



March, 1968

Volume 27

Number 3

# This Is 'Sugar Bush' Country



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Sugar bush country where maple syrup is produced.

By Gene Hertel

Assistant State Forester

"Low tonight in the 20's—highs tomorrow should reach 45 to 50 degrees. This pattern will continue for the next five days."

This March forecast reminds us all that spring is just around the corner. To the maple "sugar bush" operator it means he must act to take advantage of the early heavy sap flow.

Actually, experienced producers will have been at work ahead of this forecast. Trees to be tapped are marked in advance and the number of tapholes to be bored in each tree has been determined. Tapping will usually be done in March with the sap collection made over a one month period. Whether the sugar grove is in Vermont, Kentucky, Michigan or Iowa, the basic sugar bush procedure is the same.

Maple syrup production is one of the oldest agricultural practices in this country. Indians were using this product before white men came, and syrup production has continued as an interesting and profitable venture ever since.

Two maple species, the hard or sugar maple and the black maple, are important in maple syrup production. Soft maples are not desirable for tapping since sugar content of their sap is low. Both maples tapped for maple products are found in Iowa.

The usual sugar bush, as maple groves used for sap collection are called, is made up mostly of maple trees. Other kinds of trees are cut from the grove to provide the maples with plenty of growing space. Open grown trees with large crowns are usually heavy producers and this principle makes a grove with 25 to 30 trees per acre more economical to collect than one with a greater number.

Trees should be 10 inches in diameter at breast height (four and one half feet above the ground) before they are tapped. Annual sap yield from a taphole

(Continued on page 20)

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CIRCULATION ON THIS ISSUE 62,850

**COMMISSION MINUTES****State Conservation Commission Meeting Held in Des Moines, Iowa January 3 and 4, 1968**

Appropriate staff members of the State Conservation Commission of Iowa were directed to take immediate action toward the development of a comprehensive plan for the control and improvement of the watershed areas of the lands and waters under the jurisdiction of the Conservation Commission from the standpoint of siltation control and to embrace the matter of compelling offending landowners through appropriate legal processes to remedy the injurious effect of the siltation processes, and that the comprehensive plan of the staff as so developed be refined and presented to the Legislature for adoption at its next session.

Guidelines for in-service training for holders of college degrees were approved.

The Commission approved the agreement with Iowa State University for a study of the establishment of the ordinary high water mark on natural lakes and authorized the Director to enter into the agreement and to perform the terms of the agreement.

**Fish and Game**

The contract for a six month supply of dry trout feed was awarded to Glencoe Mills, Inc. of Glencoe, Minnesota.

The State Conservation Commission of Iowa is opposed to the complete registration of firearms as proposed in numerous bills being considered for submission to the Congress of the United States pertaining to the subject of registration of firearms and that the firearms problem lies in the exercise of restraint of irresponsible criminals and other mentally disturbed persons.

The following dates of the 1968 hunting seasons were approved: Pheasant and Hungarian partridge—second Saturday in November; squirrels and rabbits—second Saturday in September; and quail—fourth Saturday in October.

**Lands and Waters**

Authorized that the land that the staff selects in the area of Shimek State Forest be offered in trade to Sinclair Petrochemicals, Inc. of Fort Madison, Iowa, for the entire 220 acres of the Green Bay Lake area on an acre-per-acre basis.

Authorized the following options on lands adjoining Gull Point State Park: Approximately two acres known as Outlot "H" of Spencer Park in Wahpeton, Iowa; approximately 1½ acres known as Outlots "Y", "Z" and part of "X" of Spencer Park in Wahpeton, Iowa; and approximately 1½ acres known as Block "H" of Lakewood Park in the town of Wahpeton, Iowa. Options for these three properties were exercised.

Authorized the staff to obtain an option and acquire the 98.92 acres adjoining state property at Lake McBride State Park and owned by Mr. Paul Myers.

The Chairman and Director of the Commission were authorized to sign the amended agreement pertaining to the watershed structure placement of Badger Creek Watershed.

**County Conservation**

Approved the request of the Muscatine County Conservation Board to acquire 74 acres of land for the development of a multiple use river access area located approximately 10 miles west of Muscatine.

The request of the Story County Conservation Board to acquire 92.74 acres of land, including a 7½ acre farm pond, for the purpose of developing a multiple use water oriented outdoor recreation area located approximately six miles northeast of Ames was approved.

The request of the Iowa County Conservation Board to acquire 25.50 acres of additional land at their Iowa County Park approximately 10½ miles southwest of Williamsburg was approved.

Approved the maintenance and management agreement between the State Conservation Commission and the Pottawattamie County Board of Supervisors for the 21.436 acre Missouri River Access Area located two miles south of Council Bluffs.

The request of the Washington County Conservation Board for approval of the revised development plan and report prepared for their Iowa Township Park located north of Riverside was approved.

The request of the Washington County Conservation Board for approval of their development plan and report prepared for the McKain's-Skunk River Access Area located six miles northwest of Brighton and located on the Skunk River was approved with the stipulation that this area be open for hunting at all times when various hunting seasons have been established as prescribed by the Iowa Code.

**Our Readers Write . . .**

Dear Sirs:

Sometime ago some friends of mine subscribed for your nice magazine and had it sent to me here in California, and I sure am very pleased to receive it.

I started fishing in Iowa in 1883 when I was 5 years old, and started hunting when I was 10 years old. I will be 90 in a few months now and I still love to fish.

I came to California in 1942, but I still go back to Iowa quite often. I have caught hundreds of striped bass up to 45 pounds and salmon up to 37 pounds here in California. While we get a few striped bass near Modesto, most of the striped bass fishing is 60 to 70 miles from here, so I don't go striper fishing very often anymore.

Again, I think you have a very nice little magazine. I like it very much. Keep up the good work.

Very Sincerely,  
H. E.  
Modesto, California.

Gentlemen:

The enclosed dollar bill is to cover a subscription to the IOWA CONSERVATIONIST which is to be sent to Douglas P. Limbacher, 812 Nicholas Avenue, Stratford, Conn. 06497.

There is no hurry as Doug is still in Germany and won't be back in the States until sometime in February. He and his wife, our daughter plan to locate along the west coast. However, he has expressed a wish to come to Iowa in a couple of years for some fall hunting. We know of no better way to keep that desire burning than by the news in the CONSERVATIONIST.

There are no hunters, and only a once-in-a-while fisherman, in this family here but we enjoy all of the articles. Even the fireside hunters and fishermen can find pleasure in your publication. Incidentally, a friend who is an avid sportsman rates the IOWA CONSERVATIONIST above any hunting and fishing magazine published.

Yours,  
T. S.  
Sumner, Iowa.

**A Good Tip —  
Hunt Like A Gentleman**

No hunter who looks beyond his bag limits will deny that sportsmen face an increasingly serious problem today—that of finding open land on which to hunt. The problem is nationwide, and it most certainly will continue unabated unless sportsmen do something about it.

Land is being lost at a fantastic rate, and there are many reasons for the squeeze. Urban sprawl, highway construction, industrial development and real estate investments are the leading causes.

There's another reason though—posted land—and here the sportsman must accept most of the blame. Perhaps you encountered it last year. Choice hunting covers that otherwise might be open to hunting are closed because of the abuse landowners suffer at the hands of irresponsible gunners.

The solution to this part of the problem lies simply in the phrase "Hunt like a gentleman." It calls for extending to the landowner the courtesy he rightfully deserves. It means asking for his permission to hunt, observing all safety rules, leaving his fences intact, making sure his barways and roads are not blocked by parked cars, cleaning up your litter and perhaps sharing your bag with him.

Still another, and rather unique, way of letting the landowner know you appreciate his generosity was pointed out recently by Dan Hurd, regional agricultural specialist with the Extension Service, University of Massachusetts. Most hunters probably never gave this one a thought. It involves picking up your empty shells.

Mr. Hurd points out that dairy cows are subject to an ailment called "hardware disease," since they are a bit unselective in their eating habits. They've been known to consume wallets, wristwatches, wire, cartridge cases and shotgun shells. The solution is expensive surgery.

Says Mr. Hurd, in suggesting that hunters pocket spent shotgun shells and cartridges: "Livestock owners who presently let hunters on their land will appreciate your taking your empties with you, and it might mean less posted land in the future."

It seems that's not asking too much for the privilege of hunting on another man's land.

# Trim and Tricky — That's the Rail

By Professor Milton W. Weller  
Dept. of Zoology and Entomology  
Iowa State University

"Thin as a rail, light as a feather, quick as lightning, or erratic as a butterfly"—all describe the rails, a group of marsh birds which are really quite common in Iowa. But they're regularly reported as rare or uncommon on bird lists.

Because they are walkers and runners rather than active swimmers or flyers, and because they frequent dense marsh vegetation, they are rarely seen except by those few brave souls who don hip boots and wade into the marsh. Moreover, their calls are so unbirdlike that few people recognize them. Thus, it's not surprising that we know little about them and tend to consider them unusual.

The rail family is a large one of worldwide distribution and some members of the group (like the American coot) are excellent swimmers and divers, nest over water and are conspicuous. A close relative, the Common Gallinule, is cootlike but has a red-orange bill, and is much more secretive. Neither of these are sought after as table birds in Iowa (actually only the coot is legal game here), but coots are hunted in several areas and make up a significant portion of the harvest. But the other Iowa rails are not presently considered game species, and most people have never heard of them, much less seen them.

## Regular Visitors

During studies of waterfowl in Iowa, three of the five species of rails have been observed with some regularity. They have been at times surprisingly common as nesting birds, and impressive numbers pass through the state during migration periods in May and September. From least to most common, and from largest to smallest, these are the King Rail, Virginia Rail, and Sora. Let's look at these species separately.

Starting with the largest and rarest in Iowa, the King Rail is a well-camouflaged, rust-colored bird with a long bill (see illustration). Only one nest was found in north-west Iowa and this was in bluegrass at the edge of a marsh. Workers in other areas also have found nests in marsh-edge grasses but nests also are common in bushes or cattails over water. King Rails feed on seeds, insects and crayfish in most areas. Because it is adept at running through dense vegetation, we sus-

pect that it is much more common than even marsh biologists suspect. The King Rail's closest relative is the pale colored Clapper Rail of the coastal marshes—a favorite of eastern and southern hunters.

The smallest, most abundant, and most hunted (in southern states) is the Sora. This is a gray-brown and black bird with a short, triangular, yellow bill. It seems to be the seed eater among the rails but does utilize a small percentage of insects, snails and other small-sized invertebrates. It nests in sedge or cattail over water which may be one or two feet deep. In our studies this species has been found closer to the shore

short, high-pitched calls termed a "whinny."

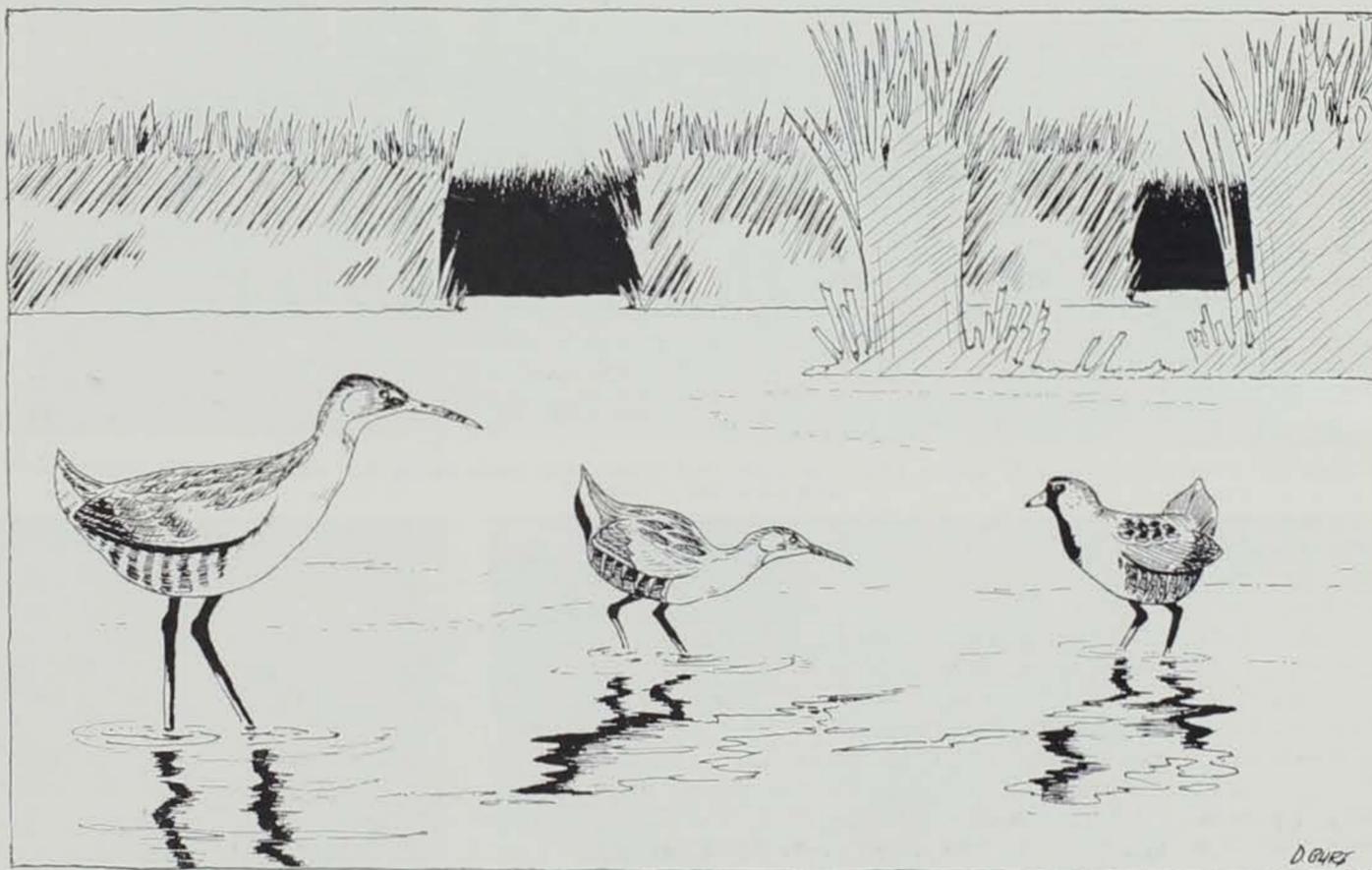
The Virginia Rail is intermediate in size and is shaped and colored more like a small King Rail with a brilliant red bill. We've found nests in cattail over several feet of water but it also nests in nearly dry sedge. Its diet is dominantly insects, crayfish, tadpoles and other small animals. Although its food choice doesn't overlap that of the Sora, the two species seem to avoid each other and stick to their own territories.

Although stories are common about many species of adult birds carrying their eggs and young in their bills, these tales have rarely

mouth full of food! In captivity, young rails learn to feed faster if given food from a tweezers painted the same color as the parent's bill. In the wild, the young soon learn to catch food of their own but they are fed and brooded some until they are almost fully feathered.

## Tricky Targets

Hunting of Clapper Rails and Sora Rails is considered excellent sport. Virginia's are less sought after. Although all species are small, they are considered delicacies by most southern hunters. Rails fly in a peculiar and deceptive manner. They rise close underfoot, slowly, and with legs



in both feeding and nesting than is the Virginia Rail but in other areas the Virginia is considered the shoreward species. We don't have sufficient observations to understand their nest site selection yet.

## Intricate Nests

Sora nests are intricately formed "cups" of grass or sedge which are elevated slightly above water level. They have large clutches (6 to 18 eggs) and, as with most rails, both sexes incubate and feed the young. Pairs seem to maintain well-defined territories and early in the season they proclaim their ownership with a long series of

been documented in other species. However, this has not only been seen, but egg-carrying rails have also been photographed. The reasons why it occurs are uncertain, but disturbance by flooding or potential predators may be a factor.

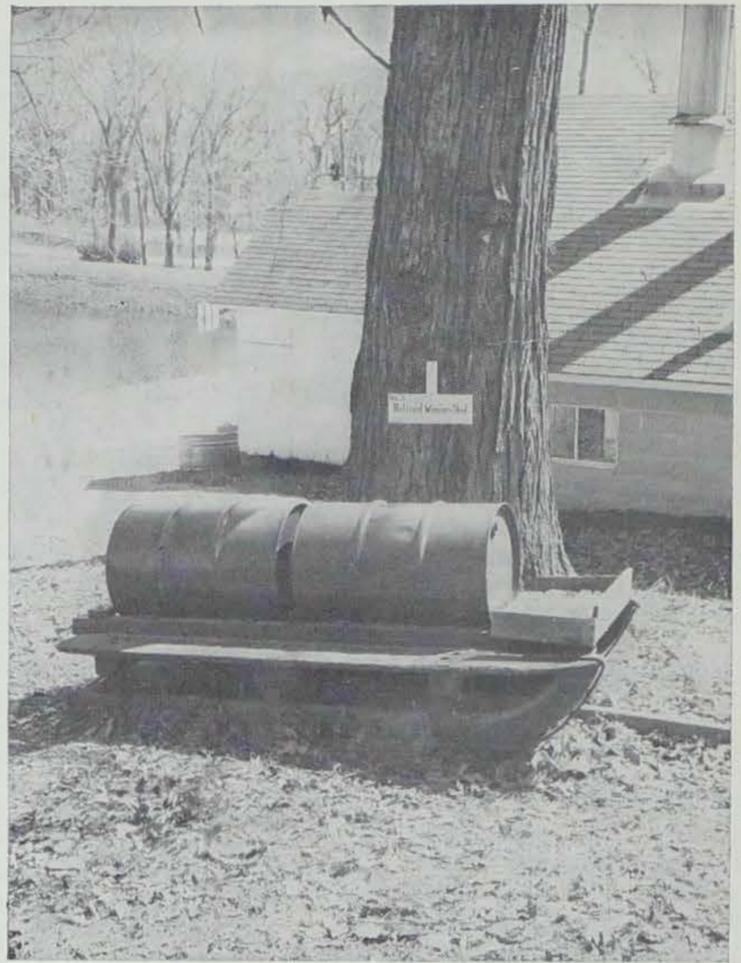
Young rails are almost universally black but with brightly colored bills and face. Parents are usually dark but have brightly colored bills. Apparently, these bright patches of color are "targets" for feeding. The parent holds the food in its bill and the young instinctively peck at the bright spot—and end up with a

dangling. When they seem barely to get airborne, they drop ungracefully into the vegetation—usually as the trigger is pulled!

Rails migrate early—few are here after September, and they fly exclusively at night. In spite of their apparent lack of grace in the air, rails migrate long distances, often crossing large expanses of water. They seem to move in large flocks and their spring arrival is spectacular . . . no rails one day, thousands the next—all calling, running and feeding eagerly and squeezing through the sedges and cattail—looking thin as a rail.



Plastic tubing is sometimes used to pipe sap from tree to storage tank.



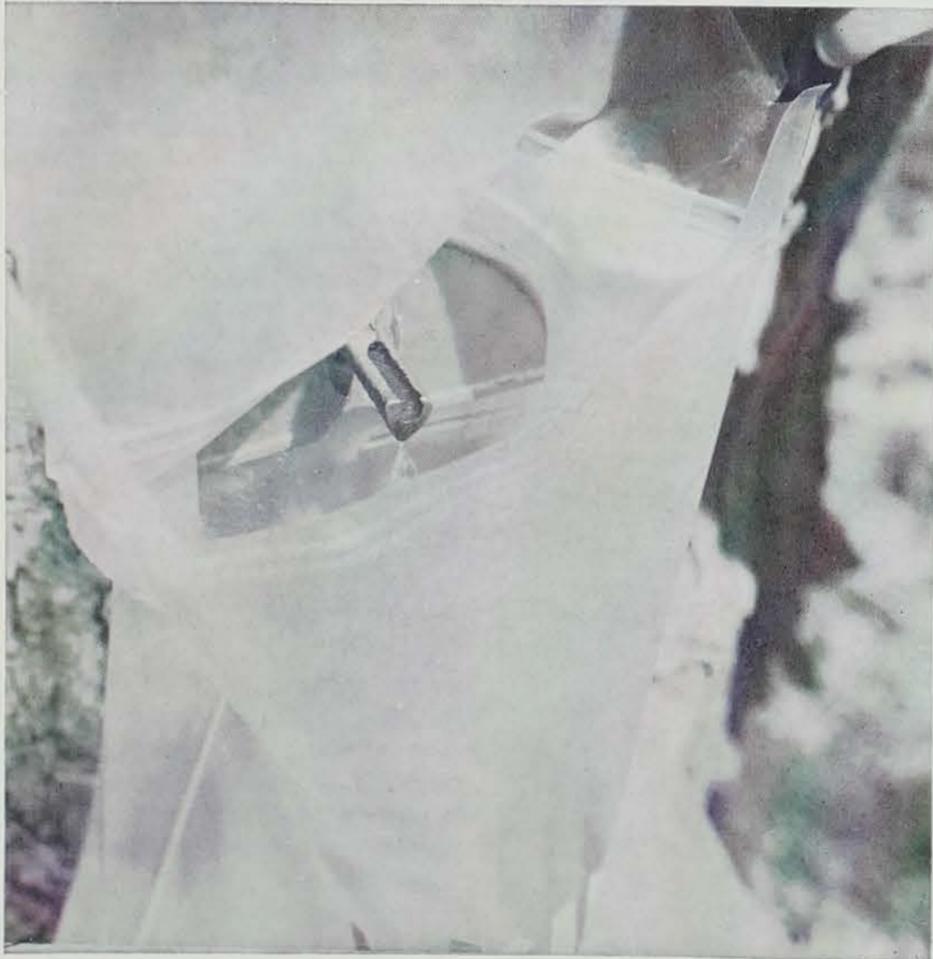
Wooden runner sled used many years ago to gather sap.

## *Elements of Old and New In Sugar Bush Country*

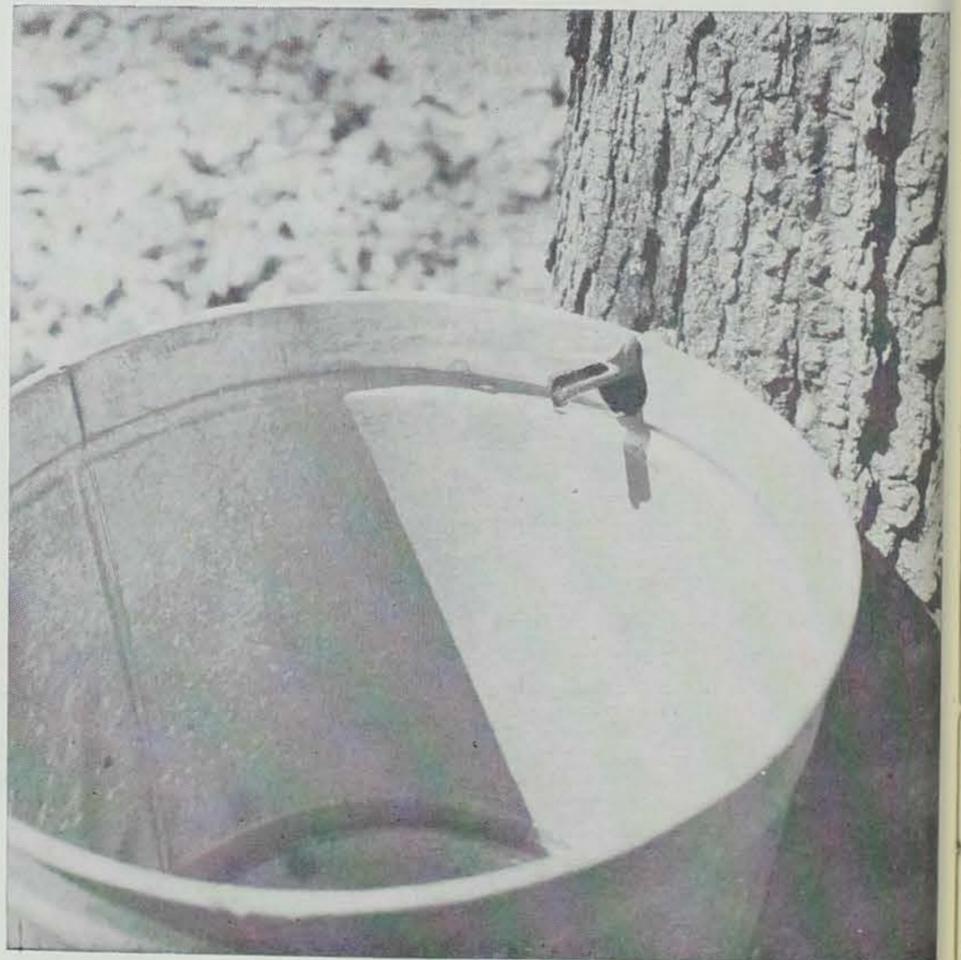
(from page 17)

usually ranges from 5 to 15 gallons and an individual maple of 20 inches in diameter may be tapped in three locations at the same time.

Boring the tapholes is done with hand drills or power drills depending on the number to be done. Some say the power drills turn too fast and polish the inside surface of the hole, causing poor sap flow. A 3/8 or 7/16-inch hole, about three inches deep, is bored into the tree two to four feet above the ground.



Sap drips from spout into plastic bag.



The traditional pail is also used to collect sap from trees.

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A sap spout or spile is driven into the taphole to act as a hook for the bucket or bag used to collect the sap and as a spout to carry the sap into the container. There are many types of sap spouts in use, but all seal the opening, causing the sap to flow only through the spout itself.

Plastic bags have come into common use along with the traditional pail for collecting the sap from the tree. There are certain advantages to each and both have covers to protect the sap from rain water and dirt. Plastic tubing is sometimes used to pipe the sap directly from the tree to a storage tank, making it unnecessary to drive through the woods to empty pails or bags.

Maple sap is about 97 percent water and the syrup is produced by evaporating this water from the sap. The procedure for evaporation has advanced from open kettle boiling over an open fire to modern continuous production evaporators using a propane gas or oil fire as a heat source.

Many producers prefer wood, since it is available in the woodland nearby and trees which must be cut can be utilized. Slabs and edgings from sawmills can also be used. Wood must be sound and dry to provide the hot even-burning fire needed to produce high quality syrup.

Present syrup makers have much better quality control of their product than was possible in the "open kettle" days. Thermometers and hydrometers are used to check the process and produce consistently high quality syrup. Maple candies, maple cream and maple butter are other products of the sugar bush.

Tapping of maple trees had its history in days before white men came to this continent. Although Iowa is not known for its maple syrup, it is probably safe to assume that the history of this crop is as long here as in the major sugar bush states.



Mrs. Clarence Green, Castalia, and author stand near two cisterns that hold 1,250 gallons of maple sap each. A collection tank is shown in the background.



Evaporator is shown here. It takes about 40 gallons of raw sap to cook down to make one gallon of the finished syrup.

# Cottontail Numbers Grow By 'Leaps and Bounds'

By M. E. Stempel  
Game Biologist

Over one million cottontails are produced annually in Iowa by late July. But there is more to the story than this simple statement. Let's start back in the late hunting season. The young made up the major portion of the more than 2,000,000 rabbits shot during the 1966-67 hunting season. That year 154,000 hunters spent an estimated 2,900,000 hours in the field for cottontails.

Weight of the dressed cottontails taken in 1966-67 was over 16,000 tons. In comparison with other common food items, this would be equivalent to 256,000 quarters of dressed beef or 202,000 head of dressed pork or 533,000 head of dressed mutton.

Data used in calculating rabbit numbers are collected by Conservation Commission personnel. In 1967 this called for the efforts of 99 cooperators including biologists, biologists' aides, game personnel and conservation officers.

Cottontails are counted during the five annual statewide game censuses. More are recorded during intensive game counts in southeastern Iowa. The results of all counts show statewide year-to-year and area-to-area changes in rabbit numbers. In 1967, along 13,700 miles in combined sample routes, 5,132 cottontails were counted.

### Early Observations

The first annual statewide game count is made in April. Even before this, the observations of rabbits have begun. These show that in winter, when weather is mild, signs of coming production are in evidence, for males are already in breeding form.

With spring now on the way, production will begin and each year, as in 1967, when there is a minimum of adverse weather, the crop of young will zoom from zero in January to over 1,000,000 in July.

To show the comparative production in spring and summer we can begin with April of 1967. This was when the first of the one-quarter grown young were seen. From then on it was usual to see many young along roadsides and in fields and in house and barn yards. In May, 30 percent of the cottontails seen were young; in June there was a near peak production, and in July about 90 percent

of the rabbits seen were considered to be young.

By late summer, many young were mature in size and could no longer be identified as young.

In the above paragraphs we looked at production as evidenced by the size of cottontails seen. Now we can discuss actual production. Some comments on nests and nesting will give a better picture of how individual cottontails contribute. In mid-June it would not be unusual to find the exposed cottontail nest lining which was a handful of fluffy bits of grass and rabbit fur dug out by some predator. This would be along a roadside or in short grass pasture. Sometimes we will find a nest of tiny living young when we mow a lawn. Farmers often see exposed nests when mowing.

### Clever Camouflage

When we have the opportunity to see a nest of tiny rabbits we find that each nest is a shallow pocket in the soil. It is neatly lined with bits of grass and with fur which was pulled from the parent. The protective top cover is a water repelling handful of grass. There may be as many as nine young per nest. The secretive habits of cottontail mothers are brought out when we consider that broods are raised in city lawns and in farm lots where people, cats and dogs are about. Yet for two weeks the nest is undiscovered. The young survive.



Provide 16,000 tons of dressed meat.

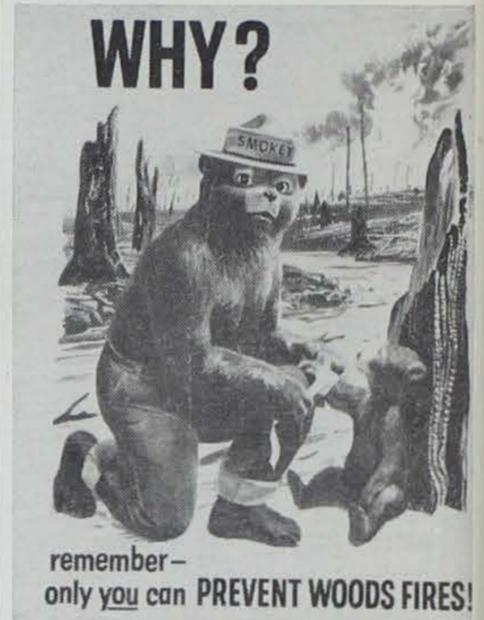
Soon after leaving the nest the young are self-dependent. Young are found in fairly heavy cover such as grass and weeds, or they may be flushed from hay fields; this is especially true of alfalfa where 20 or more may be flushed from a field of less than 10 acres.

After the young are on their own, the parents may bring off another litter. This production may be supplemented by litters

produced by those born during the current year. It has been estimated that 20 percent of young females can produce young.

By the first of September, millions of young mingle with the adult population which survived the past winter. This comprises the fall population of two to three young per adult. By late winter we again have all adults . . . or zero young.

But soon after, the first of the millions of fur lined production centers are built. And once again we go from zero in January to over 1,000,000 in July.



## LANDS AND WATERS CONSERVATION OFFICER DIRECTORY STATE PARK OFFICERS

State Park	Officer	Address
A. A. Call	Wm. Wyatt	Route 1, Box 220, Algona 50511
Backbone	Gary Silver	Dundee 52038
Beeds Lake	Ed Myers	Hampton 50441
Bellevue	Kenneth Formanek	R. 3, Box 54, Bellevue 52031
Black Hawk	Don Cole	Box 7, Lake View 51450
Clear Lake	Don Carrier	R. 1, Clear Lake 50428
Dolliver Memorial	Gene Bloudek	R. 1, Lehigh 50557
Fort Defiance	Richard Kaduce	R. 2, Estherville 51334
Geode	Henry Savage	R. 1, Danville 52623
George Wyth Memorial	Larry Kenyon	R. 2, Waterloo 50701
Green Valley	John Ripperger	R. 1, Creston 50801
Gull Point	Harry Hunter	R. 2, Milford 51351
Lacey-Keosauqua	Albert Gandy	Box 398, Keosauqua 52565
Lake Ahquabi	Craig Kaiser	R. 1, Indianola 50125
Lake Anita	Davis Lange	R. 1, Anita 50020
Lake Darling	Jim McEldoon	R. 1, Brighton 52540
Lake Keomah	Wesley Jones	R. 1, Oskaloosa 52577
Lake McBride	Charles Hagen	R. 2, Solon 52333
Lake Manawa	Roger Ruchti	Council Bluffs 51502
Lake of Three Fires	Harold Knoop	R. 1, Bedford 50833
Lake Wapello	Joe Murphy	R. 1, Drakesville 52552
Ledges	Melvin Trout	R. 1, Madrid 50156
Nine Eagles	Don Pudwill	R. 1, Davis City 50065
Palisades-Kepler	Howard Coon	Mt. Vernon 52314
Pammel	Jerry Hill	R. 3, Winterset 50273
Pikes Peak	Herman Ripperger	McGregor 52157
Pilot Knob	Dennis Phillips	R. 1, Box 108, Forest City 50436
Pine Lake	Ray Turner	R. 2, Box 85, Eldora 50627
Prairie Rose	Milan Aschbrenner	R. 4, Harlan 51537
Red Haw	Gene Carrier	R. 1, Chariton 50049
Rock Creek	Warren Strait	Kellogg 50135
Springbrook	Myron Brewer	PO Box 142, R. 1, Guthrie Center 50115
Stone	Wayne Partridge	R. 3, Sioux City 51103
Union Grove	Dale Brumm	Gladbrook 50635
Viking Lake	Robert Glen	R. 2, Stanton 51573
Walnut Woods	Vern Hauffe	R. 3, SW 52nd Ave., Des Moines 50315
Wapsipicon	Larry Van Horn	R. 2, Anamosa 52205
Waubonsie	Caryl Carstens	R. 2, Box 42, Hamburg 51640
Wild Cat Den	Larry Moffett	R. 3, Muscatine 52761
	Gary Gallart	

### LAKE PATROL STATION—WATERS SECTION:

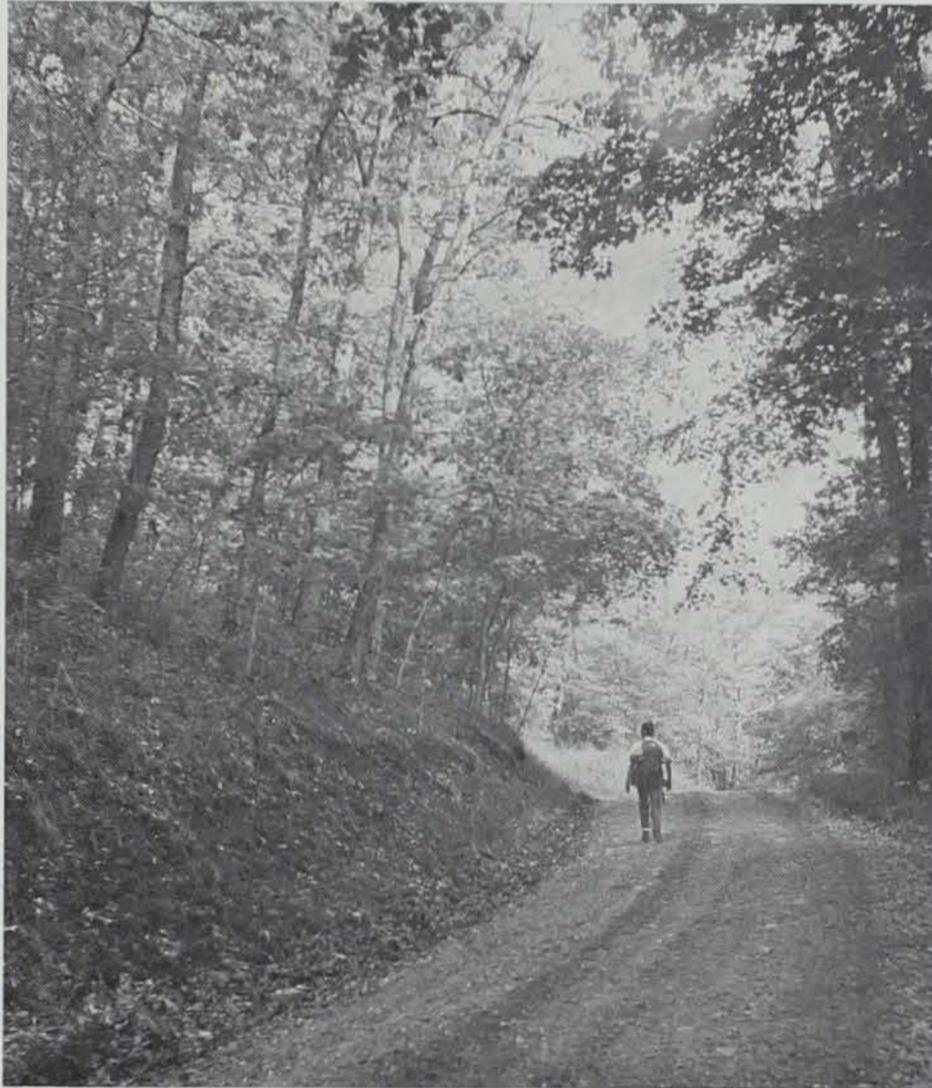
Station	Address	Telephone
†Gull Point & Lake Okoboji*	Wahpeton, Iowa	712-337-3377
†Spirit Lake	Orleans, Iowa	712-336-1577
†Storm Lake	Storm Lake, Iowa	712-732-4491
†Black Hawk	Lake View, Iowa	712-3163
†Clear Lake*	Clear Lake, Iowa	515-FL7-5000
†Coralville Reservoir	North Liberty, Iowa	319-7502
Lake Manawa	Council Bluffs, Iowa	712-366-0220
Palisades-Kepler	Mt. Vernon, Iowa	319-895-6039
†Mississippi River	DeWitt, Iowa	319-659-5060
†Missouri River	Missouri Valley, Iowa	712-2-2069
†Nobles Island	Harpers Ferry, Iowa	319-586-2642
†State-Wide	Pleasantville, Iowa	515-848-3277

†Can be contacted by radio through local county sheriff.  
\*Manned 24 hours. (Boat registration information available.)

### SUPERVISORS:

Boers, Lewis	Pleasantville, Iowa	515-848-3277
Jack, Robert	412 4th Ave., DeWitt, Iowa	319-659-5060
Johnson, Orville	Milford, Iowa	712-338-4794
Juaron, Jerry	Earling, Iowa	712-747-2355
Nuehring, Louis	1040 Amos, Des Moines, Iowa	515-285-1558
Pierce, Everett	100 N. Kossuth, Osceola, Iowa	515-342-2549

# With Wisdom of Man and Nature Forest Will Remain Forever



Man can regenerate spiritual needs in solitude of forest.

**By Bruce Plum**  
District Forester

The forest is a living community. It teems with life from the birds overhead to the burrowing creatures in the soil. Each living thing within the forest, from the lowly bacteria to the largest tree and from minute forms of protozoa to the fleeting deer, is linked to form one community. The forest, being a living thing, is ever changing. Never is it still, never is it the same today as it was yesterday.

Within the outer shell of community harmony is constant strife, with each organism competing for space and survival. Survival may be based upon symbiosis or outright parasitism depending upon the characteristics of each species.

Each forest we see today is in only one of its many phases of development. Through natural plant succession our oak-hickory type forests of Iowa would change into linden-maple types if left undisturbed. This conversion was in progress at the time the white man made his appearance in Iowa.

In relatively undisturbed areas this process can be viewed today. Natural disasters, such as insect or disease attacks, fires or human intervention can set plant succession back to repeat itself. The extent and type of destruction determine how far back plant succession is set.

Since forests are in a constant state of change, species necessary for regeneration of the forest are constantly present in seed or vegetative form ready to fill a void that may occur. A wide variety of species are present and ready to dominate only when the soil temperature, light intensity and moisture conditions are right for a particular species.

Extensive disruption of the forest canopy will increase the light intensity and temperature on the forest floor. This alters the site so that only species adapted to the new environment will survive. In the case of oak-hickory forests a sudden opening of the canopy will probably cause this type to repeat itself. When the disturbance goes beyond disruption of the canopy plant succession may be

set back to a brush type instead of trees.

If the oak-hickory canopy is left relatively undisturbed with only occasional small openings created by the dying of scattered trees the linden-maple type will probably succeed. The cool shaded conditions created by the mature oak-hickory type are not conducive to the regeneration of oak-hickory, but to the growth of the shade tolerant linden-maple type. In Iowa linden-maple is considered a "climax" forest. That is, it will continue to succeed itself because of its inherent tolerance for shade. A sudden disaster would probably cause this type to revert to a more primitive type. The linden-maple climax forest is only climax for this particular climate. A change in climate would probably cause this forest type to be succeeded by yet another type. This form of change would take place over a geologic period of time.

Through a cutting manipulation a particular type of forest can be made to succeed itself, or it can be cut in such a way as to cause the forest to continue in its natural

succession pattern. This can be determined by a forester at the time he marks a timber for cutting. Forests being used to supply material needs of man are manipulated in such a manner as to regenerate the species most in demand. Proper cuttings can reduce insect and disease hazard. A healthy vigorous forest can be maintained in much the same manner as game animal populations are kept healthy through keeping the population in check.

Today's forests must be managed to meet the many needs of man, not the least of which is to satisfy his need for solitude in spare moments. Through understanding nature's ways in developing and altering plant communities, it is possible to use our forests for the products needed by our society and still retain the natural beauty of the forest for man's enjoyment. If the wisdom of man and nature are melded together a forest will remain forever to fulfill the material and spiritual needs of man. Extremism can void either one or both of these forest values.

# Test Your Skill: True-False Quiz For Shotgunners

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I was right on that bird, but I still missed: True— False—.

The bird was that straightaway flying target that looked so easy. If you missed just place an "X" in the "True" space. If you cannot explain why the bird was missed, how about testing the gun on a pattern board to see if it shoots where you think you are aiming, or pointing the shotgun. That gun may shoot center. In that case more practice will help. But that gun may shoot to the right, left or above or below the point of aim.

Lets look at examples of test firing shotguns. To get an idea of how various modern 12-, 16- and 20-gauge shotguns shoot, or how well they place shot charges, eight modern good grade shotguns were fired at pattern boards. Two pump action guns placed the shot concentric on the target. One shot high. One shot low and one automatic threw the shot evenly around the aiming point. A side-by-side double shot well to the center, with the shot symetrically distributed about the point of aim. Another double placed the shot on center with one barrel. But the second shot with the left barrel went to one side. One over and under placed shot charges centrally around the bull's eye with the upper barrel, but high with the under barrel. Another placed shot evenly around the aiming point with the two barrels.

### Black Powder

Good grade older black powder type 12 gauge shotguns made about 1880 were also tried. A damascus barreled gun with a black-powder charge was fired. One barrel placed the shot to the right of the aiming point and the other shot left. Another gun shot center with one side, off center with the other. A third shot high with both barrels.

Six good grade double barreled muzzle-loaders were also tried for shot placement on a pattern board. These were guns which were 80 to 100 years old. They were fired with recommended black powder loads. Only one of the six delivered the shot to the center of the pattern board with both barrels. Two placed the shot on cen-

ter with one barrel each, while others were somewhat off center with either barrel.

To conclude this part of the report, we now can pose another true-false question:

The problem of where to hold to hit has been with us for over 100 years. True X. False .

### Compensating for Error

If the gun places the charge near the aiming point there is no problem. For the gun that shoots elsewhere, there are temporary solutions. Permanent adjustments must be made by a gunsmith. Single barreled shotguns will be discussed first as it is comparatively simple to do this for these guns. Doubles present a more complex problem.

Single barreled shotguns are targeted by setting up a 30 inch or larger square target. Use plain paper for the surface and mark a 3-inch bull's eye in the center. Shoot from a distance of 30 yards. Aim at the bull as you would when shooting at game.

If the shot is distributed evenly about the bull after each shot, on each of 3 shots, on 3 pattern sheets, there is no problem. If the shot hit low, hold higher for the next shot so that you can place the shot centrally on the target. The same correction method can be used to move the shot pattern to right or left.

Once the correct hold is determined, one can remember to make this same adjustment for each shot. This method may be used on game, but one sometimes forgets. During an exciting flush of birds, the correct hold may be forgotten.

A reminder to hold high can be made with a block of wood. This can be taped on the top of the gun receiver. The correct height can be determined by shooting. This method is shown in Figure 1. A block can be put on the muzzle end of the barrel to cause us to lower the muzzle if we have a gun that shoots high (Figure 2). To place a shot charge to right or left is a matter that must be remembered.

### Double Barrels

Double barreled guns present

another problem. Some are "dead on" with either barrel as in Figure 3 and if this is the situation the shot patterns converge at about 30 yards. However, some doubles hit center with one barrel. The second barrel may place its charge elsewhere, as in Figure 4. If one barrel shoots satisfactorily on the bull's eye, this barrel should be used for quick or unplanned shots while a bad or "off" barrel should be used when there

is plenty of time to adjust the hold. With a little planning any shotgun will perform at its best. Too many misses and crippling shots occur if one does not know where to point the gun to get in that killing shot. Learn to hold where the scores are highest. Then we can change that "X" from the "T" space to the "F" space in this manner:

I was right on that bird, but I missed: True . False X.

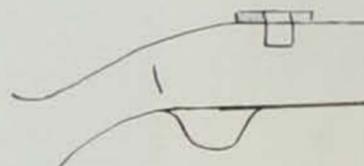


Figure 1. Block mounted on receiver causes muzzle to be raised. Shot charge hits higher.

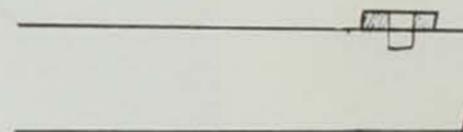


Figure 2. Block on muzzle causes lowering of muzzle. Charge hits lower.

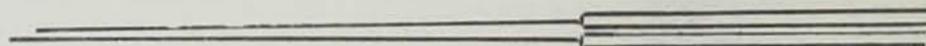


Figure 3. Double barreled guns. Both barrels shoot center.

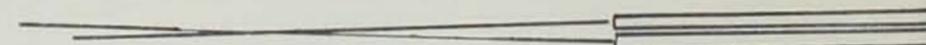


Figure 4. Barrels throw shot to different points.