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# IOWA CONSERVATIONIST

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NUMBER 1

## MEASURE SEDIMENT LOADS IN IOWA STREAMS

ivers Show Alarming Erosion  
Losses

THROUGHOUT the years several municipal and state agencies, including the Conservation Commission, have cooperated with the water resources branch of the United States Geological Survey in the collection of stream-flow data in Iowa. Owing to the interest and needs of state agencies and public concern with erosion losses and silting problems, a program also has been recently established to determine the sediment loads in streams and rivers of Iowa.

In connection with this program the Iowa Institute of Hydraulic Research at the State University of Iowa, in cooperation with a number of agencies, carried on at the laboratory a project of nationwide interest in which an extensive investigation was made of methods and equipment for the systematic measurements of the sediment or silt loads in rivers and streams, not only in Iowa, but throughout the United States. Furthermore, under an authorization of the last Iowa legislature it became possible to make some actual field measurements of river discharge and silt loads during the floods of May and June, 1944. The Iowa Geological Survey, under whose state auspices such work is performed, has for many years been the service agency for facts concerning ground water and surface water problems in Iowa. The Conservation Commission has likewise supported and collaborated in the arrangements for inventories of the water resources of Iowa.

The measurement of flow and silt load requires specially developed equipment and methods, together with trained personnel to insure proper collection of the data at

(Continued on page 103)

## Teach Fish and Wildlife Management at the Iowa State College at Ames

By George O. Hendrickson



In the fields of fish and wildlife management at Iowa State College, the Department of Zoology and Entomology offers general courses in the recognition of important fishes, birds and mammals, together with study of their habits, natural habitats and management. Large study collections of fishes, song and game birds, fur-bearing and game mammals are available for study in these general courses.

EVERYONE seeks respite from routine existence by spending some leisure time watching, hunting, or talking about wild animals. The first robin in the spring, the gorgeous male pheasant strutting along the road, the fox squirrel barking in the timber, the canny smallmouth bass in the pool below the big rock—all are part of human existence. Everyone likes them, talks about them. The enjoyment of wild creatures is a part of our living and of our life-long memories.

This universal love prompts many men of college age to think about a career in fish or wildlife management, a field which is rapidly becoming an exact science and that is constantly demanding more and more technically trained men.

From a professional viewpoint management of fish and wildlife is primarily designed to better the environment for desirable species so that they will be able to care for themselves and increase in number, and to provide for the removal of the surpluses of game, fur-bearing animals, and fishes that accrue yearly.

With wild animals, as with domesticated farm animals, numbers normally are so increased at the end of summer that it is advisable to remove the surplus (the former by hunting, fishing, or trapping, the latter by marketing or butchering), so that the remainder will have sufficient food and shelter throughout the winter.

In Iowa the State Conservation Commission is charged with supervising the care, protection, and perpetuation of desirable forms of wildlife and the harvesting of fish, game, and fur bearers. Hence we

(Continued on page 100)

## Poverty or Conservation Your National Problem

By Jay N. "Ding" Darling  
Honorary President, National  
Wildlife Federation

(Continued from last month)

PRODUCTIVITY of soil is the "bottle-neck" of human existence. It has been so since man's sojourn on earth began. History is one continuous succession of migrations from exhausted soil to new fertile fields which nature has spent millions of years in creating.

There is only one formula for production of fertile soil and man has no part in that creative process. All he can do is use it and make it last as long as possible.

Chlorophyl, that green pigment in vegetation, plus sunshine, has laid down all the topsoil, all the coal, all the oil and every organic living thing on which mankind has subsisted and must subsist forever. For chlorophyl is that magic

(Continued on page 98)

# Iowa Conservationist Poverty or Conservation

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LOIS AMES, Associate Editor

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Beginning with this issue the "Iowa Conservationist" is being printed in Des Moines by Wallace-Homestead Company and will be mailed from Des Moines instead of West Union. This changeover has necessitated revision of the present mailing list, and errors in names and addresses may occur. It will be greatly appreciated if subscribers will notify the State Conservation Commission, 10th and Mulberry, Des Moines, of any errors in names and addresses. We also call attention to the subscription expiration date printed with the address. Subscriptions may be renewed six months prior to expiration for not more than 36 months.

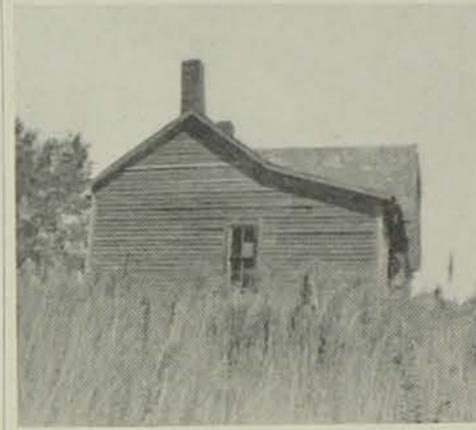
(Continued from page 97)  
green element in vegetation which alone can capture the carbon dioxide from the atmosphere and combine it with hydrogen to make all the carbohydrates which enrich the soil and keep us alive. Without countless centuries of chlorophyl and sunshine cooperation we could have no food, no fire, no crops, no life, nothing. When we inherited this continent we fell heir to a **hundred-million** years of cumulative transformation of raw volcanic rock to rich loam, grassy plains, primeval forests, a myriad population of fur-bearing animals and waters teeming with fish and aquatic life—all the product of the chlorophyl factory. Don't forget that when this rich endowment is gone its only replenishment must come through that same **small bottleneck of chlorophyl plus sunshine.**

Can any thoughtful person say that with 80 per cent of our forests already cut down, 75 per cent of our grassland grazed to a stubble and millions of acres of underbrush cleared from our hillsides that we have not constricted the bottle-neck instead of enlarging it?

Those who cite surpluses of grain and cotton to contradict the threat of shortages are only looking through the keyhole at a nation-wide, yes world-wide, problem. Those surpluses were produced at heavy cost to the richest remaining topsoil areas in America. Robbing the rich soils to produce larger and larger annual harvests may be the most costly type of farming practiced. It was exactly that type of farming which started millions of acres of American farm land down the road to the desert.

The threatened approach of shortages in natural resources is not announced by headlines in the daily press. Any editor of a local paper who dared warn prospective citizens to stay away because the home town and its environs was on its last legs due to exhausted resources would be hung from the nearest apple tree. Such embarrassing information is carefully concealed from the world by local Chambers of Commerce, Real Estate Dealers' Associations and Retail Merchants. Can you imagine railroads advising summer tourists not to buy tickets to the Minnesota lake districts because nine-tenths of their lakes have lost their once prolific fish and game populations? No land boomer was ever known to tell a prospective purchaser that the three former owners went broke trying to make a living on the ranch he was trying to sell to the fourth. Nor would an Arizona silver mine broker reveal that the precious metals had all been taken out of the mine by its previous operator, any more than a second-hand auto dealer would tell a customer that the bearings were burned out, the

battery dead and the transmission gears stripped on a car he was offering for sale. Florida does not advertise that it costs more for the fertilizer to raise oranges in that state than you can get for the ripened fruit and Iowa is careful not to let anyone know that the southern third of its farm land has been so badly eroded that whole counties have gone on relief and that schools, churches and local governments are bankrupt. The U. S. Reclamation Service does not publicize the number of



"Abandoned farm" is a familiar term which has fallen upon our ears and slid off with no more effect than a drop of water on a duck's back. But a single abandoned farm is sodden with tragedy and suffering for the members of the family who could not make a living on it and abandoned all hope there. Multiply this tragedy by a million, and the term "abandoned farm" assumes a foreboding significance which we as a nation have ignored.

irrigation projects which have cost the taxpayers millions and then wrecked the family fortunes of the settlers who tried to farm the irrigated lands. The National Forest Service does its best to arouse the public to the dangers of forest fires but it does not emphasize the fact that forest fires are taking toll of our American forests faster than Nature, with the assistance of the U. S. Forest Service and all the state forest departments, can grow them. And so on and so forth ad infinitum. Thus it happens that the people of this country have remained in igno-

rance of the progress and depth of depletion which has pulled from under them the sustaining foundation of their prosperity.

As a nation we did not concern ourselves over what was to become of the army of lumberjacks, saw-mill operators, the local storekeepers, school teachers and village inhabitants when the great primeval forests of Michigan, Wisconsin and Minnesota were all finally harvested and cut into lumber. Even less conscious were we of the fate of the thousands of families of the once prosperous fishing villages on the southern shores of Lake Erie when suddenly the prolific runs of fresh water herring gave out and fishermen, boat-makers, net weavers and associated industries were left without any means of livelihood. Ghost towns that were once thriving fishing villages line the coastal waters of the Atlantic, the Pacific, the Great Lakes and our major rivers—each one a tombstone to dead resources.

"Abandoned farm" is a familiar term which has fallen upon our ears and slid off with no more effect than a drop of water on a duck's back, but a single abandoned farm is sodden with tragedy and suffering for the members of the little family who could not make a living on it and had to abandon all hope there. Multiply that tragedy by a million abandoned farms (there are many more than a million abandoned farms in this country already) and that term "abandoned farm" assumes a foreboding significance which we as a nation have ignored.

Need we mention more examples in order to be convincing? It could be done until every nook and cranny of our continent had been shown to be the victim of similar circumstances. Each in its turn inflicted no stunning blow to our national economy, but the cumulative effect of all of them together has built up a total of profound significance. The early symptoms



Ignorance of the laws of nature is largely responsible for the destructive habits of the American people. How to educate them is a task for professional educators to determine. It is a job that must be done, and done soon. Here the Buchanan County Wild Life Association in their wildlife school are teaching youngsters some of the facts of aquatic biology.

AS LAND GOES SO GOES MAN.



BUT JUST TRY TO GET ANY POLITICIAN TO DO ANYTHING ABOUT IT

In Iowa within the past hundred years the story told in this wonderful cartoon has been enacted—not once, but many times. The tragedy occurs with increasing frequency as the years pass.

As insidious in their approach as a creeping paralysis whose earlier effects are only inconvenient but which finally paralyze the whole body. By the same token, the day when everyone in the United States will go comprehensively hungry is a long way off, but the widening margin of our population who do go underfed cause of disappearing forests, soil and water, is gaining new recruits by the hundreds of thousands annually. The climax of exhausted resources will be violent and without mercy. Once that climax is reached the restoration as slow as the ages of Nature. We know now that much of the rapid exhaustion which has taken place in America was entirely unnecessary, due largely to ignorance and wasteful practices which could have been avoided without loss to present profits. If we begin now the intelligent application of those same principles which might have averted the past waste, we can at least insure continuity of use of what we have left. We possibly can accomplish a restoration of some of that which has been lost. The application of such principles and practices which, grouped together, is called "Conservation."

Conservation is an organized campaign to eliminate the "bottleneck" in the economic mechanism for national welfare, and if it can't eliminate the bottleneck, at least it can keep it from growing smaller and choking us to death.

Conservation is not just a sentimental hobby nor a fanciful hope of idle dreamers, of duck hunters, of fishermen or bird lovers. Conservation is a science whose principles are written in the oldest legal code in the world—The Laws of Nature. It has taken the scientists longer to discover and interpret those laws than it has taken the archaeologists to unearth the story of the Egyptian Pyramids and King Tut. In spite of their greater significance to man, King Tut gets all the publicity and more people know about King Tut and his unearthed treasure than know why the region where he lived is now desert. The latter item of information is, however, much the more important of the two.

Ignorance of the laws of Nature has been, and still is, more responsible for the infractions than willful malpractice. It is therefore necessary before any real progress toward conservation can take place that the educational fraternity

shoulder a large part of the responsible burden. It is obviously hopeless to divert our mass population from their ingrown destructive habits when they are not aware of either the natural laws or the dire consequences of their violation.

How the educational institutions shall accomplish this task is for professional educators to determine. Suffice it here to say that the job must be done and done soon. It is the job of scientists to interpret and correlate the natural laws in such form that the educators may make them clear to the oncoming generations. In a large measure the natural scientists are far ahead of the educators with their work. For instance, scientific research has determined by experiment and proved by demonstration that plants have vital influence on moisture in the soil, one of the most important relationships in human welfare. But Botany teachers still occupy the minds of their pupils with identification of species and grade the students accordingly, while geologists, although water is the most precious element within their sphere, ignore it altogether and drill their classes on the relative hardness of horn-blends and talc, and how to distinguish fluorite from feldspar by the number of facets to their crystals. Biologists, whose province is the teaching of the interrelationship of all living things, have wandered off into that rarefied atmosphere which surrounds the eternal mystery of when and how life enters protoplasm. Yet within the natural laws of these common school studies lie the secrets of **droughts, floods and dust bowls, eroded topsoil, deserts and destitution.**

Why are so many of our fresh water springs, once perpetually flowing, now dry?

Why do rivers which within our memory once flowed bank full the year round now dwindle to nothing in midsummer?

What man-created influences have caused a continuous and rapid falling of the subsoil water table of our continent?

What happened to Nature's balance in the great stretches of western grasslands which has made them barren deserts and the ranch houses vacant?

How long will it take to replace the nine inches of rich topsoil which have washed off the farms of the Mississippi Valley? How?

What essential function to life do green leaves perform without which no human being could exist?

What is the source of all sugar, starch, fat, coal and oils, and is there any substitute method of production which men can provide?

Why are there no more salmon in the Atlantic Coast rivers of the United States of America?

Why do lakes which once had crystal waters and an abundance of aquatic economic resources now grow green scum and no fish?

(Continued on page 103)



By E. W. Fobes  
Acting Area Forester

The other day I was telling a friend of mine I'd been coon hunting, and he said, "What in the world does coon hunting have to do with forestry?" There are lots of folks like that. They can't see the forest for the trees, or the trees for the grass. If it weren't for the trees there wouldn't be any forests, and there would not be much of the life that may be found in the woods.

To get to the coon hunt, we got a late start, but old Briar soon opened up on a track in the cornfield. Mr. Coon high-tailed through the corn and into the adjoining pasture, one of the so-called timber pastures. There wasn't enough grass in this timber pasture for an agronomist to call it pasture, or trees enough for a forester to call it a woodlot, and it didn't have enough of either to cause old Mr. Coon to even slow his pace. So on he went, with old Briar bawling in hot pursuit. Like most coon hunts, it ended across the river with the ring-tail topside and Briar preaching from below. We crossed the stream on a slippery log (I should have sat in the water in the first place—it always happens) and in a fine white oak found the saucy coon.

We found not only our coon, but we found also a managed woodlot. The periodic tree crop had been harvested for sawlogs, and the tops had not yet been cut into fuel wood. We found seedlings and young trees and trees that would make up the next harvest. Briar found another coon, but this wise old ring-tail, cutting in and out among the fallen tops, fooled old Briar and got away.

(Continued on page 102)



Like most coon hunts, it ended across the river, with the ring-tail topside and Briar preaching from below.

## Teach Fish and Wildlife Management

(Continued from page 97)

look to the Commission for leadership in wildlife matters. The Conservation Commission and Iowa State College are cooperating with the United States Fish and Wildlife Service and the American Wildlife Institute in the investigation, teaching and field extension of desirable wildlife management practices as a part of a more profitable and permanent agriculture.

In the fields of fish and wildlife management at Iowa State College, the Department of Zoology and Entomology offers general courses in the recognition of important fishes, birds and mammals, together with study of their habits, natural habitats and management. Large study collections of fishes, song and game birds, fur-bearing and game mammals are available for study in these general courses.

The indoor work is supplemented by field trips to the timbered wildlife preserve and to Lake Laverne, both on the college campus, and to college farmland to observe wildlife in suitable environment. Several lakes, marshes, pheasant and quail management areas, and the Ledges State Park, each within half an hour's drive of the college campus, are also used as outdoor classrooms. Cooperation of the State Conservation Commission makes available live fishes and other wildlife specimens for class study as needed.

The introductory wildlife courses may be followed with several advanced courses. Taxonomy of Cold-blooded and of Warm-blooded Vertebrates are two courses in the science of classification of backboneed animals of world-wide distribution and for which the Department has numerous specimens for laboratory work. Ecology, a study of principles relating to animals and environment as they fit together, and Parasites of Wildlife, a course particularly in the more destructive and disease-spreading types, are

also advised before detailed management courses. Fish Management and Wildlife Management courses deal with the arts of producing and harvesting fishes, game birds, and mammals and fur bearers most economically, particularly in coordination with forestry and other branches of agriculture. Techniques in Fish and Wildlife Management furnish practice in censusing, care of specimens and materials in research and teaching, food analyses, habitat analyses and mapping, and many other techniques useful to the wildlife manager. These advanced practical courses take up the management of the major wildlife species of the United States.

A student in the Junior and Senior years may undertake the study of an animal of his selection and investigate some phase of life history, habits or relation to environment.

A graduate student in wildlife research usually is required to select a land area on which the investigator advises with farmers in the betterment of the cover and general management of the game. Thus the student actually practices as a wildlife manager in his research work, and the results attained are a testimonial of his abilities. Likewise, the research student in fisheries selects a water area and proves his abilities in its management for fish production.

The above general and special wildlife courses are supplemented and supported by a number of courses such as Animal Biology, Physiology, Parasites and Disease-Carrying Insects, Comparative Anatomy, Embryology, and Entomology. Courses in Botany, Forestry, Statistics, Chemistry, Geology, Soils and Land Management are essential for a successful career in wildlife management. English, History, Economics and Mathematics are also required of undergraduate students.

After receiving a Bachelor of Science degree some students continue their studies toward ad-

vanced degrees. Qualified students may pursue research studies leading to the degrees of Master of Science and Doctor of Philosophy. Facilities for such studies include a well-trained faculty, excellent research equipment, and a large library, as well as opportunities for field observations and experiments. A few teaching fellowships and graduate assistantships are open in wildlife management for superior students properly trained and qualified for a career in wildlife work.



One of the fundamentals of fish and wildlife management is a knowledge of food habits. Here a wildlife student is studying and identifying the contents of quail stomachs.

Capable young men, well prepared in the knowledge, principles, and techniques of wildlife management, obtain positions in administration, extension, and research with the U. S. Fish and Wildlife Service, National Park Service, U. S. Forest Service, and U. S. Soil Conservation Service. In universities, agricultural and other colleges, positions in teaching, research, and extension are available. The fish and game departments of the various states employ many college trained men in research and administrative positions. Many private hunting clubs and large estate owners employ men professionally trained in wildlife management as managers. There has never been a surplus of competent college trained wildlife management men.

In 1940 several hundred Iowa State College men with training in fish and wildlife management were at work professionally in 46 states, Alaska and the District of Columbia. Now many of them are in medical and insect and rat control units of the country's armed services in all continents and numerous oceanic islands, serving mostly as reserve commissioned officers. Thus their education in zoology, entomology, and fish and wildlife management have prepared them practically for defense both of national freedom and national natural resources.

The field of fish and wildlife management, enlarged greatly in the past 20 years, will increase in importance. These fields are necessary as a part of better land and water management, in the better

## NEW FISH USE BULLETIN

Iowa's annual harvest of non-game fish is approximately two million pounds and consists largely of carp, buffalo-fish, freshwater sheepshead, quillback, and suckers. At the present time the greater part of these fish is shipped to eastern markets, where they are greatly prized. These non-game fish, scorned by many Iowans as unfit for food, are nevertheless very palatable when taken from fresh, cold waters, well-conditioned and properly prepared.

Because of the need for "selling" the use of buffalo-fish, carp, and freshwater sheepshead as a food resource, the Agricultural Experiment Station has prepared a useful and informative bulletin, "Eat Iowa Fish." Anna Margrethe Olsen, of the State College Home Economics Division, is the author of this new 60-page pamphlet. The booklet deals with all phases of fish cookery and includes sketches on the life histories and habits of non-game food fish, their identification, and nutritive value.

Simple directions for the handling of the fresh fish, recipes for fresh, cooked, or canned fish, and instructions for the home preservation of fish by canning, pickling, and smoking, are all presented in this valuable illustrated bulletin.

"Eat Iowa Fish," Bulletin P67, is available from the Agricultural Extension Service, Iowa State College, Ames, Iowa, and may be obtained free of charge by writing the Bulletin Editor, Iowa State College.

## WHERE'D HE GO?

The pheasant is a wily bird; a wily bird is he.  
If you intend to shoot him you first must learn to see.  
Now this is quite a problem, especially in the fall;  
This bird that struts all summer long now isn't there at all.

Your eyes are really not at fault; it's just the pheasant's ears;  
Last week he heard the guns' report, a sound he's known for years.  
He quickly passed the word along—now all the pheasants know  
It's time to duck and run and hide and not a time for show.

The weather's been so rainy his families were quite late;  
But he took it all in strutting stride and blamed it onto fate.  
His present plight he lays to men who opened up the season;  
He says these human scalawags just will not hark to reason.

But fate he says has been real kind; an ill wind blew some good.  
The cover in the cornfield makes a very handy hood.  
And through this hood men's eyes can't pierce—now listen, pheasant, hear—  
Be calm, collected, run, don't fly, and live another year.  
—Clear Lake Reporter.

use and conservation of natural resources, and in the provision of low-priced healthful recreation for an increasing human population—all problems that must and will be handled better in the future.

An unlimited horizon in fish and wildlife management beckons to young men of ability and vision who will with serious determination prepare themselves for a lifetime in this fascinating field.



An unlimited horizon in fish and wildlife management calls to young men of ability and vision who with serious determination prepare themselves for a lifetime in this fascinating field.

# A Hunting We Go in Merrie England

(Editor's Note: From a copy of a very rare "Cyclopedia and Encyclopedia, Complete, Modern, and Universal Dictionary of Arts and Sciences," printed in London in 1790, is a dissertation on English hunting more than 150 years ago was taken. Words in parentheses have been inserted by the editor to explain the choice or little known English term directly preceding.)

HUNTING is the exercise or diversion of pursuing four-footed beasts of game. Hunting, considered as an exercise, is perhaps the best that can possibly be contrived for strengthening the general habit and procuring health and vigour. In the season of the year, the time of the day destined for the amusement, and the motion necessary on this occasion, are all admirably adapted to the restoration and continuance of health. It is besides of small importance to have the mind recreated at the time the body is exercised, for this admirably assists the due circulation of the fluids through the minute canals destined for their conveyance; and there are few people not utterly abandoned to idleness and debauchery of some kind or other, who do not perceive a spontaneous glow of spirits when they ride at or about the rise of the sun, when they respire the purest air, when a variety of perpetually changing scenes present themselves, and when the mind is agreeably agitated concerning the event of the chase.

Hunting is practiced in a different manner, and with different apparatus, according to the nature of the beasts which are hunted. With regard to the seasons, that for hart and buck-hunting begins fortnight after Midsummer (June 24), and lasts till holy-rod day (May 3); that for hind and doe begins on holy-rod day, and lasts till Candlemas (February 2); that for fox-hunting begins at Christmas, and holds till Lady-day (March 25); that for roe-hunting begins at Michaelmas (September 9) and ends at Christmas; hare-hunting commences at Michaelmas and lasts till the end of February; and where the wolf and bear are hunted, the season for each begins at Christmas, the first ending at Lady-day, and the latter at the purification (February 2).

When the sportsmen have provided themselves with nets, spears, and a hunting-horn, to call the dogs together; and likewise with instruments for digging the ground, the following directions will be of use to them in the pursuit of each sort of game.

**Badger-hunting.** You must begin with seeking the earths (lair of burrowing animal) and burrows where he lies, and in a clear moon-hine night go and stop all the burrows, except one or two, and there-in place some sacks, fastened with

drawing strings, which may shut him in as soon as he straineth the bag. Some use no more than to set a hoop in the mouth of the sack, and so put it into the hole; and as soon as the badger is in the sack and straineth it, the sack flippeth off the hoop and follows him into the earth, so he lies tumbling therein till he is taken. These sacks or bags being thus set, cast off the hounds, beating about all the woods, coppices, hedges, and tufts, round about, for the com-



The wild and deceitful stag frequently deceives its hunters by windings and turnings and with all its agility leaps hedges, gates, and ditches in its endeavor to elude the hunting dogs.

pass of a mile or two, and what badgers are abroad, being alarmed by the hounds, will soon betake themselves to their burrows; and observe that he who is placed to watch the sacks must stand close and upon a clear wind; otherwise the badger will discover him, and will immediately fly some other way into his burrow. But if the hounds can encounter him before he can take his sanctuary, he will then stand at bay like a boar, and make good sport, grievously biting and clawing the dogs, for the manner of their fighting is laying on their backs, using both teeth and nails; and by blowing up their skins defend themselves against all bites of the dogs, and blows of the men upon their noses. And for the better preservation of your dogs, it is good to put broad collars about their necks made of grey skins (rawhide).

When the badger perceives the terriers to begin to yearn him (give tongue) in his burrow, he will stop the hole betwixt him and the terriers, and if they still continue baying, he will remove his couch into another chamber, or part of the burrow, and so from one to another, barricading the way before them as they retreat, until they can go no further. If you intend to dig the badger out of his burrow, you must be provided with the same tools as for digging out a fox; and besides, you should have a pail of water to refresh the terriers, when they come out of the earth to take breath and cool themselves. It will also be necessary to

put collars of bells about the necks of your terriers, which making a noise may cause the badger to bolt out. The tools used for digging out the badger being troublesome to be carried on men's backs, may be brought in a cart. In digging, you must consider the situation of the ground, by which you may judge where the chief angles are; for else, instead of advancing the work, you will hinder it. In this order you may besiege them in their holds, or castles, and may break their platforms, parapets, case-mates, and work to them with mines and countermines, until you have overcome them.

The skin of the badger, when dressed with the hair, is used for pistol furniture (holsters, etc.). The Highlanders make their pendant pouches of it. The hair is often used for making brushes to soften the shades in painting, called sweetening tools. These animals are also hunted in the winter nights for the sake of their flesh, for the hind quarters may be made into hams, not inferior in goodness to the best bacon. The fat is much valued for ointments and salves; and the skin, being well dressed, is also very warm, and good for ancient people who are troubled with paralytic distempers.

**Hart or stag-hunting.** Gesner, speaking of hart-hunting, observes that this wild, deceitful, and subtle beast frequently deceives its hunter by windings and turnings. Wherefore the prudent hunter must train his dogs with words of art, that he may be able to set them on, and take them off again at pleasure. First, encompass the beast in her own layer (lair, bed of wild beast), and so unharbour (chase from shelter) her in the view of the dogs, that so you may never lose her footing. Neither must you set upon every one, either of the herd, or those that wander solitary alone, or a little one, but partly by fight, and partly by their footing (foot-prints) and fumets (odor of game), make a judgment of the game, and also observe the largeness of his layer.

The huntsman, having made these discoveries in order to the chase, takes off the couplings of the dogs, and some on horseback, and others on foot, follow the cry, with the greatest art, observation, and speed, remembering and intercepting him in his subtle turnings and headings; with all agility leaping hedges, gates, pales, ditches; neither fearing thorns, down hills, nor woods, but mounting fresh horse, if the first tire; follow the largest head of the whole herd, which must be singled out of the chase; which the dogs perceiving, must follow; not following any other. The dogs are animated to the sport by the winding of horns, and the voices of the huntsmen. But sometimes the crafty beast sends forth his little squire to be sacrificed to the dogs and hunters, instead of himself, lying close the mean time. In this case the hunts-

man must sound a retreat, break off the dogs, and take them in, that is, lead them again, until they be brought to the fairer game; which riseth with fear, yet still striveth by flight, until he be wearied and breathless. The nobles call the beast a wise hart, who, to avoid all his enemies, runneth into the greatest herds, and so brings a cloud of error on the dogs, to obstruct their farther pursuit; sometimes also beating (driving) some of the herd into his footings, that so he may the more easily escape, by amusing (distracting) the dogs. Afterwards he betakes himself to his heels again, still running with the wind, not only for the sake of refreshment, but also because by that means he can the more easily hear the voice of his pursuers, whether they be far from him, or near to him. But at last being again discovered by the hunters and sagacious scent of the dogs, he flies into the herds of cattle, as cows, sheep, &c. leaping on a cow or ox, laying the fore parts of his body thereon, that so touching the earth only with his hinder feet, he may leave a very small or no scent at all behind, for the hounds to discern.

But their usual manner is, when they see themselves hard beset, and every way intercepted, to make force at their enemy with their horns, who first comes upon him, unless they be prevented by spear or sword. When the beast is slain, the huntsman with his horn windeth (blows) the fall of the beast, and then the whole company comes up, blowing their horns in triumph for such a conquest; among whom, the skilfullest opening the beast, rewards the hounds with what properly belongs to them, for their future encouragement; for which purpose the huntsmen dip bread in the skin and blood of the beast, to give to the hounds.

It is very dangerous to go in to a hart at bay, of which there are two sorts, one on land and the other in water. Now if the hart be in a deep water, where you cannot well come at him, then couple up your dogs; for should they continue long in the water, it would endanger their surbating or found-



If the hounds can encounter a badger before he takes to his sanctuary, he will then stand at bay like a boar and make good sport, for their manner of fighting is laying on their backs, using both teeth and nails.

ering. In this case, get a boat, and swim (row) to him, with dagger drawn, or else with rope that has a noose, and throw it over his horns; for if the water be so deep that the hart swims, there is no danger in approaching him; otherwise you must be very cautious.

As to a land-bay; if a hart be burnished (velvet removed from horns, the latter then fully developed), then you must consider the place; for if it be in a plain and open place, where there is no wood nor covert, it is dangerous and difficult to come in to him; but if he be on a hedge-side, or in a thicket, then, while the hart is staring on the hounds, you may come softly and covertly behind him, and cut his throat. If you miss your aim, and the hart turn head upon you, then take refuge at some tree; and when the hart is at bay, couple up your hounds: and when you see the hart turn head to fly, gallop in roundly to him, and kill him with your sword.

**Directions at the death of a Hart or Buck.** The first ceremony, when the huntsman comes into the death of a deer, is to cry, **ware haunch**, that the hounds may not break in to the deer; which being done, the next is the cutting his throat, and there blooding the youngest hounds, that they may the better love a deer, and learn to leap at his throat; then the mort (dead stag) having been blown, and all the company come in, the best person, who hath not **taken say** (first cutting of a deer) before, is to take up the knife that the keeper or huntsman is to lay across the belly of the deer, and draw the edge of the knife leisurely along the middle of the belly, beginning near the brisket, and drawing a little upon it, enough in the length and depth to discover how fat the deer is; then he that is to break up the deer, first slits the skin from the cutting of the throat downwards, making the arber (first stage in disemboweling), that so the ordure (excrement) may not break forth, and then be paunches (disembowels) him, rewarding the hounds with it.

In the next place, he is to present the same person who **took say** with a drawn hanger (short sword) to cut off the head of the deer. Which being done, and the hounds rewarded, the concluding ceremony is, if it be a stag, to blow a triple mort; and if a buck, a double one; and then all who have horns, blow a reheat (strain blown on hunting horn) in concert, and immediately a general whoop, whoop.

#### FAMOUS IOWA TREES

Do you have a famous tree in your vicinity? Each month during the coming year the "Iowa Conservationist" will carry a photograph and brief history of trees that have figured in Iowa's history. If you have a tree in your neighborhood that can qualify for this series, write briefly the facts concerning the tree and its location to the "Iowa Conservationist."



Wonder what a pheasant thinks about the first few days in November? Well, we interviewed one. A Sun interview wouldn't be a Sun interview unless we printed a picture of the bird, and so, herewith, we give you one.

John R. Pheasant was born (hatched) two miles east and a half mile south of Matlock. His early life was spent on a farm. He was inclined to be a little wild in his youth and the neighbors said that he was a bad egg and would come to no good in the end. It turned out that the neighbors were right, for he was shot from the east while flying west.

We are not much concerned with Mr. Pheasant's youth. Of course, we could go into a lot of detail about the time the hawk nearly got him, and the time that the mower just missed clipping off one of his legs, and the time that he ate so much corn that he nearly died of the colic, but truly, I think that we are much more interested in his love life and his final donation to science.

Johnny met bride-to-be early last March. The little lady was a newcomer in the territory, having flown up from Sioux township for a weekend with her parents, Mr. and Mrs. Horace Ringneck. It was a case of love at first sight and the young couple were married after a whirlwind courtship. The newlyweds suffered a tragedy in their early married life, when a violent hail storm took the lives of their first brood. After the storm, they held an auction and moved to a farm about two miles north and a mile west, out of the hail belt.

They were only renters, but they worried right along with the owner about the excessive rainfall and the possibilities of soft corn this fall.

But we are getting just a little ahead of our story. It seems that Mrs. Jno. Pheasant, nee Sadie Ringneck (of the Orange City Ringnecks) was of a jealous disposition. Johnny had been flirting around a bit, to take his mind off the hail storm perhaps, and had been on some of the side roads with a gal by the name of Susie Gallinae (look this word up in the dictionary, I did), and it was rumored about the township that Johnny had given up the doctrine of monogamy.

Sadie Ringneck (we still insist upon calling her by her maiden name because we knew her folks back in '43) raised a rumpus. She and Susie had it out in the schoolhouse yard just east of Gerrit Vaandrager's farm. If you should happen to shoot a hen pheasant with her left eye gone—that's

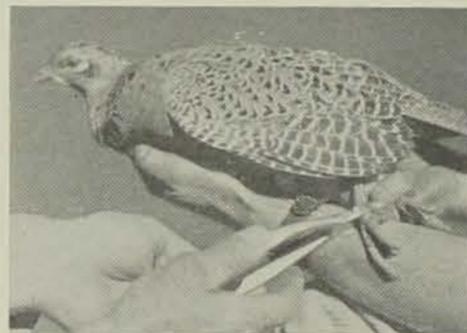
Susie. But if you do shoot a hen pheasant, don't let Jim Gregory find it out, 'cause he'll take you right into Lee Austin's court at Rock Rapids and fine you fifty dollars.

To get back to our interview. The opening of the pheasant season in northwest Iowa, we took the "Blue Cub", as we playfully call the machine that passes as an automobile, and headed toward Matlock. By being very alert, we had managed to pick up a box of shells and had borrowed a dog. We planned to pay a visit to the Pheasant family.

We met Johnny in a weed patch in the lee side of a grove on his south forty. Mrs. Pheasant had gone back to Orange City to spend the weekend with her folks. The interview began pleasantly enough. "What do you think of the season so far, Johnny?" we queried.

"It's a bad business," he said slowly. "We were invaded without a word of warning. By sunup we could see them mobilizing on the roads and in the fields west of Ritter, but we never suspected a thing. We thought that they were going to attack the Ducks. It was a regular Pearl Harbor."

"Maybe all that they wanted was a corridor through Matlock," we suggested.



A Sun interview wouldn't be a Sun interview unless we printed a picture of the bird. Here is Johnny's bride getting a numbered aluminum leg band for identification.

Johnny Pheasant shook his ruff. "We tried appeasement last year but it didn't work." He wiped his bill sadly. "I wouldn't mind it so much if we hadn't been out-flanked," he said.

"Well, you have the superior air force," we remarked by way of an alibi.

"Yes, and what does it amount to, if we don't have the fields to fly off from and the flak is terrific. Nope, I think we'll have to capitulate," Johnny said sadly.

"The bad weather will set in in another week if you can just hold out," we hopefully suggested. "You can't very well maneuver with a foot of snow on the ground."

Johnny Pheasant spread his fan tail and crouched lower into the weeds, the better to camouflage his position. "Don't look now, but I think there's an attack coming in from the east." Johnny had a worried look in his eyes.

"Oh, that's only Steve Watkins and Roy Coomes," we rejoined. "They can't hit anything, anyway."

#### CHANGES MIND ABOUT BEAR-KILLING PROCEDURE

Bill Sharpe, of the North Carolina State News Bureau, tells this one: Penn Morris, a well-known deer hunter, has always maintained the best way to kill a bear is to grab his paw and hit him in the burr of the ear. That, however, was before he met one at close quarters.

Last week, while Penn was alone on a deer stand, a 345-pound bear walked right up to him. He immediately changed his mind. He declared there was nothing to do but pull the trigger and hope for the best. Fortunately this was good enough, but Penn declares he has hunted alone on a stand for the last time.

To be a good officer an Agent must be not only courteous but courageous, although he should avoid any form of harshness or an overbearing attitude. His methods should be direct, orderly, and firm, without provoking resistance. When approaching a person suspected of violating the law, the officer should make known his identity and give his name to the hunter before checking over his bag, license or stamp, and also give to such individual information he may desire regarding the Federal regulations.

While an Agent may exercise reasonable force, when necessary in effecting an arrest, he should be courteous and considerate to the fullest possible extent. There will be times when an Agent must act swiftly and forcibly, and if criticized for his act, his reputation for tact and courtesy will sustain him.

The efficiency of an Agent and his usefulness to the Survey will depend in large measure upon his ability to command the respect and confidence of those with whom he comes in contact. Discourtesy on the part of an Agent in his official capacity will not be tolerated.—Manual for U. S. Deputy Game Wardens.

#### Forestry Chips

(Continued from page 99)

There was much in that woodlot besides a tree crop. There was a night of recreation and a challenge to return for the one that got away, and they were all ours because someone took care of his trees and used them as a crop.

As a forester and a coon hunter there is a soft spot in my heart for this understanding gentleman and the others like him.

Just sit tight; they'll never see you."

But Johnny Pheasant couldn't take it any longer. He gave one squawk and took off in a power climb. He stalled at 30 feet, and Steve and Roy caught him in a cross fire. As far as Johnny Pheasant was concerned, the interview was over.—Sheldon Sun.

## America's Bird Dogs



### SPRINGER HAS MANY FRIENDS

By Jack Hewins

He'll take you where they are, slipping through the toughest rush and burrs to throw a covey of quail or pheasant into your gun-sight with the unexpectedness of a fire alarm, and you'd better be ready, mister, because he'll toss you a look of disgust if you miss your reward with an alligator mile when he brings in your kill if you connect. That's why springer men are springer men—guys who insist there are just two breeds, "springer" and "dog."

They like him for the very reason many pointer-setter men despise him—his close ranging and sudden flushing of the birds. They tell you his tail is a signal—when its eternal waving hits a boogie-woogie tempo he's got his nose in the covey and it's ready to explode.

The springer ranges close under the guns, and when the birds rise and the guns crash he squats on his haunches to watch where the kill goes down. Then he finds it and brings it in with a look of pride in his eyes and a big smile on his chops.

He's a long-haired, long-eared, silky animal with high-domed forehead and lopped tail. Big-footed or swimming, he's an excellent pal in the duck blind. He comes ordinarily in two shades, black and white or liver and white, and the hunter usually picks the one with plenty of white above—so he can be seen more readily in the shadows of thorn and thicket.—AP Newsfeatures, Reprinted by Permission of the Des Moines Register and Tribune.

(Next Month: Irish Setter)

"When the wind is in the east  
Then the fishes bite the least;  
When the wind is in the west  
Then the fishes bite the best.  
When the wind is in the north  
Then the fishes do come forth;  
When the wind is in the south  
It blows the bait in the fish's mouth."  
—Old Rhyme.

"Don't think to hunt two hares with one dog."—Benjamin Franklin.

"Like a dog, he hunts in dreams."  
—Tennyson.

## Measure Sediment

(Continued from page 97)

all times and particularly during floods. The recognition of the need for quantitative facts has been most timely with reference to the major floods of May and June, 1944, in Iowa. A summary of some of the information is believed to be of interest to the public.

For example, the computations show that during the 10-day period May 20-29, 1944, about 400,000 acre feet of water flowed past the gage on the Iowa River at Iowa City. This volume of water is practically equal to the proposed storage capacity of the Coralville reservoir with reference to the consideration of some time ago. In other words, the flow of the Iowa River during a major 10-day period of the May flood would have filled a reservoir of 400,000 acre feet if completely empty on May 19, 1944. For comparative purposes the capacity of the Keokuk reservoir in 1928 has been given as 370,000 acre feet. With reference to silt loads during the same 10-day period in May, slightly less than 1,000,000 tons of sediment were carried past the gaging station in Iowa City. During the second high water period from June 14-23, 1944, a quantity of 370,000 tons of suspended matter was discharged in the 10-day period.

On the basis that an inch of top soil from one acre of land weighs 150 tons, the irreplaceable soil loss in these 20 days would be equivalent to an inch of soil on each of approximately 8,500 acres of valuable farm lands in the Iowa River Basin.

These figures, furnished by the Iowa Geological Survey through L. C. Crawford, district engineer at the Hydraulics Laboratory at Iowa City, represent only a small part of soil losses from the destructive floods which occurred over a large portion of the state last summer. After the floods the State Soil Conservation Committee reported an estimated soil wash-away in excess of \$150,000,000, the major part of



The measurement of stream flow and silt loads requires specially developed equipment and methods, together with trained personnel, to insure proper collection of data at all times and particularly during floods. Here a milk bottle containing sample of river waters and sediment is being taken from sampling device on a Des Moines River bridge.

the tremendous damage and loss occurring in the floods.

Through the field measurements taken by engineers with technical instruments, further startling indication has been given of the magnitude of silt loads in Iowa streams.

On June 26, 1944, just after the crest of the flood on the Little Maquoketa River near Durango, a measurement revealed that 264,000 tons of silt per day were being carried downstream, an average rate of about three tons daily from every acre drained by the river. At Augusta on the Skunk River on May 26, 1944, the sediment load being carried was 206,000 tons per day. When the Des Moines River at Keosauqua reached a height of 17.7 feet on May 26, 1944, a determination showed a sediment discharge rate of 198,000 tons every 24 hours.

Such quantitative facts will be most helpful for the proper con-



During the 10-day period May 20-29, 1944, measured water samples revealed that slightly less than 1,000,000 tons of sediment were carried past the gauging station at Iowa City.

sideration of a variety of problems relating to Iowa agriculture and conservation, such as municipal water supplies, soil losses, silting of Iowa lakes and rivers, protection of state parks and preserves, and proposals for flood control dams.

## Poverty or Conservation

(Continued from page 99)

What has become of the millions of people who once lived on the now denuded forests, abandoned farm land and exhausted fishing waters?

The answers to all these and many more questions like them are now written so that anyone who cares to may read in the simple language of the natural research scientists. And the fate of our future generations rests upon their application to everyday living.

Research scientists have gone a long way to provide the formulas by which Conservation can be accomplished. The public, hydraulic and sanitary engineers, industrialists and, alas, educators, have been slow to apply or even think of these vital essentials to man's existence while our population grows larger and our productive resources shrink.

(To be continued next month)

## EXPERIMENT PROVES NOT MUCH LUMBER IN TREE

Gene Von Helmut's experiment with the willow tree: Gene took a large metal bowl and put carefully weighed amounts of soil in it. He planted a 16 ounce willow and covered it with a close-fitting lid having a hole in the middle for the tree to grow through. Then he added only water to this mixture, and at the end of five years the tree weighed 167 pounds. Upon weighing soil again, it had lost 2 ounces. Conclusion: Tree was 95 percent water and air.—Timber Topics.

## WILD VALETS

The Custer wolf, one of the most notorious of animal outlaws, once had two servants. A few weeks after his mate died, two coyotes attached themselves to the wolf that plagued Wyoming stockmen for years until he was finally exterminated by a government hunter. These coyotes flanked all the Custer wolf's movements, giving warning of danger. When he ate, the coyotes hung back and waited until he had finished, before devouring what was left of the prey.—From The American Wildlife Institute.

## WANTED—TO COMPLETE OUR SET OF IOWA CONSERVATIONISTS

Vol. 1, Nos. 1 and 5. We are binding and cataloguing our set for permanent reference, and we should like to secure these two numbers, either by gift or in exchange for other material. Anyone willing to give or exchange them should write to Mrs. William Newkirk Manning, Librarian, Department of Zoology, Cornell University, Ithaca, New York.

Anglers who have been exhausting their fishing tackle at a more rapid rate than it was being replaced during the past two years will find a note of cheer in the announcement by the War Production Board that in all probability production of a limited number of reels and steel rods will be permitted early in 1945.

Almost every major tackle maker has been engaged 100 percent in war work since early in 1942. This has resulted in the complete cleaning out of every jobber's and every retailer's stock of reels. We have not seen a new reel on a dealer's shelf in many months. The same may be said of steel rods, although the rod situation never was as serious as the reel situation.

Now, with the nation catching up on its war effort, at least that part of it upon which the tackle makers were busy, the release of a moderate amount of material and manpower for tackle production is seen. But don't get too excited about that new reel, for it will probably be many months before your dealer has one.—The Nomad, Davenport Democrat.

## Famous Iowa Trees

From Local Legend and  
Historical Fact



### THE COUNCIL OAK

The Council Oak, in Riverside Park at Sioux City, is possibly the most widely known of Iowa's famous trees. This gnarled and ancient bur oak is still alive and grows on the Missouri River bottom near the mouth of the Big Sioux River. The tree towers nearly a hundred feet and is almost four feet in diameter at the base. Its twisted, broken limbs and areas of decay add impressiveness to its size, and it wears these scars of battle with time in cold and aristocratic dignity.

The Council Oak is more than 350 years old. It was an old tree when Lewis and Clark made their epic journey up the Missouri River in 1804. Legend says the two explorers called the Indians to council and under its spreading branches smoked kinnikinnick with the native headmen. Tradition also holds that years before the famous expedition this giant landmark furnished shade and shelter for the numerous councils of war and peace between Indian tribes of the region. It is said that the last Indian council held under Council Oak was in 1854, called by Smutty Bear regarding white surveyors operating in the area. Some people doubt part of these romantic tales. It cannot be denied, however, that this grand tree has faced the centuries in a location rich in history, and there is little doubt that it served as a beacon, even before white man's occupancy. Who smugly dares dispute the right of this hoary giant to wear, untarnished by cynicism, its diadem of legends as it faces the winds and rains of its twilight years?

## Business Is Brisk

Business has been very brisk at our outdoor bird-feeding station during the recent cold, wintry weather.

While our opportunity for observation is limited to a very short period each day, we have observed some interesting things. The bluejays appear to be boss of the cafeteria whenever they put in an appearance, crowding out the starlings, sparrows, cardinals, and other species. We observe, too, that when two bluejays alight at the feeding shelf at the same time, one must give way. They are a quarrelsome species with little respect for their kind.

The little juncos are very well-behaved. They flit about, preferring to take their grains from the snow, never molesting any other species, flying away when a door slams, or a dog barks. The cardinals act quite dignified, coming to eat with a sort of "we mind our own business" attitude. The sparrows and starlings just dive in whenever there is feed, having no table manners at all.

The woodpeckers must have heard about the OPA, for they have developed the hoarding habit. They will fly to the shelf, snatch a piece of bread or meat scraps, then fly to some large tree to hide the morsel in a crevice. Maybe they are short of red stamps, or is it the blue ones?

Our menu has consisted chiefly of bread crusts and snatch grains, with some meat scraps. Suet is hard to obtain, due to its need in the war effort. Sand, when we have it on hand, is added to the food supply, for birds need grit as well as food. There is never a dull moment at the feeding shelf, and some of the bird antics are better than vaudeville.—The Nomad, Davenport Democrat.

## Pollution of Streams, Lakes

Among the manifold measures of public interest which will claim attention of the Iowa assembly this winter is a bill originated by the Izaak Walton League and supported by organizations of kindred interest, to broaden the scope of anti-pollution law and render existing regulation more enforceable.

B. B. Kint is one of 20 committeemen of the sixth district, while all districts are represented in an impressive state organization which has undertaken to spread the gospel of public water sanitation.

The measure will not encounter such assembly opposition as will be incurred by proposed sumptuary legislation because anti-pollutionists aren't asking state appropriation. They seek preemptory state regulation of sewage disposal to compel compliance of municipalities, corporations, and other offenders.

The bill probably will be generally supported.—Estherville News.

## What Winter Means to Fish

By Dr. Lowell A. Woodbury

Most people think, when they ever consider the subject at all, that fish probably lead a more or less dormant existence under the ice during the winter, occasionally arousing themselves to browse about for food when the pangs of hunger assail them.

Under certain conditions this is more or less correct. The small-mouth bass, for example, practically goes into hibernation during the winter time, frequently seeking a secluded hiding place in some hollow log or under some large rock and remaining there in a more or less dormant condition until the spring of the year. Other fish, however, move around quite frequently during the winter months, as can be testified by the numerous ice fishermen.

However, winter is not entirely a period of reduced activity for fish. It is a period in which many species are developing their egg supply for the spring spawning, and it is also one of the most critical periods of the year for general fish populations.

It is during this period that heavy fish losses known as winter kill occur, at times removing practically all of the fish from a fairly sizable lake. Winter kill is due to the depletion of oxygen in the water under the ice with the consequent suffocation of the fish. To properly understand the depletion of oxygen from the water it will be necessary to review briefly a few of the things that happen to the water of the lakes during the winter.

In the fall of the year, with the cooling of the surface waters, the autumn winds thoroughly mix the water of the lake and at the same time impregnate the water with oxygen. Shortly afterwards the ice forms, sealing the lake so that no further air can reach the water. If the lake is large and has an adequate depth of water, the oxygen supply contained in solution in the water is sufficient to last the fish and other animal life throughout the winter. However, if the lake is quite small and shallow, the oxygen may not last till spring. In most shallow lakes the bottom is covered with decaying vegetation and muck which has what is known as a high oxygen demand. That is to say, the material in decaying utilizes oxygen in the process. If the lake is shallow, the decaying material on the bottom may take almost all of the oxygen present out of the water, leaving none for the animal life existing in the lake.

Under these conditions a winter kill occurs. However, winter kill does not occur as easily in shallow lakes if the winter is fairly open and the lake is free from snow a good part of the time. The clear

ice allows sunlight to penetrate into the water, resulting in the stimulation to growth of small plants present in the water. As is well known, plants under the influence of sunlight give off oxygen due to the process of photosynthesis. Such large quantities of oxygen may be given off under these conditions that will safely keep the water of the lake supplied with sufficient oxygen to maintain life.

However, if the winter is heavy and the lake remains snow-covered during most of the season, the oxygen may be used up by the dead and decaying plants, resulting in the asphyxiation of animal life and of course a heavy winter kill.

The phenomenon of winter kill arouses a lot of curiosity among the people when they have occasion to observe it, and one of the most frequent questions asked is, "What can be done to prevent or alleviate this condition?" Unfortunately the answer at present is "Little or nothing."

The sheer labor of physically pumping enough air into a moderately large lake places this method beyond practicability. About the only hope of preventing winter kill lies in keeping all, or at least a good proportion, of the lake surface free from snow. If this can be done the sunlight and the plants within the lake will keep the water aerated.

The removal of snow from a lake of any size is quite a Herculean task in itself, even with heavy snow-moving machinery. It has often been said that if ice fishing were permitted, fishermen would chop holes through the ice and thus aerate the water and prevent winter kill of fish. Experiments have shown that this procedure is of little value in oxygenation of the water. Other methods of introduction of oxygen to the lakes in the winter have not been encouraging. Other states, as well as Wisconsin, have tried various schemes, but to date all attempts are expensive and inefficient.—Wisconsin Conservation Bulletin.



This titmouse is one of the comedy actors at the winter feeding tray.