Iowa CONSERVATIONIST

Volume 24 February, 1965 No. 2

Field glasses and keen eyesight are as indispensable as speed in fox hunting with greyhounds. Max Schnepf Photo.

SPORT OF SPEED

Max Schnepf

"Get 'im!" Joe commanded. The two lanky greyhounds standing at s side hesitated for a moment; their sharp eyes scanned the area low the ridge; then they spotted the red fox piling up the bank out the frozen creek bed; and the chase was on.

Once out of the creek bottom Reynard streaked parallel to a fence e for a hundred yards, made a sharp right turn and dashed along second fence in an attempt to lose his pursuers. The greyhounds ickly recovered from their slow start. They jumped the first fence d cut the corner on the fox's turn in hopes of intercepting him. The rrain, however, favored Reynard. Just as the dogs cleared the second nce, their quarry dashed back through it and out of sight in a weed tch.

The dogs followed the hot trail for a few yards into the tangled ough grass and iron weeds but soon became disinterested and loped t of the weed patch with tongues hanging. It isn't often Joe Hill's eyhounds have to concede to their canine cousin.

The last 200 years have seen fox hunting evolve from a *chase for fun* a *chase in hopes of making a kill.* The social romps on horseback hind a pack of fox hounds have never become popular in the nation's dlands. Instead, the circle hunt, shotgun, predator call and high-wered rifle are king, at least to most fox hunters.

Joe Hill, a Roland, Iowa, farmer, is a member of a growing minority Reynard's tormentors who are convinced greyhounds are the ultimate fox hunting weapon. These slender canine speedsters are bred to run. On an open stretch with good going a greyhound is capable of running 50 miles per hour, almost twice what a red fox can do. The purebred greyhound, however, is too fast for his own good, according to Hill. The sharp turns at high speed required during the pursuit frequently result in cut feet and broken toes and toenails. Consequently, the Roland hunter prefers to run a greyhound-German shepherd cross, a slower dog but one that is stronger and more intelligent.

Hill's crossbreds are still more than a match for *Vulpes fulva.* In stubble, picked corn or pasture it's just a matter of time before the dogs overtake the fox. Reynard is not always at a disadvantage, however. He doesn't always lose. A fox can hold his own against the greyhounds on the rough surface of plowed ground. On crusted snow the dogs, which weigh four or five times as much as a fox, are practically helpless, especially when this cunning mammal runs atop the snow drifts along a fence line. And how Reynard loves to run fence lines!

Hilly or heavy cover areas also favor the fox, since he has more time to maneuver and make the dogs lose sight of him. Timber gives the fox his greatest advantage. In fact he outmaneuvers greyhounds so easily in timber that Hill does not bother to hunt in or near wooded areas.

Fox hunting with greyhounds isn't all a battle of caninie speed, in-

(Continued on page 16)

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CIRCULATION THIS ISSUE.....52,000

COMMISSION MINUTES

January 6 and 7, 1965

LANDS AND WATERS

A report on park development plans for the Rathbun Reservoir Area in Appanoose County was given by the Superintendent of Parks and Superintendent of Engineering.

Approval was given for concessions in six state parks.

Rates charged by concessionaires for boat rental on artificial lakes was discussed.

Announcement was made of the appointment of Joe Etzen as Park Supervisor for the southwest one-third of the state.

A discussion was held concerning the possibility of the acquisition of additional state park land near Bellevue.

The Commission met with Mrs. Nodurft concerning the concession at Backbone State Park.

The Board of Control met with the Conservation Commission to discuss the possibility of constructing a youth camp at Williamson Pond near the town of Williamson.

Approval was given for negotiations for options on the Nebraska land located on the Iowa side of the Missouri River to be exercised in case of a boundary settlement, this procedure to be subject to the approval of the attorney general.

Approval was given to the purchase from Ed McFerrin of Modale of 6,000 feet of river frontage at the lower end of Tyson Bend for a total cost of $3,000 the area to vary from 50 feet to 600 feet wide.

FISH AND GAME

Approval was given to exercise an option for land purchase from Klosterman for an area consisting of about 33 acres called Ashton Pits in Osceola County at a cost of $85 per acre.

Approval was given to exercise an option for land purchase from Boles for 54.5 acre area known as Yager's Slough in Dickinson County at a total cost of $5,450.

A discussion was held concerning the possibility of the acquisition of about 300 acres which was a former missile site at Missouri Valley.

A motion was passed directing the Director of the Commission to use all legal resources possible to protect and preserve Green Bay Lake.

Approval was given for the construction of a new fish screen and trap between Minnewashta and Gar Lakes in Dickinson County.

Chairman Sherry Fisher informed the Commission of an agreement to trade Iowa catfish for Nebraska turkeys for stocking in Iowa.

The Commission met with a group of people from Britt to discuss the management of Eagle Lake in Hancock County.

COUNTY CONSERVATION ACTIVITIES

Black Hawk County received approval for the acquisition of the Wapsi Access Area consisting of about five acres of land at a total cost of $250, located east of Dunkerton on the Wapsipinicon River for fishing access.

Hancock County received approval for a Farmer-Cooperative Wildlife Area agreement consisting of 10.3 acres of land made up of the 14 separate parcels under a 10-year lease with 14 different property owners for the purpose of planting wildlife habitat.

Hancock received approval for the acquisition of Torkelson Wild Goose Park consisting of 62 acres of land under a renewable 25-year lease of a total cost of $1. The area is a gravel pit located northeast of the town of Miller immediately north of the Winnebago River. The purpose of acquiring this area is to develop the worked out gravel pits for fishing, and develop a picnic area between the gravel pits and the Winnebago River.

Linn County received approval for an addition to Palisades-Dows Preserve consisting of about 12 acres of additional land at a cost of $2,743.43 for the purpose of building an access road and parking lot for this area.

Linn County received approval for the acquisition of 123.85 acres of land at a total cost of $19,600 as an addition to the Pinicon Ridge Park. This acquisition will provide an additional one mile of frontage on the west side of the Wapsipinicon River which will be on the pool created by the new dam to be constructed at Central City.

Linn County received approval for the acquisition of 3.73 acres of land as a gift for lands formerly leased by the County Board and known as Jay G. Sigmund Park, located immediately north of the town of Waubeek on the Wapsipinicon River.

Mitchell County received approval for the acquisition of 10.61 acres of land at a total cost of $4,000 located on the Cedar River on the upper end of the Mitchell Dam Impoundment and south of the town of St. Ansgar to be called Halvorson Park and used for picnicking, camping and river access.

Mitchell County received approval for the acquisition of 4½ acres of land by a 10-year lease for a cost of $1 per year for a county park on the Little Cedar River on the east edge of the town of Stacyville.

Black Hawk County received approval for a development plan for five of their county parks, all of which are to be used for general park purposes, fishing access and hunting, including Black Hawk Park, Bruggemen County Park, Popp Access Area, Childs Public Access Area and Siggekov Access Area.

Carroll County received approval for a revised development plan for Swan Lake Park which would provide expansion of the picnic area, camping facilities, and others.

Hancock County received approval for a development plan for Farmer-County Cooperative Wildlife Habitat Areas on 14 separate tracts of wildlife habitat plantings.

Linn County received approval for a revision of their Pinicon Ridge Park development plan which would provide a marina and various changes in road development, trailer camp plans, etc.

Linn County received approval for a revised development plan for the Buffalo Creek Parkway to include the Coggon dam remedial project and excavation of silt from the impoundment.

Delaware County received approval for the acquisition of 10 acres of land as a gift from Mariett P. Childs located three miles west of the town of Greeley to provide a wildlife area and timber preserve.

GENERAL

Travel was approved for a forestry meeting at Milwaukee, Wisconsin; the Great Lakes Training Institute, Pokagon State Park, Angola, Indiana; the Bureau of Outdoor Recreation Training School at Ann Arbor, Michigan; a fisheries meeting at Yankton, South Dakota; Aquatic Weed Control Meeting at Chicago, Illinois; a trip to pick up Hungarian Partridge in North Dakota; the Upper Mississippi River Comprehensive Basin Study of Urbana, Illinois; to work at a sports' show at Kansas City, Missouri; a movie short course at Kansas City, Missouri; to Washington, D. C., to attend a trial concerning the boundary between the State of Nebraska and the State of Iowa; and to Lincoln, Nebraska to attend a Missouri River Survey Meeting.

The Director of Planning presented a report on the Long Range Conservation Plan.

A discussion was held concerning proposed legislation.

THE LUSTY BROW TROUT

It was the brown trout *(S no trutta)* that prompted the En poet, Tennyson, to take his g pen in hand and write:

"I wind about, and in and
with here a blossom saili
And here and there a lusty t
And here and there a grayl
The brownie, the common
in England, was introduce
American anglers during an
best identified as the "Gay
ties." It is now an accepted
ber of the American trout fa
and lurks in dancing str
throughout most of our trout c
try. The natives were two dis
Old World species, the brown
the loch leven, but they have
crossbred by fish culturists un
clear strain of either no longe
ists.

In various parts of its r
the brown may be called En
brown trout, German brown t
European trout, von Behr t
loch leven trout, or Euro
brown trout.

The brown can be distingui
from the other trouts by the l
red or orange spots on its
These spots are surrounded
light rings. The fish has ra
large scales (as trout scales
and a large adipose fin.

In a few states the brownie
opposed for many years bec
of its predatory habits, but
opposition is gradually weake
and the trout is now being sto
in the larger trout streams
many of these states.

From the fish manager's st
point, the brown's value lies i
ability to survive in water t
peratures up to 75 degrees an
ability to withstand heavy fis
pressure. The wary brown is
an easy fish to catch. Our na
brook trout are the easiest of
trouts to creel and vanish u
heavy angling pressure. Nor
they survive in water temperat
much above 65 degrees. The fl
rainbow falls between
brook and the brown on
counts. The niche the brown
filled in American trout water
the marginal stream—the str
that never quite makes the g
as a brook or rainbow stream

The female brown lays 200-
eggs during the fall of the y
but most brown trout fishing
sustained by periodic stocking
hatchery raised fish.

From the angler's point of v
the brownie is a dry fly fisherm
dream—particularly in sizes u
15 inches. Above that it beco
a flesh eater preying on minn
and small trout. Tying int
lunker is a brown trout possibi
as under proper conditions t
quickly grow to seven or e
pounds. The world record is
pounds and it was creeled in na
brown trout waters—Loch A
Scotland, in 1866.

Wary though it may be,

(Continued on page 11)

Did you know—WATER is LAYERED LIKE A CAKE!

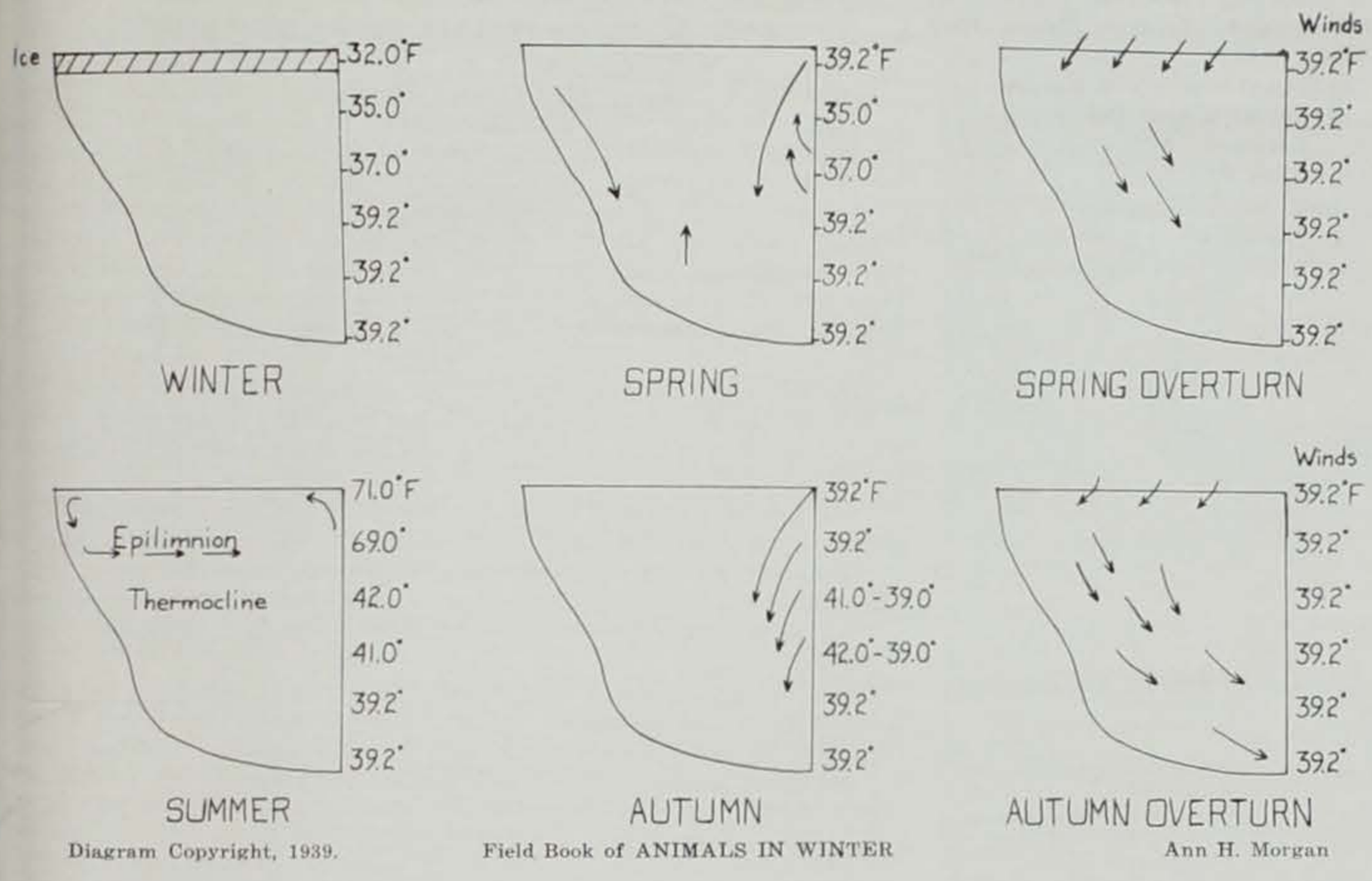

Diagram Copyright, 1939. Field Book of ANIMALS IN WINTER Ann H. Morgan

Jack Higgins

Most folks firmly believe that what they don't know won't hurt them! But the fisherman fishing in a farm pond or lake had better know something about how nature does about arranging water according to its temperature at various levels if he expects to catch many fish.

If you could slice a hunk of pond water from top to bottom, (see illustration) you'd find the water layered like a cake. This is because the water of a given temperature seeks water of the same temperature. Scientists refer to this principal as *thermal stratification*. It's a phenomenon that is found in just about every pond and lake in Iowa.

A temperature of 32.0 F. causes water to freeze and become extremely light, whereas a water temperature of 39.2 F. causes water to be heavy or dense. In other words, water that is either warmer or cooler than 39.2 F. will be lighter, and therefore rise to a higher level. Thus during stable thermactic conditions, such as those created during summer or winter, impounded water is layered according to definite temperature gradients.

Throughout the winter, water at the top of a pond or lake obviously will be exactly 32.0 F. Beneath the ice cover, and as one descends, water temperature rapidly rises to 39.2 F. At this level aquatic life gathers to spend the winter. The 39.2 F. zone is also the most hazardous place for them, as water at that temperature holds relatively little oxygen. That is why a prolonged winter of heavy ice and snow cover may result in a heavy kill of fish and other aquatic life.

Spring Overturn

When spring arrives and the ice cover melts, winter stratification is broken by what is known as the spring overturn. The overturn is caused by the strong gusty winds that characterize an Iowa spring. The force of the wind pushes the surface water ahead of it and piles it up on the opposite shore. Since water seeks its own level, and the tide effect caused by the wind disrupts its normal level, the excess water is forced to turn under itself and flow back to the other shore as a bottom current. In a comparatively short period of time the entire body of water is turned over and thoroughly mixed so that a relatively even temperature of 39.2 degrees F. is found throughout.

As the water boils up from the depths, it releases huge amounts of carbon dioxide gas in exchange for oxygen. The lethal carbon dioxide gas was acquired from the life and death that went on during the winter. If nature hadn't provided for this "curing" process, all of our lakes and ponds would be sterile and lifeless.

Summer Zones

Spring winds have a way of dying, however, and so the stage is set for summer stratification. Several days of bright sunshine and calm winds quickly warm the upper few inches of water. As soon as this area gets several degrees warmer than that below, it becomes less dense and is effectively prevented from re-mixing until fall cooling occurs.

Summer stratification is more complex than that of winter. The upper third contains the warmest, and hence the lightest waters. This is called the *epilimnion* zone. In the middle, or *thermocline* zone, temperature drops sharply and the water becomes more dense. In the lowest zone, or *hypolimnion*, the water is an exact 39.2 degrees F.; is extremely dense; and, in artificial impoundments, will be quite likely to be devoid of oxygen and life.

Fall Overturn

The water radiates its stored heat during the cooler days and nights of fall; and as the water cools, it becomes more dense. When the blustery fall winds begin, the water is ready to mix in the same way it did during the spring overturn. The fall overturn is complete when all the water reaches 39.2 degrees F.

It appears that one of the major purposes served to the water community by the fall overturn is the assurance of an abundant food supply. Surface plankton and other aquatic life forms that supplied food to various fish during the summer months are carried to the bottom areas and continue to be an available food supply throughout the winter months. In addition, the water is re-oxygenated throughout. Nature's rhythmic cycle is completed once more, and life goes on.

Knowing all this, the smart fisherman will not fish the bottom or deepest parts of artificial lakes during summer months, but will instead try to find the "floor" of the thermocline and fish at, or a little above it. This knowledge will mean the difference between a good catch or an empty creel.

Fisher Heads Lewis And Clark Commission

Sherry Fisher, chairman of the State Conservation Commission, was recently elected chairman of the Lewis and Clark Trail Commission.

The Trail Commission was authorized by the last session of Congress and met for the first time on January 4 in Washington, D.C. Its purpose is to promote historic and recreation development along the route of the Lewis and Clark expedition.

The Commission grew out of proposals by the late J. N. "Ding" Darling, conservationist and cartoonist, that historic points of interest and other features along the Trail be developed for enjoyment by all Americans.

Fisher is one of 27 members of the Trail Commission representing 10 States along the Lewis and Clark route, Congress and five Federal agencies. Other Iowans on the Commission are Christopher Koss, grandson of the late "Ding" Darling, and former Congressman John Kyl. Koss is from Des Moines, Kyl from Bloomfield.

BROWN TROUT—
(Continued from page 10)

brown can be outwitted, but it will not often fall for opening day worm dunking tactics. The fish has too much European aristocracy for that. The brownie feeds mostly at dusk or during the night, and dusk is a delightful time for dry fly fishing.

For some serious fly fishing, give the brownie a try some spring or summer evening.

By Bob Gooch from
West Virginia Conservation

Things You May Not Know

Animals that chew a cud include cows, deer, sheep, goats, giraffes and antelopes.

The sloth, one of the slowest of all animals, eats so slowly that before he has finished one meal, it is time for the next.

An elephant's trunk contains 40 thousand muscles and can perform more services than any other animal part except the human hand.

The ruffed grouse is also known as mountain pheasant, thunder bird, partridge and drummer.

The common American bear may be cinnamon, chocolate brown or black in color, but all, correctly speaking, are Black Bears.

Insects have no lungs. They breathe through tubes running all through their bodies.

Bears are near-sighted because of their long-time habit of feeding with noses to the ground.

Illustration No. 1: Stapling. Jim Sherman Photo.

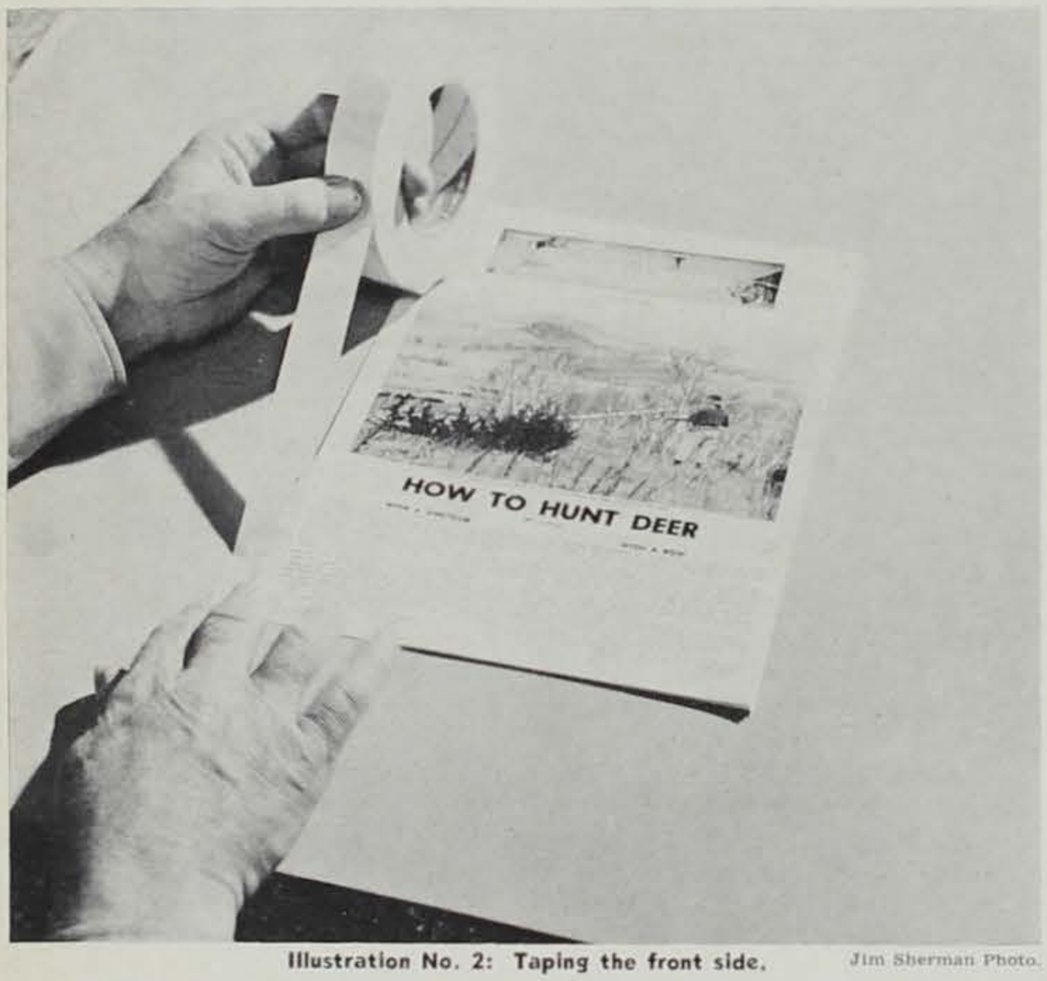

Illustration No. 2: Taping the front side. Jim Sherman Photo.

Illustration No. 3: Taping the back side. Jim Sherman Photo.

PRESTO!

ONE HOMEMADE BOUND VOLUME OF IOWA CONSERVATIONISTS

Lloyd Huff, Conservation Officer for Polk County, recently walked into the Conservation Commission office in Des Moines with a homemade bound volume of 1963 IOWA CONSERVATIONISTS tucked under his arm. The booklet drew the attention of several people in the office; and after a brief discussion of the unique and inexpensive binding technique, someone suggested we use the idea as a feature in the CONSERVATIONIST. This way, thousands of readers who have had a hard time keeping track of all the issues could make their own bound volume. For those readers who are interested here's how!

You will need the following items: a stapler, scissors, paper punch, a roll of three-quarter inch masking tape and a pressboard binder, which can be purchased at most any dime store or drug store.

Take the first issue of the series you plan to bind, and staple it three times along the fold, about one-eighth of an inch from the edge (illustration number one). Stapling holds the loose-leaf pages in place. (This step can follow the second or taping step. In fact, stapling after the masking tape has been applied makes a stronger binding.)

Now for the taping step. Apply one strip of masking tape to the front side of the magazine (illustration number two), and a second strip to the back side (illustration number three). One-half inch of the masking tape's width should lap off the folded edge of the magazine so there is room to punch the binder holes. Staple the pages if you did not do so before the taping step.

Next, lay the metal locking strip from the pressboard binder on the taped edge of the magazine; and mark the location of the three holes. Makes sure the strip is laid flush with the outside edge of the masking tape and the top and bottom of the magazine. Punch the three holes (illustration number four).

Before going any further, the three preceding steps must be repeated for each issue you wish to include in the bound volume. When each issue has been taped, stapled and the holes have been punched, you are ready to complete the booklet.

Arrange the issues in their proper order. Place the magazines on the three binder spindles of the pressboard binder; lock the metal locking strip; and presto, you have a neat, convenient bound volume of IOWA CONSERVATIONISTS.—M.S.

Jim Sherman P

Illustration No. 4: Punching the holes. Note the placement of staples.

GUNPOWDER

John Madson

It all began with Chinese Snow, but it took many centuries to develop the fine, smokeless powders used today.

We'll never know who invented gunpowder, or what he had in mind at the time. The ancient Asians probably started the whole thing with their "Chinese Snow" about 600 A.D. And although the Byzantines tried to cop some of the credit when their "Greek Fire" was invented by the engineer Gallinicus in about 673 A.D., this doesn't really count. "Greek Fire" is not an explosive compound, but simply an inflammable mess made of saltpeter, pitch, and resin.

In the National Library of Paris, a manuscript written by Liber Ignium and dated 846 A.D. describes a compound of six parts of saltpeter, two parts sulphur, and two parts charcoal—about the same formula for black powder that is used today. Black powder was first mentioned in the writing of an Arabian named Abd Allah, who was born about 1200 A.D., and it's believed that Friar Roger Bacon of England learned the secret of gunpowder from such Arabian writers in the 1200's, but he had no notion of applying it to use in any type of firearms.

First "Gun" Wars

Until the 14th Century, gunpowder had largely been a plaything confined to firecrackers and rockets. But the party began to get rough in 1313 when Berchtold Schwarz, a Franciscan monk in Germany, applied Bacon's knowledge of gunpowder to push projectiles out of tubes. Once these good churchmen had introduced explosives to Europe, the body politic lost no time in applying them. By 1324, when the King of Bohemia attacked Metz, the citizenry employed firearms of a sort. The English had three large guns at Crecy in 1346. Some of the first "guns" were bronze devices that fired arrows, but a burgeoning technology soon led to stone cannonballs and bullets; childishly crude, perhaps, but effective enough to displace edged steel as the main instrument of war. In only a few generations the yew longbows and bodkin-tipped clothyards of the English yeomanry were supplanted by crude guns—and full armor became obsolete forever.

The general formula of black powder remained unchanged for centuries. Although the compound was greatly refined and improved, the quality of black powder probably didn't depend so much upon formulation as upon the quality of the ingredients. For many years the New World's finest powders were imported from Europe, and hard, fine-grained French powder was in particular demand among hunters and shooters of our colonial frontier.

The first American powder mill was at Milton, Massachusetts, in the early 1700's. As the new land began to slowly sever its dependence on European products, other local powder mills began springing up in New England during the 18th Century. The colonies, however, were hardly an arsenal of freedom. The Americans had less than 80,000 pounds of gunpowder at the beginning of the Revolution and half of this was recklessly wasted before General Washington could take charge. The colonials' powder supplies were nearly exhausted by the end of 1775. At one time, Washington maintained a thirteen-mile sentry line around the British Army—within gunshot of the Redcoats—and not one sentry had a loaded gun! But with France lending a hand, and with our infant powder industry finally beginning to toddle, there was enough gunpowder to carry us to Yorktown and decisive victory over the British.

Gunpowder Tames the West

Then came the 1800's, with a western frontier to be tamed and several important wars to be fought, and Americans consumed guns and gunpowder in incredible quantities. Flintlock pistols evolved to cartridge revolvers. Lancaster rifles gave way to percussion-capped arms, and these evolved to breechloaders using cartridges with integral primers. But the ingenuity of the gunsmith had swiftly outstripped the knowledge of the powdermaker. In their most refined forms, the old black powder rifles were capable of superb accuracy. Yet, the ancient problems of smoke and powder residue remained, and in desperation the powdermakers seemed to throw anything at hand into their vats. Some homebrewed powders contained coffee grounds, sugar, coal dust sawdust and even ground bark. A "white" powder appeared during the Civil War—a mixture of potassium chlorate, yellow prussiate of potash, and sulfur. It was tremendously corrosive to the mild steels then used in guns, and even lacked some of the propellant qualities of good black powder. But it made gun-cleaning easier, and was widely used throughout that long conflict.

By the late 1800's, black-powder guns had reached their zenith. Little more could be done to improve the balance of a rifle's various design features (weight, length, and rifling twist) if black powder was used. To obtain greater velocities and flatter trajectories with the same calibers and bullet weights, the cartridges were lengthened and their powder capacities greatly increased. This led to heavily-breeched rifles and such potent black-powder loads as the Sharps .40-90 and the Winchester .40-110-260 Express—a cartridge that was nearly four inches long. Such rifles were quite accurate, and very powreful. But they were heavy, and largely limited to single-shot actions since the long cartridges could not feed readily from magazines. Something better than black powder was badly needed if the arts of gunmaking and precision shooting were to advance. And something better was on the way:

Hausfrau's Apron Helps Refine Powder

In 1845—so the story goes—a German chemist named Schoenbein was distilling a mixture of sulfuric and nitric acids on his wife's kitchen stove when the acid flask broke. Schoenbein mopped up this mess with his wife's apron. Then, with husbandly caution, he carefully washed the apron and hung it up to dry. That famous apron, drying slowly before the kitchen fire, suddenly vanished in the flame of a low-grade explosion. A German hausfrau's loss was the shooter's gain; Schoenbein had nitrated cellulose and discovered guncotton. Later work on nitrocellulose showed it to have great advantages over black powder. It burned violently with little residue and consequently little smoke, but it was years before it was perfected as gunpowder.

The following year, an Italian chemist named Sobero combined nitric and sulphuric acids with glycerine to form nitroglycerine. But this, like guncotton, was too powerfully explosive to use in small arms. It would be years before nitroglycerine would be combined with guncotton to form a compound without the highly explosive qualities of its main components. This would be the original Nobel powder, or "double-base" powder. Gunpowder comprised mainly of modified guncotton would be "single-base" powder.

The first useful smokeless powder was produced in 1867 by a captain of Prussian artillery named Johann Schultz. Selected hardwood was cut into veneer about $\frac{1}{16}$ inch thick, and this was reduced to small rods and re-clipped into tiny cubes. The particles of wood were then nitrated with nitric and sulphuric acids, and washed and dried in a number of steps. The result was a friable "bulk" powder that was not strictly smokeless, but which was more powerful and produced less smoke than an equal charge of black powder.

A great breakthrough occurred in 1870 when an Austrian named Fredrick Volkmann finally tamed guncotton. Using powder made by the Schultz process, he added ether and alcohol. The result was a plastic paste that could be placed in special molds and further dried. When guncotton is gelatinized by an etheralocohol solution, the resultant nitrocellulose burns less rapidly and more uniformly than does loose or compressed guncotton. By treating this "nitrolignin" for a longer time with solvents, and varying the molding pressure, it is also possible to regulate the powder shape and burning rate on a mathematical basis. Unfortunately, Volkmann did all this on his own and didn't cut the Austrian government in on the action. His factory was closed and the inventor dropped into obscurity. A French chemist named Vielle worked further with this process, and his smokeless powder was first used in the Lebel service rifle in 1886.

Black Powder Gives Way

With the real advent of smokeless powder in the 1890's, the industry became a scrambling confusion. The old black powders had been pretty much standardized and limited to a few brands. But smokeless powder, with its infinite variety of complexity, began to appear under a host of names—each with its special characteristics. These early powders included such greats as Ruby N, Lightning, Sharpshooter, Unique, Ballistite, Cordite, Maxim, HiVel, Bullseye, Infallible, Bear and Stag.

The old black powder burned with a great, smoky rush that left accuracy-destroying residues and pushed bullets at highly-limited velocities. Today's fine smokeless powders have virtually no residues. Furthermore, their burning rates can be controlled by coating the powder grains with graphite or other materials, and forming the grains in various shapes and sizes. By slowing the combustion of powder grains, sustained burning is possible. The inertia of the projectile is overcome with relative slowness, and the bullets or shotload is well on its way down the barrel before the full pressure of gases is developed. This slow build-up (progressive burning) reduces breech pressure, lessons recoil and gives greater velocities through a long, accelerated push. Result: flatter trajectories, high velocities, high target impact with small-caliber bullets, and more uniform shot patterns.

Those powder canisters on your reloading bench are more than cans of safe, stable, propellants.

They are the repositories of great energies—the potential power of slumbering nitrocellulose, and the tireless efforts of chemical pioneers who gave us the finest shooting components in the world.

LET'S CONQUER LAKE SILTATION

Everett Pierce

The progress of erosion control work for the prevention of lake siltation has been wholly inadequate for the fullest protection of our artificial lakes. Until 1956 no provisions had been made by law to require watershed protection and siltation measures to be taken before a new lake could be built. The law now requires 75 percent of the land in a proposed lake watershed to be signed with the local Soil and Water Conservation District for the purpose of controlling lake siltation before actual construction work is started.

Studies Underway

Siltation studies are now underway on some of the artificial lakes to determine the extent of siltation that has occurred from the time the lake was constructed. In the Backbone watershed, preliminary studies show a maximum accumulation of eight feet of silt, while in the main body of the lake the estimated average accumulation is 2.8 feet. Indications are that the bulk of this siltation was made prior to 1942.

With the establishment of Soil and Water Conservation Districts in this area, the silt load has been materialy reduced through the use of erosion control structures, terraces, contouring and better cropping systems. In the case of severe siltation, as has occurred in Backbone, there are two methods of counteracting the silt deposition. One is to raise the outlet spillway sufficiently to increase the water depth enough to over-come the silt; however, this can present many problems such as increased shoreline erosion, access for more land, moving of beaches and buildings, roads, waterlines and many others. The other solution is to dredge the silt out of the lake bed, which is usually more desirable but more expensive.

A plan is being devised in cooperation with each local Soil District in which an artificial lake is located to determine the extent and need for watershed protection above the lakes that are under the jurisdiction of the State Conservation Commission's Division of Lands and Waters. This plan will determine the number of permanent erosion control structures, amount of contouring and strip cropping, miles of terracing, tree and wildlife plantings, and other land use practices needed to control siltation. It will also indicate the amount of riprap needed to protect the shoreline. Riprap consists of broken concrete, common field stone or quarry stone of sufficient size and quantity and placed at the waters edge to control shoreline erosion. There have been no detailed studies made of this problem to determine the amount of silt being deposited in the lakes from this source; but through observations made over the past six years at Green Valley in Union County, it is estimated a total of 14,300 tons of silt has been deposited in the lake from this source. This would indicate shoreline erosion is a major problem on our lakes.

Jack Kirstein Ph

Terracing is one of several erosion control structures used to reduce silt deposition in Iowa's artificial lakes.

Structures Are Efficient

The efficiency of structures was demonstrated this past year by a siltation pond in the Springbrook watershed in Guthrie County when it caught and held three acre feet of lake choking silt from the heavy rains in that area last summer. Three acre feet of soil weighs over 6,000 tons; this amount of silt represents almost one inch of top soil lost from every acre of cropland draining into this structure. The siltation pond was built in 1950 and had a life expectancy of 50 years, but by improper land use its usefulness was destroyed in 14 years. When it takes nature 600 to 1,000 years to build one inch of top soil, can we afford to lose it so easy?

Funds Lacking

A lack of sufficient funds to help bear the cost of an all-out erosion control program has prolonged the completion of a sound land use program in our lake watersheds. Even with limited funds the state has assisted financially with the construction of forty major erosion control structures, thirty three thousand feet of standard and bench type terraces, and two thousand feet of diversions. Also about three miles of new park roads were built with the contour of the land thus reducing the siltation that normally comes

(Continued on page 15)

Jack Kirstein Ph

A new type terrace drain eliminates the less efficient ditch method of draining terrac

Jack Kirstein Ph

Siltation ponds are capable of holding back tons of silt.

SPORTS I AM BAD AT

Anne C. Garrison
From Michigan Conservation

It looked so easy; the nearby picnic party was water skiing, all
king turns swooping and gliding around Crystal Lake. On a sudden
pulse, I put down my bologna sandwich and walked to the shore,
ere they were changing places in the boat while the outboard
ugged and idled. "Do you suppose I could try that just once?" was
fatal question. The obliging neighbors changed about again: two
the boat to pull me, and two to demonstrate how you put on the
is, and to steady me. "As you start up, you rise easily from a
ouching position and get on your feet," stated the woman who was
tiating me into the mystery; "You just let the boat do the work."
these cheerful directions were seeping into my ears there was a
sh, a roar, a churning of spray, and a great dislocating jerk at the
ulder sockets. We were off!

Now should have come (I realize) the confident and steady pulling
oneself from the crouch to that easy stance in which others were
tering over the water behind their boats. But somehow I couldn't
ke it to my feet. We rushed onward—how we rushed—I still
ouching about a foot below the surface, pulled by the powerful engine
across the lake like a sack of wet laundry, submerged but resolute.
solution—that was my mistake. Letting go was what cooler heads
uld have advocated. But would the Dutch boy with his finger in the
e have let go, if he had happened to be on water skis at the time?
uld the girl who clung to the clapper of the bell to keep it from
ging have let go if she had skis on?

Or the man who ran from Marathon to Athens with the news of
tory? Rocketing through the bubbles and weeds I thought of these
oic figures and held on. The boat finally stopped; the lordly rooster-
of foam subsided. Kind hands loosened my spastic grip on the
atchamacallit. "That isn't quite the way to do it," they explained.
vaded ashore before a rapt audience and have not been on water
s since.

My Philosophy

Anything worth doing at all is worth doing badly: as a general rule,
s is a sound philosophy of life. It is your real lover of birds who
ntifies an eagle on a dead tree near Marshall—he thinks magnifi-
tly big, and would rather be wrong with an eagle than right with a
hawk. Your true lover of mountain hiking tries for a distance he
't reach—he too is thinking magnificently, though someone may
ve to go out with a mule and bring him back from seven miles short
his dream. Your true lover of gardening may plant lilies in his
y soil and irises in deep shade—and enjoy the idea of perfect flowers
his mind's eye, though the actual ones pindle away.

One doesn't *choose* to be bad at sports; one simply rushes onward
ard an ideal adeptness, omitting intermediate steps. Looking back
many curious episodes in my encounters with the outdoors, I can
that water-skiing exemplifies my rather unravelled approach to
hnique as such.

Skiing on terra firma has never put my philosophy quite so dramat-
lly before the public. True, I did slice the top off one kneecap, but
s could have happened to anyone skiing by moonlight across a
ghbor's back yard, who happened to crash into this trash heap.
t even an Olympic skier could have known that rusty tomato can
s just under the powder snow. And whatever the story that got
, I did not fall off a ski jump on that other occasion. As a matter
fact, I was not skiing, but reading poetry on the top of the jump
midsummer, and all I did was fall down the jump (clutching a
ume of Robert Frost). Ski jumps, in summer, have splinters, and I
s wearing shorts.

An Equestrienne Failure

As for horseback riding, my basic philosophy did not get into oper-
on until I had ridden for many years. This fact is due to the lim-
l philosophical bent of my teacher, a hard-drinking retired Irish
alryman, who judged his pupils by their seats and their hands, and
that oneness with a horse was measured not in terms of meta-
sical union but in adherance of rider to saddle. It was not decades
t my own basic feeling overrode his stern perfectionism. It was
until last summer in the Canadian Rockies. As one of a string
riders in the charge of a disillusioned wrangler, I got impatient of
dust and smell and clatter, and went off on my own, to commune
h the Athabasca River and the surrounding peaks. Do not expect
tory of a fool rider who went up into the mountains and was not
nd for twenty years; I simply turned back along the well-defined
l, and the silence closed in and the smell of twenty sweating horses
s replaced by that of bear, grass, pine, and the sweat of one horse.
communion with nature was profound, marred only by a certain
of unanimity with the horse. He was given to groaning, to look-
back at me with one ghastly white eye, and to stalling in a trance,
f to pose for that celebrated equestrian statute: "The End of the Trail." I suspected him of lack of spirituality. We came finally to the paved road we had crossed earlier with our group. Traffic had stopped for us then, as the road was garnished with neat notices, "Traffic Yields Right-of-Way to Ponies." The reader should not think we were riding Shetland ponies: the term "pony" denotes Big Horse, (equus equus), anywhere out where the buffalo roam.

To continue. My horse reached the road, which he had presumably crossed before only because the mad mood of the other horses had overcome his soberer judgment. This time he was taking no chances. He planted his feet firmly in the cedar chips, resumed his statuary position, and groaned. The only movement was on my part. When flailing, kicking, and eloquence failed, I tried stategy: Turning him back into the forest, I brought him out again to the road at a brisk shamble—perhaps it would slip his mind that he disliked hard surfaces. It did not. Quite an audience of transcontinental camping trucks, Pacific Intermountain Express vans, and local station wagons, all waiting to Yield Right-of-Way, witnessed the near-debacle of our halt at the edge of the pavement. I am proud to state that I did not sail across the road under my own momentum. Finally I dismounted and led him across, the traffic Yielding, I was cringing with embarrassment, the mount curling his lip with hideous satisfaction. The mount would then not be mounted, but flushed with victory he danced sideways at the end of the reins all the way to the stable.

I've Taken Stock

What sport am I good at? Let me comb my memory. Not group dancing, which I gave up as a sulky stout Dafiodil nine years old, when I fell and ruptured my crepe paper in the middle of the school Pageant of the Flowers. Not skating, in which I combined dazzling speed forward and backward with a tendency to turn the left ankle; also with a total inability to stop. This is disconcerting but less dangerous than standing still: the last time I stood still on skates I fell and fractured my radius.

Not volleyball, to which I have brought a great deal of dishevelled team spirit together with a readily dislocated shoulder. Not tennis . . .

Swimming, now. I am a good swimmer and a compulsive high diver. But even here my accomplishment is blemished by the occasional state of funk which sends me trembling down the ladder from the twenty-foot platform. A damper on the swimming is the cautionary attitude of the Red Cross safety instructions, which take a jaundiced view of swimming alone in the dark.

And so we come to bicycling. I am a good bicycler. I had a wonderful view of the Lansing Centennial Parade several years ago; riding parallel to it on the other side of the street, I could then overtake it and see the best parts all over again—the Marine Fife and Drum Corps got to recognize me after a while, and several of them winked as they passed me the fifth time. But the pleasure went out of it after an abominably young girl in the crowd said clearly to her escort, "Lester, why does that old woman keep going by on the bicycle? Is she part of the parade, huh?" I went home and transplanted zinnias. If the sports I am good at get that sort of public response, I may as well stick to the ones I'm bad at.

LAKE SILTATION—
(Continued from page 14)

from steep road grades. In addition, fifteen thousand tons of riprap were placed on the shorelines of eleven artificial lakes, all in the past two years.

Where active watershed programs are in progress, the lakes are showing the results with clearer water, better fishing and more stable water levels. If we are to continue with progress in this direction, co-operation between the Legislature, State Conservation Commission, local Soil Districts and the public will be most vital.

THE TEACHER, THE STUDENT, AND FIELD TRIPS

Jack Higgins

Mention field trips to the average teacher and you'll be guaranteed to receive startled reactions. Replies may range from an unqualified and horrified "No!" to "I'd like to try one, but . . ." or a rhapsodic interlude about the tremendous success of "**My** trips . . ."

Regardless of any negative reactions, and the correspondingly long lists of objections to field trips that you might receive, the trips remain an outstanding educational tool and they're also inexpensive! When the final analysis of all protests is examined, one fact stands out: the teacher does not know how to conduct a trip, and the thoughts of organizing one strikes terror in his/her heart. The solution is as simple as the basic fear—learn how to do it.

Books Are Available

Fortunately for the modern teacher there are a number of good self-teaching books on how to conduct field trips now on the market. Also, there are many resource people in Iowa who are intensely interested in getting Iowa's teachers to overcome their reluctance and take their students to the scene, rather than confining eager minds to books or expensive teaching aids. Two of them are Ron Koble, geologist for the U. S. Geological Survey, Iowa City, and Dr. Lyle V. A. Sandlein, Departmetn of Geology, Iowa State University, Ames.

In a paper prepared for presentation at the Fall Conference on Conservation Education, Koble and Sandlein made the following point:

"Much of the uniqueness of investigating the earth lies in the necessity sooner or later of making direct observations out-of-doors. Investigating the earth is not something that can be done wholly, or even largely, by experiment although experiments may in some instances provide strong supporting data. Likewise, the earth cannot be investigated mainly by deduction, induction, or by intuition, although each of these can be important when based on, or supported by data revealed by nature."

Although the statement was directed at teachers mainly interested in geology, it is a fine recommendation for all departments, whether they be science, English, math, social studies, or whatever. In fact, the guide lines established by Koble and Sandlein for the trip they conducted at the conference are as valid as the statement.

Define Objectives

The first problem, as they see it, is to make a statement about the subject to be investigated. The teacher must decide in advance just what and how much is to be learned about what. There are many things that can be observed on one field trip; however, in order to be meaningful, the topic must be narrowed down. In other words, the class should be exclusively interested in just one of the many phases of the course, and not a broad and meaningless over-view of the entire subject.

When the teacher has this problem fully settled, a decision about observations must be made. As a field trip leader, the teacher must have asked and answered: What is to be observed? Where and under what circumstances should the observation be made? How are the observations most effectively made? When or in what sequence should the observations be made? What are the requirements for samples or specimens to be?

And since the sole purpose of the trip is learning, the teacher must also decide what data are to be recorded; how much detail is to be included in the record; the form of the record—tabular, written notes, etc.; and finally the importance of diagrams and the attention given to scale.

Analysis and interpretation of the data gathered must also be pre-planned. This can be accomplished by knowing how to assess the completeness and accuracy of the data before leaving the field, and determining the methods of analysis and interpretation to be applied after leaving the field. In addition, an advance check of laboratory or library sources that can supply supplemental data should be made so that students can be quickly directed to them after field studies are completed.

Student Reports

To enable the student to make the experience his own, Koble and Sandlein say that students must be required to assemble the data in a written report. Their definition of the report is interesting: "*. . . the minimum requirement is not that it* CAN *be understood, but that it* CANNOT *be misunderstood . . . students and their teachers, should discover the difference.*" This can be done, they say, if the teacher has discussed with the students the dangers of confusing facts with inferences; taught them the importance of tables, and how to organize them; and how to draw and read simple diagrams and maps.

The two geologists gave one other note of caution: "Neither the teacher nor the student should be provided with what appears to be a conducted tour to fit any local situation or with a sequence of questions which, when all are answered, the investigation is complete. Questions can be a useful device, but for heaven's sake avoid the self-answering type so common in laboratory and field manuals."

Like all good things in life, work is involved in planning a successful field trip. The heartening fact is, however, that teachers are usually not the type to shrink back from work. Instead they rise to meet a challenge head-on. And the challenge of today is to prepare American youth for the diverse and complex life that awaits their maturity. A good field trip helps to do just that!

Max Schnepf Photo

A den is one of Reynard's best escape routes.

SPORT OF SPEED—

(Continued from page 9)

telligence and endurance. Since greyhounds hunt by sight, the hun is required to spot and jump the fox from his bed or at least put t dogs in a position where they can see their quarry. Spotting is usua done from a car or while walking the ridges in a section of land. Ev though snow is a tremendous aid, it is not a prerequisite for an exciti chase. January and February are the prime hunting months becau of fox mating activity; yet, the hunter who knows Reynard's hab can hunt the year 'round with greyhounds. Many hunters, howev including Joe Hill, prefer not to run fox in the spring when the adu are raising their cubs. Usually the Roland hunter does not hunt alo with his pair of dogs, as he has found the post and drive techniq most effective. When a fox is spotted, he posts himself with the do on or near Reynard's probable escape route, then lets his hunti companions drive the animal into the trap. If spotting becomes t difficult, the same technique is used to hunt likely looking clover fie and weed patches.

Hunting becomes more complicated when it requires stalking Re nard with dogs. Getting up on a sunning fox in hilly terrain takes so ingenuity. Accomplishing the same feat on relatively flat land is real challenge. Fortunately, if the dogs have good going, they c compensate for a portion of any human error involved.

While in the field, Hill usually has his dogs leashed to prevent the from running jack rabbits. It's embarrassing to have the greyhoun chasing a jack a half or three-quarters of a mile away when a f jumps from his bed a few yards in front of where the dogs shou have been. Hill's leash is a piece of clothesline rope, knotted at o end for a better grip. It's not only handy but inexpensive. The do are quickly freed by dropping the unknotted end, which slips fr of their collars as they break for the chase.

Besides being unwilling to fight a dog in most situations, Reyna is no match for the greyhounds. The kill is quick, especially if t fight is on a two against one basis. While running at top spe the dogs grab their target by the neck, back or any limb that handy and quickly dispense him with a few violent shakes and we aimed slashes with their teeth.

The sport is violent only during the kill. It is not a cruel spo although it does have many characteristics of a good old fashion cock fight. It is a sport of speed—canine vs. canine—greyhounds v Sir Reynard, the most cunning and challenging small game anim available to all Iowans.

The only bees that can rea the nectar in red clover are bu ble bees. So without bumble be red clover cannot grow.

The bald eagle is an exceeding loyal and affectionate parent. will not desert its young even the tree on which they are nestin is in flames.