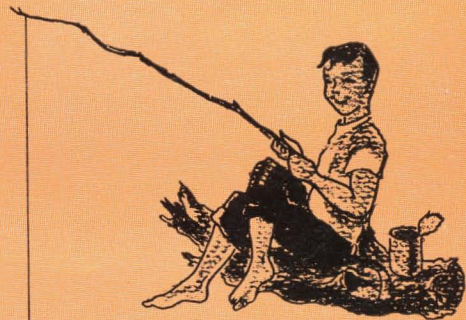
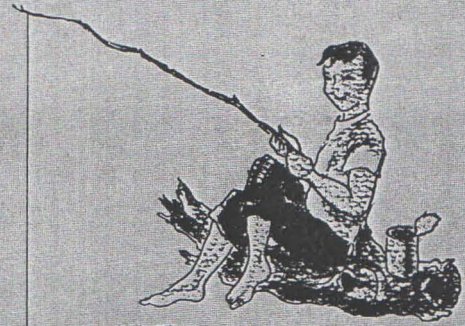


# KANSAS FISH & GAME



Summer 1964

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Summer 1964

## Pollution—Everyone's Concern

There is not much one single person can do to stop water pollution, but when several persons, either together or singly begin to form the formidable weapon of "public opinion," something is certain to be accomplished. This can be especially true in the fight against pollution of our rivers, lakes and streams.

It is quite obvious that nothing will be done unless citizens care enough. If you don't fight for clean water, then you should not complain about the funny taste in the drinking water; the millions of fish which were killed last year by pollution—the ugly and smelly state of many of our rivers and streams—and most important, the potential dangers to the health of American families.

According to the U. S. Department of Health, Education and Welfare, there is nearly six times as much waste in our rivers, lakes, and streams now as 60 years ago, and the amount is still growing.

There are 190 million Americans today—nearly three times the population of 1900. This population growth, plus growing urbanization, plus new advances in industrial technology, have vastly increased our problems of waste disposal.

The problem is not being ignored, but with the increased need for more water, it is imperative that the public keep informed on the needs of their community, city, county and state. Better public understanding and more action at the local level is the key to meeting the need of more treatment facilities, better controls, new technical information, new research and more effective planning for the future.

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Garnett  
Horton  
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## Summer

1964

Published Quarterly  
by the  
KANSAS FORESTRY,  
FISH AND GAME  
COMMISSION,  
Pratt, Kansas

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Edited by Information-Education Division

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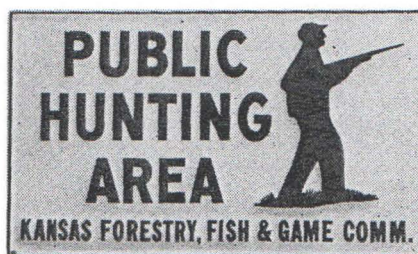




Waterfowl at Kingman County Game Management Area. Intensive management will provide additional hunting opportunity for quail, pheasant and small game. Heavy hunting pressure can be supported.

## *Commission Outlines Policy Concerning* **Acquisition of Public Hunting Lands**

Many factors have made it apparent to sportsmen that there is a lessening opportunity for hunting on private land. An increasing population with an accompanying increase in the number of hunters; a decrease of habitat due to clean farming and the ease of cover eradication by use of chemicals; the shrinking land area available to game production due to the inroads of housing developments, highways and other intensive uses; and, the growing tendency for land to be posted are some of the factors causing a smaller number of licenses per thousand residents in suburban and metropolitan areas



The sign that will mark areas acquired by the Kansas Forestry, Fish and Game Commission to provide more opportunity for sportsmen.

compared to the number of licenses per thousand in rural areas. Realizing this and with an eye toward providing more opportunity for sportsmen, the Kansas Forestry,

Fish and Game Commission has adopted a policy of land acquisition to provide "public hunting areas."

New industry is bringing new citizens into the state. Many of them will be looking for a place to hunt. Establishment of public hunting areas will provide the opportunity for residents in suburban and metropolitan areas of the state and new residents attracted by increased industry to enjoy hunting.

Commission personnel have already made a study of areas presently owned by the commission to

*(Continued on next page)*

determine where additional acquisition of surrounding areas is urgently needed. These involve state areas where private land tends to disrupt management units, where access to existing hunting areas is limited or where acreages are too small to provide the necessary food-producing acreages for waterfowl.

Negotiations are being completed on such an area in south central Kansas (Kingman county). Approximately 2,900 acres of land is being acquired adjacent to 1,700 acres already owned by the state. Because of the high population in this area many sportsmen will have an opportunity to hunt not only waterfowl, but also pheasant, quail and small game. Too, with the high game potential, hunters from the entire state will benefit. The land contains about 1,400 acres of grazing land and about 1,500 acres of land under cultivation. Over a several year period all the cultivated acreage will be returned to natural growth or planted to food-producing crops for wildlife. No fees for use of this and other lands to be developed, are contemplated.

Unlike on private lands, intensive wildlife management can be practiced on public lands and thus heavy hunting pressure can be supported. For example, on the Kingman County Game Management Area approximately 1,600 man days of hunting were provided by 800 acres of land in one season. Game Management Areas will also take considerable pressure from private lands in many sections of the state.

For the most part, federal-aid funds (P-R) will be used for the acquisition. These funds are derived from a tax on sporting arms and sporting ammunition, and must be used to purchase land, to develop land for wildlife or to carry out wildlife research. The federal government will reimburse the state up to 75 percent of the cost of approved projects. Progress in the acquisition program will hinge upon: (1) the availability of funds; (2) the delineation of suit-



**A part of the intensive management will include food patches, beneficial where food is lacking in the overall habitat pattern. Location is important. They should be close to good woody cover when possible to allow game to utilize this source of food without being unduly exposed to predators.**



**Hedgerow plantings provide travel lanes for wildlife. They also create "edge," the all-important effect essential for big numbers of upland game.**



Herbaceous vegetation, such as weeds and grass, is essential to most species of wildlife. Such cover, however, can have little value if burned, mowed or overgrazed.



Public hunting and fishing is being provided by the Strip Pits Wildlife Management Area. Roads have been developed to provide more access.

able tracts by trained wildlife technicians; (3) the availability of these proposed lands at a reasonable purchase price; and, (4) the suitability of these lands for efficient game management and production.

After acquisition of each area, a survey will be conducted to determine habitat factors which are limiting game populations. The most critical shortages then will be corrected by filling in the necessary habitat requirements. For example, in an area where there is pasture and timberland but little food, food plots will be established. If the land was heavily grazed and clean tilled so that little brushy cover was available, woody plots will be planted.

Kansas presently has a small amount of public hunting lands compared to many other states which purchased land while the price was low. Certainly, land is now higher in price, but there is no indication it will sell any lower in the future.

Some examples of public hunting areas already established in the state are: (state-owned) Cheyenne Bottoms Waterfowl Management Area; Marais des Cygnes Waterfowl Management Area; Neosho Waterfowl Management Area; Kingman County Game Management Area; (federal-owned but state-managed) Fall River Reservoir; Toronto Reservoir; Webster Reservoir; Lovewell Reservoir; and, Tuttle Creek Reservoir. Others are being developed, such as the 2,337-acre Strip Pits Wildlife Management Area in Cherokee county. The commission also owns other lands in Cherokee and Crawford counties which will be developed in the future for public hunting and fishing.

In addition to the lands mentioned the federal reservoirs nearing completion, under construction or in the planning stage, such as John Redmond, Pomona, Council Grove, Milford, Cheney, Norton,

*(Concluded on next page)*

## Deer Season Recommended For Kansas in Late 1965

The Kansas Forestry, Fish and Game Commission paved the way for a deer season in Kansas during late 1965 by giving tentative approval of preliminary management recommendations presented by the big game project leader studying the state's deer herd. Leland Queal and Dave Coleman, Chief of the Game Division, recommended both a firearm hunting season and an archery hunting season, on a permit basis.

An archery season would be relatively long and the number of permits would probably be unlimited as this hunting sport will provide a great deal of outdoor recreation with very little drain on the deer resource. In most states, the annual loss of deer to highway accidents is much greater than the annual harvest by archers. Most of the state, with the exception of the southwest quarter, will probably be open to archery hunting of deer.

A short firearm deer season to follow the archery season is planned. No decision has been made to date regarding what particular types of firearm will be permissible weapons for deer hunting. Only selected portions of the state, the areas of higher deer concentration, will be opened to the taking of deer with firearms.

It is proposed that the deer will be hunted on the basis of management units with specific regulations for each unit. In this way the number of permits to be issued and regulations concerning the sex of deer to be legally harvested will be varied as the biological information warrants. Management units will be based on major watersheds and major habitat types, with state and federal highways or rivers as unit boundaries. Twelve to fifteen deer management units are being considered for firearms hunting.

In order to effectively manage the deer resource and to provide adequate control of the deer herd, both sexes of deer will be legal targets in most management units.

The greatest distribution of deer is in the northern three tiers of counties across the state and in the southeastern region. It is in these areas that the various management units will be set up. In most areas the majority of deer are associated with the various streams and river systems and the surrounding habitat.

Permits to hunt deer with firearms will be limited in number and interested hunters will probably have to make application and then be selected on a permit drawing. It is thought that an electronic computer will be used in the selection of permittees to receive permits. This will provide equal opportunity for all applicants.

Currently, the Kansas deer population, which is composed of both white-tailed and mule deer, is estimated at between 20,000 and 30,000 animals. The deer herd has been increasing in size at the rate of about 30 percent per year. A hunting season is the only logical approach to control of this expanding population. It will be necessary to maintain the population within economic limits tolerable to Kansas farmers and ranchers. A recent survey of farmers and ranchers by the Game Division of the Kansas Forestry, Fish and Game Commission, indicates that approximately 6.5 percent of the rural landowners suffered crop damage by deer in 1963. In some sections of northern Kansas 15 to 20 percent of the landowners reported deer crop damage.

The preliminary recommendations mentioned here do not constitute the actual setting of Kansas' first deer season. They do, however, represent the fundamental deer management policies which the Forestry, Fish and Game Commission will follow to provide the most efficient utilization of this valuable wildlife resource.

Glen Elder and Perry will provide considerably more land area to be developed for public hunting.

With the increasing number of reservoirs and land associated with the reservoirs, particularly in the eastern and northern portions of the state combined with those in other parts of the state, the adoption of a land acquisition policy will make public hunting available to hunters within a short distance in almost all parts of the state.

The purpose of game management areas is not to promise a full bag to the hunter, but to provide hunting *opportunity* for sportsmen. The areas will be managed to produce the maximum amount of game. It is the commission's feeling that this will be part of the answer to an increasing demand for a place to enjoy hunting. A secondary benefit, in some areas, will be new fishing waters or improved access to those which previously existed.

## Book Reviews

*For the Young Hunter.* By John Madson and Ed Kozicky. 32 pages. Illustrated with drawings by Bob Hines. Published by Conservation Department, Olin Mathieson Chemical Corp., East Alton, Ill.

This is the latest in a series of "basic" booklets designed to aid the novice outdoorsman. Intended as a companion piece to "Principles of Game Management," this booklet was written to supplement firearms safety programs, hunter-training courses and as a handbook for outdoor clubs, summer camps and other groups. It should be required reading for every young hunter just starting down the trail, containing essays on selecting companions, dogs, and equipment plus information on outdoor lore, gunmanship and a suggested code of conduct for young hunters.

The eggs of snapping turtles are good food but must be fried as they will not boil hard.

# All About Fish

The actions and the frustrating behavior of fish are the subject of continuous conversation among anglers. Some of the questions that arise from such discussions are: Where are the best places to fish, why do fish react as they do under certain conditions, what are the best baits and what method should be used. These are but a few of the questions that may arise. The answers to these questions are numerous and many unfounded. Chances are every fisherman will have a different answer for each question. The Fish and Game Commission is the first to admit that it does not have all the answers, but are always in pursuit of more correct and scientifically logical answers.

The advancement of your knowledge as to the fish's habits, habitat and his general appearance will be most helpful on your future fishing excursions.

All fish are classified as cold-blooded vertebrates. This means that they do not have the ability to maintain a constant body temperature. In other words, their body temperature will be the same as that of their natural habitat. For an example, if the water is cold, the body temperature of the fish will be very nearly the same as that of the water. In direct proportion to the body temperature, the activity of the fish is effected. The warmer the fish, the more active, and the more active, the more energy is necessary. This explains some of the reasons that a fish which will be very sporty in the summer may not be so during the winter or the colder months of the year.

## Sight

All fish are very near-sighted, and most of them probably cannot see more than six or eight feet in the very clearest of water. Their



eyeballs are under independent control. That is, one eye may be looking up while the other is looking down. Another question which often arises has to do with fish being able to see color. Most biologists agree that fish are all nearly color-blind. However, bright colors may be viewed by the fishes in different shades of gray, green or brown. According to recent investigations, the color most easily defined by fishes are green or yellow.

## Smell

Smell is probably the most highly developed sense of the fish. The nostril has no function whatever in breathing, but leads to a small sac where the smelling sensory tissue is located. Pollution may be readily detected and therefore, fish may avoid areas where wastes have been released. Blood can be smelled by sharks at surprisingly great distances.

(Continued on next page)



## Fish and Game

### Touch

Fish also have a highly developed sense of touch, very nearly like that of man. The sensory cells are located all over the body and are very sensitive. For example, the whiskers of catfish assist in finding their way in muddy water.

### Hearing

The hearing in fish is very nearly like that of most mammals. Since sound travels much faster in water than through air, the fish are extremely sensitive to sounds of low frequency. The fish has no ear. Its hearing is conducted by sensory cells which are located along the lateral line and then transferred to an inner ear. This lateral line is readily visible on most fish. Oftentimes, this is noticeable by markings on the scales of some fish. Sounds made by people talking while fishing probably are not detectable to the fish however, any movement which would make a sound in the water is very easily heard by the fish.

### Anatomy

The internal anatomy of all fishes is essentially the same. The drawing outlines the main and most important organs of fishes. Their internal system is very complex and highly developed. Many fish's organs may be larger or smaller than in the drawing. It is believed that the variations in size of different fish's organs may be a result of the food that they eat. For example, fish such as bass, crappie and pike, which are mainly fish-eaters, have short intestines, while fish such as carp, suckers and shad that feed on vegetable material have long coiled intestines.

### Suggestions

After reviewing the fish's sense of smelling, touch, hearing and vision, we come up with a few fishing tips that should prove very basic to the angler. Some of these tips are:

(1) You should carry with you a small thermometer with which to check the water temperature.

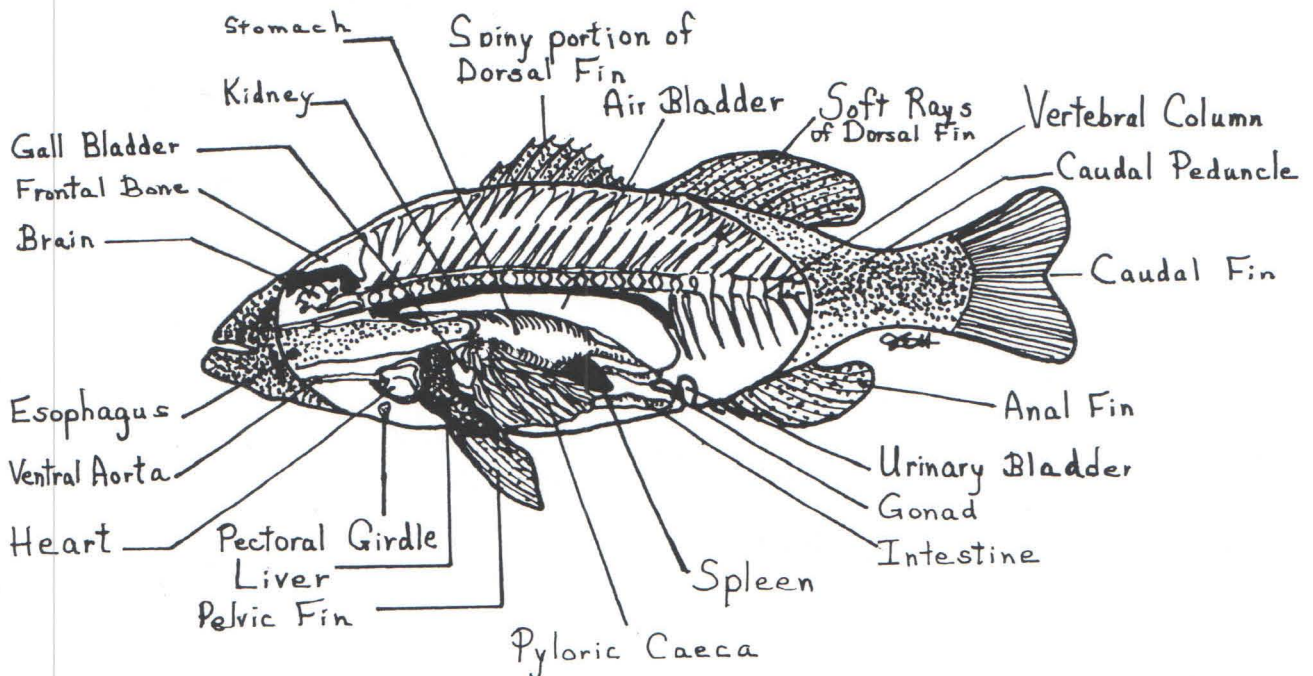
By using the thermometer to determine the temperature of the water, you will be more able to select the proper depth at which to fish. A good rule to follow is during the spring and fall, fish shallower than in mid-summer. If you do not have a thermometer, it will be necessary for you to experiment on your own.

(2) Select your bait and fishing lures on the basis of their resemblance to live baits. It is also important to attempt to duplicate the movements of that of the real food organisms in the water. The color of your artificial lures probably will not have much effect on the catching of fish.

(3) Be quiet, especially if you are in a boat. Your normal conversation probably will not be heard by the fish but splashing of the water and thumping of the sides of your boat will more than likely rid the area of fish.

(4) When using surface plugs, allow a short time after the plug

(Concluded on page 21)





The soft light of evening lends a sparkle to the water at the south cove, Atchison County State Lake.

# Atchison County State Lake

By **GEORGE VALYER**

*23rd of a Series on the State Lakes of Kansas*

The July sun beat mercilessly down as I sat on the rock boulder and contemplated the scene before me. Straight ahead, to the north, lay the beckoning waters of a lake but on either side was the reason for the trek up the hill. Blackberry and raspberry bushes grew in profusion along the hillside and there were a few ripe berries as well as green ones on almost every bush.

As I nibbled at a handful of sweet, ripe fruit, my mind wandered back to the first time I had

ever seen Atchison County State Lake. The construction crews had been gone only a short time and the raw scars in the earth left by the machinery were plainly visible.

Since that time, the healing hand of nature has made a verdant retreat of the area nestled among the limestone hills of northeast Kansas. The rolling tree-covered hillsides and the grassy shores form a beautiful backdrop to the sparkling clear waters of the lake. A towering thunderhead in the distance

seemed to crown the view with regal splendor.

Anyone wishing and longing for a quiet place to while away a summer day could look long and wide before finding a spot superior to this. During the week, while most are forced to toil for a livelihood, only an occasional hum of a fisherman's outboard gives indication that others are enjoying the serenity of this lake. On weekends,

*(Continued on next page)*



Caretaker Dean Bell stands by the stone marker designating Atchison County State Lake as Lake Hetherington.

the scene changes to that of a playground with dozens and even hundreds of campers, picnickers and fishermen.

Located away from major tourist routes, Atchison County State Lake does not attract a great number of campers from outside the state. Most of the persons using the lake come from the immediate area surrounding or, at least, from the northeast part of Kansas and north-west Missouri. On occasion, travelers will turn off U. S. 73 or U. S. 59 at Atchison in order to pitch their tents at this location.

In comparison with the larger lakes and reservoirs, Atchison County State Lake is small with only 66 acres of water. However its depth is surprising. Due to the terrain, its banks slope sharply into thirty- and forty-foot depths. One hundred eighty-three acres of land surround the lake and provide adequate room for outdoor activities.

Land for the lake site was purchased and acquired in early 1956 and construction was begun in July of that year. Final inspection of the new lake was made in May,

1957. Stocking with fish was possible in the fall of '57 due to the fact that springs in the watershed augmented the rainfall to help fill the lake.

The residents of Atchison, only five and one-half miles distant, were quite pleased with the location of the lake so close to their city. To show their appreciation, nearly every service club and organization in the town joined in a program to provide the basic facilities for the new lake. Brick and concrete outdoor fireplaces were constructed at several locations on the east and south sides of the lake and the spots were also equipped with picnic tables and sanitary units.

Atchison County State Lake is known locally as Lake Hetherington. The name was chosen by the people of Atchison county to honor a lifetime resident, Wert Hetherington, sportsman, banker, and civic leader. A stone marker at the lake entrance commemorates the good sportsmanship and civic responsibility of this man.

The lake itself lies in a south-

west to northeast direction with one large cove extending to the south from the main body of water. In this cove is located the boat launching ramp and docking area. Access roads are maintained on the south and east sides but the north-west shore can be reached only by boat or on foot.

All facilities at the lake are maintained by Dean Bell, the genial caretaker. You are liable to find Dean almost anywhere around the lake, mowing picnic areas or assisting some angler in launching his boat. He is always ready to give fishermen the latest information on what is being caught and the best baits.

All kinds of wildlife find Atchison County State Lake to be attractive. Many species of birds make their home there and may be observed by quiet visitors. There is even a barn swallow nest under the eaves of the maintenance building which is located close to the south entrance. When I last visited there, two young swallows, nearly ready to fly, were being fed by their parents. This nest is used every year.

Other interesting birds may be found in the area including the rare (for Kansas) bluebird, countless robins, doves, orioles, kingbirds and wrens. You may see a kingfisher perched on a dead limb hanging over the water waiting for a meal to come swimming by.

Deer are sometimes seen close to the lake and, at night, a coyote's wail may cause you to stir in your tent or sleeping bag. The area abounds in cottontail rabbits and squirrels which seem a little less timid than normal. The tracks of a raccoon along the shore indicate that this masked bandit of the animal world has been searching for a juicy crayfish the night before.

If you camp here during the month of July, you might augment your larder with wild raspberries or blackberries provided you have enough fortitude to brave the thorns. Two words of caution are in order though; be sure that you

do not destroy any plants since all growing within the area are protected by law. The second point to remember is that copperheads and timber rattlesnakes also like the rocky hills and wooded slopes. Young children should not be allowed to stray too far from the mowed areas unless accompanied by adults.

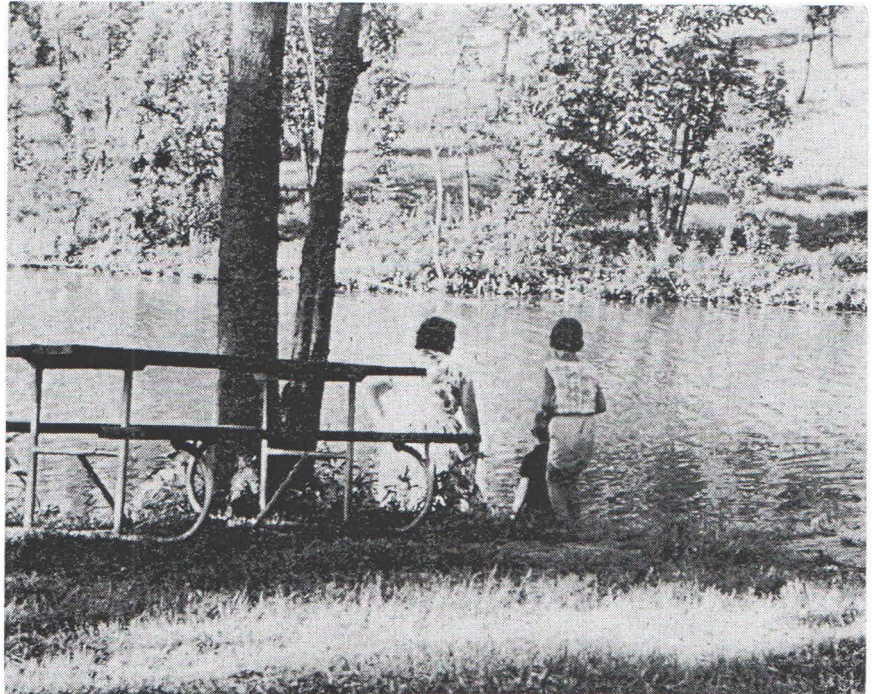
How is the fishing? Well, excellent at times, slow at others. This seems to be the nature of all lakes and Atchison County State Lake is no different. Early morning and late evening fishing is probably most productive during the months of July and August. The lake contains good populations of large bass, channel catfish, crappie and bluegill. A boat is not a must for fishing this lake since the bottom drops off sharply at many places along the shoreline. Only at the upper end will you find the shallows which are common to some lakes.

As the sun sinks lower toward the western horizon, the cool of evening creeps slowly up the hollows from the deep, clear waters. Bluegill dimple the surface on an evening feeding spree and, farther down the shore, a bass bulges a wake in pursuit of a minnow. Across the lake, a channel catfish nudges a bait, sucks it in and you hear the faint whirr of a reel click as he strips off line. This is contentment. Try it and see.

## Sport Fishing Contest To Be in September

The third annual Kansas sports fishing contest will be held at Tuttle Creek Reservoir on September 12 and 13, according to the Kansas Wildlife Federation, the sponsoring organization.

The contest for individuals will run two full days, starting at 5 each day. A separate contest for married couples will be held September 13, ending at noon. Only



A lady fisherman tends her line while the children look on with anticipation.

artificial lures will be permitted. The winner in each division will receive an expense-paid trip to the World Series of Sport Fishing.

Entries must be sponsored by a sportsmen's club, civic or service club, or any other conservation or recreation organization. Each club will be permitted two entries. Entry fee is \$10 for an individual or for a couple. The KWF will supply boats, but contestants may use their own boats if they wish. Fuel, life jackets, fishing tackle, food and lodging must be supplied by each contestant. Contestants will fish two to a boat, as determined by a drawing.

Entry blanks and complete rules may be obtained by writing: KWF, 501 East Front, Bonner Springs.

The contest will be limited to that part of Tuttle Creek Reservoir north of the Highway 16 bridge.

The snapping turtle never feeds out of the water because it cannot swallow unless its head is submerged.

## Temperature Counts

During the hot and cold months, fish are usually found on the bottom where the water temperature is more comfortable and food is plentiful. In the spring and fall, they range within a few feet of the surface, says the Johnson Motor News Bureau.

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(In compliance with Statement of Ownership, Management and Circulation Act of October 23, 1962; Section 4369, Title 39, United States Code.)

Date of Filing: September 24, 1963.

KANSAS FISH AND GAME is a quarterly magazine owned and published by the Kansas Forestry, Fish and Game Commission, Box F, Pratt, Kansas, Zip Code 67124. (State Agency.)

Editor: Information-Education Division of above.

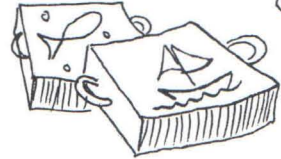
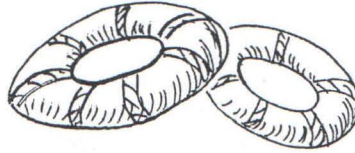
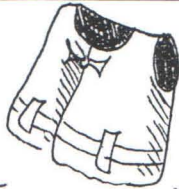
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I certify that the statements made by me above are correct and complete.

JOHN D. POLSON.

# IT'S THE LAW!



Every boat is required to carry one approved life preserver, vest, ring buoy or cushion **PER PERSON**.  
**SKI BELTS ARE NOT APPROVED.**

	NUMBER NAME AND ADDRESS OF OWNER(S) <div style="border: 1px solid black; border-radius: 15px; padding: 5px; display: inline-block;">SAMPLE</div>		EXPIRATION DATE HULL MATERIAL WOOD <input type="checkbox"/> ALUMINUM <input type="checkbox"/> STEEL <input type="checkbox"/> PLASTIC <input type="checkbox"/> OTHER <input type="checkbox"/>	
	OWNER'S DATE OF BIRTH 	CITIZENSHIP 	PROPULSION OUTBOARD <input type="checkbox"/> GASOLINE <input type="checkbox"/> INBOARD <input type="checkbox"/> DIESEL <input type="checkbox"/> OTHER <input type="checkbox"/> OTHER <input type="checkbox"/>	FUEL 
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	CERTIFICATE OF NUMBER State Boating Act <small>28-1276-600</small>		Signature of Owner X Director, Forestry, Fish and Game Commission	



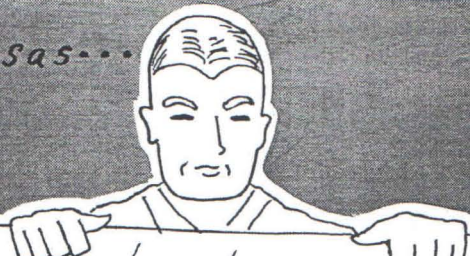
The certificate must be available for inspection whenever motorboat is in operation.



Do not be responsible for damage caused by negligence!



... For Safer Boating in Kansas...



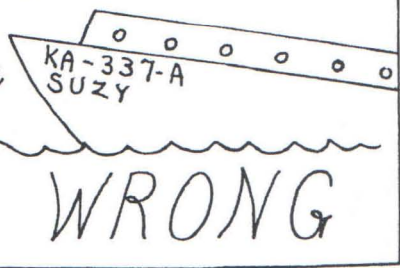
Identifying numbers must be displayed correctly. There must be a hyphen or equivalent space between the three groups of letters and digits.

KA-337-A ← RIGHT      KA 337A  
KA 337 A      WRONG → KA3-37A

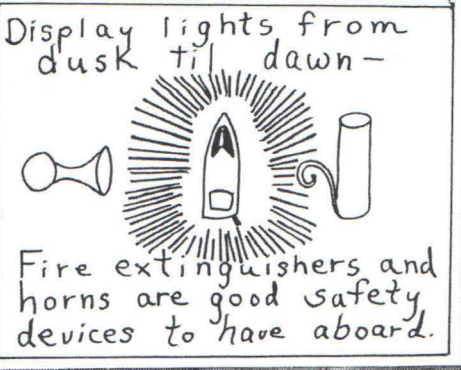
The letters and numbers **must** be vertical, legible, of contrasting color, and at least three inches high.



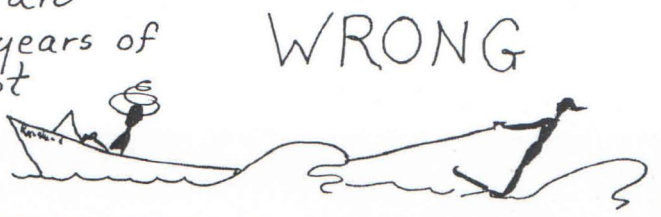
All letters and numbers **must** be displayed on both sides of bow, and no other letters or numbers should be near the identifying number.

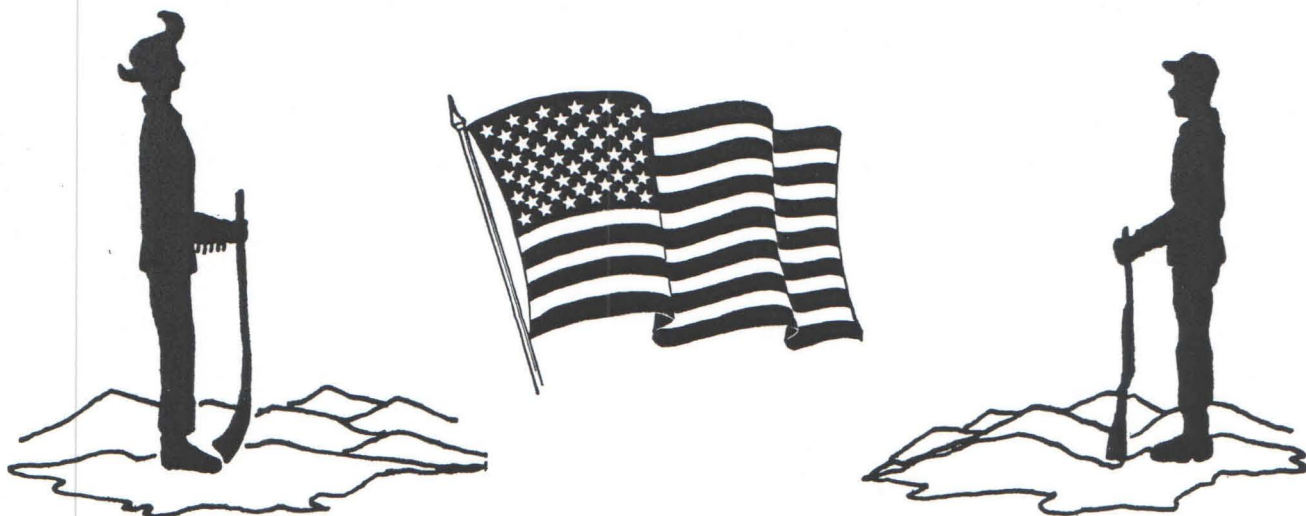


Don't mix the bottle and the throttle ~



Boats towing skiers must have a wide-angle mirror or an observer of at least 12 years of age. The driver cannot safely watch two directions at once.





# The Right to Keep and Bear Arms

## *Are We Going to Lose It?*

The use of a rifle to assassinate our nation's leader was an incredible tragedy to those who treasure the right to keep and bear arms and the other basic American freedoms. We cannot rightfully allow ourselves to take hasty action that may be regretted later.

We are concerned primarily with the crimes committed, not the weapons that are used. The weapon is actually the lesser problem, if not completely irrelevant. It is the crime, not the tool used that should be the target of preventative legislation. Anyone in a frame of mind to commit murder seldom ever has trouble finding a weapon to use, whether it be a gun, knife, broken bottle, golf club, fireplace poker, croquet mallet, hat pin, or the bare hands; this is the fundamental weakness of all laws aimed at the tool, rather than the crime.

The Second Amendment to the Constitution of the United States says that the right of the people to keep and bear arms shall not be infringed. Then, to prevent local actions from nullifying the provisions they thought essential to

this country, the Fourteenth Amendment was added. This provides that no state shall make or enforce any law which shall abridge the privileges or immunities of citizens of the United States.

Firearm legislation that is aimed at nullifying the Second Amendment on the basis that some people misuse it is the same as nullifying the famous Fifth Amendment, too, as it is often used by criminals. As for that matter, are there really any of our four freedoms guaranteed in the First Amendment—speech, religion, press, petition—not sadly abused by some people; but, responsible citizens recognize that the importance of the guarantees of the amendments to the Constitution far outweigh their risks.

Any legislation along this line that is contemplated by state and/or local authorities should be directed toward the criminal element and unlawful use rather than mere possession or registration of firearms. Gun registration lists, no matter how carefully guarded, can and will provide the most convenient and effective way of dis-

arming the private citizen should a subversive power infiltrate our police system or our enemies occupy our country.

Criminals do not abide by the law; only good citizens do. If someone is going to either hold up a place or lay someone low with a gun, the law against carrying that gun definitely is not going to stop him. A law on the books that would prevent people from having and using guns would not prevent the criminal from carrying a gun. Honest people would comply, of course; would the crooks?

Evidently, some of the people in our great country have forgotten that upstanding citizens, trained and expert in the use of firearms, won our country's freedom from tyranny, obtaining for us all the great individual freedoms we today possess.

Beware of gun registration. It can be followed by requiring officialdom's permission to buy . . . and in more than one country it has been followed by outright confiscation.

The proposal by Dr. E. U. Condon, professor of physics at

the University of Colorado, written to the Attorney General of the United States and to all 50 state governors, recommended that the possession of firearms by citizens be permitted only after licensing and then be left in police custody at all times except when taken out for a specific period and purpose. He further advocated that all persons so permitted to have firearms in their possession be required to wear distinctive garb to identify them as armed persons.

According to the *Rocky Mountain News* of Denver, Colo., dated November 29, 1963, Doctor Condon was described by the House Un-American Activities Committee as "one of the weakest links in our atomic security." According again to the newspaper account, the description was based on no allegation of disloyalty, but rather on acquaintance of alleged Russian spies. It is hoped that the committee will not be influenced by extremists of this type.

Any debate of gun laws should not fail to consider the value and importance of guns to America. America's more than 18 million hunters contribute one billion dollars a year to the national economy through purchase of equipment and services of all kinds, ranging from gasoline, lodging and clothing, to guns, binoculars and other equipment. Their hunting license fees contribute the funds (Kansas-1963—\$974,924.00) upon which Kansas' wildlife conservation programs depend for existence. Furthermore, federal excise taxes on firearms and ammunition are allocated to the states for wildlife conservation purposes to the tune of over 15 million dollars a year.

Wisdom, patience and good sense are needed. Let's not be led astray by the misinformed, anti-gun prejudiced and ill-advised segment of our populace who are guided solely by emotion, or by those with hidden motives.

The solution to the firearms problem lies in restraining the ir-

responsible, the criminal, the mentally disturbed, and the inexperience of youth, and not in the control of an inanimate object which can be used for good or evil only as directed by the minds of those who possess it. Get as tough as the law can devise on the criminal or the dregs of society who have proved their evil intent—but do not so penalize the law abiding citizen or destroy the great American citizen's right to keep and bear arms unharrassed by governmental bureaucracy at any level.

Guns in the hands of responsible citizens have won our freedom and independence, rolled back our western frontiers, won two world wars, provided millions of hours of pleasure and recreation for the sportsmen of our nation, sustained an important industry vital to our nation's economy and defense, and provided a continuing supply of meat and protein by cropping the nation's wildlife surplus. Wildlife, a great renewable resource owned by the people, must be managed to prosper and the removal of surplus animals by sport shooting protects the environment and is a vital and inseparable part of wise management.

Firearms legislation is of insufficient value in the prevention of crime to justify the inevitable restrictions which such legislation places upon law-abiding citizens. The concern of those who would propose legislation against firearms would be better directed to the cause or source of the crime rather than the weapon.

### Bore Sighting

Bore sighting of a center-fire rifle is a quick and easy method of sighting in when time or lack of facilities do not permit actual firing of the gun. Though far from providing precision accuracy, BORE SIGHTING will generally assure a hunter sufficient accuracy to hit a deer-sized target between 50 and 100 yards.

In order to bore sight a rifle, remove the bolt and set the gun on a rigid rest. Next, look through the bore at a target 50 to 100 yards distant. Center the target within the bore opening and, without moving the rifle, adjust the sights so that they, too, center on the same target. This type of sighting will put the bullet's point of impact a few inches low on the target, but, if time permits, three or four practice sighting-in shots will correct to proper accuracy.

### Basic Instructions

In rifle shooting, the **STANDING** and **OFF-HAND** positions are often considered synonymous by the novice. Though very similar, they are not the same. In the **STANDING** position, the left arm is extended part way from the body, as in shotgun shooting, while the left hand grips the rifle's fore end. In the **OFF-HAND** position, the upper part of the left arm rests firmly against the shooter's body and the weight of the rifle is supported on the thumb and the tips of the fingers of the left hand.

### Sight Adjustments

Sight adjustments are frequently a source of confusion to the novice rifle shooter. Should he raise or lower the sight as his distance from the target increases? And what about windage, does a bullet striking left of the target require moving the sights to the right or left? To avoid such confusion, the beginner has only to remember this simple rule: Always move your sights in the direction you wish your bullet to go. For example, as distance from the target increases, the bullet's point of impact will be low, necessitating a raising, or upward adjustment, of the sight. A bullet striking left of the target requires moving the sight to the right, in other words, in the same direction you wish the bullet to go to put it on target.



## Don't Pity the Bullhead Fisherman

By GEORGE VALYER

The kid with the willow pole, a piece of string from mamma's kitchen drawer and a rusty old hook has been the subject of many a story, photograph and cartoon for years. Still, one can see such a youngster and his modest tackle if he just examines almost any small creek or pond during the spring. Yes, kids still fish this way and get the same enjoyment that we did when we were barefoot boys.

I remember quite clearly my first excursion with such a rigging—even though it was longer ago than I like to admit. The creek was not too far from the back door of the farm home my parents occupied at that time but, at such a young and tender age, the distance seemed greater than it actually was. Beckoning me onward was the cool green shade of the elms which grew along the banks and the promise of the mystery contained in the dark waters underneath.

Then there was the long period of waiting and watching as the bottle cork floated serenely on the water surface. It seemed like an eternity before anything disturbed the worm so carefully selected but, finally, the cork bobbed a couple of times and disappeared from sight. With a heave which threatened the well being of anyone within striking distance, I had my first bullhead flopping in the grass.

This was a supreme moment in any boy's life—his first fish caught all by himself. Just thinking about it, the chills play up and down my back and I can still remember the thrill of carrying that fish into the kitchen to present to the family.

Since that time, my tackle has changed considerably, but I still enjoy an old fishing hole on the creek and the prospect of catching a mess of bullheads in the spring-time. Sure I have fished for bass and I enjoy trolling for walleyes. Crappie fishing with jigs is great



and I have even traveled hundreds of miles for the opportunity of taking a few trout. Still, on a soft spring day, the bullhead hole on the creek holds a fascination which is hard to resist.

Bullheads are looked upon with disdain by some fishermen who have not been fortunate enough to have experienced this type of fishing. In some areas of the United States, fishermen cuss a blue streak when they get one on their line and proceed to rip it off the hook and cast it aside. In the New England states, the bullhead is scornfully called the horned pout and considered not fit to eat. The only reason for such an attitude would be the excuse of ignorance. Any-

one who has not tasted a fresh-dressed bullhead rolled in cornmeal and fried to a golden brown has missed one of the delights of living. Naturally, the quality of water from which the fish was caught makes a difference but this applies to all species of fish.

Bullheads are quite adaptable to a variance of water conditions. They have the ability to survive where some other species perish. They are generally credited with the tenacity for life which will keep them alive for some time in a small amount of water or even burrowed into damp mud. Because of this adaptability, bullheads are found in almost all streams in Kansas and in many ponds.

The reproductive potential of bullheads is great and, in impounded waters where predation on them is not great, they have a tendency to produce more young than can be fed from the natural food in the water. For this reason, bullheads are not recommended for stocking in farm ponds. Even when not stocked, they have a remarkable aptitude of swimming upstream in a spring freshet and thus gaining admittance to almost any body of water. Therefore, almost any pond may contain a population of bullheads.

I like to fish for bullheads with a light spin-caster with four- or six-pound test line. Although they are not renowned for being scrappers, bullheads put up a fine battle on light tackle. If they can find an underwater obstruction, chances are that they will snag your line and you will come out of the fray with only a waving bit of monofilament to mark the place where hook and sinker once were. The smart bullhead fisherman takes along plenty of spares.

As far as bait is concerned, almost any animal matter will do but the kid with the worm can has the right idea. There have been more bullheads caught on earthworms than any other bait. Equally good a little later in the summer is the grasshopper. One bullhead fisherman I know likes to use grasshoppers early in the spring. To insure a supply, he catches a quantity in the fall by picking them up right after the first frost and then placing them in his freezer until the following spring and his first fishing trip.

It doesn't take a youngster long to learn just where to place his bait. One of the best spots on our creek was a deep hole under the base of a tree which grew at the water's edge. All you had to do was drop a worm on the upstream side of the hole and let it drift down to a little whirlpool at the base of the tree. If the bullheads were biting, the fun began immediately. I remember one morning right after a rain when the creek was rising

that I took seven nice bullheads from this one spot during a short period of time. Another good spot was a pool just below a rocky crossing where Dad used to ford the creek with his farm implements.

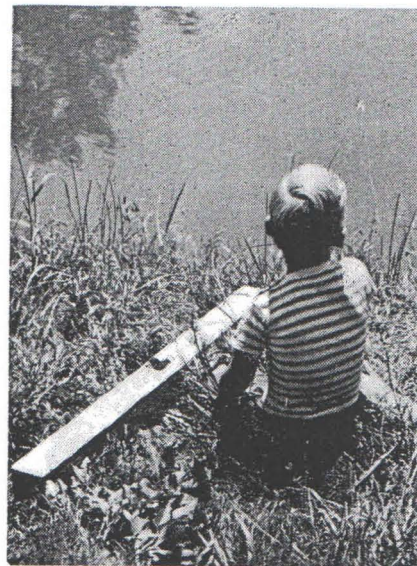
After we built the pond down in the pasture, it wasn't long before my attention shifted to this body of water. This is where I first learned that bullheads don't have to be stocked. It wasn't long before we had plenty of fishing there. It also wasn't long before I began to think that the old willow pole was inadequate for fishing this larger body of water. A careful accounting of resources plus a little saving effort resulted in a rod (solid steel) and reel for the total price of \$2.72. Believe me, this was quite a capital expenditure for those days. Although I derived a great deal more pleasure from owning such fine tackle, I found that my catch didn't increase proportionately. The bullheads still seemed to bite best next to the shoreline within the area which could be covered adequately by a cane pole fisherman. This was particularly true during the early morning and evening hours.

Thus I learned some very important lessons in fishing which have helped a great deal in fishing for other species. The habits of bullheads are really not a great deal different than other fishes.

When the bullheads are really biting, you can catch 'em faster than you can get them strung. Thus, I like to have a bucket of water handy to drop them in. If a bullhead is not seriously injured in the process of hook removal, he'll live a long time in a small amount of water or even a sippy wet gunnysack (burlap bag to the uninitiated). I remember one such occasion when I was glad to have a bucket along.

My wife and I had brought a friend with us to fish for channels at Chase County State Lake. The only stringer in the party was in my tackle box. We didn't take many channels that evening but the bullheads were hitting like crazy. I

strung the first two or three but soon found that I was neglecting my fishing trying to keep up with the stringing chores. The car trunk yielded a three-gallon pail and, from then on, it was everyone for himself. We caught a bucket of bullheads that night in just a short time. And, they were big ones too. Most of them went better than a pound each.



Like other catfish, the bullhead has three formidable weapons growing on his anatomy. Any boy who has ever caught one will soon learn how to hold them to keep from being finned. I've had fin marks on my hands many a time and they hurt like the dickens. Even bullhead experts get gouged occasionally when one of them gives an unexpected flip while being held. Such wounds are hardly noticed, however, if you are in the middle of some fast action. A thorough cleansing when you get home is adequate to prevent infection.

If you haven't guessed it by now, I really enjoy catching bullheads. They might not grow as large as some other species but they almost always are ready to bite. Any time you want to have a bushel of fun, give 'em a try. Even if you don't enjoy bullhead fishing, don't waste any pity on those who do. They are having more fun than you.

## Unprotected Hawks of Kansas

Most hawks are protected by law, however, the members of the Accipiter family are not. The Accipiters or the "true hawks" are not protected due to the fact that they do considerably more damage than good. There are seventeen species of birds that are commonly called hawks found in Kansas. Of the seventeen, only three belong to the Accipiter family: Goshawk, Cooper's Hawk, Sharp-shinned Hawk. The remaining fourteen are all protected by law in Kansas.

### Identification

The upper portion of the Goshawk (*Accipiter Gentilis*) is bluish with a black head. The tail usually shows four black bars. This hawk normally has a white streak above the eye. The lower portions of the body are gray. The Goshawk is the largest of the unprotected hawks in Kansas, slightly larger than a crow.

The Sharp-shinned Hawk (*Accipiter Velox*) has a rather uniform gray to the upper parts of the body while the under parts are white with the throat finely streaked and the breast barred with brown. The tail is slender and square-tipped with about five bars. This hawk usually measures 11 to 13 inches in length and the wing spread varies from 23 to 27 inches. This hawk can be distinguished from the rare goshawk in Kansas by its smaller size and from the more common cooper's hawk by its square-tipped tail.

The general coloration of the Cooper's Hawk (*Accipiter Cooperi*) is strikingly similar to that of the Sharp-shinned Hawk, however the head is slightly darker. The Cooper's Hawk is larger than the Sharp-shinned Hawk, measuring .18 to 20 inches in length with a wing spread of 30 to 36 inches.

The female of these three species is always larger than the male.

### Habits and Habitat

In Kansas, the Goshawk is considered one of the most destructive of hawks. It is large and powerful; capable, it is said, of flying off with prey of equal weight. Its food tends to be mostly native birds, such as ducks, quail, grouse, and doves. They are also known to feed on squirrels, rabbits and small destructive rodents. During a bad winter, they have been seen raiding poultry pens.

Sharp-shinned Hawks usually nest in very tall trees or on cliffs.

The nest is composed of sticks and twigs, with a scant lining of grasses, leaves and bark. The eggs are about four in number and are greenish, or bluish white, blotched with rich shades of brown. Quite generally throughout its range, this hawk is the most destructive of the hawks, killing both for food and pleasure. Though it will attack birds as large or larger than itself, the attacks are said to be directed primarily against the sparrows and the other hedgerow birds. The Sharp-shinned Hawk kills on the ground, from a perch, and in the air, which attests to its agility and strength of movement.

The Cooper's Hawk may be seen in Kansas at any season of the year, and is considered one of the common hawks of the state. It merits the ill will of all for its inroads into the numbers of our song birds, game birds and barnyard fowl. Unfortunately, so swift and strong are the movements of this hawk that he frequently escapes his just fate.

The nest of the Cooper's Hawk is built of twigs and sticks, lined sparingly with grass and leaves. It is placed in the forks of moderately tall trees. The Cooper's Hawk has an average clutch of four eggs. These eggs are bluish-white and sometimes faintly blotched with yellow-brown.

### Role in Nature

The small creatures that hawks eat breed rapidly creating, to some extent, an important job for every hawk to do. If rats, mice, rabbits, squirrels and gophers are not partially controlled by hawks and other predators, they sometimes do extensive damage to agricultural crops. There can be no doubt that hawks have a great value to the farmer and the land.



Immature Goshawk



Adult Sharp-shinned

(Continued on page 21)

# Poisonous Snakes

There are forty species of snakes in Kansas. Only two families of snakes, found in the United States, do not appear within the state. Of the snakes in Kansas, only six species are poisonous. These six are all members of the Crotalidae family, known as "pit vipers." The "pit vipers" get their name from a pit or indentation that is located between the nostril and the eye. This pit is extremely sensitive to any change in temperature. Therefore, the snakes classified as "pit vipers" can detect the presence of any warm-blooded animal without being able to see them. The young of the "pit vipers," represented in Kansas, are generally born in August or September. All snakes in Kansas, except the "pit vipers," hatch their young.

## Copperhead

The copperhead lives in the eastern one-third of the state and is generally found in rocky hills where the weather is moist. They feed mostly on mice or other small rodents. Most larger animals are swallowed head first. The copperhead has been found frequently near streams at nighttime, the time when they are most active. The copperhead carries brown-colored, hour-glass shaped markings. Its head is of a coppery tinge, giving the snake its popular name.

## Cottonmouth

The range of the cottonmouth in Kansas is limited to the extreme southeast corner of the state. It is recorded being found only in the Neosho River at Chetopa in Labette county. The cottonmouth is considered to have the nastiest temper of any poisonous snake in

Kansas. These snakes may be found sunbathing during the daytime and feeding during the night. The colors of its body are dull brown or olive, crossed with darker, usually obscure, bands. Young specimens are brightly marked with transverse blotches of a reddish background.

The cottonmouth feeds on both warm and cold-blooded vertebrates; frogs, fishes and birds.

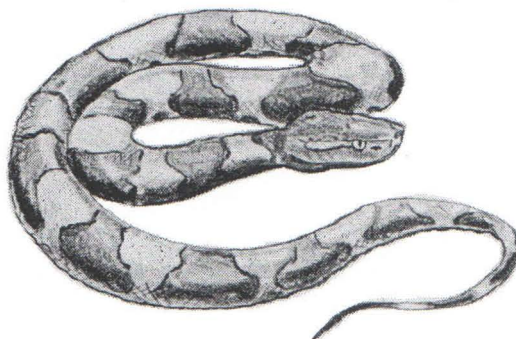
## Pigmy Rattlesnake (*Massasauga*)

The pigmy rattlesnake may be found throughout the state except in the northwest quarter. These snakes prefer swampy areas most of the time. In midsummer, they seek out the drier regions. The temperament of the pigmy rattler is more mild than the other rattlesnakes of Kansas. The massasauga seldom reaches more than two and one-half feet in length.

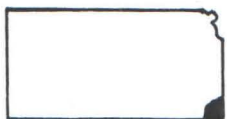
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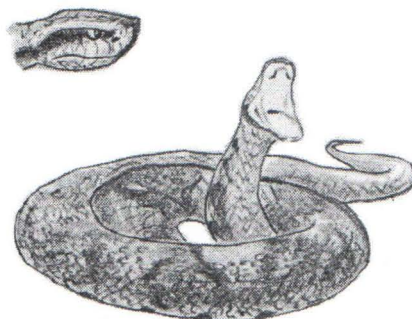
Copperhead Range



Copperhead



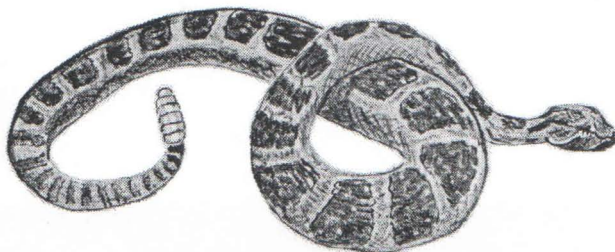
Cottonmouth Range



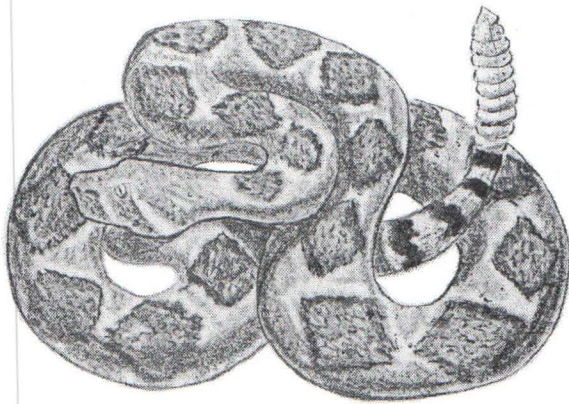
Cottonmouth



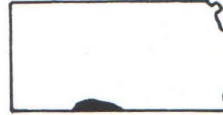
Pigmy Rattler Range



Pigmy Rattlesnake



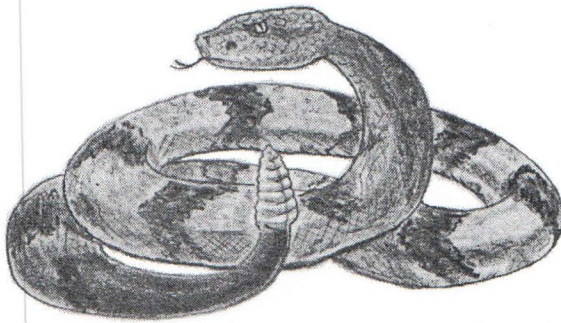
Diamond-Backed Rattlesnake



Diamond-Back Range

**Western Diamond-Backed Rattlesnake**

This snake is found only in the extreme southern parts of Kansas. They are inhabitants of the dry plains and prefer canyons and hills with thin vegetation. The diamond-backed rattlesnake gets its name from the large symmetrical so-called diamonds which cover the back. The diamond-back has been known to be found exceeding seven feet in length. They prefer rodents and occasionally a bird as a delicacy at lunchtime.



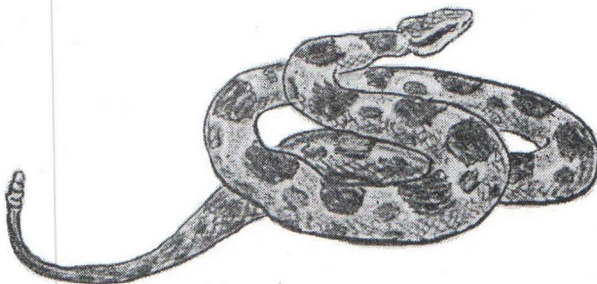
Timber Rattlesnake



Timber Rattler Range

**Timber Rattlesnake**

The timber rattlesnake can be found in the northeast sixth of the state and along the extreme eastern border south to Oklahoma. As their name implies, they prefer the timber areas where there are outcroppings of limestone. The timber rattlesnake has chevron-shaped blotches at least on the forepart of the body and the tail is black in most adults. This snake may reach lengths of five feet or better, but average three and one-half feet.



Prairie Rattlesnake



Prairie Rattler Range

**Prairie Rattlesnake**

This snake may be found throughout the state except for the northeast quarter. The prairie rattlesnake has been found as far east as Crawford county. To find them east of Republic or Barber counties is extremely rare. Their food consists mainly of small mammals such as rats and mice. The female produces young every other year. All other rattlesnakes in Kansas give birth to young each year.

**Watch the Birds For Weather Change**

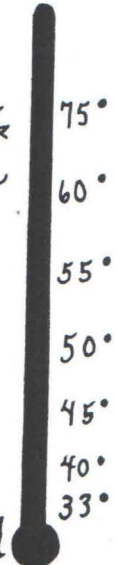
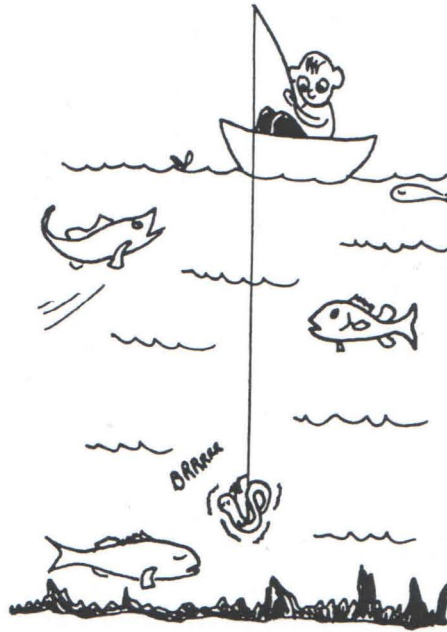
Large numbers of birds perched on wires, tree limbs, bridge girders or any other handy resting spot indicate bad weather is approaching, says the Johnson Motor News Bureau. Low pressure, an indication of bad weather, makes it difficult for them to fly.

**All About Fish**

(Continued from page 8)

has hit the water before you start to retrieve it. Fish are very near-sighted and chances are will not see the lure hit the water, but the vibrations of it hitting the water will make him curious enough to swim a little closer and look it over.

Any good angler must know that one cannot learn to fish by simply reading a book or talking to a friend. Fishing luck depends solely upon the individual's experience and his desires to better his fishing ability. Nothing can guarantee you catching fish. The "tips and points" that have been discussed here are only a few of the very basic things that go into taking a good creel. The Kansas Forestry, Fish and Game Commission sincerely hopes that this information will be of some help to you on your next fishing trip.



FISH FOR ME IN  
TEMPERATE WATER—  
NOT TOO HOT AND  
NOT TOO COLD!



**Fish Records Continue to Fall**

The latest record to "worm" its way into the official Kansas fish records file is a "bodacious buster" to say the least. Any time you can catch a fish which falls short of a world record by only 6½ ounces, you have justified many a brag session.

The fish which did the trick was a white bass weighing 4 pounds, 11½ ounces and the fellow to receive the plaudits is Ray Cleghorn of Eureka, Kansas. On April 12 of this year, Cleghorn was fishing in Fall River Reservoir when the whopper struck his Abu spinner.

Weighed later that day on state inspected grocery store scales, the 20½-inch fish brought another honor to Greenwood county. Already, this county has produced the record bullhead and white crappie. As we informed you in the past, both the just-mentioned records are held by the same man who is Frank Miller, also of Eureka.

The world's record white bass was taken at Grenada Dam, Mis-



Ray Cleghorn displays his record white bass.

issippi in July, 1960 and weighed 5 lbs., 2 ozs. with the Kansas record so near this size, who knows, the next world record might come from Midway, U. S. A.

**Hawks**

(Continued from page 18)



Immature Cooper's Hawk

Learn to identify the various hawks in your vicinity and observe their food habits.

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# SNAKE BITE FIRST AID +



## Snake Bite First Aid

Giving first aid to a snake bite victim can be very dangerous if the person administering it does not know what he is doing. Before one attempts to give first aid for a snake bite, he should understand the effect of the poison to the body.

The poison of the "pit vipers" affects the blood and any cells with which it comes into contact. Normally, it is injected into spaces between the cells and is slowly swept along in the lymphatic system toward the heart. As it is carried along, it breaks down many cells, especially those of vessel walls and thus contributes to the accumulation of a great deal of lymphatic ooze. Thus, it is that considerable swelling occurs at the site of the bite of one of these snakes. The swelling accompanies the venom as it moves toward the heart. The venom breaks down the red blood cells as well as other cells. If death ensues, which is a rare occurrence now, it is brought about chiefly by the loss of too many red blood

cells and resultant asphyxiation through the lack of oxygen which these cells normally carry to the body tissues. If, by chance, the venom is injected directly into the big vessels of the blood circulatory system, it comes into immediate contact with many red blood cells; these are broken down rapidly and death may follow in a few minutes. The action is greatly slowed if the venom is injected into the spaces between the cells and is carried into the blood circulation by the slow movement of the lymph. Fortunately, this is the way the venom is most often received.

First aid to the extent described should be in the mind of every one who is exposed to possible snake-bite. Ordinarily, the treatment outlined is sufficient until the time when a doctor is reached. If at all possible, get the victim to a doctor immediately.

(1) Sterilize the skin over the area of the bite and with a sharp knife or razor blade, also sterilized, make cross cuts over each fang mark at least a quarter of an inch deep. Any standard antiseptic such as iodine or mercurochrome may be

used for sterilization. If an antiseptic is not available, use the flame from a match.

(2) Do not run or do anything that will speed up circulation. Do not use whiskey or other forms of alcohol internally.

(3) Apply a tourniquet between the bite and the heart. Do not tie it too tight. Soft rubber tubing, such as that furnished with the various snakebite kits, makes the best tourniquet, but a shoestring, handkerchief or necktie will do.

(4) Apply suction to the incision. If the small rubber bulbs supplied with the kits for this purpose are not available, the mouth can be used. There is no danger if there are no cuts or sores in the mouth or on the lips. The venom must get into the blood stream to cause harm.

(5) Continue the suction, loosening the tourniquet every ten minutes for a few seconds. As swelling progresses, the tourniquet should be moved and kept just above it and just tight enough to retard, but not obstruct, the flow of blood in the veins. Great harm may result if it is too tight. It should be loose enough to allow a finger to be slipped under it easily.

(6) Get to a doctor or hospital as quickly as possible. Meanwhile, continue suction.

(7) If antivenin is available, after about one hour of suction, inject five ampoules (50 cc.) directly into the bite and the surrounding areas.

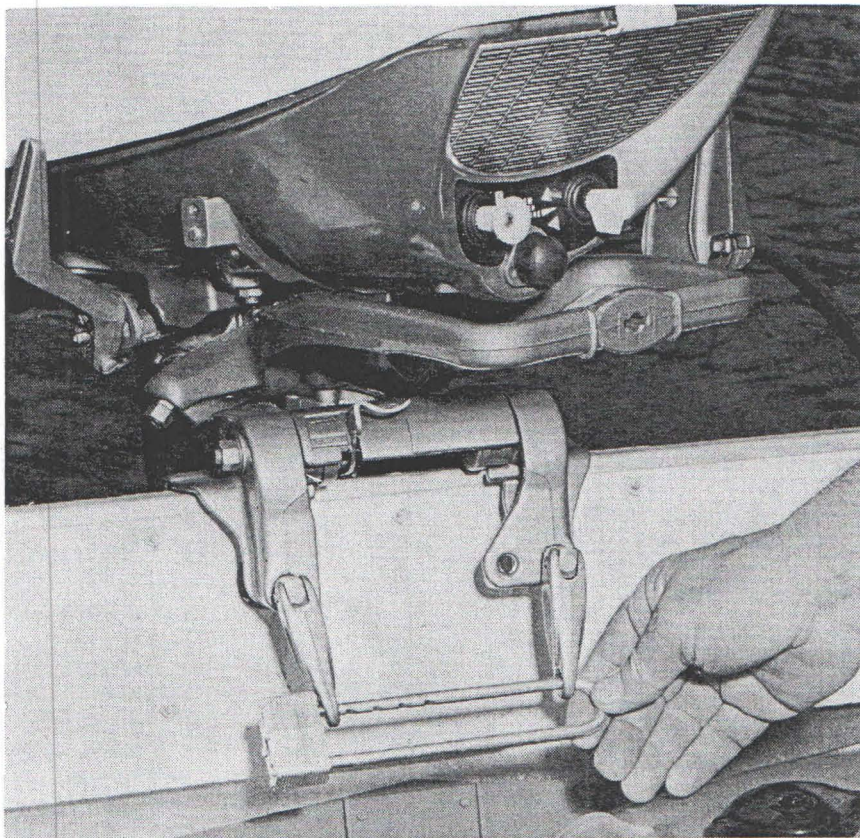
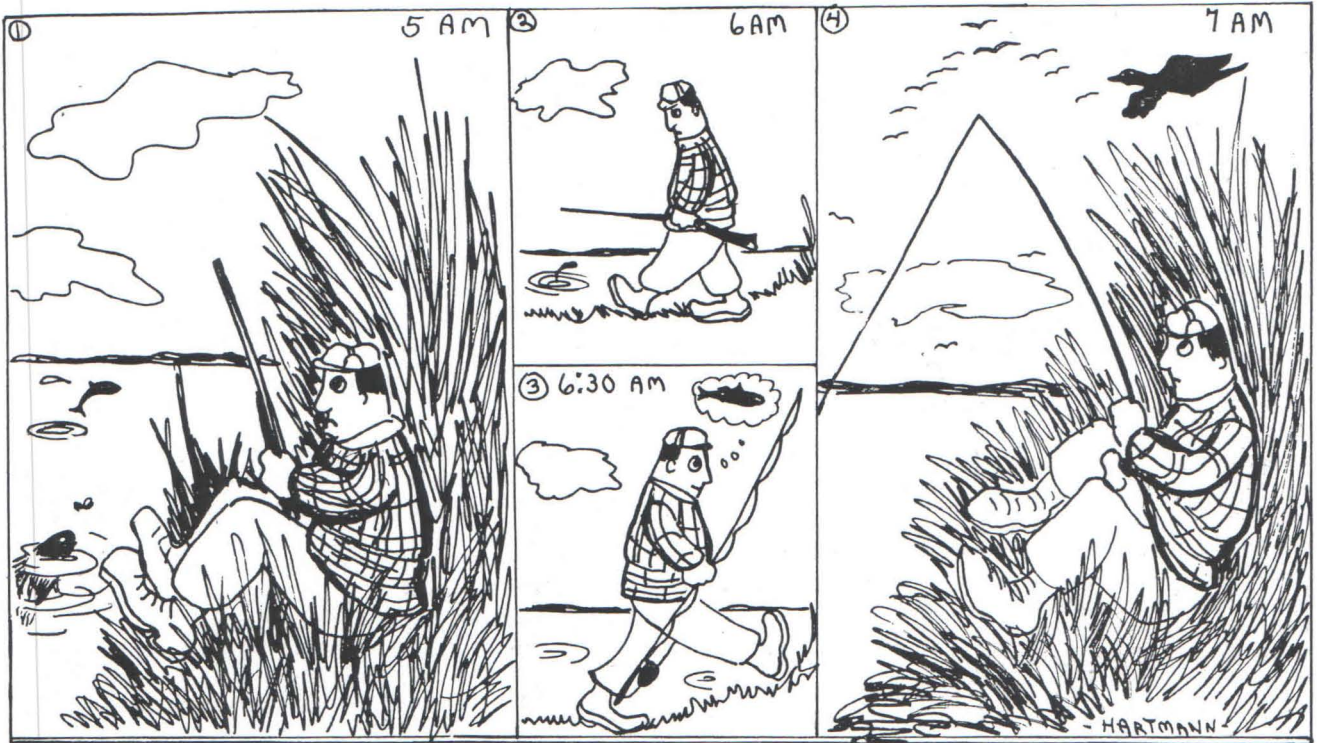
(8) If an antivenin has been given as above, wait one hour before resuming suction; otherwise, continue the active suction treatment.

By this time, you should have reached a physician. If not, continue suction for at least fifteen hours.

It should be strongly emphasized that a snake-bitten person should be taken to a physician or a hospital at once, if possible. Only a physician is qualified to meet emergencies that may arise during treatment.

## Keep Motor Upright

If you remove your outboard motor from the boat after each outing, Evinrude engineers suggests that you hold it in an upright position for a few moments before putting it into your car trunk or laying it down. This will allow water to drain from the lower unit and keep it from entering the cylinder and crankcase through the exhaust ports.



A regular bicycle lock can be effectively used to discourage outboard motor theft. To attach the lock, tighten the stern bracket clamp screw handles until they point downward. Then pass the lock through the holes provided in both handles. The motor cannot be removed from the boat without first disturbing the lock.

## PROTECT AMERICA'S CLEAN WATER



WATER POLLUTION CONTROL

### Source of Ice

A handy way of keeping food and cold drinks cold on boat outings is to fill a quart carton with water, pop into the freezer and remove when frozen—a neat source of ice. When it melts you have ice cold fresh water, says the Johnson Motor News Bureau.



# SUNRISE-SUNSET TABLE (C. S. T.)

Wichita								Dodge City									
DAY	September		October		November		December		DAY	September		October		November		December	
	SR	SS	SR	SS	SR	SS	SR	SS		SR	SS	SR	SS	SR	SS	SR	SS
1	5:58	6:59	6:24	6:13	6:54	5:31	7:25	5:11	1	6:09	7:10	6:35	6:23	7:05	5:42	7:36	5:21
2	5:59	6:58	6:25	6:11	6:55	5:30	7:25	5:11	2	6:10	7:08	6:36	6:22	7:06	5:41	7:37	5:21
3	6:00	6:56	6:26	6:10	6:56	5:29	7:26	5:11	3	6:11	7:07	6:37	6:20	7:07	5:40	7:38	5:21
4	6:02	6:54	6:27	6:08	6:57	5:28	7:27	5:11	4	6:12	7:05	6:38	6:19	7:08	5:38	7:39	5:21
5	6:02	6:53	6:27	6:07	6:58	5:27	7:29	5:10	5	6:13	7:04	6:39	6:17	7:09	5:37	7:40	5:21
6	6:03	6:51	6:29	6:05	6:59	5:26	7:30	5:10	6	6:14	7:02	6:40	6:16	7:10	5:36	7:41	5:21
7	6:04	6:50	6:30	6:03	7:00	5:25	7:31	5:10	7	6:15	7:01	6:40	6:14	7:11	5:36	7:42	5:21
8	6:05	6:48	6:31	6:02	7:01	5:24	7:32	5:10	8	6:15	6:59	6:41	6:13	7:12	5:35	7:43	5:21
9	6:05	6:47	6:31	6:01	7:02	5:23	7:32	5:10	9	6:16	6:58	6:42	6:12	7:13	5:34	7:43	5:21
10	6:07	6:45	6:33	5:59	7:03	5:22	7:33	5:11	10	6:17	6:56	6:43	6:10	7:14	5:33	7:44	5:21
11	6:07	6:43	6:33	5:58	7:04	5:22	7:33	5:11	11	6:18	6:54	6:44	6:09	7:15	5:32	7:45	5:21
12	6:08	6:42	6:35	5:56	7:05	5:21	7:35	5:11	12	6:19	6:53	6:45	6:07	7:17	5:31	7:46	5:21
13	6:08	6:41	6:36	5:55	7:06	5:20	7:36	5:11	13	6:20	6:51	6:46	6:06	7:18	5:30	7:46	5:22
14	6:10	6:39	6:36	5:53	7:07	5:19	7:36	5:11	14	6:20	6:50	6:47	6:04	7:19	5:30	7:47	5:22
15	6:11	6:37	6:37	5:52	7:08	5:19	7:37	5:12	15	6:21	6:48	6:48	6:03	7:20	5:29	7:48	5:22
16	6:12	6:36	6:37	5:51	7:09	5:18	7:38	5:12	16	6:22	6:47	6:49	6:02	7:21	5:28	7:49	5:22
17	6:12	6:34	6:39	5:49	7:10	5:17	7:38	5:12	17	6:23	6:45	6:50	6:00	7:22	5:27	7:49	5:23
18	6:13	6:33	6:40	5:48	7:12	5:16	7:39	5:13	18	6:24	6:44	6:51	5:59	7:23	5:27	7:50	5:23
19	6:14	6:31	6:41	5:47	7:13	5:16	7:39	5:13	19	6:25	6:42	6:52	5:58	7:24	5:26	7:50	5:23
20	6:15	6:30	6:42	5:45	7:15	5:15	7:39	5:13	20	6:26	6:40	6:53	5:56	7:25	5:26	7:51	5:24
21	6:16	6:28	6:43	5:44	7:15	5:15	7:40	5:14	21	6:26	6:39	6:54	5:55	7:26	5:25	7:52	5:24
22	6:16	6:27	6:44	5:43	7:17	5:14	7:40	5:14	22	6:27	6:37	6:55	5:54	7:27	5:25	7:52	5:25
23	6:17	6:25	6:45	5:41	7:17	5:14	7:41	5:15	23	6:28	6:36	6:56	5:52	7:28	5:24	7:52	5:25
24	6:18	6:23	6:46	5:40	7:19	5:13	7:41	5:15	24	6:29	6:34	6:57	5:51	7:29	5:24	7:53	5:26
25	6:19	6:22	6:47	5:39	7:19	5:13	7:42	5:16	25	6:30	6:33	6:58	5:50	7:30	5:23	7:53	5:27
26	6:20	6:20	6:48	5:38	7:21	5:12	7:42	5:17	26	6:31	6:31	6:49	5:49	7:31	5:23	7:54	5:27
27	6:21	6:19	6:49	5:37	7:22	5:12	7:42	5:17	27	6:32	6:30	7:00	5:47	7:32	5:22	7:54	5:28
28	6:22	6:17	6:50	5:35	7:22	5:12	7:43	5:18	28	6:32	6:28	7:01	5:46	7:33	5:22	7:54	5:29
29	6:22	6:16	6:51	5:34	7:23	5:11	7:44	5:19	29	6:33	6:27	7:02	5:45	7:34	5:22	7:55	5:29
30	6:23	6:14	6:52	5:33	7:24	5:11	7:44	5:19	30	6:34	6:25	7:03	5:44	7:35	5:22	7:55	5:30
31			6:52	5:32			7:44	5:20	31			7:04	5:43			7:55	5:31

(For each 15 miles west, *add* one minute; for each 15 miles east, *subtract* one minute.)