

# IOWA CONSERVATIONIST

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## THE MYSTERIOUS MIGRATORY EEL

### BATS IN THE REFRIGERATOR

By Jean Strong

You've heard it said that some people have bats in their belfry, but there is a young Marion couple who have bats in their refrigerator.

"Collecting bats is sort of a hobby with me," stocky Glen Sanderson explained. And since captive bats are very difficult to feed, he put a couple of them in the refrigerator the other day to hibernate until he gets a chance to stuff them.

The bats are probably just as comfortable in the paper sack behind the milk bottles as they were in the Maquoketa Cave where Sanderson caught them.

Unusual? For some people maybe it does seem unusual, but young Sanderson's interest in bats is prompted by his work as game biologist with the Iowa Conservation Commission.

Sanderson probably is the only collector of bats in Iowa, and you must agree that his pretty wife, Beverly, is the most understanding "little woman" in the state.

Not only does she tolerate his hobby and work, she helps him—and she likes it. And, in case you're wondering, that sort of situation seems to make for a happy homelife for these two.

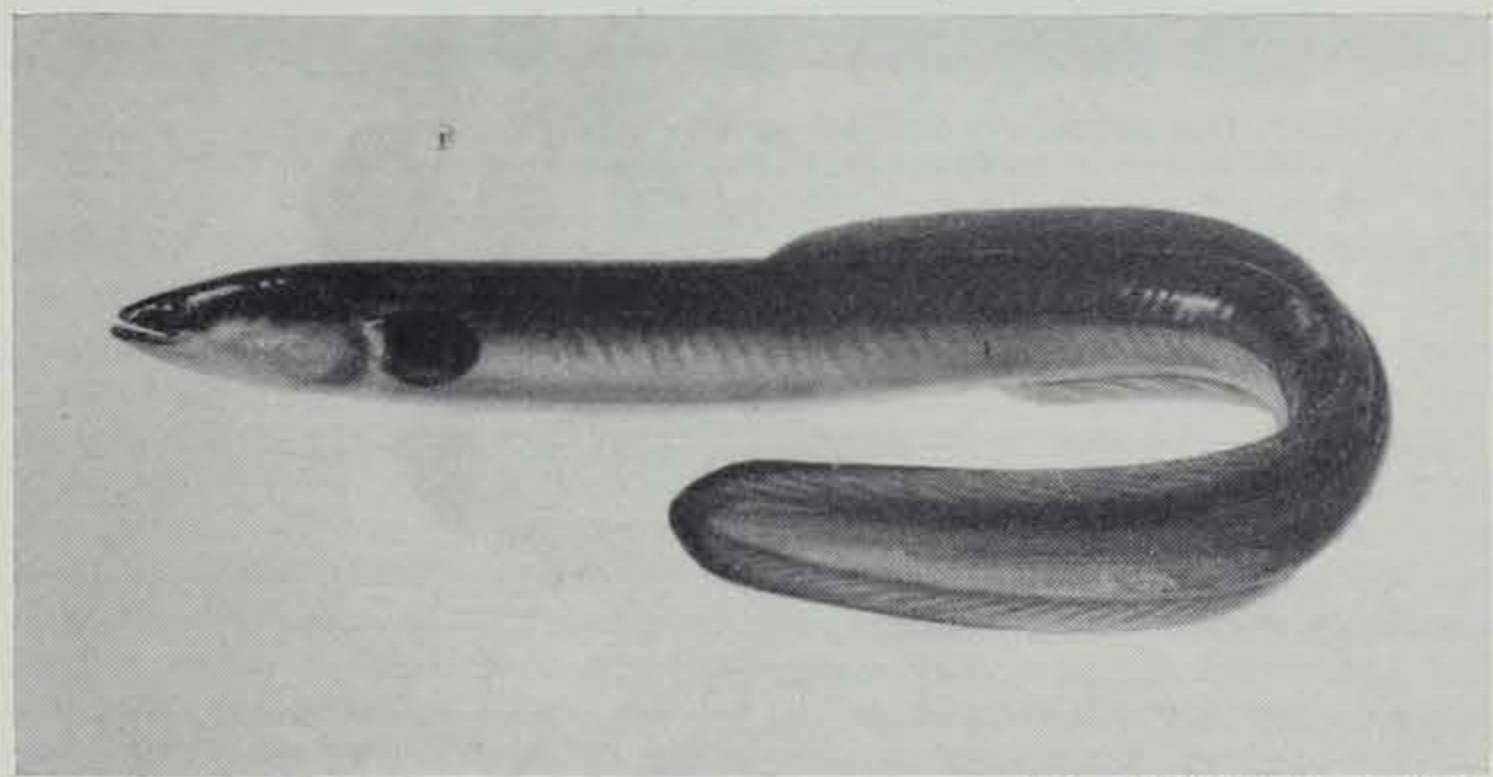
They live at 786 Fifth Avenue in a home which originally was built for a garage. But as the housing shortage grew more acute in Marion the garage was remodeled into a comfortable, though small home and office for the young couple. Sanderson has his office on the second floor.

The two met in Manitoba, Canada, in 1947 where Glen, (a student from the University of Missouri) had a summer job as research assistant at a wildlife station.

Beverly, a schoolteacher from Toronto, was summering at the station as assistant to her brother, who was the wildlife photographer.

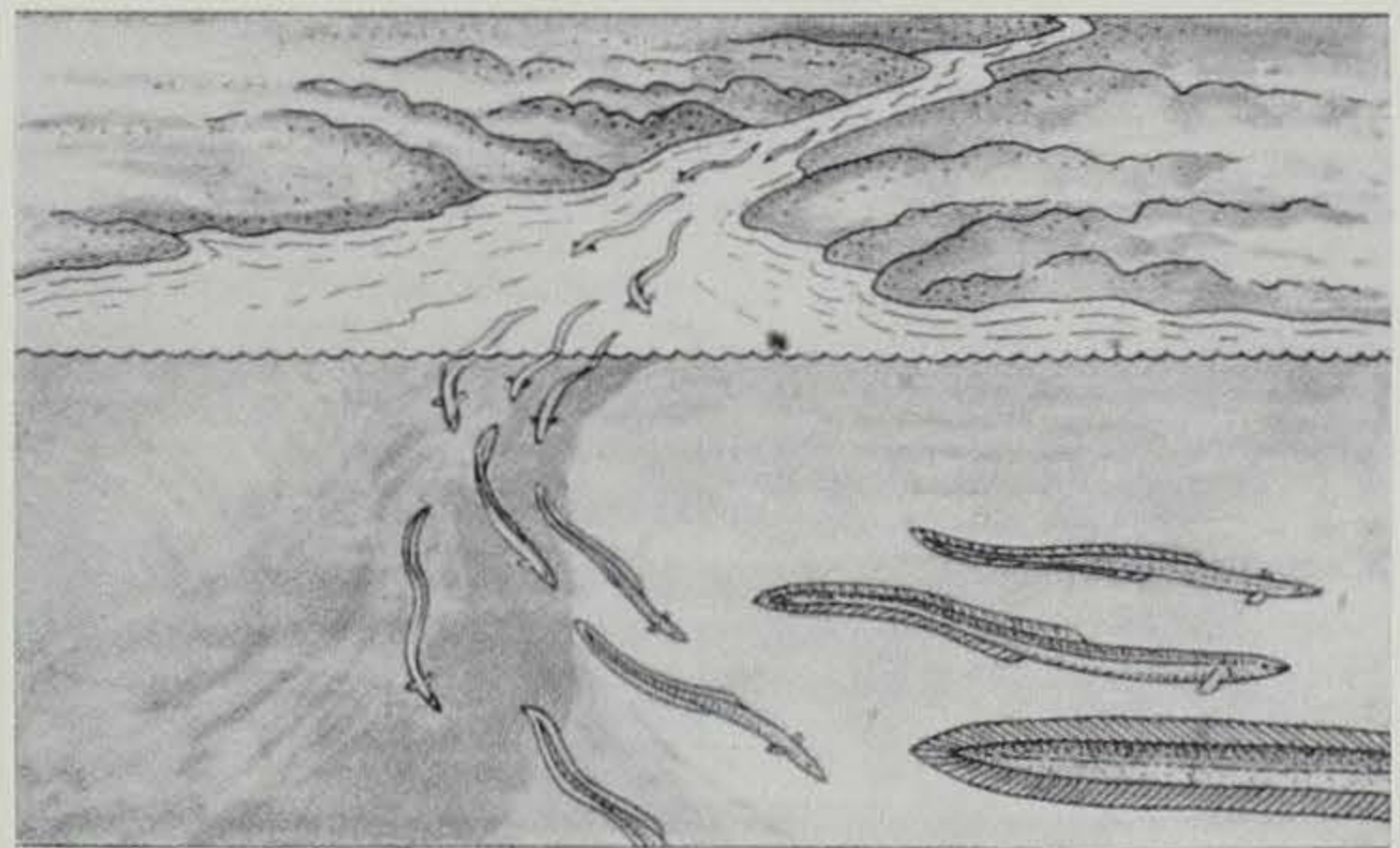
But after meeting Glen, her main

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Fish and Wildlife Service Photo.

Of all the fish known to mankind, none has puzzled scientists for so long a time as have the fresh-water eels of Europe and America.



Audubon Magazine Illustration.

Each autumn, vast numbers of eels move downstream to the sea never to return, for no adult eel has ever been known to revisit its fresh-water home.

By Paul Bulla

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Audubon Magazine

Off the North American continent, southeast of Bermuda and northeast of Puerto Rico, lies a tract of sluggish water known to mariners as the Sargasso Sea. Here, according to legend, the Gulf Stream is born and here below the weed-choked surface is the breeding and spawning grounds of the fresh-water eel.

In this sea within a sea they are born, and here, after years in far places, they return to reproduce and to die, for no spent eels have ever been seen, and adult eels have never been known to run upstream.

Of all fish known to mankind, none has a more remarkable life history, and none has puzzled scientists for so long a time as have the fresh-water eels of the rivers and lakes of Europe and America. Down through the centuries they have been a food delicacy in European and Mediterranean countries, but their migratory habits and method of propagation remained unexplained. Men knew that each autumn vast numbers of eels moved downstream to the sea, where many were caught by fishermen awaiting their migration, but those that avoided capture moved out into the ocean, never to return, for no adult eel was ever seen returning to its fresh-water home.

In the spring and summer of each succeeding year, after the adult eels' fall migration, tiny eel-like creatures appeared along the coast of Europe and moved through the Straits of Gibraltar into the Mediterranean. These young eels, or "elvers" were incorrectly assumed to be the offspring of the adult eels which had gone down the rivers the previous autumn. Later the elvers entered the fresh-water streams and rivers that ran down to the sea, moving upstream to the interior of European countries where they grew to maturity. Scientists were further puzzled as to how, when, and where young eels were born, because the eggs of eels had never

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## SNAPPERS AND SOFT-SHELLS

By Robert B. Moorman and  
Kenneth D. Carlander  
Iowa State College

Unpopular in the pond but welcome at the dinner table! These phrases aptly describe three of our Iowa turtles. For they are noted for their vicious and savage temperament, and at the same time are almost as famous for their eating qualities. These three are the common snapping turtle (*Chelydra serpentina serpentina*), the spiny soft-shelled turtle (*Amyda spini-*

*fera spinifera*) and the spineless soft-shelled turtle (*Amyda muticus*).

Although not the most common turtle in Iowa, the snapping turtle is probably the best known. The horny shields of the upper shell, the relatively long tail with its crest of horny plates and the very small lower shell are familiar sights about Iowa's water areas. A more complete description would include mention of the large pow-

(Continued on page 135)

## Iowa Conservationist

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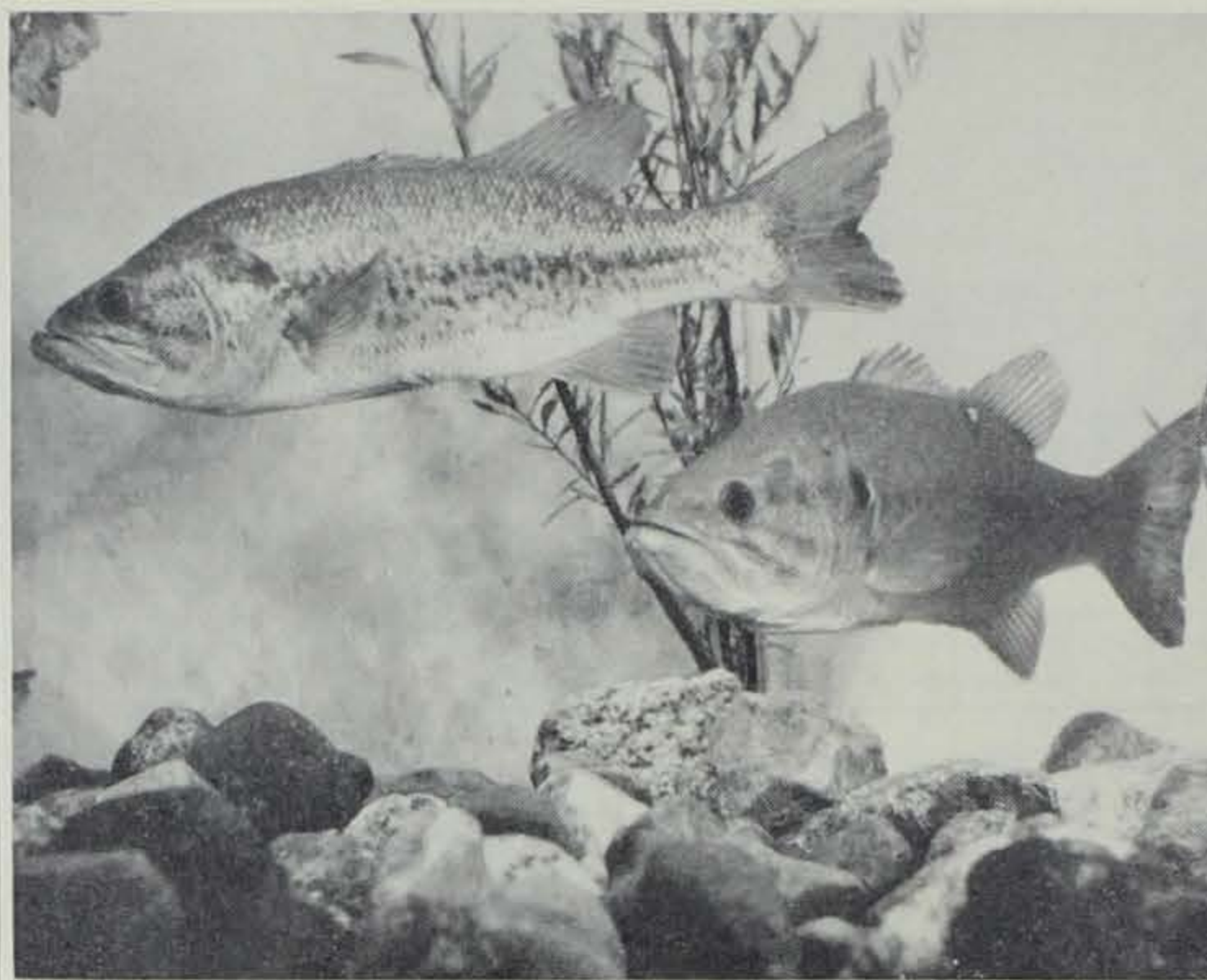
## NATIONAL WILDLIFE WEEK

Since its inception by presidential proclamation in 1938, National Wildlife week has been used as a symbol to point out the urgency of conserving, protecting and restoring our fast diminishing store of natural resources. For decades, we have been digging deeper and farther into our storehouse of natural resources. Four billion tons of soil are being washed away each year, our forests are being cut down 50 per cent faster each year than we grow them, our waters are getting more and more polluted and the drain on other resources is equally appalling.

This year, with a national emergency upon us, the need for a carefully planned program of wildlife protection is doubled. As the keystone to this program, we find conservation education. For too long has an apathetic public smiled tolerantly, sympathetically and discouragingly whenever a professional conservationist begins to tell of the far reaching values of conservation. This attitude is fostered to a very large extent by a complete misconception of the aims of conservationists.

All too few have paused long enough to hear the true story of a balance between nature and man, between animals and forage areas, between forest land and flood areas, between supply and demand as a businessman might describe it. This then is the true aim of conservation, so to balance the supply of wildlife that it will neither grow so abundant as to destroy itself by impossible demands on space and forage nor to allow the demands of thoughtless hunters, businessmen, farmers, or just plain you and me to reduce any of our God-given heritage to the point of annihilation.

National Wildlife week is dedicated to spreading this information to all walks of life. To point out how conservation, or its lack, has its effects on all people, city dwellers or country folks, on the dust bowl in Texas or Oklahoma, or the flood zone of the great Mississippi. —Davenport Democrat.



Jim Sherman Photo.

It is probable that largemouth bass are able to distinguish among colors in about the same manner as would a human being looking through a yellow filter.

## THE COLOR QUESTION

By Tom Farley

Can you fool a fish with colors? This reasonable question has provoked one of the longest drawn out controversies in angling. No one knows who brought the question up for the first time—or when; it has been kicked around for at least a century, and perhaps since the inception of sport fishing.

Some anglers maintain that fish are so sensitive to colors that you can put down a trout rise, for example, simply by switching to a different shade of the same fly pattern you had been using with success. And they'll point to a mass of reports based on scientific experiments which show that fish have excellent color-perception.

Other scientists, however, have muddled up the question thoroughly by proving—to themselves and to a great many others—that all fish are color-blind!

Who is right?

Well, back in the 1880's the German scientist Graber ran exhaustive tests on several species and concluded that fish were definitely attracted by certain colored lights and food. Another German, Bauer, conducted similar experiments in 1910 and 1911 and came to the same decision.

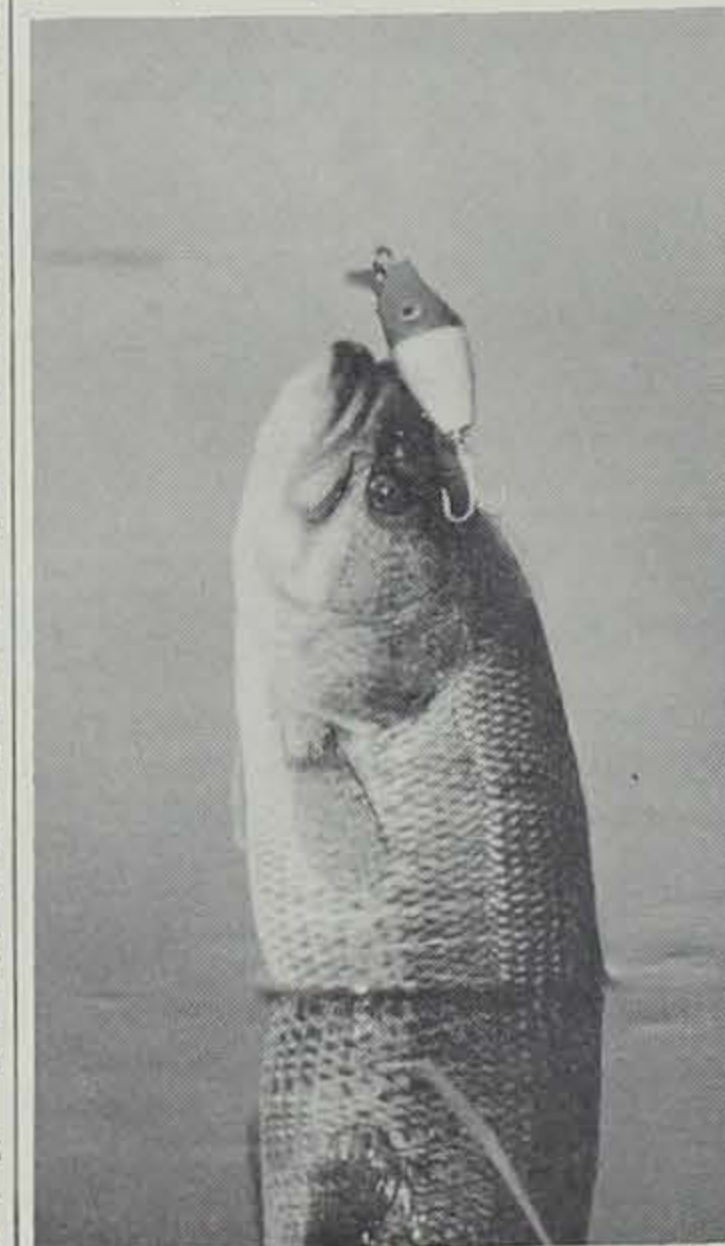
At about the time Bauer was backing up Graber's theory, a scientist named Hess was making some tests of his own. When he completed them, in 1914, he announced that his findings disagreed sharply with those of Graber and Bauer. Hess concluded that a fish's vision was similar to that of a color-blind man; that its response to colors depended upon the color's intensity—not its hue.

Two more scientists, Schiemenz and Wolff, looked into the squabble over fishes' color perception in the mid-'20's and stated after a time that a minnow could distin-

guish among about twenty colors of the visible spectrum.

Dr. Frank A. Brown, working with the Illinois Natural History Survey, made nearly 15,000 experiments with the color perception of largemouth bass. In one of the tests he lowered a glass tube, wrapped with a colored band, into a tank of the fish. When a bass swam near it he was rewarded with food. Then other colors were wrapped around tubes which were placed in the tank—but when a bass investigated these he was given a small electric shock. After a few experiences with this treatment most of the fish could distinguish between strong shades of red, yellow, green, and blue.

Dr. Brown decided: "It is probable that largemouth bass are able to distinguish among colors in about the same manner as would a human being with perfectly nor-



Jim Sherman Photo.

The fishing tackle business has reacted to the color argument with enthusiasm.

mal vision—if he were looking through a yellowish filter."

One of the most devastating arguments in favor of fishes' ability to recognize colors came out of tests conducted by the scientists Kottgen and Abelsdorf. In all eyes—human, fish, and other animal—the only identified substance which permits color perception is a chemical known as rhodopsin; by comparative tests of rhodopsin from human and fish eyes, these scientists found that each had virtually the same qualities.

The fishing tackle business has reacted to the color argument with enthusiasm. Anglers can buy lures in practically any color of the spectrum for the purpose of attracting fish. A whole lot less attention has been paid to another important color angle, however—the use of color in lines to hide their presence in the water.

Many dry-fly fishermen will use only light colors in their lines. They believe that since a fish normally sees a dry-fly line as it lies on top of the water—silhouetted against the sky—light colors are less noticeable and thus less likely to spook the quarry.

Bait-casting lines are, of course, a different story. They have no floating qualities and they are much more finely calibrated than fly lines. Therefore, the possibility of their casting a shadow in the water is considerably lessened. However, the color of a bait-casting line may very well be of far greater importance than that of a fly line. This is because a sunken bait-line comes directly into a fish's view.

By far the most commonly used color in bait-lines is, at present, black. There is no apparent explanation for this; black is certainly not a shade calculated to blend in with all types of water. Nor is it a shade which fish can't see. If bass, for example, were totally oblivious to black, there would be small point indeed to fishing for them with black plugs—which actually are notable bass killers under some conditions.

One fishing tackle manufacturer, The Horton Bristol Co., has engaged in extensive research and brought out a line which they say will match water colors and conditions—the variations which are encountered among lake, creek, river, pond, and ocean fishing. The idea behind the blended colors is, of course, to disguise the fact that the lure is connected to a line which in turn is connected to a fisherman—circumstances which fish regard with understandable concern.

A good many fishermen will embrace the idea of blended lines because it agrees exactly with what they have been saying all along.

The others—the ones who scout the notion that fish can be fooled with color? They'll wait and see. After all, this squabble has been going on for generations.



Jim Sherman Photo.

These wild whistling swans have stopped to bathe and preen on Lakin Slough in Guthrie County, 54 miles northwest of Des Moines.

## RECORD FLIGHT OF THE WHISTLING SWANS

For the first time in many years large flocks of whistling swans have stopped during spring migration in Iowa, apparently attracted by flooded river bottoms. Groups of from 12 birds upward have been reported from widely scattered areas. Largest single flock containing 41 birds was observed on the Wapsipinicon bottoms in Chickasaw County by Herb Eells, conservation officer.

Considerable numbers of whistling swans migrate over Iowa each year, but at great heights where they are seldom recognized. Each year, especially in the spring, a few stop on the inland lakes, generally in singles, pairs, or trios.

The whistling swan is not an Iowa nester. It raises its young in the Arctic region. The now very rare trumpeter swan was found nesting in this state when the early settlers moved into the natural lakes district of the north. The trumpeter became extinct in this

state, however, between 1875 and 1900.

The whistling swan is our largest waterfowl with a length of almost 60 inches and a weight up to 18 pounds.

### A FREE GUIDE TO EASY DOG CARE

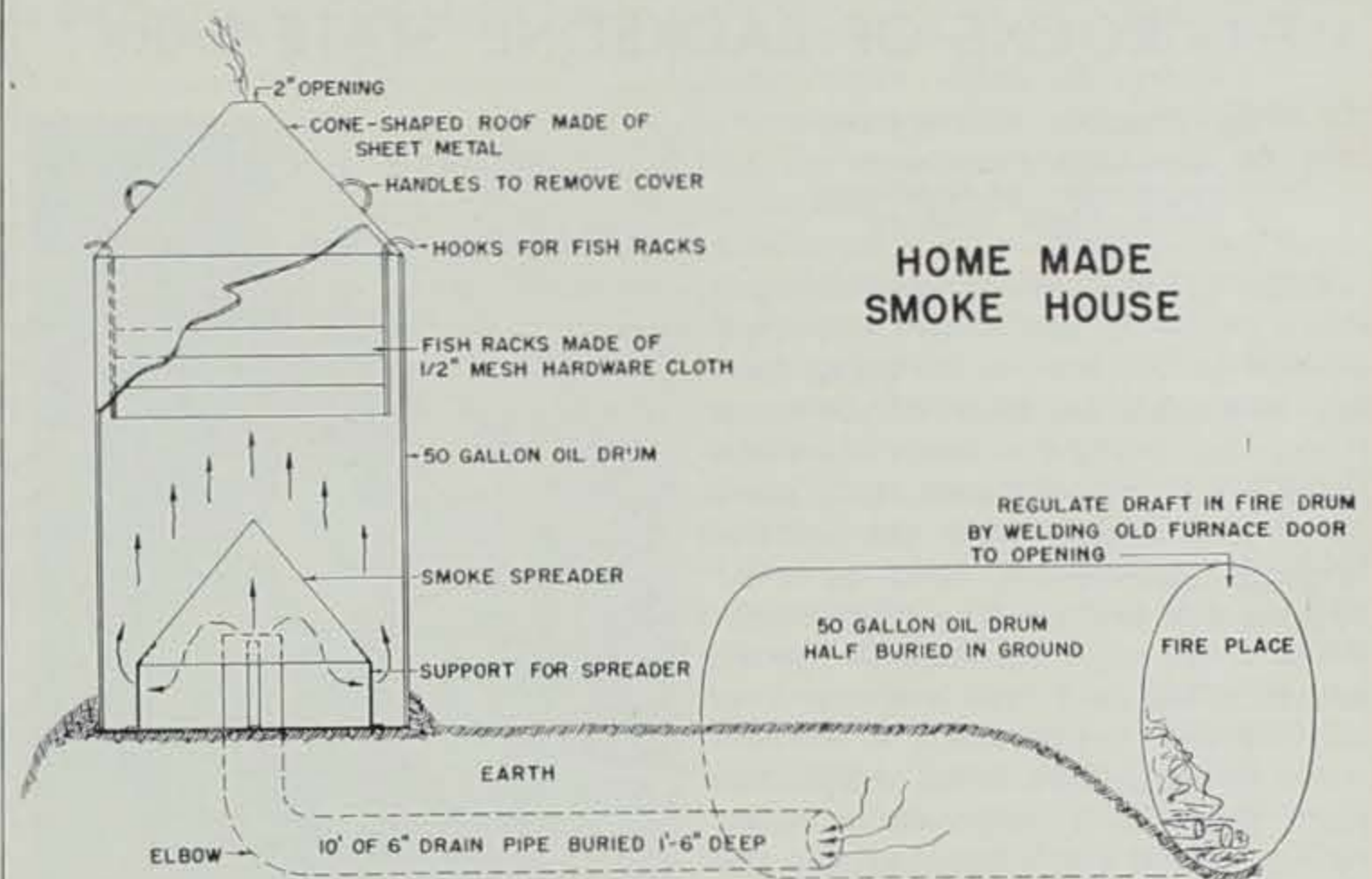
Tom Farley has hit the bulls-eye with a new free leaflet titled, "Guide to Easy Dog Care." This little, 12-page illustrated booklet will be a boon, especially to new dog owners. "Easy dog care is intended for people who are blessed with common sense, but who can use a few hints on how to make themselves and their dogs a little happier."

Write for a free copy to Tom Farley, *Guide to Easy Dog Care*, 551 Fifth Avenue, New York 17, N. Y.



Jim Sherman Photo.

Whistling swans in flight are things of rare beauty. With their pure white plumage, large size and long outstretched neck they can be confused with no other native bird.



## YOU CAN SMOKE FISH

By Curly Sharp

Where there's smoke — there's fire. But where there's smoke, fire and fish—something good to eat is cooking.

Ever eat smoked fish? Ever try smoking them yourself? You'll find smoked fish have a succulent smoked-tanged flavor all of their own and will provide a pleasant change from the usual methods of preparing them. Rough fish such as carp and buffalo are excellent and smoke up better than most game fish. Smoked sturgeon are also a delicacy when available.

Use only fresh-caught fish for smoking! Before they are ready for the smokehouse they must be cleaned, washed and thoroughly dry-salted overnight. Fish weighing over two pounds must be split so the fish will lay flat or may be cut in chunks. If you live near the Mississippi or Missouri river where there are commercial fishermen, you can buy carp all dressed and for a few cents a pound. We have a lot of fun getting our own with pole and line.

Scale the fish if you prefer but it is not necessary. (Do not skin fish.) We prefer to dry-salt them and use the following formula, or if available use Morton's Tender-Quick which is excellent, and all ready to use. Our formula is: 3 pounds salt—1 pound sugar—1 ounce saltpeter—mix all together well and rub on the flesh side of fish until they are covered with all they will hold. As they are salted, pack them in a clean earthen jar or crock. Sprinkle a little extra of the salt between each layer as they are packed in the jar and the same on the last fish put in. Store in a cool place overnight. When fish are removed the next morning wash thoroughly of all salt and slime. Drain for a few minutes and then arrange them skin side down on the racks in your smokehouse.

Any kind of hardwood may be used but we prefer maple or hickory. Never use pine!!! Fire should be kept small and steady. Start with a brisk fire then smolder it.

Keep fire low, smoking gently, so that the smoke rises steadily out of the opening in the smokehouse. A smokehouse should never get hot—never over 150°—you should be able to hold your hand inside without any discomfort. In 6 to 8 hours the fish should acquire a rich smoky-brown glaze, and the meat underneath should be a flaky white, separating easily from the bones. If you wish a little added flavor brush the fish the last hour or so lightly with dark Karo syrup. When done take them out and put on layers of heavy brown paper in a cool, dry place.

It's just as well to call in your friends because once the fish start coming out, they'll sure be there to help with the eating.

ONE LAST WARNING!! Fish prepared like this are dope! Once you've tasted them you're an addict, you're sunk!!!

### TROLLING WITH MOTOR-BOATS NOW LEGAL IN IOWA

The trolling bill recently signed by Governor William S. Beardsley has become law, and fishing by trolling with a motor has become legal in all state-owned waters in which fishing is permitted, except in artificial lakes of less than 100 acres. On the following artificial lakes, motors of five horsepower or less may be operated: Macbride, Beed's Lake, Lake Wapello, Swan Lake, Geode, Lake Darling, Union Grove, Three Fires, Ahquabi, Al-ler-ton, Backbone.

Artificial lakes open to fishing on which trolling or use of motors is prohibited include the following: Echo Valley, Osceola Reservoir, Springbrook, Pilot Knob, Pine Lake, Upper Pine Lake, Red Haw Hill, Lake Keomah, Mill Creek, Lacey-Keosauqua, Artesian Lake, Dead Man's Lake, Lucas Forest Lake, Walnut Woods, Arrowhead, Beaver Meadows, Heery Woods, Steamboat Rock, Coggon and Spring Lake.

On all natural lakes and streams on which fishing is permitted, there is no restriction on the size of motors that may be used for trolling.

## THE ROCKS OF BACKBONE STATE PARK

By Charles S. Gwynne  
Associate Professor  
Department of Geology  
Iowa State College

One of the most picturesque state parks in Iowa and one well known to all lovers of trout fishing is Backbone, near Strawberry Point in northwestern Delaware County. It was the first state park purchased and is also one of the largest, having an area of over two square miles. The Maquoketa River flows right through the park, and in doing so forms a sharp loop around the "backbone," a narrow ridge of limestone from which the park gets its name. From some places on the ridge one can see the Maquoketa flowing at its base on each side. It flows south on the west side and north on the east.

The solid rock which forms the "backbone" is one known to geologists as dolomite, a type of limestone. It directly underlies the soil and subsoil of all or parts of several counties of eastern Iowa, including Dubuque, Delaware, Jones, Jackson, Clinton and Scott.

This rock, like so many of the formations in Iowa, formed as a deposit of limey material in an ancient sea. This sea covered the land millions of years after the one in which the sediment of the rocks of Pike's Peak were laid down, and extended into Canada, and as far east as New York. The outcropping edges of the hardened deposits formed in this sea can be traced through eastern Wisconsin, north around Lake Huron, through southern Ontario, and across Niagara Falls into New York. The rock forms the rim at Niagara Falls, and so has been called by geologists the Niagara series.

The limey material deposited in seas such as this one is composed of the chemical substance calcium carbonate. If this hardens to rock it is plain limestone. However, many of these ancient deposits



Backbone, near Strawberry Point in Delaware County, is one of the most picturesque state parks in Iowa and well known to all lovers of trout fishing.

\* \* \* \* \*  
have been changed by chemical action of the sea water. They were partly converted to magnesium carbonate before hardening. Thus they became what are called dolomites, or dolomitic limestones. This is the case with the rock at Backbone State Park.

Long after Iowa and the surrounding states were lifted above the sea for the last time, glaciers covered this part of the world. They were like those of Greenland today, and were thousands of feet thick. When they melted, they left the drift, a jumbled mass of clay, sand, and stones. This drift was later covered by loess. This was deposited from the wind, following the melting of the glacier. The drift and loess are exposed in road-



The spectacular balanced rock in Backbone State Park is one of the strange forms left after millions of years of weathering.

cuts in the park. Many of the stones along the streams in the park are from the drift. They can be recognized because they differ in appearance from the dolomite.

The region in which Backbone lies has been subject to weathering and stream erosion for millions of years, both before and following the retreat of the ice. The Maquoketa River has cut a deep valley into the limestone in its course through the park area. Tributaries to the river also have cut valleys, and so the country is a hilly one. The sides of the valleys have steep cliffs of dolomite, made rough by irregular weathering. In places, huge blocks have separated, leaving deep crevices. Frost action has helped in this. Some blocks have fallen.

The dolomite carries the imprints of corals and other seawdwelling animals. One of these animals had two-shells, like a clam, and its imprints crowd the rock in some places. Many of the imprints are of the insides of the shells. They look like some sort of a nut, but of course are not.

The trout fisherman of the park will perhaps be disappointed to learn that there were no fish like those of the present in the ancient sea. It was even before the "Age of Fishes." But he should be pleased to recognize that he is fishing in an area founded upon the deposits of ancient seas, and that the fine park region has had a long and interesting history before it became his fishing ground.

### SWEET MARSH

Come the 1951 duck hunting season, the largest concentration of migratory waterfowl in Iowa may be found a mile east of Tripoli, a Bremer County town of 1,100 population.

There, in the lowlands of the Wapsipicon River valley, construction crews are working around the clock on what will be a huge man-made marsh to serve as a breeding grounds and sanctuary for water birds.

Here Iowa sportsmen will see tangible returns from the federal taxes they have been paying on sporting arms and ammunition.

This federal tax is levied under the Pittman-Robertson Act, which provides that the federal tax money collected will be prorated back to the states in direct proportion to the number of hunting licenses issued in the respective states.

The Pittman-Robertson appropriation provides that 25 per cent of the cost of the project must be paid by the state.

The state has acquired 1,700 acres of waste land for the project, of which approximately 1,000 acres will be covered with water ranging in depth from a few inches to possibly as deep as 12 feet in one location where an old lake bed creates a sizable depression.

The project is to be known as Sweet Marsh, named in honor of

Burton Sweet, Waverly attorney, who owned 600 acres of the land and whose father owned it before him.

Topography of the land selected was found by engineers to be ideal for the purpose.

All of the swamp will be located along the east bank of the Wapsie River.

Huge dikes will confine the waters of the swamp and will divide it into three areas, with each section containing slightly over 300 acres.

At the north end of the area an earthen dam is being thrown across Plum Creek, and waters of the stream will be impounded in an 80-acre reservoir that will supply water for the swamp during dry seasons.

Concrete spillways will be constructed in the dikes dividing the three sections of the swamp, permitting accurate control of water levels.

At the lower end of the project, a spillway will permit surplus water to flow through the dike and into the Wapsie River.

Under regulations covering Pittman-Robertson appropriations, a portion of the total area of any project must be maintained as wildlife refuge.

Hence Iowa duck hunters will be assured of at least 500 acres of marsh lands on which to build their blinds.

The balance of the marsh will be closed to shooting as a bird sanctuary.

The state will keep a full-time manager on duty at the marsh the year around. The man assigned to that job is Jack McSweeney, formerly assigned by the Iowa Conservation Commission to duty in the northwestern Iowa lakes area.

A good deal of the credit for the location selected for this first Pittman-Robertson project must go to the Wapsie Sportsmen's Club of Tripoli.

Probably no similar organization in the state can match this group in enthusiasm.

It boasts approximately 375 members. This includes practically every adult male in Tripoli, as well as farmers from miles around. Numerous members may also be found in such nearby Bremer County communities as Sumner, Frederika, Readlyn and Denver.

When members of the club conceived the idea of a vast duck marsh on the nearby Wapsie flats, they lost no time in getting state officials to Tripoli to inspect the site.

The enthusiasm of the Bremer County sportsmen apparently was contagious, for soon state conservation officials were pushing the project with equal enthusiasm. . . .

And although the swamp is located on the very doorstep of Tripoli, the editor of the *Sumner Gazette*, with commendable community spirit, always asserts that it is located seven and one-half miles west of Sumner.—*Waterloo Courier*.



Sportsmen are boys who have grown up under the proper guidance of a friend or father, who has steadied them as the leaves of life unfolded.

## HOW SPORTSMEN ARE BORN

I saw a little friend at the city dump the other day looking for rats. He was properly guided by a friend who helped him steady the gun, and the lad's father stood nearby. The boy (Sammy) didn't kill any rats, but he got some fundamentals on firearms in an orderly manner. His eyes sparkled at the prospect of shooting. That's the way good marksmen are born.

Fishermen, on the other hand, are born when they accidentally land a big fish. I recall the experience with my pal, Harvey, a student of philosophy. He reluctantly went fishing with me several years ago, but remained on the bank reading some of Hegel's output. His girl friend went in the boat with me, and hooked a huge pike which broke her pole, and caused much furore in the boat. Harvey

saw this and promptly foresook Hegel for Hilda-flickers. I believe he is today a better philosopher than he ever was before. I know some fellows that fish along the bank here in Bellevue; after landing a crippled catfish, become inveterate fishermen, and I'm not mentioning any names either.—*Bellevue Leader.*

## MULTIFLORA ROSE

If anyone has any doubts about multiflora rose being good cover and making a good fence, they can see the answer for themselves by going out to Walton Oaks, the Izaak Walton club grounds, located six miles northwest of Cedar Rapids on Glass road. The multiflora rose planting is located near the railroad, creek and rifle range. This stand is four years old, was planted in a very dry year, and is now thick enough to stop all traffic.—*Cedar Rapids Gazette.*

## PUSSY CAT, PUSSY CAT

*Displaying every feline grace, untamed,  
Your house cat stalks his prey my garden through.  
This picture should be circularly framed;  
My rifle's peep sight gives a charming view.*

—Edward S. Parker, M.D.

## ECHOES FROM THE PAST

By Rueben Babcock

Many foxes are being bagged in Chickasaw County, and occasionally a party of hunters will round up two or three in one hunt. Sixty-five or more years ago a fox was almost unknown in this part of the state; however, one was occasionally taken and it was a great curiosity.

Prairie wolves, sometimes called coyotes, were quite common, and occasionally one of the timber wolf family was seen. A few men had hounds, and these dogs would go out on a chase and in many instances bring a wolf to bay. When I was just a kid (I was born in 1873) the old timers were in the habit of telling us of being chased by wolves and how they had a hard fight to get safely home. These stories were told with variations; something like the fish stories that are told in these days.

Wildcats were numerous and once in a while a lynx was caught in a trap. My mother used to tell us kids (so I know it is a fact) that a blacksmith who worked for my father in a shop in Fayette County made a hobby of trapping wildcats, and like Frank Buck, he brought them back alive. He would take them from the trap by wrapping them in a buffalo robe, and such robes were plentiful.

Wildlife comes and goes. For instance, in the time spoken of there were no jackrabbits, and the opossum was not known hereabout until about thirty years ago. The beavers have made a comeback after having been a minus quantity for many years and they are building dams within ten miles of where this is being written.

An old resident, years ago, told me he had shot a deer just below the dam at the Old Red Mill at Waucoma. Recently a deer, in

daytime, crossed the bridge at that place, from east to west, and very deliberately made his approach to a small patch of woods just west of the town. This bridge is at the main four corners, in the business district of town. Badgers are seen quite frequently, and the raccoon, the woodchuck, and the fox and gray squirrels we have always with us, and likewise, the cottontail rabbit; however, the writer has not heard the mention of the flying squirrel for many years.

Oldsters tell of the flocks of blue pigeons that would come in flights that would cloud the sun. They have been extinct for many years. There was a time when there were pheasants, also called partridges which were never very numerous, and were infrequently bagged. The prairie chicken that once furnished real sport, and a relished food, are practically gone; however, with the last few years people have reported seeing a covey of the birds.

The quail have come and gone a dozen times, and they are scarce about here at the present writing.

The deer population of the state has been estimated at ten thousand, and Chickasaw County evidently has their fair share as practically every day somebody reports seeing one and sometimes as many as three in a herd.

## IOWA DEER INCREASE 52 PER CENT

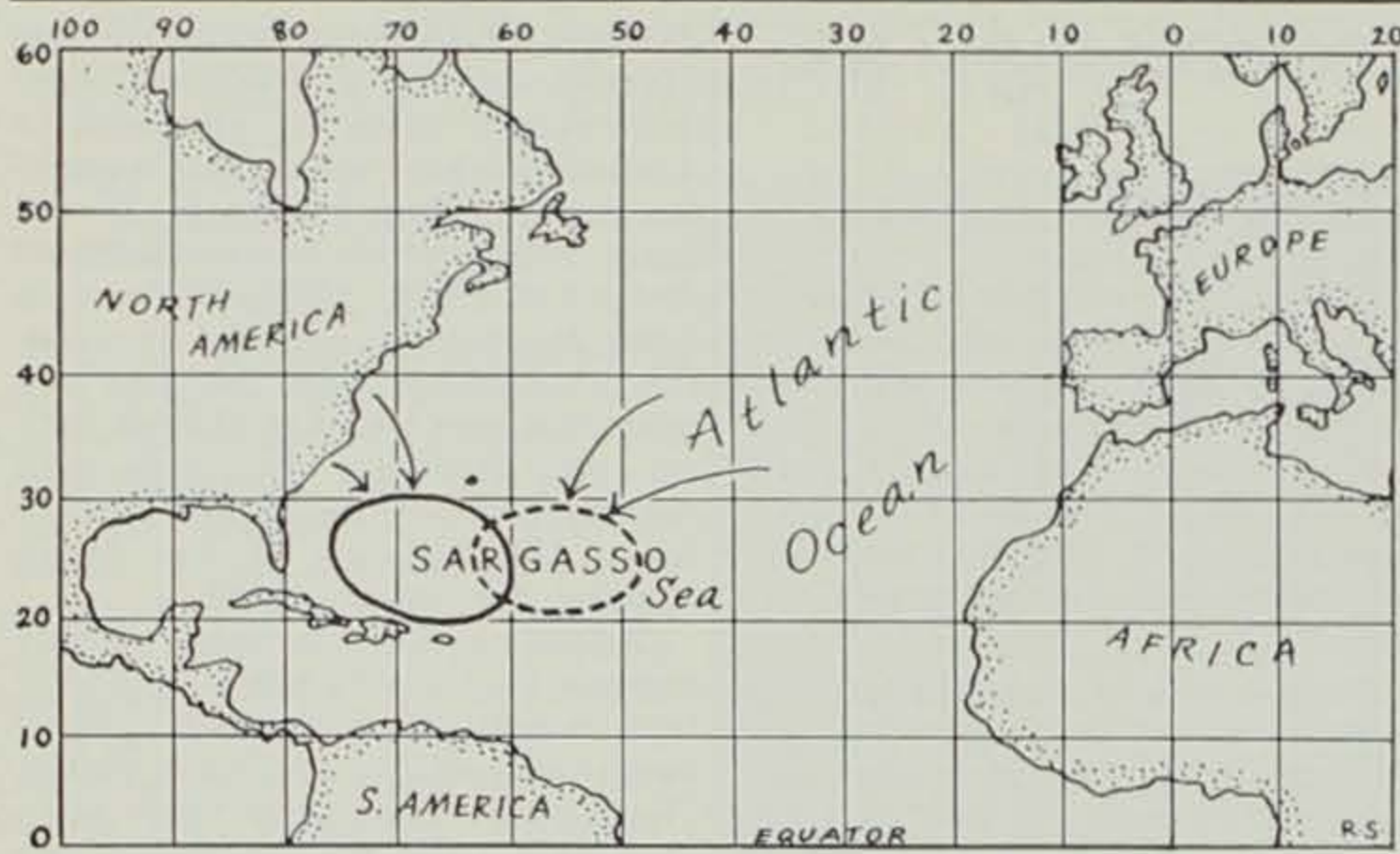
Iowa's deer population has increased approximately 52 per cent since 1950, according to Glen Sanderson, game biologist for the Conservation Commission. This information is obtained from a special survey conducted by conservation officers.

In 1947, 1,650 deer were reported. In 1950, 4,330. In 1951, the deer population had increased to 6,553.

The water courses still contain the major deer population; however, each county in the state has some deer.



"The quail have come and gone a dozen times and they are scarce about here at the present writing." Jim Sherman Photo.



The breeding and spawning grounds of both the European and American eel have been found southwest of Bermuda near the Sargasso Sea, the warmest water in the mid-Atlantic.

**Migratory Eel . . .**

(Continued from page 129) been found in the bodies of the adults, and males of the species had never been seen.

It was not until 1777 that the ovary of the eel was first recognized by a professor of anatomy at the University of Bologna, thus definitely establishing an eel female sex. Ninety-five years later the scientific discovery of a male eel was announced, but where the eels came from and how they were reproduced still remained a mystery. Then in 1846, a German, Johann Jakob Kaup, found in the sea a small ribbonlike fish with a tiny head. Placing the creature in a bottle of alcohol, he labeled it *Leptocephalus brevirostris*, after which the tiny creature seems to have been forgotten.

Half a century passed before two Italians, Gracchi and Calandrucci, found one of Kaup's little fish in the Mediterranean, but it was much larger and more fully developed than Kaup's fish had been. The Italian scientists identified their discovery as the young of the edible fresh-water eel that inhabited the streams of the European continent! Thus, the stage was set for the Danish scientist, Dr. Johann Schmidt.

For 15 years, starting in 1906, Schmidt towed nets from the Eng-

lish Channel to Chesapeake Bay on the North American coast, and from Greenland to Puerto Rico, collecting and correlating the sizes of eel larvae. He reasoned that the larvae were growing as they moved toward the coast and their fresh-water homes, away from the oceanic depths in which they were spawned. It followed, therefore, that the smaller the larvae found in any part of the ocean, the nearer such a specimen must be to the place where it was born. After years of tireless effort Schmidt was able, through this method, to fix the breeding and spawning grounds of the European eel, *Anguilla vulgaris*, and the American species, *Anguilla rostrata*, within the latitudes 20-30 degrees north and longitudes 60-78 degrees west, to the south and southwest of Bermuda near the Sargasso Sea, the warmest water in the mid-Atlantic. He further established that the European eel spawning beds overlapped those of the American species.

But this discovery uncovered only one phase in the life cycle of the eel. During the period of growth in the fresh-waters of their home continents, eels are a uniform green to yellowish-brown above, shading to a pale dirty white beneath, and are called "yellow eels." The migratory instinct asserts it-

self at the breeding stage in autumn, when fresh-water eels are between the ages of 7 and 15 years, at which time the sides of their bodies take on a metallic sheen and their backs become a deep black. This is their breeding dress, and they are then known as "silver eels."

Upon assuming this dress certain other marked changes take place in the females. Their snouts become sharp, the eyes larger, and the pectoral fins, just back of the gill slits, more pointed than usual. Although they have been voracious eaters all of their lives, they cease feeding at this time. Leaving the lakes and rivers in which they lived, they move downstream to the sea. While these visible changes have been taking place, it is not until they have reached salt water that their ovaries mature. Upon arriving in the bays and estuaries of their home shores they are joined by the mature males that have been living there, and together they start the journey back to their birthplace in the Atlantic Ocean off the North American coast.

It is not known how far below the surface migrating eels swim, but somewhere beyond the continental shelf they pass from the range of human observation. Neither is it known how long it takes them to reach their destination, but it has been estimated that the European eel requires about six months to make the crossing, swimming at the rate of one-half mile an hour. As the migration from the European continent begins in early autumn, and spawning starts in early spring at the breeding grounds, this estimate seems to be justified.

Upon arrival at the breeding grounds near the Sargasso Sea, the European species shares its spawning beds, to some extent, with its American cousin whose beds overlap its own and extend westward from it. From Labrador southward to Panama and the West Indies, the "silver eels" from America have journeyed to the rendezvous in from one to two months after reaching salt water. Hundreds of fathoms below the seaweed-clogged surface of this tropical sea, the eggs of both species are spawned; the females each produce from 5-20 million transparent, almost colorless, tiny eggs.

A week or so after fertilization the eggs are hatched and larvae of both species begin life with a length of about one-fourth inch. Ribbonlike, and so transparent that newsprint can be read through their bodies, they float for a time from 600 to 900 feet below the surface. Later they rise into the upper layers of water and slowly move northward. Reaching the latitude of Bermuda a separation occurs. The larvae of the European species drift eastward with the Gulf Stream on their long journey back to their native shores, feeding on plankton as they go,

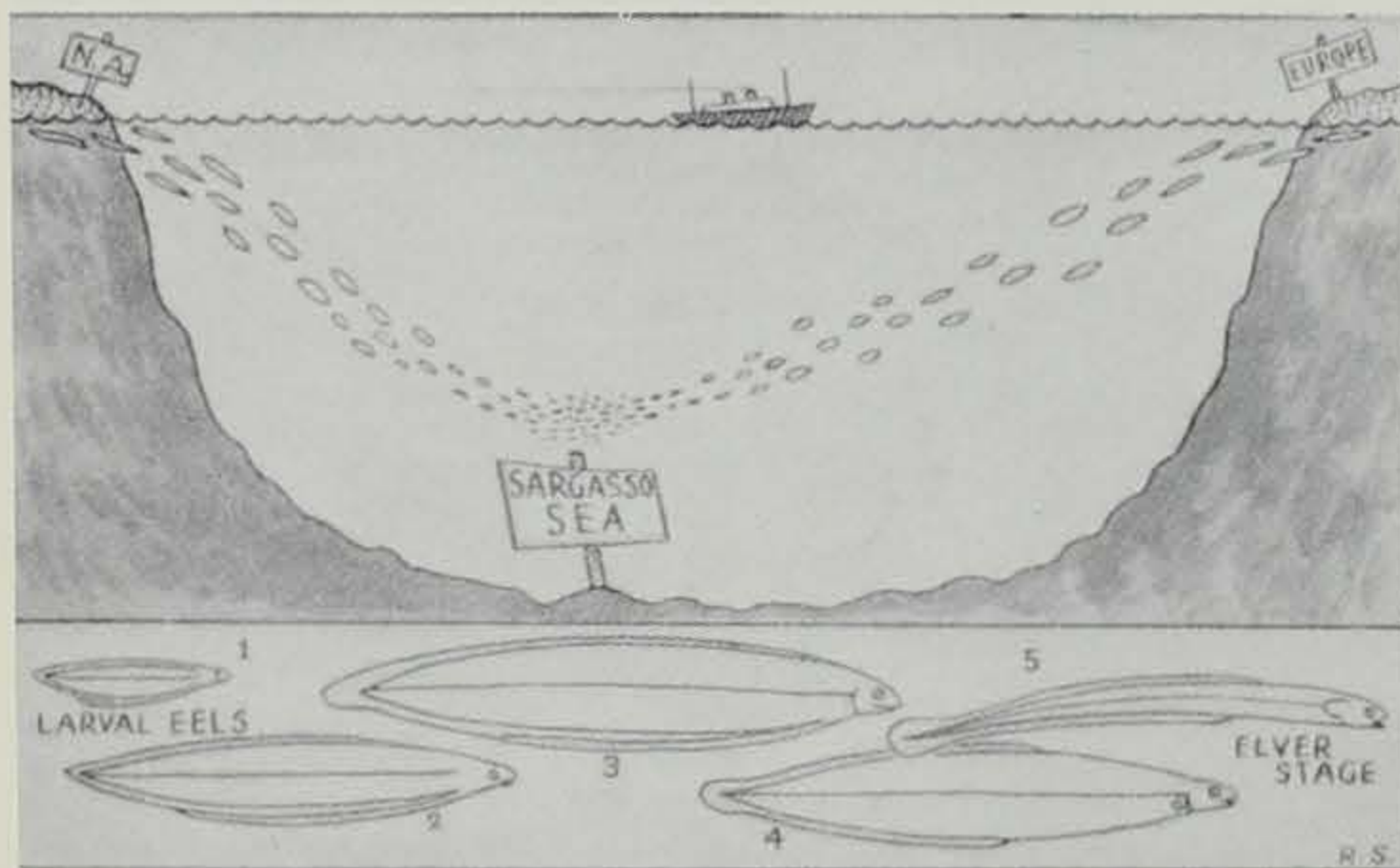
while their tiny American relatives drift westward toward the coastline of America.

During their first summer of life the European larvae are found in the western Atlantic. By the second summer they have reached the central Atlantic, and by the third they have arrived off the coast of Europe. During their two-and-one-half years in the ocean, they have attained a length of from two to three-and-one-half inches, but still retain their flat, leaf-like larval form. They are now faced with a new way of life and must be prepared to meet it. They cease feeding, lose their larval teeth, shrink in depth and length, and become elvers, or "little eels." While they are shaped like their parents in miniature, they are still transparent, and so are known as "glass eels."

Our American eel has a shorter larval history, for it reaches its home shores and the elver stage in about one year. After the transformation from larvae to elver, the females of both the American and European species ascend the fresh-water streams of their native lands to live their lives in the interior until the moment when the migratory instinct drives them back to the sea. In these journeys upstream, they feed ravenously on fishes, worms, clams, snails and aquatic plants, travel through pipelines and sewers, clamber over waterfalls and surmount dams to reach their destination. The males, however, remain in the brackish waters of lagoons and estuaries, where they grow to maturity, and await the downstream migration of the females.

As eels have been found in ponds having no outlets or inlets, it is believed that they will travel overland to reach these waters, choosing nights when the grass is damp for the journey. As there is no evidence to establish this presumption, their presence in these isolated waters is something of a mystery. They are at home in high as well as low altitudes, having been found in Swiss lakes 3,000 feet above sea level.

Female eels average from two to three-and-one-half or four feet (Continued on page 136)



During the first summer of life, the European larvae are found in the western Atlantic. By the second summer they have reached the central Atlantic, and by the third they have arrived off the coast of Europe.



Eels have been found in lakes 3,000 feet above the sea level.



Unpopular in the pond but welcome at the dinner table, the snapper has a vicious, snappy temperament.

## Turtles . . .

(Continued from page 129)

erful head with its hooked jaws, and the serrations or notches at the back edge of the upper shell.

Normally the snapper prefers the quiet water and the association of water plants found in our smaller lakes and ponds. Frequently, however, it seems to forget these preferences and lives in rivers or even clear swift streams.

Contrary to popular belief the snapping turtle is relatively harmless when in the water and free to move about. When surprised under these conditions it will attempt to escape to deep water. If cornered on land or lifted from the water its real savageness is quickly displayed. It will defend itself with vigor, and will even move to the attack. An enraged snapper holds its jaws wide open, then jabs its head forward with lightning speed. If the jaws reach their goal they close in a vise-like grip that is reminiscent of the bite of a bulldog. If the strike misses, the force put into the blow may be so strong as to actually lift the

turtle off the ground. This willingness to fight an aggressor is found even in newly-hatched snappers, who will bite viciously, if provoked.

Unlike most of the turtles the snapper seldom leaves the water to lie in the sun. What little basking is done occurs at the water surface or on the sunlit bottom of shallow bays. Actually a poor swimmer, the snapper spends considerable time walking on the bottom mud, where it gets much of its food. It often spends long periods motionless on the bottom, its moss-covered back resembling a half-buried stone.

Snapping turtles were once thought to live entirely on the flesh of fish and other animals. We now know that at times they eat considerable amounts of plant materials. One study showed that about one-third of the foods eaten in Michigan waters was made up of water plants, a third of game fish, and a third of insects, crayfish, snails and carrion. Snappers capture their food either by stalking or by lying in wait for it.

Snappers hibernate during the winter, burying themselves in the mud of the bottom or in holes in the bank. Turtle hunters often find a number of them in the same muskrat burrow or hollow log under the ice.

Since they are so thoroughly aquatic the mating of the males and females takes place only in the water. The eggs are laid in June in a bottle-shaped cavity dug in loose soil or sand above the water line. The nest is dug by the hind feet, the soil being loosened and thrown alternately to the left and right. When the 20 to 30 eggs have been placed in the nest they are covered with soil raked in by the hind feet. The eggs may hatch in the fall of the same year or hatching may be delayed until the following spring.

The spiny soft-shelled turtle and the spineless soft-shelled turtle are much alike in appearance and habits, at the same time differing greatly from the other Iowa turtles. Their flexible leathery shell and the long soft snout and their "pancake thinness" readily identify

them. The two soft-shells can be separated most readily by the character that gives both their names—the presence or absence of spine-like tubercles along the front edge of the upper shell. Both probably have quite general distribution over the state, although the spineless soft-shell has not been collected in the western part of the state.

Rivers and large streams are the favorite haunts of the soft-shelled turtles, but lakes and smaller streams are also used. They show no preference to areas containing water plants as do the common snappers.

Soft-shells are powerful and agile swimmers. They can run rapidly on land although they spend very little time out of the water and never get far from it. When coming out onto a sand bar or bank they move cautiously and go scurrying for the water at the slightest disturbance. If prevented from reaching water a soft-shelled turtle displays extreme viciousness. The knifelike edges of the jaws of mature specimens make very excellent weapons, capable of badly lacerating a man's hand. When captured they hiss loudly and thrust out their head, snapping vigorously with accurate darting movements.

A rather unusual physiological arrangement permits these turtles to remain under water for hours on end. The lining of part of the throat is capable of removing oxygen from the water and releasing carbon dioxide. The submerged animal pumps water in and out of its mouth, getting sufficient oxygen to maintain life.

When not pressed for food these turtles spend hours on end floating lazily at the surface or lying buried in the mud and sand in shallow water.

Food of the soft-shelled turtles consists largely of crayfish, minnows and other small fish, insect larvae, and frogs and tadpoles. They eat little vegetable matter or carrion flesh.

The three species of turtles discussed here find a ready market as food among people acquainted with this use. The snapper is widely used for food, even reaching the markets of large cities. The soft-shelled turtles are never captured in numbers and rarely reach such markets, but are sold locally where their flesh is rated superior to that of the snapper.

Turtles for eating purposes may be captured in a variety of ways. Snappers are often taken in large numbers by winter fishermen searching in bank holes and other hibernation sites. All of them may be taken on hook and line or in underwater traps.

One of the most quoted descriptions of preparing and cooking turtle is that of Everett Speaker in the November, 1942 issue of this magazine. Portions of his description follows:

"When a turtle is lifted off the

ground by its tail, its head will protrude and can be easily cut off with a sharp axe. It should be allowed to bleed freely for about half an hour. The most simple way to dress out the dead turtle is to turn it on its back and proceed as follows: Insert a very sharp knife through the skin at its junction with the upper shell and cut completely around the under side of the top shell. It makes little difference where the knife is started, but it should follow the outline of the top shell as closely as possible. The top shell should be separated from the lower shell by running the knife through the tough cartilage which connects the two. Next the turtle is turned over and the top shell lifted off. The four feet are then cut off at the first joint. The skin from the legs, neck and tail can be pulled off or may be removed more easily by pouring scalding water over it. The next step is to remove the turtle meat from its attachments to the lower shell. The most important pieces to save are the legs, the neck and the tail. There are two tenderloins in the back, however, which are delicious and well worth saving on the larger animals."

### Sauteed or Fried Turtle

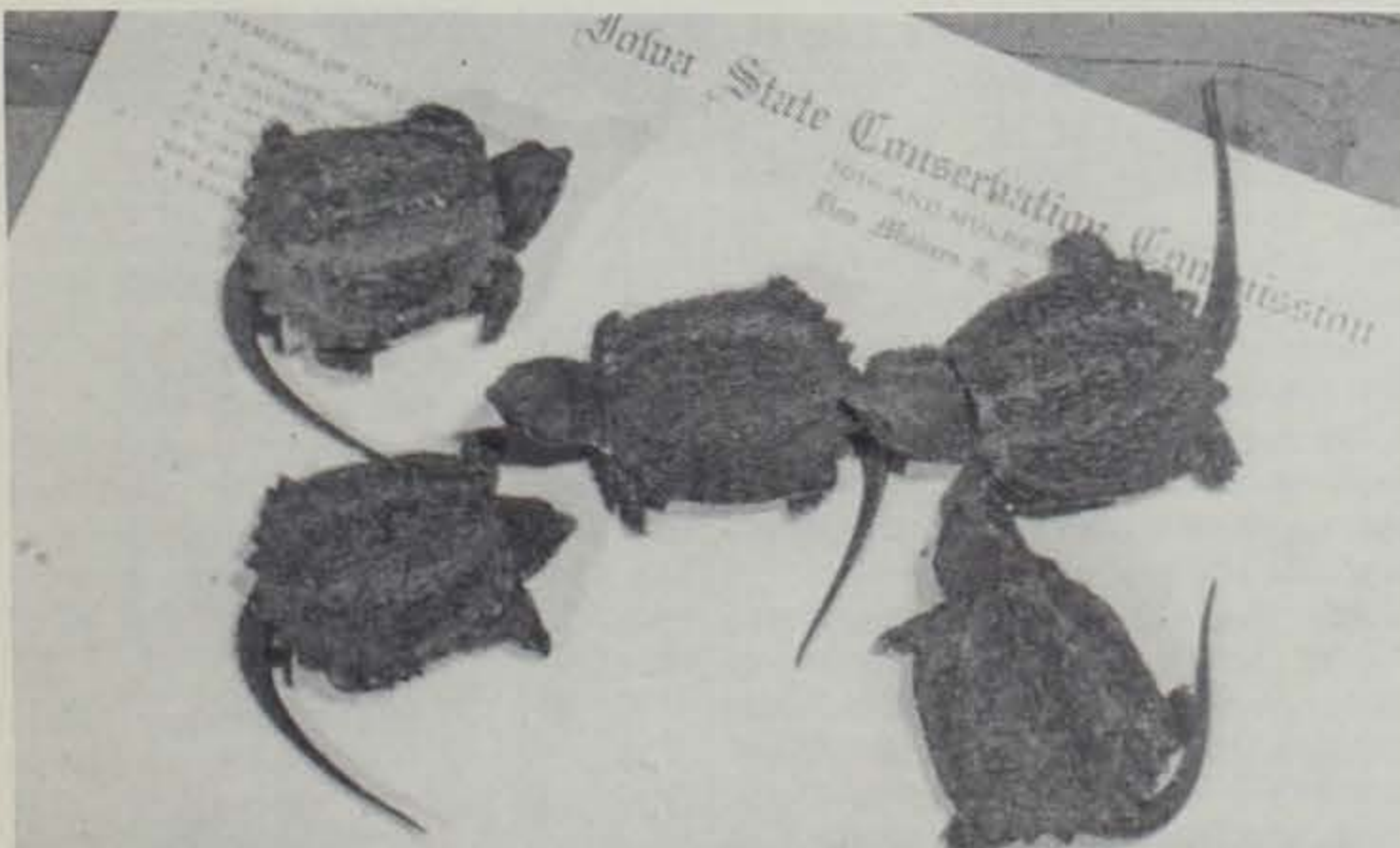
"Pour about  $\frac{1}{2}$  cup of flour into a No. 6 (medium) paper sack. Add  $1\frac{1}{2}$  teaspoons of salt and  $\frac{1}{8}$  teaspoon pepper. Place a few pieces of turtle at a time in the sack and shake well. When all pieces of turtle have been well floured, proceed to fry as follows: Melt  $\frac{1}{2}$  cup of lard or vegetable fat in a medium-sized frying pan. When hot, drop in pieces of turtle and brown rapidly on both sides. Reduce heat, place cover on pan and add  $\frac{1}{2}$  cup of water. Cook slowly until meat is very tender. This will depend somewhat upon the size of the turtle. The procedure is exactly the same as frying chicken. If desired, turtle meat can be placed in an oven after it has been browned instead of completing the process on top of the stove in the frying pan."

### FOX AND WOLF TRAPPING GOOD

It was fox day at the office of County Auditor Ethel Carl, Saturday forenoon of last week.

Tom Johnson of Washington township presented 40 foxes and two wolf pelts for bounty. Mr. Johnson trapped the foxes and wolves in Washington and Jackson townships. On a single day he caught as many as three foxes and one wolf out of the six traps he had set. He caught 13 foxes in one field and in another caught 11. The trapping was done within a mile of his farm home.

The same morning, Kenneth Chafa of Bridgewater presented 12 foxes for bounty. Mr. Chafa has been operating a trap line south and west of Bridgewater for a number of years. — *Greenfield Free Press.*



Snapping turtle eggs may hatch in the fall, or hatching may be delayed until the following spring. Newly hatched young are a little larger than a quarter dollar.

Jim Sherman Photo.

## Migratory Eel . . .

(Continued from page 134)

in length; males average around 14 to 18 inches and never grow longer than 24 inches. The vertebrae of these fish mark the only difference between the American and European species; the American has an average of 107 segments; the European eel averages 114.

Differing from their salt-water cousins, the lower jaw of both fresh-water eel species projects beyond the upper jaw, and the large mouth gapes back to a point even with, or somewhat behind the eyes. On the side of the neck there are gill slits with upper corners on a line with the center of the base of the pectoral fins. A single fin, soft and without spines, extends along the back, around the tip of the tail, and forward on the underside of the body. There is no separation into dorsal, caudal or anal fins as with many other fishes. After the third or fourth year of life, eels develop small scales that are embedded in the skin. These are covered with a coating of slimy mucous, which has given rise to the simile, "as slippery as an eel."

Perhaps the most intriguing part of the life cycle of this unusual fish is that neither European nor American eelers have ever been known to appear off the shores of any country but their own. A cause for their distribution is advanced by Dr. Schmidt who points out that the center of production for the American eel lies farther west and south than the center of the spawning beds of the European species. These, together with the movement of the ocean currents as an aid to the journey in the early stages of larval development, must be considered as causes directing the two species to their own side of the ocean.

While much has been learned of the habits of these sluggish, sedentary fish since the turn of the century, much remains unexplained. No one has ever collected an adult fresh-water eel far out at sea and no one really knows their route or at what depth they swim on their way to the breeding grounds or how they die after the eggs have been laid.

With a singleness of purpose and an unerring instinct, untold thousands of eels desert their fresh-water homes each autumn to seek adventure in a tropic sea and to keep their rendezvous with death. Weak and immature, their progeny are cast adrift far from their native land; unguided, these feeble swimmers travel a route to their home continents over which they have never journeyed. Truly, the oceanic life of the fresh-water eel has been one of our great marine mysteries.

The badger is famous for its disappearing act. Using all four feet and its mouth, the badger digs into the ground in a matter of a few seconds. He may then plug up the hole and only a patch of fresh soil marks his point of disappearance.



Bats in the icebox, yes, but neither Sandy nor Mrs. Sanderson have bats in the belfry. Sandy, like hundreds of other young scientists throughout the United States, is contributing to the basic knowledge of the new science of fish and game management.

## Bats . . .

(Continued from page 129)

interest soon switched from photography to research, and she's been helping Glen ever since.

Married in Toronto the following November, the couple returned to the Missouri University campus, where Glenn had just begun work toward his master's degree.

His thesis topic was "Raccoons," and during the next two years, with the help of his wife, Glen became an expert on all phases of that game and fur-bearing animal so plentiful in Missouri (and in Iowa, too!)

The Sandersons even had a pet raccoon which followed them around the campus. One day a fellow student, obviously not a zoology major, asked what kind of animal it was.

When informed that it was a raccoon, he blithely volunteered, "Oh, that's one of those animals that spins its own silk, isn't it?"

Confusing a raccoon and a cocoon is indicative of the lack of information most people have about wildlife and the Commission which deals with wildlife, Sanderson said.

Take Sanderson's work as one of eight biologists employed by the Iowa Conservation Commission. Many people confuse the Iowa Conservation Commission with the Federal soil conservation program.

Further confusion arises in the minds of friends who admit they don't know whether to hide their pheasants or invite the Sandersons over to a pheasant dinner.

Glen has nothing to do with the enforcement part of the Commission's work, and he likes to hunt and fish as well as the next fellow, as long as it's legal.

As a game biologist specializing in mammals, his job is to gather pertinent information concerning raccoons, squirrels, rabbits, deer and beaver, and send it to the home office in Des Moines.

Of the other seven biologists around the state, four work with fish and three are game biologists specializing in quail, pheasant, and waterfowl.

The Commission uses the information to determine the length of the season and other regulations placed on hunters and fishermen.

What does Glen have to say about the black panther stories?

"Well, I wouldn't say there isn't one here, but I think it is very unlikely." He explained that the black panther isn't native to North America, but one could have escaped from a circus or show.

Sanderson's work is of primary use to hunters, but he doesn't believe the importance stops there. "Many people get aesthetic enjoyment by just looking at wildlife along the roadside or watching a beaver at work."

He explained that "It isn't so important to know exactly how many of a given animal is available as it is to know if there are more or less than there were last year."

Hunters all over the state, as well as enforcement officers employed by the Commission, help the enthusiastic biologist with his work.

"I'm always interested in getting more good cooperators," he added. The cooperators send specimens along with pertinent data of the place and circumstances where the animal was caught.

Glen stuffs some of the specimens and adds them to his museum collection which he keeps for study.

Included in his collection are rabbit, mink, various species of mice, gophers, ground squirrel and beaver, as well as the skulls of various animals.

Mrs. Sanderson lends a hand in charting the pertinent information about each animal, after her hus-

band uses different techniques which have been developed to determine age, sex, etc.

For example, the age of a fish is determined by its scales, while a squirrel or rabbits age can be determined by examining the leg bone, quail by its wing, muskrat by its pelt, deer by its teeth, and waterfowl by its notched tail feathers.

Sanderson developed a method of measuring the productivity in raccoon when he was working on his thesis.

He has already published one article in a scientific journal based on his thesis. Recently he delivered a paper before the National Wildlife Conference at Milwaukee.

At present he is planning a paper on the Iowa raccoon population for the Iowa Academy of Sciences meeting to be held next month at Waverly.

But all of this studying hasn't caused Sanderson to lose his sense of humor. He can laugh when his wife jokingly complains about the time she opened a cottage cheese container to find three dead mice which her hubby had intended to stuff. Or the time he used her pressure cooker to prepare a coyote's head for a skeleton specimen.

"Appreciation of and interest in wildlife are very important for my work," Sanderson concluded. And how!—Cedar Rapids Gazette.

## SOME CARP FOOD FACTS

Contrary to popular opinion carp are not vegetarians. Tom Moen, fisheries biologist for the Iowa Conservation Commission, in the examination of 739 carp stomachs during 1946 through 1949, found that carp of all sizes and ages feed principally on animal material. The food falls into three groups, insect larvae, crustaceans, and mollusks.

Game fish egg predation is, in the popular mind, one of the principal objections to carp. Moen found that carp do take walleye eggs during the spawning period. From 37 carp collected in April in Spirit Lake, one contained three walleye eggs. On analysis of 51 stomachs no eggs were found in Spirit Lake, while of two carp from Okoboji, 9 walleye eggs were found in one stomach.

Winter food studies on 167 carp from four Iowa lakes reveals that there is considerable feeding during winter months, with animal organisms making up 100 per cent of the diet, with only traces of plant material found. During winter, both the volume of food and the per cent of stomachs containing food was found to be considerably less than during the summer.

In rate of digestion experiments it was found that at temperatures from 49° to 73°F., carp were able to digest the entire contents of the stomach within 24 hours.—April Biology Seminar.