa".* RICHARD W. GATES, Iowa City.

5. Invited Paper *"Improving the Education of Teachers of Science".* DR. CLIFFORD MCCOLLUM, Cedar Falls.

6. *"A Method of Self-Evaluation".* ROBERT E. COOK, Iowa City.

7. *"An Investigation of the Decrease In Science Enrollments in Iowa Public Schools".* PAUL W. TWEETEN, Des Moines.

8. *"Independent Studies in the B.S.C.S. Biology Program".* LENA KEITHAHN, Mason City.

ROBERT SWEENEY, Presiding

Friday, 2:00-4:00 p.m.

9. *"Status of B.S.C.S. in Iowa"* Robert E. Cook, Iowa City.

10. *"Community Resources in Science"*. Cameron Christensen, Rockwell City.

11. Invited Paper *"Research - Teaching Gap"*. Dr. Richard Bovberg, Iowa City.

12. *"We Used Russian Textbooks"*. Oliver W. Eason, Cedar Falls.

13. *"Pigment Alteration in Plants Due to Various Chemical and Physical Factors"* David N. West, Iowa Falls.

14. *"A Steam Table for Every Student"*. Gordon Eggleton, Iowa City.

15. Invited Paper *"Applications of a Computer in Nuclear Science"*. Dr. Edward B .Nelson, Iowa City.

16. *"The Status of Biology and Biology Teachers for 1966-1967 in the State of Iowa"*. Alan Swanson and Bernard W. Benson.

David Fagle, Presiding

Saturday, 8:00-10:00 a.m.

17. *"A Comparison of a Programmed and Classroom Approach to the Study of Statistics in High School Science Classes"*. J. Emory Howell.

18. *"Changes in the Status of Chemistry in the State of Iowa for the Years 1965-1967"*. Vern A. Troxel, Iowa City.

19. *"Advanced High School Science Courses"*. Jerry L. Underfer, Iowa City.

20. Invited Paper *"Chemical Bonds (Pi, O, μ)"*. Dr. Norman C. Baenzinger, Iowa City.

21. *"An Attempt at Coordinating Science and Mathematics in the Junior High School"*. Linda L. Young, Iowa City.

22. Invited Paper *"Rumblings of a Pseudo-Scientist"*. Dr. Leland P. Johnson, Des Moines.

23. *"Analysis of Attitude, Subject Preference and Teacher Performance for Three Emphasis of Teaching B.S.C.S. Biology at the Eight Grade Level"*. Vern A. Troxel, Iowa City.

In St Louis - Wildlife Society

Died 4/22 - 1948 = 19 yrs

J. N. Darling - others

Iowa 25 year plan 1931

Aldo and others

Put Iowa as a leader

in conservation } a difference
recreation }

Research fund, of 9,000 cc

quail project

Paul Errington
F+F. Hammerstrom

3 M - JN Darling

3 M Ames

3 M Ia fish & game

Aldo's Game Survey

Sporting Arms Ammunition

Iowa his first state

Dr Clunglen

Dr Kellberry I. U.

Mr Larson - Biologist Ia.

Madden -

Errington

Fred C. Schwob

This Diploma Certifies that

Aldo Leopold

is a member of the Fraternity

Phi Kappa Phi

by election of the Chapter in

The University of New Mexico

and he is hereby granted all the honors and privileges pertaining to the Fraternity

Charles E. Hodgin President of Chapter

Leon E. Woodman Registrar General

James S. Stevens President General

Date 1920 Number 4905

IWZV
L55

WILDLIFE
Conservation on the Farm



by Aldo Leopold



LIBRARY OF THE
UNIVERSITY OF WISCONSIN

Reprinted from

Wisconsin Agriculturist and Farmer

Racine, Wisconsin

Recipes for Rural Conservation

Don't graze the whole woodlot. Fence off a part for the birds and wildflowers.

Don't burn, mow, or graze the whole marsh. Protect a part as winter shelter for birds, and as a refuge for bog flowers and tamaracks.

Leave some fencerows or plant windbreaks to check the wind, catch snow, and shelter wildlife.

Leave corn or spread manure to feed the birds in winter.

Shoot only those hawks and owls actually caught taking poultry. Hawks and owls work for you night and day as mousers and rodent-police.

The farm landscape is a portrait you have painted of yourself.

Den-trees, dead snags, fencerows, bird houses, and feeding stations are the visible evidences of your hospitality toward wild things.

A remnant of each of the plants and animals originally native to your farm is visible evidence that it grows historical perspective as well as butter fat or cheese. He who knows what his land was is a safe custodian of its future.

★ ★ ★

Wildlife Conservation on the farm

By ALDO LEOPOLD

Drawings By Byron Jorns



HERE are the authors of our exclusive series on nature and wild life on the farm, which has been published at regular intervals during the past year. The series will be continued with appropriate subjects according to season. Prof. Aldo Leopold is one of the foremost conservationists in the country. He is an outdoor man, a naturalist and bird expert. Likewise for many years he was one of the country's leading archery enthusiasts and both he and Mrs. Leopold are widely known for their skill in making bows and arrows, and as expert marksmen.

The artist, Byron Jorns, is a native of Portage, Wisconsin, received art training at University of Wisconsin and Art Institute of Chicago. He is bulletin illustrator for the Wisconsin College of Agriculture, Madison. Being himself an outdoor enthusiast, Mr. Jorns takes to the sketches for this series like a duck to Wisconsin ponds.

X25 2936

Winter Cover

THE recipe for wintering game is corn and cover. Corn is easily provided but cover is often scarce. This tells how winter cover may be improved.

By winter cover is meant vegetation stiff and tall enough so that snow will not bury it, and thick enough to protect birds from weather and enemies.

Young evergreens, grape tangles, and bushy marsh are the three kinds of cover dependable in all weathers.

Bushy Marsh

Nothing excels a bushy marsh as winter cover, especially for pheasants and quail. After snow and ice have flattened down all grass and weeds, the bushes still stand up. Willow, red dogwood, and alder are good bushes.

All marsh tends to grow bushes if protected from fire, grazing, and mowing. Marsh cover, then, is a matter of leaving part of the marsh unburned, ungrazed, and uncut. If the marsh is drained, ditch banks are a good place to leave bushes.

To hurry the natural process of growing bushes, plant cuttings. This is best done in spring.

Uncut cattails, slough grass, or sweet clover are valuable to reinforce the bushes and to serve as roosts, but are not weatherproof in themselves.

Grape Tangles

A grape tangle can be grown in a single season, and will house more game per square rod than any other cover.

One way to build a tangle is to find a tree with a vine in its top. Fell the tree, but don't cut the vine. Leave the stump high, with the butt resting on it. The vine soon converts the down tree into a dense tangle.

Another way is to find a grape sprawling on the ground. Build over it a "teepee" of stout durable poles. Wrap the teepee with discarded wire. Pick up the vines from the ground and lace them into the superstructure. The vine soon covers the whole structure with dense growth.

Grape tangles, to grow vigorously, must be in full sunlight. They must be protected from live stock.

Evergreens

These are best planted in spring. Brushpiles, and down tops of oaks felled with the leaves on, are good temporary covers while waiting for evergreens or grape tangles to grow. Brushpiles are more effective if topped with cornstalks or marsh hay.

It is useless to plant birds on a farm without good cover. New fences to protect cover may bring more birds than new laws.



"Teepee" frame for a grape tangle

Winter Food

THE recipe for wintering game is corn and cover. As in other recipes, success depends on where, when, and how "the makings" are put together.

Where?

For quail, put your corn on the leeward (south or east) side of the thickest cover, preferably on the sunny side of a south-facing bank. Quail dislike to feed in the open.

For prairie chickens and Hungarian partridge, put corn in the open, never in woods or brush. Grass or weeds nearby are good but not essential.

For pheasants it doesn't matter where corn is put, provided there is plenty of it.

Wastage by squirrels is serious when corn is left in or near woods. A brush patch, marsh edge, or fence row is therefore a better place than a woodlot to feed quail or pheasants.

When?

Start early, preferably by November. This is especially important in order to hold quail and pheasants on uplands. If no corn is offered until the winter storms actually start, your birds are likely to drift to some distant marsh and you may never see them again.

How?

The best and simplest way to feed is to leave some shocks or standing corn in the field. If shocks are used, new bundles should be exposed from time to time in winter. Don't worry about birds learning to remove husks. Even quail become expert at this. The next best way is to put corn ears in a wire basket or impale them on spikes in a pole (see drawings).

Shelled corn is best fed in a hopper, but the hopper must be roofed over, else rain or melting snow will clog it with ice. Where squirrels are present, the tray of the hopper should be covered with wire mesh to reduce wastage.

The manure-spreader is a good feeder, especially for pheasants and Hungarians, but the danger is that spreading will cease in bad weather when the birds need it most.

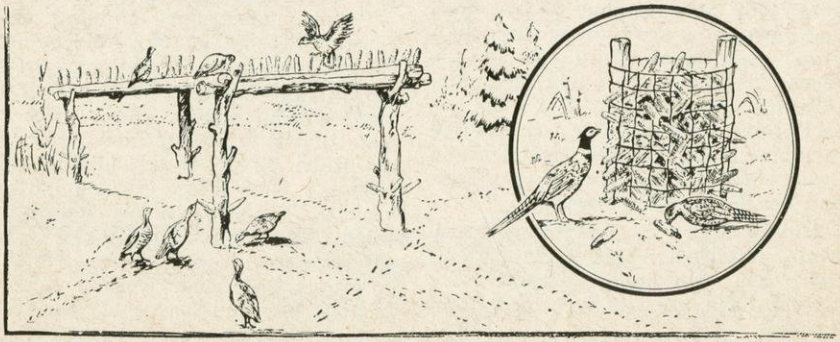
The poorest way to feed is to force the birds to visit the barnyard. Dogs and cats harass the birds. In quail this may be fatal, especially if the covey fails to reassemble before night.

How Much?

In a hard winter a quail eats half a pound of corn per week, a Hungarian three-quarters of a pound, a pheasant or prairie chicken two pounds, a rabbit one pound, a squirrel two pounds. This is over and above the wild foods which they "rustle" for themselves.

Substitutes For Corn

Soy beans, small grains, or foxtail and ragweed seeds gathered under the shredder are all good winter food. Weed seeds must be dried, else they will mold. Small grains are best fed in shocks or stacks.



Corn in wire baskets or put up on spikes is kept out of the snow

Woodlot Wildlife



Hollow trees make homes for the wild creatures

IN Europe, foresters for two centuries tried to clean the woods of every dead, hollow, or defective tree. They succeeded so well that woodpeckers, squirrels, owls, titmice, and other hole-nesting birds have become alarmingly scarce. In Germany, I saw dead oaks laboriously being riddled with auger-holes to encourage woodpeckers.

In Wisconsin, we pay a hunting license to restock the state with raccoons, and at the same time we are chopping down the last hollow trees in which a coon can live. We maintain a closed season on ruffed grouse in the southern woodlots, but grouse are rapidly disappearing from them because the down logs needed for drumming, and the brush needed as cover, are being removed.

This does not make sense. A few hollow trees, especially durable live basswoods or oaks, and a few dead and down logs, are essential to a balanced assortment of wildlife on the farm. The fur-bearers and the squirrels, the rodent-eating owls, the insect-eating woodpeckers, chickadees and blue-birds, are all dependent on dead wood for their breeding places, and hence for their existence.

Hollow apple trees in the orchard, while admittedly not good horticulture, are especially attractive to screech owls, crested flycatchers, and flickers.

Dead willows in the marsh, after being riddled by woodpeckers, are almost sure "bait" for tree swallows. Dead willows in the southern counties, if over water, may also harbor the beautiful prothonotary warbler.

Wide shallow cavities in creekbank trees are the nesting place of the wood duck.

Tall dead snags near lakeshores always have a chance of becoming an eyrie for the bald eagle or the fish-hawk.

If you are lucky enough to have otters on your stream, think twice before you cut a hollow tree with the entrance under water. It may be the "holt" where otter pups are born.

Any hollow tree may become a bee tree. There was a time when no cane or beet sugar was to be had in Wisconsin; one ate honey or maple sugar or went without.

When cutting wood this winter, it is well to remember these manifold uses of defective trees.

On the upper slope of many Wisconsin ravines there are limby crooked bur oaks and white oaks, often with hollow limbs. These veterans grew in the open. They mark the edge of the former prairie. Scars of old prairie fires are imbedded in their stumps. They have escaped cutting because they are crooked and short-boled. Quite aside from their value as den trees, these veterans should be preserved as historical monuments. If your boy can learn to read their history, he will understand better the meaning of his home state and his home farm.

The Farm Pond

IN THE dust bowl thousands of artificial ponds are being built, with government help, by farmers who learned during the drouth to appreciate water. Some day Dakota may build as many ponds as Wisconsin has drained.

The farm pond has many uses: stock water, muskrats, pan fish, water lilies, and last but not least, waterfowl.

Jack Miner, an Ontario farmer, had a small pond behind his barn. Like most ponds, it was duckless, having been "burnt out" by too much shooting. Jack Miner quit shooting, put out some live decoys and grain. A few wild birds began to drop in. Within a decade ten thousand Canada geese were visiting his refuge each spring and fall. So spectacular a success is, of course, not to be had by all, but any pond, even if temporary, can attract at least a few interesting waterfowl. The time to start is spring.

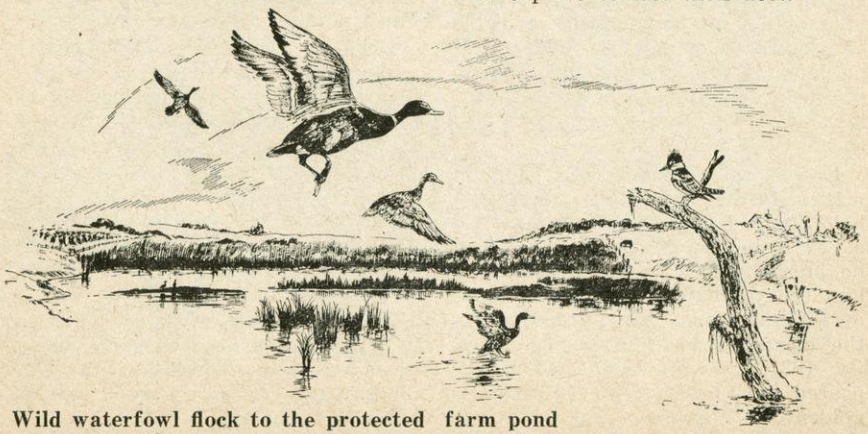
The first essential is to exclude all shooting. As soon as the ice breaks, put in a few live decoys, preferably pinioned wild ducks, and some feed, preferably corn. It is illegal to use either live decoys or grain bait on a shooting pond, but on a refuge they are both legal and proper. Avoid too many decoys; they roil the water. If crows and blackbirds are bad, put the feed on a shallow bar under water. If you have no bar, build one by hauling gravel on the ice. If carp prevent placing the feed in the water, feed on an open beach. Diving ducks like bluebill and redhead, however, will not readily find grain unless it is in the water.

Once the ducks start to use your pond, both the numbers and kinds will increase as long as protection is maintained. Some kinds, notably bluewinged teal and mallards, may be induced to stay and nest.

For the greatest variety of bird life, part of the shoreline must be bare of cover. Shorebirds, geese, and most ducks like to loaf where they can see in all directions.

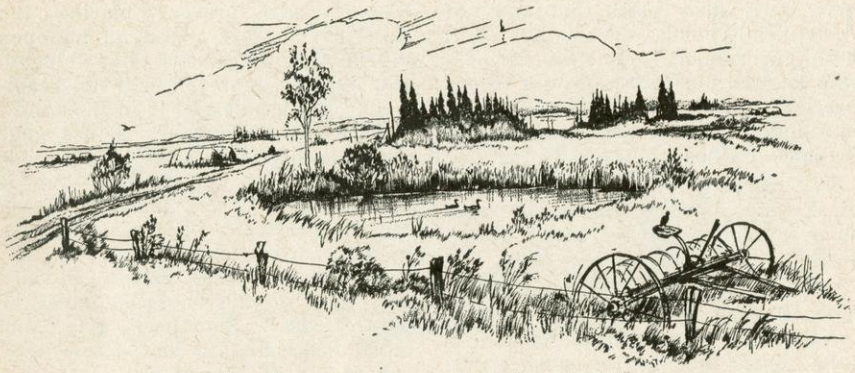
Kingfishers and terns add greatly to the summer bird life of a pond. To attract kingfishers, plant a few dead snags with limbs overhanging the water, and leave a steep bank in the nearest gravel-pit for the birds to excavate their nest. Such a bank will give you hundreds of nesting swallows as a "dividend." To attract terns, build a raft and anchor it in the middle of the pond. Such a safe loafing place is infallible bait for terns and perhaps gulls.

To merely attract birds is only half the game. The next thing is to distinguish the various kinds, to learn the habits, calls and plumages of each, where they come from and where they go. Some of your callers will be on their way from Carolina to Saskatchewan; others from Patagonia to the Arctic seas. All they ask of you is something to eat and a safe place to wet their feet.



Wild waterfowl flock to the protected farm pond

The Marsh



Marshes make fine refuge for wildlife

SHALL we fire the marsh?" This is a question which faces the owner of marshlands, especially in the spring following a wet year.

Burning does not hurt a marsh if the soil is wet, and if infrequent enough so that the bushes resprout. But burning which consumes the peat soil is ruinous to all living things. Even light burning, if repeated annually, gradually kills all bush growths, and when the bushes are gone the marsh loses its cover value for birds during deep snows. In hard winters like 1935-1936, quail and pheasants survived only in bushy marshes with feed nearby. All other growths were squashed and buried by snow.

Frequent Burning Bad

The farmer who prizes his birds should therefore be careful to keep part of his marsh in bushy growths of dogwood, willow or elder. If he must burn, he should confine the fire to the area to be cut for hay, keeping it out of the area to be left as bush cover.

Here is an actual case—in 1933, I met a farmer burning a peat pothole "to ged rid of the ragweeds". I asked if he had burned before. Yes, he burned every year. I persuaded him that perhaps fire was the cause of the ragweeds. He agreed to try the idea, and has not burned since. By 1937, the ragweeds had disappeared, having been replaced by aster, goldenrod, dogwood, and elder. A feeding station was maintained in this pothole every winter. While it was still in ragweed (the giant variety), not a bird could be persuaded to use the station. As the more varied vegetation gained a foothold, the game population began to build up. Last winter this 8-acre pothole carried 28 pheasants, 20 Hungarian partridges, and 21 cottontails.

Marsh wildflowers as well as marsh game birds suffer from too much fire. Most of the ladyslippers, pitcher plants, and other bog flowers thrive only under the shade of tamaracks. Repeated marsh fires push back the tamaracks until they disappear. Some ladyslippers require live sphagnum moss to grow in, and hence are destroyed by fire. Most Wisconsin marshes have already lost all their tamaracks, and with them most of their bog flowers, through the combined action of fire and grazing.

Curiously enough, some birds require freshly burned marsh for nesting and feeding. The Brewers blackbird, for example, nests in Wisconsin only in freshly burned cattails. Jacksnipe and geese like a burned marsh for feeding during the spring migration. A few valuable bird foods, especially the false climbing buckwheat, are greatly increased after light-burning a peat marsh.

Needless to say, if fire is to be used at all it should be used early, before nests are built. There is truth in the old saying: "Fire is a good servant, but a bad master".

Wildflower Corners

Aldo Leopold and John Curtis

WISCONSIN wildflowers are of three groups: the prairie flowers, the woods flowers, and the bog flowers. Each group requires a distinctive habitat, each group responds differently to grazing, mowing, picking, and burning.

The prairie group, for example, is not injured by fire, provided the fire comes before or after the growing season. Fire, in fact, may be beneficial to prairie flowers in preventing trees and brush from shading them out. Grazing, however, is fatal.

Prairie plants can stand mowing if not repeated too often. One of the best ways to preserve prairie flowers in a wild haymeadow is to reserve an unmowed strip each year, rotating the location of the strip. This enables each plant to go to seed occasionally, and incidentally improves cover for prairie chickens and pheasants.

Remnants of prairie vegetation occur on ungrazed roadsides as well as in hay meadows. The best conservation method in such spots is to burn early, mow late and never graze.

The prairie flowers, in the order of their blooming, include pasque flower, white and small yellow ladyslipper, blazing star, prairie clover, butterfly weed, compass plant, ladies tresses, and blue aster. Of these, the ladies tresses and ladyslippers grow only on marshy prairie. The remainder are upland prairie species.

Woods Flowers

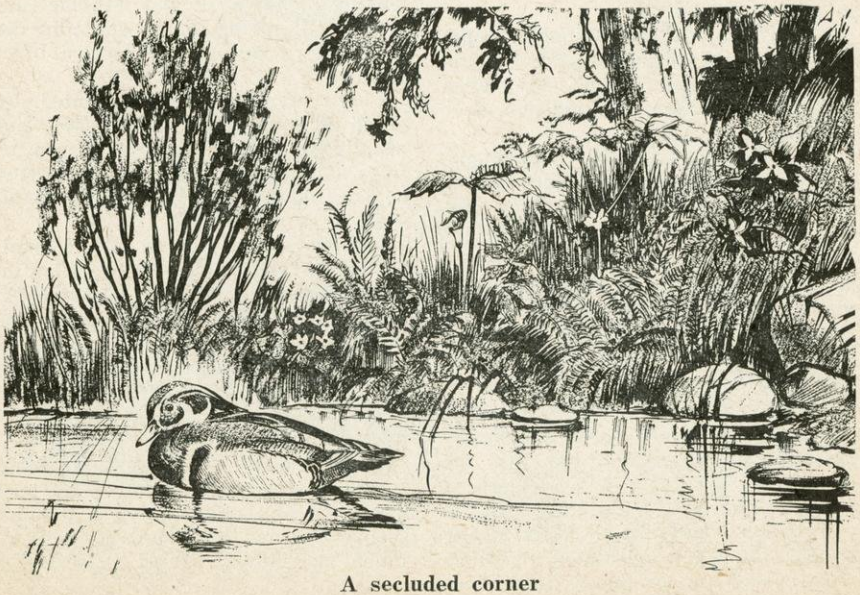
This group, in the order of blooming, includes bloodroot, hepatica, windflower, Dutchman's breeches, jack-in-the-pulpit, ginseng, white, nodding, and red trillium, blue phlox, and large yellow ladyslipper. Many ferns have the same habitat requirements, and may be grouped with the woods flowers.

Bog Flowers

This group includes the pink mocassin flower, pitcher plant, grass pink, rose pogonia, bog laurel, and bog rosemary.

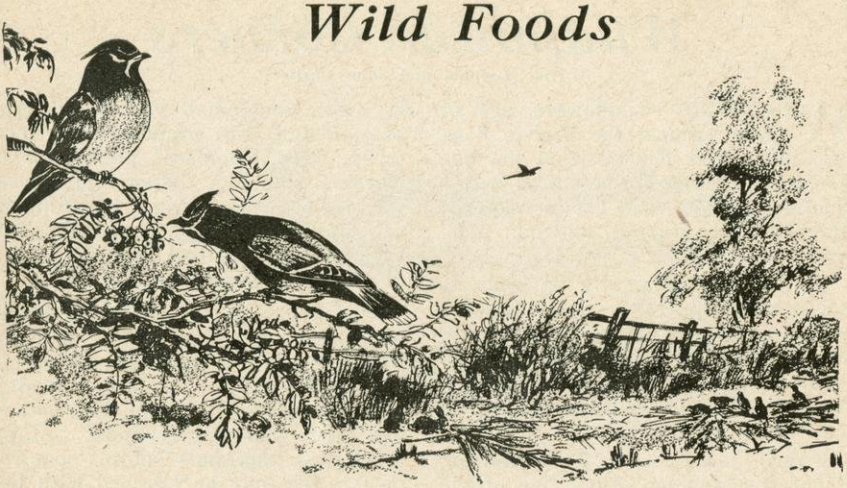
All these bog species require moist acid peat for survival. Drainage and grazing are fatal because they admit peat fires, weeds, and grass.

Conservation of bog flowers is a matter of reserving part of the bog against drainage, grazing, cutting, and burning.



A secluded corner

Wild Foods



NEARLY every farming operation offers chances either to conserve or to destroy the wild plants on which game, fur, and feather depend for food. There are many of these wild plants. Each has its own "customers" who like its products.

Winter Fruits. The most dependable yielder is the wild grape. Some vines are male and do not bear. The fall is the time to mark the bearing vines. All they need is full sun and some brush to climb on. Most game and song birds relish wild grapes, both when fresh and as dried "raisins" in winter.

"Wild" apples are valuable, especially to ruffed grouse, foxes, and deer. The fallen fruit is eaten even after it has frozen. In addition, deer eat the fallen leaves.

All the haws, crabs, viburnums, dogwoods, and sumacs yield valuable winter fruits. All they need is protection from axe, cow, and fire.

Summer Fruits. All game and most song birds feed berries to their young. The heaviest yielder among the summer berries is the mulberry. If you have none, you can make no better move for wildlife than to plant a few. They bear only in full sun.

The black cherry tree, the chokecherry bush, the wild plum and the elder bush are all heavy yielders of summer fruit for wildlife.

Fall and Winter Seeds. Almost any fertile soil, when cultivated or otherwise broken up, produces weed seeds valuable as fall and winter food.

Thus any marshy spot grows smartweed after cultivation. Smartweed seeds are relished by most game birds, including waterfowl. But marsh soils, if deeply burned, produce only worthless nettles or giant ragweed.

Any upland soil, if fertile, produces foxtail or ragweed after cultivation. Both plants yield abundant seeds which are the staple winter food of quail, pheasants, Hungarian partridge, juncos, and tree sparrows. A supply of seeds can be insured by leaving a strip of oat stubble unplowed till spring, or by omitting the last cultivation on the border of a cornfield.

Peat haymeadows surrounded by brush offer excellent winter cover but usually no food. A heavy crop of false climbing buckwheat can often be secured by lightly burning small spots in the brush.

Oak woods are sure to yield a small but highly valuable crop of trefoil beans (sometimes called stick-tights) provided the cattle are excluded. Once grazed, however, a woods loses its trefoil for five or ten years. Trefoil beans are the first choice of quail, pheasants, and ruffed grouse for a winter meal.

Insect Foods. To attract warblers to the farmyard, it is well to have at least one box elder tree. Box elder seems to draw the insects they want, much as clover draws insects for poultry.

Look For Bird Bands

DEAD birds which have been shot, or found killed on highways, sometimes bear leg-bands of aluminum or colored celluloid.

Such birds have been banded for a definite purpose. Wild birds are trapped, banded, and released in the hope of tracing their migration routes. Birds raised in captivity are banded upon release in the hope of tracing their survival and movements. Banding also yields information on how long birds live.

A banded bird invariably represents a lot of work done by some scientist or conservation officer, but that work comes to nothing unless the finder reports where, when, and if possible, how the banded bird was killed.

This is a plea for your co-operation and good will in looking for bird bands, and in reporting them to the address given on the band. Most Wisconsin bands are marked for return either to the Conservation Department, Madison, or to the United States Biological Survey, Washington, D. C. If in doubt, send the band to the Conservation Department. You will receive a return report telling you where, when, and by whom your bird was banded.

Here are some examples of valuable facts gleaned from banding reports:

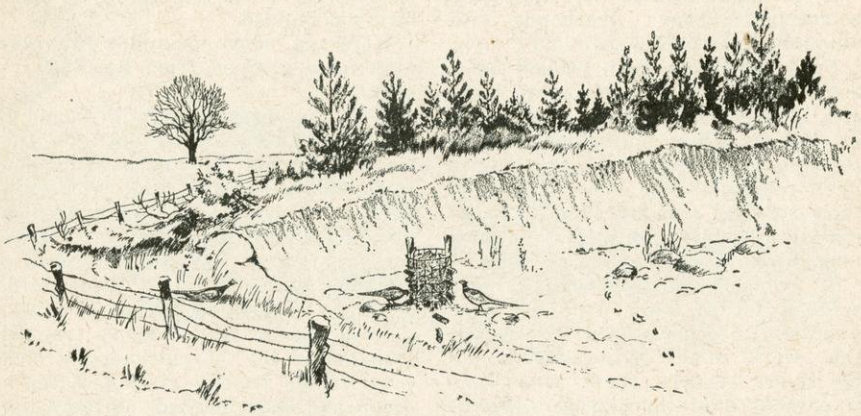
A farmer near Ladysmith found a banded prairie chicken dead on the road in summer. It had been banded two years before at La Crosse, in winter. This one bird answered a question which had been in dispute for years, do Wisconsin prairie chickens ever migrate? This bird, a hen, had migrated a hundred miles.

A farmer in Sauk County trapped and banded all the chickadees which came to his feeding station. After a dozen had been marked, no more unmarked birds appeared in the trap. This gave a reliable census of the local population. Next summer several marked chickadees were seen nesting nearby. This showed that part, at least, of the summer chickadees were yearlong residents. Next winter about half the original dozen reappeared at the feeder. This showed that during the year half the population either moved or died.



Look for the band when you find a dead bird! This aids the record makers in this work

Evergreens For Cover



Young evergreens furnish more shelter for more wildlife per square rod than any other growth

YOUNG evergreens furnish more shelter per square rod, for a greater variety of wildlife, than any other vegetation. The farmer who wants to hold his birds in winter, but has only a few odd corners to devote to cover, will do well to plant evergreens on them.

It takes five years, however, for small evergreens to reach a size useful as wildlife cover. Failure is probable if maintenance is neglected, or if the kind of evergreen does not fit the kind of soil.

On any limey soil, any soil which will grow alfalfa or clover without liming, I recommend red cedar and creeping juniper for dry locations, white cedar for moist locations. On acid soil use white pine, white spruce, or Norway spruce for moist situations; red (Norway) pine, jack pine, or Scotch pine for dry situations.

Evergreens And Shade

White pine, spruces, and white cedar do best in partial shade. Red pine and jack pine tolerate little or no shade. If in doubt about what kind of evergreen to plant, select the kind native to the locality.

Use nothing smaller than 2-2 stock, i.e., four-year-old trees which have grown two years in the seedbed and two years in the transplant bed. In heavy grass or where rabbits are thick, even larger stock is desirable. White pines and spruces may be wiped out by rabbits unless the stock is large enough for the tip to be out of reach. Red cedar is rabbit-proof; jack pine is proof against cottontails, but not snowshoes.

If you must use stock smaller than 2-2, put it in the garden and let it grow until at least a foot high.

Diseases

If you plant white pine, make sure your farm is free of gooseberries and currants which carry the white pine blister disease. Do not plant red cedar near apples. These two species share a rust disease which may destroy both.

Grass And Evergreen Plantings Compete

The worst enemy of evergreen plantings is grass. If the planting site is sodded, I advise clean cultivation for a space of 3 feet from each tree before planting, and for two years afterward. Herbs or weeds, if not too rank, do no harm, and in

the case of the shade-tolerant evergreens, may be beneficial.

On ground which contains vestiges of grass, especially quack, do not mulch or else mulch heavily. A light mulch merely protects the grass while it forms a sod.

Land frequently flooded by overflow is not suitable for planting evergreens. White pine, spruces, and white cedar tolerate short periods of flooding, but the other pines do not, especially if flooded in summer.

Red Cedar Resists Grazing

All plantings in pastures must be fenced, with the possible exception of red cedar. Red cedar resists grazing, but may be destroyed by rubbing.

Where To Plant

To make evergreens valuable to wildlife, the design and location of the plantings is important. Cold windy locations are not worth planting. If you have a warm south-facing bank, use evergreens as a windbreak to make it warmer. On such banks the drouth resistant species like red cedar, creeping juniper, red pine, or jack pine are best.

Evergreens planted for wildlife should not be pruned. Their value as winter cover lies in the low-hanging branches which sweep the ground. As the trees grow older these low branches die, and should be replaced by a new planting of young trees.

Birds Enjoy Evergreens

Nearly all wildlife species which winter in Wisconsin make use of evergreens. Pheasants, quail, and Hungarian partridges resort to them during blizzards. Cardinals, chickadees, juncos, tree sparrows, bluejays, cedar wax-wings, and redpolls can be held without them, but they winter in greater numbers where evergreens occur. Long-eared owls, evening grosbeaks, crossbills, and pine siskins seldom winter where evergreens are absent. Wintering bluebirds and robins are especially attracted by red cedar berries; crossbills by pine or spruce cones.

There are localities in Wisconsin where no evergreen will fit. Thus there are soils too limey for the acid-loving species, too near apples to risk red cedar, and too dry for white cedar. In such localities it is better to use grape tangles for wildlife cover.



Fire is one of the worst enemies of conservation

Stories In The Snow

SOME SUNDAY in Jauuary when the tracking is good, I like to stroll over my acres and make mental note of the birds and mammals whose sign ought to be there, but isn't.

Every large Wisconsin woodlot, for example, ought to show the mincing lady-like tracks of ruffed grouse, but few do. There are a dozen counties now grouseless. Why? Because we failed to reserve part of the woods from grazing.

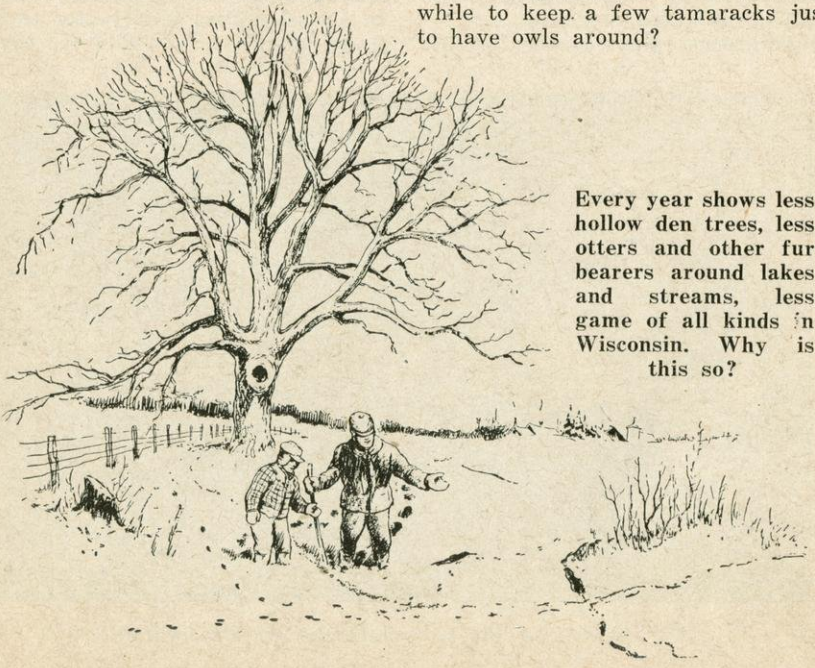
Every woodlot, during winter thaws, ought to show the hurried wanderings of coons emerging hungry from their den trees. Few do, because few woods have any den trees left. The hollow basswoods and white oaks which formerly harbored coons have been chopped out, often by improvident coon hunters. The same lack of hollow trees has eliminated the flying squirrel, the screech owl, and the barred owl from many a woods.

Out in the corn stubble by the marsh we should find the peculiar tap-dancing tracks of the prairie chicken; instead we find only the trotting-horse stride of a racing pheasant. Why no chickens? Because years ago we plowed up their booming grounds, mowed, burned or pastured their nesting cover, and then overshot the young in fall. Today we have a dozen chicken-less counties, and if fires are not checked in the peat lands, we shall end with a chickenless state.

Jumping Mouse Disappearing

In the tussock swamp by the tamaracks we can look for a track few people know; the kangaroo-like springs of the jumping mouse. But if the tussocks have been drained, or too hard pastured, the jumping mouse will have disappeared, to be replaced by the prosaic meadow mouse.

In the tamaracks, if you have any, you should find the regurgitated pellets of the long-eared owl. Note well the mouse skulls; three skulls per pellet, one pellet per day, 100 days in the winter, 300 mice per owl per year. Can you afford to let some rabbit-hunter with the trigger-itch shoot him just for fun? Is it worth while to keep a few tamaracks just to have owls around?



Every year shows less hollow den trees, less otters and other fur bearers around lakes and streams, less game of all kinds in Wisconsin. Why is this so?

Windbreaks

FARMERS learn by experience, but in matters affecting conservation they sometimes learn pretty late.

In the 1920's farmers pulled all the hedges out of the cornbelt.

In the 1930's, under the name of "shelterbelt", the government replanted hedges all over the "dust bowl". The time may come, given wind and drouth enough, when we shall replant them in the cornbelt. We have already had wind and drouth enough in the sandy counties of Wisconsin; hundreds of miles of pine windbreaks are beginning to line the highways, farm boundaries, and field fences.

Let's Restore Windbreaks

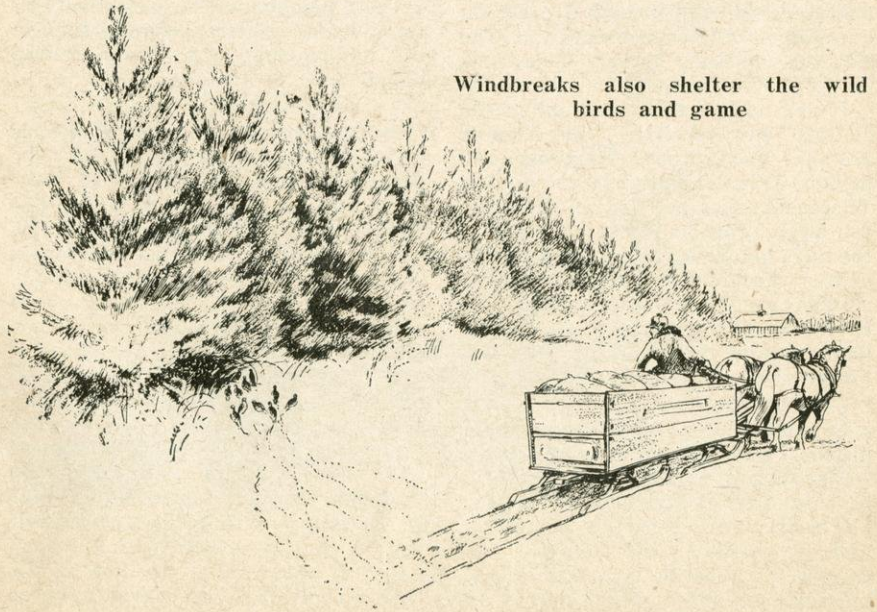
Windbreaks are good or bad depending on one's style of thinking. If one thinks as a "lone wolf" they are bad, for they use up good land. Why not let the neighbors stop the wind before it gets to your place?

But if one thinks as a social animal they are good, for with too much wind all the land may become bad, as it did in the dust bowl. Why not help the neighbors stop the winds?

If windbreaks become general, they will have a large effect on wildlife. Scores of species of birds and mammals will have new nesting and wintering cover. Those which do not want or need cover will have plenty of open ground left.

Which Will We Choose?

How shall we reconcile this new enthusiasm toward windbreaks with the old hostility toward fence rows? A fence row is a natural windbreak which springs up without cost. If kept under reasonable control by cutting at intervals, it is nearly as effective as the artificial windbreaks which eat up cash and labor. Perhaps we are due for a change of attitude toward fence rows. They use up land and sometimes harbor insects, but if we abolish them we lose our birds and increase our wind.

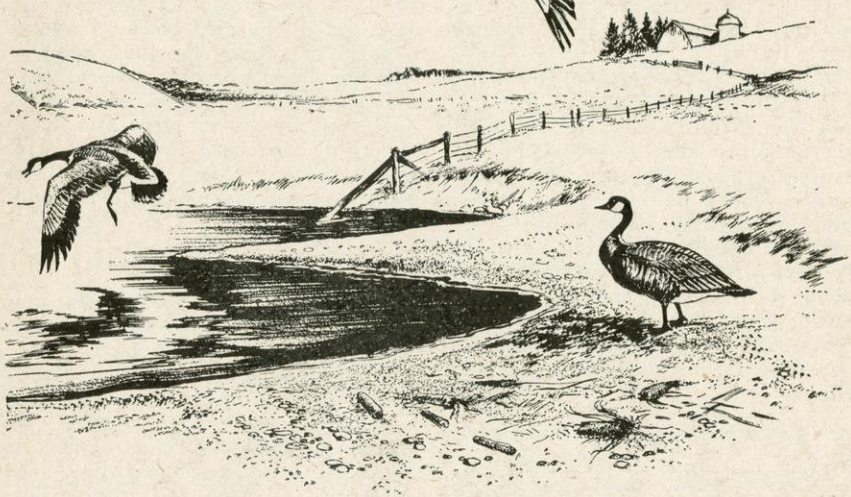


Windbreaks also shelter the wild birds and game

When The Geese Return



From time immemorial geese have watered at certain Wisconsin lakes



ONE swallow does not make a summer, but one flock of honkers, winging northward through a murky March thaw, make a spring.

What chance has a farmer to induce the migrant flocks to settle down and stay awhile? This is a practical question in wildlife conservation. The future of geese is largely a question of hospitable farmers.

If you happen to live on one of the historic "goose prairies", your chances are very good. Geese from time immemorial have watered at certain Wisconsin lakes and fed on the nearest large prairie. What they ate in the days before corn came is a puzzle, because we know so little about what plants covered the original prairie. Probably they ate the seeds of wild legumes and the bulbs of nutgrass. Today they eat corn and the leaves of winter wheat or rye.

Granted you are in or near a goose prairie, what are the requirements for attracting geese? Mainly a large bare expanse of stubble offering corn and winter grain, absolute protection, and if possible, live decoys. Live decoys for shooting are now illegal, but for "baiting" a refuge decoys are both legal and effective.

If you can muster this combination, and have patience, you will eventually attract geese.

By protection I mean complete freedom from shooting over a period of years. Geese have a long memory. Several neighbors who pool their efforts have a better chance to ban the hunter than one farmer acting alone.

Goose Ponds

A farm pond with bare shores is an additional inducement, for the geese can then dispense with their daily trip to water at a lake. The pond should contain gravel, but this occurs naturally in most Wisconsin ponds. If it offers a gravelly island, barely awash, it is ideal. Deep ponds with wooded shores and no islands or bars are unfavorable for geese.

It is astonishing that more Wisconsin farmers have not built themselves a goose-show. Once your reputation is established, the geese will pile in, spring and fall. One Canadian farmer (Jack Miner) got so many geese that the government had to chip in to help with the feed bills. If you want geese, now is the time to advertise the advantages of your farm.

Feeding Stations

IN FEEDING birds, as in feeding folks, the first thought is to see that nobody goes hungry.

Experience brings a second thought: to see that feeding does not become too easy for the good of the fed.

The first Wisconsin game bird feeders were hoppers. The birds stood up to a tray and gorged.

It is better for a bird to gorge than to starve, and hoppers are still recommended where the operator is unable to visit the station frequently. A hopper set under a roofed shelter (so as to keep ice out of the grain) is nearly automatic, and a single filling often lasts for weeks.

But where the operator can tend the station frequently (say twice a week) a hopper is far inferior to a straw bed.

A straw bed is simplicity itself. Build a roofed shelter facing east or south, put straw or chaff on the floor and throw shelled corn into it. Let the birds scratch and earn their keep. To notify the birds that there is grain in the straw, lay a few cobs on it, or scatter "bait" grain on bare ground nearby.

Do not use marsh hay for the scratching bed; it's too heavy. Quail can't move heavy materials.

European farmers discarded hoppers long ago, and feed mostly in straw beds. The exercise is good for the birds; there is much less wastage by squirrels and rabbits. The only limitation on the straw-bed method is that fresh grain must be added every few days.

If you have saved the chaff from under the corn shredder, it is superior to straw, especially for winter songbirds. The foxtail and ragweed seeds contained in such chaff are attractive to pheasants, quail, and Hungarians as well. Beware of moldy chaff; it must usually be dried to keep well.

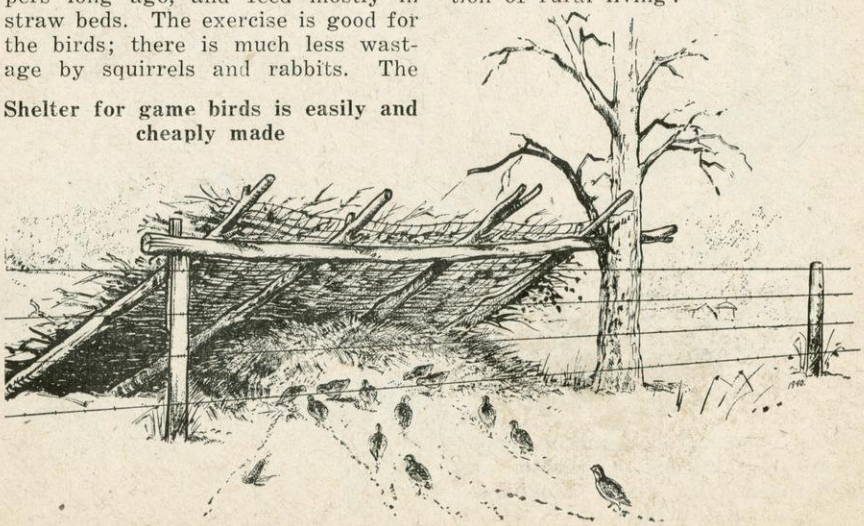
Don't build your shelter too tight; it should have plenty of escape holes, else the birds may refuse to enter it.

The consumption of grain from hoppers runs about as follows: two pounds per pheasant per week; one pound per prairie chicken per week; three-quarter pound per Hungarian per week; one-half pound per quail per week. Rabbits and squirrels eat two pounds or more per week, and squirrels may waste an almost unlimited amount by taking out the "hearts" of the corn.

Soy beans, buckwheat, wheat, rye, barley and sorghum are all acceptable substitutes for corn. Cracked acorns are also good.

One half of one per cent of the corn raised on an average southern Wisconsin farm will winter a good stand of wildlife. Does wildlife add one-half of one per cent to the satisfaction of rural living?

Shelter for game birds is easily and cheaply made



Winter Care Of Plantings

TREES, shrubs and vines planted for wild life cover require some forethought and care. Not as much as crops and live stock, but some nevertheless.

Your main winter risk is rabbits. In some years mice may girdle trees; in open winters wandering stock may browse them; in dry, snowless winters, frost may injure them.

Rabbits Prefer Spruce

Rabbit trouble begins when the young trees have emerged above snow level. It is much worse in cover than in the open. Any small evergreen planted in brushy or weedy ground is liable to be demolished by rabbits. On brushy ground the only defense against rabbits is to surround pine and spruce with cylinders of woven wire, or else to plant such large stock that the rabbits can't reach the terminal shoot. If wire is lacking, loose bundling with straw, weed stalks, fine brush, or burlap answers the same purpose.

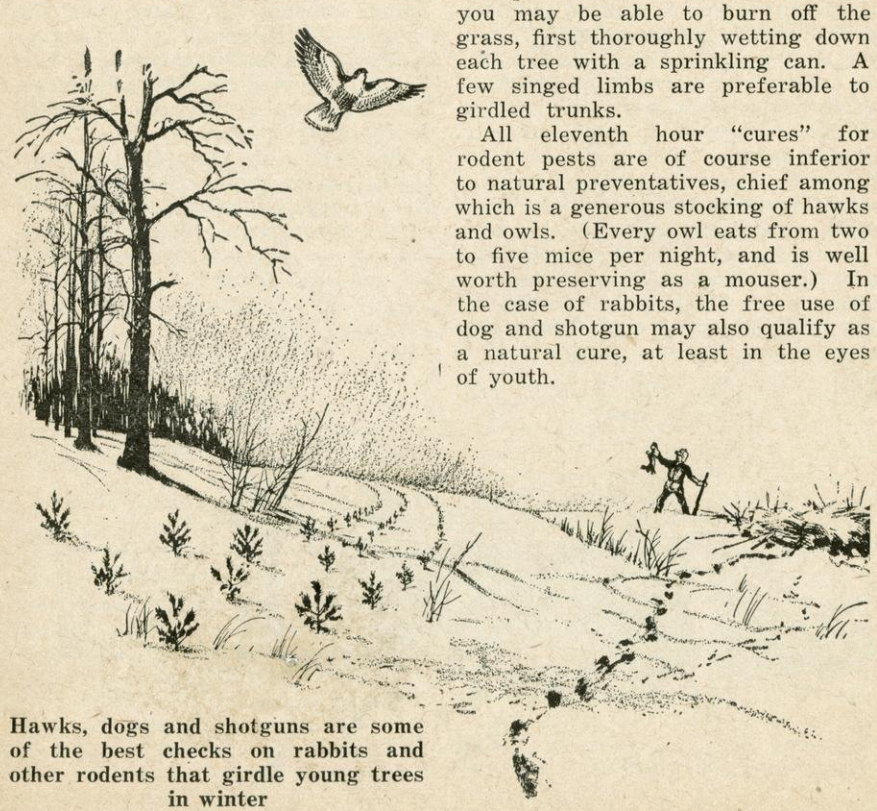
I have found that in underplanting woodlots it reduces rabbit damage to place trees away from trails. Rabbits seem to be conventional creatures; they hate to step off the "sidewalk".

Mice make trouble in plantations only during years of excessive abundance. The years 1935 and 1939 were high in mice. "Highs" occur at four-year intervals, so 1943 is the next in prospect.

Clean Cultivation Discourages Mice

The best defense against mice is clean cultivation. This, of course, implies planting the trees in rows. Where you are threatened with mice but it is impossible or too late to cultivate, you may be able to burn off the grass, first thoroughly wetting down each tree with a sprinkling can. A few singed limbs are preferable to girdled trunks.

All eleventh hour "cures" for rodent pests are of course inferior to natural preventatives, chief among which is a generous stocking of hawks and owls. (Every owl eats from two to five mice per night, and is well worth preserving as a mouser.) In the case of rabbits, the free use of dog and shotgun may also qualify as a natural cure, at least in the eyes of youth.



Hawks, dogs and shotguns are some of the best checks on rabbits and other rodents that girdle young trees in winter

Feed The Song Birds

WOULD you like to sit at your south window and watch cardinals, chickadees, nuthatches, juncos, tree sparrows, bluejays, and woodpeckers eat breakfast?

It is easily arranged.

First, keep a piece of suet tacked on some nearby tree. This is for the chickadees, nuthatches, and woodpeckers. If the jays carry away too much of it, cover it with wire mesh.

Second, erect a feeding tray; any flat surface set on a stump or post so as to discourage cats. Keep this clear of snow and sprinkled with cracked corn, sunflower seed, and weed seed saved from the corn shredder. Sunflower seed is particularly good bait for cardinals, cracked acorns and nuts for chickadees and woodpeckers.

If dogs or poultry interfere, fence them out by erecting a temporary fence. If starlings or English sparrows get too thick, thin them out.

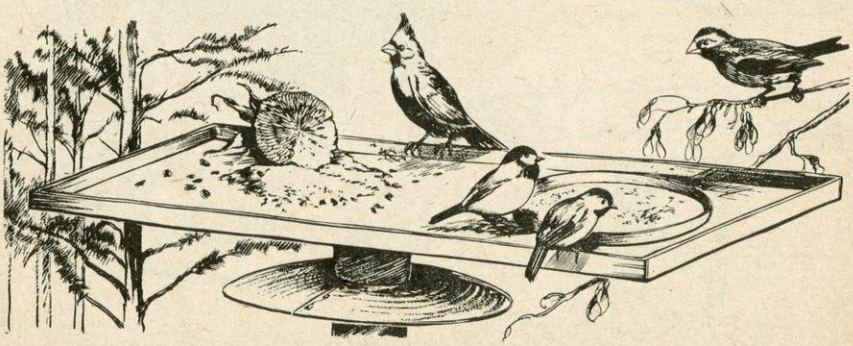
Nearby evergreens, vines, or thick bushes help to hold the birds. Discarded Christmas trees are good temporary shelter.

Success in attracting winter birds is largely a question of persistence. If the birds can count on finding food, you can count on their coming after it, and each new year adds more birds of more kinds.

Success in attracting ordinary birds soon whets the appetite for extraordinary ones. A mountain ash in the yard may bring cedar waxwings, or even the rare Bohemian waxwing. A box elder tree may bring evening grosbeaks. Faithful feeding of suet may bring the uncommon redbreasted nuthatch. A south-facing hollow snag wired onto the top of a dense evergreen may add the screech owl to your list of guests. A good fence row, judiciously baited with corn, may lead quail or pheasants out of the fields into your dooryard.



A good feeding station is the best of classrooms for learning ornithology, and one of the luxuries forbidden most city folks. You will enjoy it quite as much as the birds.



Winter table set for the birds

Bluebirds Welcome

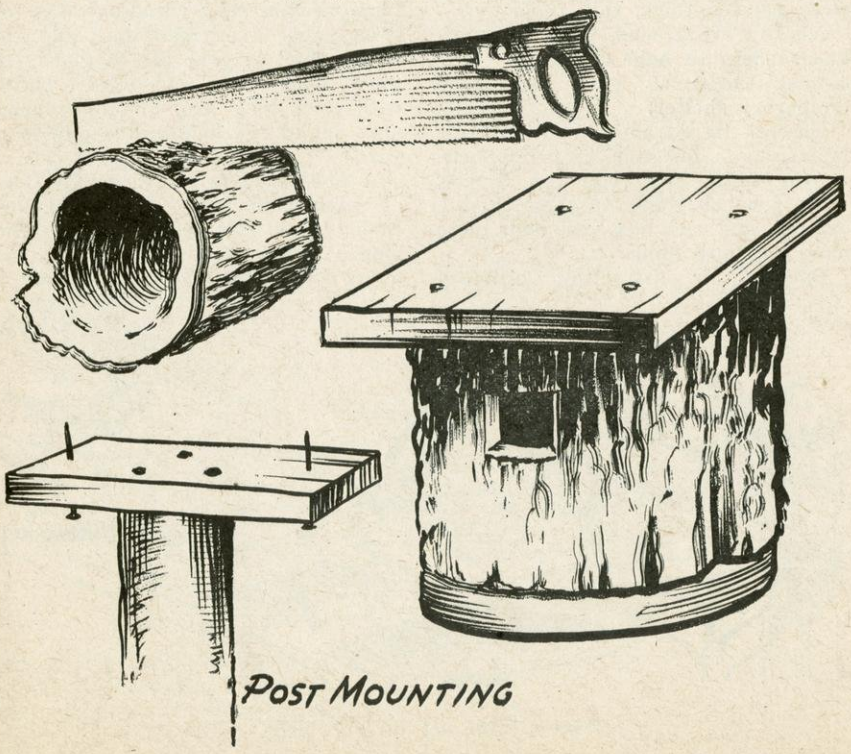
TO NOTE the arrival of the first bluebird, like tapping the sugar bush, is an authentic ritual of spring. Most farms, however, are content to let the bluebirds arrive, and depart, without offering them a place to stay.

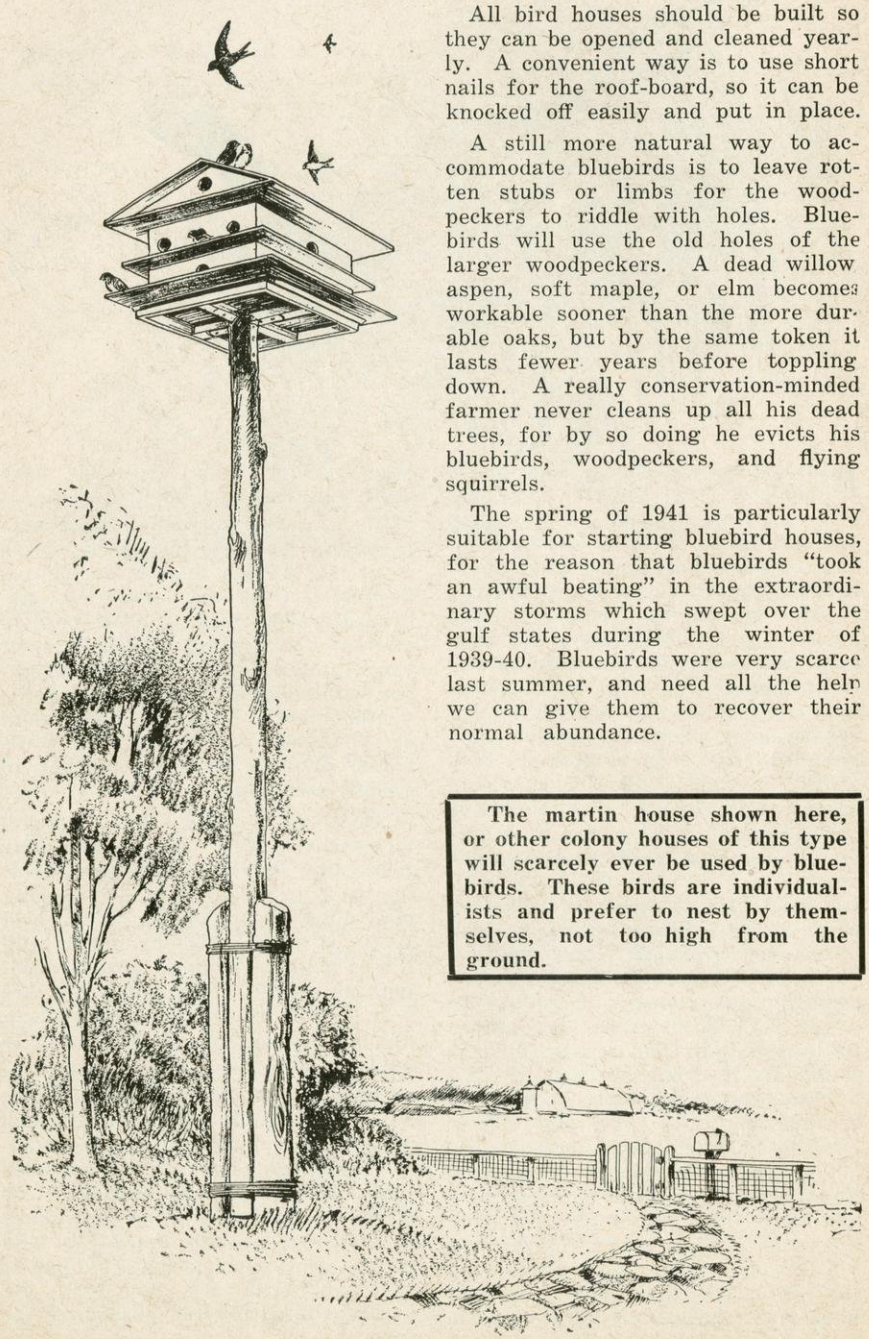
In the old days when every farm had hollow apple trees and wooden posts full of woodpecker holes, there was no need to provide housing for bluebirds. But today the hollow apples are gone, and the wooden posts are going. The more "modern" the farm, the greater the need for bluebird houses. I once tallied 100 farms and found that only 12 had birdhouses of any kind.

Bluebirds once nested in towns and villages, as well as in open country. English sparrows and starlings have completely routed them from urban habitats, and are now by way of routing them from farm yards as well. Hence an accurate 22 rifle is a good tool for rebuilding bluebird prosperity. The trouble with the rifle is that it may be turned against hawks and owls, or other birds just as desirable as bluebirds.

The rifle is not the only way to foil starlings. One very simple way is to erect bluebird houses not over eight feet above the ground. Starlings will not nest at such low levels, while bluebirds prefer to.

Bluebird houses may be built of old lumber, but a better-looking house may be made by ransacking the woodpile for hollow sections. Most woodpiles contain hollow cylinders of convenient length (6 to 12 inches), with hollows 4 to 8 inches in diameter. Bore, chop, or saw an entrance hole in such a cylinder, tack on a top and bottom board, and your bluebird house is complete. Set it on a high fencepost, or on the top of a short pole set in the ground. Place the house in a fencerow or open pasture, never in dense woods.





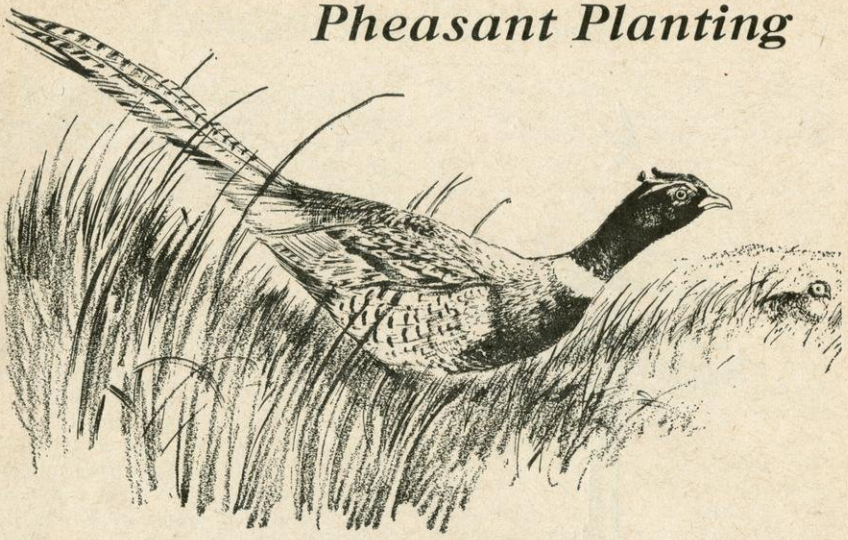
All bird houses should be built so they can be opened and cleaned yearly. A convenient way is to use short nails for the roof-board, so it can be knocked off easily and put in place.

A still more natural way to accommodate bluebirds is to leave rotten stubs or limbs for the woodpeckers to riddle with holes. Bluebirds will use the old holes of the larger woodpeckers. A dead willow aspen, soft maple, or elm becomes workable sooner than the more durable oaks, but by the same token it lasts fewer years before toppling down. A really conservation-minded farmer never cleans up all his dead trees, for by so doing he evicts his bluebirds, woodpeckers, and flying squirrels.

The spring of 1941 is particularly suitable for starting bluebird houses, for the reason that bluebirds "took an awful beating" in the extraordinary storms which swept over the gulf states during the winter of 1939-40. Bluebirds were very scarce last summer, and need all the help we can give them to recover their normal abundance.

The martin house shown here, or other colony houses of this type will scarcely ever be used by bluebirds. These birds are individualists and prefer to nest by themselves, not too high from the ground.

Pheasant Planting



PLANTING pheasants, like planting seed, may yield a good crop or none at all, depending on the skill and care used. Much is known about how to raise pheasants; little about how to plant them for high survival.

First of all, the planting stock must be right. Pheasants less than eight weeks old seldom survive, and from then on survival gets better with age, up to full maturity. Under-developed pheasants survive poorly at any age. An 8-week-old cock should, if well developed, weigh 14 ounces. Pheasants which have learned foraging in roomy pens survive better than those from crowded ones.

Second, the method of planting must be right. Pheasants which learn to wander gradually from the pen "go wild" better than those dumped suddenly and violently from pen to covert. Violent releases are known to lose weight, and if this loss is severe the bird may die.

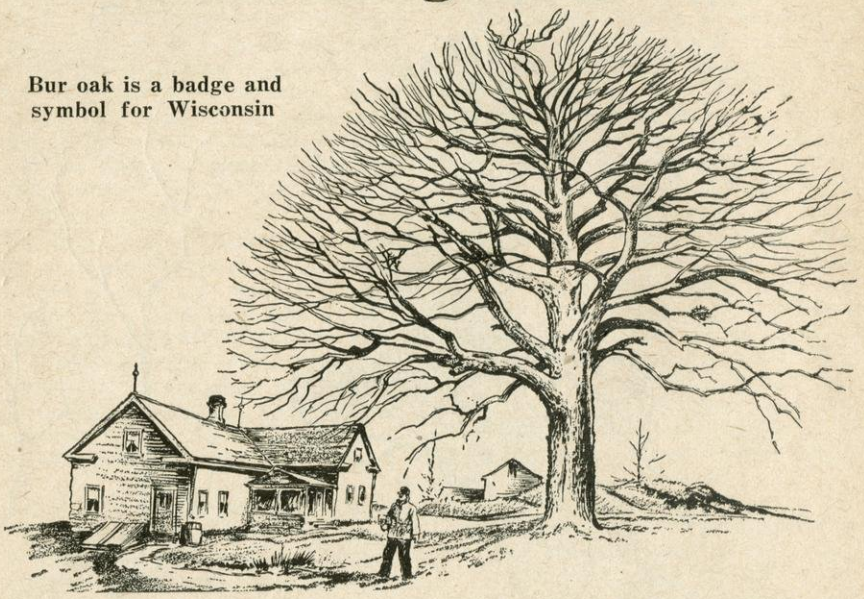
Third, the range must be right if the planting is to "stay put." It is hard to hold pheasants on bare uplands, especially after frost and shooting begins. The better the food and cover and the lower the land, the easier it is to hold birds through the fall and winter. In really severe winters it is impossible to hold pheasants except on bushy marsh, that is, marsh containing spots where willows and dogwoods have gone ungrazed and unburned.

Farms which lose their pheasants in winter because they lack marsh cover may regain them in spring, especially if there are fence rows, ungrazed woods, and grassy corners suitable for nesting. Such summer ranges must depend on some neighbor within three miles furnishing the winter marsh. Returns from banded pheasants show that the birds travel at least that far to get to good winter range.

Shooting hastens the downhill movement in fall. The farmer may reduce the shooting exodus by shooting only in moderation, by keeping both dogs and guns out of the best spots of cover, and by feeding in those spots. For such "bait" feeding, patches of standing grain are best. Corn, sweet corn, buckwheat, and sunflowers are good "baits" to hold fall birds.

On range already well stocked with wild pheasants, it is doubtful if much is gained by planting more. Artificially reared birds are at first excluded from wild pheasant "society," as shown by the fact that marked plantings do not at first appear in wild flocks. They are pushed out, and if the wild birds are abundant, the artificial birds may be pushed off the farm.

Bur Oak is Badge of Wisconsin



Bur oak is a badge and symbol for Wisconsin

WHEN school children vote on a state bird, flower, or tree, they are not making a decision; they are merely ratifying history.

When the prairie grasses first gained possession of our southern counties, they thereby decided that the characteristic tree of this region would be the bur oak, for the bur oak is the only tree that can stand up to a prairie fire and live.

Bur Oaks Were Shock Troops

Have you ever wondered why that thick crust of corky bark covers the whole tree, even to the smallest twigs? This cork is armor. Bur oaks were the shock troops sent by the invading forest to storm the prairie; fire is what they had to fight. Engineers didn't discover insulation; they copied it from these old soldiers of the prairie war.

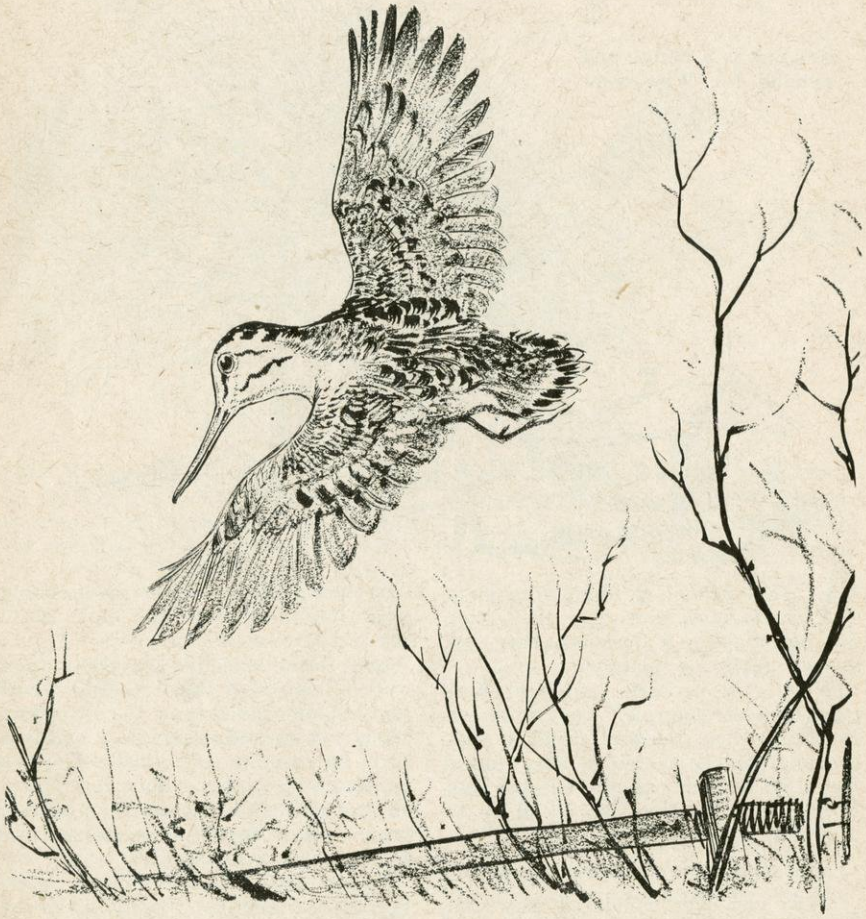
Botanists can read the story of that war for twenty thousand years. The record consists partly of pollen grains embedded in peats, partly of relic plants "interned" in the rear of the battle, and there forgotten. The record shows that the forest front at times retreated almost to Lake Superior; but the average advancement of the forest was about what it is now; and the outcome of the battle was a draw.

One reason for this was that there were allies which threw their support first to one side, then to the other. Thus rabbits and mice ate the prairie herbs in summer and girdled the oak seedlings in winter. Squirrels planted acorns in fall and ate them all the year. June beetles undermined the sod in their grub stage.

In the 1840's a new animal intervened; the settler. He didn't mean to, he just plowed enough fields to deprive the prairie of its immemorial weapon, fire. A rout followed. The oaks romped over the prairie in legions, and "overnight" what had been the prairie region became a region of woodlot farms. If you doubt this story, go count the rings on any set of stumps on any "ridge" woodlot in southwest Wisconsin. All the trees except the oldest veterans date back to the 1850's and the 1860's, and this was when fires ceased on the prairie.

Thus, he who owns a veteran bur oak owns more than a tree. He owns an historical library, and a reserved seat in the theatre of evolution.

Sky Dance Of Spring



The Woodcock is a spring dancer

I OWNED a farm for two years before becoming aware that the sky dance is to be seen in my woodlot, each evening in April and May. Once discovered, my family and I are reluctant to miss even a single performance.

The show begins on the first warm evening in late March, at exactly 6:45 p. m. Station yourself near an opening in woods or brush bordering a marsh, and listen. Soon you will hear the overture, a queer note sounding a little like a hoarse frog and much like the summer call of the night hawk: peent—peent—peent, monotonously repeated. Once you hear the peent, move up cautiously to get the performer between you and the western sky.

Suddenly the peenting ceases and a bird climbs skyward in a series of wide spirals, emitting a musical twitter. It is the male woodcock, in mating display. Up and up he goes, the spirals steeper and smaller, the twittering louder and louder, until the performer is only a speck in the sky. Then, without warning, he tumbles like a crippled plane, giving voice in a soft liquid warble which even a March bluebird might envy.

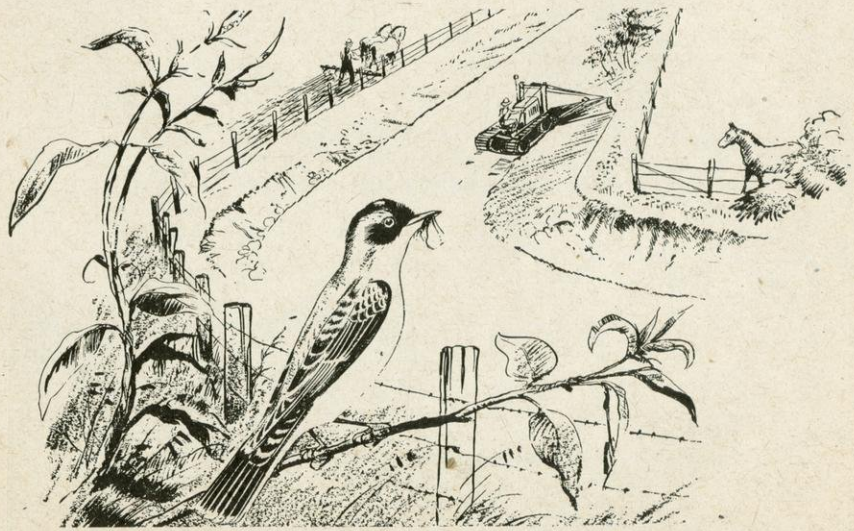
At a few feet from the ground he levels off and returns to his peenting ground, usually to the exact spot where the performance began. The spot is always in an opening; a pasture, a hay meadow, or a bare rock, and always in or near woods or brush. The sky dance is repeated dozens of times each evening, and by moonlight it lasts the night.

This little drama is enacted nightly by at least 30 pairs of woodcocks within a mile of the outskirts of Madison, i.e. within a mile of thousands of people who sigh for dramatic entertainment. It is enacted nightly in the woodlots of thousands of farmers who seek the better life, but who harbor the illusion that it grows in department stores and theatres. They are unaware that part of it grows on the back 40. There are less than a hundred people in Wisconsin who know, and annually enjoy, the sky dance.

The woodcock is living refutation of the theory that the main utility of game birds is to serve as a target, or to pose gracefully on a slice of toast. No one would rather hunt woodcock in October than I, but since learning the sky dance I find myself calling one or two birds enough.

The nearly universal grazing of woodlots and drainage of marshes is fast evicting the woodcock from southern Wisconsin. Light grazing improves woodcock cover by providing openings for the sky dance, but the kind of grazing which removes all the brush and young timber is ruinous. An ideal woodcock range consists of a springy alder or dogwood swamp adjoining spotty thickets of hazelbrush, blackberry, young popples, and young oaks. On such a range I have counted as many as 20 sky-dancing pairs per square mile, but this is exceptional. Overgrazing, overcutting, and drainage have already cleaned many a township of its last woodcock, without a single person being aware of the loss.

Woodcocks are just now in special need of help, for the spring blizzards of 1940 caught them too far north; thousands froze and starved. Such natural losses are unavoidable, and would do only temporary damage if the breeding ranges were in good shape. But in the dairy belt the breeding ranges are being improved to death. More people should learn the sky dance; we cannot conserve what we do not know exists.



"Clean fence rows invite quack grass and noxious weeds", says Leopold

Wild Life Likes Water

CONTRARY to popular supposition, it is not necessary for most wildlife species to drink water. We know this because many kinds live and thrive on waterless range, where they get their water from juicy insects, fruits, plants, and dewdrops.

Most kinds of wildlife will, however, drink and bathe if they are offered the chance, and prefer to live on well-watered range. The farm which includes permanent springs, streams, and ponds is therefore better wildlife range than the farm without natural water, especially during dewless drouths when there are few fruits or succulent shoots. The chicks of all upland game birds are known to drink dewdrops, and dewless periods may be very damaging to the upland game crop.

One of the best and cheapest ways to furnish water to wildlife is to plant mulberries. A surprising number of songbirds, gamebirds, and mammals eat the berries and feed them to their young.

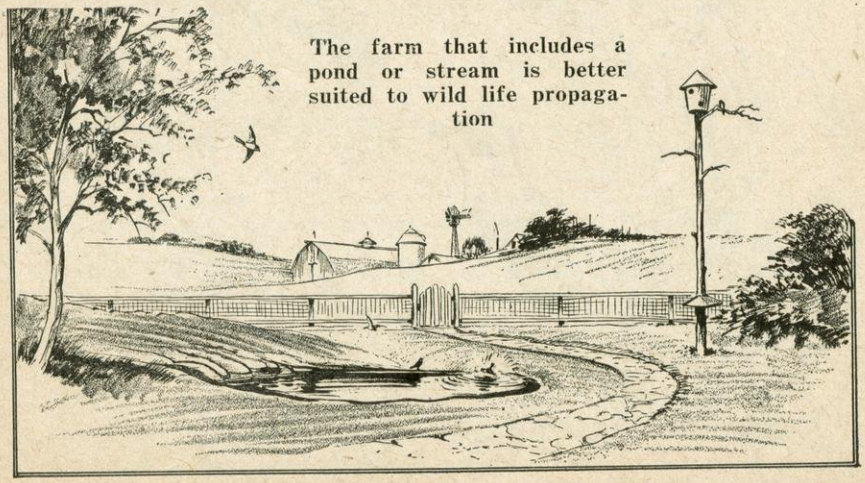
Build Bird Bath

Deep water in stock tanks or troughs furnishes drinking water for many birds, but they cannot bathe there unless there is spillage. Wet feathers mean weak flight, hence no bird takes the risk of bathing except in shallow water free from cover which might hide enemies. You can have a bird "bathing beach" on your lawn by building a very shallow concrete pool and filling it every few days. Let the edges "shelve out"; do not build a steep margin.

We seldom think of freshet water on stream bottoms as an asset to wildlife, but if it stands long enough to grow a crop of aquatic animals it constitutes a rich food resource. I have seen young pheasants gorging on snails in a disappearing pond. Gulls, herons, and coons have great tadpole fishing in drying sloughs or ponds.

Many people suppose that wild things in winter eat snow, hence need no water. Yet some do. I have followed deer tracks which made a considerable detour to a snowed-over spring, which had been pawed out by the deer, evidently for drinking.

Some winter behavior in respect to water is so unexpected as to be confusing. I have seen both pheasants and quail during blizzards, wading in unfrozen springs up to their "knees". Were they "warming" their feet in the relatively warm water? Or were they hunting snails to eat? Or were they eating watercress? I am not yet sure.



The farm that includes a pond or stream is better suited to wild life propagation

Tax-Free Wood Lots Mean A Step To Conserve Nature

Wisconsin has enacted a special farm wood lot tax exemption law designed to encourage farmers to devote certain tracts of their land to conservation. As amended to remove objectionable features on fencing, the law now stands as follows:

To repeal and recreate 0.11 (40) of the statutes, RELATING TO THE EXEMPTION OF CERTAIN WOOD LOTS AND SLOPE LANDS FROM TAXATION.

The people of the state of Wisconsin, represented in senate and assembly, do enact as follows:

SECTION 1. Subsection (40) of section 70.11 of the statutes is repealed and recreated to read:

70.11 (40) Any wood lot or wood lots forming an integral, even though detached part, of a regularly operated farm, and not exceeding one-fifth of the total area of such farm, and any partion of a regularly operated farm, the slopes of which portion have a gradient of more than 30 per cent, if for one year immediately preceding May 1 of the year in which the assessment is made, the owner or operator of such farm has not permitted such wood lot or wood lots to be cultivated, mowed, grazed, or burned, and if the owner or operator of such farm has made a reasonable effort to reforest such wood lot or wood lots and, in the case of slopes, to protect and promote the growth of such grass, shrubs, or trees as will tend to prevent erosion thereon;—if such wood lots are separated from the farm of which they are a part by a fence consisting of three barbed wires on posts spaced not more than one rod apart.

Farm Game Management in Silesia



By
ALDO LEOPOLD
University of Wisconsin



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Farm Game Management in Silesia*

Here Farm Practice and Game Management Are Dovetailed

By ALDO LEOPOLD
University of Wisconsin

THE American outdoorsman, hearing tall tales of abundant game in Germany, is likely to form a mental picture of a whole country hopping with furred and feathered wildlife. Such is by no means the case. In Germany, as in America, one finds farming regions which are gameless, and others which have abundant game of many species.

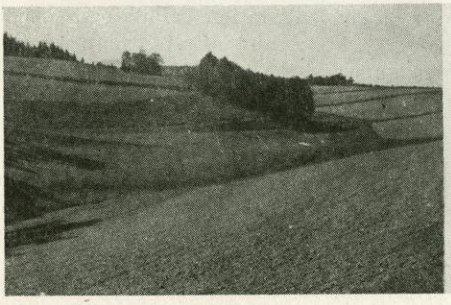
Why? The difference lies mainly, I think, in the local people. Some localities are willing to work for their sport, and have plenty. Others are willing merely to take what comes easy, and have little or none. *In no case does government raise game for the shiftless community.* Game officials have learned, through long experience, that the only thing they can do to improve shooting is to help those who help themselves.

While abundance thus depends primarily on local effort, there is a general trend for effort to reap greater rewards as one moves inland. This is because the soils grow better inland. The same is true with us.

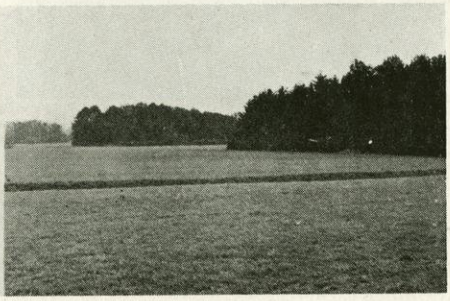
Unlike America, abundance does *not* depend on shiftless farming. There is no shiftless farming. The most abundant farm game often occurs on the richest, most intensively cultivated farms. (Illinois and Iowa take notice.)

While there are gameless farm regions, there are no gameless forests. The sportsmanship of German foresters is traditional,—they managed game long before they managed timber; hence game management is universal in both public and private forests. At the present time, however, forest game is in a bad way. The carrying capacity of the range has declined due to planting too many pure-conifer stands, which afford an excess of cover but no food.

A heavy population of deer is carried by means of artificial feeding, but without natural foods the deer herd has declined in quality and vigor. The German foresters now wish to restore a natural mixture of hardwoods, but the deer won't let them,—hardwoods must be fenced to survive the hungry animals.



Remise system.



Remise system on newly-cut hay meadow.

*This paper is based on studies made in Germany and Czecho-Slovakia, August to November, 1935, under the auspices of the Oberlaender Trust and Carl Schurz Memorial Foundation. For help in gathering the data I am especially indebted to Gaujagermeister Freiherr von Riebnitz, Kreisjagermeister Quaschning, and Landwirt Alfred L. Schottlaender, of Breslau; Forstmeister Wilhelm Blume of Heinrichau. Graf von Rotkirch und Panthen of Massel, Graf Carl Dietrich von Haldenberg of Rettgau, Dr. Sperg of Puschkowa, Silesia; also Prince Carl von Hohenlohe-Langenburg of Domane Rothenhaus, Gorkau, Czecho-Slovakia.

The deer pressure also tends to destroy the berries and mast which are the food supply of grouse.

There is much for American conservationists to ponder in this situation, the details of which have been described in another paper.[1]

The reason for gameless farms is the same as with us: intensive agriculture, where conducted without regard for wildlife, has destroyed the cover and food. A few hares and Hungarian partridges may persist on such unmanaged areas. They



Clipped spruce backed by tall spruce on edge of a remise.

are leased and hunted for what little shooting they afford, but as with us, the crop is thin and uncertain, being determined wholly by accidental combinations of weather, gunpowder, and agricultural practice.

As with us, the shiftless sportsman on unmanaged range blames the game shortage on "vermin," which, we are soberly informed, hunt year-around. (I wonder when this profound deduction was first made, and in what century it will cease to be regarded as news.)

The German farm country productive of game is remarkable for three things: (1) the detail with which *farm practice and game management are dovetailed,* (2) the *variety of species co-existing on the same area,* (3) the *low per cent of artificial propagation.*

Managed farms yield a large and dependable game crop consisting of various combinations of pheasant, Hungarian partridge, hare, rabbit, and roe deer. Pheasants predominate on the heavier wetter soils; partridges on the lighter warmer loesses and sands. A heavy crop of both pheasant and partridge is seldom found on a single property. Combinations of pheasant, hare, and roe prevail on rich soils. On light soils the usual combination is partridge and hare.

One of the regions most productive of both agricultural crops and game is Lower Silesia, which lies on the upper reaches of the River Oder, and comprises that eastward projection of Germany abutting on southern Poland and eastern Czecho-Slovakia. The rich plains around the capital city, Breslau, are "the best soil in Germany," and correspond to our cornbelt. Sugar beets are the cash crop. The fields are traversed by a system of small portable tramways to haul the beets and the heavy machinery used for their cultivation. Potatoes, small grains, clover, and alfalfa comprise the remainder of the rotation. There is some dairying but no pasture, the wetter meadows being worked for hay, rather than grazed directly by stock.

On this rich central plain there is no timber except the *remises* planted for game cover, but as one climbs into the sandier rolling uplands timber progressively increases until finally, on the mountains, the country becomes solid forest.

The Silesian land-holdings are both large and small, but even where small the owners are congregated in villages. Hence the landscape in either case is one of wide horizons, broken only here and there by densely clustered habitations. There are no fences and hence no fencerows. The frequent drainage ditches are lined with a very narrow fringe of alders and willows. All highways are lined with small fruit trees. In neither case, however, is there any tall grass cover, the ditchbanks and roadsides being kept short by frequent hand-mowings for hay.

The climate of the Silesian plain is similar to that of Ohio; the ground is usually bare most of the winter, but in exceptional years several feet of snow may lie for months.

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[1] See *Deer and Dauerwald in Germany,* Journal of Forestry, Vol. 34, Nos. 4-5, 1936, pp. 367-375, 461-466.

Where, in such a highly cultivated landscape, shall one find shelter for game? The answer is the remise—a small concentrated spot of cover planted especially for pheasants, but used also by hares and roes. On an October evening I have frequently seen, on the fields adjacent to a single remise, as many as 75 pheasants, half a dozen roe deer, and a dozen hares.

A typical remise covers an acre or two, and consists of an outer belt of hedged Norway spruce, next a belt of taller unhedged spruce, then a belt of alder, and finally a central core of hardwoods, or—if on wet land—willows and cane (*phragmites*). Fig. 1 shows the design and operation of a typical remise.

Remises are located on haymeadows or on waste spots if there are any; potholes, gravel and sand pits, old slough bottoms, banks, and the like. Failing such spots, they are planted on good beet land. The Silesian farmer uses his land more intensively than we do, but he does not begrudge a few acres of good soil for wildlife remises, or for a woodland "park" around his farmstead.

The best remise system I examined had 10 cover units on an estate of 780 acres, or one per 80 acres. On this estate the area in remises, park, and food patches was 8 per cent of the total. The average size of a remise was 2 acres. The average distance between remises was a long pheasant-flight, i. e., about one-third mile. Fig. 2 shows a typical estate in relation to its remise system.

When the spruce in a remise gets too large for good cover, either a new outside belt is planted, or the big trees are chopped down and replaced by young ones. Such replacement is commonly done by stages, so as not to sacrifice the utility of the remise during the period when the new trees are small. Such a thing as grazing livestock in a remise is unheard of.

Some remises are laid out in unpleasing geometrical squares and triangles, but usually enough irregularity is maintained in shape, size, and content so that the system of remises greatly enhances the beauty of the farm landscape. The photographs include a farm landscape with its remise system.

The remise is usually designed to facilitate drives as well as to shelter the birds, of which more later.

Most remises have a food patch ad-

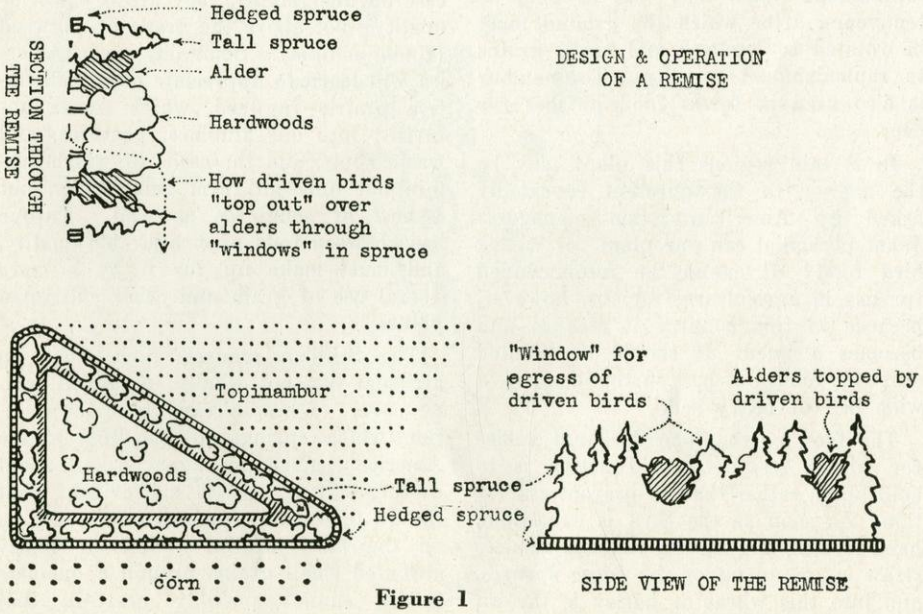
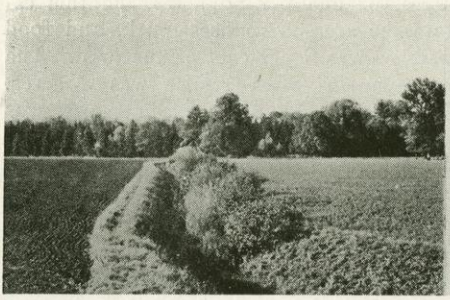


Figure 1



Ditchbank hand-mowed for hay with wooded "park" in background. One hundred pheasants, as well as hares, rabbits and roes, were feeding in sight when this picture was taken.



Kreisjagermeister and owner discussing a millet food patch for pheasants (at left). Remise in background.

jacent or nearby. These patches consist of standing corn, and a perennial sunflower called *Topinambur tuberosa* (Jerusalem artichoke). The stem of this plant bears no seed, but the roots bear a whitish potato-like tuber, about the size of a hen's egg, which, after the corn is exhausted, is eagerly eaten by pheasants, roes, and hares. The tubers are exposed by plowing during the fall. They are not spoiled by frost. Even after plowing there are enough tubers left in the ground to form next year's crop. A topinambur patch may last as long as ten years, after which the ground must be rotated to legumes and small grains to replenish soil fertility. Topinambur is also used in forest food patches for deer.

In certain regions this plant may be the answer to the question repeatedly asked by American game managers: What perennial can one plant for winter bird food? It cannot be recommended for use in agricultural regions, however, because in this country it escapes and becomes a weed. It should be planted only in food patches surrounded by a wide belt of heavy sod.

The food patch alone does not suffice for winter feeding. Its function is to hold birds, rather than to prevent starvation. As soon as the corn is exhausted, hand-feeding begins. In selected remises straw is spread under the dense spruces, and into this wheat or barley is thrown by hand. "Automatic" hoppers are unknown (a reflection of the lesser labor costs in Europe.)

All game gets winter greens from the alfalfa and clover stubbles, and in most years, acorns from the oaks in the parks.

The outstanding peculiarity of the Silesian pheasant range, and for that matter all other German game ranges, as compared with our Middle West, is the lack of high-class food-bearing weeds. Weeds not only tend to be excluded by the intensive farming and the frequent mowing of all grass, but even where they are deliberately encouraged (as was the case on one estate), they are of inferior quality—not above the grade of pigweed (*Chenopodium*). Some day we in America will learn to appreciate our small native prairie ragweed, which comes uninvited into our stubbles, pastures, and waste spots, and the seeds of which sustain not only all farm game birds, but a host of songbirds as well. Europe has no weed food of comparable quality, and must make up for it by a more liberal use of grain and other cultivated plants.

The Silesian remises, then, offer an artificial but not wholly unnatural winter cover. I now already hear the question which springs to the lips of the American game manager: what about nesting cover? It is self-evident that the 50 pheasants which one sees feeding on the bare alfalfa stubble or newly sprouted small grains around a one-acre remise cannot possibly nest in that remise, even after their number has

been trimmed down by the November shooting.

The answer is that *there is no nesting cover,* and furthermore there is no attempt to provide any. The pheasants nest in the alfalfa, clover, and grain fields, often at a great distance from any remise. In alfalfa and clover they of course sustain a heavy loss from mowing machines, just as with us. The grain, however, offers a safe nesting place, since most of it is planted in fall, grows early in spring, and stands uncut till July, by which time all except repeat-nests have safely fledged. Consequently management seeks either to force the birds out of the alfalfa and into the grain, or to salvage the hayfield eggs for artificial rearing. There are three systems in use for accomplishing one or both of these solutions of the hayfield problem.

The first consists of systematically dogging the alfalfa, clover fields, and hay meadows just before the first eggs are laid. The purpose is to drive the nesting birds out of the hay and into the grain. Any early nests found are lifted and the eggs transferred to the artificial propagation plant.

The second system is to dog the hayfields just before the hay is cut for the purpose of locating nests, and to transfer the eggs for artificial propagation. Such eggs are, of course, already partly incubated, and must be transferred speedily, set by set, to avoid heavy loss.

The third is to dog and mark the hayfield nests, and to leave islands of uncut hay so that the pheasant can complete her hatch. This system has, of course, been tried in America, but with pretty heavy crow losses. I am assured that

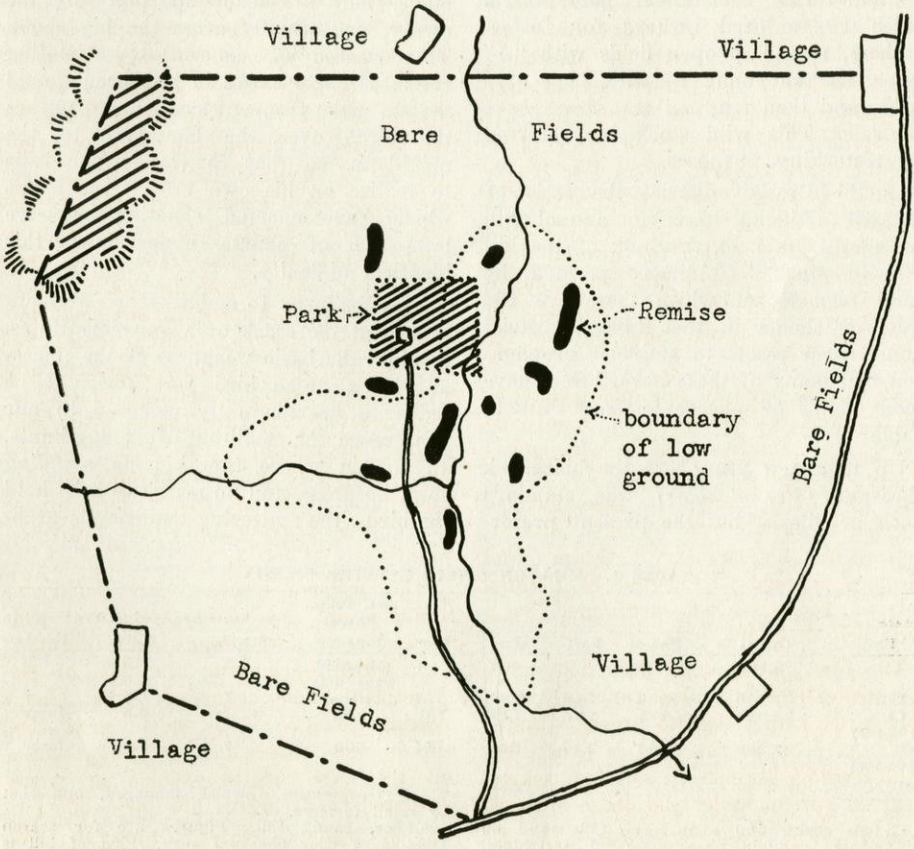


Figure 2

crows are kept low enough in Germany that the system is reasonably safe, and that it is wisely used by small farmers who lack time to operate propagation plants.

Flushing bars are unknown.

Propagation systems in Silesia are identical with ours, except that mechanical incubation and brooding are rare, and turkeys as well as chickens are used as foster mothers. Rearing fields are commonly not placed on clover, but rather on haymeadow. Pens contain live growing spruces as cover. The turnips grown as a soiling crop in pens come right up to the stems of the hedged spruce trees.

Usually only hayfield eggs are artificially propagated, but a few holdings produce and propagate additional eggs, and I saw at least one which operates as a commercial game farm. Other large holdings depend wholly on natural propagation. The commercial game farm which I saw used turkeys for foster-mothers, reared in open fields with "A" coops, let the young go wild, shot only cocks, and then *trapped the excess hens* for sale. This wild stock is preferred for restocking purposes.

In the Breslau district the ratio of released artificial birds to annual kill averages 1:10, i. e., the bulk of the kill is wild stock. Holdings operated by small farmers, of which there are 186 units or shoots in the Breslau district alone, never resort to artificial propagation, but many of these nevertheless have good stands of pheasants (see Unit B, Table 1).

Up to a few years ago the blackneck pheasant (*P. colchicus*) was standard stock in Silesia, but the present preference is for a cross between the ringneck (*P. torquatus*) and the Mongolian. This change in species is being accomplished by the periodic release of outside breeding stock for "new blood."

The present prejudice against blacknecks is grounded on the alleged wandering tendencies of this species, but I think the greater meat poundage of the larger birds also comes into play. Despite the introduction of the larger species, the average pheasant one sees in the fields seems to me distinctly smaller than ours, i. e., to run heavier to blackneck blood.

To an American one of the most surprising and least pleasing aspects of Silesian pheasant management is that most of the pheasant shooting on each holding is concentrated into a single big one-day drive, during which very large bags are made. If any small hunts are made, they are made sparingly by the owner, and usually after the big shoot. This custom of concentrated shooting rests on experience: it has been found that to make frequent small hunts pushes the birds over the boundary to the neighbors, so that the landowner fails to realize on his own crop. Our states which have enacted shooting preserve laws are, of course, experiencing this identical difficulty.

This tendency to embark for parts unknown at the crack of a gun constitutes, I think, the basic weakness of the pheasant as a game bird for America: he tends to be inherently unsuited to our preference for small-but-often dog-hunts. In Silesia where there is no standing corn, no grass, and no marsh to help hold the birds, the scattering tendency is prob-

TABLE 1. KILL ON SINGLE ESTATES, SILESIA

Estate or Unit	Area	Kill				Art. Prop. Pheas.	Acres per bird		Per cent in
	Acres	Pheas.	Part.	Hare	Roe	Release	Stand	Kill	Remises
A	5,500	3,500[1]	?	?	?	Hayfield eggs only	0.5	1.6	8%
B[2]	900	200	500	280	?	none	?	1.3	?
C[3] (1934-5)	23,000	3,442	107	1,549	131	many	?	6.5	large
D (1933-4)	2,800	654	126	206	14	500	?	3.6	large

[1] 3,000 cocks, 500 hens. The fall stand on this estate is 8,000 pheasants, 300 partridges, the kill a little under 50 per cent.

[2] A "cooperative" owned, managed, and shot by small farmers.

[3] Poor, sandy soil. Figures are for season 1934-35, a poor pheasant year. Part of kill is trapped birds sold for restocking.

TABLE 2. 1934 KILL IN KREISS BRESLAU 250,000 ACRES

Game	*Kill*	*Acres per head*	*Predators and fur*	*Kill*	*Ratios*
Roes	1,086		Fox	49	
Hares	19,114	11.3	Badger	3	
Pheasants	22,378		Marten	11	
Partridges	13,602	7.0	Weasel	832	
				895	Game per mammal 64:1
Woodcock	26		Accipitrine Hawks	176	
Jacksnipe	15		Buteo Hawks	69	
Pigeons	207			245	Game birds per raptor 142:1
Ducks	1,055		Crows and Magpies	2,021	
Total	57,483	4.4	Total	3,161	Game per predator 18:1

ably even worse than in the unmanaged ranges of Ohio, Iowa, or Wisconsin.

Sometimes a landowner, in order to drive his birds inward, does a little advance dog-hunting on his outlying boundary-line fields which have no cover, but he is always careful to burn no powder near the remises until the big day of the annual shoot. On that day the birds are so herded from remise to remise by skillful beaters, that to the pheasant one direction probably seems no better than another for get-away purposes. I imagine that, to a pheasant, a Silesian drive is on all fours with Opening Day in an Iowa cornfield.

This brings us now to an important point. The "big drive" consists in pushing the birds from one remise to another, over the heads of the intervening line of guns. The remise system, however, may cover only a fraction of the hunting unit, and lies usually *at its centre*. That is to say, the hatch of birds from the whole unit is, by virtue of the distribution of remises, *crowded into a small winter range,* on which all drives, all winter cover, and all winter feeding are concentrated. This winter range is always the lowest, wettest, flattest ground. It follows that the outlying borders of a hunting unit are usually bare fields habitable during summer only, and that this bare zone tends to act as a barrier to discourage scattering during the fall hunts. Fig. 2 illustrates such a central system of remises.

Agricultural practice is also modified to push birds inward and to discourage dispersion. Thus of any two fields ready to cut at one time, the outer is always cut first.

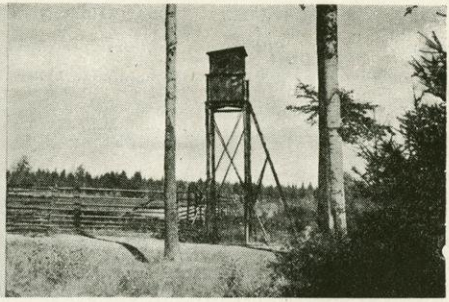
To sum up, the birds are pushed inward by peripheral shooting and cutting, by centripetal feeding and cover, and, during the big shoot, by centripetal driving.

Table 2 shows the average kill in the Breslau district, which is as large as a small county. The kill is one bird (pheasant or partridge) to each seven acres. The average kill on the intensively managed estates shown in Table 1 is one bird to each two acres for rich land, and one per five acres for sandy land. I am assured that just about half the fall population is shot, so one may say the fall density on the best estates is a bird per acre, counting both the summer and winter range. The density in the winter range or remise area is of course much greater; I saw 448 pheasants shot in one day out of 11 remises of not over 3 acres each, a kill of 15 birds per acre, of remise cover. Silesia, in other words, achieves a stand of pheasants equal to South Dakota and better than north Iowa, without the standing corn and long grass which make a heavy stand in those lucky states nearly automatic. One may say further that this heavy stand is 90 per cent natural, and grows on machine-farmed land in the face of a human population-pressure heavier than we know anything about. This, I submit, is a substantial achievement.

I cannot help adding that this achievement must be credited not to sportsmen passing laws and resolutions for each other's governance, but to landowners



Gathering up after a drive.



"Hochsitz" or shooting blind for roes.

who go out on their land and practice game management as a natural and widespread adjunct to good agriculture.

The Silesian landowners and officials seem unanimous in the opinion that a breeding ratio of 1 cock:5 hens or 1 cock:6 hens is right for wild pheasants. They believe in this so explicitly that when more cocks than this are left over they often—with the permission of the state warden or *jägermeister*—go out in spring to shoot off cocks which seem to be without harem. This belief seems to run counter to the earlier conclusions reached by Wight, who found in Michigan that harems of over 2-3 hens per cock are rare. His later work, however, seems to leave the maximum hens per cock as an open question, and one probably without any fixed and uniform answer.

During the big drive, it is the usual practice to shoot only cocks. In certain remises, however, the owner may pass out word to shoot hens; this is because a previous census has shown that particular remise to have more hens than are needed. Later in the season the owner, his game manager, or a few invited officials—all experienced men—may hold one or two small shoots in which old hens are trimmed out.

The total kill is about half of the fall population. The resulting sex-ratio after the hunting season may be 1:6, but the winter losses falling heavier on hens will make the spring ratio 1:5. As already stated, new stock is often released during the winter for "new blood," but this is done in the desired ratio, and does not change the sex composition of the population. Wild trapped stock, rather than game farm stock, is usually used for new blood. It is acquired sometimes by purchase, sometimes by exchange of trapped birds between estates.

On the big estates managed intensively for pheasants there are few partridges. On the sandier lands, however, partridges are sometimes more numerous than pheasants, especially where there are no remises and hence no pheasant cover. For the Breslau district, the partridge kill is about half as large as the pheasant kill (see Table 2).

The partridge crop fluctuates much more violently as between years than the pheasant crop. This fluctuation will be discussed in a separate paper on the game cycle. A German study of this fluctuation has recently been made by Nolte.[2]

It is my impression that the partridge crop is more of an accidental crop than the pheasant crop. The only management measure generally practiced is winter feeding. In remise country, partridge feeding is combined with pheasant feeding by placing the straw-beds already described near the edge of the remise, where partridges will not hesitate to enter. In open country without remises, special straw-beds for partridges are placed in the open.

Partridge shooting is done mostly in late August and early September, before the pheasant broods have separated, hence the partridge shooting does not scatter the pheasants, which at that sea-

[2] Nolte, W. *Zur Biologie des Rephuhns.* Reviewed in Wilson Bulletin, Vol. XLVII, December, 1935, pp. 300-303.

son are not much disposed to wander. Some partridge shooting is individual dog-work, the rest of it "walking-in-line." Rarely both pheasants and partridges are shot together in October and November line-hunts. This, however, is resorted to only by landowners who do not hope to hold their pheasants, but on the contrary want to shoot a few before they have all departed for their neighbor's remises.

I saw one walking-in-line partridge hunt in Czecho-Slovakia in which about 1,000 birds (not counting reflushes), 180 hares, and 4 pheasants were put up on about 1,200 acres. The bag was 278 partridges. I think this stand was about a bird per acre, and represents the best of the range on the Bohemian plain. There is no winter cover. The birds nest in alfalfa and winter wheat. They are fed during snow, but there is no other management except predator control and regulation of the kill.

Hares may be called an accidental by-product of pheasant and partridge management, although they occur even where there are no birds. They eat the topinambur and grain set out for pheasants, and benefit by the remise cover, but their mainstay is the clover and alfalfa.

Most hares are shot in separate line-hunts or enclosing-drives, the latter resembling the jackrabbit drives of our western states. Just as with our rabbit, the late fall hare drives are regarded by German sportsmen as a sort of light comedy, which forms an agreeable contrast to the more serious job of hitting pheasants or partridges.

The American reader must grasp the unfamiliar fact that the roe deer in Silesia, while he uses remises and woods, is not dependent on them. There are "field roes" which never see the inside of the remise or any other cover for months at a time, and which wander about in the open fields like antelopes. Even the fawns may be dropped in treeless clover fields, and when thus cached in hay they get caught in the mowing machine like partridges or pheasants.

The Silesian pheasant remises, scattered over a fertile fenceless plain of beets, clover, and alfalfa, are ideal roe range. On several evenings I counted 10 to 40 feeding in the fields. Roes feed on the pheasant food. A special kind of leafy non-freezing cabbage is also planted for their benefit. Roes rut, fawn, and shed much earlier than other deer, hence the bucks are hunted in summer, usually by waiting at evening in a "hochsitz" or elevated blind on the edge of woods.

Our small woods in America have no really first-class game mammal like the roe, but we are even-up when we consider that small woods in Germany have no really first-class game bird like the ruffed grouse and the quail.

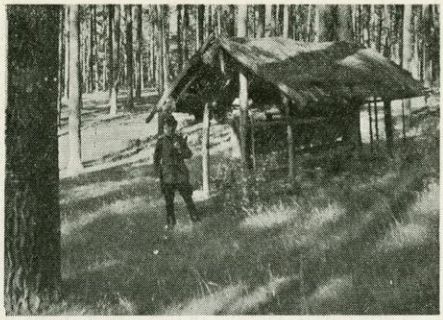
American wild turkeys were planted in Silesia some twenty years ago, but failed.

Table 2 indicates no excessive kill of predators: 1 hawk killed per 142 game birds killed; 1 predator per 18 head of game for Silesia as a whole. I fear, though, that in respect of raptors at least, the explanation lies in their near-eradication. I saw only one hawk during a week's travel in Silesia (and only 45 hawks in three months in Germany).

It is also possible that in making their reports to the game officials, the game managers may "go easy" on their predator kill. The game:predator kill ratios I gathered from private shooting books, in which most of the entries pre-dated the present *Naturschutz* movement, run-between 1 and 10 head of small game killed per predator killed. In these books the local game manager is showing the owner that he is "on the job." This question is more fully discussed in a separate paper.[3]

The bulk of the predator kill consists of crows, of which there are two common species. Every spring the German sporting magazines bristle with advertisements of crow poisons, used mostly in eggs. Despite such ruthless control, crows continue numerous. One recent writer thinks the extermination of horned owls has given crows an undue advantage. If a hunting unit fails to poison its crows, the game officials may,

[3] Leopold, Aldo. *Naturschutz in Germany.* Bird-Lore, Vol. 38, pp. 102-111, March-April, 1936.



Winter Feeding Deer in a Pure Pine Forest without natural food.

under the new game law, require that this be done.

The German attitude toward foxes is in process of change. On some properties foxes have long been managed on a sustained-yield basis. A new law now prohibits the use of steel traps. The first result was an alarming rise in the fox population, and a loud hue-and-cry about loss of game. The second result was a sort of renaissance of ingenuity in killing foxes without steel traps. Every issue of the German sporting press now brings forth new legal traps, new calls, new baits, and new methods of driving or stalking foxes. Fox shooting is coming into its own as one of the really difficult high-class field sports. A parallel trend toward sporting fox shooting is clearly apparent in Ohio, Iowa, and Wisconsin.

It must be conceded, I think, that the production of a heavy game stand on such a nearly coverless range as Lower Silesia probably requires a more radical predator control than is necessary or even desirable on well-covered moderately-populated game ranges in America. This is merely one of a dozen basic points where we, by reason of our good luck in having more room, can improve on European conservation practice, *provided* our landowners can muster the persistence and enthusiasm which has made a sportsman's paradise of Lower Silesia.

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Wisconsin Wildlife Chronology



Forest Fires Change the Wildlife Ecology.

Publication 301

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WISCONSIN WILDLIFE CHRONOLOGY

By ALDO LEOPOLD
University of Wisconsin

(Reprinted from the Wisconsin Conservation Bulletin, Vol. V, No. 11, November, 1940)

The history of wildlife is too often regarded as the domain of old-timers indulging in nostalgic reflection, or of professors writing post-mortems on the wild pigeon and the buffalo.

It has now become apparent that such history has other uses. Present-day problems in conservation and land use, viewed in the light of contemporary evidence alone, often baffle the investigator. The same problem, viewed in the light of history, may often be deciphered as the repetition of some historic pattern.

This chronology records the changes in Wisconsin wildlife which occurred under the impact of civilization, and the responses of Wisconsin people to those changes. It also records the changes in land use, hunting practices, game laws, and weather which caused or conditioned the changes in wildlife, and the inception dates of wildlife enterprises (such as societies, publications, researches, restockings, and public works) which register trends in public thought.

It is doubtful whether wildlife disappears under the impact of civilization. The rich variety of wildlife does indeed disappear, unless we take pains to preserve it, but the total volume of plants and animals is in all probability an automatic expression of the soil on which they grow. As long as the soil is there it will grow plants, and these plants will grow animals, and such part of both as are not domestic will be wild. Our option in wildlife is a question of quality, not quantity. Shall the wild growths of the soil retain a large part of their original diversity, beauty, and utility? Or shall they consist largely of simple plant and animal weeds? Conservation is the intelligent exercise of this option.

The decline of Wisconsin wildlife since 1840 is no simple process of recession. It is a process of ebb and flow, gain and loss, and it is comprised of at least two major movements in which a dozen groups of species played diverse and sometimes contradictory parts.

One group of large mammals and birds retreated northward and westward because they could not exist in a settled countryside. The buffalo and the passenger pigeon, for example, must live as a wandering horde or not at all; hordes have no place on the farm. The cougar and the wolf damage livestock, which accounts for their demise. The eviction of the buffalo and the pigeon was inevitable, but hindsight shows us that the wolf and the cougar should have been retained in the north to keep the deer herd in check.

Another group of southern species, the wild turkey and the Carolina paroquet, were exterminated because they could not retreat. Climate restricted them to the southern counties, and lack of timber cut off retreat westward.

Another group were pushed out or decimated solely by reason of their value for meat or fur, and not because their presence was incompatible with settlement. The now evicted fur-bearers, marten,

fisher, wolverine, could still be common in the north but for overtrapping and forest fires. The much reduced waterfowl (geese, ducks, swans, cranes, shorebirds) could still be abundant but for overshooting and excessive drainage of marshlands.

Another group has suffered curtailment of range in the hard-pastured southern counties, but are still common elsewhere. The sharptailed grouse, the ruffed grouse, and forest-loving species like the pileated woodpecker are examples.

The predatory hawks and owls are now being decimated, both in diversity of species and in numbers, because they eat game and poultry. They will probably become rare before the public realizes that their main prey consists of rodents and other competitors of game and poultry. A similar persecution of fish-eating birds and mammals is now in full swing.

These four categories have all taken a loss; they collectively represent one general movement: retreat. But there are other categories of wildlife which profited by the very changes in land use which evicted the first four, and which collectively represent an opposite movement: invasion.

Some invaders came from the prairies to the south, occupying the man-made clearings, rich in food, which replaced the once inhospitable forests. Prairie chickens, quail, cottontail, cardinal, opossum, crow, and many open-land song birds are in this class.

One invader, the jack rabbit, came from the prairies to the west, but for the same reason.

Some species at first retreated northward, but reinvaded their old southerly habitats when abandoned farms or better law enforcement gave them a toehold. The white-tailed deer and the beaver are conspicuous examples. The black bear, the coyote, and red and gray foxes show a similar tendency.

Some invaders are foreigners planted as substitutes for native species. The ring-necked pheasant is a familiar example. Other foreigners got in as stowaways (Norway rat, house mouse) or escaped from captivity (feral house cat).

Lastly, some invaders are native species which, once released from their natural controls, become pests. Wisconsin has been largely exempt from pest-like behavior in her native birds and mammals. The meadow mouse, however, reached pest levels in 1938, and in spots rabbits reach pest levels at each peak of their population cycle.

Not all invaders have been able to hold their earlier gains. The prairie chicken, for example, is now being evicted from the southern counties. Others, like the opossum and the cardinal, seem alternately to spread and shrink in long cycles.

The net effect of all retreats and all invasions to date is clearly this: fewer total species, more foreign species, larger numbers of small birds and rodents, smaller numbers of game, fur, and predators; general replacement of forest and marsh species by open upland forms, and more frequent pest-like behavior, i. e., less internal balance in the wildlife community.

What, now, of human attitudes? The chronology exhibits the unfolding of a series of ideas. Each idea is in turn conceived, expanded, and poured through the sieve of practice, after which its permanent values are added to the reservoir of social experience. None of these ideas has been wholly discarded, but some have taken a heavy shrinkage.

Wildlife conservation began with the idea of *prohibitions*. As early as 1838 the legislature prohibited dams without fishways. Prohibitions have no end; they give bulk to our statutes and recurrent hope to wishful thinkers, but after a century of trial it seems apparent that they give more aid and comfort to wildlifers than to wildlife. Prohibitions are a necessary springboard to positive action, but in and of themselves they are negative and accomplish little.

Next came the idea of *substitutions*. It began with the introduction of the English sparrow in 1875. The first introductions were motivated by affection for the plants and animals of the European home land, but the motive soon shifted. As our native wildlife shrunk, we substituted foreign species in the hope they would prove less shrinkable. Some, like the carp (1879) and the starling (1923), proved to be Trojan horses. Others like the pheasant (1893?) and the Hungarian partridge (1910) successfully filled a niche no longer tenable for native game birds. The substitution of artificial for natural propagation may be regarded as an elaboration of the substitute idea; the first fish hatchery (1876) was the first expression of this still expanding notion.

The whole substitution idea has obvious utility, but it also carries risks: the risk of introducing pests, the risk of neglecting native species, and the risk of forgetting that planted game, like wild game, needs food and cover.

Next came the idea of *public works and public lands* devoted in whole or in part to wildlife. This began modestly with a state park in 1900 and a series of state forests in 1903. Crusades for wildlife refuges shook the public mind in 1910–1913, and again in 1924–1927 and in 1933. The purchase of large public wildlife areas and their development by relief labor began with the C. C. C. and C. W. A. in 1933 and 1934.

The most recent idea to emerge is that of scientific *cropping or management* of wildlife. Inventories of wildlife resources were started by Dr. P. R. Hoy and Thure Kumlien as early as the 1840s. King, in 1872, began to explore the economic utility of wildlife, and Birge in 1878 the dependence of species on each other and on their environment. Van Hise in 1910 conceived an integrated cropping policy for all organic resources, but with no particular emphasis on wildlife. Griffith in 1903 began to apply the cropping idea to forests. The idea of cropping Wisconsin birds and mammals in the wild, by improving their habitat, was conceived in so many minds that it is difficult to assign and date its beginnings. Stoddard, between 1910 and 1924, envisaged such a system but carried it to another state (Georgia) before it emerged from his pen as public property. The

Conservation Department in 1927 definitely envisaged a statewide wildlife cropping system. The forest crop law of 1927 sought to encourage private timber cropping. The first definite search for a technology of wildlife cropping began with the prairie chicken investigation of 1928. Financial provision to extend that search to all species came with the Pittman–Robertson Act of 1938.

A fifth idea, the idea of *educating* the citizen to understand and to practice conservation, runs concurrently with all the foregoing concepts. As early as 1867 the publication of game laws was prescribed in order that the citizen might know what new prohibitions had been laid down for his observance. A wildlife course for farmers was tried as early as 1910. A school for wardens was held in 1912, and educational work in schools started in 1912. Waves of emphasis on conservation education rolled across the state in 1914 (Wisconsin Game Protective Association), 1922 (Izaak Walton League), 1929 (Women's Clubs), 1936 (Wildlife Federation), and 1940 (Conservation League). In 1935 the legislature compelled public schools to teach conservation. Despite the seeming finality of this law, the questions of how and what to teach and how to equip teachers are still largely unanswered.

Conservation, viewed in its entirety, is the slow and laborious unfolding of a new relationship between people and land. Each seemingly trivial event in the following chronology is a part of this unfolding process. Each marks the birth or death of an aspiration, the beginning or the end of an experience, a loss or a gain in the vitality of that great organism: Wisconsin.

1822–3, 1831–2 Cold winters (Miller).

1832 Last buffalo east of Mississippi killed in Trempealeau County (Schorger). Perhaps buffalo on St. Croix River to 1833 (Hoy).

1835–7 Cold years (Miller).

1838 Fishways required in all dams "except mill dams." Probably first conservation law (Scott).

1840 Sharptails "extremely abundant" in southern Wisconsin (Kumlien & Hollister).

1840 Last woodland caribou seen at La Pointe, Ashland County (Hoy). Drifters from north reported in Burnett and Price counties in 1910 (Scott).

1840 Sandhill cranes bred on prairies near Racine. Whooping cranes less abundant (Hoy).

1840–5 Sharptails abundant in S. Wisconsin and Chicago region (Ridgeway). (Last southern breeding colony seen in Dane County, 1935.)

1842? Prairie chicken entered Walworth County from Illinois (Kumlien & Hollister).

1842–3 March snow starved wild turkeys near Racine. Last turkeys killed there in 1846 (Hoy).

1844 Thure Kumlien started studies which led ultimately to "Birds of Wisconsin" (Kumlien and Hollister).

1847 Last turkey in eastern Wisconsin killed in Waukesha County (Kumlien & Hollister).

1848 Last cardinal and last opossum taken at Racine (Hoy). (Both have since reinvaded the state.)

1848 Eighteen sharptailed grouse shot by Hoy near Racine (Hoy).

1849 John Muir emigrated to Columbia County (Muir).

1849 First woodcock seen near Racine; later increased (Hoy). (The meaning of this is obscure.)

1849–50 C. A. Orvis shipped 2 tons of quail to New York from Racine; scarce since (Hoy).

1850s Last great flights of migratory sharptails when snow came in Rock County (Leopold).

1851 First game laws. Deer closed Feb. 1–July 1; prairie chicken, quail, woodcock, and "pheasant" (ruffed grouse) Feb. 1–Aug. 1 (Palmer).

1853 Ludwig Kumlien, co-author of "Birds of Wisconsin," born in Jefferson County (Taylor).

1851–53 Large goshawk migrations (Kumlien & Hollister).

1954 Open season shortened 2 weeks (Jan. 1–July 15); trapping of quail, grouse, or prairie chicken prohibited except on owner's premises (Palmer).

1855–6–7 Cold winters (Miller, Mandeville).

1856 Swallow-tailed kite last seen at Racine (Hoy).

1856 Last Wisconsin turkey killed in Grant County. Other questionable records for 1872 and 1894. (Kumlien & Hollister).

1856 Mockingbird last nested near Racine (Hoy). Has reappeared near Racine at various times recently (Scott).

1857 Cougar killed in Outagamie County. Now in Lawrence College Museum (Schorger).

1858 First crow seen at Racine; formerly rare (Hoy). (Meaning of this is obscure.)

1858 Prairie chickens abundant near Racine up to this year (Hoy).

1858 Elk killed in Dunn and Buffalo counties (Bartlett).

1859 Drouth; 1859–60 an open winter (Schafer).

1860 Great grey owl taken at Racine. Also in 1858 (Hoy).

1863 Elk seen on Hay River; cougar shot on Black River (Hoy).

1863–64 "Killing winter (Mandeville) killed all the quail and many partridges in Rock County" (Leopold).

1864 Last bear killed in Buffalo County (Leopold).

1864 First closed season for fur animals (Scott).

1865 John Muir offers to buy wildflower sanctuary, Columbia County. Offer declined (Muir).

1865 Caw-Caw Club established on Horicon Marsh; later moved to Lake Puckaway (Leopold).

1866 Twelve elk seen, 9 killed, Dunn County (Scott). Reported seen near Green Bay, 1882 (Cory). Reported killed Buffalo County, 1868 (Leopold).

1867 I. A. Lapham and committee report on "Disastrous Effects of Destruction of Forests" (Scott).

1867 County treasurer required to publish game law in some newspaper at the county seat (Palmer).

1870 Wolverine taken in La Crosse County (Hoy).

1871 Last great Wisconsin nesting of passenger pigeon; covered 850 square miles and comprised 136 million pigeons (Schorger). First protection for pigeons came in 1877 (Scott).

1871 Peshtigo Fire; also "Great Fire" in Door County (Holand).

1872–3 Cold winter (Miller).

1872 F. H. King started work on "Economic Relations of Wisconsin Birds," published 1879 (King).

1873 First state association for preservation of game.

1874 Grouse and quail seasons closed or shortened. Low of cycle? (Scott)

1874–5 Cold winter (Miller).

1875 English sparrow planted at Milwaukee (Schorger).

1875–79 Epidemics of chinch bugs, grubs, rust, and depletion of soils ended wheat farming in southern Wisconsin (Schafer).

1876 First state fish hatchery established at Madison (Scott).

1876 Hounding deer prohibited (Palmer).

1876 Barbed wire fencing first available in quantity (Webb). This marks the demise of the rail fence and the reduction of fence-row wildlife.

1876–(1880?) Irruption of jack rabbits, Trempealeau County (Leopold).

1878 First state park set aside in Vilas County (Scott); sold 1897, repurchased 1925.

1878 E. A. Birge started study of Wisconsin lakes.

1879 First carp planted in Wisconsin by U. S. Fish Commission (Cole).

1881–2 "The Big Snow." Killing winter (Leopold).

1882 Final small nesting of pigeons (Schorger).

1882? Decline in prairie chicken in Pierce County (King, date circumstantial).

1882–3 Last bear in western Wisconsin near Viroqua, Vernon County (Leopold).

1883 Wm. A. Henry became Dean of Agriculture, University of Wisconsin. Short course started, 1886; dairy school, 1887 (Schafer).

1884–5–6–7 Cold winters (Miller).

1885 Decline in sharptails began in Dunn County (Kumlien & Hollister).

1887 Spring shooting and open-water blinds prohibited, also export of game and killing for millinery purposes. All game birds except woodcock closed Dec. 1–Sept. 1. Four wardens appointed (Palmer). Spring shooting was reopened provisionally in 1893 (Scott).

1880s New York hunters learned of canvasbacks in Lake Koshkonong and began to come there for shooting.

1889 Drouth (Hoy).

1890s Kansas quail liberated (Kumlien & Hollister). Following cold winters up to 1887?

1891 First private duck refuge on Weber's pond, Horicon Marsh (Leopold).

1890–3 Prairie chickens declined in Horicon Marsh (Leopold).

1890 Creation of the office of state game warden (Scott).

1893 Closure on spring shooting made conditional on neighbor states following suit (Palmer). Open season on Mongolian pheasant; closed again 1895 (Scott). (The pheasant season was probably a legislative error; no pheasants had been planted.)

1894 Drouth (Hoyt). Phillips fire (Scott).

1894 "The Bluebird Storm" in spring (Barrows). (Anderson gives 1893 as the year.)

1895 Hinckley fire, drouth (Whitson & Baker).

1895 Organized colonization of northern cutover lands begun (Schafer).

1895 Quail closed throughout the state. Stayed closed until 1932 (Leopold).

1896–8 Many quail in Pine County, Minnesota, opposite Burnett County. Followed Hinckley fire of 1895? (Leopold).

1897 Drouth (Whitson & Baker).

1897 Forestry commission appointed; employ Filbert Roth to investigate shrinkage of forests (Scott).

1897 Wisconsin Geological and Natural History Survey established.

1897 First bag limits established. Resident license established. Killing deer in water or on ice prohibited (Palmer).

1899 Last Wisconsin passenger pigeon shot by Mr. Varney near Babcock, Wood County, between Sept. 9 and 15 (Schorger).

1899 Wisconsin Natural History Society organized. Bulletin published January, 1900, to December, 1915.

1899 Shipments of fish and game must be marked; boats, lights, swivel guns, rafts, and blinds in open water declared public nuisances; game officials of other states authorized to seize illegal game in Wisconsin (Palmer).

1899 Interstate Park Commission appointed for St. Croix River park (Scott).

1900 Ruffed grouse planted on Washington Island, Door County (Phillips). One of the few known transplantations of this species.

1900? Last sharptail in Iowa County (Leopold).

1900 First state park purchased in Polk County (Scott).

1901 Non-game birds protected by Audubon model law (Palmer).

1901 Drouth (Whitson & Baker).

1902–3 Killing winter. Partridges found dead on snow in Door County (Leopold).

1903 Appropriation for purchase of state forest "reserve." State Forester Griffith appointed 1904 (Scott).

1903 Quail planted in Outagamie County (Leopold). Probably to restock loss during winter of 1902.

1903 Sale of protected game prohibited. Deer tag required (Palmer).
1903–4 Cold winter (Miller).
1904 Last ruffed grouse in Racine and Kenosha counties (Leopold).
1905 General civil service law applying the merit system to game wardens (Palmer).
1905–6 (or 1906–7) Goshawks killed many grouse in Sauk County (H. L. Stoddard, unpubl.).
1907 State Park Board appointed (Scott).
1907 Lynx killed in Dane County (Ed Ochsener, unpubl.). Probably a drifter.
1908 Worst fire year; 1,435 fires reported; 1,209,432 acres burned (Scott).
1908 Conservation Commission appointed (Scott).
1908 Last Wisconsin cougar killed in Douglas County (Cory).
1909 First oral examinations for deputy game warden held by Civil Service Commission (Palmer).
1909 Soil survey started (Scott).
1909 First drainage began in Horicon Marsh and last Canada geese nested there (Leopold).
1909 First complete closure of spring shooting on all waterfowl. Spring duck shooting last open in 1904, geese 1908. Wisconsin was second state to close finally all spring shooting (Scott).
1909 Wet year; legislature cuts forest fire appropriation (Scott).
1909 Charles B. Cory's "The Birds of Illinois and Wisconsin" published.
1910 Drouth (Hoyt).
1910 Van Hise published "Conservation of Natural Resources in the United States."
1910 Gustave Pabst began planting Hungarians in Waukesha County; continued yearly until 1927 (Leopold).
1910 Dean Russell appointed A. C. Burrill to give a forestry-game course to agricultural short course students (letter from Burrill).
1910 Jack rabbits planted in Sauk and Vernon counties by local sportsmen (Leopold).
1910–24 H. L. Stoddard started work for Milwaukee Public Museum. There he conceived the ideas later (1931) embodied in his "Bobwhite Quail," first American work on game management.
1910 Refuge idea spread. Five refuges posted at Madison and at Green Lake, by A. C. Burrill, at instigation of Prof. Moody and State Game Warden Scholtz (letter from Burrill).
1911 Second Conservation Commission appointed (Scott). Hunting license fees turned into general fund and expenses of department limited to receipts from licenses and sale of confiscated game (Palmer).
1911 First state forest nursery at Trout Lake. 1911–12 were wet years; Griffith starts fire lanes, towers, and phone lines (Scott).
1912 School for conservation wardens held; educational work in schools started; buck law passed (Scott).

1912 Charles B. Cory's "The Mammals of Illinois and Wisconsin" published.

1913 State game farm started at Trout Lake; Yellowstone elk planted (Scott).

1913 First federal bird refuge in Wisconsin on Gravel and Spider islands, Door County (letter from Burrill).

1914 State Audubon Society, State Warden, and H. L. Russell planted 60 male quail on refuge on University Farm (letter from Burrill).

1914 Wisconsin Game Protective Association active.

1915 Federal migratory bird regulations in effect. Sunset rule for waterfowl. Mississippi River closed. No shooting from motorboats (Palmer). Third conservation commission (paid, 3-man) established (Scott).

1915 Supreme Court decision invalidates Griffith's state forest program (Scott).

1915 Bird reserves totalling 50,000 acres posted by State Forester Moody and Wisconsin Audubon Society (letter from Burrill).

1916 Quail irruption in Adams, Wood & Juneau counties. Gone by 1917 (Leopold). This seems contradictory to the Report of the Conservation Commission for 1916, which says 1915–16 was a killing winter.

1916 Pheasants first propagated by Col. Pabst in Waukesha County (Scott).

1917 Conservation Commission given regulatory powers (Scott).

1917–18 Drouth (Hoyt) and killing winter (Leopold). All grouse low and closed until 1920 (Scott).

1917–18 Trappers required to report catch, which included 559 fisher and 48 marten (Scott). (Identifications faulty? These numbers seem large.)

1919 "The Wisconsin Conservationist" published by Conservation Department March, 1919–Jan., 1921.

1919 First open season on Hungarian partridge (Scott).

1920 Friends of Our Native Landscape organized.

1921 First open season on pheasants and Hungarians.

1921–2–3 Ruffed grouse damaged Door County cherry orchards by budding (Leopold).

1922 "Big Sleet" in March. Killed quail in Winnebago, Vernon, Jefferson counties (Leopold). Also ruffed grouse (Scott).

1922 Last known wolverine trapped, in Sawyer County (Scott).

1922 First chapters of Izaak Walton League organized at Milwaukee and Fond du Lac.

1923 Starling arrives in Wisconsin (Schorger).

1923 Jack rabbits planted in Iowa County (Leopold).

1923 Picking lotus prohibited (Fuller).

1924 Congress established Upper Mississippi Wildlife Refuge.

1925 Last known marten taken in Douglas County (Scott).

1927 Passed commission-director plan for Conservation Department.

1927 First National Forest purchase area set up in Wisconsin. Area 500,000 acres; later increased to 2,000,000 acres.

1927 Horicon Marsh made a refuge and ordered reflooded (Schafer).
1927 Winter feeding program begun by Dr. Merritt L. Jones and Wallace Grange for Conservation Department.
1927 Forest Crop Law passed. Lands entered must allow free public hunting.
1928 "Monthly Survey" published by Conservation Department Nov. 1928 to Jan. 1936.
1928 First charging for shooting upland game near Sullivan (Leopold).
1928 Conservation Commission again established a state game farm (at Fish Creek in Door County) and began statewide planting of pheasants.
1928 Dr. A. O. Gross and F. J. W. Schmidt started Wisconsin Prairie Chicken Investigation.
1928–9 Killing winter, Wisconsin and Michigan (Leopold).
1929 State Federation of Women's Clubs started conservation work.
1929 Game Survey made by Aldo Leopold for Sporting Arms Institute. Quail research fellowship set up at University of Wisconsin.
1929 Picking arbutus, orchids, trilliums prohibited (Fuller).
1929 Modern trespass law passed. Cashman woodlot taxation bill introduced.
1930 Conservation Commission planted Hungarian partridges in Green Lake, Pierce, Richland, Monroe, St. Croix counties. "Wild" turkeys planted in Columbia and Sauk counties.
1930 Drouth (Kincer). Peat fires in central Wisconsin (Leopold).
1930 "Progress Report of the Wisconsin Prairie Chicken Investigation" by A. O. Gross published by Conservation Department.
1931 Pheasant shooting preserve law passed.
1931 Game kill reports required of hunters as well as trappers (Scott).
1932 Conservation Commission started test plantings of chukar partridge, California valley quail, and raccoon.
1932 Peak population on all grouse. Quail irruption.
1932 Last known fisher. Carcass found by Barney Devine, Burnett County. Sight records up to 1937 (Scott).
1933 C. C. C. camps established; started stream improvements and other wildlife work.
1933 Soil Conservation Service starts erosion control at Coon Valley, La Crosse County.
1933 Conservation Department given power to set all game open season dates (Scott).
1933 Chair of Game Management established at University of Wisconsin by Alumni Research Foundation.
1933 State game farms moved from Fish Creek, Moon Lake and Waupun to Poynette, Columbia County. Fur farm established at Poynette.
1933 Drouth (Hoyt).
1933 Fuller published "Orchids of Wisconsin."

1933 Electric fence comes into general use. A further loss of fence-row wildlife begins (see 1876).

1934 County game committee system for recommending seasons inaugurated by Conservation Department. Later became "Conservation Congress."

1934 Drouth in central and southern Wisconsin (Cronin and Beers; Wade).

1934 C. W. A. funds available for conservation. Marsh survey started. First drainage ditches plugged in Portage and Leola districts.

1935 Last breeding sharptail in S. Wisconsin seen in Dane County (memo from J. G. Dickson).

1935 F. J. W. Schmidt died. Most of his findings on prairie chickens lost by fire.

1934–5 Bow-and-arrow deer season opened in Sauk and Columbia counties.

1935–6 Killing winter. Drouth in 1936. End of cycle peak in all grouse, quail, and rabbits (Leopold; Wade).

1935 Teaching of conservation made compulsory in public schools.

1936 Supreme Court decision of April 28 says state must pay farmers for reflooding Horicon Marsh.

1936 Wisconsin Wildlife Federation organized.

1936 "Wisconsin Conservation Bulletin" published by Conservation Department from Jan. 1936 to present.

1937 Nursery for food and cover plants established by Conservation Department at Wisconsin Rapids.

1938 Sheboygan Marsh reflooded, covering 12,000 acres (Scott).

1938 Federal aid for wildlife becomes available through Pittman–Robertson Act.

1938 Deansville Marsh Public Hunting Ground (Dane County) established by Conservation Department.

1938 Ridges Sanctuary established in Door County for preservation of wildflowers. Financed as a non-profit corporation by local landowners.

1939 State Planning Board issues bulletin on Horicon Marsh.

1939 Summer and fall drouth.

1939 Wisconsin Society of Ornithology organized; "Passenger Pigeon" started publication.

1939 Necedah National Wildlife Refuge established by Biological Survey.

1940 State Conservation Department and U. S. Fish and Wildlife Service begin purchasing Horicon Marsh lands. Conservation Department, with federal aid funds, begins research projects on deer, pheasant, grouse, and waterfowl. State takes 95-year lease on Central Wisconsin Conservation Area.

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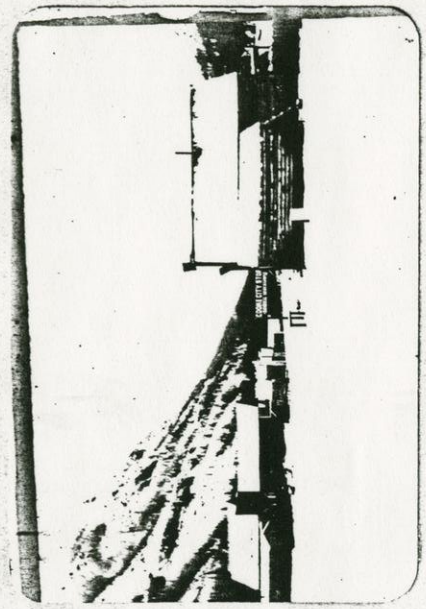
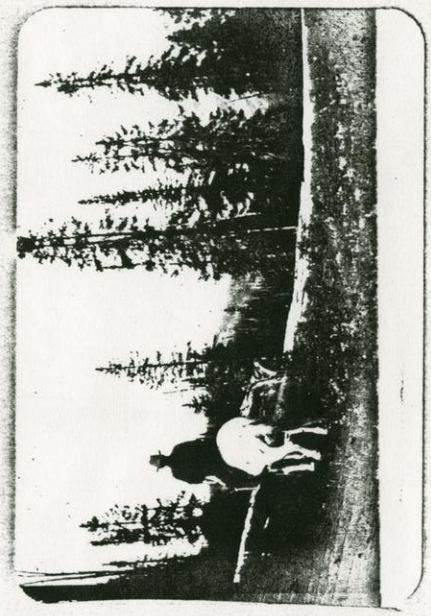
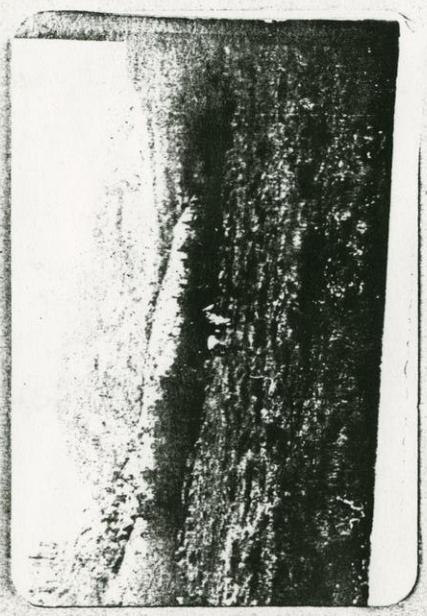
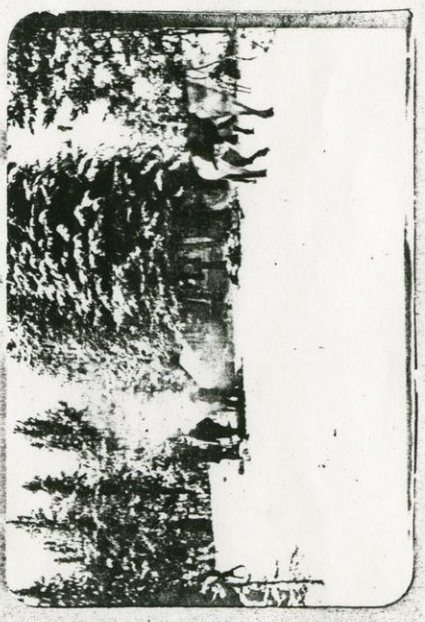
STATE CONSERVATION COMMISSION
OF WISCONSIN

Photo album











Citation
for Meritorious Service

is hereby awarded to

MRS. ALDO LEOPOLD

in behalf of those in our Country's service, our valiant Allies, and our neighbors at home, for an outstanding contribution to the 1944 National War Fund Campaign

The Wisconsin War Fund

W B Rosenberry
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Frank A Ross
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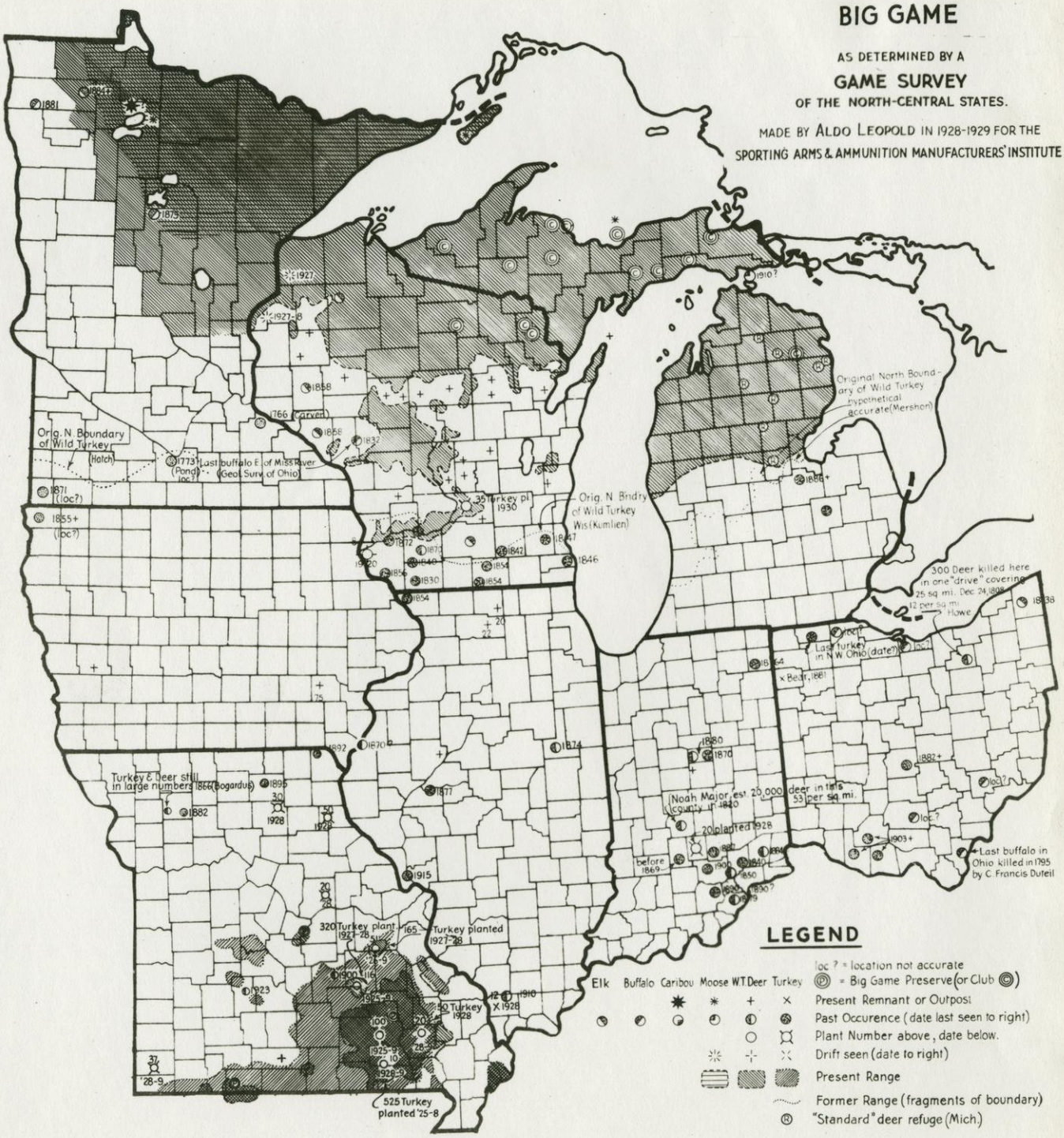
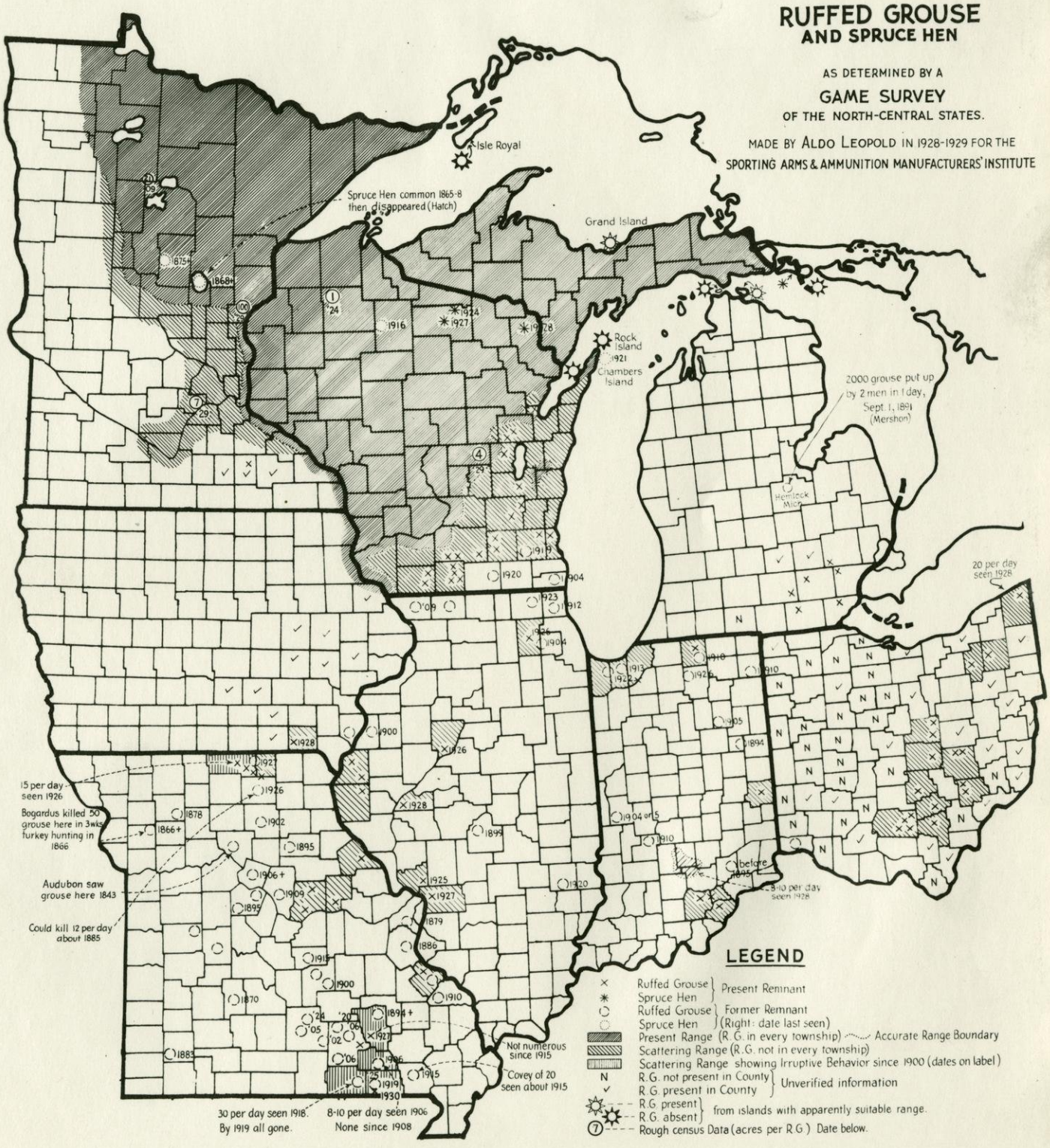
Campaign Chairman

Map 63.


BIG GAME
AS DETERMINED BY A
GAME SURVEY
OF THE NORTH-CENTRAL STATES.
MADE BY ALDO LEOPOLD IN 1928-1929 FOR THE
SPORTING ARMS & AMMUNITION MANUFACTURERS' INSTITUTE
Orig. N. Boundary of Wild Turkey (Hatch)
Last buffalo E. of Miss River (Geol. Surv. of Ohio)
Orig. N. Bndry of Wild Turkey Wis (Kumlien)
Original North Boundary of Wild Turkey hypothetical accurate (Mershon)
300 Deer killed here in one "drive" covering 25 sq. mi. Dec. 24, 1808 12 per sq. mi. Howe
Last turkey in N.W. Ohio (date?)
Bear, 1881
Noah Major, est. 20,000 deer in this county in 1820
53 per sq. mi.
20 planted 1928
before 1869
Last buffalo in Ohio killed in 1795 by C. Francis Duteil
Turkey & Deer still in large numbers 1866 (Bogardus)
320 Turkey plant 1927-28
Turkey planted 1927-28
50 Turkey 1928
525 Turkey planted '25-8
LEGEND
loc ? = location not accurate
= Big Game Preserve (or Club)
Elk Buffalo Caribou Moose W.T. Deer Turkey
Present Remnant or Outpost
Past Occurence (date last seen to right)
Plant Number above, date below.
Drift seen (date to right)
Present Range
Former Range (fragments of boundary)
"Standard" deer refuge (Mich.)


RUFFED GROUSE
AND SPRUCE HEN
AS DETERMINED BY A
GAME SURVEY
OF THE NORTH-CENTRAL STATES.
MADE BY ALDO LEOPOLD IN 1928-1929 FOR THE
SPORTING ARMS & AMMUNITION MANUFACTURERS' INSTITUTE
Isle Royal
Spruce Hen common 1865-8 then disappeared (Hatch)
Grand Island
Rock Island 1921
Chambers Island
2000 grouse put up by 2 men in 1 day, Sept. 1, 1891 (Mershon)
Hemlock Mich.
20 per day seen 1928
15 per day seen 1926
Bogardus killed 50 grouse here in 3 wks. turkey hunting in 1866
Audubon saw grouse here 1843
Could kill 12 per day about 1885
30 per day seen 1918. By 1919 all gone.
8-10 per day seen 1906 None since 1908
Not numerous since 1915
Covey of 20 seen about 1915
5-10 per day seen 1928
LEGEND
Ruffed Grouse } Present Remnant
Spruce Hen }
Ruffed Grouse } Former Remnant
Spruce Hen } (Right: date last seen)
Present Range (R. G. in every township) Accurate Range Boundary
Scattering Range (R. G. not in every township)
Scattering Range showing Irruptive Behavior since 1900 (dates on label)
N R. G. not present in County } Unverified information
✓ R. G. present in County }
R. G. present } from islands with apparently suitable range.
R. G. absent }
Rough census Data (acres per R. G.) Date below.

from Denver Post - Sunday Oct-25-1953

The Baca Land Grant Fight

By WILLIAM MacLEOD RAINE

Copyright by William MacLeod Raine

Don Bartolome left 1,500,000 acres of New Mexico--and trouble--to his heirs

IN THE first years of the nineteenth century, Don Bartolome Baca, a *caballero* of Casa, Colo., in what was then Valencia county, asked Facundo Megares, governor of the royal Spanish province of New Mexico, for a grant of land on which to pasture his sheep and cattle. Baca had already started a little town in the mountains and named it Torreon. Here he had built a tower house that overlooked the valley so that he might be able to protect himself and his dependents from the sudden attacks of Indians.

Just as in the old feudal days when a king held his country intact by means of grants to powerful barons, so the representatives of Spain were empowered to hold its New World colonies against Indians and other possible claimants by the assistance of the great landed proprietors. Baca was most eligible as a lineal descendant of a noble family, and a man with a reputation as a soldier, a ruler and a grandee.

Governor Megares ordered the constitutional *alcalde* Jose Garcia de la Mora to execute the act assigning to Baca a certain tract of land bounded on the south by Crow Springs (Ojo del Cuervo), following its *cordillera* to the Salt Springs (Ojo del Chico), on the east by the Pedornal mountains (Ojo del Cibolo), and on the west by the summit of the mountain *(la altura de la Cierra)*.

This the *alcalde* did, and Baca formally took possession on July 2, 1819. No survey of the land was made, but the grant was estimated to contain about 1,500,000 acres, or nearly 2,500 square miles.

He Burned the Mortgages

Don Bartolome Baca grazed his herds over this great tract, larger than the state of Delaware; and at times cultivated some of it. He visited his estate occasionally, but does not seem, at any time, to have taken up his permanent residence there.

Possessed of very great wealth, he was generous and public-spirited even beyond the wont of his class. On several occasions, when the people in the province suffered from the raids of the Indians, he distributed thousands of his sheep to relieve their needs. These were furnished ostensibly as a loan, but he never asked for repayment.

It is recorded that when in 1870 Don Bartolome Baca, then a very old man, sensed the nearness of death, he sent for his friend and secretary, Francisco de Maradiaga, a learned priest prominent in the territory. Baca had large sums of money loaned all over New Mexico and held hundreds of mortgages from the people who owed him. In the presence of his children the old don dictated his will to the priest, distributing his property with minute attention to detail. But of his numerous mortgages he said not a word.

One of his sons asked him why he did not say which of his children was to inherit these. He replied that he would presently dispose of them, and, having concluded his other affairs, he had Padre Maradiaga burn the mortgages.

There were then no official records kept of such papers, so that their destruction was irrevocable. Thus Baca, even to his death, looked out for the welfare of the poor people indebted to him. Despite his generosity and his munificence, Baca had flourished greatly. His flocks and herds spread over a score of hills and valleys until they numbered several hundred thousand.

The peculiarity of his grant is that it appears to have been a grazing rather than an agricultural one, since the latter would have necessitated a four-year residence on the part of the grantee. According to the decision of the surveyor general many years later (a decision adverse to the Baca claim) no record of an actual grant had ever been shown, although the acting governor certainly ordered the transfer of land to Baca.

Another point that militated against the Baca claim by his descendants was that subsequent grants were made of lands included in this grant, both within Don Bartolome's lifetime and after his death, without protest on his part or the part of his heirs.

Indeed, Don Bartolome Baca had succeeded Megares as governor and captain general of the province of New Mexico, and while he was president of the *Ayuntamiento*, or Council at Tome, he officially indorsed grants of land included in the Baca Estancia estate. One of these grants was to a colony of farmers at Manzana, and was situated right in the heart of the estate. This grant was made with the concurrence of Don Bartolome on Sept. 22, 1829.

The grants of Ojo del Medio in November, 1831, and of Tejique in March, 1834, were also made with Baca's knowledge. Therefore the United States court of private land claims years later adjudged that Baca had abandoned his grant, and the supreme court of the United States sustained this view.

The Baca heirs have always denied this, alleging that the generous old don was willing to have these small grants made to help develop the country, to help settlers, as well as to bring in men to protect his herds from the Indians.

Meanwhile, Mexico became a country independent of Spain.

The last Mexican governor of the province of New Mexico, Manuel Armijo, was granted extraordinary powers for the disposition of lands.

Out of the very heart of the Baca grant Armijo carved nearly 500,000 acres, including both the Antelope and the Estancia springs as well as others south of them, and conveyed it on Dec. 7, 1845, to Antonio Sandoval, for "services to the government of Mexico."

The latter, a roving Spanish soldier, in turn deeded it to Gervacio Nolan, from whose heirs [illegible] Whitney, a Boston capitalist, purchased the grant in 1878.

The Boston millionaire sent his brother, James G. Whitney, out to take charge of his estate in New Mexico, near which district ranged about 25,000 cattle owned by him. Thus another powerful claimant for the land about Estancia was created by Armijo's ill-considered grant.

Eloisa the Beautiful

In 1874 Don Manuel Antonio Otero, together with his brother, the Hon. Miguel Antonio Otero, father of a governor of New Mexico, and himself later both governor and delegate to congress, in Mexico City bought from the Baca heirs all their interests in the Don Bartolome Baca Estancia land grant.

In 1881 Don Manuel Antonio Otero died and his only son, Manuel B. Otero, took charge of the estate, on which he was running about 35,000 sheep.

Manuel B. Otero was typical of his family. A handsome young blond of splendid physique, he had inherited the strict integrity of his father and uncle, as well as their uncurbed pride of blood. He was the product of a German university, and upon his return to this country he had married Eloisa Luna, the most beautiful girl in the territory. She was then about 16 years old, and had just returned from a New York convent where she had been educated.

The daughter of the Hon. Antonio Jose Luna and of Dona Isabel Baca y Castillo, Eloisa was the direct descendant of one of the great Spanish houses. About 1695, the Lunas had come to the royal province of New Mexico. One of them, the Duke of Albuquerque, founded the town of that name, and his cousin, the Count de Luna, built the neighboring village of Los Lunas as a focal point for his retainers to congregate.

It was inevitable that there should be in time a clash between the vaqueros of Whitney and the herders of Otero. There was first the old antipathy between sheep and cattle. In addition to this Otero and Whitney were rival claimants for this rich grazing ground—ground especially well adapted both to cattle and sheep.

There were about 200 squatters on the Estancia grants, and against one of these, named McAfee, Whitney brought a test case and was granted the judgment by the territorial supreme court. James G. Whitney and his vaqueros rode to the Barendo or Antelope Springs, where the McAfee ranch was located, to dispossess the squatter. Whitney bought McAfee's cattle and improvements at a good price, the squatter relinquishing his right of appeal to the United States supreme court.

However, the decision in McAfee's case had no application to the Baca claim. A suit was pending in the courts between Otero and Whitney, the representatives of the original Baca and Sandoval grants, but Whitney, instead of waiting for the court decision decided to treat Otero as a squatter and rode to the adobe ranch house at Estancia to dispossess Otero's majordomo, Jesus M. Chaves.

"Drop That Gun!"

Whitney and his party went armed. With him and his vaqueros were his brother-in-law, Alexander Fernandez, a nephew named Haines, and another young man, Arthur Bailhache. Whitney had already served a peremptory notice to Otero to vacate, which order Otero had refused to obey. Whitney's men took possession of the little ranch house and sat up all night playing cards in high spirits.

Chaves, the majordomo, hearing that the Whitney party was on the way to the ranch, had sent a messenger to Manuel Otero's home at La Constancia, where he lived with his beautiful young wife Eloisa and their two children.

With his brother-in-law, Carlos Armijo, and a vaquero or two, Otero started at once for the scene of trouble, leaving word for another brother-in-law, Dr. Edward C. Henriques, to follow as soon as he could. The latter, with several attendants, caught up with the Otero party just before it reached the Estancia adobe house. Both parties had traveled all night in their haste.

The meeting between Otero and Whitney was distant. The young Mexican was courteous but stern, the American not disposed to yield what he thought to be his rights.

"Have you a writ of ejectment, sir?" Otero asked.

"I have, but not with me," replied the Bostonian.

"Then you are proceeding contrary to law."

"Not at all," replied the American. "You, as a squatter, are outside the law. I order you to vacate the premises."

"And I decline," Otero said. "I am no squatter."

There was a hot word or two, a threat, and several revolvers were loosened in their holsters. Henriques, according to the testimony of the Whitney faction, was especially belligerent. Whitney later testified that he heard a gun click behind him and immediately drew his pistol.

"Drop that gun!" cried Henriques to Whitney, covering him from behind.

The American closed with him, and in the scuffle both their revolvers were discharged. Somebody whipped up a gun and fired at Otero. There was another shot and Alexander Fernandez rolled under the bed on which he had been sitting, with a bullet in his heart. A fusillade followed. Bailhache, unarmed, dropped to the floor, and Armijo, also without a weapon, bolted through the door.

When the smoke cleared, the place looked like a shambles.

Otero staggered to the door, clutching at his neck from which blood was spurting. Whitney, with eleven bullets in him, lay on the floor writhing in agony. Fernandez had expired, and Dr. Henriques was stretched across a cot with two bullets in his arm, one of which had severed an artery at the wrist. His revolver was still pointed at Whitney.

"For God's sake, don't shoot," Whitney groaned.

Henriques flung his gun away.

The Otero forces took possession of the ranch house. Brown, Whitney's cook, ran in and was disarmed.

"You had better attend to your master," said Henriques.

Otero was removed to another room, where he died before sunset.

A crowd gathered, murmuring threats against Whitney. Secretly he was taken in a wagon to Las Vegas. There he was arrested by two deputy sheriffs, Page B. Otero, and his brother, who later became governor. An order was issued by the court to take him to Los Lunas for a preliminary examination, but at Albuquerque he was tried and acquitted. Whitney lived nearly twenty years, but never recovered fully from his terrible experience.

A few years after the tragedy a young Italian, Alfred M. Bergere, drifted into the southwest. He was handsome, cultured, and distinguished; born in England and educated at Queen's college.

He fell in love at sight with Manuel Otero's young widow and wooed Eloisa with Latin ardour. Finally Bergere won her from all her suitors, and became henceforth a fighter for his wife's rights as represented by the Baca grant. He bought out the other heirs and spent $250,000 championing her cause from court to court.

Always he was hampered by lack of the original grant papers. Then it happened that one of old Bartolome Baca's grandsons in Belen, N. M., was eating a Mexican cake at his home and noticed that the paper in which it had been cooked had his grandfather's name on it.

Part of the Signature

The paper was part of Governor Megares' original order. In an old trunk the rest of the paper, with only one little corner gone, was found and turned over to Bergere.

As a result, the court of private land claims at Santa Fe awarded the Baca claimants eleven square leagues, this being all that could be given on a Mexican grant. But Bergere, because the original grant had been Spanish and not Mexican, appealed on behalf of his wife.

The case was reviewed by the supreme court of the United States, and the grant rejected on the grounds that there was no proof that Governor Megares had signed the approval of the grant as required by law.

The missing corner of the approval had contained part of his signature.

The Sandoval grant had already been rejected by the court of claims. All the territory contained in the famous Estancia grants reverted to the government then, and was thrown open for homestead entry.

It is pleasant to record that Mr. Bergere, though he lost his fight on behalf of his wife for a great fortune, had acquired by homesteading the best parts of the Estancia estate for his family and himself. This land included the famous springs which were most suitable for irrigation use.

Some years back, I visited Alfred M. Bergere at his Santa Fe home, a typical Spanish house of the better class. His wife, the former Eloisa Luna, was the mother of eleven dark-eyed handsome children. She looked so young at that time that she might have been their eldest sister.

The courts had decreed that she was no longer princess of Estancia, but, with old Castilian grace, she was queening it over a happy American home where old family heirlooms still reminded the fortunate guest of the days when *dons* and *donas* ruled the southwest magnificently under royal grant from Spain.

Leopold

WILDLIFE MANAGEMENT LIBRARY 5-18-45

(A) SPECIES BLOCK

Plants

general
aquatics
arboreta
economical & special uses
prairie
weeds
wildflowers
Wisconsin, state publications

Mammals

general
state lists, checklists
Wisconsin, state publications
fur bearers and predators
(rare species, see ecology)
opossum, mole, shrew, bat
bear
raccoon, civet cat, marten, fisher,
weasel, ferret, mink, wolverine, otter
skunk, badger
fox, coyote, wolf, feral dog
cats: cougar, jaguar, lynx,
bobcat, feral housecat
sea lion, seal, walrus, manatee,
whale, dolphin, porpoise
woodchuck, marmot, rock squirrel, ground
squirrel, chipmunk, prairie dog, pocket
gopher
squirrels: red, chickaree, gray,
fox, flying
beaver
rats, mice, lemmings, voles, mt. beaver
muskrat
porcupine, pika, peccary, armadillo
hares: snowshoe, jackrabbit
rabbits: cottontail & general
deer: general and whitetail
whitetail, food
Wisconsin
mule, blacktail
wapiti (elk)
moose, caribou, reindeer
pronghorn (antelope), bison (buffalo),
musk ox, mt. sheep, mt. goat

Birds

general
state lists, check lists
Wisconsin, state publications
(rare species, see ecology)
bobwhite: general
artificial propagation
food

grouse: ruffed
prairie chicken, sharptail,
spruce, heath hen
western: sage hen, blue grouse
Hungarian partridge
ring-necked pheasant:
life history and management
artificial propagation
food
wild turkey
western quail
doves and pigeons
chukkar partridge. Other introduced
gallinae
woodcock, Wilson's snipe, shorebirds
cranes, rails, coots, gallinules
fish-eating birds, general
herons, bitterns, egrets
gulls, terns, cormorants, pelicans
grebes, loons
waterfowl:
general, economic and administrative
geese and swans
ducks
waterfowl losses: botulism, lead
poisoning, disease, crippling, oil
crows, jays, magpies, ravens, blackbirds,
roadrunners
hawks, owls, eagles
falcons, falconry
English sparrow, starling, house finch
songbirds, birdhouse designs
chickadee

Reptiles and Amphibians, General

Fish

general
management
Wisconsin, state publications
Wisconsin, Great Lakes Fisheries

Insects, general

(B) ECOLOGY BLOCK

Ecology: theory and principles
animal studies
plant studies
general studies
accidents
artificial propagation (see game farming)
banding, migration, movement
breeding and mortality, nest studies, life
equations, turnover rates, survival rates
census, density measurements
crippling loss*
cycles, animal
(weather, see under land-use)
disease, parasites
economics of wildlife
fire
flight limits, speeds*

food habits: general
technique
mammal studies
bird studies
food and cover:
general, mammals
food patches, foods, feeding, nutrition
lists of plants, food value palatability
cover plantings, fencerows, windbreaks,
snowfences, borders, soil requirements,
fences
yields of wild foods, inc. mast records*
range tallies, food & cover surveys,
carrying capacity surveys
grit*
kill records, trophies, yields, success
ratios*
longevity*
mechanical devices, traps
phenology
physiology
poison
predation, predator and rodent control,
bounties
psychology, behavior
rare species
refuges
salt and minerals*
sex and age criteria
sex and age ratios
starvation*
techniques: collecting, preserving
laboratory (other than food
habits) tracks, pellets,
scats, hairs, etc.
statistical methods*
territory
tracks and sign*
transplantation, exotics, spread rates
water*
weights and measurements, growth rates,
relation to soils

(C) LAND USE BLOCK

Land use, general
Wisconsin land use, zoning, state publications
Wisconsin land economic inventory
Wisconsin: "Making the most of ___ county lands"
Agriculture, general*
*, Wisconsin
classification, land use
damage and benefits. repellents, economic status,
pest control
drainage, marsh management, general, reclamation
*, Wisconsin, state publications
economics, land
education: general
teaching materials, general
teaching materials, Wisconsin
teaching materials, birds
erosion: general
southwest
Wisconsin
ecology, history, research, esthetic
flood control AND WATERSHEDS
forestry:
general and legislation
ecology, influences, dendrology, soils,
physiology, silvics
Black Rock Forest publications (physiology,soils)
planting, nursery, seed, pathology
products, utilization
policy, economics, statistics, geography
Lake states, northern hardwoods, selective
logging, northern conifers
western states
southern states
eastern states
woodlot problems
Wisconsin, state publications
fur: management and farming (see also species)
game farming (see also species)
handbooks and manuals
hunting studies
laws, conservation
management areas, farmer-sportsman relations,
public hunting areas, farm wildlife yields
management plans
(marsh management, see drainage)
policy
pollution
public domain
range management
soils, general (see also ecology, weights)
*, Wisconsin, state publications
surveys and maps
water areas, pond and marsh impoundment
weather: records
cycles
wilderness

(D) GEOGRAPHIC BLOCK

Wisconsin state publications:

general
agriculture, crops
archaeology
botany
erosion
fish, Great Lakes Fisheries
forestry (see also Lake States)
forests and parks
Central Wisconsin Wildlife Area
game, ornithology
geography, geology, soils
history
land use, zoning
marsh restoration, drainage
Land Economic Inventory
"Making the Most of ___ County Lands"
Annual Report, College of Agriculture
Wisconsin Conservation Bulletin
The Passenger Pigeon
Wisconsin Science Inquiry
Upper Mississippi Conservation Committee
Biennial Reports, Conservation Commission
Wisconsin Conservation Laws
Wisconsin Sportsman
Wisconsin Conservation League
Wisconsin Wildlife
Bull. Wis. Natural History Society
Save The Deer Club
Wis. Trout Streams Improvement Assoc.

Other 47 states
Alaska
Canada
Mexico
New Zealand and Australia
South America, Europe
Indians and wildlife — PACIFIC ISLANDS

(E) MISCELLANEOUS BLOCK

archaeology*
art and literature
bibliographies
directories
geography, general*
*, Wisconsin, state publications
geology, general*
*, Wisconsin, state publications
history, general*, chronology records
*, Wisconsin, chronology records
meteorology
philosophy

(F) PUBLICATIONS BLOCK

Of professional societies:

The Auk
The Condor
Ecology

Journal of Animal Ecology
Journal of Forestry
Journal of Mammalogy
Journal of Wildlife Management
The Wilson Bulletin

Of conservation organizations:

Amer. Comm. for Internat'l. Wildlife Protection,
Pan American Union
American Forest Industries
American Midland Naturalist
American Wildlife Institute (American Game,
American Wildlife)
Anti-steel Trap League
Audubon Magazine
Bird-Banding
Boone and Crockett Club
Bull. Wisconsin Natural History Society
COC
California Fish and Game
Canadian Conservation Assoc., Trans. of
Canadian Field-Naturalist
Conference on Outdoor Recreation
Conservation Volunteer
Ducks Unlimited
Emergency Conservation Committee
Fish and Wildlife Service
Forest Service, National Forests Wildlife
Foundation for the Study of Cycles
Izaak Walton League
The Land
Land Policy Circular
Linnaean Society of New York
More Game Birds in America
National Research Council
Midwest Wildlife Conference
National Park Service, National Parks Wildlife,
Yellowstone Park
N. Amer. Wildlife Conference, Trans. of
Pennsylvania Game News
Pittman-Robertson Quarterly
Progressive Fish Culturist
Roosevelt Wildlife Bulletin
Soil Conservation Service
Wild Flower
Wilderness Society
Wildlife Committees, House and Senate
Wildlife Conference
Wildlife Federation
Wildlife Review
Wisconsin Academy of Sciences, Arts, and
Letters, Trans. of
Wisconsin Wildlife Research

* carding but no box

Ducks
River ducks
mallard, black duck, gadwall, widgeon pintail, teals, shoveller, wood duck
Diving ducks
redhead, canvasback, scaup, ringneck, goldeneye, sea, ruddy, merg.

bird song

Waterfowl, Miscellaneous
Waterfowl, Controversial
Lit.; Policy; Admin.
Waterfowl Studies in B. C. & Manitoba; Ill. & Iowa

Raptors, Gen.

Wis. Inland Fisheries

damage?

wariness & avoidance

JACK MINER

Mollo

add "professional" ←

game: management

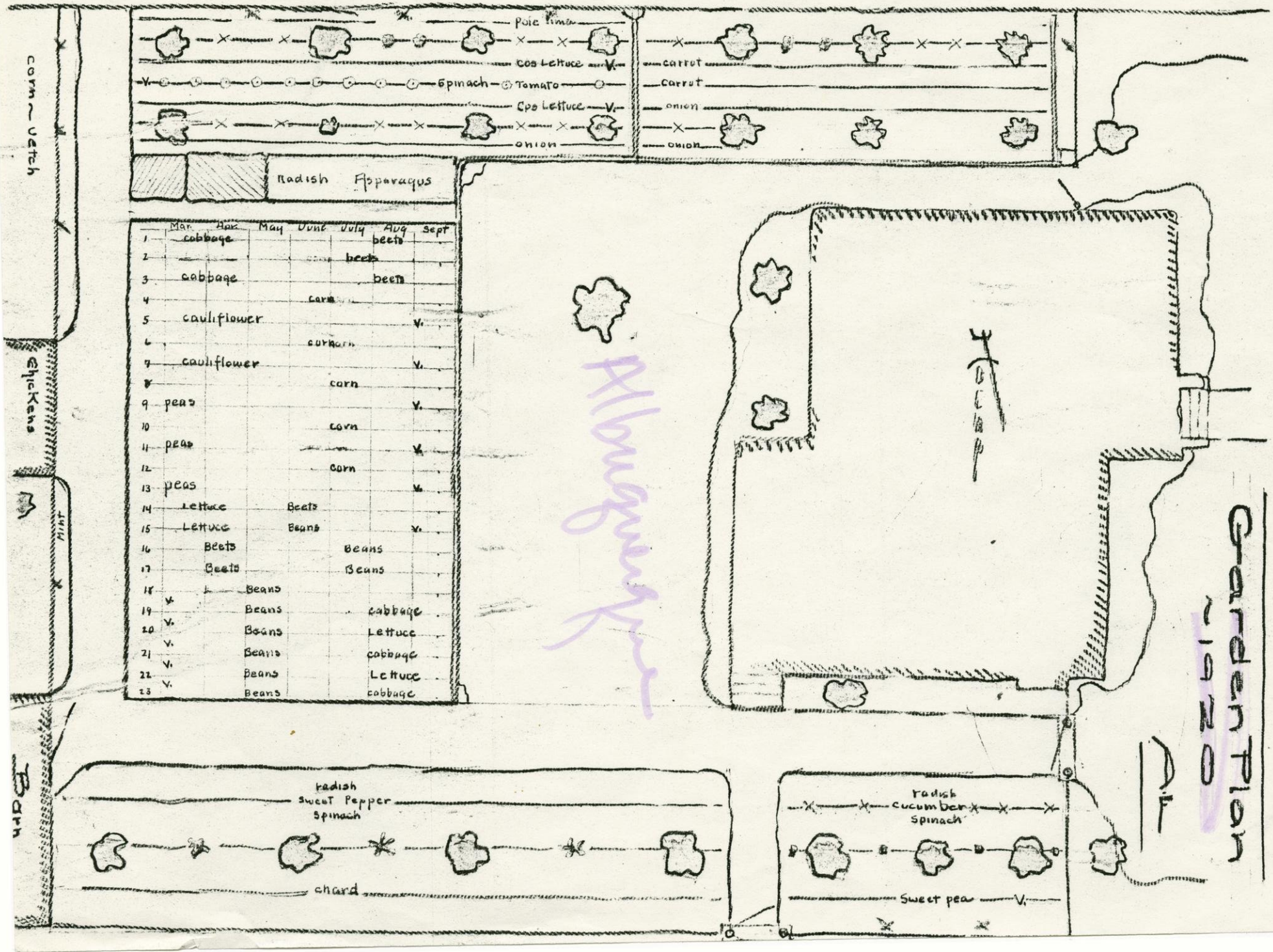
Wis. pollution

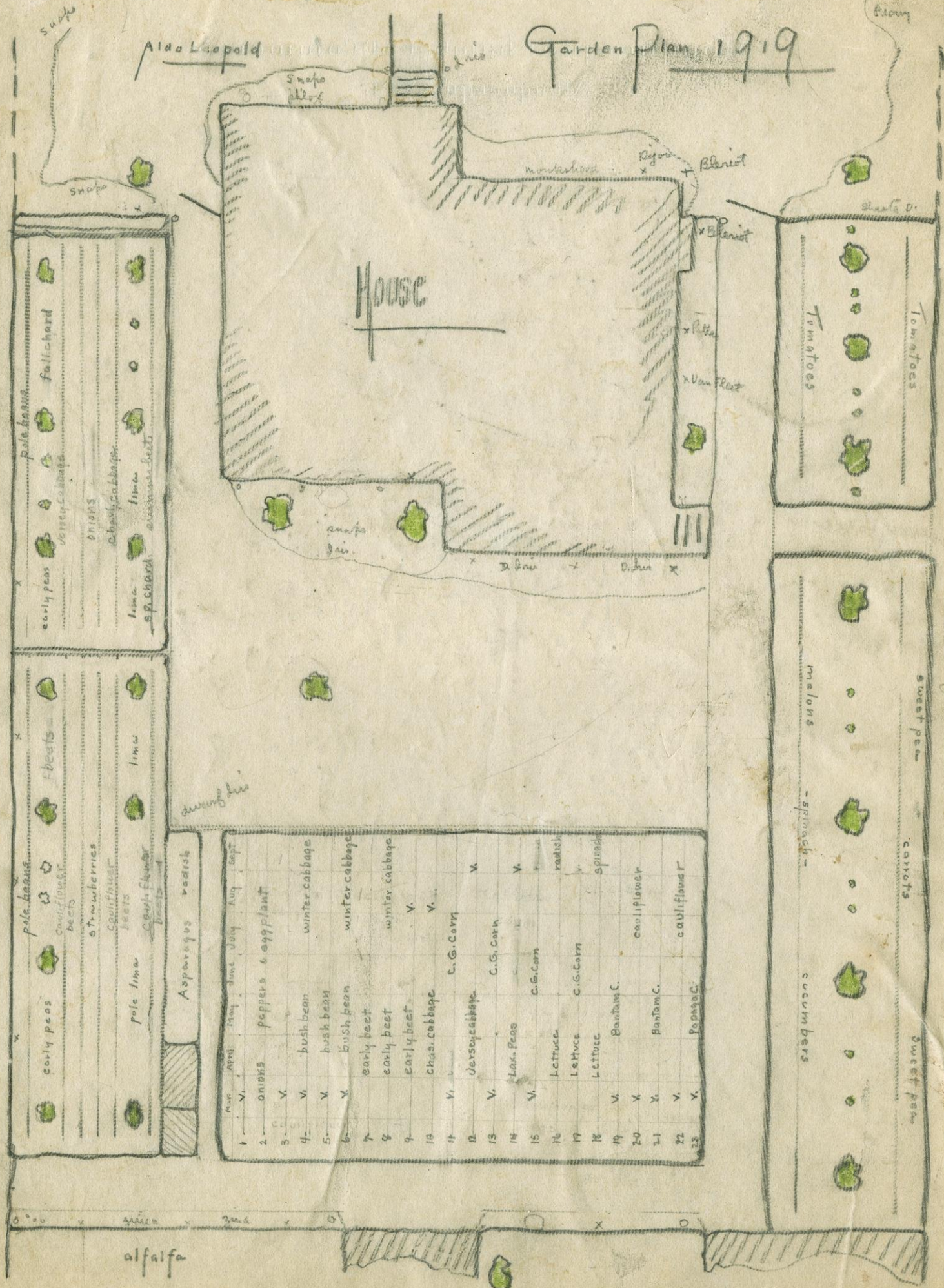
Wis. State Planning Board

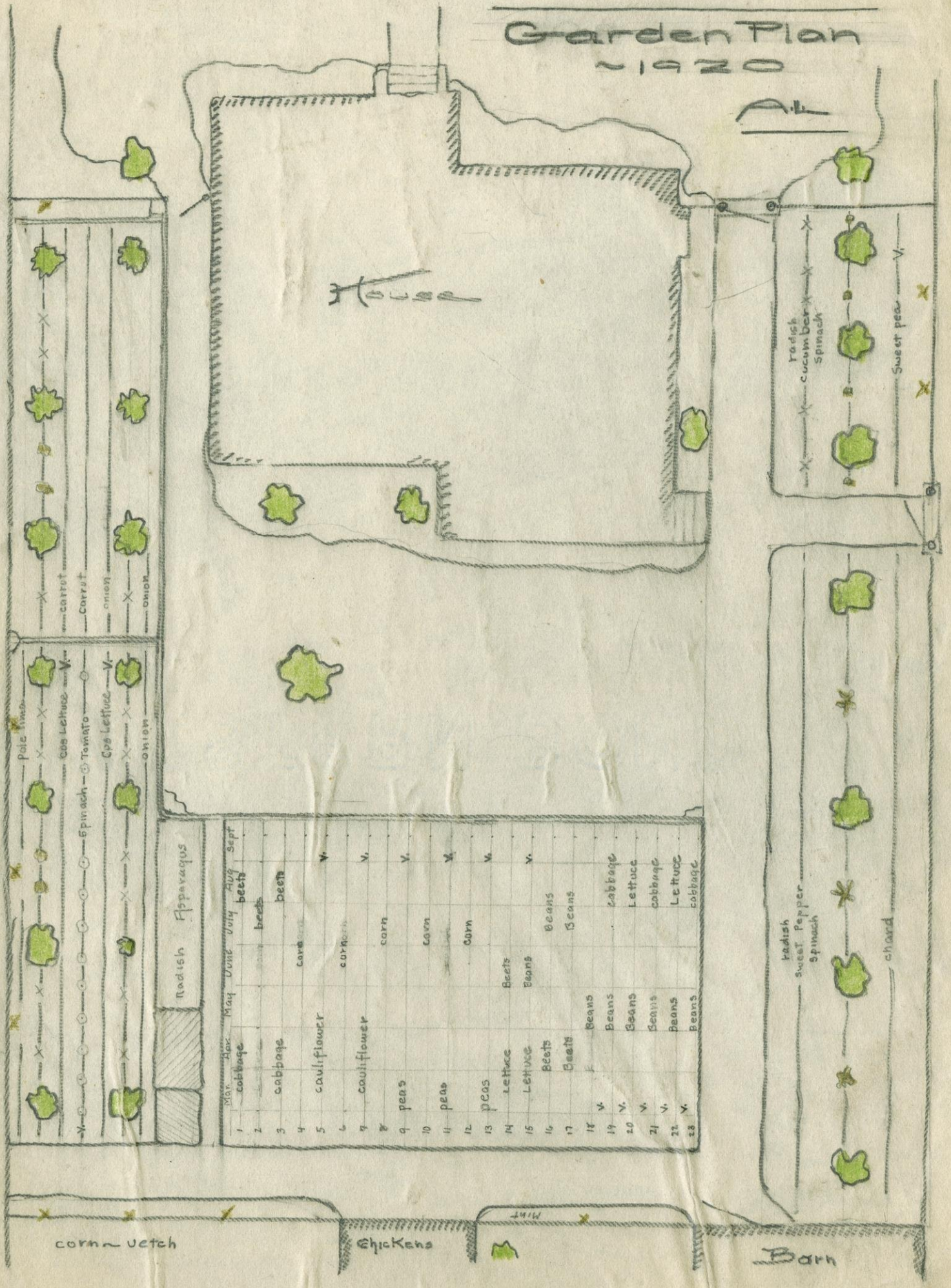
Wildlife as Meat

Conservation Foundation

Ecological Soc. of Amer.
ECOLOGISTS' UNION


Garden Plan
~1920
A.L.
Pole lima
Cos Lettuce V.
Spinach
Tomato
Cps Lettuce V.
onion
carrot
carrot
onion
onion
Radish Asparagus
Mar. Apr. May June July Aug Sept
1 cabbage beets
2 beets
3 cabbage beets
4 corn
5 cauliflower V.
6 cornorn
7 cauliflower V.
8 corn
9 peas V.
10 corn
11 peas V.
12 corn
13 peas V.
14 Lettuce Beets
15 Lettuce Beans V.
16 Beets Beans
17 Beets Beans
18 Beans
19 V. Beans cabbage
20 V. Beans Lettuce
21 V. Beans cabbage
22 V. Beans Lettuce
23 V. Beans cabbage
Albuquerque
Hoop
corn ~ vetch
Chickens
Mint
Barn
radish
Sweet Pepper
Spinach
chard
radish
cucumber
Spinach
Sweet pea V.


Aldo Leopold
Garden Plan 1919
House
Tomatoes
Tomatoes
sweet peas
carrots
melons
spinach
cucumbers
sweet peas
alfalfa
early peas
pole beans
Asparagus
Beets
Cauliflower
Pole lima
Bush lima
Strawberries
Onions
Chard
Cabbage
Lima
Sp. Chard
Parsley
Beets
Lima
Cauliflower
Beets
Lima
Bush Lima
Beets
Cauliflower
Parsley
Lima
Sp. Chard
Cabbage
Onions
Parsley
Beets
Cauliflower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House
Radish Asparagus
Mar. Apr. May June July Aug Sept
1 cabbage beets
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8 corn
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10 corn
11 peas V.
12 corn
13 peas V.
14 Lettuce Beets
15 Lettuce Beans V.
16 Beets Beans
17 Beets Beans
18 Beans
19 V. Beans cabbage
20 V. Beans Lettuce
21 V. Beans cabbage
22 V. Beans Lettuce
23 V. Beans cabbage
Pole lima
Cos Lettuce V.
Tomato
Spinach
Cos Lettuce V.
onion
carrot
carrot
onion
onion
radish cucumber Spinach
Sweet pea V.
radish Sweet Pepper Spinach
chard
corn ~ vetch
Chickens
Mint
Barn

PHOTOGRAPHS

To Mr. Carl and Aldo Leopold
with the compliments of
Frank R & Mortimer C. Groves
Evanston Ills Oct 24" 1903.











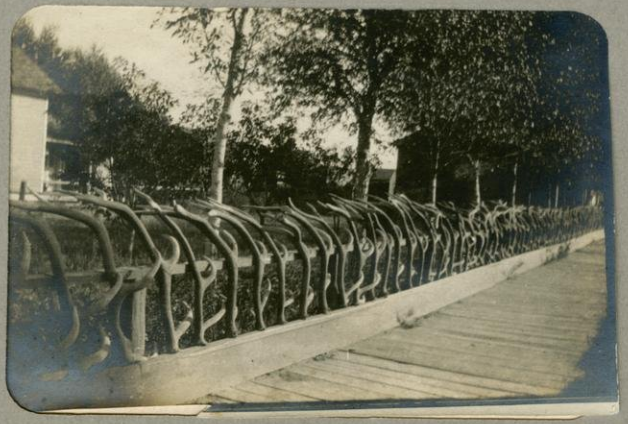



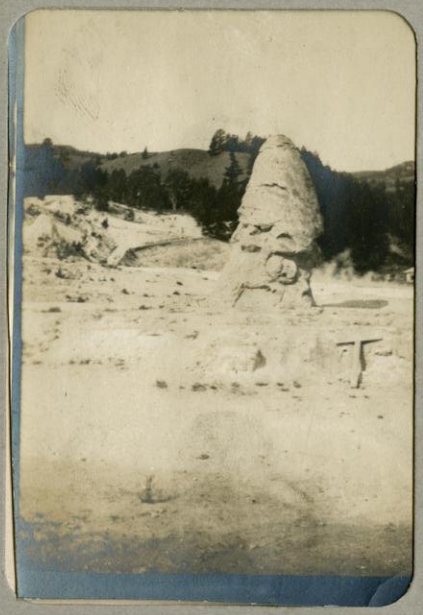













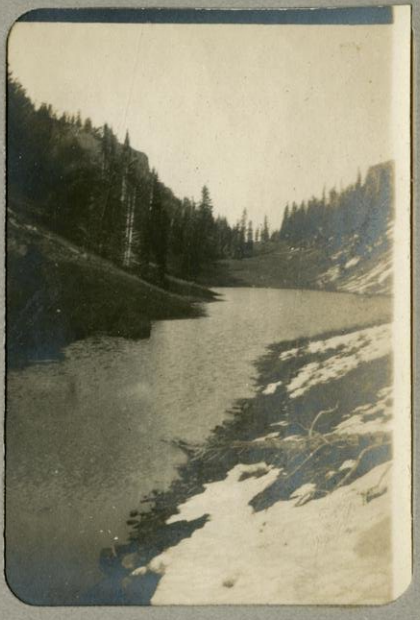









































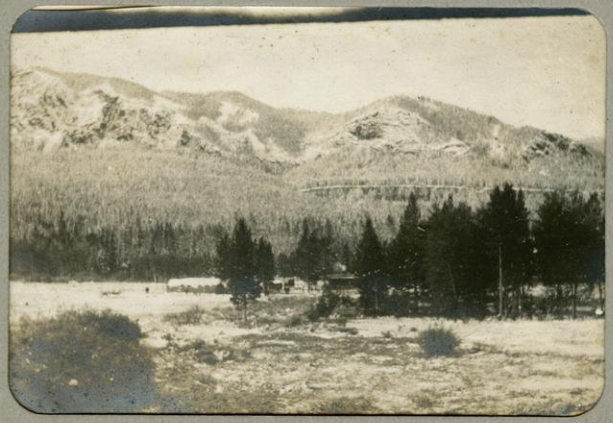











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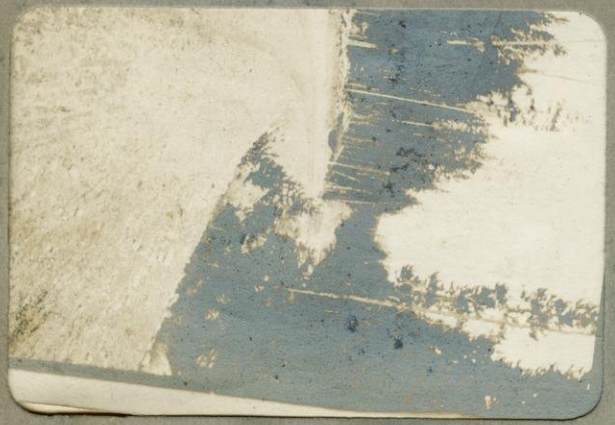



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306 D	"	"	Steel Gray
304 A	3½ X 3½	4	Gray
306 A	"	"	Steel Gray
304 Q	3¼ X 4¼	"	Gray
306 Q	3¼ X 4¼	4	Steel Gray
304 C	4 X 5	"	Gray
306 C	"	"	Steel Gray
304	5 X 7	2	Gray
306	"	"	Steel Gray

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BOSTON, NEW YORK, CHICAGO, LONDON, BRUSSELS.
U. S. Patents May 6, 1890, and June 22, 1897.
Patented in Great Britain, France, Germany, Belgium, and Canada.

INDEX OF PHOTOGRAPHS

Aldo Leopold

ALBUM NO. 1

RECORD OF PHOTOGRAPHS

Yale Forest School — Aldo Leopold

May - 1908.

ALBUM NO. 1

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TAKEN WITH AN EASTMAN 3A - 3¼" × 5½"

NUMBER	SUBJECT	DATE	LOCALITY	
1	Mixed Hardwoods - partly cut over.	5/23/08	Guilford - Tract no. 1	Working Plan Comp. I - C
2	Old Field Hickory - almost pure stand. Grass coming in. See #32	5/23	"	" " Comp. I - J
3	Azalea nudiflorum on cut-over land	5/23	"	Comp I - B
4	Chestnut & Tulip Bottom - showing tall stems	5/26	Maltby Tract - N. H. Water Co.	Silv: Working Plan Map Comp I(A) Also see Type Map.
5	White Pine - 4 yrs. after planting - showing good growth in sunlight, even on a poor site (ridge).	5/26	"	Comp I(A)
6	Norway Spruce on a Springy Slope - showing good growth. On dry sites in the same plantation the trees are 6" high.	"	"	Comp. I (B)
7	Hillside with 9 yr. old Mixed Hardwood Sprouts	"	" Lake no. 2	Comp. II (E)
8	Cordwood & Ties in Wood Depot.	"	"	Comp II (A)
9	Improvement Thinning in mixed Hardwood Stand 50 yrs. old (Sprouts). 6 cords per acre cut, 14 cords remain.	"	"	Comp II (B & C)
10	Old Field Type 15-30 yrs old, showing Cedar, Dogwood, etc.	"	"	Comp IV (F)

11	Mixed Hardwood Sprouts with Beech understory	5/26	Maltby Tract	Comp. IV (G)
12	Moist Grassy Meadow-to be planted with Red Oak	5/28	Woodbridge Reservoir Tract. N. H. Water Co.	Planting Plan - Comp. III (B)
13	Old Orchard site - to be planted with White & Red Pine	"	"	Comp III (E & D)
14	Abandoned Upland Pasture "	"	"	Comp III (E)
15	Old Orchard.	"	"	Comp IV (F)
16	Red Cedar in old Orchard. Note the round bole.	"	"	Comp IV (G)
17	Seedling Hardwoods on pastured cut-over lands.	"	"	Comp VI (E)
18	Old Field Cedar	"	"	Comp VI (B)
19	Old Orchard - pastured and now abandoned	"	"	Comp VI (C)
20	Old Pasture showing Clump of Bay & Sumac	"	"	Comp IV (H)

21	Hillside with good growth of Hardwoods	5/28	Woodbridge Reservoir Tract	Comp IV (A)
	TAKEN WITH A PREMO FILM PACK 3¼ × 5½			
22	Culled Hemlock & Hardwoods. Birch coming in.	5/31	Guilford - Tract no.	
23-24	Culled Hemlock & Hardwoods. Granite outcrop in distance.	"	"	
25	Tulip growing in a dense Hemlock Stand. 8"-75'	"	"	
26-27	Huckleberry growing in a Granite Seam.	"	"	
28	Black Oak rooting in a seam on hard Granite.	"	"	
29	White Pine on edge of pasture, Weevil-bitten when young	"	"	
30	Old Field Chestnut showing poor pruning & large crown. 70 yrs. old.	"	Guilford Tract. no. 1	
31	Maple Swamp (Sprouts)	"	Branford - north of Stoney Creek	
32	Old Field Hickory - almost pure. Grass is coming in everywhere.	6/2	Guilford - Tract no. 1. See no. 2	

33	View into the edge of a cutted swamp showing crooked maple and dense underwood.	6/2	Guilford - Tract no. 1
34	Pastured White Oak Stand	"	"
35	Large White Oaks, with Beech & Gum	"	"
36.	Kalmia latifolia (Laurel)	6/7	Yale Forest School, New Haven
37.	Towing escaped logs (Pine) alongshore to a Boom	8/15	mouth of Carp River, near St. Ignace, Mich.
38	Boom of Cedar ties	8/15	"
39	Balm of Gilead log Rollway, showing Key-log	8/15	Near St. Ignace, Mich.
40	Norway Pine on Lakeshore	8/20	Little La Salle Isl. Les Cheneaux, Mich.
41-42	Balsam, Spruce, & Pine. Black Spruce and Norway Pine to the right.	8/20	"
43	White Spruce 4' high bearing cones.		Marquette Island, Mich.

44	Aspen felled by Beavers, showing teeth marks. D.B.H. 10"	8/10	Steeles Creek near Hessel Mich.
45	Same, side view.	"	"
46	Balm of Gilead - partly cut through D.B.H. 12"	"	"
47	Under side of a small dam, below main dam. 4' high. Raised the water 2'.	"	"
48	View taken from the main dam along its upper edge. Water 8' deep to the right. Dam 40 yards long.	"	"
49	Bear Trap (deadfall) showing pen and old triggers	9/5	Near Pollocks Farm. Les Cheneaux - Michigan.
50	Plantation of European Larch yr old.	11/10	Near Mt. Carmel New Haven Co.
51	White Oak in Old Field.	11/20	Orange. New Haven Co.
52	Same.	"	"
53	Open stand of Pitch Pine, showing feathered bole and suppressed Red Cedar.	11/20	Near Lake Whitney. New Haven Co.

54	White Pine on sandy exposed situation	11/27	Head of Lake Whitney near the Causeway. New Haven Conn.	
55	"	"	"	
56	"	"	"	
57	Spruce Beam, broken in a 75-Ton Riehle. Max. Load 14950#	1/25/09	Wood Testing Lab. Y. F. S.	Test A-7 See Sheet 6 Curve.
58	Same, Photo by Mr. H.D. Tiernan. Sec. B.			Test B-7
59	Same, showing Failure.			Test B-7
60	Sunset, Head of Lake Whitney. White Pine on horizon.	11/27/08		
61	Elm,	4/08	Sheff - Vanderbilt Quadrangle	
62	Camp. C. & C.S. Leopold.	8/08	La Salle Isl. Les Cheneaux Mich.	
63	Pike. 7# & 5½#	8/08	Les Cheneaux Club, Mich.	

64	Harebells.	8/08 marquette Island, mich.
65	Cooking dinner. C. S. Leopold.	8/08. St. Martin's Bay. Mich.
66.	Canoe & Outfit C.S. Leopold	8/08 mouth of Carp River, St. Martin's Bay
67	Same showing Boom of Cedar Trees. See 37-39	8/08 "
68.	Mary Elizabeth Baker.	8/08. Marquette Isl. mich. Sanderson Bay.
69	Sam Jack. With cup of Juneberries.	8/08 " " " " "
70 & 71	Spud Irish Terrier.	7/08 Burlington Iowa
72 & 73	Chickadee Eating Suet.	1/2/09 Burlington Iowa
74	White breasted Nuthatch	1/2/09 " "

75	Logs rolling into the log-pond.	5/09	Thompson Bros. Lbr. Co. Doucette Texas
76	"	"	"
77	Unloader at work on partially unloaded car.	"	"
78	Mill of the Kirby Lumber Co. (Shut down)	"	Woodville - Tyler Co. - Texas
79	Mooney's Water-mill.	"	near camp - Doucette Texas
80	Logs splashing into pond. Mill & dust conveyer in the background.	"	Thompson Bros. Lbr. Co. Doucette Texas
81	Same, with Engine Repair shop in the background.	"	"
82	Same.	"	"
83	Same	"	"
84	Pond-man at work, feeding the Jacker.	"	"
85	same	"	"

86.	Ox Team with a load of Shortleaf logs.	6/09	Mooney's Mill, near Camp. Doucette Texas	
87	The leading pair of the above team	"	"	
88 a & b.	Typical cut over land. Longleaf Pine, freshly cut, annual skidding. Tram Road on the left.	4/09	Hickory Switch. Thompson Bros. Lbr. Co. Doucette Texas.	
89	Setzinger - Woods Foreman	4/09	Thompson Bros. Lbr. Co. Doucette Texas	
89				
90	Old cut-over land (20 years) with good reproduction	4/09	"	
91 a & b.	Group of Shortleaf Reproduction freed by Lumbering	5/09	"	
92	Scaling a carload of logs. From the left: Fegley, Wolff, Hirst	4/09	Hickory Switch "	
93	Looking up a big Loblolly	5/09	"	
94	Young Loblolly on Old Field. MacDaniels standing.	5/09	Eddings Farm. Doucette Texas	See Report # 5 on Old Field Pine
95	View from a Lumber yard showing Typical Bottomland Forest of Loblolly (right) Sweet Gum (left) Beech Magnolia etc.	3/09	Turkey Creek. Tyler Co. Texas	

96	Group of large Loblollies. Little Cypress Creek. All enclosed within a 15 foot square. From left to right —			
	No.	Girth	D.B.H.	Height	Volume
	# 1	120"	38.2"	108'	2800' B.M.
	2	107"	35.2"	94'	2400'
	3	62"	19.8"	85'	700
	4	103"	32.4"	103'	2250
					8150' B.M.
97	Field re-cleared from a stand of Old Field Pine 40 years old.			4/09	Lanceltè - Tyler Co - Texas	See Report # 5 on Old Field Pine.
98	Red Cedar growing under a stand of Old Field pine. Showing comparative tolerance in the southern part of its range.			4/09	"	
99	Waste by Stave-cutters (Slavonians) in hewing White Oak. MacDaniels standing.			5/09	"	
100	Same, showing where only a single cross-tie has been taken from the entire tree. Hodgson standing.			5/09	"	
101	Hewn White Oak staves piled by the railroad ready for shipment.			4/09	Seneca, Tyler Co, Texas. On the T. & N.O. R.R.	
102	Encroachment of Shortleaf Pine on an Old Field. Seed trees in the right background. Paxton standing.			6/09.	Miguel de Herrera Survey, 10 miles east of Colmesneil, Texas	
				5/09.	Hardwood Bottom of Little Cypress Creek, Tyler Co. Texas.	

103.	Typical large upland Longleaf. Dubois standing at the base.	6/09.	Miguel de Herrera Survey, 10 miles east of Colmesneil, Texas
104.	Large Post Oak, showing typical form on Longleaf soil. Dubois and Paxton at the base.	6/09	Six miles east of Colmesneil, Texas
105a & b.	Turpentine Still. Still to the left, Cooper's shop to the right.	4/09	Turkey Creek Tyler Co. Texas
106.	Large Cypress tree on the edge of a field. D.B.H. 57.5"	5/09	Big Cypress Creek Tyler Co. Texas
107	Another Cypress D.B.H. 54"	"	"
108	Two large Cypresses. To the left, Hodgson standing, D.B.H. of tree = 58" To the right MacDaniels. D.B.H. of tree = 69"	5/09	"
109.	Large Cypress & Cypress Knees. MacDaniels and Hodgson, Hodgson with a Cotton-mouth moccasin on a stick.	"	"
110.	Water Gums (Nyssa aquatica) in a slough. Showing very marked basal swelling. Hodgson & MacDaniels	"	"
111	Large Cypress Knees. MacDaniels & Hodgson	"	"
112	Sweet Magnolia (magnolia foetida) in a field.	5/09	Woodville - Tyler Co - Texas
113	Gully beside a road. Leuite sandy hillside.	"	"

114	Young hogs in the woods.	4/09	Dancette Texas
115	"	"	"
116	Leopold Paxton & Co. Ltd.	5/09	Camp near Doncette Texas
117	Hanging up the Wash. Leopold.	"	"
118.	Cow Oak on Turkey Creek Bottom	"	near Woodville Texas
119.	The "Glen of Misery & Vice" Playing bridge near Paxton's tent. MacDaniels (reading) Gaylord Bellard Paxton Kircher	6/09	Camp.
120.	The Class of 1909 F on the steps of the Bunkhouse	"	"
121	Group on "The Campus" during the meeting of the Conservation Committee of the Southern yellow Pine Mgfg. Assoc. at Camp. From the left, front row:- Hoxey Thompson, H. H. Chapman, Carroll, Capt. J. B. White, Col. A. J. Houston, Carroll, ———, Jno. Kaul, J. Lewis Thompson	6/09	"
122.	Same, with Gifford Pinchot standing with Capt. White.	"	"

123.	Billy Goat on woodpile. Farm of Charles Fowler	5/09	5 miles east of Calumesneil Texas
124	Goats hunting salt on woodpile.	"	"
125	Billy goat	"	"
126	Type of young Texan. Only 18 years old	"	"
127	Type of country girl.	"	"
127	mother and family	"	"
128	another family	"	"
129	Lanky youth	"	—
130.	R. P. Pritchard diving. Mill pond near camp.	5/09.	Camp near Doucette Texas

Films presented to Charles Fowler

131	Lemon - American Wonder.	3/09	Yale Forest School Greenhouse New Haven Conn.
132	Orchid (unknown)	"	"
133	Orchid "	"	"
134	Lily "	"	"
135	Azalea	"	"
136	Narcissus	"	"
137	Narcissus	"	"
138 a & b & c.	Panoramic view Thompson Bros. Lbr. Co. Dancette Texas.	5/09	Dancette - Tyler Co - Texas
139.	Mule & Dolly on Lumber Docks.	"	Dancette Texas

ALBUM NO. I

Taken during a course at the
Yale Forest School
1908 - 1909

New Haven Ct. LesCheneaux Islands Mich.
Tyler County Texas Des Moines County Iowa

Phenology Table

Events observed at the Leopold Shack
1935-1940

by Carl Leopold

Library of
Aldo Leopold

carded to phenology file "

PHENOLOGY TABLE

Events observed at the Leopold Shack, Fairfield Township,

Sauk County, Wisconsin

1935 to 1940

Copied by Marjorie Nelson, on May 13, 1942
from original manuscript by Carl Leopold.

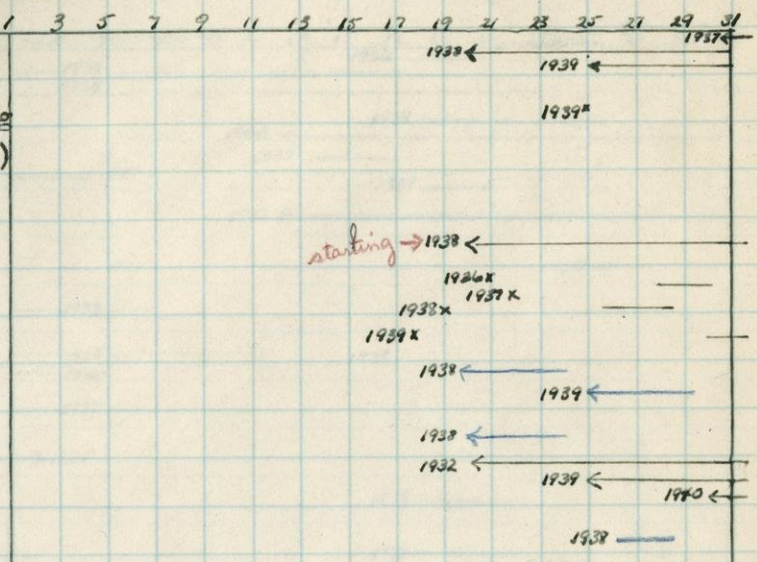
Key:

orange designates budding
blue designates flowering
red designates fruiting
green designates leaves enlarging

Arrows on the line indicate the known points of origin or termination of period designated.

Note: this record is being extended and will be found in Vol II of the Leopold Shack Journals. Aldo Leopold 6/8/42

MARCH



frogs piping: spring peepers

leopard (x= heading inland)

green

quail whistling?

Wisconsin River
(x= opening, -- = flood)

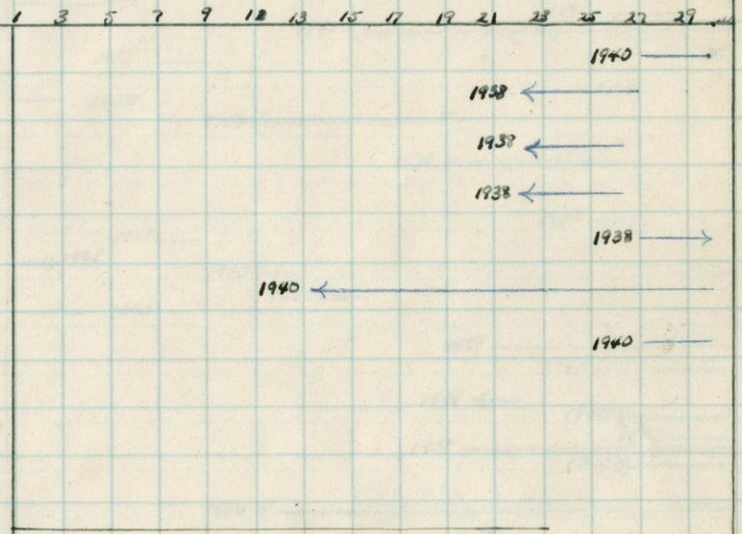
Soft maple

Alder

Woodcock peenting

hazel

APRIL



pasque

amelanchier

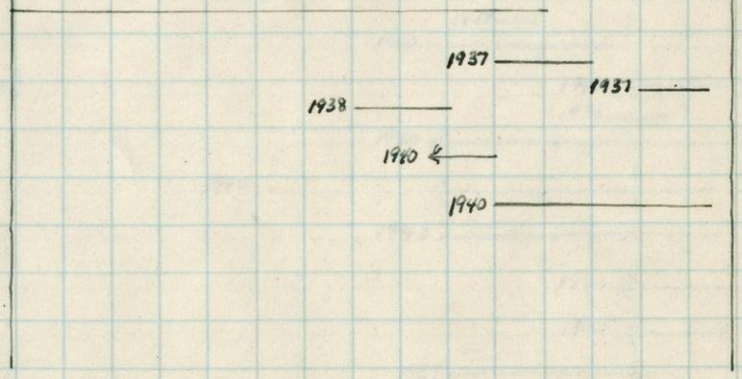
marsh marigold

dogtooth violet

plum

alder

elm



woodcock peenting

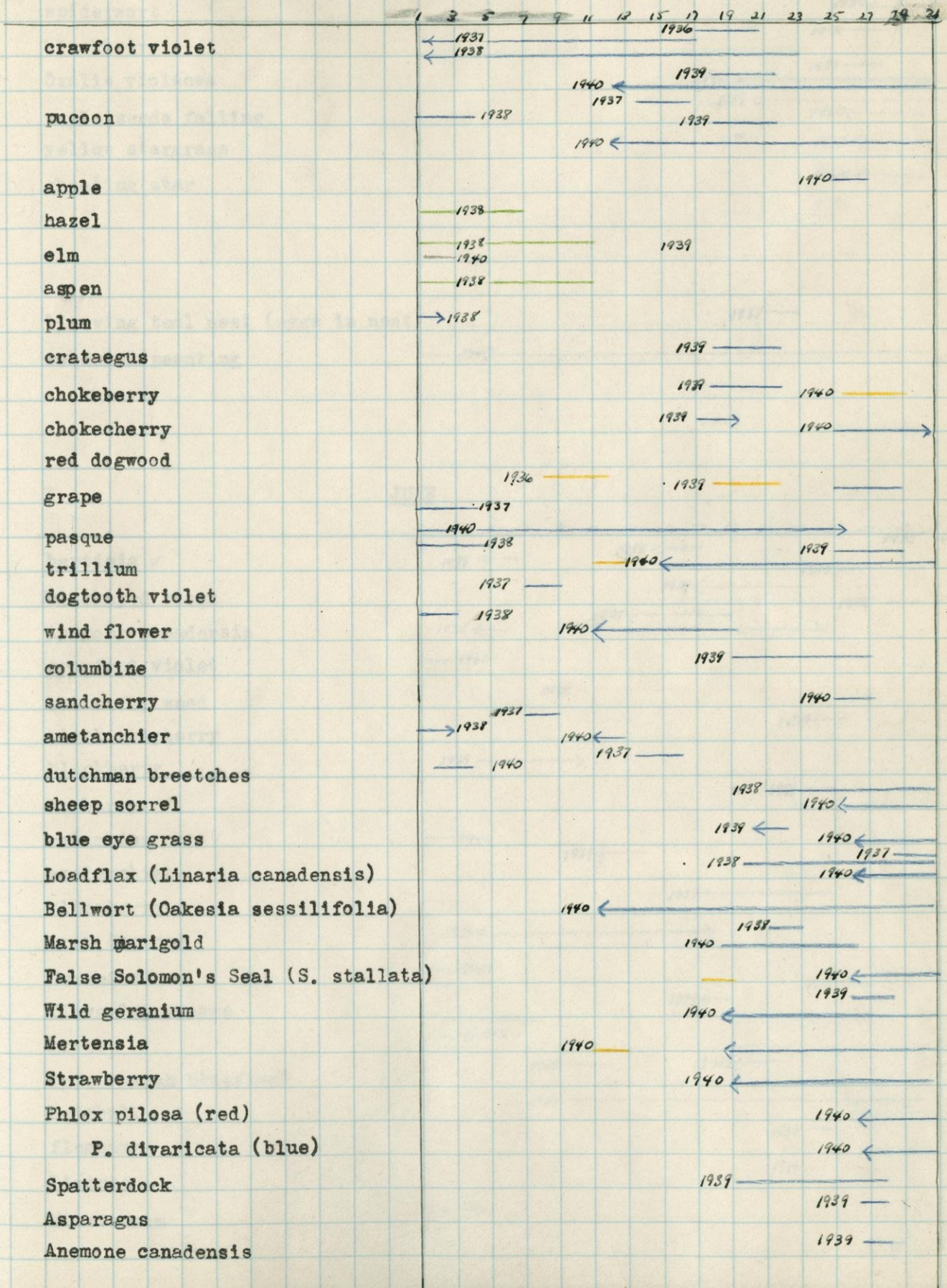
woodcock nest

mallard nest

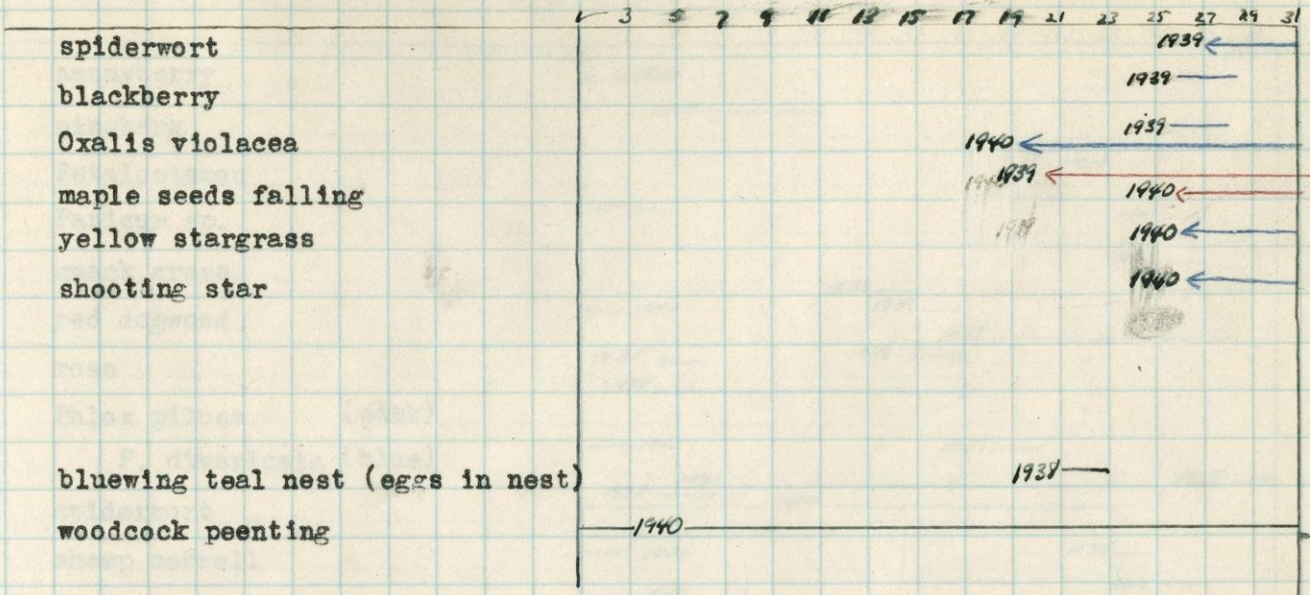
jacksnipe winnowing

quail whistling

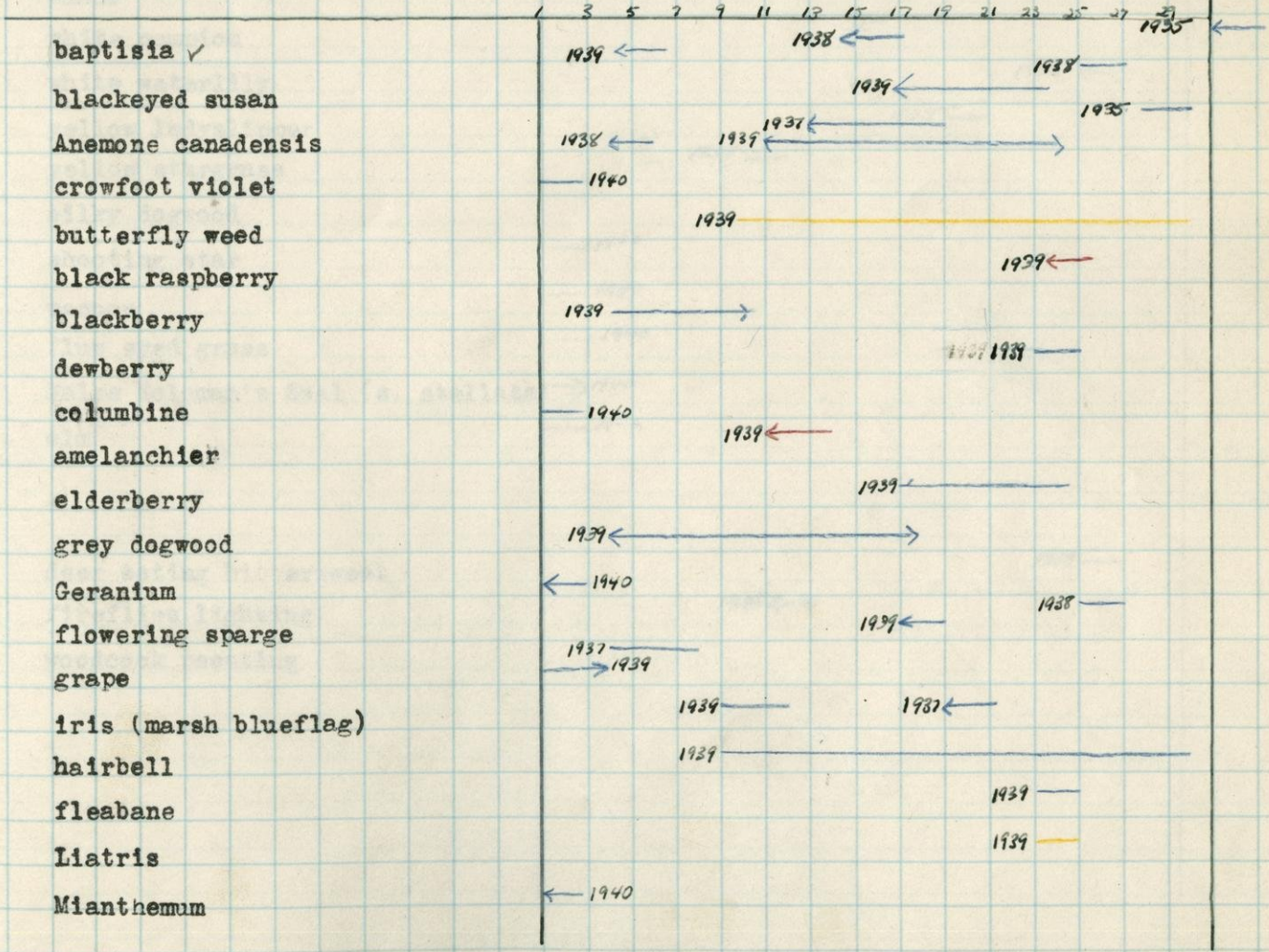
May


1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31
crawfoot violet
1936
1937
1938
1939
1940
1937
pucoon
1938
1939
1940
apple
1940
hazel
1938
elm
1938
1940
1939
aspen
1938
plum
1938
crataegus
1939
chokeberry
1939
1940
chokecherry
1939
1940
red dogwood
1936
1939
grape
1937
pasque
1940
1938
trillium
1939
1940
dogtooth violet
1937
wind flower
1938
1940
columbine
1939
sandcherry
1940
ametanchier
1937
1938
1940
1937
dutchman breetches
1940
sheep sorrel
1938
1940
blue eye grass
1939
1940
Loadflax (Linaria canadensis)
1937
1938
1940
Bellwort (Oakesia sessilifolia)
1940
Marsh marigold
1938
1940
False Solomon's Seal (S. stallata)
1940
Wild geranium
1939
1940
Mertensia
1940
Strawberry
1940
Phlox pilosa (red)
1940
P. divaricata (blue)
1940
Spatterdock
1939
Asparagus
1939
Anemone canadensis
1939

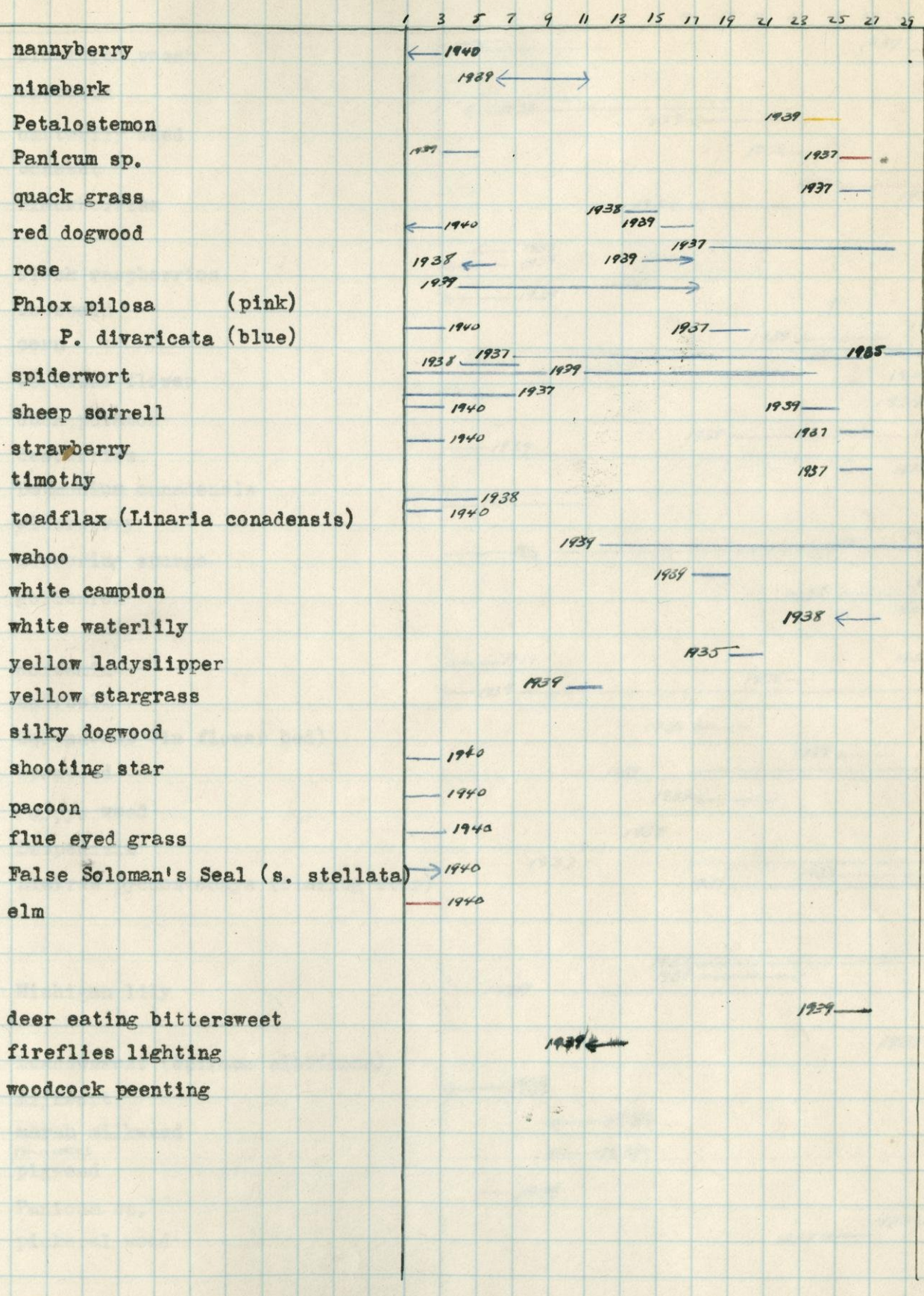
MAY


1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31
spiderwort
1939
blackberry
1939
Oxalis violacea
1939
1940
maple seeds falling
1939
1940
yellow stargrass
1940
shooting star
1940
bluewing teal nest (eggs in nest)
1938
woodcock peenting
1940

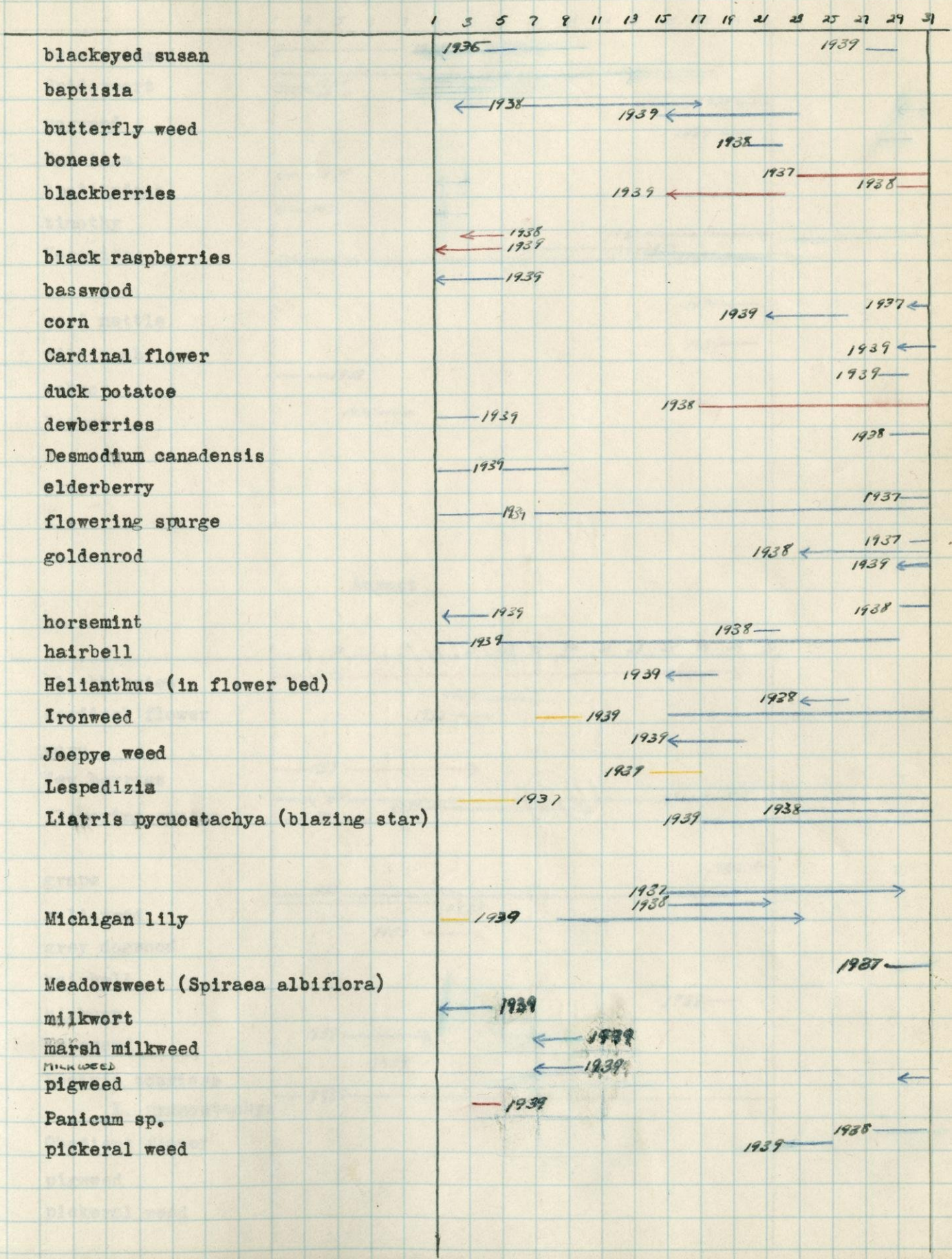
JUNE


1 3 5 7 9 11 13 15 17 19 21 23 25 27 29
baptisia
1939
1938
1935
blackeyed susan
1938
1939
Anemone canadensis
1938
1939
1937
1935
crowfoot violet
1940
butterfly weed
1939
black raspberry
1939
blackberry
1939
dewberry
1939
columbine
1940
amelanchier
1939
elderberry
1939
grey dogwood
1939
Geranium
1940
flowering sparge
1938
1939
grape
1937
1939
iris (marsh blueflag)
1939
1937
hairbell
1939
fleabane
1939
Liatris
1939
Mianthemum
1940

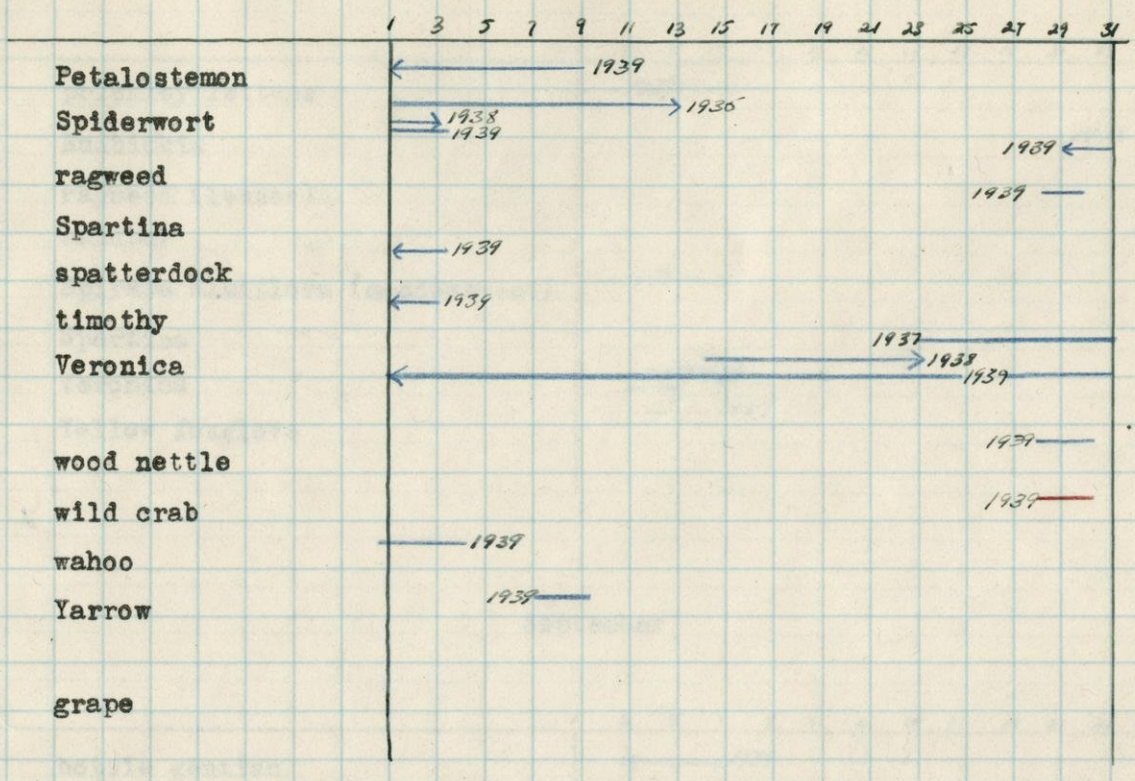
JUNE


1 3 5 7 9 11 13 15 17 19 21 23 25 27 29
nannyberry
ninebark
Petalostemon
Panicum sp.
quack grass
red dogwood
rose
Phlox pilosa (pink)
P. divaricata (blue)
spiderwort
sheep sorrell
strawberry
timothy
toadflax (Linaria conadensis)
wahoo
white campion
white waterlily
yellow ladyslipper
yellow stargrass
silky dogwood
shooting star
pacoon
flue eyed grass
False Soloman's Seal (s. stellata)
elm
deer eating bittersweet
fireflies lighting
woodcock peenting
1940
1939
1938
1937
1985

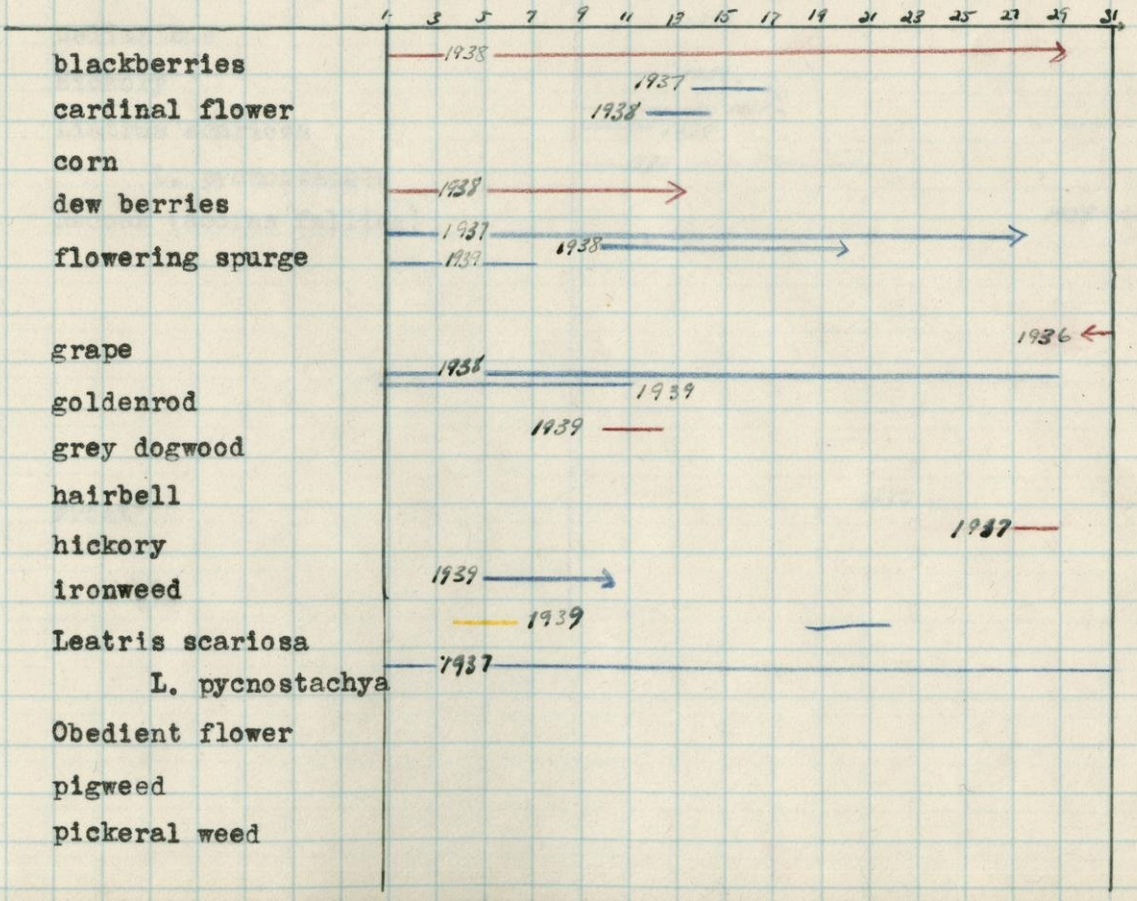
JULY


1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31
blackeyed susan
1936
1939
baptisia
1938
butterfly weed
1939
boneset
1938
blackberries
1937
1938
1939
black raspberries
1938
1939
basswood
1939
corn
1939
1937
Cardinal flower
1939
duck potatoe
1939
dewberries
1938
1939
Desmodium canadensis
1938
elderberry
1939
flowering spurge
1937
1939
goldenrod
1938
1937
1939
horsemint
1939
1938
hairbell
1938
1939
Helianthus (in flower bed)
1939
Ironweed
1938
1939
Joepye weed
1939
Lespedizia
1937
Liatris pycuostachya (blazing star)
1937
1938
1939
Michigan lily
1937
1938
1939
Meadowsweet (Spiraea albiflora)
1937
milkwort
1939
marsh milkweed
1939
pigweed
1939
Panicum sp.
1939
pickeral weed
1938
1939

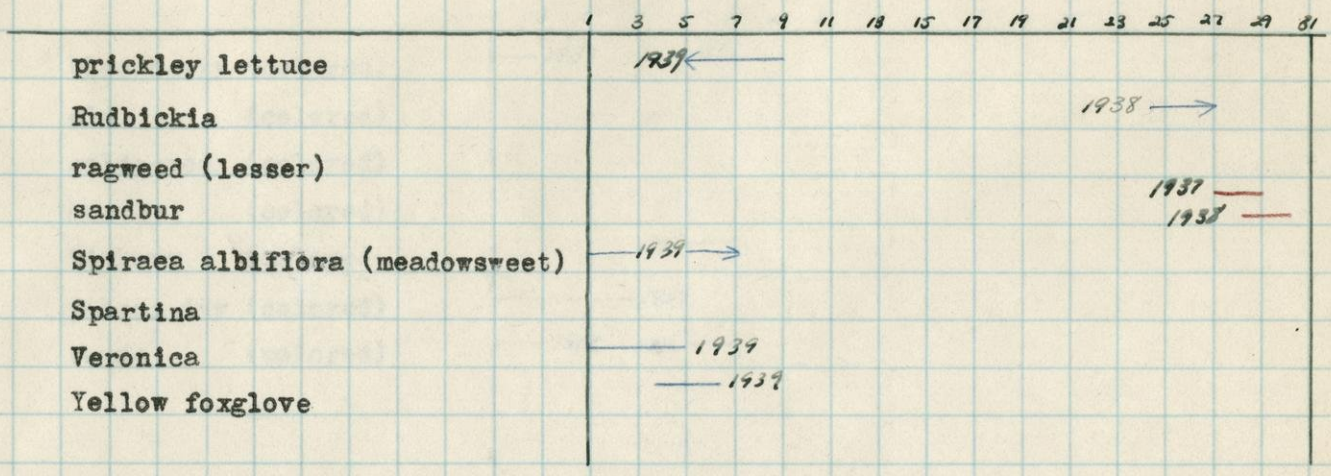
July


1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31
Petalostemon
Spiderwort
ragweed
Spartina
spatterdock
timothy
Veronica
wood nettle
wild crab
wahoo
Yarrow
grape
1939
1938
1939
1939
1939
1939
1939
1937
1938
1939
1939
1939
1939
1939

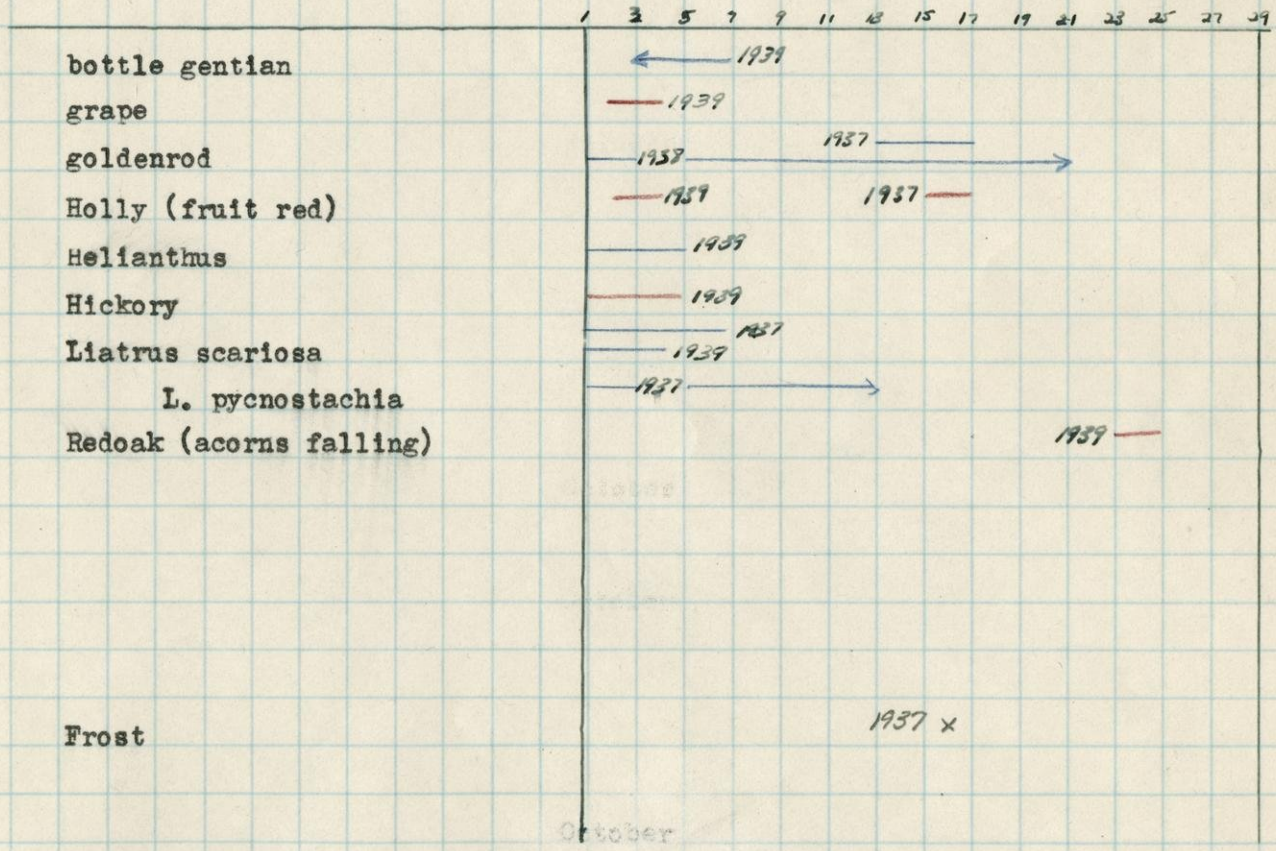
August


1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31
blackberries
cardinal flower
corn
dew berries
flowering spurge
grape
goldenrod
grey dogwood
hairbell
hickory
ironweed
Leatris scariosa
L. pycnostachya
Obedient flower
pigweed
pickeral weed
1938
1937
1938
1938
1937
1938
1937
1936
1938
1939
1939
1937
1939
1939
1937

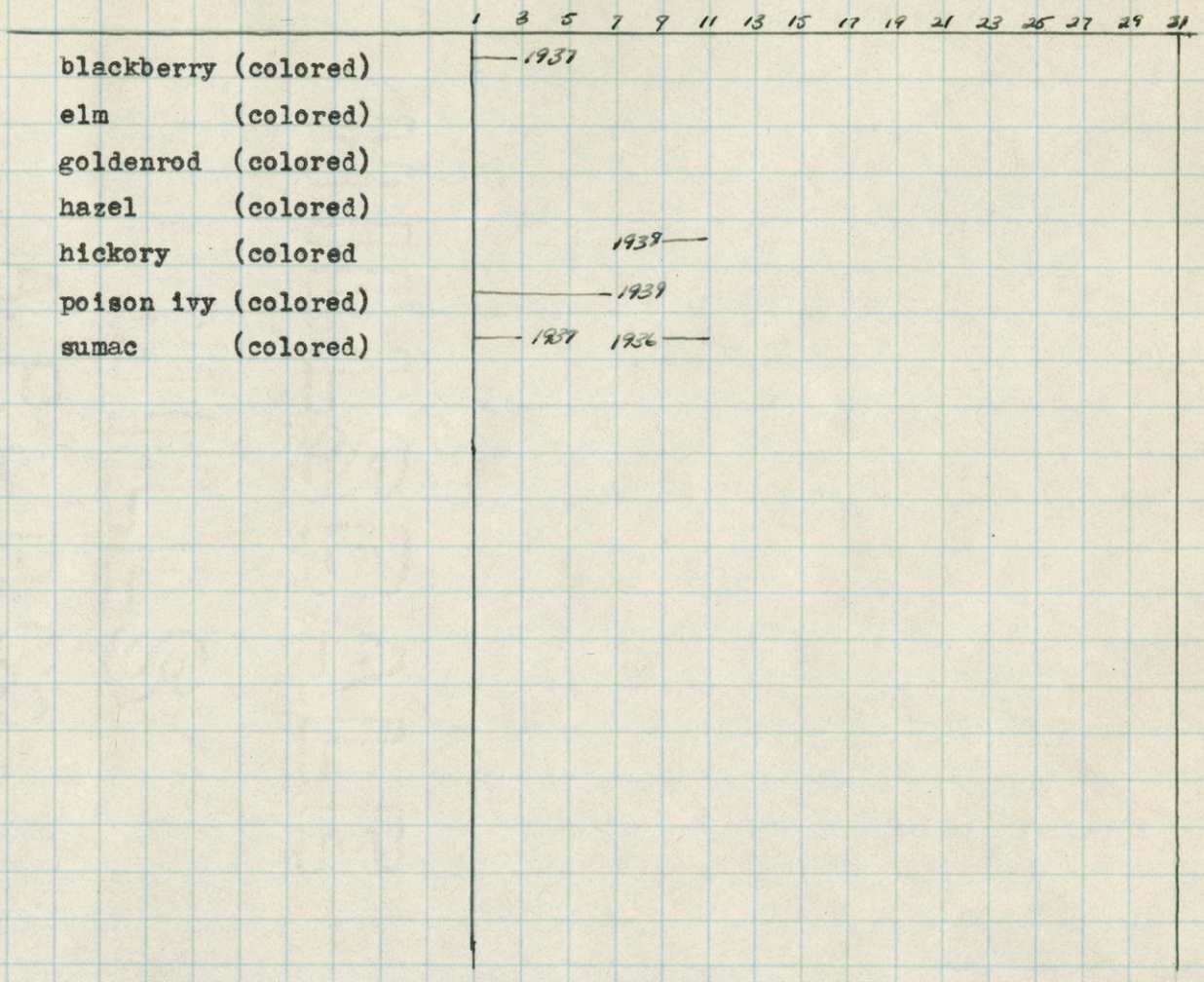
August



September



October


1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31
blackberry (colored)
1937
elm (colored)
goldenrod (colored)
hazel (colored)
hickory (colored
1938
poison ivy (colored)
1939
sumac (colored)
1937
1936

Aldo Leopold
424 University Farm Place
Madison 5, Wisconsin

PHENOLOGY RECORDS 1946 -

Phenology Records 1946 –

Aldo Leopold
2222 Van Hise Ave
Madison Wis

Legend

pencil: Leopold Shack, Fairfield Twp Sauk Co
red crayon: Madison, Dane Co.
x— annual event begins ?x question whether first occurence.
x annual event, one occurence
<--- In bud
<---> In bloom — — — straggling bloom
<oooo In fruit
<ooooo Fruit ripe
– – – – leaves falling
+ - + - + leaves in color and falling
mm·1"mm leaves enlarging 1" long
0 checked and found not yet due

Abbreviations

Arb University of Wis Arboretum
FC Fairchild Grove, Jefferson Co
SC Sauk City
PduS Prairie du Sac

Note: after 6/28/46 absolutely accurate dates are designated by a double arrow ←

Tally of* geese seen at Shack

	25	27	.	1	3	5	7	9	11	13	15	17	19	21	23	25	27	29	31	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30
	Feb										March															April									
1946																																		
1947																																		
1948																																		
1949																																		
1950																																		

	25	27	29	1	3	5	7	9	11	13	15	17	18	21	23	25	27	29	31	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30
	Sept										October															November									
1946																																		
1947							10																											
1948																																		
1949																																		
1950																																		

* Canadian geese unless otherwise specified

Legend: (1/4) = needle length, inches

Phenology of 3 Red Pines - Wisconsin to New York

See Vol II p 416

In cooperation with David B Cook
(See his letter 5-17-43)

Date	1	2	3	
1940	8"	8"	2½"	} growth
1941	12"	13½"	9½"	
1942	16"	19"	14"	
1943	50"	60"	42"	Initial height
	7	6	6	no buds
5/31/43	11¼" (1/4)	13" (1/4)	11½" (1/4)	needles visible
6/5	13¼ (1)	16¾ (1)	15" (1)	
6/14	17"	21¾	18½	Buds visible.
6/17	18 (3)	24 (2¼)	19½ (2¾)	
6/26	19½ (3½)	27½ (3½)	21½ (3½)	
7/5	19½	28 (3¾)	27 (3½)	Growth ceased
7/9	19½ (3)	27½ (3¾)	22 (4½)	
7/25	19¾	27¾	22¼	Buds elongating
		7	8	no. buds
5/7/44	2½	2½	2½	Growth started 4/25
5/13	3¼	3¾	3½	
5/20	6¼	6½	6	
5/29	13⅜ (1¼)	14 (1)	12⅛ (1⅜)	
6/2	18 (2¼)	19 (1½)	16¼ (2⅜)	
6/14	23½	24	21	Buds visible Prolepsis on #3 Pruned 9/21/44
6/17	25 (3¼)	27 (3⅝)	23 (4¼)	
7/1	26 (3¼)	31 (3¾)	23 (4¼)	
7/5	26 (4¼)	31½ (4)	23½ (5)	
7/16	26¼ (4½)	31½ (5)	24 (5⅝)	
8/5				
	6	7	5	no. buds
1945	8'	10'	7'	Initial height
4/8	2	2	1½	Growth started 4/5
4/12	3½	2¾	3½	

Date	1	2	3	
4/22	3¾	3¾	3¾	
5/5	5	5½	4¾	
5/18	6½	7¼	6¼	
6/4	13½ (1⅝)	14 (1½)	12½ (1⅛)	
6/16	20 (2⅝)	19½ (2½)	17½ (2⅛)	
6/28	24½ (2⅞)	26½ (3)	22½ (3)	
7/3	(3)	(3¼)	(3⅜)	
7/9	24¾	26½	23½	
9/1/46	9	9	8	no buds (branches)
1946	10'	12'2"	9'	Initial height
4/21	1¾	2	1¾	Growth started 4/10
4/28	2½	3	3¼	
5/5	3½	4	4	
5/11	5	6	6	
5/19	10	11	11	
5/28	11	12	13	
6/8	19 (1⅛)	23 (1⅛)	22 (1⅜)	Buds visible
6/16	25 (2⅛)	29 (2½)	26 (2¼)	
6/29	27 (3⅛)	32 (3½)	30 (3⅛)	
8/26	27 (4¾)	32 (4¾)	30 (5")	
1947	12'	14'9"	11'9"	Initial height

Record of young Black Oak on Lawn 25' east of Shack, 8' N of elm.

1942 Est. 4" seedling desodded and watered. I think this was first year. Leaves est. 3"

1943 Est. 8" stem; browsed back to 2" winter 1943-44. Chicken wire installed.

1944 One end bud of browsed stem sprouted 7". Died back for unknown causes.

1945 Sprout 12" high. Barked by mice during winter 1945-46. Flowerbed abolished.

1946 Sprout 13" high 8/26. Leaves 5" long. Another 6" sprout

1947 Girdled by mice (forgot to screen last fall) On Oct 11 had 12'4" stem with leaves 8½" long and 11" stem with leaves 6½" long.

Record of Young Black Oak on Lawn 30' S. of Shack Planted by Elton 1937.

1946 All eaten down by mice during winter of 1946-47.

1947. On Oct 11 had 24" stem on E. end with deeply notched 5½" leaves. On west end had 19½" stem with 7½" leaves, 15" stem with 7" leaves, and a triple 11½" stem with 7½" leaves, each of the three a separate seedling.

1946

Date	I White Pine	II Red Pine	III White Pine	IV Jack Pine	V Jack Pine	VI White Pine	VII White Pine	VIII Red Cedar	IX Tamarack
4/7	H+ 106" [7]	H+ 65" [3]	H+ 89" [7]	H+ 71" [7]	H+ 81" [2] (plus 2 prolepses)	H+ 88" [5]	H+ 46" [4] plus 3 prolepses	42"	H+ 48"
growth began	4/15	4/10	4/15	4/5	4/5	4/15	4/15	4/25	4/25
4/21	1/2"	1"	1/2"	3"	2"	1/4"	5/8"		
4/28	1 1/2"	2 1/4"	1 3/8"	7 1/4	7 1/4	1 1/8	2 1/4	1/8"	4 (1/2)
5/5	3"	3 1/4"	2 1/4"	pistillate flowers no stam. 10 1/4	pistillate flowers no stam. 9 3/4	1 1/2	3 1/2	3/8"	1/2" (7/8)
5/11	3 1/4	4 1/4	3	12 3/8	12 1/4	2	4 3/4		
5/19	4 (1/2)	6 (1/2)	4 3/4	15 3/4 (3/8)	14 (3/8)	2 1/2 (1/4)	7 1/2 (1/2)		2 1/2 (1 1/4)
5/26	7 1/2	8 1/4	6	18 1/4	17	3 1/2	10	1	5 (1 1/2)
6/2	10 (7/8)	10 1/4 (1)	7 (5/8)	20 (5/8)	19 1/2 (5/8)	4 3/4 (3/4)	13 1/4 (1)	2"	8 (1 1/2)
6/8	Buds 10 (1)	Buds 11 3/4 (2 1/4) [6]	Buds 8 (7/8)	Buds 23 (1)	Buds 22 (3/4)	Buds 5 3/4 (3/4)	Buds 16 (1 5/8)	3"	10 1/2 (1 1/4)
6/16	12 (1 7/8)	12 1/4 (2 3/4)	10 (1 1/2)	24 (1 1/8)	26 (1)	8 3/4 (1 1/2)	19 3/4 (1 3/4)	5 1/2	15 (1 1/2)
6/29	12 3/4 (2 1/2)	13 (3 3/4)	11 (2)	24 (1 1/2)	26 (1 1/2)	11 (2 1/4)	23 (2 1/8)	7 1/2	22 (1 1/2)
7/5	13 (2 7/8)	13 (4 1/2)	12 1/2 (1 1/8)	24 3/4 (1 5/8)	25 1/2 (1 5/8)	11 (2 3/4)	23 (2 1/4)		24 1/4 (1 3/8)
7/28	13 (3 5/8)	13 (5 1/2)	14 (2)	25 (1 3/4)	27 (1 3/4)	11 (3 1/4)	23 (2 7/8)	11	31 1/2 (1 5/8)
8/5								11 1/2	33 1/2
8/10								12	34 1/2
8/26								13	35 1/2
9/1								13 1/2	35 1/2

1947

	Down 2 3/4" H+ 119 [ ]	Down 2 1/4" 76" [6]	102 [dead buds]	95 [6]	107 [6?]	101 [7]	Down 1 1/2" 67 [9]	55"	Down 3/4" 83 1/2 [dead]
growth began	5/10	5/10	5/10	5/1	5/1	5/10	5/10	5/10	5/1
5/19	2"	1 1/2	×	5"	8"	1"	2"	1/4"	× (5/8")
6/8	8"	7"	×	buds 16"	Buds 23"	5 1/2"	12"	2"	
6/16	11 1/2 (1)	9 3/4 (1 1/8)	×	17 (5/8)	25" (5/8)	9 (5/8)	16 1/2	2" (1/2)	2 1/4 (1)
6/24	12 (1 3/4)	13 1/2 (2)	×	20 1/2 (7/8)	28 (1 1/4)	13 1/2 (7/8)	21 1 1/8	4"	
7/6	16 (2 1/8)	13 1/2 (3 5/8)	×	24 (1 3/8)	32 (1 3/8)	19 (1 5/8)	24 1/2 (1 5/8)	6"	9 (1)
7/27	16 (3 1/4)	14 (5)	Lamb getting upright	24 (2)	32 1/2 (2)	19 (2 7/8)	25 (2 3/4)	10 1/2"	17 1/2
8/4								~~12~~ 10 1/2	18
8/10								~~12~~ 10 1/2	19 1/2
8/18								~~12~~ 10 1/2	19 1/2

Cardinal Song by Stokes, 1947 — 11

Dec | Jan | Feb | March

24 26 28 30 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 2 4 6 8 12 14 16 18 20 22 24 26 28 1 3 5 7 9 11 13 15 17 19 21 23

1. Kennedy Manor 11-23-46 (Virginia Spence) — X 6:30
2. Samuel Rogers — ±1 X — 6:35 X
3. 424 Univ Farm Place (office) — (Zimmerman) X 0 0 — Mackens X
4. 2222 Van Wise — 0 — 0 0 — 6:54 X X — X X X X X X S
5. Leopold Shade — 0
6. Joe Alexander Rear — X
7. Edith Leopold 456 Virginia Terrace — 8:30 X
8. J Twalker, Barcalvo — 8:00 X
9. Tony de Vos 1805 Keyes — about 7:45 X
10. Arnold Jackson 1901 Adams — 7:00 X
11. Mrs CM Huffer 2119 Regent — 7:00 X
12. Otto Bayer Biggsville — X X

Cardinal Song 1948 D = daybreak

2222 Vanwise — X (X) — X X X X X X

January

24 26 28 30 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 2 4 6 8

1. Skunk emerges
   S & D = 2/12
   Fish H.
   1946 1947 1948
   Big Emery, Pdn S, Arb
   Arb
   Fish H.

2. Horned Owl incubates
   D = 2/16

3. Cardinal sings
   S = 2/27 D = 1/26
   11/23/46 ±1
   12-23-47
   1946 1947 1948
   Hale arb
   Nakoma
   Man Hse
   Briggsville
   C. Bryan
   Briggsville
   117 N Allen
   All of these in Madison

4. Pheasant crows
   S = 3/5 D = 2/8
   Horizon
   1946 1947 1948
   Arb.
   Arb (Hale)
   Pdn S
   1st Fish Hatchery
   Arb Arb
   none to 1/22
   0

Chickadee, phoebe call
1946 1947 1948
-10°

Squirrel buds elm
1946 1947
also 3/23, 3/27, 4/4, 4/7. Also 2/20, 2/25, 3/6, 4/1
2/14/47

Pheasants browse elder
at Fish Hatchery
1946 1947

House sparrow courting behavior
1948 first?

February

24 26 28 30 1 3 5 7 9 11 13 15 17 19 21 23 25 27 1 3 5 7 9 11

1. Skunk emerges
S & D = 2/12

1946 — Pr. du S. — × maybe not earliest (old tracks)
1947 — Portage — Arb — Sauk City
1948 — Arb

2. Horned Owl incubates
D = 2/16

1947 — 3/20 Horicon
1948 — 2 young Riley 3/10 Schriger

3. Cardinal sings
S = 2/27 D = 1/26

1946 — 2222 Van Hise only
1947
1948 — 117 N Allen — Clarke Res (also Ag Hall) — Kendall — 2222 — 2222 — 2222 — 2222 — 2222 — All at house — Cont p11
Briggsville

4. Pheasant crows
S = 3/5 D = 2/8

1947 — Arb — Univ. B. — Arb
1948 — none to date — Arb — FH — Arb

5. Marshhawk arrives

1946
1947 — Sauk City — 3/22/47
1948

WB Nuthatch sings

1946
1947

8 Chipmunk emerges
1/14/47

1946 — Biol. Bldg. Jim Beer
1947 — Hale Arb

Cont p23

Ruffed grouse drums

1946 — Cactus Bluff A. Jackson
1947
1948

Garter snake out

1946 — Sauk City — R. Turk Sauk City 2/17
1947

Cont p26

		24 26 28 30	1 3 5 7 9 11 13 15 17 19 21 23 25 27	1 3 5 7 9 11
16	Canada goose	1946	x	x x
		1947		0 0 3/18/47
12	Robin	1946	x x	Joe Lewis x x x x x S
		1947		0 0
		1948	2/29 x	
	Chickadee phoebe call	1947	x	
		1948	x x	
	Song Sparrow sings	1947	x	x
		1948		
	Last Roughleg hawk	1947	P. du S x Iowa Co x Dave x	0 0
	Cont p 29			
	Cottontail ♂ with descended testes	1947	arb x	
		1948		
	Wintering woodcock seen	1947	Sauk City x	
	Junco, first song	1947		x
	(Cont p 29)			
	Fox Squirrel R = chasing C = copulating	1947	C C	
		1948	R	

(1) Chipmunk out Unw. Bay despite 2" snow, 22°, strong NW wind. 3/25/47

Woodchuck out at Truax Field
Observations by Robert Kebrein Mar 19 - May 7, 1947

	1	3	5	7	9	11	13	15	17	19	21	23	25	27	29	31
1947																
March										x	x	x				
April									x	x	x		x	x	x	x
May	x		x													

(This chuck was looked for through early march but not seen until Mar 19)

March 1948 Cardinal song see p 11

~~February~~ march

24 26 28 30 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 1 3 5 7 9 11

4. Pheasant crows
S = 3/5 D = 2/8

5 marshhawk
S = 3/6 D = 3/5

6 woodchuck emerges
D = 3/8

7 Bluebird
S = 3/12 D = 3/9

8 Gray Chipmunk emerges
D = 3/16

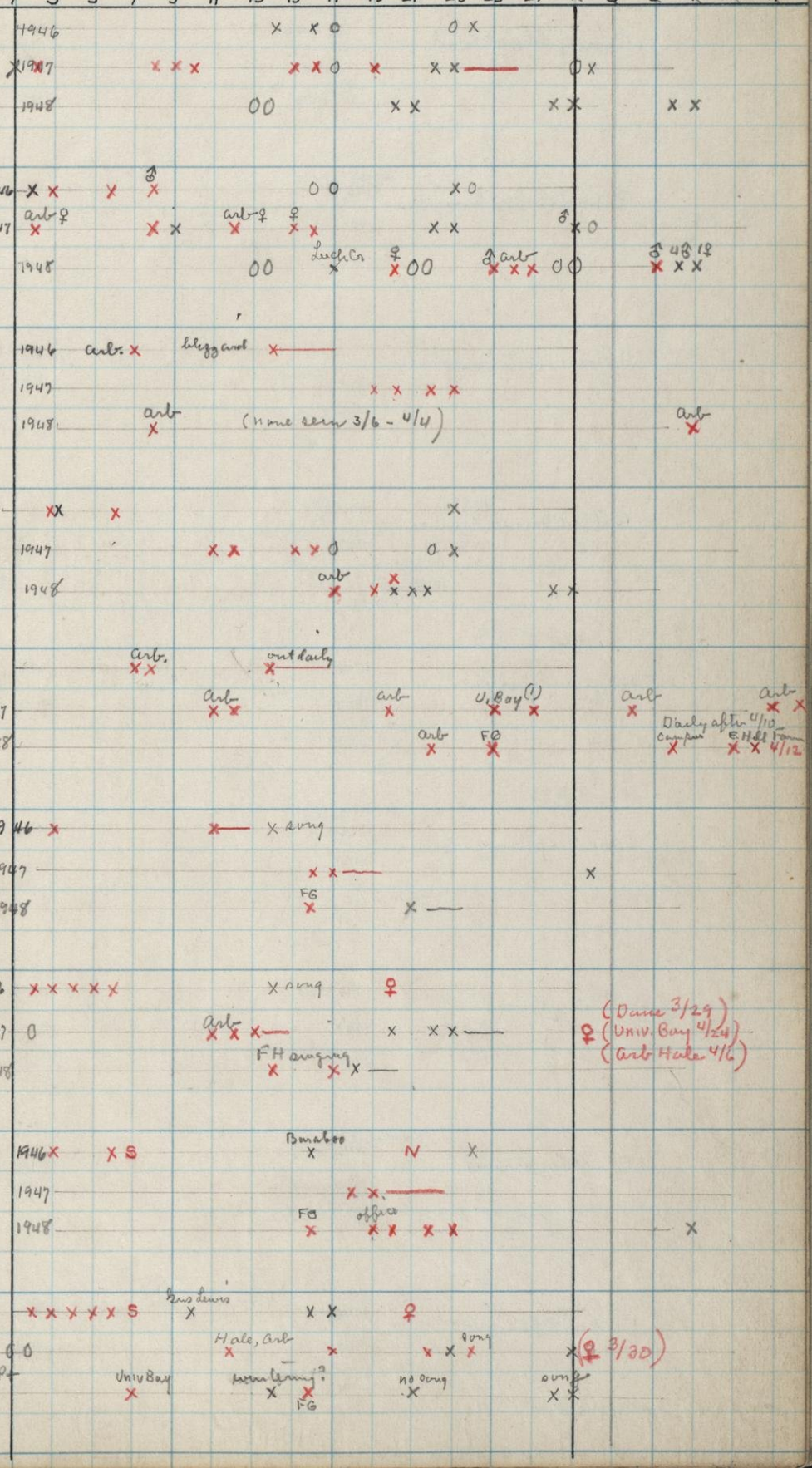
(from p17)

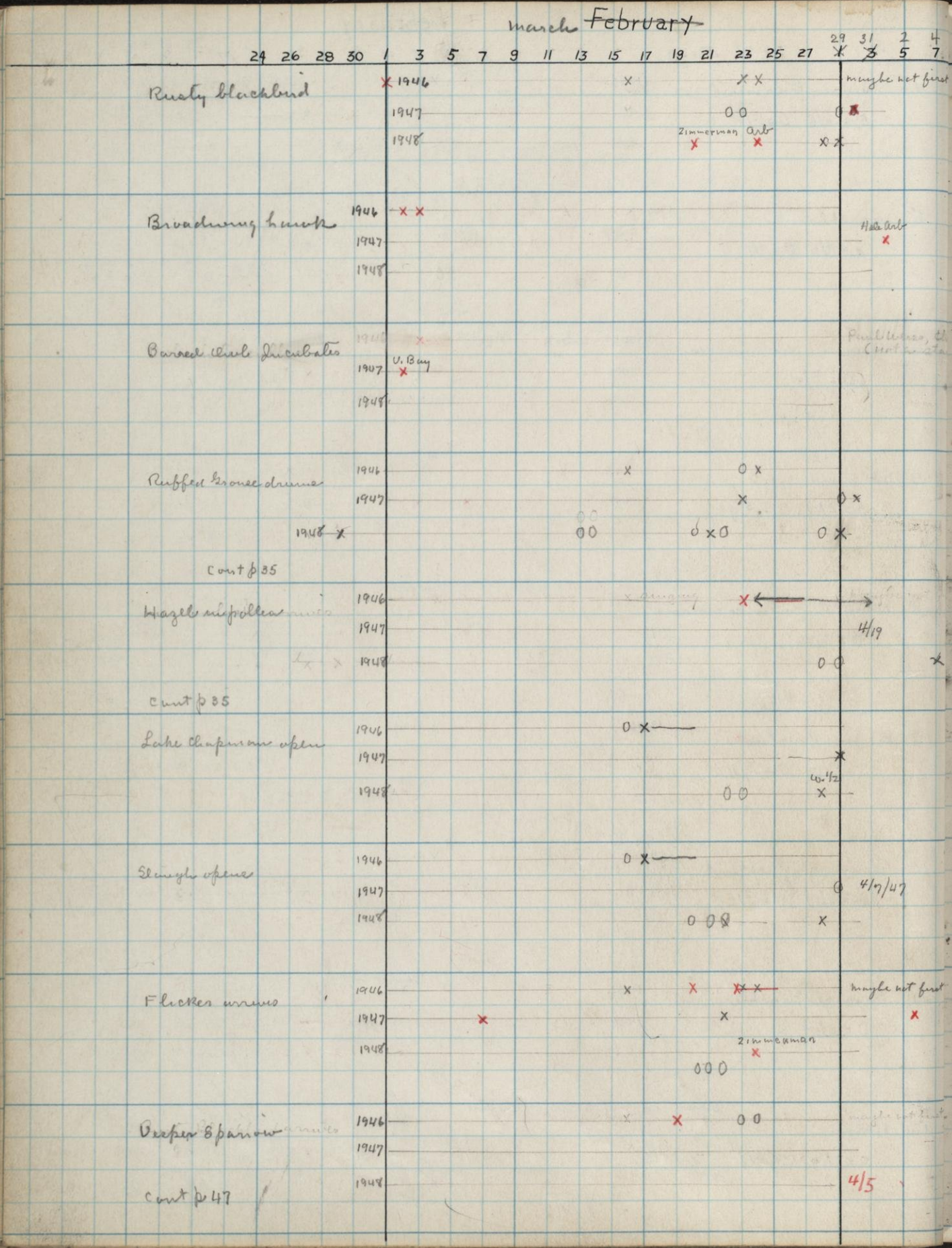
9 E. meadowlark
S = 3/17 D = 3/11

10 Redwing blackbird
S = 3/18 D = 2/28

11 Bronze Grackle
D = 3/18

12 Robin
S = 3/19 D = 3/3




March February
24 26 28 30 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 2 4 7
Rusty blackbird
1946
1947
1948
maybe not first
Zimmerman Ark
Broadwing hawk
1946
1947
1948
Barred owl Incubates
1947
U. Bay
1948
Ruffed Grouse drumm
1946
1947
1948
cont p 35
Hazel nipollea
1946
1947
1948
4/19
cont p 35
Lake Chapman open
1946
1947
1948
4/7/47
Slough opens
1946
1947
1948
4/7/47
Flicker mmm
1946
1947
1948
maybe not first
Zimmerman
Vesper Sparrow
1946
1947
1948
4/5
cont p 47

13 Prairie mole active
S & D = 3/21

14 Wis. River opens
S = 3/21

15 Killdeer
S = 3/22 D = 3/6

16 Canada goose
S = 3/22 D = 3/11

Cont p. 34

17 Mourning dove
S = 3/23 D = 3/17

18 woodcock
S = 3/25 D = 3/21

19 Fox Sparrow
S = 3/26 D = 3/21

20 Leopard frog on land
S & D = 3/26

21 Spring Cankerworms
S = 3/27

March

21 23 25 27 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 2 4

Yellow-bellied Sapsucker
1946 — 0 0
1947 — 0 0
1948 — 0 0 — 0 0

Cont p 33

Dandelion
1946 — S. wall — normal
1947
1948

cont. p. 39

Jacksnipe
1946 — arb
1947 — 4/9
1948 — 0

Cont p 35

Spermophile
1946 — Campus — 0 0 Shock 4-
1947 — 0 — 0 0 — 4/6 4/10
1948 — 0 0 0 — McCabe Campus — 0 0

Cont p 33

Crow carrying sticks
1947 — Hawkins — incubating 4/15
1948

Skunk Cabbage in pollen
1947 — Sauk City
1948 — Mazomanie

Cont p 33

Fox Squirrel Litter born
1947
1948 — ♀ carrying jaw. Fond du lac (sp?)

Garter snake out
1947
1948 — 0 0 — Fish Hatchery

From p 17

22 Lake Lemoyne opens
D = 3/27

23 Brown bat
D = 3/29
cont p 34

24 Earthworm on surface
D = 3/29

25 Cricket frog in voice
S = 3/29 D = 3/24

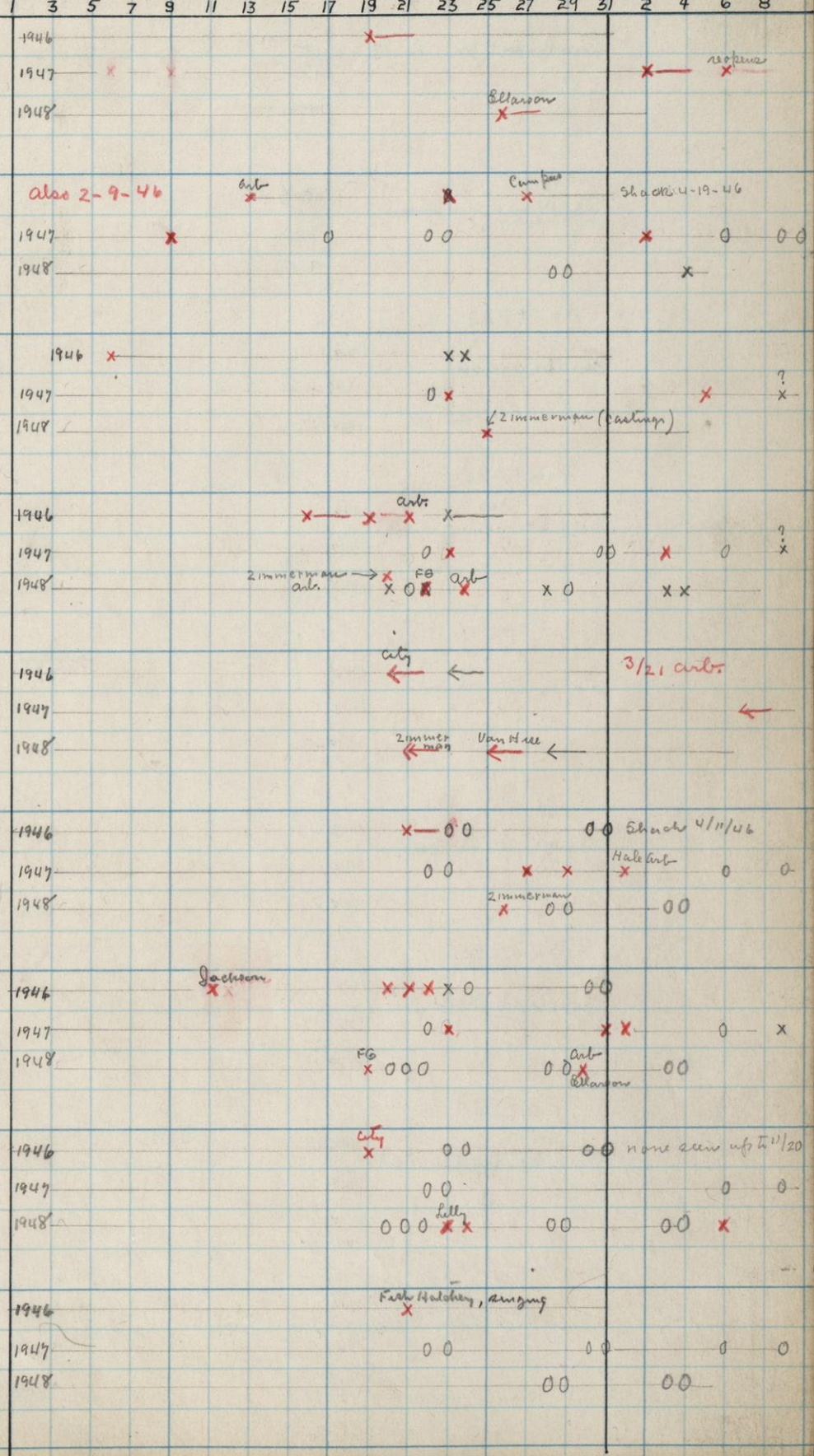
26 Silver maple
S = 4/1 D = 3/31
cont p 33

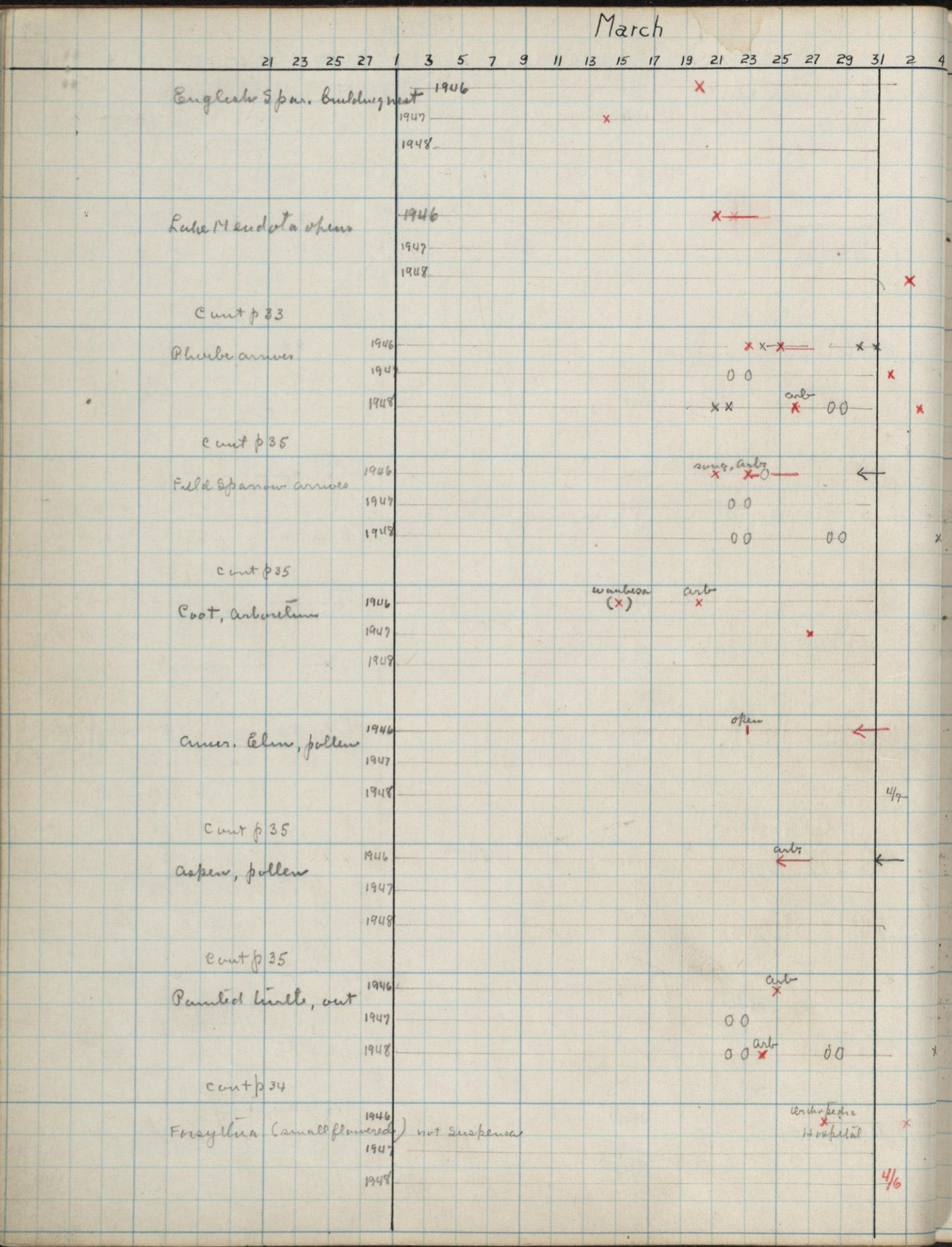
Cowbird
cont p 33

Blue heron
cont p 33

Mourning cloak
cont p 33

House wren
cont p 45




March
21 23 25 27 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 2 4
English Spar. Building nest
1946
1947
1948
Lake Mendota opens
1946
1947
1948
cont p 33
Phoebe arrives
1946
1947
1948
arb.
cont p 35
Field Sparrow arrives
1946
swmg. arb.
1947
1948
cont p 35
Coot, Arboretum
1946
wambesa (X)
arb.
1947
1948
Amer. Elm, pollen
1946
open
1947
1948
4/7
cont p 35
Aspen, pollen
1946
arb.
1947
1948
cont p 35
Painted Turtle, out
1946
arb.
1947
1948
arb.
cont p 34
Forsythia (small flowered) not suspensa
1946
orthopedic Hospital
1947
1948
4/6

21 23 25 27 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 2 4 6 8

Last Roughleg hawk

1947 — wannaker

1948 — FG

From p19 cont p34

Blanding's Turtle out

1947 — mazomanie

1948

Runner muskrat on campus

1947 — Park St dead

1948 — Obs. Hill

Lake Monona opens

1946

1947 — ?

1948

Junco sings

1947 — Arb, Hale

1948

(from p19)

Collembola (snow flea)

1948

Wood duck arrives

1948

Loon arrives

1948 — wingra

Big brown bat

office

1948

March

21 23 25 27 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 2 4

Spring Peeper in voice
(not cricket frog)

Discarded Phenology for March

1 SNOW FLEA (Collembola sp.)

Place?: first appears-----3/1/41 also 3/13/48

2 SKUNK CABBAGE (Symplocarpus foetidus)

Sauk: buds enlarge-------3/3/45

3 PRAIRIE CHICKEN (Tymphanucus cupido americanus)

First booming:
Juneau, Washara-----3/21/36, 3/13/37, 3/2/38, 3/5/40, Data by F.N. Hamerstrom-
Jefferson----------3/18/37, 3/26/38, (by 4/7/39), Data by Arthur S. Hawkins Jr.

Sauk---------------3/19/37, 3/28/38, 3/29/41

4 HAZEL (Corylus americana)

Dane: leaves enlarge------3/29-?/45

No items for January and February.

20 22 24 26 28 30 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 1 3 5 7 9

26 Silver maple
S = 4/1 D = 3/21
(Acer saccharinum)
(from p 27) (see also p 54)
1946 1947 1948
? bud scales fall 4/23
Zimmerman

27 Lake mendota ice breaks
D = 4/1
(from p 28)
1946 1947 1948

28 Skunk Cabbage
S = (4/1)
(Symplocarpus foetidus)
from p 26
See p 26
1947 March 9 Sauk City
1948
Mazomanie

29 Striped Spermophile emerges
D = 4/3
(Citellus T. tridecemlineatus)
from p 26
1946 1947 1948
Univ Bay
Arb Hole
not sure 4/20 first emerg.

30 Y. B. Sapsucker
S = 4/3 D = 4/1
cont from p 26
1946 1947 1948

3-11-46
31 Great Blue Heron
S = 4/5 D = 3/24
FG
arb
from p 27
1946 1947 1948

32 Mourning Cloak Butterfly
S & D = 4/5
(Aglais antiope)
(from p 27)
1946 1947 1948
Campus
? first seen 5/16/47

33 Cowbird
S = 4/6 D = 3/24
from p 27
1946 1947 1948

34 Pussy willow (S. discolor)
D = 4/6
1946 1947 1948
? out 5/16

April

24 26 28 30 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 1 3 5

Myrtle warbler

1946

Chipping Sparrow

1946

1947

1948

Canada geese seen at shack

1946 89,640, 200,100

200,3 1947 17 192,25,84,36,148,99,49 282,454 54,11 May 11 none

× 9,5,17,0 160 1948 300 200 200 300 1000 1000

From p 25

Sandhill Crane

wood Co. × 1947 Bl. R Falls × arb. × ×

3 Poynette × wood Co × arb × 1948 Endeavor ×

See also p 39

Brown bat

1947 0 0 0 0 0 0

0 0 1948 × 0 0

from p 27

Painted Turtle out

1947 0 0 0 0 0 × 0 0 × × ×

0 0 × 0 0 1948 ×

from p 28

Last Roughleg hawks

1947 × × 0 0 0 0 0 Horicon × 0 0 0 Springer × Dane

F⊙ × 0 0 1948 0

from p 29

Barn Swallow arrives

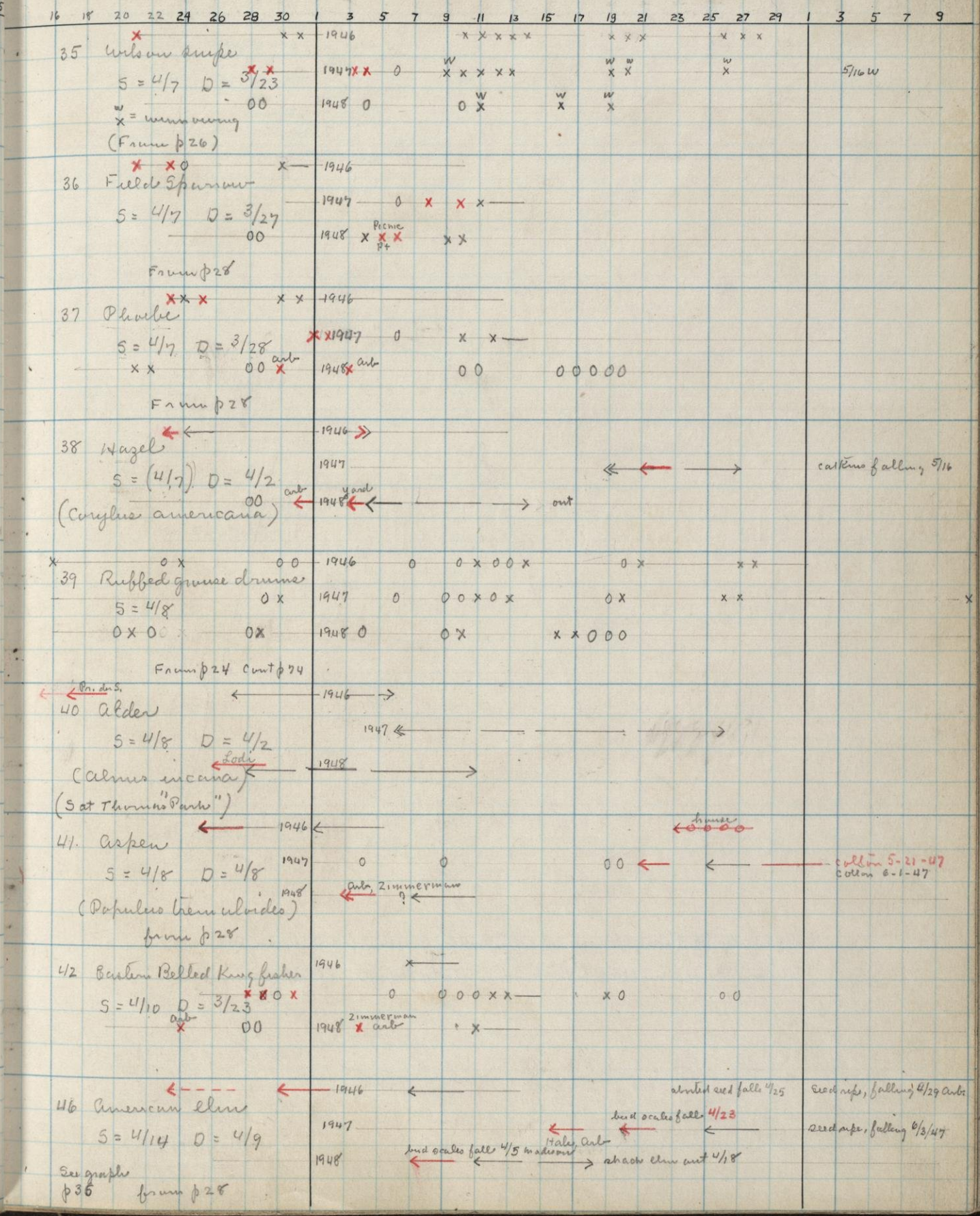
1947 ×

Junco last seen

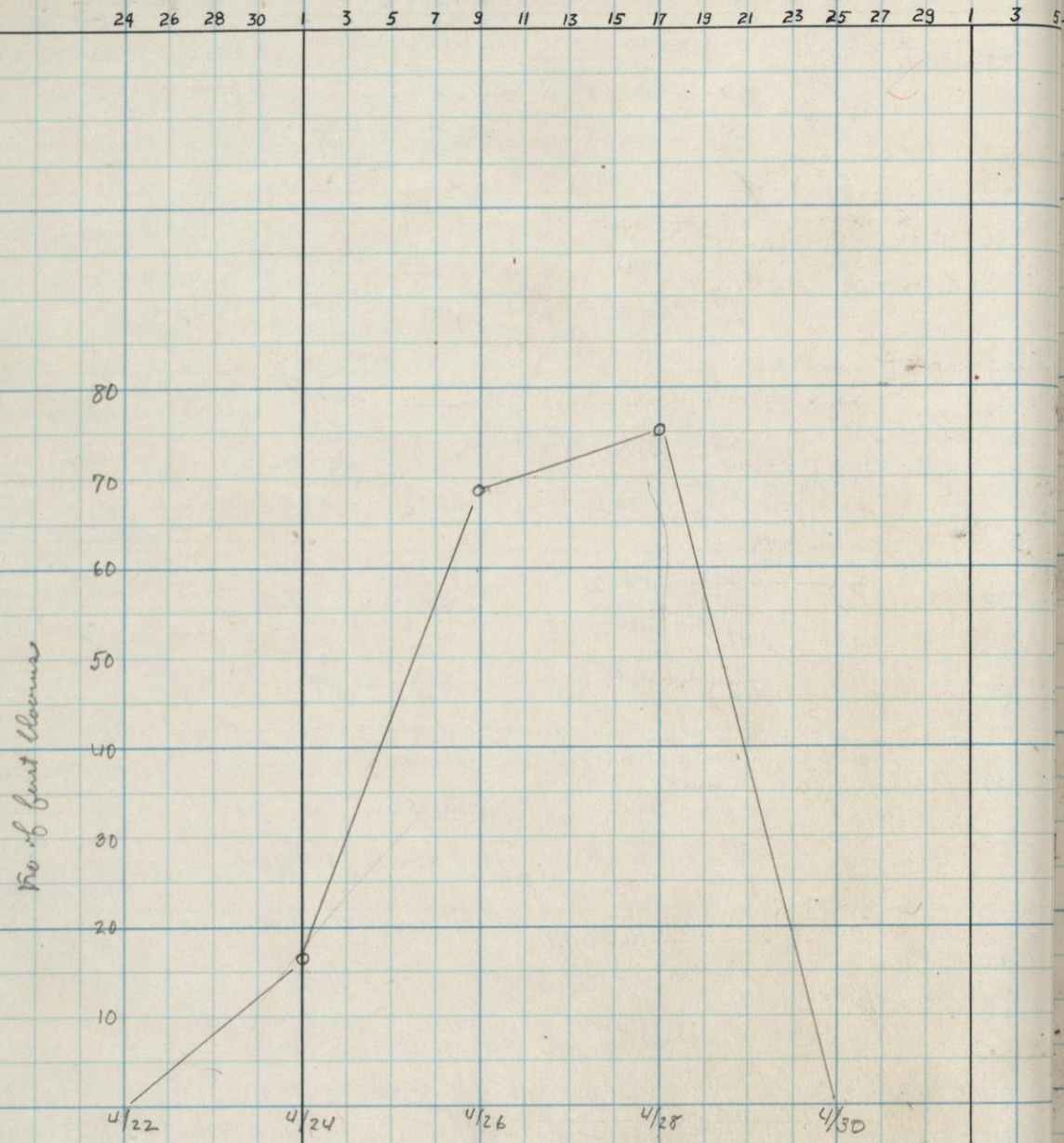
1947

× × 1948 × × × × ×

5/15


16 18 20 22 24 26 28 30 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 1 3 5 7 9
35 Wilson snipe
S = 4/7 D = 3/23
w x = winnowing
(From p 26)
1946
1947
1948
5/16 W
36 Field Sparrow
S = 4/7 D = 3/27
From p 28
1946
1947
1948
Picnic
P+
37 Phoebe
S = 4/7 D = 3/28
arb
From p 28
1946
1947
1948
arb
38 Hazel
S = (4/7) D = 4/2
(Corylus americana)
arb
1946
1947
1948
yard
out
catkins falling 5/16
39 Ruffed grouse drums
S = 4/8
From p 24 Cont p 74
1946
1947
1948
40 Alder
S = 4/8 D = 4/2
(Alnus incana)
(S at Thomas "Park")
Pr. du S.
Lodi
1946
1947
1948
41. Aspen
S = 4/8 D = 4/8
(Populus tremuloides)
from p 28
1946
1947
1948
arb, Zimmerman
house
collon 5-21-47
collon 6-1-47
42 Eastern Belted Kingfisher
S = 4/10 D = 3/23
arb
1946
1948
Zimmerman
arb
46 American elm
S = 4/14 D = 4/9
See graph p 36 from p 28
1946
1947
1948
bud scales fall 4/5 madison
Hale, arb
shack elm out 4/18
bud scales fall 4/23
aborted seed falls 4/25
seed ripe, falling 4/29 arb.
seed ripe, falling 6/3/47

April



Frequency of First bloom on 75 Amer. Elms Univ. Campus
Between Bascom Hall & Park St. Data by Jean Matichs.

24 26 28 30 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 1 3 5 7 9

43 Forsythia suspensa
D = 4/10
ident. checked 1947
Cont p 56
(Allen St. below Kendall Ave)

1946
1947
1948

44 Pasque flower
S = 4/11 D = 4/10
Cross Plains
Pr. div. S.
1946 arb.
seed ripe 5/27
1947 1" 1" bud
1948 Blue Mounds
Burke Twp.

45 Cottonwood
D = 4/13
(1930 Univ. Ave) Cont p 54

1946 1" 3" full by 5/1 Univ. Ave
1947
1948

3/29 Rogers House
47 Hepatica (acutiloba & americana)
D = 4/14
(H. acutiloba & H. americana)
Cont p 56
(at shack 1 plant on N. slope)

Pr. div. S.
arb 1946
1947 Baxter Hollow arb. ?
1948 Zimmerman Baxter Hollow arb

48 Box elder
D = 4/14
(Acer negundo)
S = bend of CoT

1946 leaflets falling 5/3
1947
1948

49 Uplands plover
D = 4/16

Richards, Carb.
Buss
1947 F.G. Livingston Wis
1948

50 D.C. Cormorant
S = 4/16 D = 4/12

1946
1947 Hale arb arb
1948

51 Draba reptans
S = 4/17
Cont p 56

1946 out
1947
1948

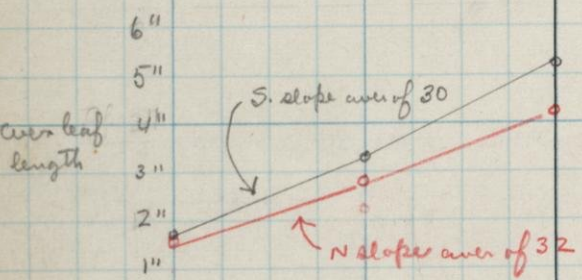
52 Red Cedar
S = 4/17
(Juniperus virginiana)

1946 out
1947 arb ? ? out
1948

24 26 28 30 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 1 3 5

53. Dandelion First seed of three blooming 4/16 on 4/30.

Lengthening of Dandelion Leaves, N. vs S. slope
By Bob Hackbarth Park & Chester St on RR tracks

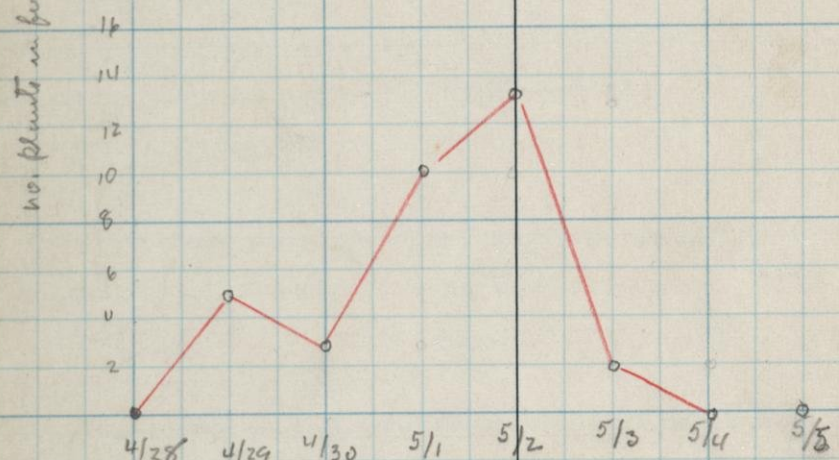


Apr 22 Apr 29 May 6

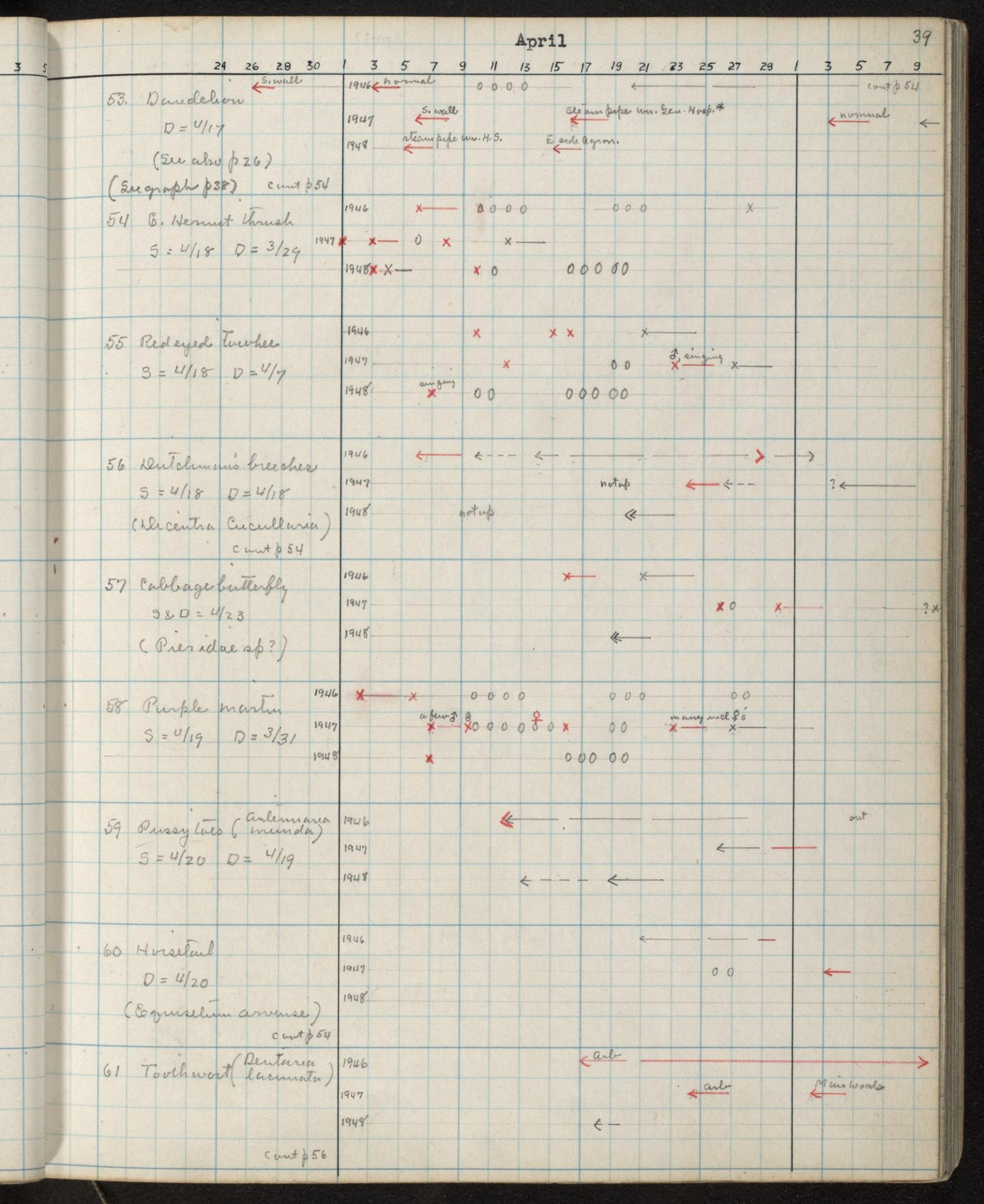
First blooms

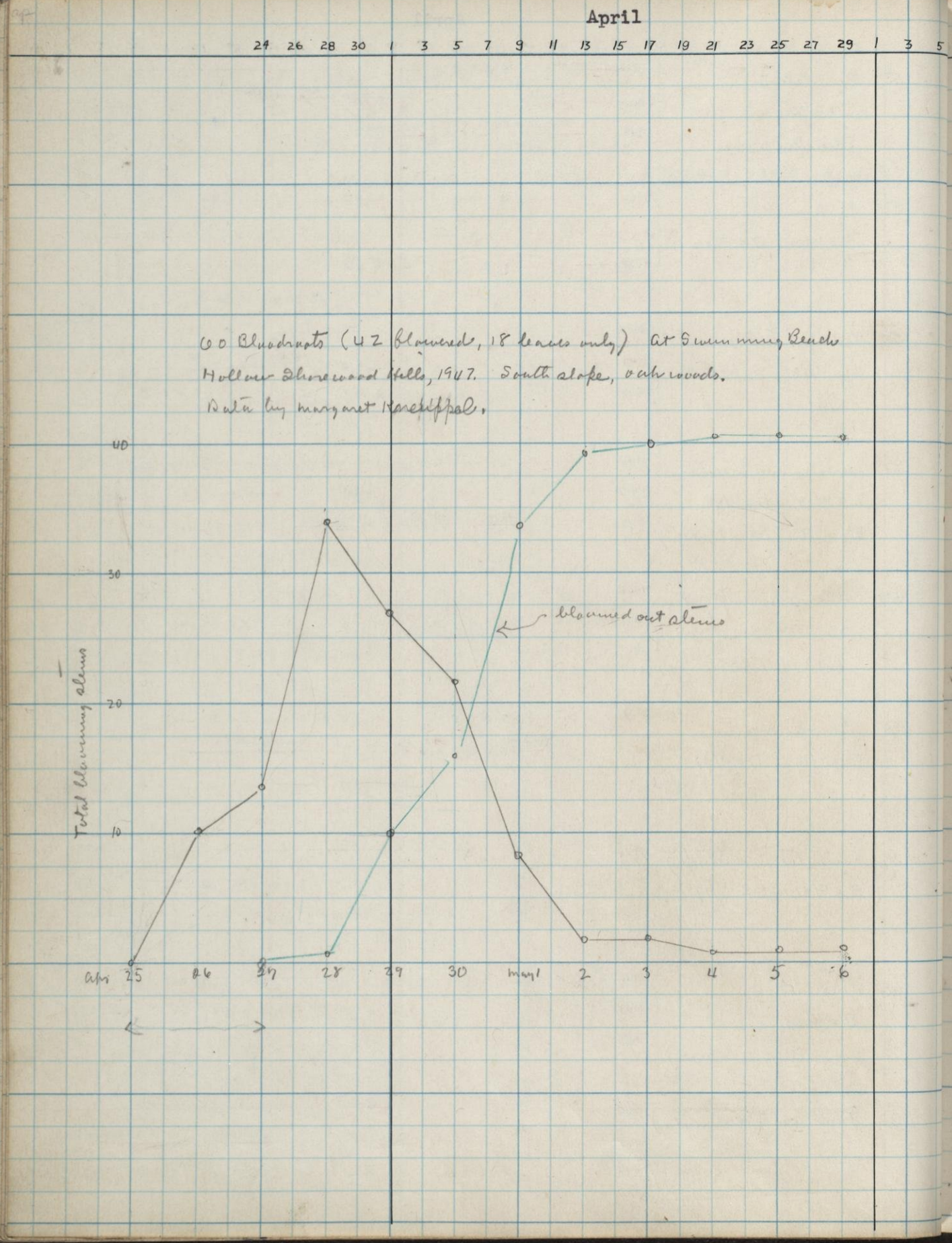
1 1 2 2 1 1 1
4/30 5/1 5/2 5/3 5/5 5/6 5/7

33 Dandelions Bunches plants in Bascom woods 1947
by Edgar A Schlenker



Species	Year	Dates
53. Dandelion D = 4/17 (See also p 26) (See graph p 38) cont p 54	1946	S. wall; normal; 0 0 0 0; cont p 54
	1947	S. wall; steam pipe Wis. Gen. Hosp.*; normal
	1948	steam pipe Wis. H.S.; E. side Agron.
54 E. Hermit thrush S = 4/18 D = 3/29	1946	0 0 0 0; 0 0 0; x
	1947	x; x; 0; x; x
	1948	x; x; x 0; 0 0 0 0 0
55 Red eyed Towhee S = 4/18 D = 4/7	1946	x; x x; x
	1947	x; 0 0; ♂ singing; x
	1948	singing; 0 0; 0 0 0 0 0
56 Dutchman's breeches S = 4/18 D = 4/18 (Dicentra Cucullaria) cont p 54	1946	←; ← - - -; ←; ; ; →
	1947	not up; ← ← - -; ? ←
	1948	not up; ←
57 Cabbage butterfly S & D = 4/23 (Pieridae sp?)	1946	x; x
	1947	x 0; x; ? x
	1948	←
58 Purple martin S = 4/19 D = 3/31	1946	x; x; 0 0 0 0; 0 0 0; 0 0
	1947	a few ♂; ♂ x 0 0 0 0 ♀ 0 0 x; 0 0; many incl ♀'s x; x
	1948	x; 0 0 0 0 0
59 Pussy toes (Antennaria munda) S = 4/20 D = 4/19	1946	←; out
	1947	←
	1948	← - - - ←
60 Horsetail D = 4/20 (Equisetum arvense) cont p 54	1946	←
	1947	0 0; ←
	1948	
61 Toothwort (Dentaria lacinata) cont p 56	1946	arb; →
	1947	arb; Mainwoods
	1948	←




April
24 26 28 30 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 1 3 5
60 Bloodroots (42 flowered, 18 leaves only) At Swimming Beach
Hollow Shorewood Hills, 1947. South slope, oak woods.
Data by Margaret Kneippel.
40
30
20
10
Total blooming stems
blooming out stems
apr 25 26 27 28 29 30 may 1 2 3 4 5 6

24 26 28 30 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 1 3 5 7 9

62 Bloodroot
S = 4/21 D = 4/14
(Sanguinaria canadensis)
(See p. 40, 42) cont p 56

1946 — Leaves dead 8/1-46
1947 — arb. — Mrs Kertenneker's up — ?
1948 — arb

63 Norway maple
D = 4/21
(Acer platanoides)

1946 — Univ. Ave — blooms fallen
1947
1948

64 Spring oats & barley
D = 4/21

1947
1948

65 Brown thrasher
S = 4/22 D = 4/17

1946 — arb
1947
1948 — Baxter Hollow

66 Carex pennsylvanica
S = 4/23 D = 4/17

1946
1947
1948

67 Ranunculus fasicularis
S & D = 4/23

1946 — Fur. Grove
1947
1948 — Coleman

cont p 54

68 Sandbar willow (Salix interior)

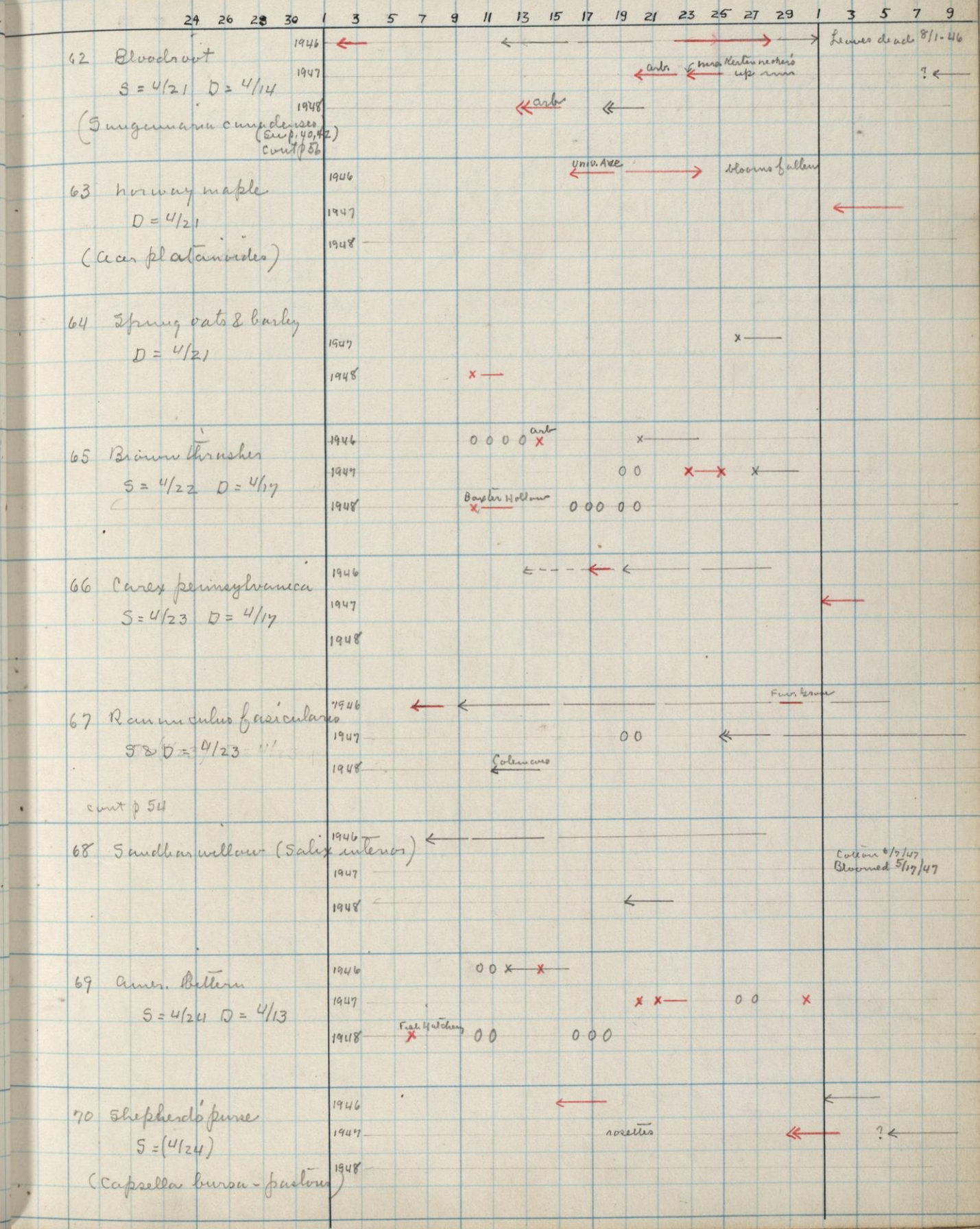
1946 — Cotton 6/7/47
1947 — Bloomed 5/17/47
1948

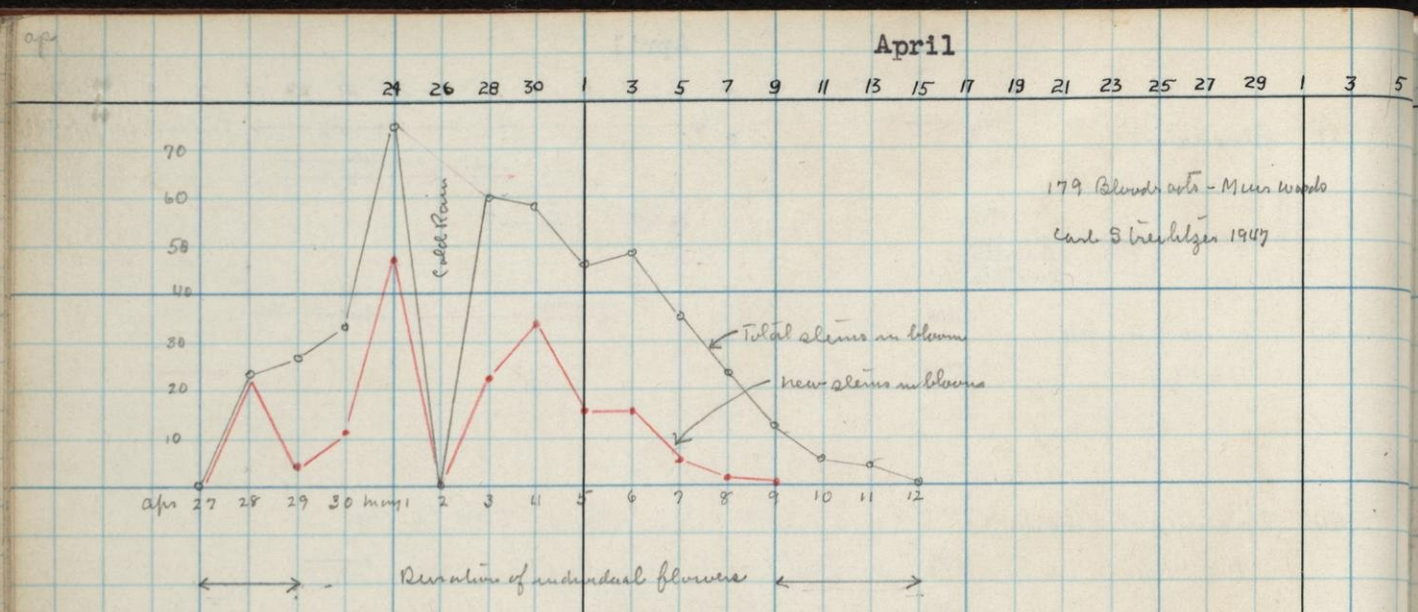
69 Amer. Bittern
S = 4/24 D = 4/13

1946
1947
1948 — Fish Hatchery

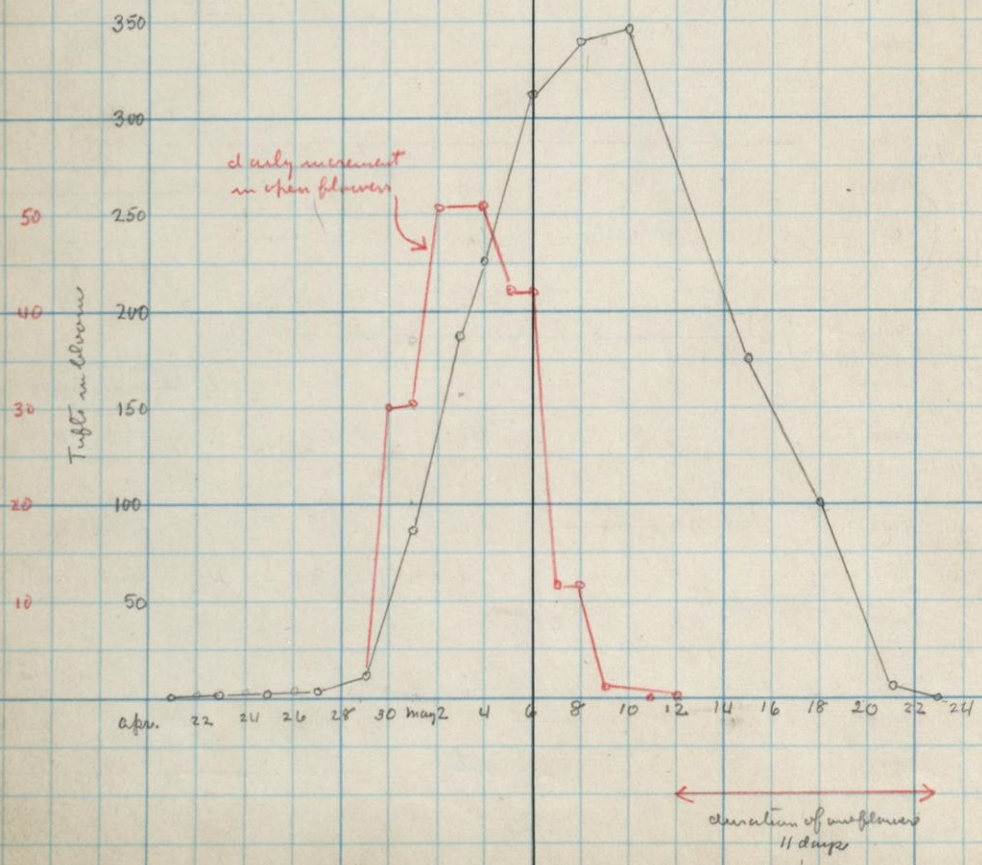
70 Shepherd's purse
S = (4/24)
(Capsella bursa-pastoris)

1946
1947 — rosettes — ?
1948





179 Bloodroots - Muir woods
Carl Strechtzer 1947



345 Tufts of marsh marigold
L. Wingra, West marsh
John E Bardach

24 26 28 30 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 1 3 5 7 9

* 73 marsh marigold
S = 4/28 D = 4/20
(Caltha palustris)
S = Lewis spring
cont p 54

74 Juneberry (Amelanchier canadensis)
S = 4/28 D = 4/23
cont p 56

Buss-Zeima Co - 3/11/46
75 Bowlute anzo
S = 4/29 D = 4/6
cont p 74

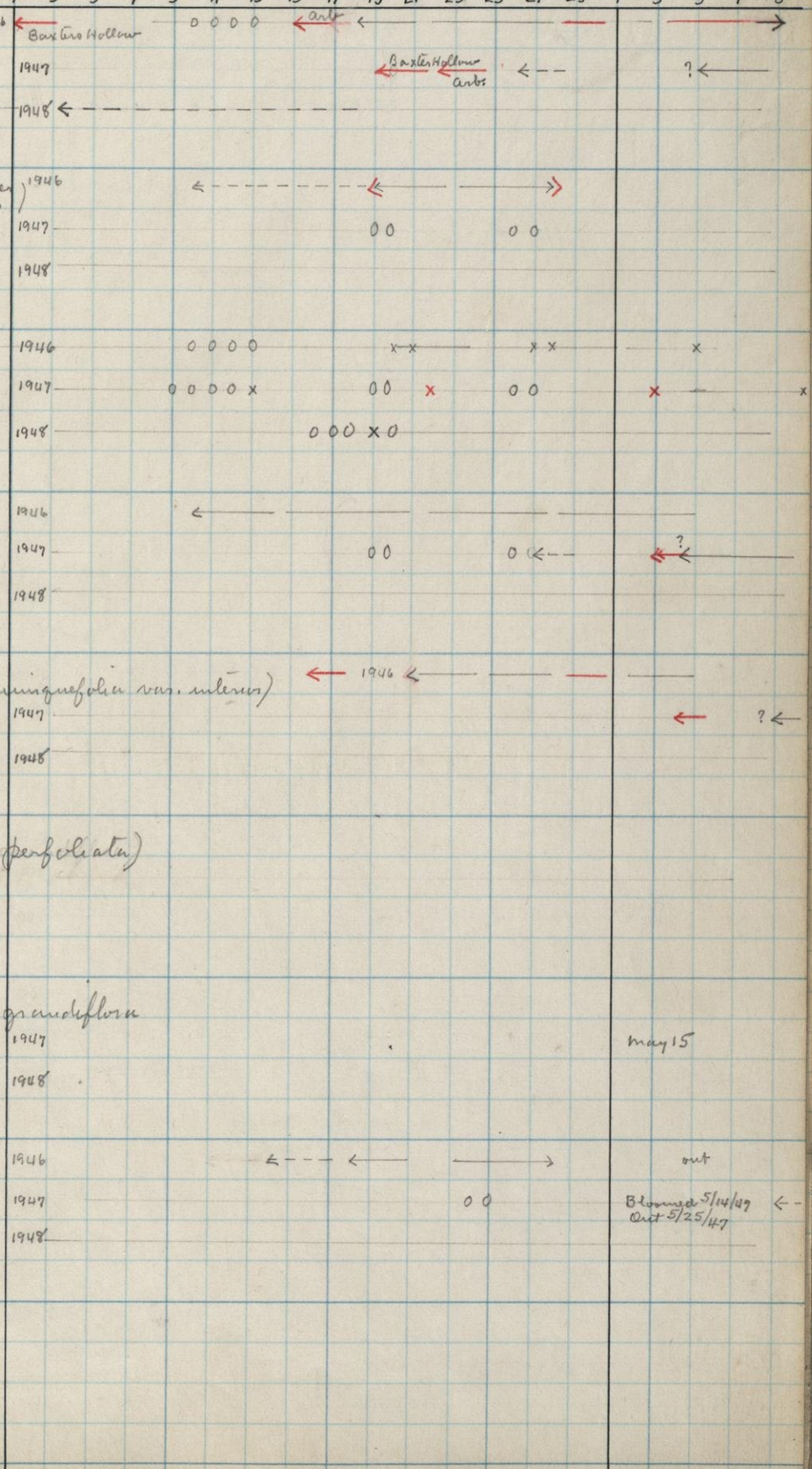
76 Arabis lyrata
S = 4/29 D = 4/20
cont on p 54

77 wood Anemone (A. quinquefolia var. interior)
S = 4/29 D = 4/26
cont on p 54

71. Bellwort (Uvularia perfoliata)
D = 4/27

* 72. Bellwort (Uvularia grandiflora
D = 4/28
cont p 67

78 Prickly Ash
S = 4/30
cont p 58



April

24 26 28 30 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 1 3 5

	24 26 28 30	1 3 5 7 9 11 13 15 17 19 21 23 25 27 29	1 3 5 7 9
Chickweed, first bloom		1947 ←	
		1948	
Snow Trillium (T. nivale)		1947 ←	
arboretum			
Tree Swallow		1947 × × ×	
		1948 × arb-Beer 0 0 0 0	
whitethroated Sparrow		1947 × × × 0 0 first song ×	
		1948 0 0 0 0 × first song (shack)	
Vesper Sparrow	×	1946	
		1947 × × × ×	
cont from p 24			
Large-toothed aspen		1947 ←	
		1948	
Margaret Bergseng's yard			
Sora rail		1947 ×	
		1948	
Chimney Swift		1947 × ×	
		1948	
Jill-over-the Ground		1947 ←	
cont p 70		1948 ⟸	

D = 2222 Van Hise

(over)

April

24 26 28 30 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 1 3 5

Henslow Sparrow

1947 ×—×

1948 /

Tree Sparrow last seen

1947 ×

1948 ×

Starling building nest

1948 ×

5

Discarded Phenology for April

5 SANDHILL CRANE (Grus canadensis tabida) See p 34

Arrives.
Sauk:----------4/7/39, 4/14/40
Adams, Juneau, Waushara: 4/6/35, 3/25/36, 4/9/37, 3/30/40-Data by F.N. Hamerstrom Jr. & Arthur S/Hawkins

6 QUAKING ASPEN (Populus tremuloides)

Sauk: in pollen----------4/21/40, 4/12/41, 3/23/45, (4/8)-Average

7 PASQUE FLOWER (Anemone patens)

Sauk: in bud----------4/17/40, 4/9/41, 4/5/42, 4/10/43, 3/23/45, Average-4/7

8 WILSON SNIPE (Gallinago delicata)

Sauk: winnows----------4/7/-?/39, 4/20-?/40, 4/10-?/41, 4/3-5/9/42, 4/11-5/2+/43, 3/25-?/45, (4/8)-Average

9 JUNE BERRY (Amelanchier canadensis)
Leaves enlarge----------4/27-5/19/44
Sauk: in bud---------4/28/40, 4/19/41, 4/22/43, 5/6/44, 4/8/45
Leaves enlarge----------?-5/19/44, 3/22-?/45
Dane: in bud---------4/27/44, 4/8/45

10 MARSH MARIGOLD (Caltha palustris)

Dane: in bud----------4/20/44, 3/31/45

11 EARLY CROWFOOT (Ranunculus fascicularis)

Sauk: in bloom----------4/21-?/43, ?-5/25/44, 3/31-5/20/45

12 DWARF BUTTERCUP (Ranunculus rhomboidens)

Sauk: in bloom----------5/15-?/40, 4/16-?/45, (4/31)-Average
Dane: in bloom----------4/21-?/43, 4/29-5/27/44, 3/31/45, (4/17)-Average

102 Roosevelt (Pedicularis canadensis)
Dune - in bloom - 4/29 - 5/19/45

13 RED CEDAR (Juniperus virginiana)

Sauk: in pollen----------4/23-?/43, 4/28-?/44, 3/31-4/7/45, (4/17)-Average

14 SAND BAR WILLOW (Solix interior)

Dane: first bloom---------5/10/44, 4/6/45, (4/23)-Average

15 MAGNOLIA (Magnolia soulangiana)

Dane: in bloom----------4/30-5/9/45, (4/25)-Average

16 SPRING CANKERWORM (Paleacrita vernata)

Sauk: last descends trees---6/6-?/37, ?-6/11/38, ?-6/4/39, ?-5/31/41, ?-5/31/42, 5/1-5/15/43, 5/1-5/25/44
Dane: first ascends trees--3/30/43

17 SILVER MAPLE (Acer saccharinum)

Sauk: flower buds fall-----4/19/44
samaras full size----5/20/39, 5/26/40, 5/4/41, 5/14/42, 5/15/43, (5/16)-Aver.
Dane: flower buds open-----4/1/43, 4/3/44, 3/17/45, Average-3/28
leaves enlarging-----5/1-5/17/44
samaras full size----5/24/44

18 AMERICAN ELM (Ulmus americana)

Sauk: bud scales fall-----4/29-4/31/44
leaves enlarge------?-5/11/38, 5/1-5/22/41,
Dane: bud scales fall-----4/24-4/25/45
fruits enlarge------5/14/41-4/1/45

19 BOX ELDER (Acer Negundo)

Dane: staminate flowers fall-4/4/44
leaves enlarge-----5/1-5/17/44, 3/28-4/17/45
ripe samaras fall--5/21-6/1/44

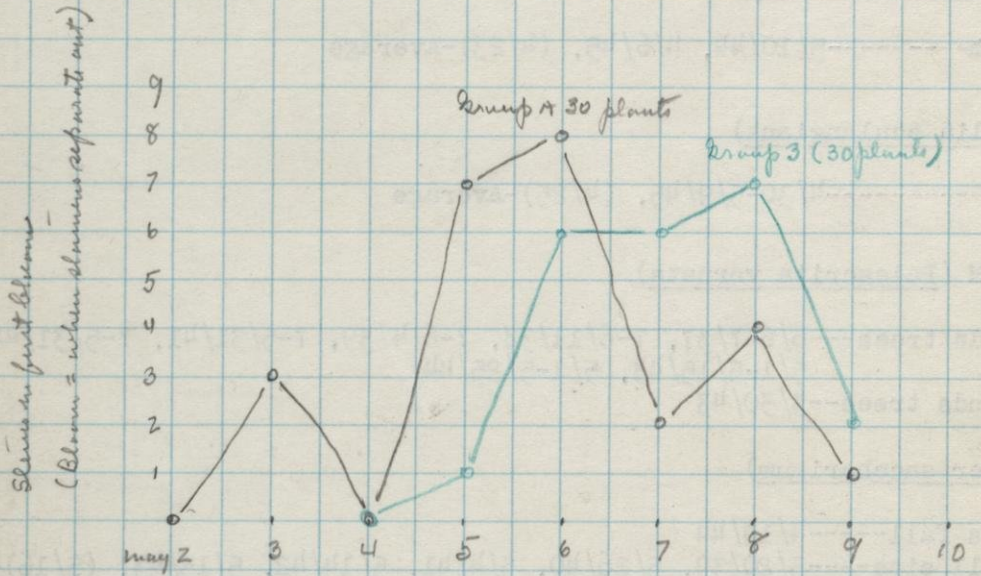
20 TIGER SWALLOWTAIL BUTTERFLY (?)
?-: first seen----------4/28/42

21 DUTCHMAN'S BREECHES (Dicentra--cucullaria)

Sauk: leaves yellow-------5/29/43
leaves dead---------5/31/44

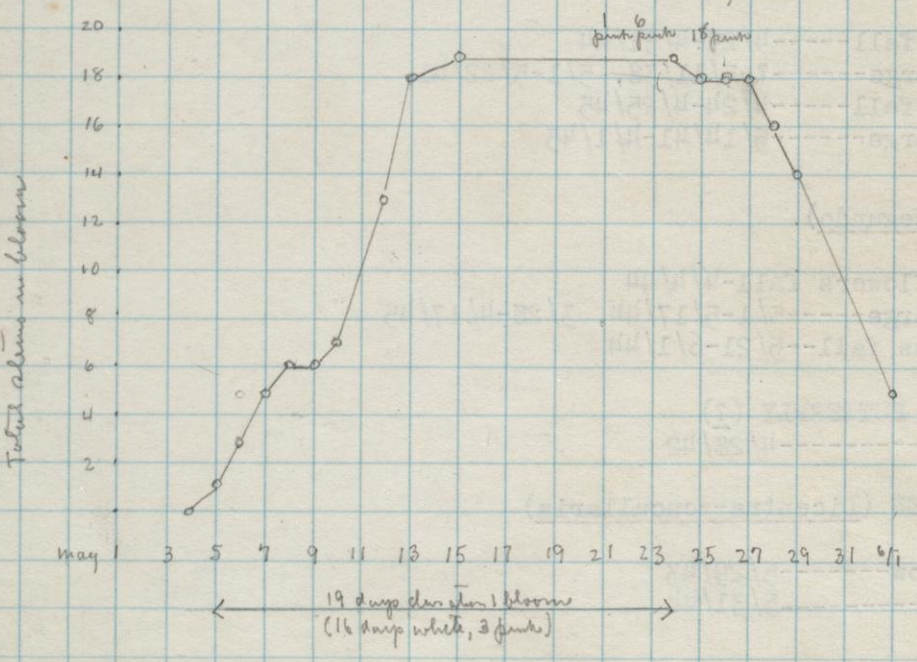
Lawns mowed: See 1942 Bluegrass bloom

60 white Dog-tooth Edgewood Acad. 1947
Fred W Fass



(none out of bloom by may 9)

White Trilliums at 2222 Van Hise (about 3 clumps) 1947



13 15 17 19 21 23 25 27 29 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 2 4 6 8

78. Small Flowered Crowfoot
(Ranunculus abortivus)
S = 5/1 D = 4/26

1946 →
1947 ←

* 80. Hoary Puccoon
(Lithospermum canescens
S = 5/1 D = 5/3

1946 →
1947 ←

81. Dogtooth Violet
(Erythronium americanum)
S = (5/2) D = 4/29

Briggs Farm

1946 →
1947 ? ←

82 Birdfoot Violet
(Viola pedata) up 1"
S = 5/2 D = 5/1

1946 →
1947 ←

83. Arabis laevigata up 5"
S = 5/3

1946 →
1947 ←

84 River Birch
(Betula nigra)
S = 5/3

1946
1947 ? ←

85 Sand Cherry
(Prunus pumila)
S = 5/3

1946 →
1947 ←

Cardamine parviflora
S = 5/3

1946 →
1947 ? ←

* 79 Last Killing frost
28° 21°
S = 5/1 D = 4/27

1946
1947 ×

only on bottoms

May - extensions

21 23 25 27 29 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 2

26 Silver maple
(Samaras ripe, falling)

1946
1947 Seed ripe 6-7-47

for bloom p 33

45 Cottonwood
(Cotton falling)

1946
1947

from p 37

67 Ranunculus fascicularis

1946 ? to 6/8
1947 to 6/8

from p 41

73 Marsh marigold

1946
1947

76 Arabis lyrata

1946 to 7/
1947 to 6/8, 7/

cont from p 43

77 Wood anemone

1946
1947 to 6/5

cont from p 43

53 Dandelion

1946
1947 2nd peak

from p 39

56 Dutchmans breeches

1946
1947 arb McCabe

from p 37

60 Horsetail

1946
1947

from p 39

17 19 21 23 25 27 29 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 2 4 6 8

88 Black Oak
(Quercus velutina)
1946 → ← frost attacked
1947 1½" 1½" ← ← ←

May

23 25 27 29 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 2

97. Sugar maple. Carl L. Strechtzer saw a large (natural?) sugar maple in bloom at 2500 W Monroe St. He is sure it is not a norway. Genetical variant?

74 Juneberry

1946

1947

Cont from p43

43 Forsythia suspensa

1946

1947

from p 37

47. Hepatica

1946

1947

from p. 37

51 Draba replans

1946

1947

Cont from p37

62 Bloodroot

1946

1947

from p41

61 Toothwort

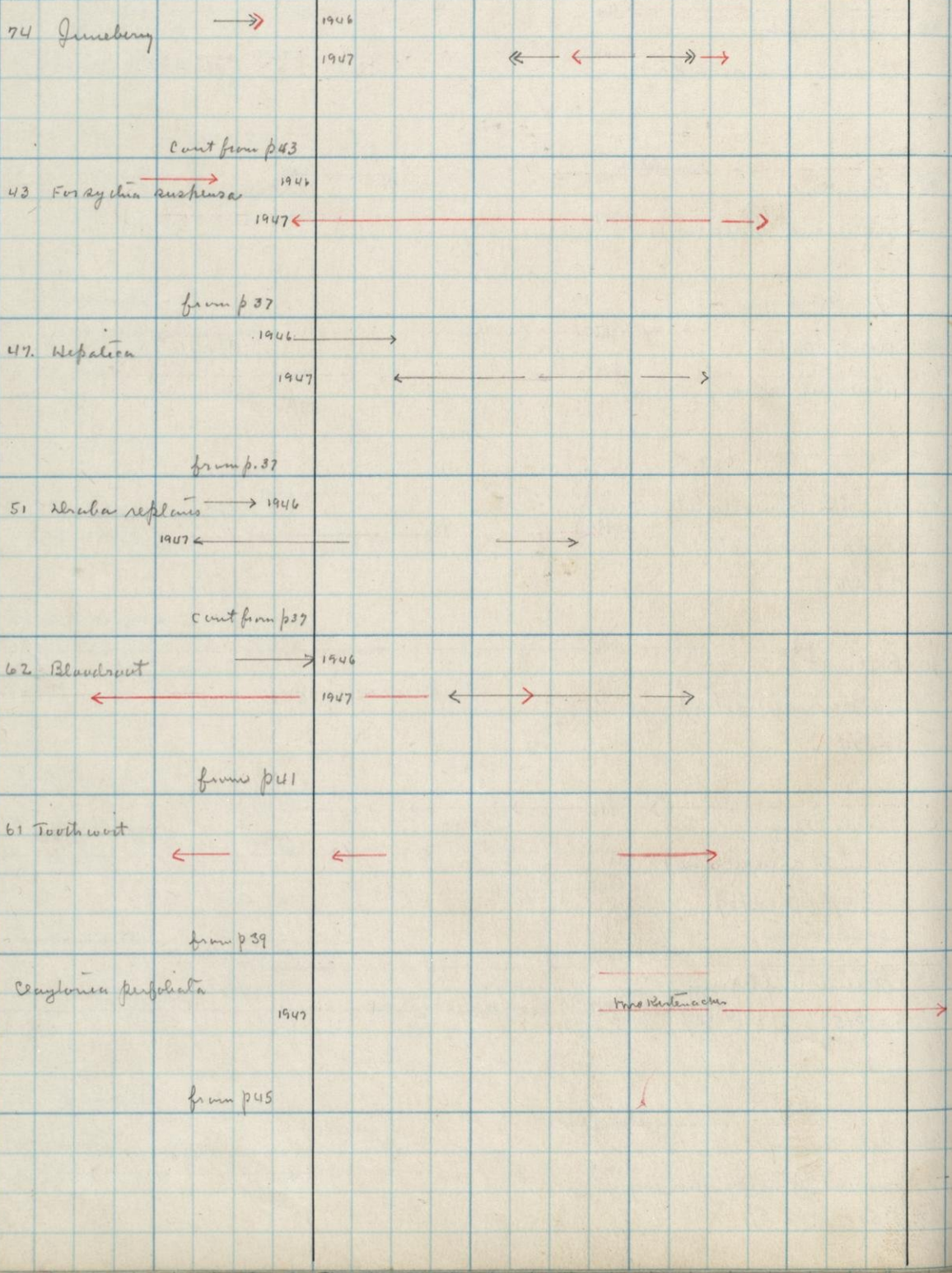
from p 39

Claytonia perfoliata

1947

Mrs Kistenacker

from p45



17 19 21 23 25 27 29 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 2 4 6 8

Van Hise 1946

97 Sugar maple
(Acer saccharum)
D = 5/5
D = 2227 Van Hise (Rundell)

1947

100 Choke Cherry
(Prunus virginiana)
S = 5/6 D = 5/8
(S at Lewis spring)

1946

1947

Baraboo 1946 out

101 Winter Cress
(Barbarea vulgaris)
S = (5/6) D = (5/8)

0

1946

102 Lousewort
(Pedicularis canadensis)
S = 5/6

1947

House Arb. 1946

104 White Trillium
(Trillium grandiflorum) up 6"
S = 5/7 D = 5/5
(D = 2222 Van Hise)

1947

1946

105 Crataegus sp?
S = (5/7)
(1 bush near road, L. Chapman)

1947 ?

1946

107 ~~Bearberry~~ Blueberry
(~~Arctostaphylos uva-ursi~~)
S = (5/8) Vaccinium pennsylvanicum? See p 45

1947

1946 out

108 Indian Sweet Grass
(Hierochloe odorata)
S = 5/8

1947 ?

1946

109 Trillium recurvatum
D = 5/8
Wake-Robin

1947 ?

May

23 25 27 29 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 2 4

78 Prickly ash

1946

1947

from p 43

23 25 27 29 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 2 4 6 8

110 Wild Crab
(Pyrus ioensis)
D = 5/9
D = Allen & Chamberlain

Baraboo

Baraboo

Van Hise

1946 — no bloom at shack, injured by frost. 4/27

...ds visible 3/30/46

112 Lilac
(Syringa vulgaris)
S = 5/10 D = 5/3

1947

115 Blue Phlox
(Phlox divaricata) up
S = 5/11 D = 5/12
cont p 90

1946

1947

116 Jack Pine
(Pinus banksiana)
S = 5/11

1946 out

1947

117 Jack in the Pulpit
(Arisaema triphyllum)
S = 5/11

? 1946 arb ?

1947 open 6/14

119 Jacobs Ladder
(Polemonium reptans)
S = 5/12 D = 5/5
cont p 90

madison g 11 shack arb 1946

up

120 Wild Strawberry
(Fragaria virginiana)
S = 5/12 D = 5/8
cont p 92

1946

1947

121 Red Osier Dogwood
(Cornus stolonifera)
D = 5/12

Univ. Ave 1946

1947

123 Asiatic Honeysuckle
(Lonicera tartarica)
D = 5/13
(Fruit p. 90)

1946 office 3/4" office

1947 office

May

23 25 27 29 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 2 4

19 21 23 25 27 29 | 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 2 4 6 8

134. Bastard Toadflax
(Comandra umbellata)
S = 5/21 D = 5/8
cont p 84

1946
1947 up

135 wild Geranium
(Geranium maculatum)
S = 5/21 D = 5/10
cont p 84

up 2" 6"
1946 yard arb.
1947 Unn. Bay
6/13

136 Toadflax
(Linaria canadensis)
S = 5/22 D = 5/13
cont p 84

1946
1947 6"

137 Shooting Star
(Dodecatheon Meadia)
S = 5/22 D = 5/14
cont p 84

1946 arb.
1947 W. entrance
W. migra Co.

138 yellow wood Sorrel
(Oxalis europea)
S = 5/22 D = 5/24
cont p 84

1946
1947 D

139 Tall yellow Ladyslipper
(Cypripedium parviflorum)
D = 5/22
cont p 86

1946 122 Bascom arb.
1947 up 1" 4"

140 Mulberry
(Morus alba)
D = 5/22
cont p 102

1946
1947 1"

141 Puccoon
(Lithospermum angustifolium)
D = 5/23

1946
1947

142 Bluegrass
(Poa pratensis)
S = 5/24
X = first lawn mowed

1946 S. wall general
1947 parallel general

may

May

23 25 27 29 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 2 4

23 25 27 29 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 2 4 6 8

151 Cinquefoil
(Potentilla canadensis)
S = 5/28 D = 5/31

1946 ← 1947 ←

152 Shagbark Hickory
(Carya ovata)
D = 5/29
Count p 88

1946 1" catkins fall, leaves fall, 5/24
1947 buds burst
leaf buds burst

153 Blackberry
(Rubus alleghaniensis)
S = 5/30 D = 5/24
Count p 88

1946 ← 1947 ←

Red Astrachan apple
1946
1947

(on hill w of shack)

Field Peas
1946 ← 0 Sank C

Count p 88

Yellow Bellwort
(Uvularia grandiflora
1947 ←

Count from p 72

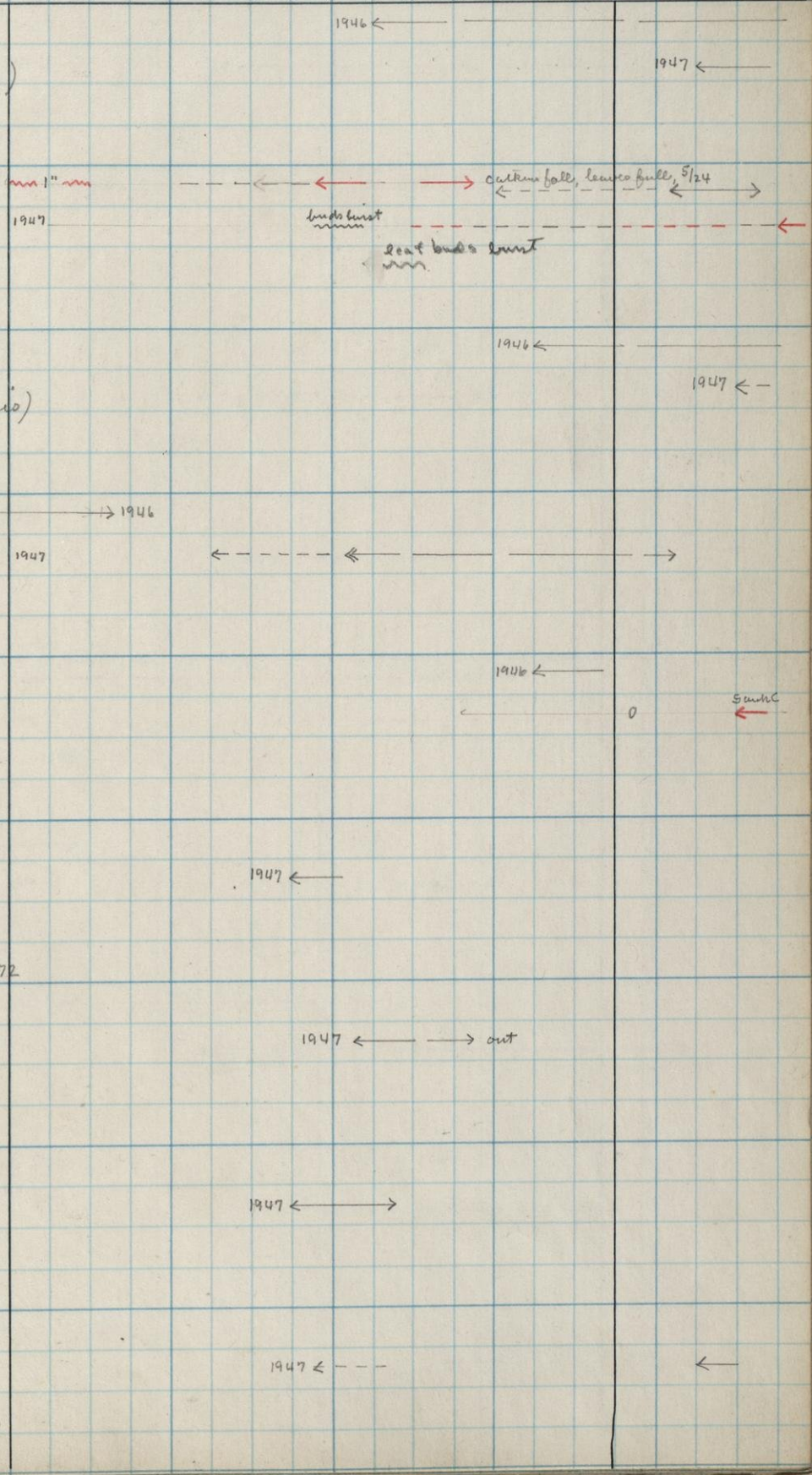
Cherry in orchard
1947 ← → out

Sweet Fern
1947 ←→

On sandhill

Native bush honeysuckle
1947 ← ←

(On clay hill road cut)



19 21 23 25 27 29 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 2 4 6 8

Viola lanceolata — 1946 — out
1947 — ?

Black Walnut — 2" — 3" — 1946 — 6" — 8" — 14" — (Baraboo cemetery)
(Juglans nigra) — 3" — 5" — 10"
(cont p 88)
1 tree, 2222 Van Hise ave

yellow violet — 1946 — out
1947 — ?

(Lewis Spring)

Sickel Pear — 1946
1947

S = pear (var?) in orchard
D = 2222 Van Hise

Redbud — 1946 — (our tree died later)
1947 — D. Main
1948

2222 Van Hise

White birch — 1946
(Betula papyrifera) — 1947 — ? out
(See p 79)
Yard of shack

Ranunculus septentrionalis — 1946
? — 1947 — ? out

Plum thicket, clay hill

Dwarf Amelanchier — 1946
1947

(bed at shack)

Cheat Grass — 1946 — in head — drying up 6/5
(Bromus tectorum) — in head

RR tracks back of office

May

23 25 27 29 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 2 4

180 Asparagus sprouts gathered

1946 — x x x x x x x x

1947 — (one only) x x x x x x x x

1948 — x x

Cont p 88

Carrion flower

1946 ← — — — — — —

1947 ← —

Morelle mushrooms up

1946 ←

1947 — x — wilted x — x also 6/8

1948 —

Native Fleabane

(Erigeron pulchellis)

1946 ←

Juniper communis

1946 ← → 1946 — — — — — —

1947 ← — — — — — — — ← →

Cont from p 45

Green Dragon

1946 ← — — — — — — — —

1947 ← — — — — — —

up but no bloom

x x

Cont on p 88

Bell-over-the-Ground

1946 ← arb

← yard 1947

(cont from p 47)

Wild Ginger

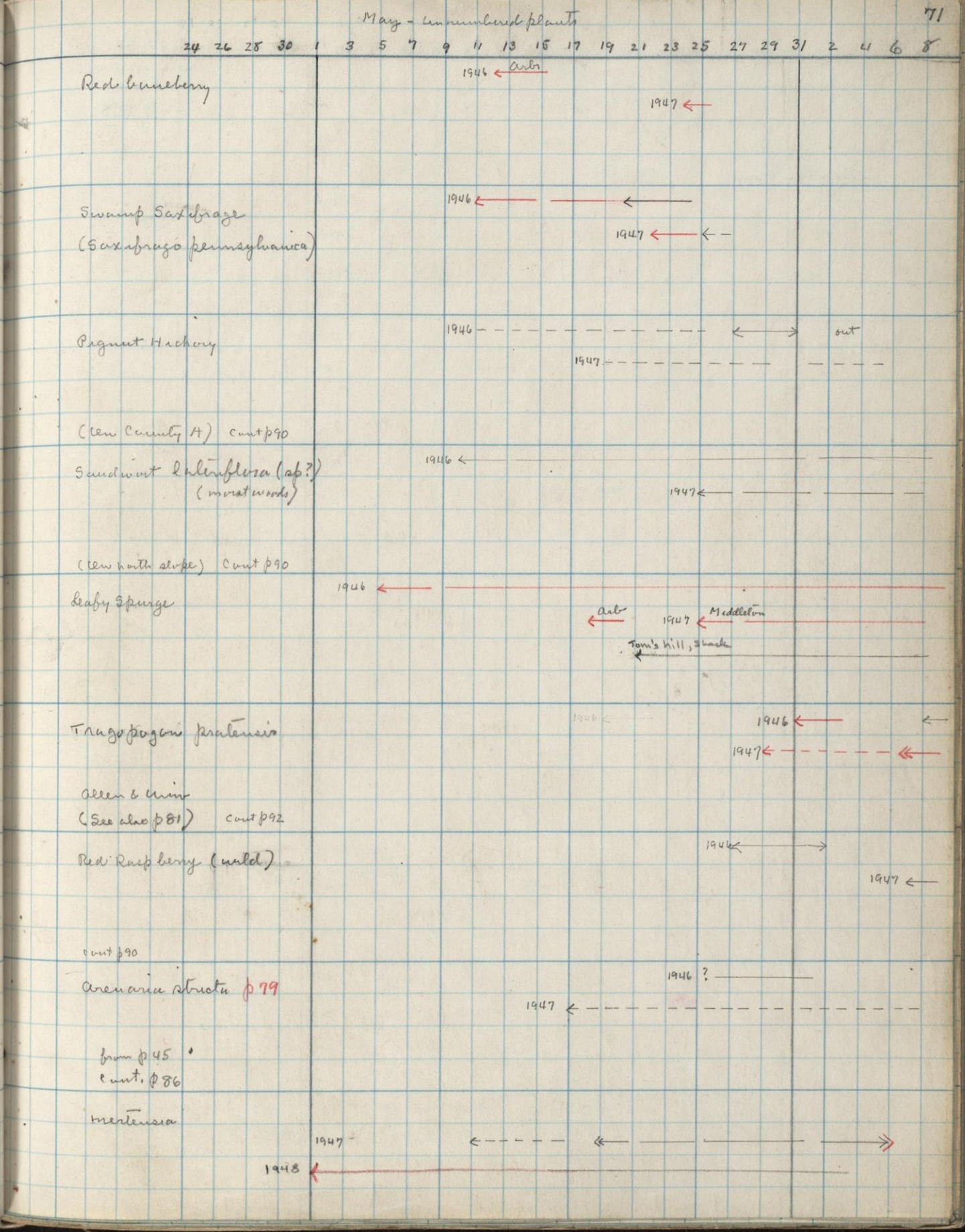
1946 ← arb

Seneca Snakeroot

1946 ←

1947 — — —

Cont p 90


May - unnumbered plants
24 26 28 30 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 2 4 6 8
Red bunchberry
1946 arb
1947
Swamp Saxifrage
(Saxifrago pennsylvanica)
1946
1947
Pignut Hickory
1946
out
1947
(Cen County A) cont p90
Sandwort laterflora (sp?)
(moist woods)
1946
1947
(Cen north slope) Cont p90
Leafy Spurge
1946
arb
1947
Middleton
Tom's hill, shack
Tragopogon pratensis
1946
1947
Allen & Univ
(See also p81) cont p92
Red Raspberry (wild)
1946
1947
cont p90
Arenaria stricta p79
1946 ?
1947
from p45
cont. p86
Mertensia
1947
1948

May - Unnumbered Plants

1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31

Identification verified by UNIV Herbarium

Krigia virginica

1947 ← → 1947 ←

(See also Oenothera p. 101)

(with Penstemon gracilis)

cont p92

23 25 27 29 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 2 4 6 8

(Apr. 2 & 7, Madison 1946 x——

77. House Wren
S = (5/1) D = 4/22

? x——

86. E. Kingbird
S = 5/4 D = 5/1

1946 x—— x——
1947 x—— x——

87 N. Crested Flycatcher
S = 5/4 D = 5/3

1946 x——
1947 x—— x

91 Franklin Ground Squirrel
D = 5/4

x arb
1946
1947 U. Bay arb x—— x x

95 Baltimore Oriole
S = 5/5 D = 5/3

1946 x—— x——
1947 x—— x——

96 E. Warbling Vireo
S = 5/5 D = 5/5

x—— x—— 1946
1947 x x——

98 Bobolink
S = 5/6 D = 5/3

x—— x—— 1946——
1947 19x x—— Dunn's Marsh x——

99 Rose-br. Grosbeak
S = 5/6 D = 5/6

1946 x—— x——
1947 x——

103 N. Yellowthroat
S = (5/7) D = 5/1

1946 x—— none x——
arb x 1947 x—— x——

May - Extensions

	23	25	27	29	1	3	5	7	9	11	13	15	17	19	21	23	25	27	29	31	2	4
39 Ruffed Grouse drums							x			0				x x			0 0 0 0 x 0					
1947										x		0 0 0		x x		x x x				x		
Cont p 103 Cont from p 35																						
75 Bobwhite sings 1946							x			0				0 0			0 0 0 0 0 0 x 0					
1947										x		x x x		x x			x		x x x			
1948															x 0							
Cont. from p 43																						
June beetle flying 1947 x																						

17 19 21 23 25 27 29 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 2 4 6 8

106 N. Wood Thrush
S = 5/8 D = 4/28

111 E. Whippoorwill
S = 5/10 D = 4/24

1946
1947
1948

113 Prothonotary Warbler
S = 5/10

1946
1947

114 Indigo Bunting
S = (5/11) D = 5/10

1946
1947

118 Scarlet Tanager
D = 5/11

1946
1947
arb

white throated Sparrow
heard one song only

1946
1947
1948

120 Catbird
S = 5/13 D = 5/2

1946
arb
1947
D dim S
?

124 E. Nighthawk
S = 5/14 D = 5/6

1946
1947
1948

May

23 25 27 29 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 2 4

Chimney Swift — arb.

1946

1947

1948

Deer browsing elm

1946

Deer eating Veronica

1946

1947

Cont p. 103

Last winnowing of jacksnipe

1946

1947

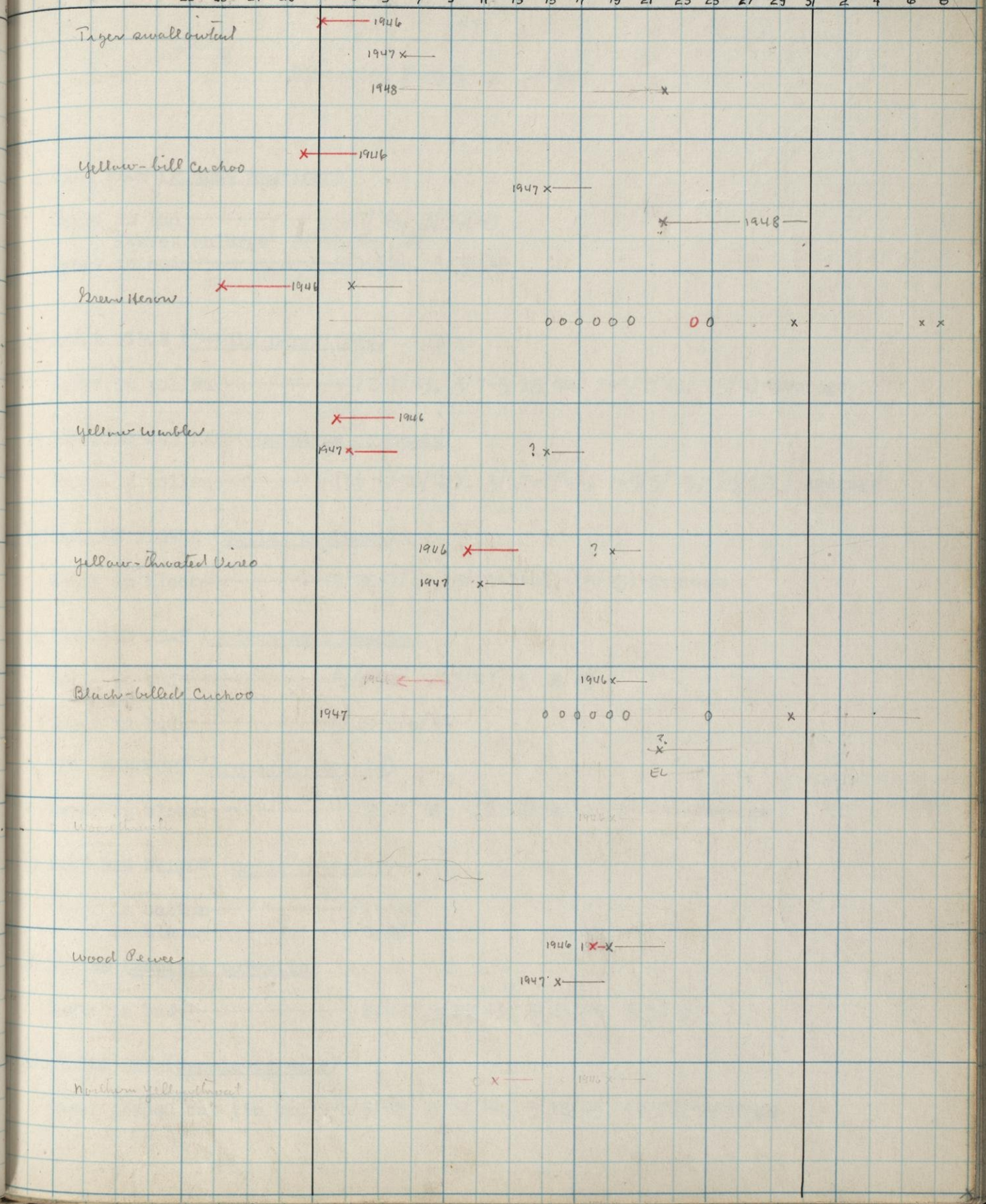
First tree frog heard

1947

1948

Deer eating wood nettle

1947


23 25 27 29 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 2 4 6 8
Tiger swallowtail
1946
1947
1948
Yellow-bill Cuckoo
1946
1947
1948
Green Heron
1946
Yellow Warbler
1946
1947
?
Yellow-throated Vireo
1946
?
1947
Black-billed Cuckoo
1946
1947
?
EL
Wood Pewee
1946
1947
Northern Yellowthroat

May

23 25 27 29 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 2 4

Robin fledged

1946 ×——

×——×—— flying 5/21

×——

Discarded Phenology for May

22 WILD PLUM (Prunus americana)

Sauk: in bud----------5/7/44, 3/30/45
leaves enlarge------5/8-?/44
Dane: in bud----------5/10/44, 3/30/45

23 PAPER BIRCH (Betula papyrifera) see p 69

Sauk: in pollen----------5/2-?/43, 5/7-5/15/44, ?-5/7/45, (5/4)-Average

24 CREEPING JUNIPER (Juniperus communis)

Sauk: in pollen----------(by 5/30/42), 5/17-?/44, ?-5/5/45, (5/17/)-Average

25 CARRION FLOWER (Smilax herbacea)

Sauk: in bloom----------5/25-?/40, 5/21-?/44, (5/23)-Average

26 SHOOTING STAR (Dodecatheon Meadia)

Sauk: in bud----------5/9/41, 5/13/43, 5/18/45

Dane: in bud----------4/19-5/6/45

27 ROCK SANDWORT (Arenaria stricta) p 86

Dane: in bloom----------5/26-?/38, 5/21-6/30/41, (5/24)-Average } no-OK ~~too late for stricta. Probably laterifolia?~~

28 SAND BAR WILLOW (Salix interior)

----: In cotton----------5/16/42
----: In bloom----------6/8/40

29 LUPINE (Lupinis perennis)

Sauk: in bud----------5/8/42, 5/15/43, 5/21/44, 5/5/45

30 WINTER RYE (Secale cereale)

Dane: headed out (in bud)--6/5/43, 5/21/44, 5/18/45, (5/25)-Average

31 BITTERSWEET (Solanum Dulcamara)

Dane: in bloom----------5/21-8/20+/44, 5/28-?/45, (5/25)-Average

32 WOODDUCK (Aix sponsa) Newly hatched brood seen with estimated age in days.

Sauk:----------6/3/39-(4), 6/16/40-(20), 6/16/43-(10), 5/19/45-(1)
Dane:----------6/15/45-(1)
Average computed hatching date, Sauk & Dane: June 1.

33 SHEEP SORREL (Rumex acetosella)

Sauk: in bud----------6/21/41, 5/7/42, 5/7/43, 5/21/44, 4/14/45

34 WILD GRAPE (Vitis vulpina)

Sauk: in bud----------5/18/41, 4/25/42, 5/20/44, 4/15/45
Dane: in bud----------5/20/44, 4/18/45

35 GOAT'S BEARD (Tragopogon pratensis) See p 71

Dane: in bloom----------5/28-7/10/44, 5/27-7/29/45, (5/28)-Average

20 22 24 26 28 30 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 1 3 5 7

154 Pucoon (Tall)
(Lithospermum carolinense) ← Sandhill
S = 6/1 D = (5/19)
1946 1947 ← Lewis

155 Wild Rose
(Rosa blanda)
S = 6/1 D = 6/1
1946 1947

156 Vetch
(Vicia angustifolia)
S = (6/1) D = (6/9)
1946 1947 ? out

157 Anemone cylindrica
S = 6/1 D = (6/12)
1946 out 1947

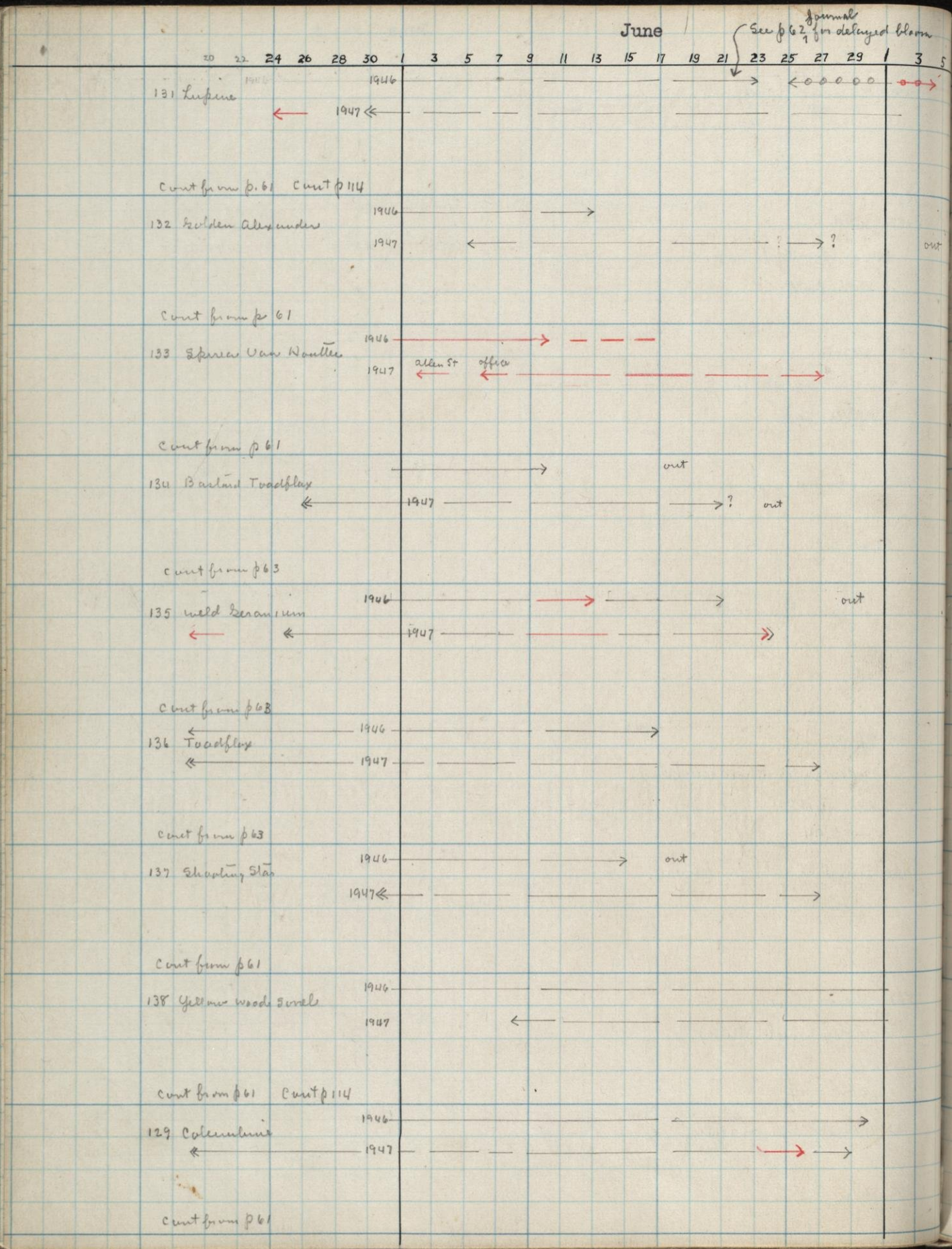
158 Baptisia leucophea
S = 6/1

159 Spiderwort
(Tradescantia canaliculata)
S = 6/2 D = 6/2
cont p. 114
1946 1947

160 Angelica atropurpurea
D = 6/2
1946 out 1947 ? out

161 Alsike Clover
(Trifolium hybridum)
S = 6/3
cont p 114
1946 1947

162 Penstemon gracilis
S = 6/3
1946 1947


June
See p 62 for delayed bloom
20 22 24 26 28 30 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 1 3 5
131 Lupine
1946
1947
Cont from p. 61 Cont p 114
132 Golden Alexanders
1946
1947
?
?
out
Cont from p 61
133 Spiraea Van Houttei
1946
1947
alien St
office
Cont from p 61
134 Barbed Toadflax
out
1947
?
out
Cont from p 63
135 wild Geranium
1946
out
1947
Cont from p 63
136 Toadflax
1946
1947
Cont from p 63
137 Shooting Star
1946
out
1947
Cont from p 61
138 Yellow wood Sorrel
1946
1947
Cont from p 61 Cont p 114
129 Coleosanthus
1946
1947
Cont from p 61

20 22 24 26 28 30 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 1 3 5 7

1946 ← → out

163 Canada Mayflower
(Maianthemum canadense)
S = 6/3

1947 out

1946 ← 1946 →

164 Dewberry
(Rubus flagellaris)
S = 6/3
cont p 124

1947 ←

1946 ← ← 1946 →

165 Domestic Yellow Iris
(Iris flavescens)
S = (6/3)

1947 ← out

1946 →

166 Anemone canadense
S = 6/3

1947 ← to 7/25

? Libby 6/11 Arb

1946 ←

167 Frostweed
(Helianthemum canadense)
D = (6/3)
cont p 114

1947 ←

1946 ←

168 White Clover
(Trifolium repens)
S = 6/4 D = 5/30
cont p 114

1946 ← 1946

169 Yarrow
(Achillea millefolium)
S = 6/4 D = 5/31
cont p 114

1947 ←

1946 →

171 Ninebark
(Physocarpus opulifolius)
S = 6/4 D = (6/7)

1947 ←

1946 →

172 Hudsonia tomentosa
S = (6/4)

1947 ←

June

24 26 28 30 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 1 3 5

139 Tall Yellow Ladyslipper
1946 →
1947 ← ← out

Cont from p 63

143 Pink Phlox
1946 → none
1947 ← ← →

Cont from p 65

144 Mandrake
1946 →
1947 ? ← ?

Cont from p 65

145 Naringberry
1946 → out
1947 ← ← →

Cont from p 65

146 Sheep Sorrel
1946 ← →
1947 ← →

Cont from p 65 Cont p 114

147 Yellow Star grass
← → 1946
1947 ← ? out

Cont from p 65

148 Wild Grape
← 1946 →
← 1947 ← → out

Cont from p 65

149 Golden Ragwort
1946 →
← 1947 ← ? out

Cont from p 65

Arenaria stricta p 79
1946 →
1947 ← →

Cont from p 71

24 26 28 30 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 1 3 5 7

173 Wild Parsnip
(Pastinaca sativa)
D = 6/4
Cont p 114

174 Spatterdock
(Nymphaea variegatus)
S = 6/5 D = (5/27)
Cont p 116

175 Black Locust
(Robinia pseudo-acacia)
S = 6/5 D = 5/29

176 Krigia biflora
S = 6/7 D = 6/2

177 Lychnis alba
S = 6/7 D = (6/2)
Cont p 116

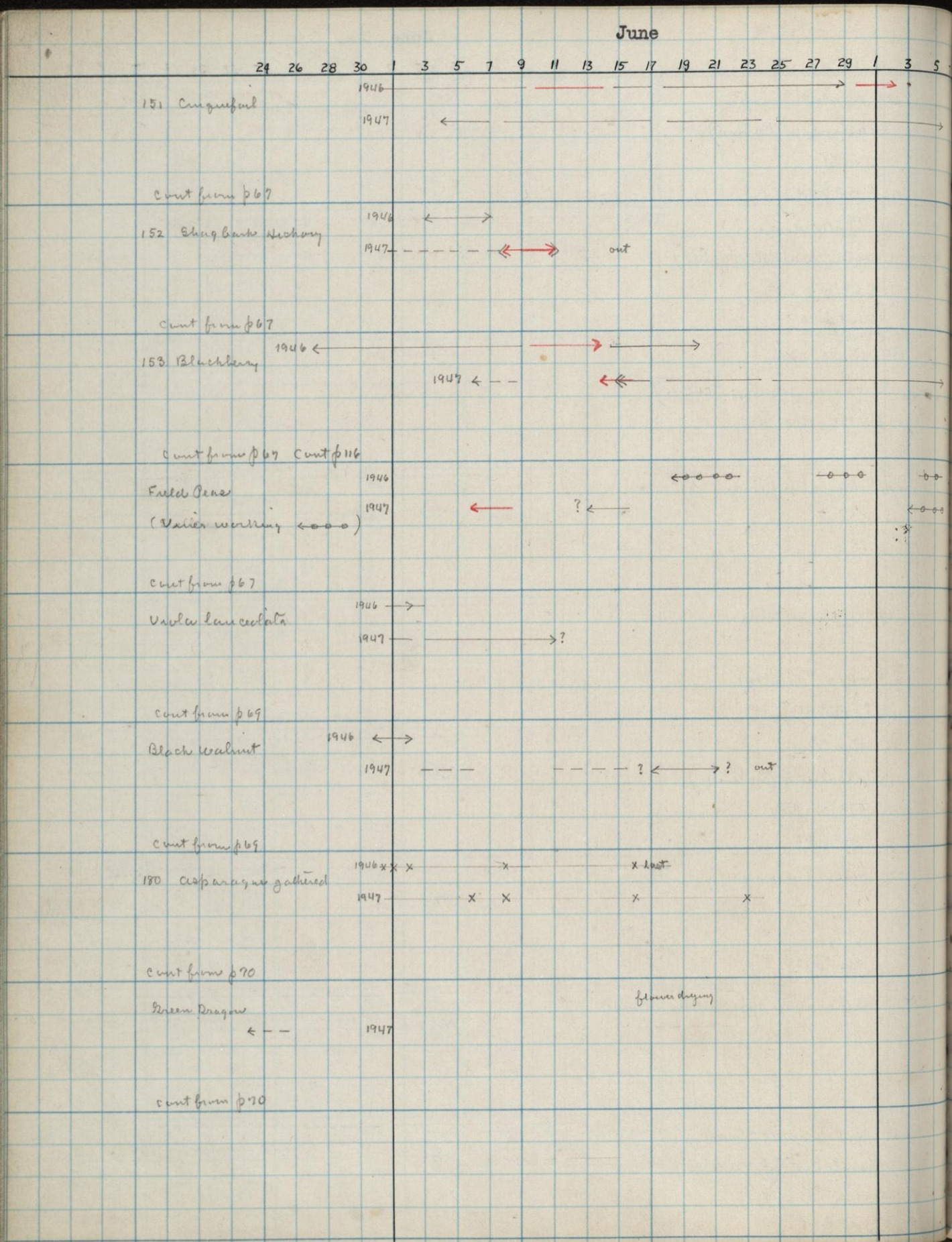
178 Red Clover
(Trifolium pratense)
S = (6/7) D = 6/4
Cont p 116

179 Potentilla arguta
S = 6/7
Cont p 124

180 Asparagus officinalis blown
S = (6/7)

181 Yellow Sweet Clover
(Melelotus officinalis)
S = 6/8 D = (5/31)
Cont p 116

Art Hale & McCabe


June
24 26 28 30 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 1 3 5
151 Cinquefoil
1946
1947
cont from p67
152 Shag Bark Hickory
1946
1947
out
cont from p67
153 Blackberry
1946
1947
cont from p67 cont p116
Field Pansy
(Violet working)
1946
1947
?
cont from p67
Viola lanceolata
1946
1947
?
cont from p69
Black Walnut
1946
1947
?
?
out
cont from p69
180 Asparagus gathered
1946
1947
x last
cont from p70
Green Dragon
1947
flower drying
cont from p70

24 26 28 30 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 1 3 5 7

182 Daisy (Chrysanthemum leucanthemum var. pumatifidum)
S = (6/8) D = (6/2)
cont p 116

183 Amer. Bittersweet (Cledastrus scandens)
S = 6/8

184 Marsh Blueflag (Iris virginica)
S = 6/9 D = 6/4

185 Mock Orange (Philadelphus sp.)
D = (6/9)

186 Scribners Panic (Panicum scribnerianum)
S & D = (6/9)

seed on ground
seed ripe, starting to fall

188 Daisy Fleabane (Erigeron ramosus)
S = 6/12 D = 6/2
cont p 116

189 Northern Bedstraw (Galium boreale)
S = (6/12) D = (6/10)

190 Poison Ivy (Rhus radicans)
S = 6/12

191 Bluets (Houstonia cerulea)
S = 6/12

to 7/18

June

24 26 28 30 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 1 3 5

wild Ginger

(At Indian Pipe bench)

Pig nut Hickory ←→ 1946

1947 ? ← → ? out

Ten County A nearT

(cont from p 71)

Sandwort 1946

← 1947 →

(In woods, Indian pipe bench)

cont from p 71

229 Red raspberry (wild) 1946 ← → ←o o o o

1947 ←

cont from p 71 p 110 Cont p 116

123 Asiatic Honey sackle → 1946 1946 ←o o o o o o o

← 1947 →

(Bloom p. 59) Cont p 116

Red raspberry (tame) 1946 ←o o o to 8-1-46

7-20 to 8-15-47

Seneca snakeroot

1947 ← ← →

from p 71

115 Blue Phlox 1946 → →

1947 → →

cont from p 59

119 Jacob's Ladder → 1946

1947 → →

cont from p 59

29 26 28 30 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 1 3 5 7

192 Harebell
(Campanula rotundifolia)
S = 6/12
Cont p 118

193 Lobelia spicata
D = (6/12)
Cont p 124

194 Wild white Indigo
(Baptisia leucantha)
S = 6/13 D = (6/17)
Cont p 118

195 Gray Dogwood
(Cornus foemina)
S = 6/13 D = (6/9)

196 Flowering Spurge
(Euphorbia corollata)
S = 6/13 D = (6/13)
Cont p 118

197 Quack grass
(Agropyron repens)
S = 6/13 D = (6/21)

198 Ground Cherry
(Physalis virginiana)
D = 6/13

199 Wild Carrot
(Daucus carota)
D = 6/13

200 Alfalfa
(Medicago sativa)
Jefferson = 6/14

June

24 26 28 30 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 1 3 5

120 wild strawberry — 1946 → 1947 →

Cont from p59

130 Blue-eyed Grass — 1946 → 1947 ← → → → out

Cont from p61

Taago pogon pratensis ← 1946 ← 1947 ← ← struggle to 7/13 → ? out

Cont from p71

Kregia virginica 1947 ← struggle to 7/27

Cont from p72

128 Virginia Waterleaf — 1947 → →

Cont from p61

24 26 28 30 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 1 3 5 7

201 Silky Dogwood
(Cornus obliqua)
S = 6/14
Cont p 118

1946 ← → 1947 ? ←

202 Solomon's Seal
(Polygonatum biflorum)
S = 6/14

1946 ← - - - ← → 1947 ← - - ← ? → →

203 Wahoo
(Evonymus atro purpureus)
S = 6/14
Cont p 118

1946 ← - - - ← → 1947 ← - - - - - ? ←

204 Tall Meadow Rue
(Thalictrum dasycarpum)
S = 6/15 D = (6/10)

1946 ← ← → 1947 ← →

205 Hedge Bindweed
(Convolvulus sepium)
S = 6/15 D = 6/17
Cont p 118

none out 1946 ← ← 1947 ← ←

206 Field Bindweed
(Convolvulus arvensis)
D = (6/15)
Cont p 118

1946 ← ← arb 1947 ←

207 White Sweet Clover
(Melilotus alba)
S = (6/17) D = (6/9)
Cont p 118

1946 ← ← → 1947 ←

208 Motherwort
(Leonurus cardiaca)
D = (6/17)

1946 ← → 1947 ← arb

June

24 26 28 30 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 1 3 5

24 26 28 30 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 1 3 5 7

219 Spreading Dogbane
(Apocynum androsaemifolium)
S = 6/25 D = (6/26)
Cmt p 120

220 Dog Fennel
(Anthemis cotula)
S = 6/25
Cmt p 120

221 Orange Day Lily
(Hemerocallis fulva)
S = 6/26 D = (6/28)
Cmt p 120

222 St Johns wort
(Hypericum perforatum)
S = 6/26
Cmt p 122

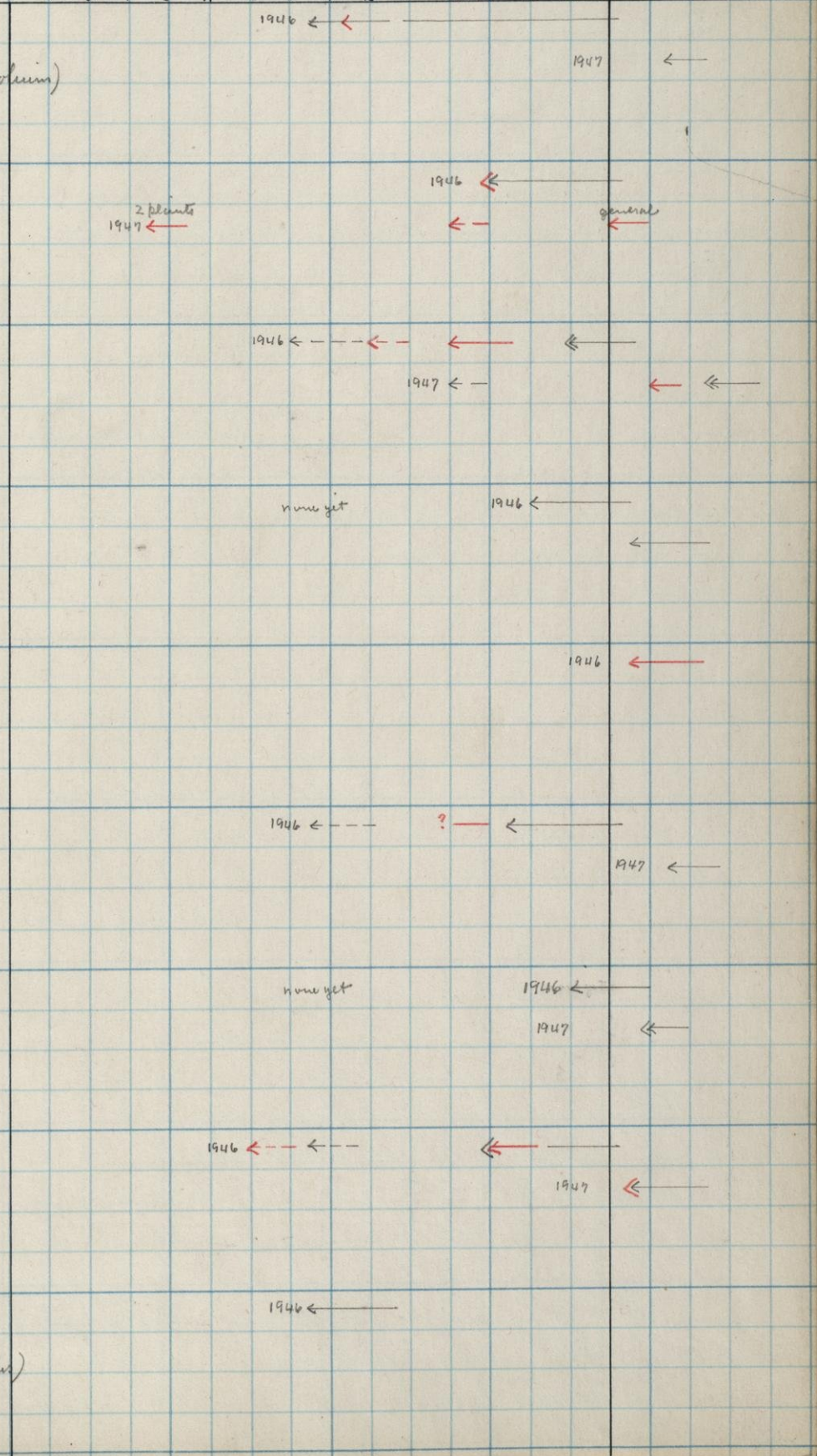
223 Purple Loosestrife
(Lythrum alata)
D = (6/27)
Cmt p 122

224 Cowbane
(Cicuta maculata)
S = (6/28) D = (6/17)
Cmt p 122

225 Butter and Eggs
(Linaria vulgaris)
S = 6/26 D = (6/22)
Cmt p 122

226 Timothy
(Phleum pratense)
S = 6/28 D = (6/23)
Cmt p 122

227 Black Bindweed
(Polygonum convolvulus)
S = (6/30)
Cmt p 122



24 26 28 30 | 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 | 1 3 5 7

1946 ← - - - - - - - - - - - - - - - ← ←

224 New Jersey Tea
(Ceanothus americanus)
S = 6/30 D = 7/2
Count @ 122

7-19-47

24 26 28 30 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 1 3 5 7

Silver Cinquefoil
1946 ← —
1947 ← —

Hieracium aurantiacum
1945 ← — Buss, ... 1946 ← — → out
1947 ← —

Smilacina racemosa
(Large false Seal)
1946 ← — out
1947 ← —

On Co. A

Trientalis borealis
(Star flower)
Bed on N slope
1946 ? → out
no bloom

Hairy Vetch
1946 ← — → —
1947 ← —

Rough Bedstraw
(Galium aparine)
1946 ← —
1947 ← —

Coral bell
? ← —
1947 ← — — → —

Sundrops p109
Oenothera fruticosa
See also Kingia virginica p. 72
1946 ← — → straggle 8/1
1947 ← — straggle 8/3

Amelanchier canadensis fruit ripe
(red, eaten by birds)
1946 ← o o o
1947 ← o o o o to 8/3

June

24 26 28 30 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 1 3 5

Prunella vulgaris (p 111) 1946 ← 1947 ←

Lysimachia quadrifolia florum? ← 1946 ← ? ←

Cont p 122

Lathyrus palustris p 109 1946 ← out 1947 ←

Showy Ladyslipper 1946 ← 1947 ←

A.T. Flint 122 Bascom Place

140 Mulberry - fruit ripe 1946 ← green at shack

Cont from p. 63 Cont p 122

Cat Tail 1946 ←

(Typha latifolia)

Mountain Ash 1947 ←

2222 Van Hise

Highbush Cranberry 1947 ←

S = clay hill

Norway Pine 1947 ← out

24 26 28 30 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 1 3 5 7

170 Woodcock, last peent

S = 6/4 D = (6/1)

187 Firefly (Lampyridae)

S = 6/11 D = 6/13

210 Virginia Deer - first no coat
(Odocoileus virginianus borealis)

S = 6/18

Deer browsing elm

Deer eating Veronica p111

from p 76

Caterpillars descending

39 Ruffed Grouse drums

Cont from p 74

Deer browsing butter sweet p111

Deer eating Solomons Seal

24 26 28 30 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 1 3 5 7

Deer eating spurge p 111

1946 x x

1947 x x x

Pheasant, first broods hatch

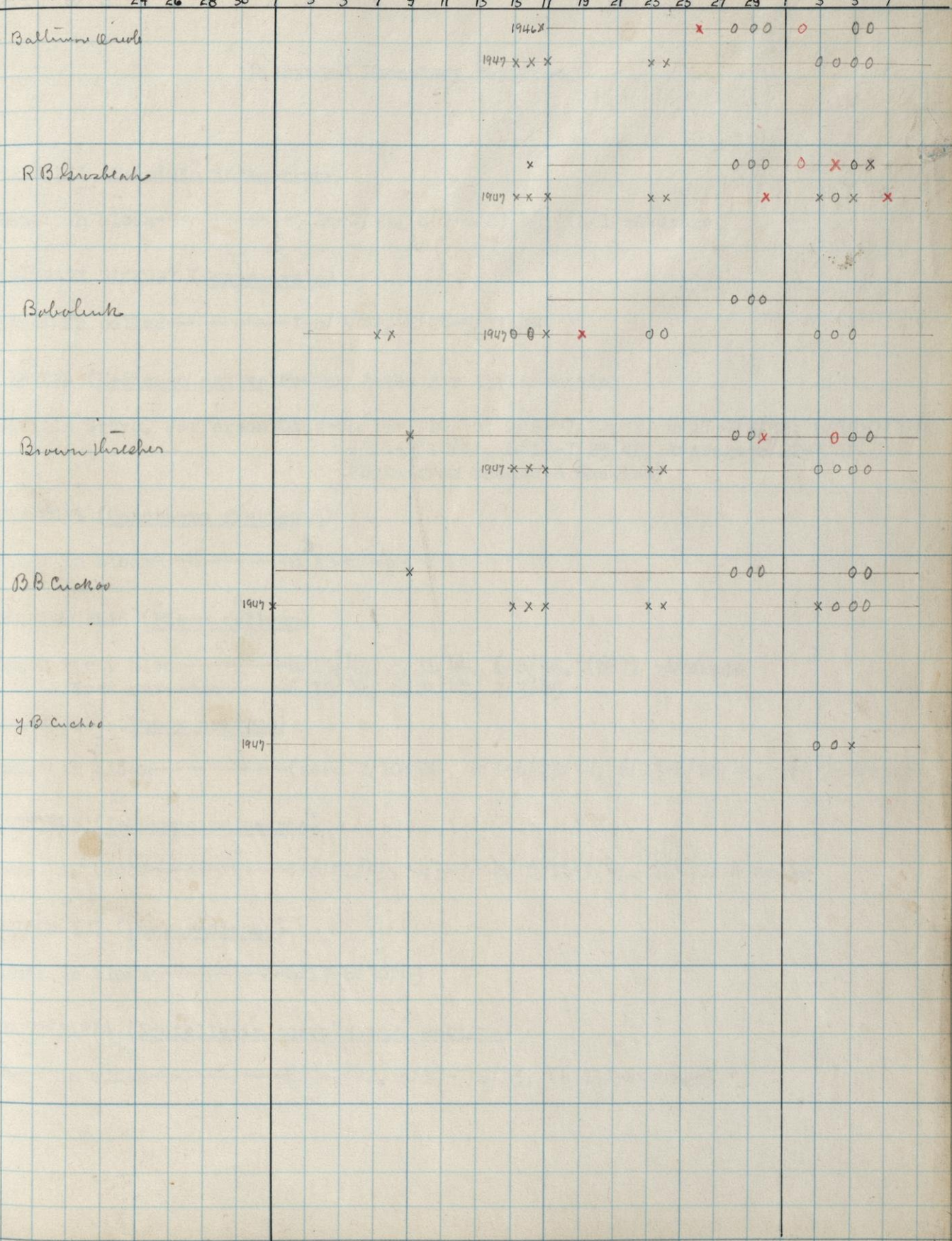
1947 x

265 N. Virginia Deer, fauns travel

7-27-46

1947 x x x

cont p 129


24 26 28 30 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 1 3 5 7
Baltimore Oriole
1946
1947
R B Grosbeak
1947
Bobolink
1947
Brown Thresher
1947
B B Cuckoo
1947
Y B Cuckoo
1947

Discarded Phenology for June

36 TAENIDIA (Taenidia integerrima)

Dane: in bloom----------5/26-?/41, 6/7-6/27/45, (6/1)-Average

37 SHAGBARK HICKORY (Carya ovata)

Sauk: in pollen----------?-6/7/42, 5/24-5/31/44

38 ALFALFA (Medicago sativa) Mowing dates for first cutting.

Faville Grove, Jefferson Co.:--6/15-7/10/36, 6/20-7/20/37, 6/17-7/8/38, 6/15-7/7/40, 6/10-7/10/41, 6/17-7/25/42, Average-6/22-7/18 (Data from McCabe & Hawkins)

39 SUNDROPS (Oenothera fruticosa) p.101

Sauk: in bloom----------6/13-?/44

40 CANNING PEAS (Pisum sativum)

Sauk: first bloom---------6/15/43, 5/31/44, 6/6/45, (6/7) -Average
first cut----------6/15/42, 6/21/43, 7/3/45

41 CURLY DOCK (Rumex crispus)

Dane: in bloom----------(seed 7/10/38), 6/1-6/23/44, 6/13-6/28/45, (6/7)-Average

42 LATHYRUS (Lathyrus palustris) see p.102

Sauk: in bloom----------?-6/21/43, 6/5-?/44, 6/16-?/45, (6/11)-Average

43 POISON IVY (Rhus radicans)

Dane: in bloom----------6/17-6/30/45

44 SCUTELLARIA (Scutellaria parvula var. ambigua)

Dane: in bloom----------6/9-?/42, 6/17-7/8/45, (6/13)-Average

229. Red Raspberry (Rubus idaeus)

Sambo - in bloom - 6/1 - ?/41 6/1 - 6/15/42, ? - 6/3/43, by 6/12/44 by 6/3/45 over (6/1)

Blephilia ciliata (single stemmed Bergamot

6/21 - 7/30/44, 6/28 - 7/24/45, 6/17 - 1946.

45 UMBRELLA WORT (Oxybaphus nyctagineus)

Dane: in bloom----------6/1-?/41, 6/27-7/15/45, (6/14)-Average

46 POLYGOLA (Polygola polygama)

Dane: in bloom----------6/9-?/42, 6/20-7/20/45, (6/15)-Average

47 NORTHERN VIRGINIA DEER (Odocoileus virginianus borealis)

Sauk: browsing of spurge--6/11/39, 6/8/40, 6/7/41, 6/22/42, 6/14/43, 6/2/44, 6/12/45, Average-6/11
p105

browsing of bittersweet-6/26/37, 6/11/39, 6/13/40, 6/7/41, 6/27/42, 6/26/43, 7/1/44,
p103

browsing of veronica----6/14/38, 6/11/39, 6/15/41, 5/23/42, 6/13/44, 6/15/45, Average-6/10
p103

browsing of wood nettle-(by 7/29/39/), 6/14/41, 5/23/42, (by 7/26/43), 7/2/44

48 HEAL-ALL (Prunella vulgaris) See p102

Dane: in bloom----------?-8/3/42, ?-7/29/43, 6/17-8/1+/44, 6/24-8/12/45, (6/21)-Av.

49 PENTSTEMON (Pentstemon digitalis)

Dane: in bloom----------6/24-7/9/44, 6/25-7/23/45, (6/24)-Average

50 ORANGE DAY LILY (Hemerocallis fulva)

Sauk: in bud----------6/7/41, 6/13/42, 6/14/43, 6/15/44, 6/16/45,

51 GROUND CHERRY (Physalis heterophylla)

Dane: in bloom----------6/22-?/44, 7/1-?/45, (6/27)-Average

52 GOAT'S RUE (Tephrosia virginiana)

Dane: in bloom----------6/25-7/9/44, 7/3-7/31/45, (6/29)-Average

53 WHITE AVENS (Geum canadense)

Dane: in bloom----------7/1-?/44, 6/27-8/9+/45, (6/29)-Average

54 COMMON PLANTAIN (Plantago major) See p103

Dane: first bloom---------6/23/45

23 25 27 29 | 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 2 4 6

230. Coreopsis palmata
1946 ←
S = 7/1 D = 7/4
to 8/11

231 Fringed Loosestrife
(Lysimachia ciliata)
1946 ←
1947 ? ←
S = 7/1
cont p 138

232 Common milkweed
(asclepias syriaca)
1946 ←
1947 ← to 8/11
S = 7/2 D = (7/1)

233 Basswood
(Tilia americana)
1946 ← Co. A ? out
S = 7/3 D = 7/1

234 Ragged Orchis
(Habenaria lacera)
cant find
S = 7/3

235 Hollyhock
(Althaea rosea)
1946 ←
1947 ←
S = 7/4 D = (6/29)
cont p 138

236 Veronicastrum virginica
1946 ←
1947 ←
S = 7/4 D = 7/4
cont p 138

237 Blue Vervain
(Verbena hastata)
1946 ←
1947 ←
S = 7/4 D = 7/4
cont p 138

238 milkwort
(Polygala sanguinea)
1946 ← ? ←
1947 ←
cont p 138

July - plant extensions

23 25 27 29 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 2 4 6

159 Spiderwort
1946
1947 to 8/10

Cont from p 83

161 Alsike clover
1946
1947

Cont from p. 83

131 Lupine seed ripening
1946 gone
1947 gone

cont from p 84

138 yellow wood sorrel
1946
1947

Cont from p 84 Cont p 138

167 Frostweed
(Helianthemum canadense)
1946 none seen none
? no later bloom
1947 none

Cont from p 85

168 White Clover
1946
1947 to 8/10

Cont from p 85

169 Yarrow
1946
1947 Straggle 10-25-47 to 8/10

Cont from p 85 Cont p 138

146 Sheep Sorrel
1946
1947

Cont from p. 86

173 Wild Parsnip
1946
1947

Cont from p 87

23 25 27 29 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 2 4 6

239. Mullein
(Verbascum Thapsus)
S = 7/5 D = 6/29
cont p 138

1946 ← — — — ←
Fresh Meadow & Middleton
1947 ← ←
To 8/10 ✓

240 Lemander
(Tencrium canadense)
S = 7/5 D = (7/8)
cont p 138

1946 ←
1947 ←

241 Butterfly weed
(Asclepias Tuberosa)
S = 7/5 D = 7/10
cont p 136

← — — 1946 — — — — — ←
1947 — — — ←

242 Evening Primrose
(Oenothera pycnocarpa)
S = 7/5 D = (7/11)
cont p 138

1946 ← — — ←
1947 ←

243 Pointed-leaf Tick Clover
(Desmodium acuminatum)
D = (7/5)

1946
1947? ← → 8/18 cut

244 Marsh milkweed
(Asclepias incarnata)
S = 7/6 D = (7/6)
cont p 138

← ← 1946 ←
1947 ←

245 Bee Balm
(Monarda punctata
var villicaulis)
S = 7/7 cont p 140

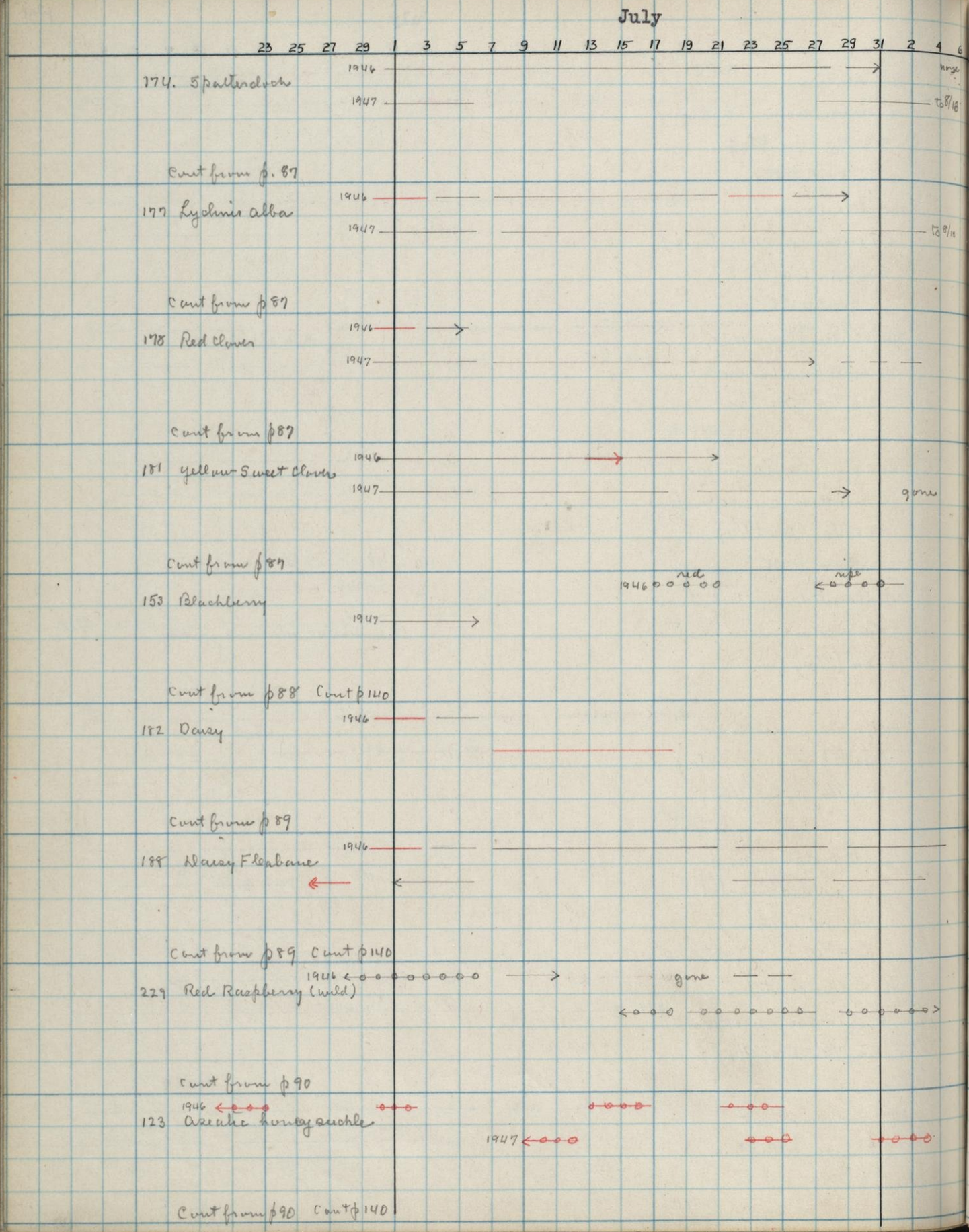
1946 ←
1947 ←

246 Lead Plant
(Amorpha canescens)
S = 7/8 D = (7/14)

1946 ← ← — ← →
1947 ← — ← →

247 Meadowsweet
(Spirea alba flora)
S = 7/8
p. 133 Cont 136

1946 ? ←
1947? ←


July
23 25 27 29 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 2 4 6
174. Spatterdock
1946
1947
to 8/18
Cont from p. 87
177 Lychnis alba
1946
1947
to 8/10
Cont from p 87
178 Red Clover
1946
1947
Cont from p 87
181 Yellow Sweet Clover
1946
1947
gone
Cont from p 87
153 Blackberry
1946
red
ripe
1947
Cont from p 88 Cont p 140
182 Daisy
1946
Cont from p 89
188 Daisy Fleabane
1946
Cont from p 89 Cont p 140
229 Red Raspberry (wild)
1946
gone
Cont from p 90
123 Asiatic honeysuckle
1946
1947
Cont from p 90 Cont p 140

23 25 27 29 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 2 4 6

248 Turkscap Lily
(Lilium superbum)
S = 7/9 D = (7/9)

1946 ← ← → gone
1947 ← ← →

249 Lopseed
(Phryma Leptostachya)
D = (7/9)

1946 ←
1947 ←

250 Smartweed
(Polygonum pennsylvanicum)
S = 7/10
cont p 140

1946 ← —
1947 ← Fish Hatch. ←

251 Green Milkweed
(Acerates hirtella)
S = (7/10)
Cont 136

1946 ← →
1947 — — ← —

252 Horse Nettle
(Solanum carolinense)
S = 7/10
cont p 140

1946 —
1947 —

253 Prairie White-fringed Orchid
(Habanaria leucophea)
D = 7/10

254 Catnip
(Nepeta cataria)
S = 7/11 D = 7/7

1946 ← —
1947 ? ← ← Arb Hale — to 8/10

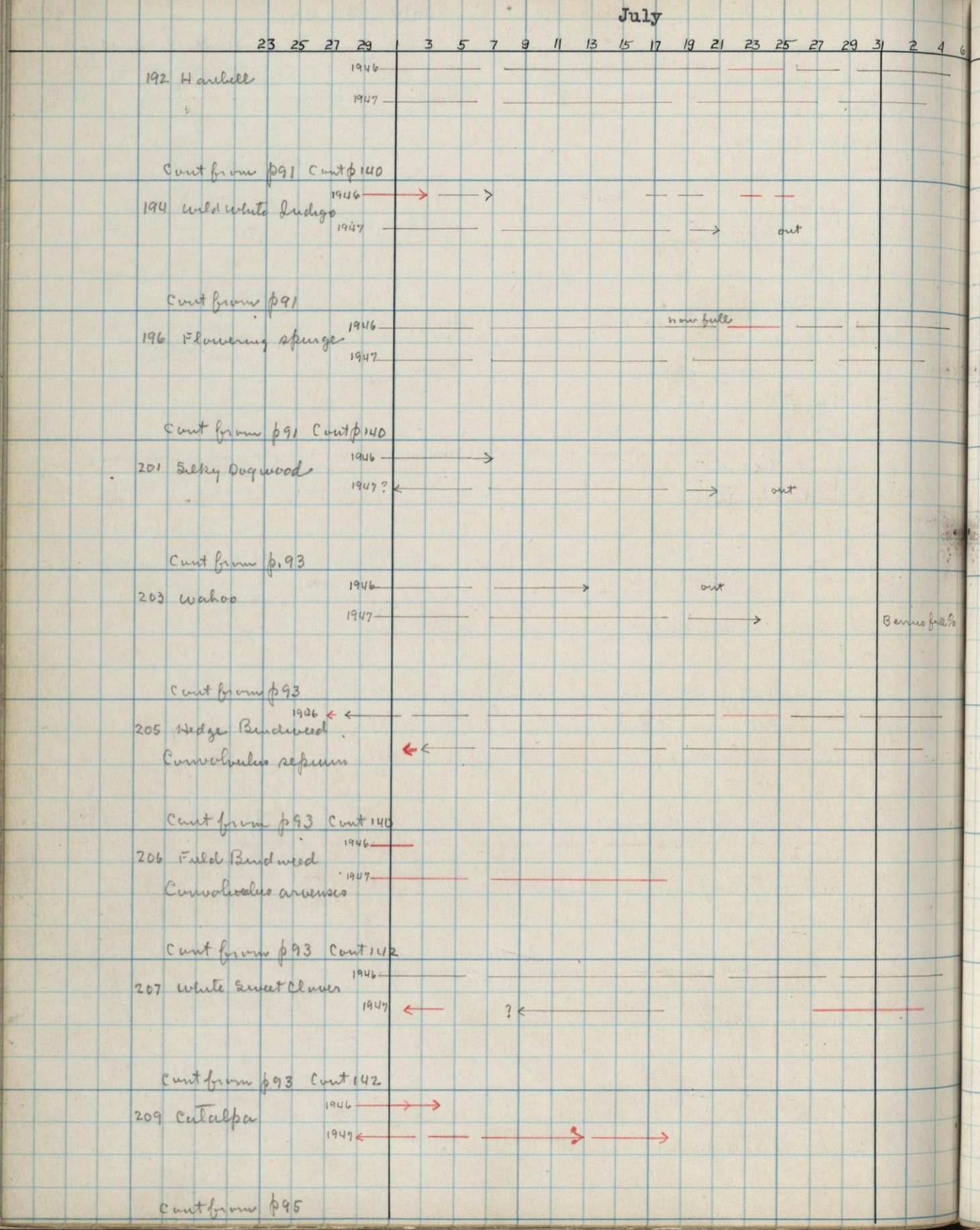
255 Common Plantain
(Plantago major)

1946 ← ←
1947 ←

see p 111

256 Winter Rye
(Secale cereale)

1947 ← o o o


July
23 25 27 29 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 2 4 6
192 Harebell
1946
1947
Cont from p91 Cont p140
194 Wild white Indigo
1946
1947
out
Cont from p91
196 Flowering spurge
1946
now full
1947
Cont from p91 Cont p140
201 Silky Dogwood
1946
1947 ?
out
Cont from p.93
203 Wahoo
1946
out
1947
Berries full?
Cont from p93
205 Hedge Bindweed
Convolvulus sepium
1946
Cont from p93 Cont 140
206 Field Bindweed
Convolvulus arvensis
1946
1947
Cont from p93 Cont 142
207 White Sweet Clover
1946
1947
?
Cont from p93 Cont 142
209 Catalpa
1946
1947
Cont from p95

23 25 27 29 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 2 4 6

257. Prairie Dock
(Silphium terebinthinaceum)
D = 7/11
Cont p 142
1947 ← Arb Hale

258 Bouncing Bet
(Saponaria officinalis)
S = 7/12 D = (6/30)
Cont p 142
1946 ←
1947 ← - - ← ←

259 Wild Bergamot
(Monarda fistulosa)
S = 7/12 D = 7/7
Cont p 142
1946 ≪
1947 ≪

261
~~260~~ Purple Prairie Clover
(Petalostemum purpureum)
S = 7/12 D = (7/17)
Cont p 136
? ← out
1947 ← - -

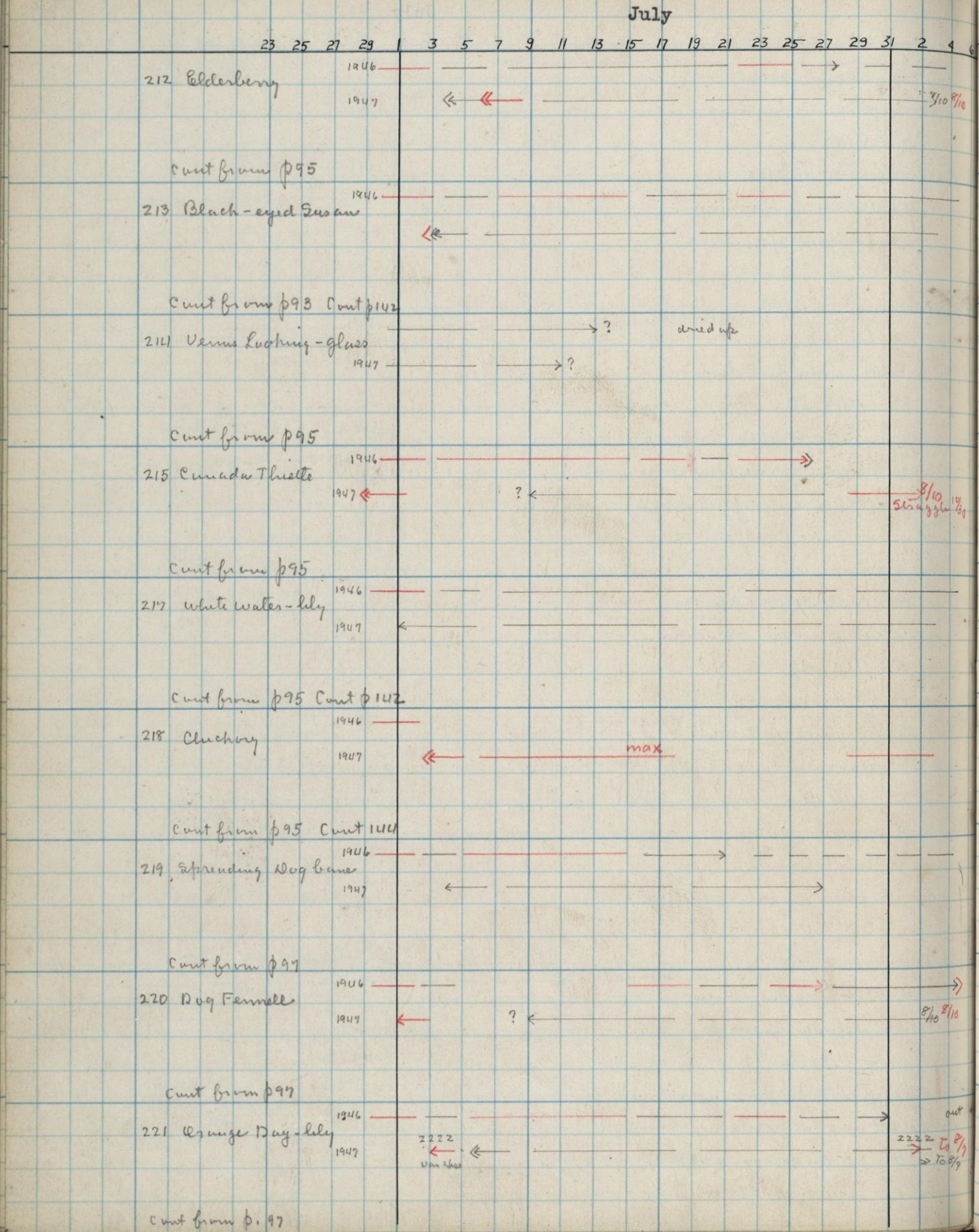
260
~~261~~ White Prairie Clover
(Petalostemum candidum)
S = 7/12 D =
Cont p 136
1946 ← ← - - ? ←
1947 ← - - ≪

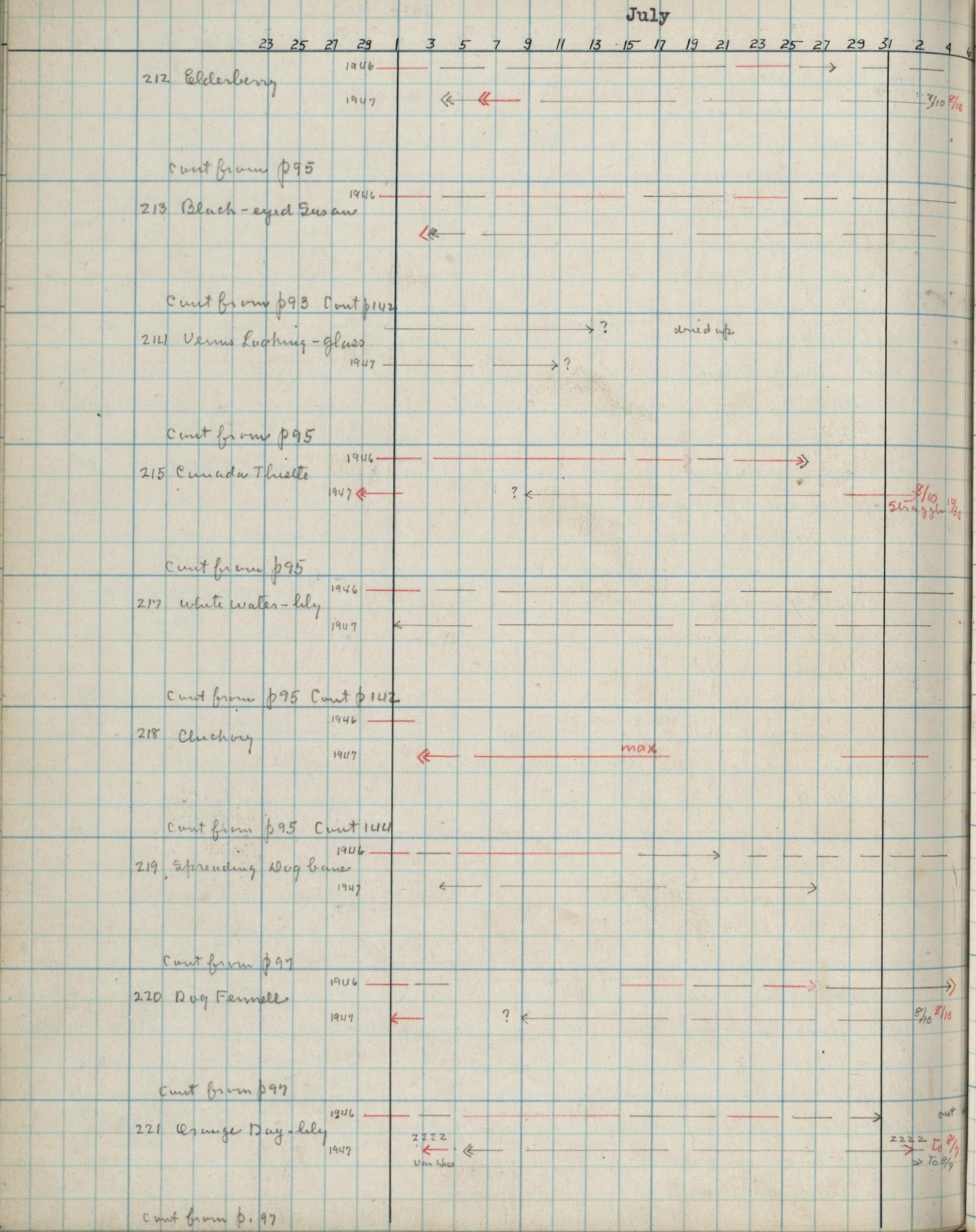
262 Hairy Hawk weed
(Hieracium longipilum)
S = 7/14 D = (7/11)
1946 ← ← - -
← Arb Hale & McCabe
1947 ≪

263 White Vervain
(Verbena urticaefolia)
D = (7/14)
Cont p 142

264 Cutleaf Coneflower
(Ratibida pinnata)
S = 7/15 D = 7/9
Cont p 142
← - - - 1946 - - ≪
1947 ← - - - - - - ← Arb Hale McCabe ≪ ≪

266 Canada Nettle
(Laportea canadensis)
S = 7/16
1946 ← - - - - ?
1947 ← - - - - - - - ←


July
23 25 27 29 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 2 4 6
212 Elderberry
1946
1947
8/10 8/10
Cont from p95
213 Black-eyed Susan
1946
Cont from p93 Cont p142
214 Venus Looking-glass
1947
?
dried up
Cont from p95
215 Canada Thistle
1946
1947
?
8/10 Straggle 10/30
Cont from p95
217 White water-lily
1946
1947
Cont from p95 Cont p142
218 Chicory
1946
1947
max
Cont from p95 Cont 144
219 Spreading Dog bane
1946
1947
Cont from p97
220 Dog Fennell
1946
1947
?
8/10 8/10
Cont from p97
221 Orange Day-lily
1946
1947
2222
Van Wise
2222
To 8/7
To 8/9
out
Cont from p. 97


July
23 25 27 29 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 2 4 6
212 Elderberry
1946
1947
8/10 8/10
Cont from p95
213 Black-eyed Susan
1946
Cont from p93 Cont p142
214 Venus Looking-glass
1947
?
dried up
Cont from p95
215 Canada Thistle
1946
1947
?
8/10
Straggle 10/30
Cont from p95
217 White water-lily
1946
1947
Cont from p95 Cont p142
218 Chicory
1946
1947
max
Cont from p95 Cont 144
219 Spreading Dog bane
1946
1947
Cont from p97
220 Dog Fennell
1946
1947
?
8/10 8/10
Cont from p97
221 Orange Day-lily
1946
1947
2222
Van Wise
2222
To 8/7
To 8/9
out
Cont from p. 97

23 25 27 29 | 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 | 2 4 6

277 Early Goldenrod
(Solidago juncea)
S = 7/24 D = 7/21
cmt p 146

278 Helianthus occidentalis
S = 7/25
cmt p 146 p135

279 Canada Tick Clover
(Desmodium canadense)
S = 7/26 D = 7/11
cmt p 146

281 Boneset
(Eupatorium perfoliatum)
S = 7/27 D = 7/17
cmt p 146

282 Bull Thistle
(Cirsium vulgare)
S = (7/27) D = 7/21
cmt p 146

283 Tansy
(Tanacetum vulgare)
S = 7/27 D = (7/31)
cmt p 146

284 Spartina pectinata
S = 7/27

285 Arrowhead
(Sagittaria latifolia)
S = (7/27)

288 Prickly Lettuce
(Lactuca Scariola)
S = (7/27)

1946 ← 1947 ← — — —

23 25 27 29 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 2 4 6

277 Early Goldenrod
(Solidago juncea)
S = 7/24 D = 7/21
Cont p146

1946
1947 arb

278 Helianthus occidentalis
S = 7/25
Cont p146 p135

1947

279 Canada Tick Clover
(Desmodium canadense)
S = 7/26 D = 7/11
Cont p146

1946
1947

281 Boneset
(Eupatorium perfoliatum)
S = 7/29 D = 7/17
Cont p146

1946
?

282 Bull Thistle
(Cirsium vulgare)
S = (7/27) D = 7/21
Cont p146

1946
Very early plant
1947
normal

283 Tansy
(Tanacetum vulgare)
S = 7/27 D = (7/31)
Cont p146

1947 not out
1947
madison
Spr. Corners

284 Spartina pectinata
S = 7/27

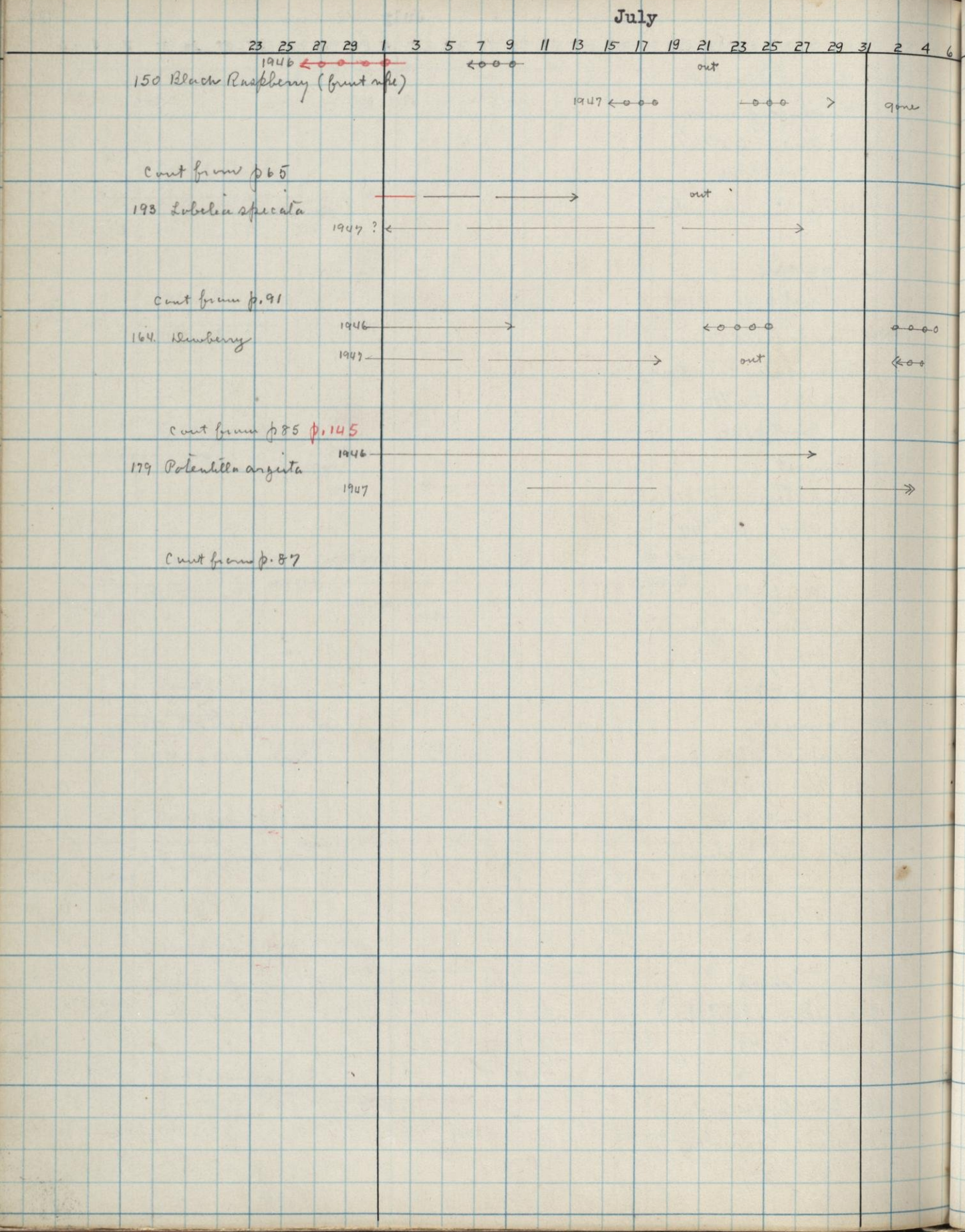
not headed
none
1947

285 Arrowhead
(Sagittaria latifolia)
S = (7/27)

none

286 Prickly Lettuce
(Lactuca Scariola)
S = (7/27)

1946
1947


July
23 25 27 29 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 2 4 6
1946
out
150 Black Raspberry (fruit ripe)
1947
gone
Cont from p65
out
193 Lobelia spicata
1947 ?
Cont from p.91
1946
164. Dewberry
1947
out
Cont from p85 p.145
1946
179 Potentilla argenta
1947
Cont from p.87

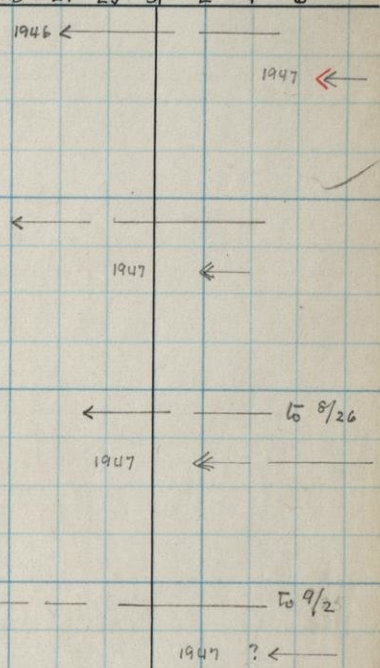
4 6 23 25 27 29 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 2 4 6

287 Cardinal Flower
(Lobelia cardinalis)
S = 7/29
cmt p 146

289 Canada Fleabane
(Erigeron canadensis)
S = 7/31 D = (7/24)

290 Big Bluestem
(Andropogon furcatus)
S = 7/31 D = (7/27)
cmt p 136

291 White Pine Bud Scales shed
(Pinus strobus)
S = 7/31



23 25 27 29 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 2 4 6

Scotch bluebell at shade ← 1946 — → gone — —

1947 ? ← — — — 8/18

←

Hoary Vervain 1946 ← — — —

1947 ← — — — —

p 133

Mountain Mint 1946 ← — ← — — → out

1947 ← — — ? out

See p 133

Leptilonia cognatum in head 1946 ← - - ← - -

1947 ← - -

Staghorn Sumac 1946 ← →

1947 - - - - ? ← out

Swamp Candle 1946 ? —

1947 ? — → —

S = 7/21

p 135

Lambs Quarter 1946 ← — ←

Helianthus strumosus ← 1946 ≪ — — —

1947 ≪ — —

Cont p 146

Pink Spirea 1946 ? ← — —

1947 ? ←

July (on numbered plants)

23 25 27 29 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 2 4 6

1946 ← ——— →

Wild Lettuce
(Lactuca canadensis)

1947 ←

p. 133

Blue Bellflower

1946 ———

Physostegia

1946 ←

1947 ←

Cont p 146

Panicum virgatum

1946 ← ———

1947 ← - -

Helianthus rigidus

1947 ←

(Beach road E. of church)

Cont p 136

Character: gray sandpapery leaves

Hieracium canadense

(Road opposite gate)

Cont p 136

4 6 23 25 27 29 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 2 4 6

265 N. Virginia Deer (Odocoileus virginianus borealis) Fauns travel
cont from p 105

6/8/47 x

1946 x —— probably late.

267 Cicada (heard)
(Probably Tibicen linnei)
S = 7/17 D = (7/18)

1946 x —— x —— (2 numerous 7/1 2 one)

1947 x ——

280 Mallard (yummy fly)
(Anas platyrhynchos platyrhynchos)
S = 7/26

1946 x ——

1947 x ——

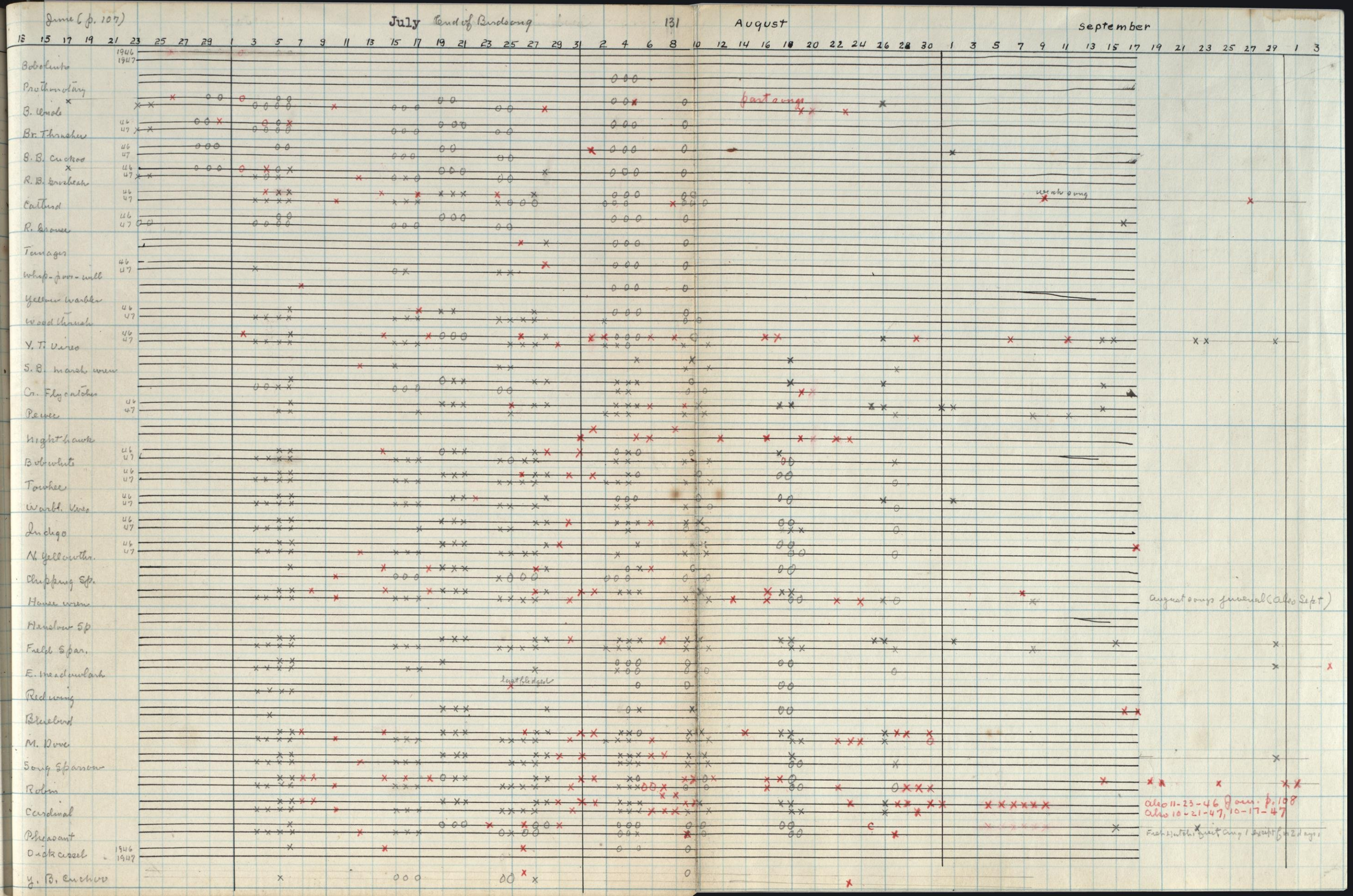
288 Squirrels eat burr oak acorns
S & D = 7/30

1946. x ——

1947 x ——

2 yellow warbler on jack pine

1946 x x x


June (p. 107)
July End of Birdsong
131
August
September
Bobolinks
Prothonotary
B. Oriole
Br. Thrasher
B. B. Cuckoo
R. B. Grosbeak
Catbird
R. Grouse
Tanager
Whip-poor-will
Yellow Warbler
Wood Thrush
Y. T. Vireo
S. B. Marsh wren
Cr. Flycatcher
Pewee
Nighthawk
Bobwhite
Towhee
Warbl. Vireo
Indigo
N. Yellowthr.
Chipping Sp.
House wren
Henslow Sp
Field Spar.
E. Meadowlark
Redwing
Bluebird
M. Dove
Song Sparrow
Robin
Cardinal
Pheasant
Dickcissel
Y. B. Cuckoo
1946
1947
46
47
part songs
weak song
August songs juvenal (also Sept)
last fledged
also 11-23-46 Jour. p. 108
also 10-21-47, 10-17-47
Fish Hatch quiet Aug 1 except for 2 days

1916 Breeding Notes.

Cardinal The Sept. song was a late-nesting pair out house. Young fledged 9/9, song ceased 9/9.

Discarded Phenology for July

55 BUGLE WEED (Lycopus americanus)

Dane: in bloom----------7/1-8/21+/44, 7/3-9/8/45, (7/2)-Average

56 ENCHANTER'S NIGHTSHADE (Circaea latifolia)

Dane: in bloom----------7/1-8/6/44, 7/7-8/8/45, (7/4)-Average

57 BLACK MUSTARD (Brassica nigra)

Dane: in bloom----------7/4-8/21+/44, 7/8-?/45, (7/6)-Average

58 MOUNTAIN MINT (Pycnanthemum virginiana) p127

Dane: in bloom---------- 7/1-8/21+/44, 7/12-9/5/45, (7/7)-Average

59 MEADOWSWEET (Spiraea albiflora) p115

Dane: in bloom----------7/14-?/45

60 HOARY VERVAIN (Verbena stricta) p127

Dane: in bloom----------7/7-8/21+/44, 7/15-9/25+/45, (7/11)-Average

61 WILD MINT (Mentha arvensis var. canadensis)

Dane: in bloom----------7/16-8/21+/44, 7/11-9/23/45, (7/14)-Average

62 HORSETAIL MILKWEED (Asclepias verticillata)

Dane: in bloom----------7/7-8/21+/44, 7/21-9/1/45, (7/14)-Average

63 WILD LETTUCE (Lactuca canadensis) p128

Dane: in bloom----------7/7-8/20/44, 7/22-9/12/45, (7/15)-Average

64 NETTLE (Urtica procera)

Dane: in bloom----------7/22-8/24/44, 7/12-9/24/45, (7/17)-Average

65 WATER SMARTWEED (Polygonum coccineum)

Dane: in bloom----------7/13-8/21+/44, 7/27-9/15/45, (7/20)-Average p 143

66 HEDGE NETTLE (Stachys hispida)

Dane: in bloom----------7/16-8/21+/44, 7/25-8/24+/45, (7/21)-Average

67 TREE CRICKET (Oecanthus nivens)

Dane: first chirping-------7/21/21, 7/22/22, 7/20/23, 7/21/24, 7/26/25, 7/20/26, 7/24/27, 7/21/28, 7/23/29, 7/22/30, 7/21/31, 7/21/32, 7/20/33, 7/22/34, 7/20/35, 7/21/36, 7/22/37, 7/21/38, 7/21/39, 7/21/40, 7/22/41, 7/20/42, 7/21/43, 7/23/44, 8/5/45, Average-7/21 7/25/46 8/7/47

Worked this from Toogood papers.

Data from J.H.H. Alexander, State Cons. Dept.
Observations since 1925 at 2241 Rugby Row, Madison; prior to 1925 at 915 Spaight St.

68 SUNFLOWER (Helianthus occidentalis) p 123

Dane: in bloom----------7/28-9/20/45

69 MALLARD (Anas platyrhynchos platyrhynchos)

Dane: young seen flying-----7/26/38

70 PRAIRIE CORDGRASS (Spartina pectinata)

Dane: in pollen----------7/19-8/20/45

71 WILD CUCUMBER (Echinocystis lobata)

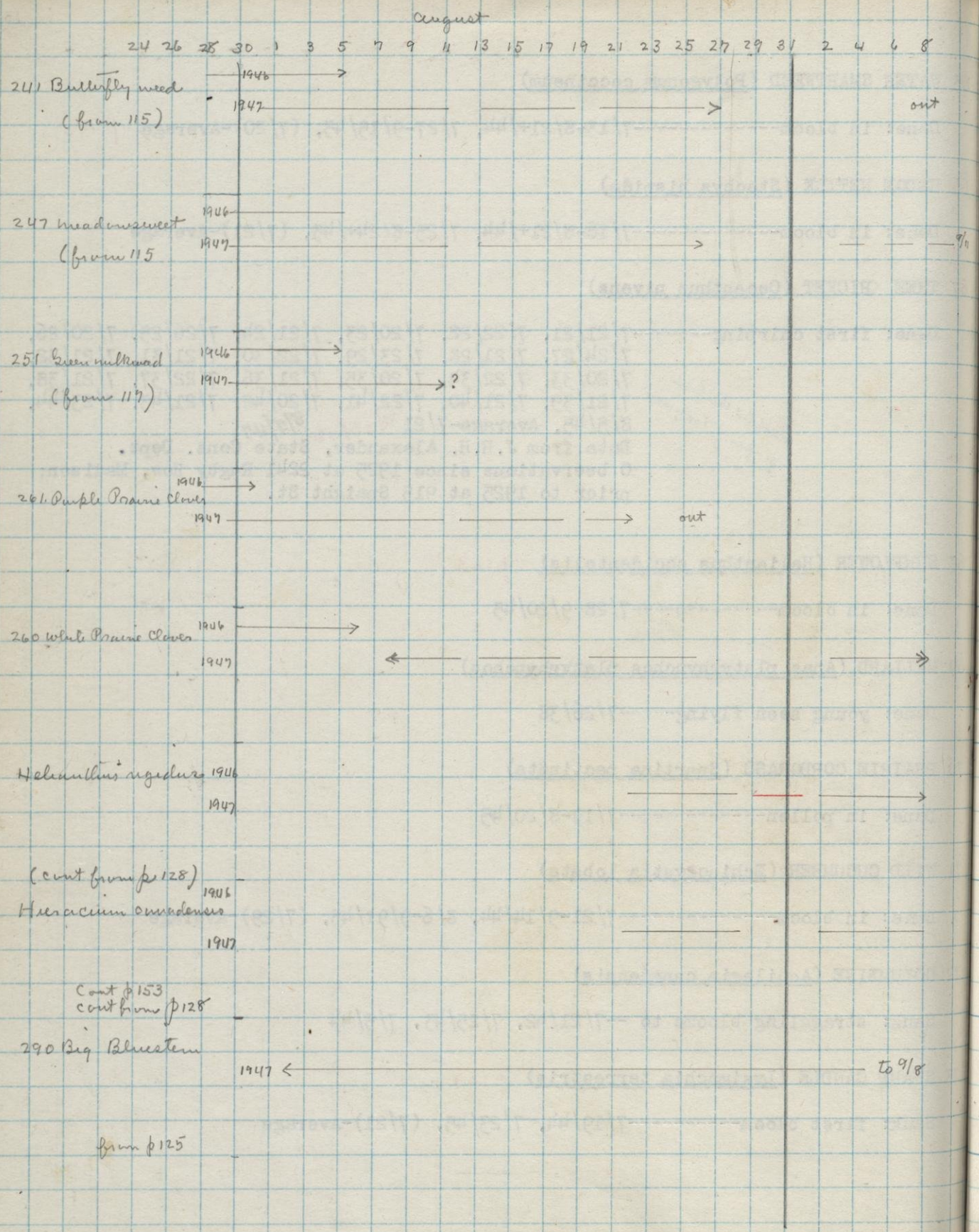
Dane: in bloom----------7/21-9/14/44, 8/6-9/9?/45, (7/29)-Average

72 COLUMBINE (Aquilegia canadensis)

Sauk: straggling blooms to --7/21/42, 7/25/43, 7/5/44

73 SWAMP CANDLE (Lysimachia terrestris) p 127

Sauk: first bloom----------7/19/44, 7/23/45, (7/21)-Average


August
24 26 28 30 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 2 4 6 8
241 Butterfly weed
(from 115)
1946
1947
out
247 meadowsweet
(from 115
1946
1947
9/11
251 Green milkweed
(from 117)
1946
1947
?
261. Purple Prairie Clover
1946
1947
out
260 White Prairie Clover
1946
1947
Helianthus rigidus
1946
1947
(cont from p 128)
Heracleum maximum
1946
1947
Cont p 153
cont from p 128
290 Big Bluestem
1947
to 9/8
from p 125

20 22 24 26 28 30 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 2 4 6 8

292. Burdock
(Arctium Lappa)
S = 8/1 D = 7/28

293 White Snakeroot
(Eupatorium rugosum)
S = (8/4) D = (7/29)
cont p. 148

294 Yellow Foxglove
(Aureolaria sp.)
S = (8/4)

295 Great Ragweed
(Ambrosia trifida)
D = 8/8
cont p. 148

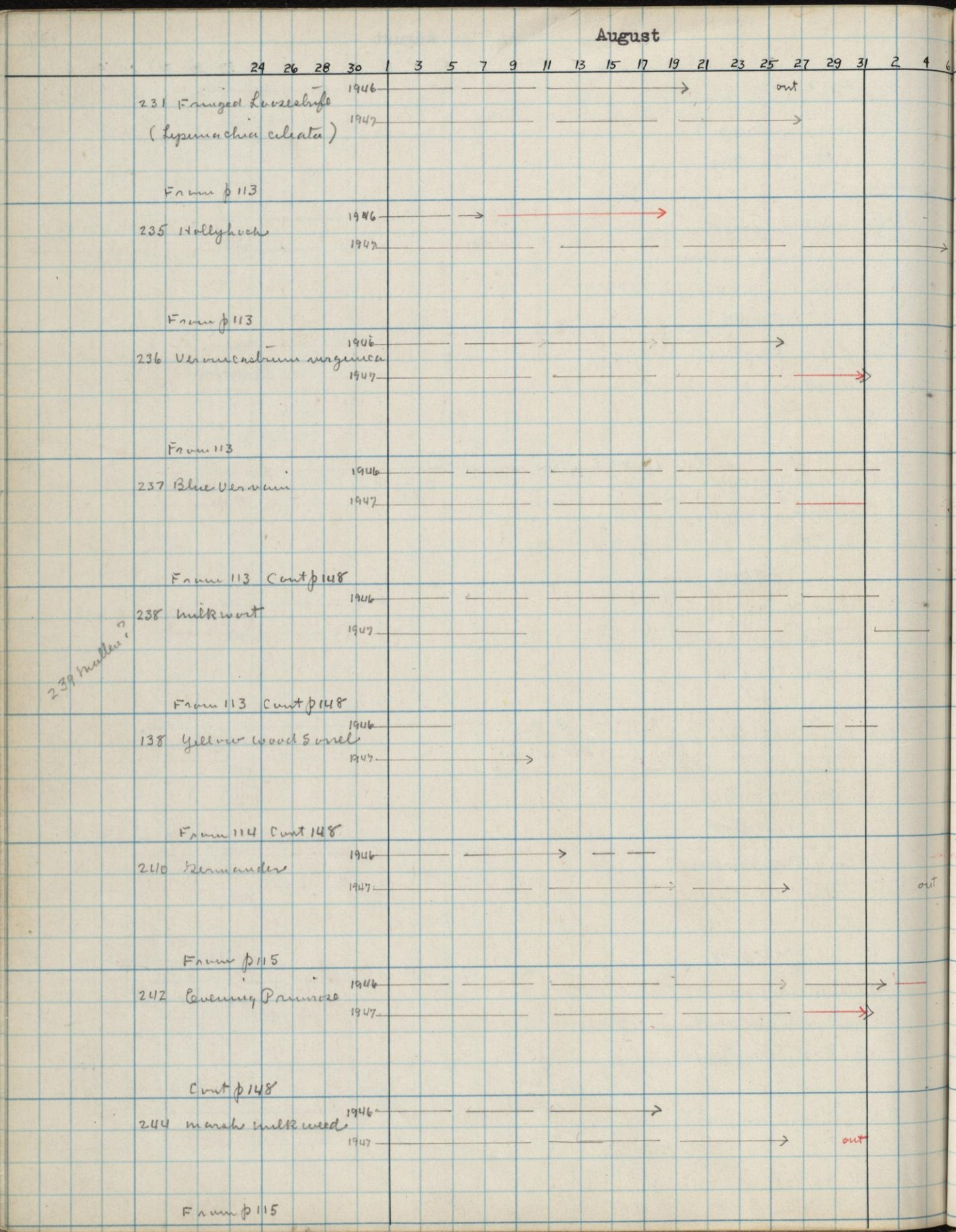
298 Bush Clover
(Lespedeza capitata)
S = 8/14 D = (8/4)

299 Lesser Ragweed
(Ambrosia artemisifolia)
S = 8/14 D = (8/5)
cont p. 148

300 Lealia spheroidea
S = 8/14 D = (8/6)
cont p. 148

301 Indian Grass
(Sorghastrum nutans)
S = 8/21 D = (8/15)

302 Fimbria lanceolata
S = 8/21
cont p. 148


August
24 26 28 30 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 2 4 6
231 Fringed Loosestrife (Lysimachia ciliata)
1946
1947
out
From p 113
235 Hollyhock
1946
1947
From p 113
236 Veronicastrum virginica
1946
1947
From 113
237 Blue Vernonia
1946
1947
From 113 Cont p 148
238 Milkweed
1946
1947
239 Mullein?
From 113 Cont p 148
138 Yellow Wood Sorrel
1946
1947
From 114 Cont 148
240 Fernandez
1946
1947
out
From p 115
242 Evening Primrose
1946
1947
Cont p 148
244 Marsh Milkweed
1946
1947
out
From p 115

24 26 28 30 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 2 4 6

303 New England Aster
(aster novae-Angliae)
D = 8/22
cont p149

1947

304 White Aster
(aster pilosus)
S = 8/24
cont p149

1946
1947

305 Blue Aster
(aster laevis)
S = 8/24
cont p149

1946
1947

306 Prairie Goldenrod
(Solidago rigida)
S = 8/25 D = (8/15)
cont p149

1946
1947

307 Bidens cernua
S = 8/28
cont p149

none

unnumbered plants

Helenium
1947

?

August

24 26 28 30 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 2 4 6

245. Bee Balm
(Monarda punctata)

From p 115

1946 ——→ out
1947 ——

153 Blackberry

1946 ←o o o

24 26 28 30 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 2 4 6

296 American Egret — 0 0 0 — 0 0 — 0 0 — 0 0 — 0 0 Wingra Koshkonong

(Casmerodius albus egretta) — 0 — 0 0 0 — 0 0 — 0 — 0 — 0 0

S = (8/9) D = 8/2

See also p 129 cont 151

297 Squirrels first eat hickory nuts — 0 0 0 — 0 0 — 0 0 x — many 8/26

1947 x — x

S = 8/13

Sawfly on jackpine 1946 — x — also 9/29 on WP

x x 1947 x — 0 0 — 0 0 — 0 0

(From p 129)

Last robin nest fledged

1947 — H. Young

Unnumbered Plants (See also p 143)

Solidago nemoralis

1947 ←

(Stem hairy. Juncea glabrous)

Bidens vulgata

1947 ?

(Leaves pinnate. Rays small)

Silphium integrifolium

1947 ←

August

24 26 28 30 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 2 4 6

206 Field Bindweed
(Convolvulus arvensis)

1947 →

From p 118

207 White Sweet Clover

1946 →

1947 →

out struggle 9/17

From p 118

257 Prairie Dock
(Silphium terebenthinaceum)

1946 →

From p 119 Cont 149

258 Bouncing Bet

1946 →

1947 →

From p 119 Cont p 150

259 Wild Bergamot
(Monarda fistulosa)

1946 →

1947 →

From p 119

263 White Vervain

1946 →

From p 119

264 Cut-leaf Coneflower
(Ratibida pinnata)

1946 →

1947 → Max → to 9/8

From 119

213 Black-eyed Susan

1946 →

1947 →

struggle 8/8

From p 120

217 White Water Lily

1946 →

1947 →

none

9/8

From p 120

24 26 28 30 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 2 4 6

Canada goldenrod (Solidago canadensis) ← 1946 — 1947 ←

p145 cont p150

Narrow-leafed Goldenrod (Solidago remota) ← 1946 — Early plant 1947 sandbar — normal

p145 Cont p150

Side-oats grama 1946 ← out

→ ? out

p145

Hemp 1946 ← → 1947 ←

Tall Sunflower (on road E. of Clay hill) 1946 ← 1947 ←

cont p150

Mimulus ringens ? → 1946 — out

1947 ← → ? out

Water smartweed P. Coccineum p135 1946 ← 1947 ←

cont p150

Cudweed Gnaphalium obtusifolium p145 1946 ← 1947 ←

cont p150

Gerardia 1946 ←

cont p150

August

24 26 28 30 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 2 4 6

218 Chichory
1946
1947

From p120 Cont 150

268 Pickerel weed
1946
1947

From p121

270 Rattle snake master
1946
1947

From p121

271 Rudbeckia laciniata
(in Amelanchier bed)
1946
1947
Max

From p121 Cont 150

273 Ironweed
1946
1947
9/11

From p121

274 Compass Plant
(Silphium laciniatum)
1946
1947

From p121 Cont 152

275 Joe Pye weed
1946
1947

From p121 Cont 152

276 Liatris pycnostachea)
1946
1947
out

From p121

225 Butter and Eggs
1946
1947

From p122 Cont 152

Frenlichia floridana
(cotton weed, sandbar

Discarded Phenology for August

74 NARROW-LEAFED GOLDENROD (Solidago remota) p 143

Sauk: first bloom---------8/24/41, 8/24/45

75 CANADA GOLDENROD (Solidago canadensis) p 143

Sauk: in bloom----------8/10-?/45

76 FALSE DRAGONHEAD (Physostigia speciosa) p 146

Sauk: first bloom----------8/4/44, 8/5/45, (8/5)-Average

77 SIDE-OATS GRAMA (Boutelona curtipendula) p 143

Dane: in bloom----------7/30-8/20+/44, 8/15-9/14/45, (8/5)-Average

78 GRAMA GRASS (Boutelona hirsuta)

Dane: in bloom----------7/30-8/20+/44, 8/12-9/27/45, (8/6)-Average

79 TURTLE HEAD (Chelone glabra) p 153

Dane: in bloom----------8/8-9/16/44, 8/9-9/21/45, (8/9)-Average

80 CUDWEED (Gnaphalium obtusifolium)

Dane: in bloom----------8/11-9/4+/44, 8/13-9/22/45, (8/12)-Average p 143

81 WORMWOOD (Artemisia candata)

Dane: in bloom----------8/16-8/23/44, 8/17-8/29/45, (8/17)-Average

82 DEWBERRY (Rubus villosus) p 124

Sauk: fruit ripe---------?-8/13/38, ?-8/30/40, 7/21-?/42, 7/26-?/43, 7/28-9/5/45

83 WHITE ASTER (Aster pilosus)

Dane: in bloom----------?-9/8+/45

84 BLUE ASTER (Aster laevis)

Dane: first bloom-------(by 8/31/38), 9/2-10/3/45

August

22 24 26 28 30 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31

277. Early Goldenrod (Solidago juncea) — 1946 ← — 1947 ←

From p. 123

278 Helianthus occidentalis — 1946 ← — 1947 ←

From p 123 Cont 152

279 Canadian Tick-Clover (Desmodium canadense) — 1946 → out — 1947 Max →

From p 123

281 Bonesett — 1946 ← — 1947 ? ←

From 123 Cont 152

282 Bull Thistle — 1946 ← — 1947 ←

From p 123 Cont 152

283 Tansy — 1946 ← — 1947 →

From p 123

287. Cardinal Flower — 1946 ← — ←

From p. 125 Cont 152

Helenium autumnale — 1946 — — 1947 —

From p 124 Cont 152

Physostegia — 1946 ← — 1947 →

p 145

From p 128 Cont 152

24 26 28 30 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 1 3 5 7 9

308 Closed gentian ← 1946 → 1947 ←
Bud 8/10, 1947
(Dasy stephana Andrewsii)
S = 9/1
Cont p 156

309 Shagbark Hickory Ripe - hulls peel 1946 x — not yet ? x — all gone — all gone
(Carya ovata)
S = 9/5

310 Poison Ivy First color 8-10-47
(Rhus toxicodendron)
S = 9/12

311 Red Oak Acorns fall

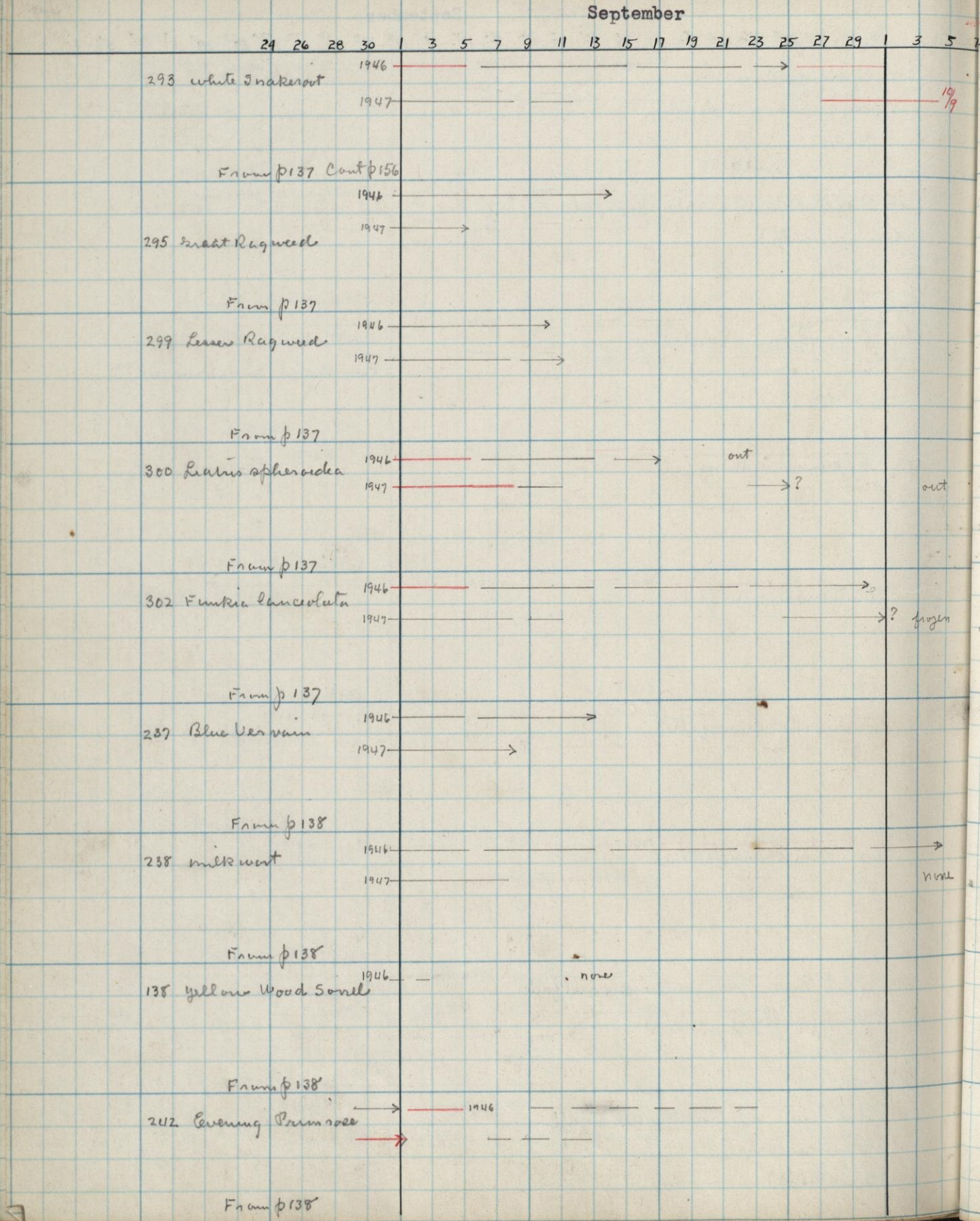
White Oak acorns fall x — 1946

Black Oak acorns fall

Burr Oak acorns fall x — 1946 1947 x — x

313 White Pine - old needles die and fall x — not yet ? x — 1947
(Pinus strobus)
S = 9/21

314 Red Pine - old needles die & fall x — not yet ? x — 1947
(Pinus resinosa)
S = (9/23)


September
24 26 28 30 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 1 3 5 7
293 white Snakeroot
1946
1947
10/9
From p 137 Cont p 156
295 Great Ragweed
1946
1947
From p 137
299 Lesser Ragweed
1946
1947
From p 137
300 Lactuca spherocarpa
1946
1947
out
?
out
From p 137
302 Funkia lanceolata
1946
1947
? frozen
From p 137
237 Blue Vervain
1946
1947
From p 138
238 milkweed
1946
1947
none
From p 138
138 Yellow Wood Sorrel
1946
none
From p 138
242 Evening Primrose
1946
From p 138

24 26 28 30 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 1 3 5 7 9

303 New England Aster — 1946 Portage; Baraboo

from p139 Cont 156

304 White Aster — 1946; 1947

from p139 Cont 156

305 Blue Aster — 1946; 1947

from p139 Cont 156

306 Prairie Goldenrod — 1946 out; 1947

from p139 Cont 156

307 Bidens cernua — 1946

from p139

250 Smartweed (Polygonum pennsylvanicum) — 1946; 1947

from p140

192 Harebell — 1946 to 11/10/46 Jour p.107; 1947

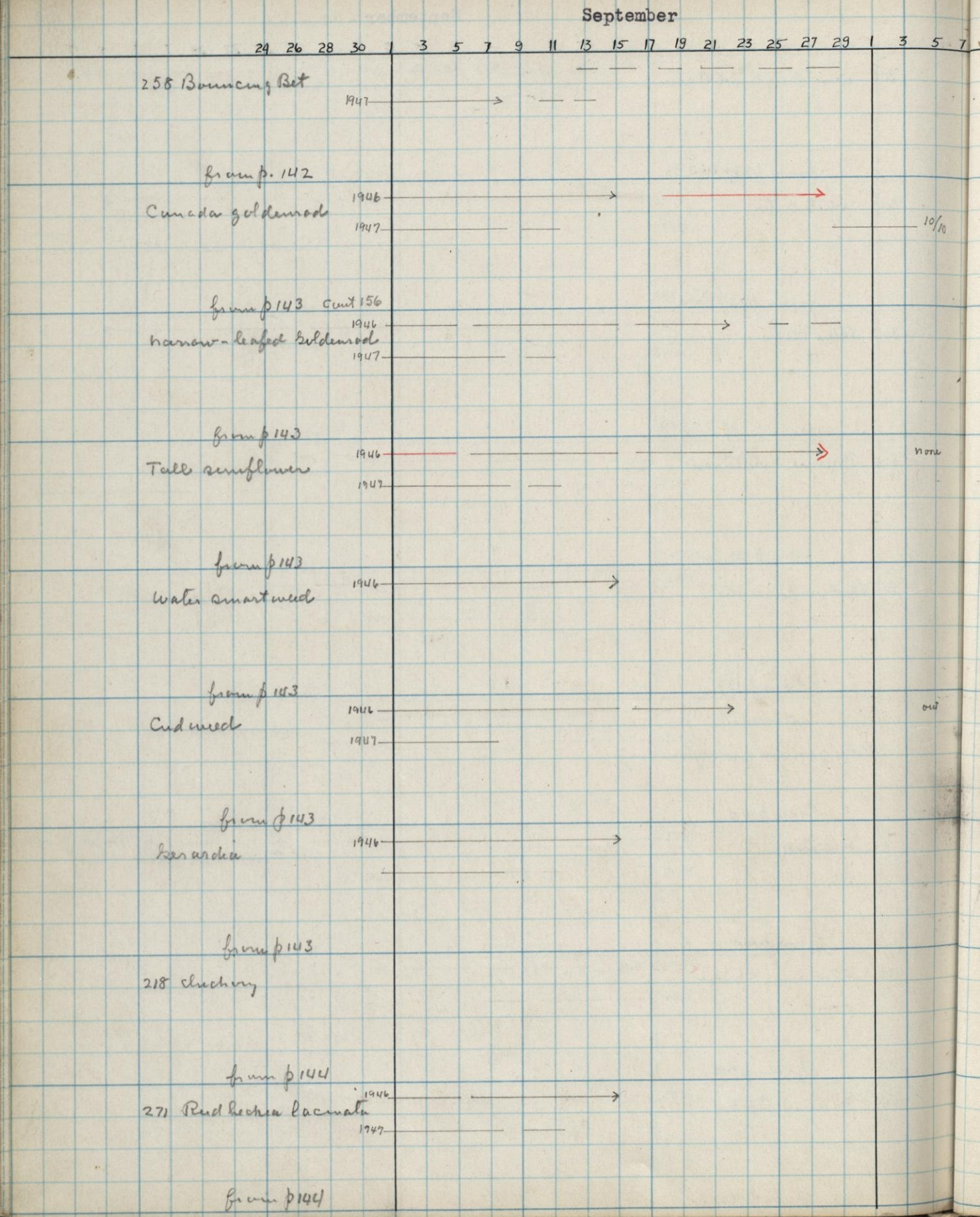
from p140

196 Flowering Spurge — 1946; 1947

from p140

257 Prairie Rock — 1946

from p142


September
24 26 28 30 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 1 3 5 7
258 Bouncing Bet
1947
from p. 142
Canada goldenrod
1946
1947
10/10
from p 143 Cont 156
narrow-leafed Goldenrod
1946
1947
from p 143
Tall sunflower
1946
1947
none
from p 143
Water smartweed
1946
from p 143
Cudweed
1946
1947
out
from p 143
Gerardia
1946
from p 143
218 Chicory
from p 144
271 Rudbeckia laciniata
1946
1947
from p 144

24 26 28 30 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 1 3 5 7

312 White-throated Sparrow
(Zonotrichia albicollis)
D = 9/20
(For song see p 157)

1946 x

315 Junco
(Junco hyemalis hyemalis)
D = 9/23

1946 x

316 Ruffed Grouse - drumming
(Bonasa umbellus)
S = (9/25)

1946 0 0 x 0 0 0 0
1947 0 0

cont 157

317 Ringnecked Pheasant
(Phasianus torquatus)
(First cackling)

1946 x x x x 0 x
1947 0 0

1946 x x x 0 0 x x
1947 0 0

(First Crowing)
Cont p 157

296 American Egret

1946 0 0 x x 0 x 0 x 0 0
1947 0 0 0 0 x La Crosse

From p 141.

324. Virginia Deer rub horns

1946 x (found 9/15)
x (found 9/7)

(cont p. 155)

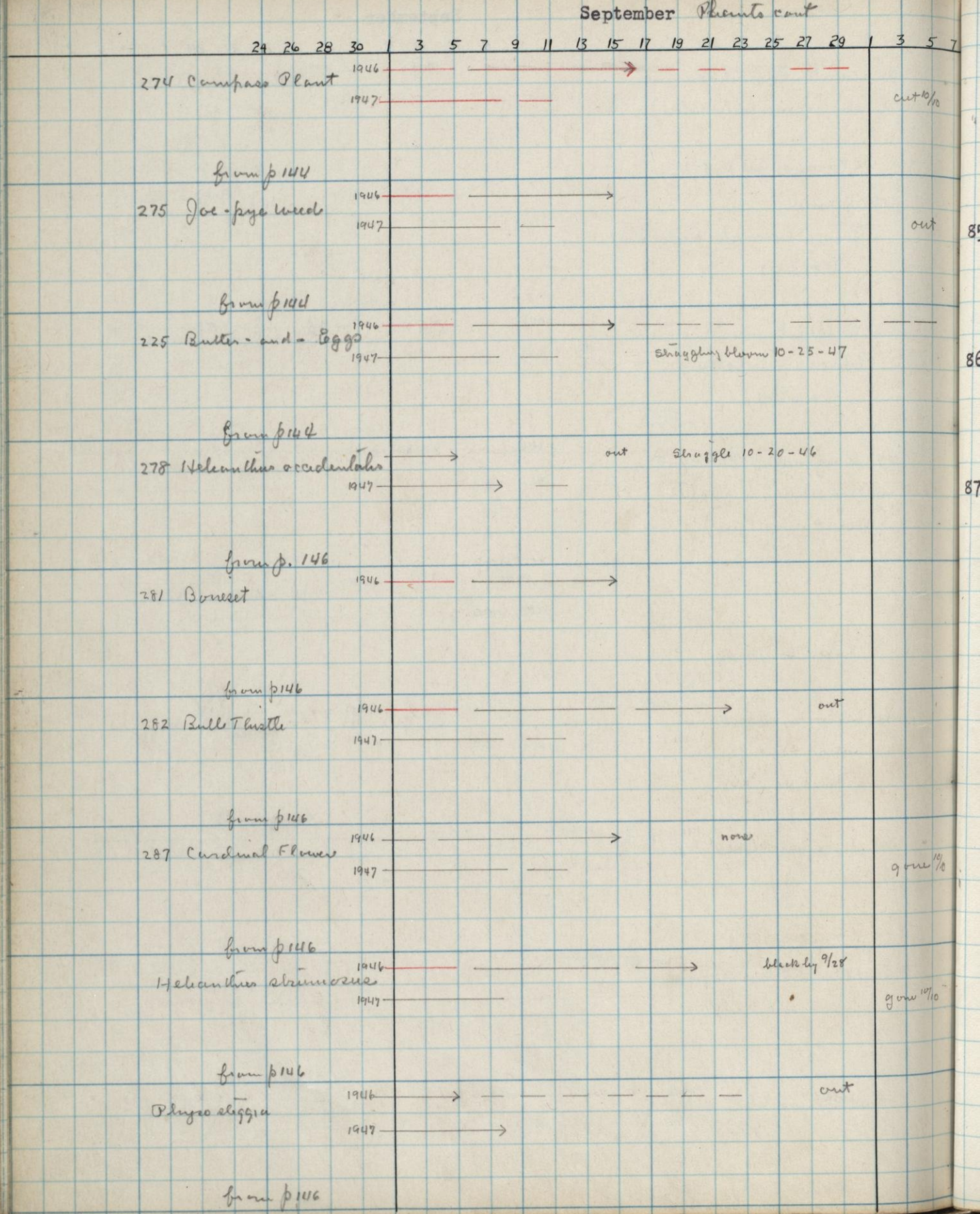
Last Franklin Ground Squirrel

x x x x x 1946 x x x x Jim Hale - Carb.

Last Spermophile

1946 x x x x x x x x x x x x x x x 0 x x x x
1947 x

(cont p 159)



September Plants cont

24 26 28 30 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 1 3 5 7

274 Compass Plant — 1946 — 1947 — cut 10/10

from p 144

275 Joe-pye weed — 1946 — 1947 — out

from p 144

225 Butter-and-Eggs — 1946 — 1947 — straggling bloom 10-25-47

from p 144

278 Helianthus occidentalis — 1947 — out — straggle 10-20-46

from p. 146

281 Boneset — 1946

from p 146

282 Bull Thistle — 1946 — 1947 — out

from p 146

287 Cardinal Flower — 1946 — 1947 — none — gone 10/10

from p 146

Helianthus strumosus — 1946 — 1947 — black by 9/28 — gone 10/10

from p 146

Physostegia — 1946 — 1947 — out

from p 146

Discarded Phenology for Sept.-Dec.

85 LADIES TRESSES (Spiranthes cernua) (See below)

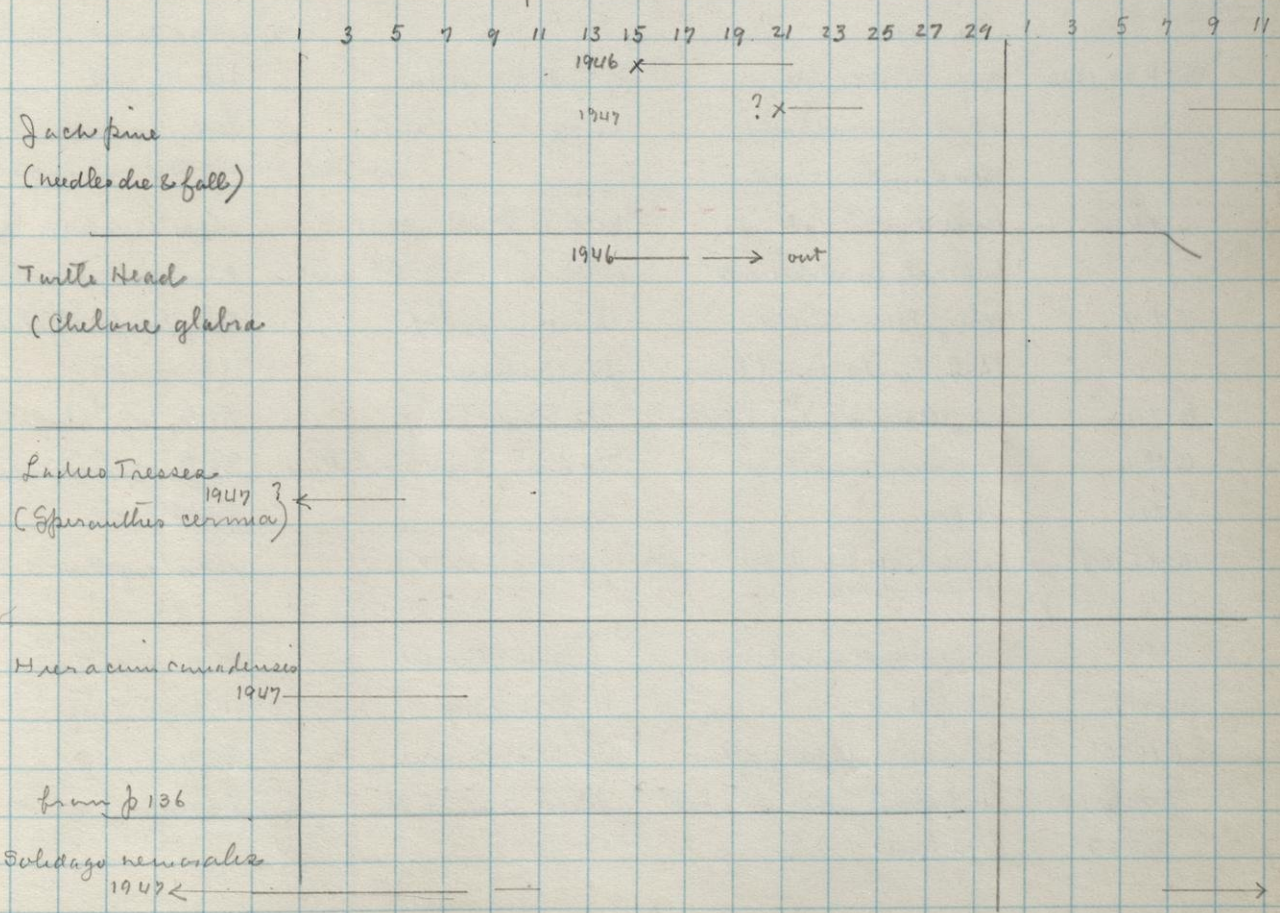
Sauk ~~& Jefferson~~: first bloom-9/1/45, (9/1)-Average

86 OAKS (Quercus) Sauk and Dane. Ripe acorns first fall.

Burr Oak----------9/1/37,
Black Oak----------10/1/45,

87 WHITE-THROATED SPARROW (Zonotrichia albicollis)

Sauk: First migrants arrive-9/15/37, 9/27/40, 10/3/41, 9/18/42, 10/2/43, 9/20/44,
Average-9/25



Fruits - Sept Oct

1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 2 4 6 8 10

1946 — — —

Wild Crab falling

marsh milkweed in silk 1946 ←o o o o

Wild Plum 1947 ←o o o

Wild grape 1947 ←o o o jelly ripe

Mountain ash 1947 ←o o o

Beta grape 1947 ←o o o jelly ripe

Bittersweet 1947 ←o o o orange

Notes on Rundell's Sugar* maples

(Ash St, corner of Van Hise ave, numbered N to S)

	no 1	no 2	no 3
Sept 28, 1946	Green except 2 branches which blooned* early; these faintly colored	3/4 yellow, green in lower SW limbs	upper 1/2 red Lower 1/2 green
Oct 4	Green & yellow all over but early branches red	yellow & red all over	upper 1/2 red lower 1/2 green
Oct 7	all yellow except early limbs faint brown	Browning, Top partly bare	Red, top partly bare
Oct 10	all yellow, starting to fall	2/3 bare at top	Red, Top 1/2 bare
Oct 14	1/2 bare, browning	7/8 bare. Leaves near bottom.	7/8 bare. Leaves near bottom
Oct 20	7/8 bare	bare	bare
Oct 9, 1947	Green except Top 1/4 & NW limb yellow and red.	Yellow all over	upper 1/4 yellow & red
Oct 15	SE 1/4 yellow in upper half	yellow all over	all red except inside of lower 1/4
Oct 17	All yellow	4' bare at top	4' bare at top
Oct 20	Browning, shedding all over	1/2 bare, brown	1/3 bare, red
Oct 24	5/6 bare	bare	bare
Oct 27	9/10 bare		

* See Journal p 27

13 15 17 19 21 23 25 27 29 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 2 4 6 8

U. Bay

319 muskrat First house-building 1946 1947 Sun Prairie shack Belton

(Ondatra z. zibethica)

S & D = 10/4

320 Canada Goose Horicon Madison Horicon Baxter AL

(Branta c. canadensis)

S = 10/11 D = 10/5

(See also p 157)

321 Wahoo fruits open (and drop →) 1946 not yet 1947 all open

(Euonymus atropurpurea)

S = 10/15

Cont p 161

322 Amer. Rough-legged Hawk 1946 1947 Horicon Horicon Oregon FG

(Buteo lagopus s. johannis)

S & D = 10/16

323 First Killing Frost 1946 1947

1947: before 10/10 at shack.

S = 10/7 D = 10/17

(Definition: Kells cosmos, petuneas.

324 N. Virginia Deer – Bucks rub horns ↓ doubt validity: Too late 1946

(Odocoileus virginianus borealis) 1947: before 9/7

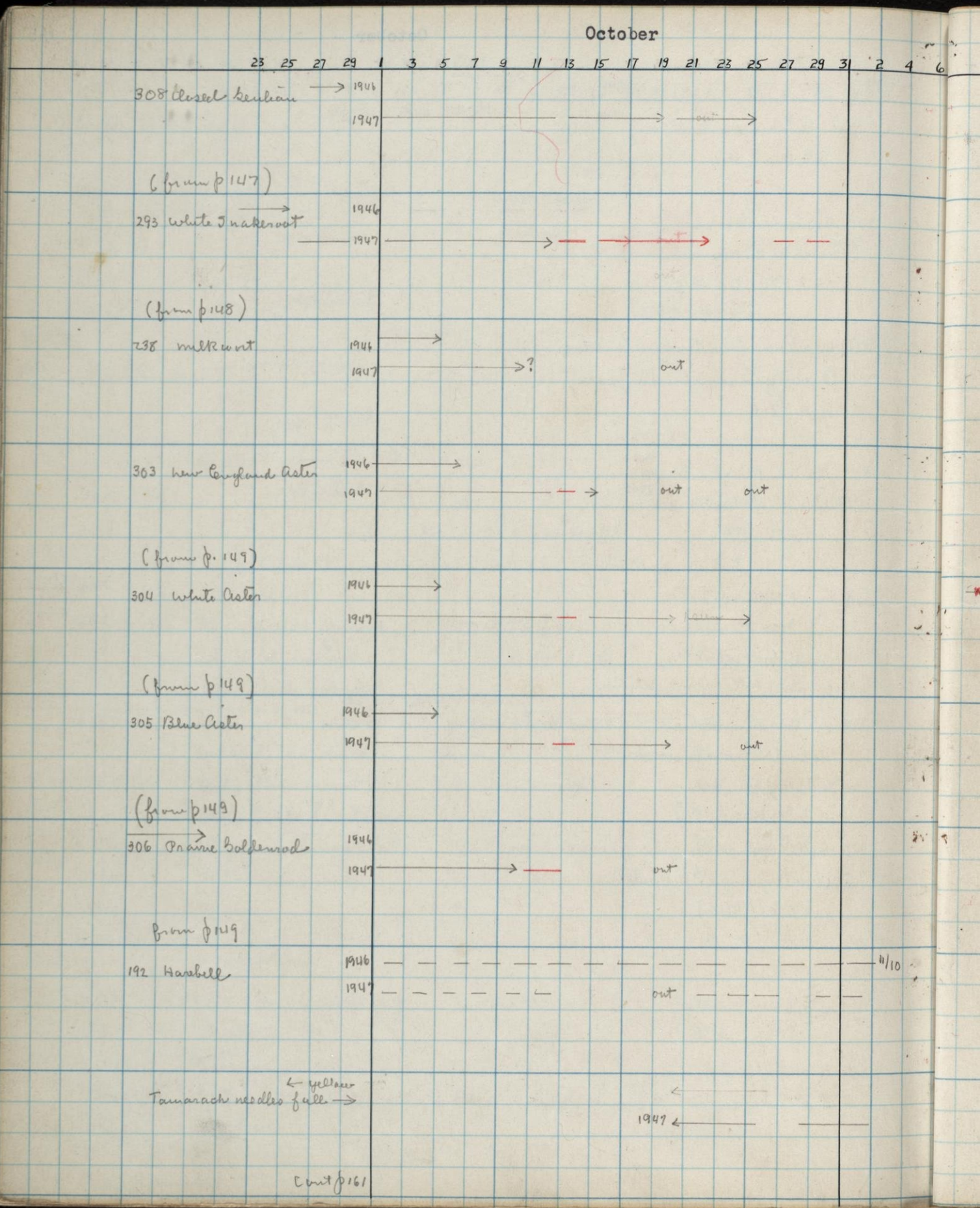
(See also p 151)

325 Fall Cankerworm ascends trees

(Anis opertyx pometaria)

S = (10/26)

° 20 roughlegs seen Loganville, Sauk Co, Oct 16-18, 1946. Audubon Field notes Jan 1947 p 10.


October
23 25 27 29 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 2 4 6
308 Closed Gentian
1946
1947
out
(from p 147)
293 White Snakeroot
1946
1947
(from p 148)
238 Milkweed
1946
1947
?
out
303 New England Aster
1946
1947
out
out
(from p. 149)
304 White Aster
1946
1947
(from p 149)
305 Blue Aster
1946
1947
out
(from p 149)
306 Prairie Goldenrod
1946
1947
out
from p 149
192 Harebell
1946
11/10
1947
out
← yellower
Tamarack needles fall →
1947
Cont p 161

17 19 21 23 25 27 29 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 2 4 6

1946 x 0 x x x x x x x x x x x x x x x x x 0 x x 0

312 White throated Sparrow song

(for arrival see p. 151)

x 1946 0 0 0 x 0 0 0 0 0 0 Bl. Earth x

316 Ruffed grouse drumming

1947 ? 0 Cr. Plains x x 0 0 0 x 0 0

from p 151

1946 0 0 x 0 12 0 5 135, 40, 1, 65 (+180 snows) 0 0

16 Canada Goose

1947 Baxter x 10, 0, 0 0 0 0 x x x 57, 1 16 x 13 x 0 0 x 400 snows 0 0

(See also p 155)

out daily in Sept 1946 x x x x x x x x x x x x x x x x x x x x x x x x also 10-25-45

Chipmunk still out

cont p 163

x 1946 none to 10/24

Woodchuck still out

1946 x x x x x x x x x x x x x x x x x x x 0 x 0 x

Robin song

x x x x x 0 0 x x x 0 0 x x 0 0 x x x x 0

cont from p 131

1946 x x x x x x x x x x

Redwing Song

1947 x 0 0 x x x x 0 0

x x x 1945 x x x x 0 x 0 c

Pheasant crows

0 0 0 0 0 0 cackle 0 x 0 x

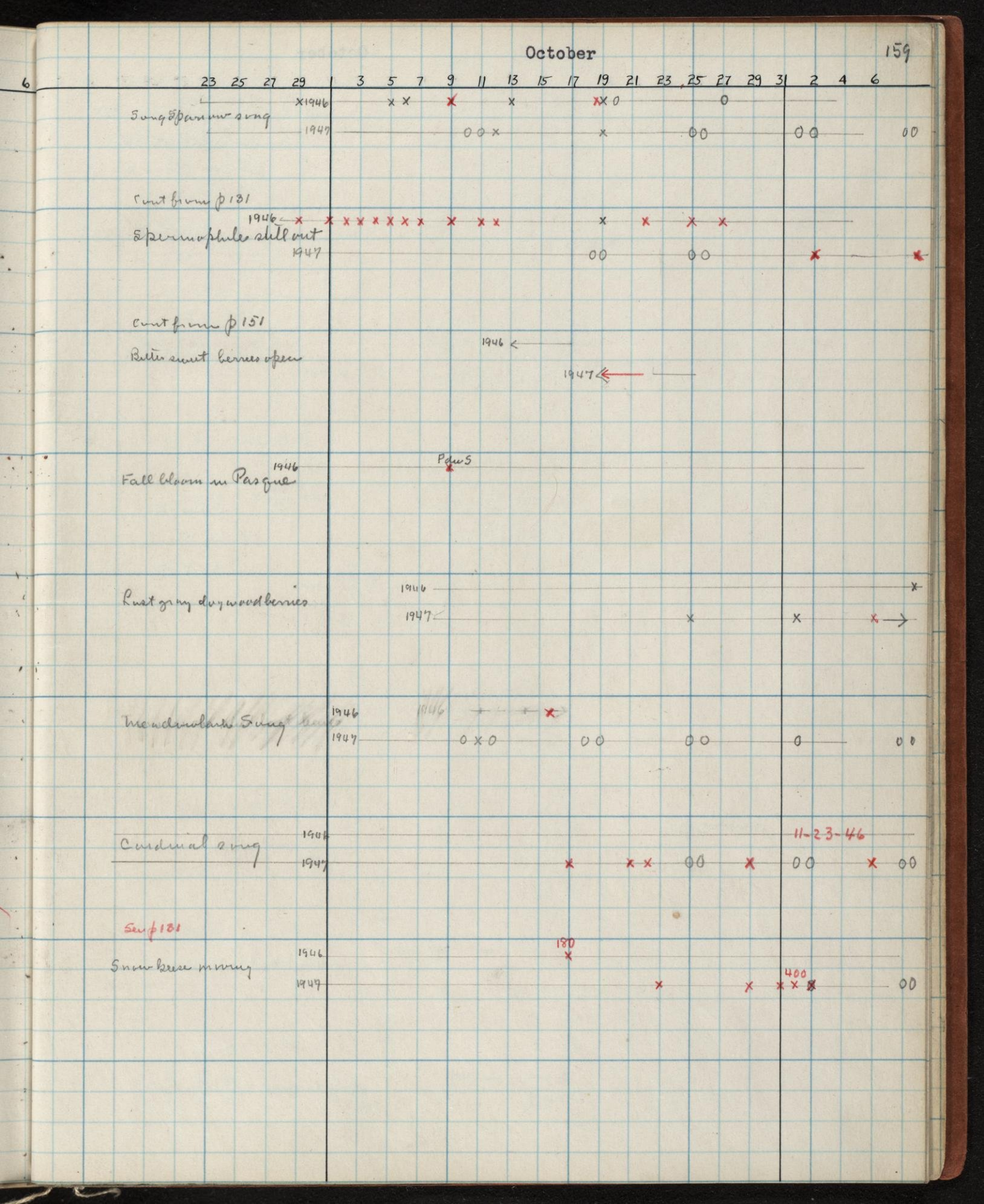
cont from p 151

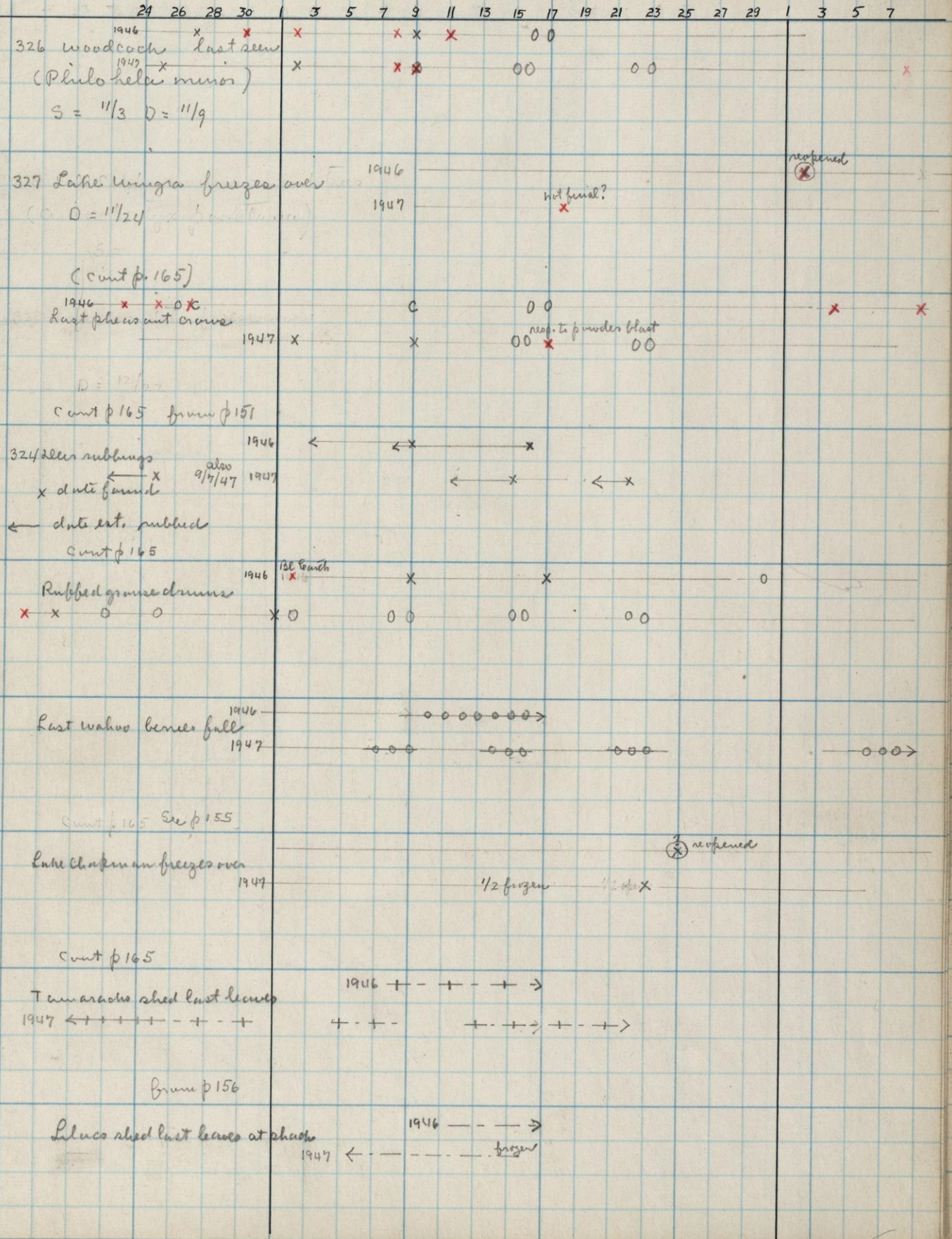
x 1946 x x 0

Field Sparrow song

1947 0 0 0 0 0 0

cont from p 131


23 25 27 29 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 2 4 6
Song Sparrow song
1946
1947
Cont from p 131
Spermophile still out
1946
1947
Cont from p 151
Bitter sweet berries open
1946
1947
Fall bloom in Pasque
1946
P du S
Rust gray dogwood berries
1946
1947
Meadowlark Song
1946
1947
Cardinal song
1946
1947
11-23-46
See p 131
Snow keese moving
1946
1947
180
400


24 26 28 30 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 1 3 5 7
1946
326 woodcock last seen
1947
(Philohela minor)
S = 11/3 D = 11/9
327 Lake Wingra freezes over
D = 11/24
1946
1947
not final?
reopened
(cont p. 165)
1946
Last pheasant crows
1947
resp. to powder blast
cont p 165 from p 151
1946
324 Deer rubbings
also 9/7/47
1947
x date found
← date est. rubbed
cont p 165
1946
Bl Earth
Ruffed grouse drums
Last wahoo berries fall
1946
1947
See p 155
Lake Chapman freezes over
1947
1/2 frozen
reopened
cont p 165
Tamaracks shed last leaves
1946
1947
from p 156
Lilacs shed last leaves at shack
1946
1947
frozen

	24 26 28 30	1 3 5 7 9 11 13 15 17 19 21 23 25 27 29	1 3 5 7
Chipmunk still out	1946	x x	59° Univ Bay x
	1947	x Juneau Co x	
From p. 157			
Slough freezes over	1947	? ← x	
Great Blue Heron (last seen)	1947	arb x 0 0	
Last Canada geese	1947	0 0 0 0 0 0 0 14 Horicon x	
Earthworm (last out)	1947	Bascom Hill x	

5 23 25 27 29 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 2 4 6

328 Lake Mendota freezes over 1946 x— Temporary x—
1947 Temporary x x—

D = 12/22

Chickweed last bloom 1946 x

Pheasants crowing 1946 x x
1947 Horicon x

From p161

324 Deer rubbings 1946 est. date ←—— x
← x 1947 ←—— x
x date found
← date est. rubbed
cont from p161

Lake Chapman freezes over 1946 x
x

(cont from p161)

Last marshhawk 1946 x
0 1947 0

327. Lake Wingra closes 1946 (x) reopened x

(cont from p161)

Skunk out 1946 arb. x
1947 arb x arb x also P du S x

Lake Monona freezes over 1946 x—
1947 x——

December

23 25 27 29 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 2 4

Badger out

1947 — arb — E. end

Cardinal song

1947 — 4 notes only