Texas Game and Fish

MAY 1951 TEN CENTS

WOOLDRIDGE

Fishermen's Lament

Backward, turn backward, oh time, in your flight;
Please make 'em bite again, just for tonight.
I've sat on this boulder for many long hours,
And baited with crawfish and doughballs and flowers,
And minnows and rye bread and liver and bees,
And grasshoppers, fishworms and limburger cheese.
And never a nibble—a jerk on the line—
Of sunfish or sucker I've seen not a sign,
My arms are fried brown and my nose is burnt red—
My seat is worn thin and my legs are both dead.

My stomach is puckered, tied up in a knot,
I'm sick, disappointed, disgusted, and hot,
I'm sore, and I'm dirty and thirsty and stiff,
I've lost my tobacco and ain't had a whiff.
It's fourteen long hours by the road to my shack—
To cold cream—to comfort—to rest and a snack.
Oh, backward, I guess, is the way I shall turn
They don't want to bite and I don't give a durn.
For I have been fishing—I've had a good day;
Now all that I want is some grub and the hay.

—*Tennessee Conservationist*

Texas Game and Fish

A MONTHLY MAGAZINE DEVOTED TO THE PROTECTION AND CONSERVATION OF OUR NATIVE GAME AND FISH; AND TO THE IMPROVEMENT OF HUNTING AND FISHING IN TEXAS.

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★ In This Issue ★

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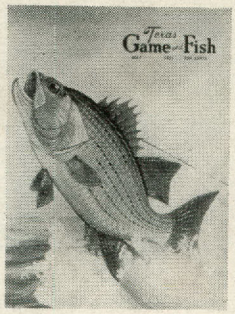


The Cover

The white bass, often called sand bass or bar bass, is the fresh-water edition of the striped bass or rockfish. Except in size, the white bass resembles closely its sea-going cousin. The white bass is smaller, seldom longer than eighteen inches, and weighs from one to four pounds. The white bass has a deep, compressed body with an arched back. The color is silver, the sides having horizontal stripes. Many regard it as the equal of a black bass as a fighter if light tackle is used, and it ranks well as a food fish.

The Fish Freeze of January 1951

By

J. L. BAUGHMAN
Chief Marine Biologist

THE pictures and the map tell the story of the January, 1951, fish freeze better than a good many thousand words.

From Port Isabel to Baffin Bay in the Laguna Madre, Marine Laboratory biologists estimated that approximately 46,250,000 fish were killed. One in every 100 of these was a trout, 18 inches and over, or about three years old. One whopper measured 48 inches. One in 200 was a redfish. A few of these were small, but most of them were 24 inches and longer. The majority were three years old and over, with a few probably between seven and eight years of age. One of these reds was also a four footer.

About seven out of 100 were drum from one to five years old, measuring from ten to 30 inches long, although there were a few larger ones.

Sheepshead were killed in a ratio of one to 2000, and croaker at a rate of one to 500. The balance of the kill was mullet.

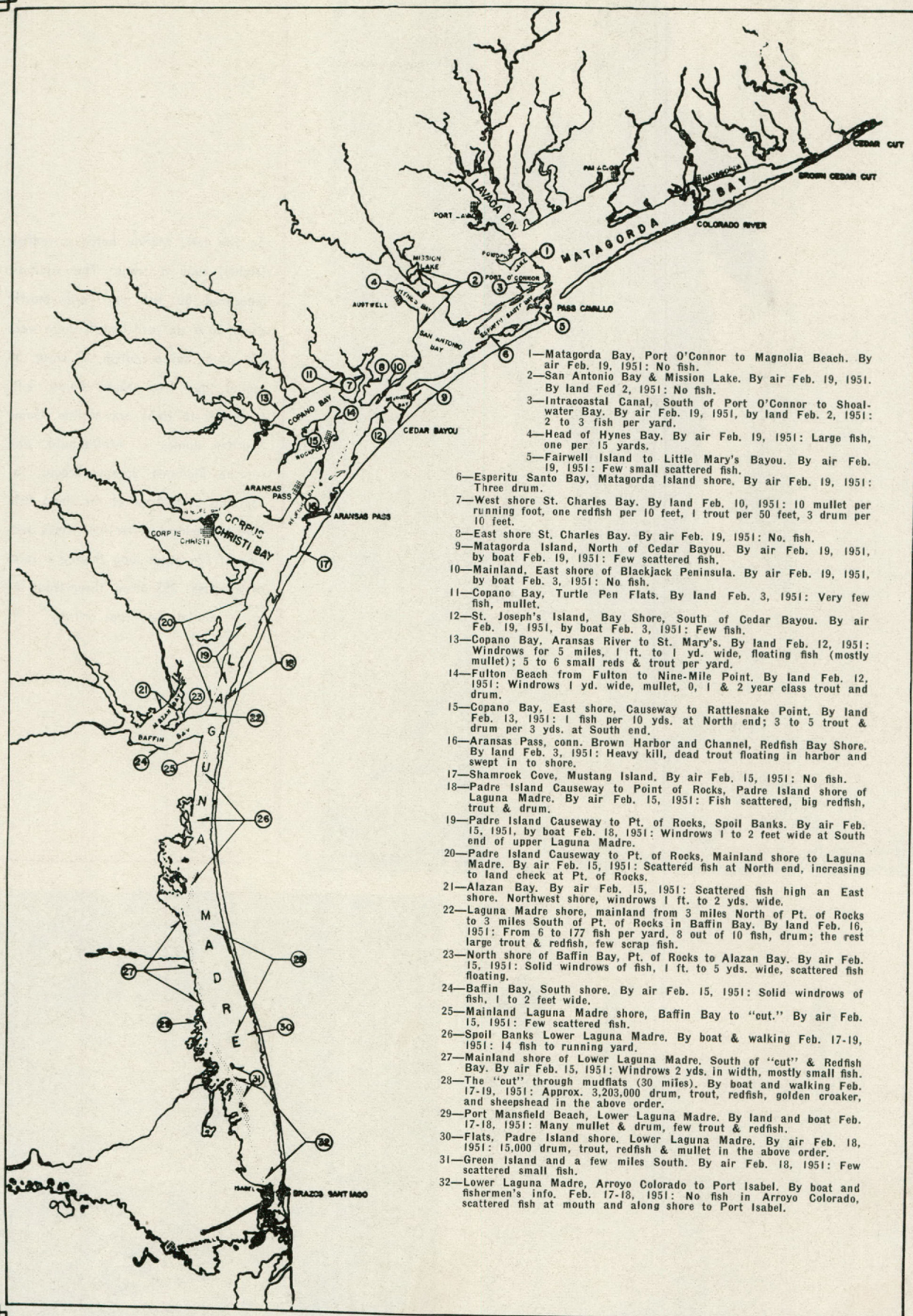
From Baffin Bay north to Galveston it was estimated that approximately 2,000,000 trout, reds and drum died, as well as 20,000,000 mullet.

There was a heavy kill of scrap fish, also, but as most of these did not come to the top, it was difficult to form any estimate of the number affected.

All in all, at a very conservative estimate, it seems probable that over 30,000 tons of fish were killed by the cold weather.

Nevertheless people are still catching fish along the coast, and will continue to do so, although next summer's catch may be off somewhat. This has been happening at least since the time of Cabeza de Vaca, who was the first man to see it, and we still have fish.

E. D. McRae, marine biologist, on the Point of Rocks, holds a drum 44 inches long. The windrow measured in picture, 6 yard length, contained 361 fish, 60 fish/yard: 254 drum, 7 redfish, 42 trout, 53 mullet, and 5 others. This photo, as well as those on the succeeding pages, were taken on February 16, 1951.



1—Matagorda Bay, Port O'Connor to Magnolia Beach. By air Feb. 19, 1951: No fish.

2—San Antonio Bay & Mission Lake. By air Feb. 19, 1951. By land Fed 2, 1951: No fish.

3—Intracoastal Canal, South of Port O'Connor to Shoalwater Bay. By air Feb. 19, 1951, by land Feb. 2, 1951: 2 to 3 fish per yard.

4—Head of Hynes Bay. By air Feb. 19, 1951: Large fish, one per 15 yards.

5—Fairwell Island to Little Mary's Bayou. By air Feb. 19, 1951: Few small scattered fish.

6—Esperitu Santo Bay, Matagorda Island shore. By air Feb. 19, 1951: Three drum.

7—West shore St. Charles Bay. By land Feb. 10, 1951: 10 mullet per running foot, one redfish per 10 feet, 1 trout per 50 feet, 3 drum per 10 feet.

8—East shore St. Charles Bay. By air Feb. 19, 1951: No. fish.

9—Matagorda Island, North of Cedar Bayou. By air Feb. 19, 1951, by boat Feb. 19, 1951: Few scattered fish.

10—Mainland, East shore of Blackjack Peninsula. By air Feb. 19, 1951, by boat Feb. 3, 1951: No fish.

11—Copano Bay, Turtle Pen Flats. By land Feb. 3, 1951: Very few fish, mullet.

12—St. Joseph's Island, Bay Shore, South of Cedar Bayou. By air Feb. 19, 1951, by boat Feb. 3, 1951: Few fish.

13—Copano Bay, Aransas River to St. Mary's. By land Feb. 12, 1951: Windrows for 5 miles, 1 ft. to 1 yd. wide, floating fish (mostly mullet); 5 to 6 small reds & trout per yard.

14—Fulton Beach from Fulton to Nine-Mile Point. By land Feb. 12, 1951: Windrows 1 yd. wide, mullet, 0, 1 & 2 year class trout and drum.

15—Copano Bay, East shore, Causeway to Rattlesnake Point. By land Feb. 13, 1951: 1 fish per 10 yds. at North end; 3 to 5 trout & drum per 3 yds. at South end.

16—Aransas Pass, conn. Brown Harbor and Channel, Redfish Bay Shore. By land Feb. 3, 1951: Heavy kill, dead trout floating in harbor and swept in to shore.

17—Shamrock Cove, Mustang Island. By air Feb. 15, 1951: No fish.

18—Padre Island Causeway to Point of Rocks, Padre Island shore of Laguna Madre. By air Feb. 15, 1951: Fish scattered, big redfish, trout & drum.

19—Padre Island Causeway to Pt. of Rocks, Spoil Banks. By air Feb. 15, 1951, by boat Feb. 18, 1951: Windrows 1 to 2 feet wide at South end of upper Laguna Madre.

20—Padre Island Causeway to Pt. of Rocks, Mainland shore to Laguna Madre. By air Feb. 15, 1951: Scattered fish at North end, increasing to land check at Pt. of Rocks.

21—Alazan Bay. By air Feb. 15, 1951: Scattered fish high an East shore. Northwest shore, windrows 1 ft. to 2 yds. wide.

22—Laguna Madre shore, mainland from 3 miles North of Pt. of Rocks to 3 miles South of Pt. of Rocks in Baffin Bay. By land Feb. 16, 1951: From 6 to 177 fish per yard, 8 out of 10 fish, drum; the rest large trout & redfish, few scrap fish.

23—North shore of Baffin Bay, Pt. of Rocks to Alazan Bay. By air Feb. 15, 1951: Solid windrows of fish, 1 ft. to 5 yds. wide, scattered fish floating.

24—Baffin Bay, South shore. By air Feb. 15, 1951: Solid windrows of fish, 1 to 2 feet wide.

25—Mainland Laguna Madre shore, Baffin Bay to "cut." By air Feb. 15, 1951: Few scattered fish.

26—Spoil Banks Lower Laguna Madre. By boat & walking Feb. 17-19, 1951: 14 fish to running yard.

27—Mainland shore of Lower Laguna Madre. South of "cut" & Redfish Bay. By air Feb. 15, 1951: Windrows 2 yds. in width, mostly small fish.

28—The "cut" through mudflats (30 miles). By boat and walking Feb. 17-19, 1951: Approx. 3,203,000 drum, trout, redfish, golden croaker, and sheepshead in the above order.

29—Port Mansfield Beach, Lower Laguna Madre. By land and boat Feb. 17-18, 1951: Many mullet & drum, few trout & redfish.

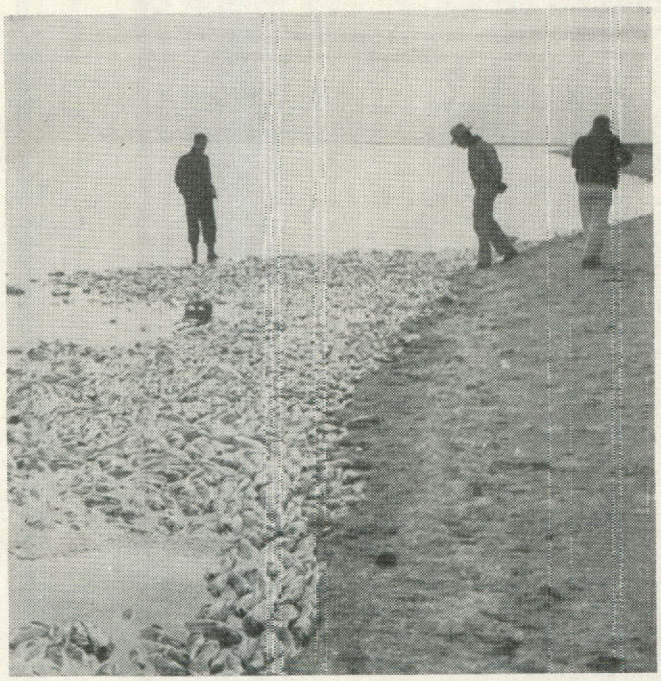
30—Flats, Padre Island shore, Lower Laguna Madre. By air Feb. 18, 1951: 15,000 drum, trout, redfish & mullet in the above order.

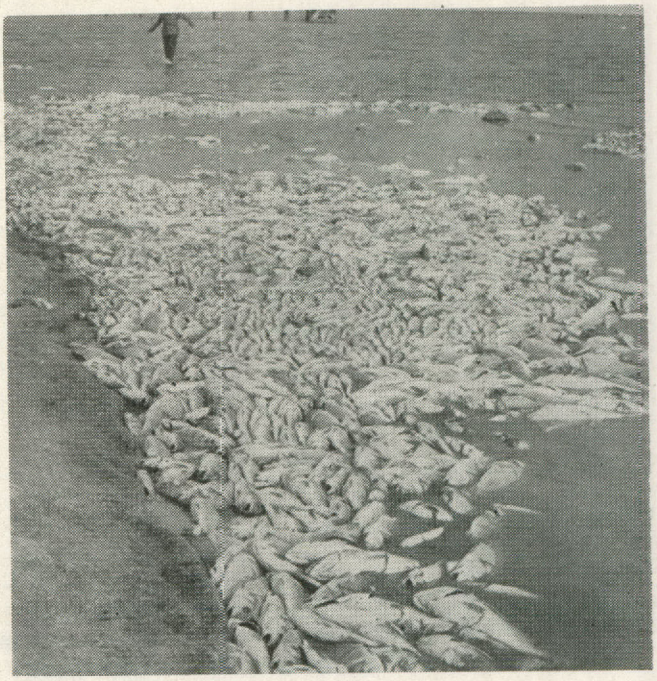
31—Green Island and a few miles South. By air Feb. 18, 1951: Few scattered small fish.

32—Lower Laguna Madre, Arroyo Colorado to Port Isabel. By boat and fishermen's info. Feb. 17-18, 1951: No fish in Arroyo Colorado, scattered fish at mouth and along shore to Port Isabel.

Map of areas affected by freeze of January, 1951.

To the left, McRae holds a redfish (right), and a trout. The windrow measured 60 fish per yard, mostly drum. In a six yard length there were 254 drum, seven redfish, 42 trout, 53 mullet, and five others. Below, left, from left to right are McRae, Game Warden James L. McDougald, and Marine Biologist Joseph Breuer, inspecting a windrow of the dead fish. Directly below, a five-foot cross section of 1⅔ yards long showed a total of 296 fish: 255 drum, three trout, 34 mullet, and four others.





Wildlife Fundamentals

By DAN W. LAY*

Wildlife Biologist

What Is Important in the Texas Wildlife Picture?

WHAT are some of the fundamentals of wildlife management in Texas? Many divergent ideas can be heard on how to provide the maximum of wildlife for Texas hunters and fishermen. Research has revealed some of the natural laws that affect the life history of our wildlife species. Perhaps more important is the human element, the sportsmen and landowners who are intricately geared to the production and use of wildlife. The following are one man's ideas on what is fundamentally important in the Texas wildlife picture.

Game and fish are products of the soil and their abundance cannot surpass the quality of the habitat, including the soil, that produces them. Lack of breeding stock or excessive hunting pressure hold some species in some parts of the state below carrying capacity of the land; but no amount of restocking or harvest regulation will enable populations to exceed the carrying capacity for long. Hunting only one sex (such as buck deer) is justifiable only where a species has not reached the carrying capacity of the range.

Wildlife populations are never constant. Numbers increase and decrease for various reasons. From September to December, quail populations often decline by two-thirds. Nature is geared to a surplus production. Numbers, as with deer, often exceed the long-time carrying capacity of the range; this naturally results in die-offs when drought or other factors reduce the food supply. The carrying capacity of the State of Texas for wildlife has been declining. Competition with increasingly intensive agricultural practices may be expected to further reduce the possible production of wildlife.

In spite of the declining carrying capacity, much can be done to increase wildlife. Species that are below carrying capacity (such as deer in East Texas) can be increased through protection from hunting. Losses of habitat can be compensated by improvements on small spots of waste or idle land, as in the case of bobwhites.

Whatever is done to improve habitat, or to prevent further damage to habitat, must be done by the landowners. Hunters and fishermen are dependent on them because there is no other place in the state to produce game and fish. State ownership cannot possibly provide sport for more than a minor percentage of the sportsmen. Even the coastal fisheries are seriously affected by landowners—witness the destruction of oyster beds by silt from North Texas farms.

The handwriting on the wall showing a declining carrying capacity has a corollary in the increasing numbers of hunters and fishermen. Thus, while production has declined, harvest effort has more than doubled in the last ten years. Hunting today is for sport, not food. Bag limits must gradually decline and hunters must enjoy a day afield even if the limit is not bagged.

Law enforcement is essential to the fair distribution of the harvest and to the protection of species which are below the limits of the range.

Much game and fish produced in Texas each year is not harvested. This does not result in higher populations later. If the harvestable surplus is not bagged, it disappears naturally. Quail populations, for instance, contain about eighty per cent juvenile birds each winter whether the population is hunted or not. Because of the high population turnover, predation is relatively unimportant. Production is geared for predation.

The reasons for the incomplete harvest of surplus wildlife are varied but all reflect the lack of sufficient good will between sportsmen and landowners. Improvements in this must come through better conduct of hunters and improved relations with the landowners. Free hunting is gone, and waiting until the day the season opens to ask permission to hunt is rapidly failing as a satisfactory approach.

The law declares the wildlife to belong to the people, but the purchaser of a license merely shares in the various activities of the Department. This is certainly essential if seasons and bag limits are to be observed in the fair division of the harvest. However, the licensee is on his own to find a place to hunt. This is a bitter pill but it must be admitted the landowner controls access to the people's wildlife.

Although the landowner's key can lock the gate to hunters, his ownership carries responsibility for the land. His tenure is but a brief span in the space of time. His heirs and assigns may be affected for many generations by the way he treats or mistreats the land. He knows that a hundred years of private ownership of lands in Texas has brought about more changes in the face of the earth than the Chinese were able to accomplish in several thousand years. Fortunately, it is now economically expedient to conserve and improve the land, whether the landowner considers or admits any responsibility to posterity or not. Wildlife will benefit from this.

It should also be recognized that the competition of agricultural economics forces some landowners to overgraze or overcrop their land. Certainly the essential welfare of the individual must receive his first concern; but this does not justify exploitation.

Pollution is a constant menace to public health and wildlife and it is largely unsolved. Unless Texas streams are to

• Continued on Page 30

* F. A. Project 20-R.

Conservation—And

THERE ARE BARELY SIX INCHES OF TOP SOIL BETWEEN YOU AND STARVATION!

Yet, day after day housewives bring home the groceries, prepare them, and set before their families, nourishing attractive food. And whether they shop in the auditorium size supermarkets, in the little store around the corner, or at the crossroad's general store, the story is the same. The food is there and it's plentiful.

It doesn't take too much imagination to figure out the path these commodities had to travel from farm to market to consumer. That is a more or less well-known story. But where conservation enters the picture—there is a little-known story.

We now know that there is a definite interrelationship between the various phases of conservation. We know that geology, forestry, game and fish management, water management, and so on, are all part and parcel of the same thing.

But what we do not realize, perhaps, is that all of these are related to soil conservation, which is not a state function but is, rather, a Federal activity. This is because soil conservation and the fight against erosion is a national problem—a problem of such magnitude that it ignores state borders entirely. But it concerns states and citizens in a way they hardly realize. Food and plenty of it is available every day and, as long as it is available, very few people will complain or question further.

Conservation and your food supply is not a glowing account of the lush, wonderful products growing on the many farms. It is a story of the fight against erosion—the fight against polluted waters and burned-over forests.

This is a fight that must go on year in and year out if there is to be food on the Nation's tables.

Would You Serve a Tree for Dinner?

"Sheer nonsense," you say. But if you think so, then next time you are in the forest, dig your fingers into the soil or through a thick sod and feel the interlacing roots. It is these roots that are the "muscles" of the soil. They help bind it together. If a list were made of the crops that hold soil, it would be headed by grass and trees. Grass plants and trees send out hundreds of fine, fibrous roots which lie just under the ground.

Forest floors and sod soils have a thin layer of vegetable material that performs an important function in preventing soil from washing away. This "layer" absorbs water, hinders its flow, and removes suspended particles of soil. Clear water soaks into the ground more readily. Muddy water, on the other hand, chokes the "pores" of the soil and retards penetration. This permits runoff to gain momentum and thus increases its power to "kidnap" soil.

Another thing to consider about forests is the dense growth of stems and leaves which protects sod-covered and forested land in that it breaks the force of the rainfall plummeting toward Earth.

According to the U. S. Soil Conservation Service, the productive surface layer of soil in the Cotton Belt exceeded a depth of 12 or 15 inches on the blackland prairies and smoother parts of forested land. It was more than 6 or 7 inches on the steeper forested slopes. The U.S.S.C.S. pointed out in 1938 that in less than a century excessive planting of cotton had removed much and sometimes all of the topsoil in large areas of the South.

We are already familiar with the "out of this world" appearance of large gullies and gnome-like twisted

Gnome-like, twisted formations speak mute testimony of continuous erosion processes.

Your Food Supply

formations in their midst that speak mute testimony of abuse of the soil. But there is also another form of erosion, known as "sheet erosion." It precedes gullying and like an embezzler it keeps robbing the valuable top soil while you least suspect. Experts, however, have noticed that rainwater flowing from a clean-tilled field is always muddy, never clear. They have observed, further, that it is usually the color of the land over which it has flowed. Thus, layer by layer after each heavy rainfall, the soil is actually "peeled" away.

Some experiments made in the 1930's definitely established the relationship of forestry and agriculture, conservation and your food supply. One of these experiments at Tyler, Texas, showed that a plot kept continuously in cotton lost 105 times as much soil as a plot in grass and 237 times as much as a plot in forest. That experiment covered a four-year period.

Another experiment conducted at the Southern Experiment Station, at Holly Springs, Mississippi, reported that under oak forest conditions, 40,000 years would be required to remove 6 inches of topsoil from a 10 per cent slope, at the rate soil was carried away by run-off over a two-year period.

However, we do have to grow things to eat and to live. In order to have perfect soil conditions, we cannot, for example, discontinue the cultivation of cotton. We cannot, on the other hand, live in the forests like our ancestors. The answer to the cotton problem is already apparent in the South. Through wise use of the soil and cover crops, much erosion and depletion of soil are being prevented. Through wise forestation much of the soil is being protected and "held in trust" for our future heirs. Through terracing, heavy defenses against the soil washing away have been erected. Traveling through rural areas, one sees many hills and slopes terraced right up to the very top, presenting a pretty sight in terms of wise usage of the soil God gave us.

"If fences could be built around all the badly worn . . . gullied lands," says the Educational Service of the Conservation Department in its book, FOREST TREE FACTS OF TENNESSEE, "to protect them from livestock and if, for a few years they could be protected from fire, the change in appearance would be almost miraculous . . . Some areas have been so badly treated that natural reforestation would take place so slowly that it is wiser and more economical to assist nature by planting forest trees on them . . ."

Now ironically enough the water that steals our soil away is also very necessary for the growth of crops—from the irrigation standpoint—for growing plants and trees must have water in the proper amounts to survive.

However, water is like the human mind. It must be properly channeled and disciplined if it is to achieve the maximum results for our use. Water in untrammeled fury can take the form of a flood and destroy and inundate entire cities—it can take the form of a raindrop and carry off our soil bit by bit—it can take the soil and deposit it in beautiful streams and cause them to become so silted that they can destroy fish life and clog irrigation dams and eventually choke out the big hydroelectric dams that supply our electric current.—Tennessee Conservationist.

Terracing provides defenses against erosion as is evidenced by this scene along the Brazos River Valley.

Mule Deer on the Move

By

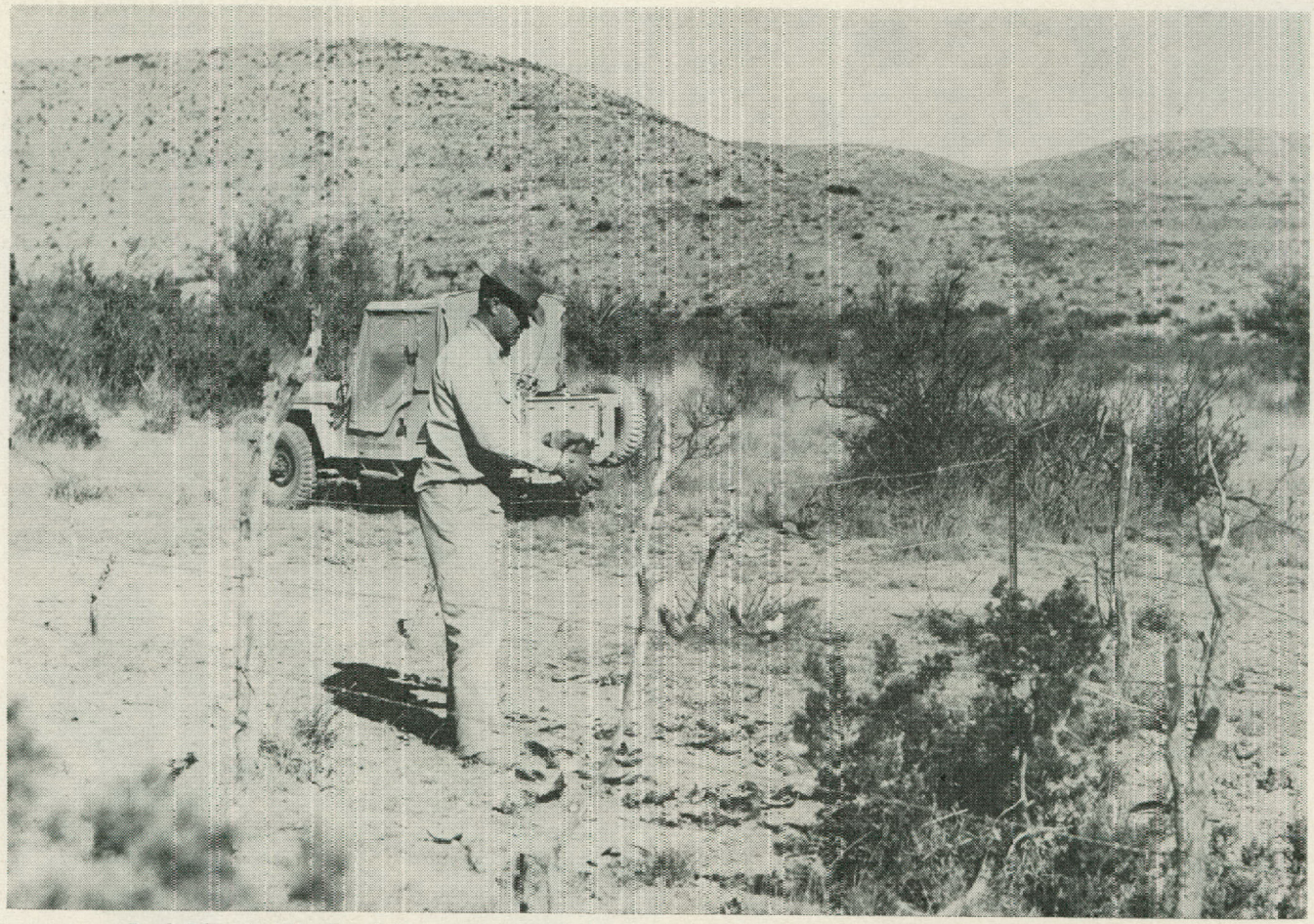
O. F. ETHEREDGE*

TOM D. MOORE

CARL H. THOMAS

Wildlife Biologists

* F. A. Project 41-D.



Frank Etheredge, director of the trapping crew, is shown here pre-baiting the trap site; also, this is sometimes done after moving a trap in anticipation of re-locating another one there. The fence provides protection from the numerous Cattle which graze in this area.

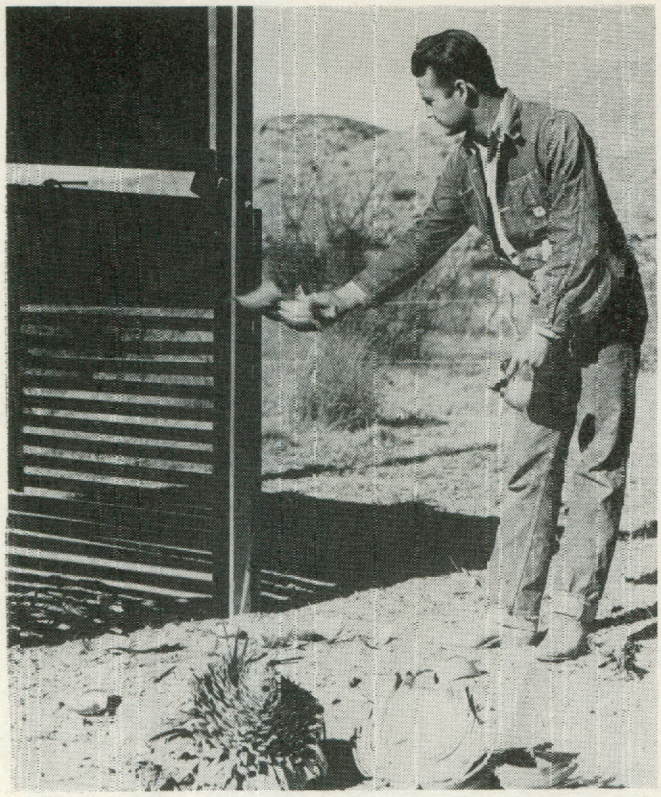
THEY are big and cover a lot of country—these West Texas mule deer. And when it comes to trapping and moving them, wildlife biologists and their trapping crews get a gleam in their eyes and carefully start plotting their strategy. Trapping crews have had lots of experience with the smaller, more numerous white tails of central and South Texas but mule deer represent a completely different problem. On the Aransas Refuge in southeast Texas, white tails are so numerous that they stumble over each other a few times and on into a trap. But with mule deer, it is a different story. In the first place, they are not nearly so numerous and their range includes many miles of the roughest country in Texas as any experienced mule deer hunter will testify.

When the signal was given from the Austin headquarters of the Game Department in December, 1948, the trapping crew set up field headquarters in Pecos County to work out the baits and methods best suited to trapping mule deer. Locating proper sites necessitated careful study of the deers' habits and their daily movements. Twenty traps were used in this experimental phase of the program. The deer proved cooperative and within two months, thirty-six of them were trapped and released on the department's Black Gap Refuge in Brewster County. The following season 131 animals were trapped and transplanted in areas where they were formerly found.

The trap used was a wooden box-like affair four feet by four feet by nine feet. It contained a sliding door on each end that can be raised and lowered like a window. The doors and top were solid while the sides were made of wooden slats to allow as much light as possible to enter the trap. When the trigger was tripped, the doors fell and the trapped deer were fairly well hidden within. Lighter weight aluminum traps which function in the same manner have replaced the heavy wooden types.

There was quite a bit of speculation about what these "big deer" would do to the small wooden trap. Heretofore only white-tailed deer were taken with this equipment. Fortunately for all concerned, the mule deer behaved much better than white-tailed deer even though they outweighed them from fifty to one hundred pounds. The mule deer have also proven that they can withstand hauling distances up to 500 miles without ill effect. During refueling at service stations as many as fifteen people sometimes peered into the truck from close range as the deer remained huddled together. Seemingly, they must feel protected for most of them never bother to get up if they are lying down.

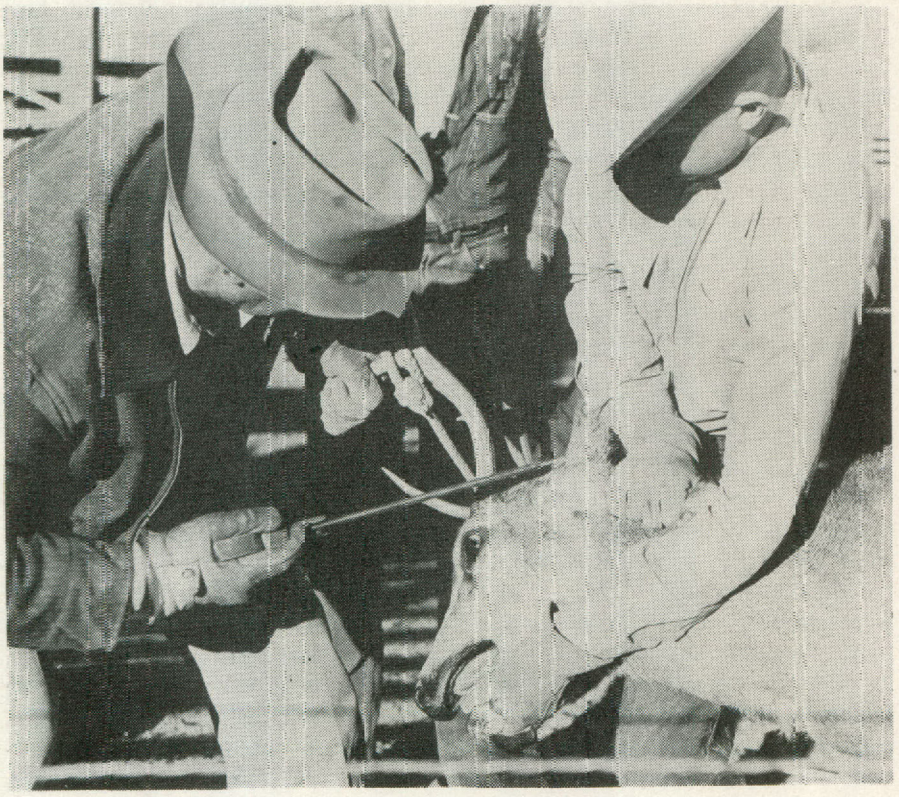
Sotol proved the best bait for mule deer. This plant is native to the Big Bend area and resembles yucca except that it is much more succulent. It is trimmed, chopped apart with an axe and scattered around the trap. Other baits have been tried but none have proved as desirable. Alfalfa, prairie and Johnson grass hay, cottonseed cake and meal, range cubes,



Don Duncan, wildlife biologist, baits a wooden trap with the mule deers' favorite food, sotol.

corn, maize, evergreen sumac, lecheguilla, and yucca have been used. Mistletoe has proved to be a good bait in other parts of the state; however, since very little is found in this area, it was not used. Deer can be taught to feed on cottonseed cake by sprinkling sotol with cottonseed meal. This did not seem practical with such

To the right, a buck emerges from the trap, intent on damaging anything in his path. Co-author Tom Moore stands by awaiting his chance to "flank" him. Etheredge begins the pre-tagging procedure (below), that of dehorning the deer.

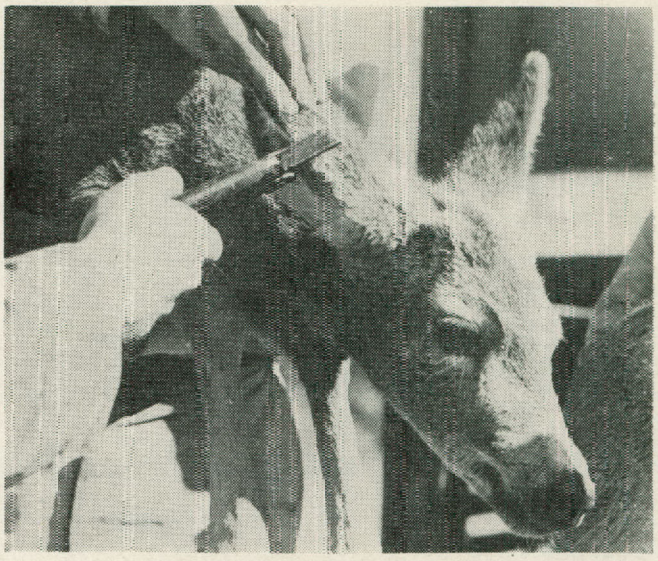


an ample supply of sotol on hand. Cottonseed cake is readily taken by deer and is used exclusively as bait providing the deer already know what it is, as is the case where ranchers throw cake onto the ground for their cattle. Before a catch is made an extensive dry-run is necessary.

The usual procedure is to fence the deer trap so that cattle cannot disturb it. The traps should be pre-baited for at least two weeks before they are set. With the use of fifty-eight traps, between thirty-five and forty deer are taken every week.

When setting the trap, a box-like trigger is buried just under the ground on which the deer step to release the sliding doors. A spring mechanism in the trigger trips the rod supporting the doors, causing them to drop into position. When a doe is trapped, a man enters the trap and the deer is caught bare handed. When the trapper has a good hold on the deer and

is ready to come out, the front door is blocked, opened, and a tag is placed in the animal's ear. Then it is loaded into the hauling truck nearby. If the trapped animal happens to be an antlered buck, it is roped before the trappers tangle with him. The horns are sawed off just above the bur to prevent injury to other deer while in transit.



Bucks and does alike are tagged on the ear.

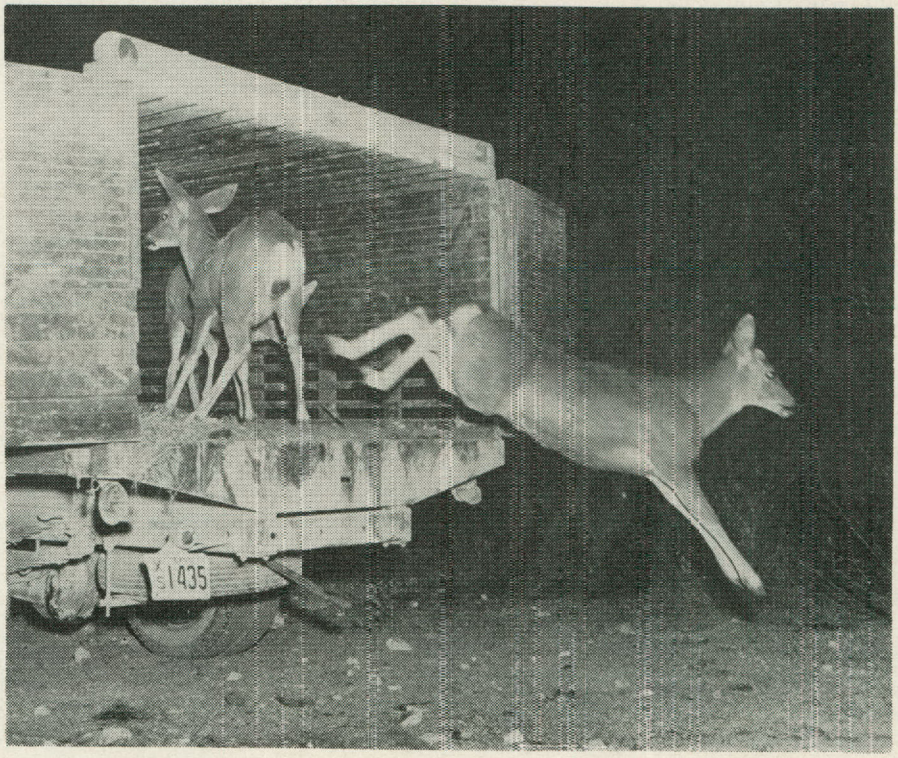
The deer are loaded into the specially designed trucks for their journey to a transplanting area. Below, the deer are released.

two fawns were taken. Later in the season as the bucks begin to run with the does, a far greater percentage of them were taken than does. After a month or so of trapping and as soon as many of them are removed from the range, the ratio usually drops back to one to one.

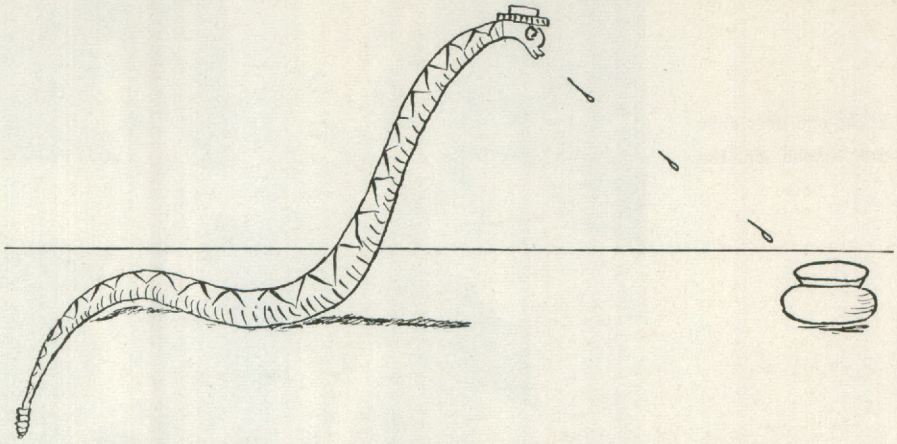
Mule deer have been released on experimental areas in Brewster, Briscoe, Randall, Armstrong and Oldham Counties. Future release areas will include Garza, Kent, and Sutton Counties. If these areas prove successful, then perhaps other potential mule deer range will be included within the Game Department's restocking program.

A mule deer buck offers the most excitement for as he is snubbed to the trap by his antlers, someone must grab a tight hold around his flanks and at the same time dodge four flying hoofs. Injury to the crew is not impossible but with good teamwork, nothing more serious than a few ripped trousers has ever occurred. As soon as a load has been caught, the truck immediately moves to the release area. Past trapping records show that the mortality is not quite two percent, and then death in most cases occurs during the trip to the point of release.

It is interesting to note that prior to the breeding season, there were more does taken than bucks. Also, more doubles were taken during this period. At this time the fawns, although they were weaned, were still with the does and many were caught together. On one occasion a doe with



Snake Facts



Spitting was one of the feats attributed to the snake by early American colonists.

By JOEL F. WEBBER

THE snake has been with us since the race of man began. In some forms it has been worshipped, loved, and feared. Eastern mythologies are filled with wondrous stories of the miraculous powers attributed to them. And, in contrast, the western world, particularly that part which subscribes to Biblical doctrines and beliefs, is largely concerned with the horrible "facts" about snakes. The latter is not wholly unreasonable, for in the Biblical world, the trouble began in the Garden of Eden when, according to the Book of Genesis, the serpent (probably referring to a "snake") became involved with the curious woman, Eve. Since that time, according to Holy Writ, the snake has been condemned to wriggle on its belly and to eat dust.

Now, all of the foregoing is very interesting lore. Because of the Biblical account, many of man's fears may be traced to early legend and folklore. An early European legend has it that the snake, being forced by Biblical edict to eat dust, therefore springs, or has its origin in dust.

Modern evolutionists dismiss these claims as old wives' tales. And, they point out that the reptile, which includes the turtles, snakes, lizards, alligators, etc., were the ancestors of the present day birds. To substantiate their claim, they draw attention to the shank of the bird, which is scaly, and compare it with the early reptiles.

To explode the early superstitions, the herpetologists state, with an abundance of evidence, that the snake neither springs from nor eats dust. Neither does it wriggle on its belly. Factually, the snake *walks* on its belly scales. The large belly scales known scientifically as *setae,* actually assist the snake in crawling, as each scale, by its more or less independent action, pulls the snake over the surface of the ground. And this ground must be fairly rough, for over a surface as literally smooth as glass, the snake is powerless. It can't move an inch.

Some people believe the snake to be a repulsive kind of creature, and, of course, according to the belief, slimy. Returning again to the facts, the snake is not a *dirty* creature, for it refuses to touch carrion, kills and eats nothing but live food unless in a zoological garden. As to the sliminess, the snake's body is quite dry, its temperature being that of its surroundings.

They are either live-bearing (viviparous) or egg-laying (oviparous). All of the poisonous varieties are of the former, and the harmless, the latter. This rule applies only to United States snakes.

Is this snake venomous? You probably have asked yourself that question upon meeting one of the forest's slithering citizens. Should I kill it? Probably the answer to both questions is no, for the harmless varieties out-number the harmful, and too, they often affect some rather startling color protection. They appear to be a poisonous species. But the eye of the expert is quick to discover the deception. So, if you don't actually recognize the snake as being poisonous, play safe—don't kill it!

Next to assuming the deceptive color patterns of the dangerous snakes, they startle the neophyte with alarming gestures and threatening attitudes. The hog-nose snake of the South is to the superstitious natives of the Ozarks a "spittin' viper." And they murder it whenever they find it. Factually, this fat-bodied snakes is most harmless, despite its alarming hissing, coiling, striking and bloating of the body. And if the bluffer does not succeed in just absolutely scaring the pants off you, it turns over on its back like a possum—and plays dead!

This protective coloration actually back-fires with the bull-snake. Many of these beneficial creatures are killed by city-dwellers mistaking them for rattlers. And every bull-snake is estimated to be worth $50 to the average farmer for the work it does in exterminating vermin.

In reality, we have but four really venomous snakes in the United States. The rattlesnake, moccasin, copperhead, and coral snake earn the dubious honors for being man killers. Their death-dealing possibilities are in about the same order. Factually, the coral snake, related to the cobra, is far more poisonous, but its gentle nature and extreme reluctance to do battle, saves many lives. Why anyone should die from a copperhead bite is a mystery, for the fangs are rather short, which precludes the possibility of a deep wound, and the glands are small.

With the hundreds of varieties of snakes on the North American continent, the chances are, any snake you find within a densely populated area is harmless. The dangerous species seemingly are not attuned to the hustle and bustle of the modern world. So, the best place to see them is in the traveling carnival pit-show. Yet, it would be better to visit a zoological garden and see them in their natural habitat.

In the tinseled world of the circus and carnival a superstition prevails that the snakes have been de-fanged. This, if it were possible, would be a good idea. Unfortunately, Nature replaces lost fangs almost immediately upon their loss, for behind each active one is another waiting its turn to slip into the fang-socket when the fully developed fang has been broken or lost. Sometimes, the poison glands which are located under the eyes, are removed. But this is a touchy job and often results in the snake's very untimely demise. Not every showman has

the skill to perform this operation which probably accounts for rattlesnakes being purchased in great numbers every season. The snakes you see in the pit-show have become docile from constant handling. But as he is an undependable critter, extreme caution should be exercised even if the rattler is supposedly tame enough to crawl up and take a live white mouse from between your teeth.

Snake-bite deaths in India wipe out thousands of persons annually. We, in the United States, are most fortunate, for similar deaths can be counted on the fingers of both hands. Some of these deaths are doubtful as to their causes. Diseased hearts and fear contribute to the mortality rate. Prompt medical attention saves many lives. On the other hand, many persons are bitten by harmless species.

Antivenin, the standard medical treatment for bites (serums made from the venom of snakes) is the promise of the Ages which has been fulfilled. The ancients believed that snake-bite could be cured with human saliva. There is no estimate of the thousands of times this belief was refuted since the mortuaries in those days kept very inadequate records.

Snake-bites in the old days were painful and usually fatal. As I mentioned, the prevailing superstitions had much to do with the death rate. Inasmuch as the snake was always believed to have been in league with Satan, the bite had a terrific religious significance. Victims consulted witches or sorcerers and were supplied with unguents or powders; or they used pieces of pumice which were called "snake-stones" to draw out the poison. The idea of drawing out the venom was, of course, sound. It was that the proper method had not been discovered.

That the snake-stones failed was the cause of snake-bite becoming the scourge of the Middle Ages (476 A.D.-1500 A.D.). When every known treatment (and there were none too many) failed, the doctor recited a verse from the Bible, made the sign of the Cross three times over the victim and bade him *bon voyage*.

Many mineral specifics were employed. Among them was the bloodstone or haematite. This was ground into a powder and applied directly to the wound. Jet, a variety of lignite which our grandmothers cherished as jewelry, was powdered and blown into the nostrils. Unfortunately, neither of these worked, but their use was in all likelihood, highly entertaining.

The people of the Middle Ages may have used the snake-stone for an antidote, but the folks down in the Ozarks used the split-chicken remedy. The idea was to kill the chicken and apply half the carcass to the puncture. As the chicken was split lengthwise while it was still alive, the process was extremely irritating to the chicken and of doubtful efficacy to the victim of the bite. Supposedly, the poison was drawn out when the flesh of the chicken had turned green. However, if the treatment failed, the reader would have had no difficulty in determining *who* turned green.

Since the snake was of such danger to the Europeans, it is not surprising that the death-dealing species in the New World should rapidly become endowed with strange and lethal powers. These, the new colonists conferred upon them in all good faith. "Spitting" was one of the feats attributed to the American snake. Rolling downhill and impaling victims with a venomous spike near the end of the tail was attributed to the hoopsnake, a graceful and harmless species. The spitting was probably attributed to every variety of American snake. And no American snake spits like the Indian cobra which is capable of blinding a victim at several paces—and in some instances, rare, of course, inducing death.

The Ozark mountaineer believed that the coach-whip snake sidled up to its victim and lashed it to death. Black-snakes charmed birds, hypnotizing them until they fell harmless to the earth where they were crushed to death and swallowed.

We'll explode the foregoing *muy pronto!* Of the ridiculous charge against the coach-whip snake, we'll say nothing. But the black-snake needs a champion, for like the bull-snake, it's no slouch when it comes to exterminating vermin. The black-snake's victim is not crushed; it is suffocated. Then, the snake, whose vision is extremely limited, feels over the carcass for the head which it ingests first. The bones are not even broken. The tremendous jaw displacement enables the snake to swallow a victim larger than the circumference of his own body. And the powerful digestive juices complete the job.

How can I rid my premises of snakes? This question has been asked of scientists for years. Truthfully, no known agent is effective—not even cyanide gas.

Some of the harmless—and the poisonous ones, too—have an embarrassing affinity for humans. They like to inhabit houses, barns and other outbuildings. And I've heard they're worse than cold feet when they decide to share your bed on a frosty morning.

The Negro share-cropper found the

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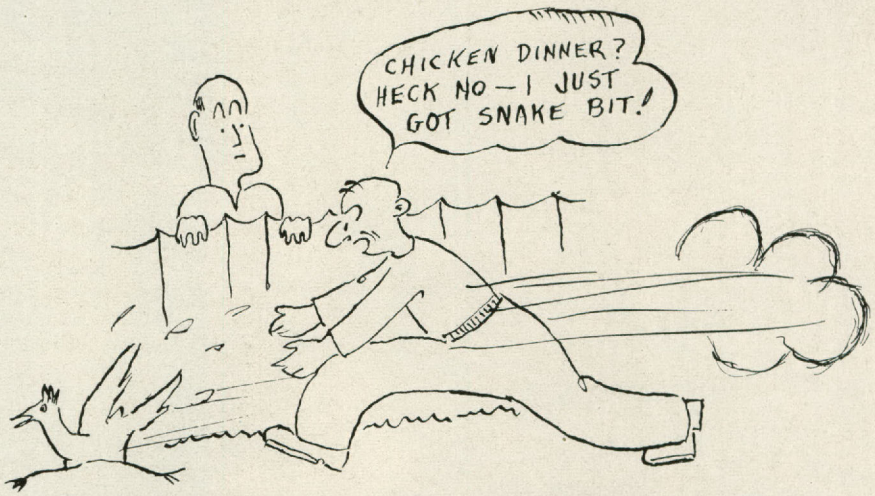

The folks down in the Ozarks may still use the "split chicken remedy." The idea was to kill the chicken and apply half of the carcass to the puncture.

WHAT INDUSTRY EXPECTS FROM THE STATE AGENCIES IN THE

By H. E. FAUBION

AS EARLY as 1860, the Legislature of Texas, in keeping with the spirit of that section of the Constitution which designates all rivers and streams natural resources, enacted a law which made it a penal offense for any citizen to pollute or obstruct any water course, lake, pond, marsh or common sewer to a degree that the water would be rendered "unwholesome or offensive" to the inhabitants. The penalty for a violation of this Act is a fine in any sum not exceeding $500.00.

Industrial development in Texas in recent years brought with it pollution hazards which caused the Legislature to enact a more drastic anti-pollution statute in 1925. This law made it a penal offense to pollute any water course or public body of water by the introduction of crude petroleum, oil or other like substances; or to introduce directly or indirectly any sewage or unclean water, or unclean or polluting matter or thing into a stream or public body of water used for farm livestock, drinking or domestic purposes. A violation of this Act was punishable by a fine in any sum not less than $100.00 and not more than $1,000.00.

Six years later, the Legislature, keeping in mind that provision of the Constitution which declares the "preservation and conservation of all natural resources to be public rights and duties" enacted a third anti-pollution law to protect the public rights to the use of public property. At this time, industrial development had made strides unparalleled by any state in the Union and pollution hazards had increased by at least tenfold. New oil fields had been discovered in North, East, West and South Texas. Ninety thousand oil wells (we now have about 126,516 wells) were in production and fifty per cent were producing salt water. More than six hundred cities, towns and communities were burdening the public waterways with 200,000,000 or more gallons of untreated or partially treated waste. Industry was contributing liquid waste in vast quantities possibly exceeding that contributed by municipalities.

This law was Article 698-a and was cumulative of the law enacted in 1925. It made it a penal offense to pollute a water course or other public body of water by the introduction of crude petroleum, oil, acid, sulphur, salt water, oil refinery waste or oil well waste, and fixed the penalty for a violation of the Act at not less than $200.00 nor more than $1,000.00.

It also provided that the introduction of salt water into a stream in excess of 2,000 p.p.m. would constitute a violation of the Act. These statutes were being equitably enforced by the Game, Fish and Oyster Commission. But the tragedy of the story is that, because of a conflict in the penalty clauses of the two statutes, both laws were held to be inoperative by the Court of Criminal Appeals on January 27, 1943, when a case went up on appeal from a county where a conviction had been on a complaint charging a violation of Article 698-a.

After the opinion was handed down by the Court of Criminal Appeals on January 27th, nullifying the laws, the Game, Fish and Oyster Commission was powerless to aid other State agencies in the prevention of pollution.

Early in January of 1943, after the 48th Legislature had convened, with the sanction of the Governor, a meeting of representatives of the Health Department, Railroad Commission, Attorney General, Board of Water Engineers and the Game, Fish and Oyster Commission was called to draft a bill to be presented to the Legislature for enactment to control pollution in

* Presented at the Third Gulf Coast Regional Conference on Industrial Health, October 12-14, 1950, Houston, Texas.

The public complains, and justly so, when our streams are polluted and fish are destroyed.

CONTROLLING OF INDUSTRIAL WASTES

Texas. The bill was amended several times after the first draft, at the suggestion of representatives of some of the larger cities and some industrialists.

Assistant Executive Secretary

The bill in its final draft was passed and signed by the Governor on May 8, 1943.

This law makes it unlawful for any person, firm, corporation, association, town, city or other political subdivision of the State, or any agent, officer, employee or representative of any person, firm, corporation, association, town, city or other political subdivision of the State to pollute any public body of surface water.

The Act defines "pollute" as the throwing, discharging or otherwise permitting to reach or to be introduced into any public body of surface water, any substance, material or thing in such quantity that the water into which it is introduced will be rendered unfit for one or more of the beneficial uses for which it was fit or suitable prior to the introduction or that is rendered harmful to public health, game birds or game animals, fish or other edible aquatic animals, or that endangers any wharf, hinders operation of any boat, or renders any bathing beach unclean or insanitary.

The term "public body of surface water" as defined by the law, includes all surface creeks, rivers, streams, bayous, lagoons, lakes and bodies of surface waters fed by a stream or that are subject to overflow from or into a stream which are the property of the State or a subdivision thereof; also all portions of the Gulf of Mexico within the gulfward boundary of the State and all inland waters in which the tide ebbs and flows.

Texas today has an oil field on the watershed of all of the major waterways of the State, and industrial plants are located on the lower reaches of most of these streams. A high salinity in the streams would be as hazardous to the operation of these plants and the production of war materials as a strike in the coal mines would be to the production of steel by the steel mills. We must not permit the introduction of any substance or thing into our streams that will retard development or interfere with the growth of our great Commonwealth.

The enforcement of that section of the pollution law which has to do with the protection of game and fish is the responsibility of the Game, Fish and Oyster Commission. When a health problem is involved, the enforcement becomes the responsibility of the State Health Department. In extreme cases, injunctive relief may be had under Article 4444 of the Civil Code if the criminal statute does not afford immediate permanent relief. These two departments act jointly with the Attorney General when a suit is filed seeking injunctive relief. It is our candid opinion that the above statute delegates ample authority to the State agencies charged with its enforcement to safeguard all of the interests of the citizens of the State. Our pollution problems in Texas are so varied that a uniform law for all the States would not be adequate in Texas and it would be difficult to enforce because of certain features of the proposed law.

The public generally, including municipalities and industries, has been apathetic toward the appeal of sportsmen's organizations, nature lovers and other unselfish organizations leading the campaign in Texas for clean water and the conservation of our natural resources. Opposing these efforts, some

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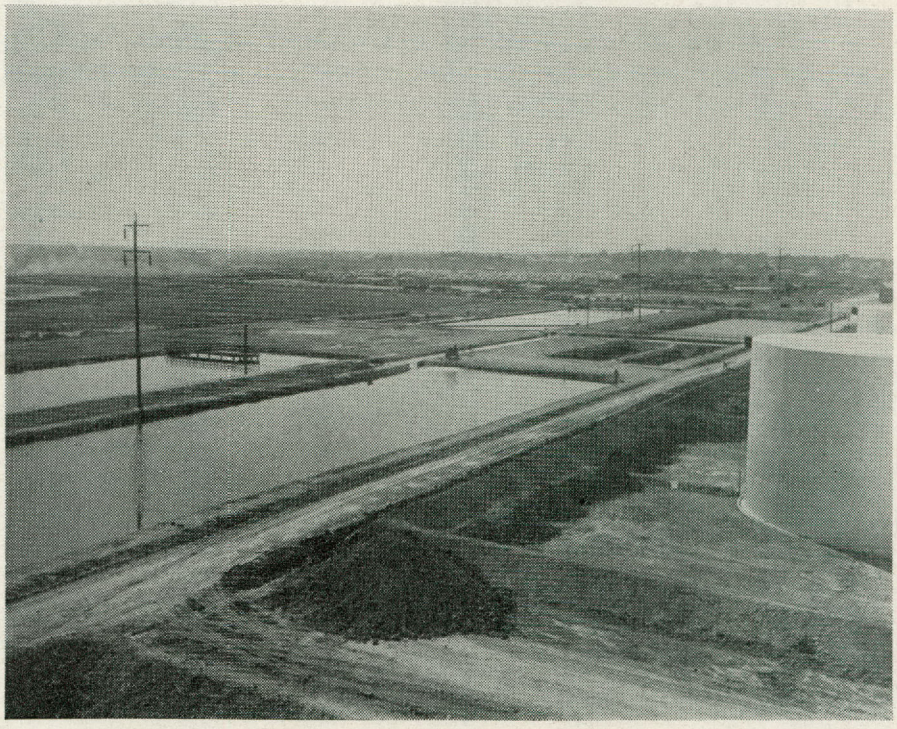


A model trapping system for the treatment and purification of industrial waste.

Mr. Pintail Gets a Serial

By J. R. SINGLETON*

WHEN it comes to serial numbers almost no person or item is exempt. The spread has even taken to our feathered friends. Perhaps the purpose is a little different, but the results are the same.

During the past four winters serial numbers have been assigned to some six hundred pintails here at Rockport, Texas. An earlier article written by Wendell Swank appeared in TEXAS GAME AND FISH giving the purposes or objectives of bird banding. These are listed briefly.

1. To determine location of nesting grounds of our Texas pintails.

2. To learn something of the average age attained by the birds, and whether we are killing the young produced each year or our breeding stock.

3. To define more clearly the flyway routes of the birds, which leads to establishment of refuges. The resting and feeding areas are set up in the flyway to provide some protection to the birds on their flight south.

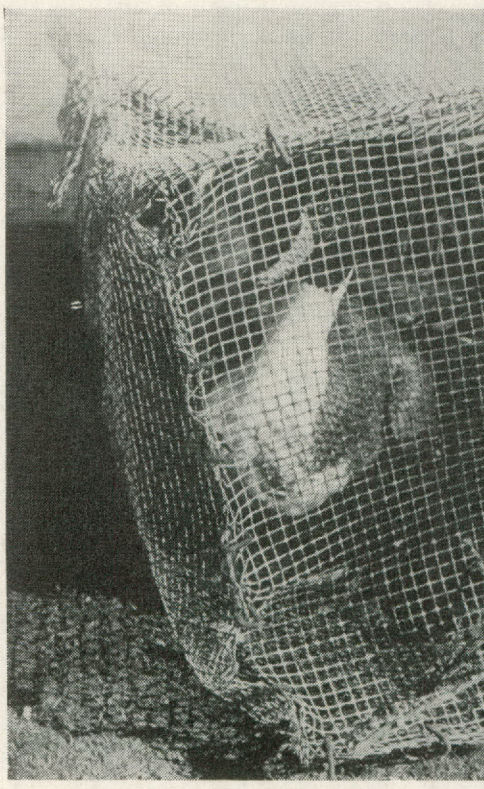
Of these pintails banded at Rockport, 26 band returns have been received. Ten were killed within two miles or less of the original banding site, eight additional were killed elsewhere in Texas, three in Nebraska, two in California, and one each in Alaska, North Dakota, and Oklahoma. Thus, we find that about 38% (10 birds) had returned to the same wintering site as occupied the year before. From a study of the additional band returns, we find that nearly all were traveling toward the Texas coast.

An exception to this statement would be in those birds killed in Alaska, Nebraska, and North Dakota. These three areas are undoubtedly nesting sites, as will be shown later. The two pintails killed in California fit into a recently developed theory of pintail migrations from their nesting grounds in the north central United States, and Alberta, Saskatchewan, and Manitoba, Canada southward into Montana and North Dakota, westward into California, south into Mexico, crossing to the Gulf Coast, and northward again up the Central and Mississippi flyways. It is anticipated that additional bands from local pintails will be returned from California. However, the percentage of bands retaken at or near the banding site, certainly indicates a strong tendency to return to the same wintering area each year.

In addition to these returns from locally banded birds, we have received

* Leader—Project 29-R

A group of pintails in a holding pen.



Birds are being held in c

Number

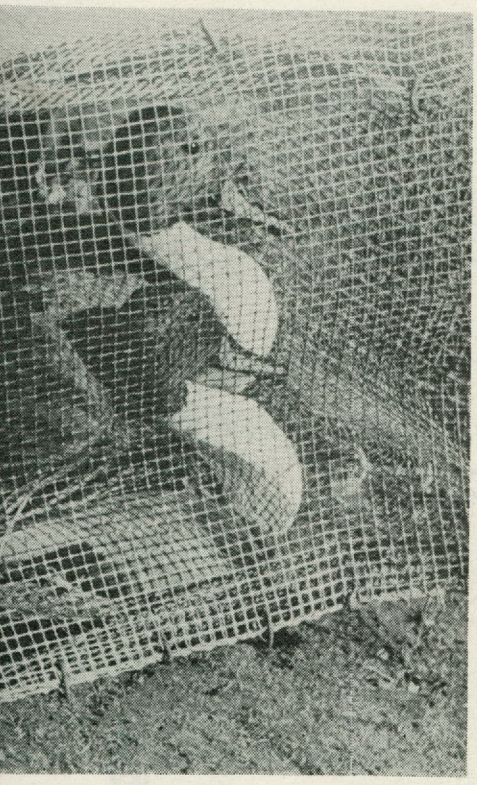
reports on 143 other banded pintails killed in Texas since 1948. All of these birds were banded in other states and in Canada. The leading areas were Saskatchewan, 30; Alberta, 26; Manitoba, 21; North Dakota, 21; Utah, 9; and Montana, 6. The majority of these ducks were banded in July and August during the nesting and rearing season. Both adults and juveniles were banded.

Wildlife Biologist

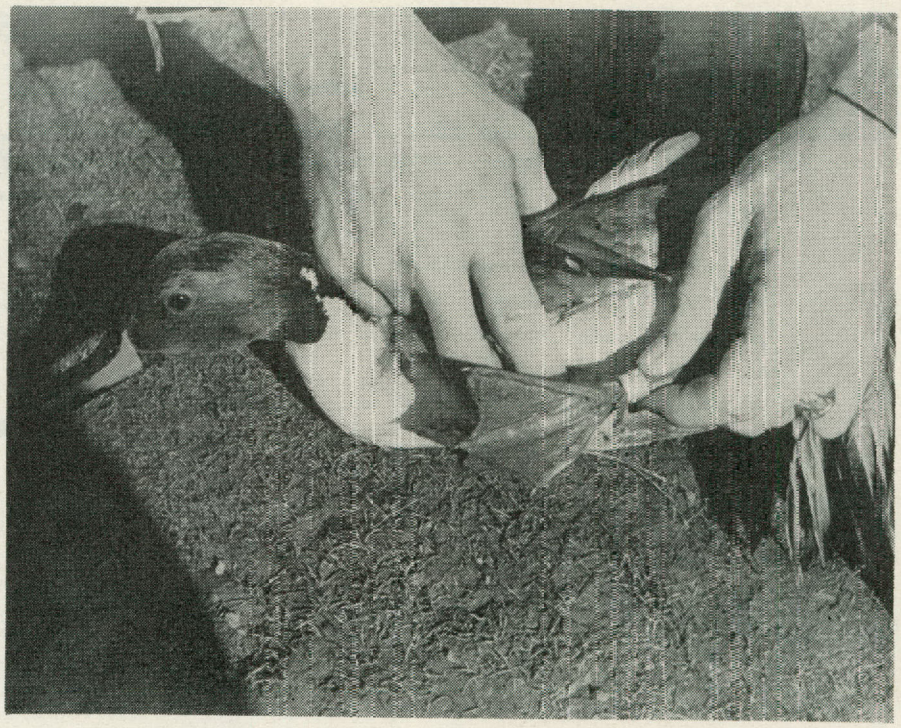
Thus the return of these bands aids in determining the longevity of individual birds, which has an important bearing on production of young.

Pintails are well distributed over the Texas coast, from the marshes of the Galveston-Beaumont area to the Laguna Madre of South Texas. As would be expected, food habits vary considerably over this wide range of habitat. Waste rice, smartweed, wild millet, and various rushes are utilized extensively on the northeastern Texas coast, while the salt water aquatics, widgeon grass and shoal grass, along with the very minute invertebrates, are utilized in the bay areas of south Texas.

At present, waterfowl banding stations are in operation at Rockport and near Port Isabel. With our high concentration of pintails, several hundred will be trapped and banded. The more we can band, the more significant the information we collect. However, before the data can be completed, we must have the bands returned.



h pen prior to banding.



Mr. Pintail now has his serial number and is about ready to return to his native wild state.

Red Guns — *In China and Korea*

By ADAM WILSON, III

SAY, fellers—you gun-hungry guys! Know what they are using in the Far East—the arms from which our ground troops are dodging bullets?

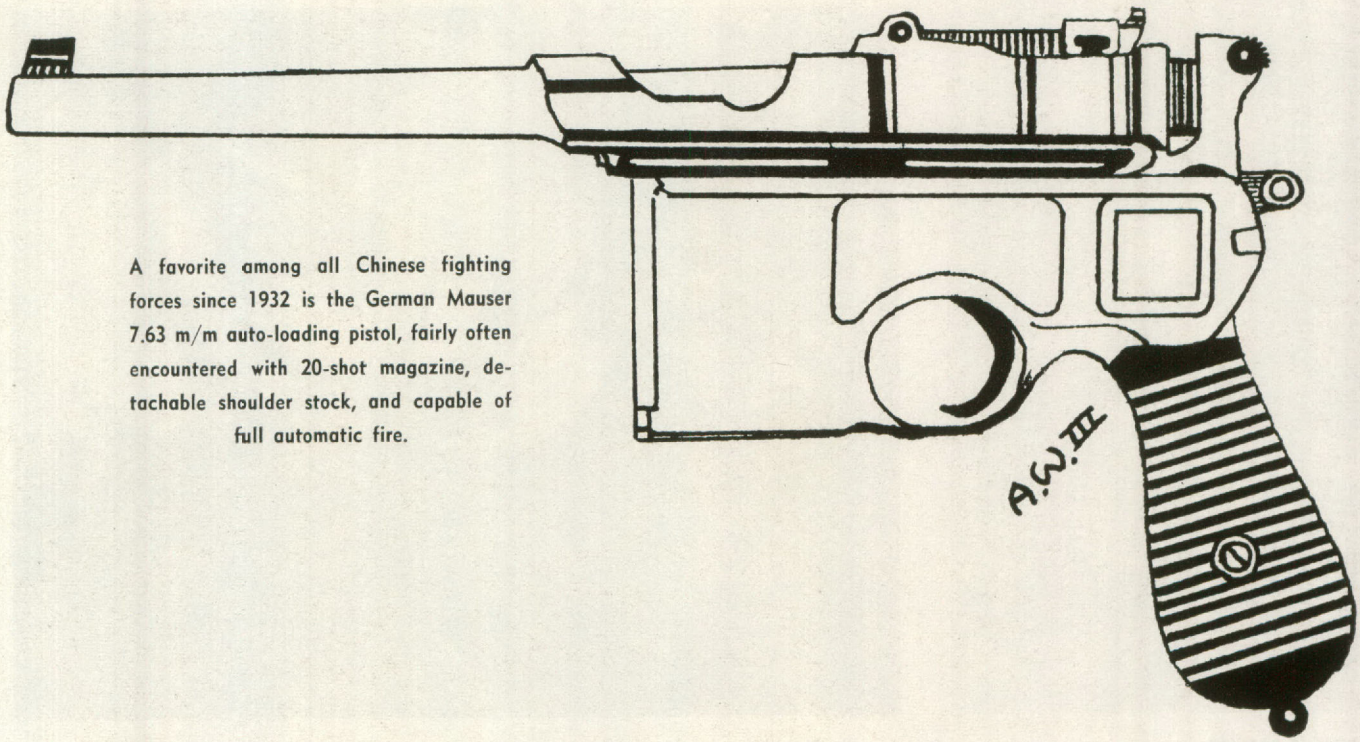
Those of us who are still making tracks on home soil can't keep from wondering and having a hankering to know what type, make, caliber, et cetera, of small arms that our enemies are using—short of the many forms of machine guns.

Their fire pieces are numerous and varied. The missile that whines over the heads of—and sometimes stopped by—our boys may have departed from the muzzle of a firearm carrying the trademark of any nation on the globe. But, the most common guns throwing lead out our way are stamped with Russian, Japanese, Chinese, Belgian, and United States' marks. It is no surprise to an Allied soldier when he notices a weapon of a friendly nation lying beside a dead enemy soldier—a captured weapon, to be sure, which is, generally, a much more superior arm than the one issued the unfortunate man. Late model Russian and Japanese guns are fairly good fighting pieces, but do not show the workmanship of U. S., British, German, or Belgian military arms with which most of the Allies are fighting. Home-made guns "manufactured" by native blacksmiths are frequently encountered. These very crudely constructed weapons were made with only one object in mind—tools with which to murder! Battleground evidence shows that the targets viewed through their makeshift sights are not always their victims—sometimes their *shooter* gets the works!

Japanese arms, captured by the Chinese during past years of conflict between the two countries, are for and against us. All of the Jap's *prewar* arms are well constructed and are good performers; the late models are, with few exceptions, strictly mass-production, rough and cheaply built jobs—one might say, "made one the run." A soldier can defend himself and give an enemy a heck of a lot of trouble with the pieces, but I would hate to think my country's security had to depend on such hunks of junk.

The little 6.5 m/m Model 38 Arisaka is seeing action; however, not nearly as much as the late Model 99 (1939) 7.7 m/m caliber. Both have bolt-actions and are equipped with a 14½-inch bayonet. Muzzle velocities are 2,400 feet per second (138-grain bullet), and 2,600 feet per second (175-grain bullet), respectively for the two rifles. I have found the smaller caliber a bit more accurate and a smoother operating arm, but it doesn't, of course, have the knock-down power and range of the larger bore.

Sidearms of the Rising Sun nation,



A favorite among all Chinese fighting forces since 1932 is the German Mauser 7.63 m/m auto-loading pistol, fairly often encountered with 20-shot magazine, detachable shoulder stock, and capable of full automatic fire.

the auto-loading 8 m/m Nambu in models 1914 and 14 (1925) and the Model-26 9 m/m revolver, are getting a thorough barrel warming in Red hands. The Nambu's 102-grain bullet drifts along at 950 f.p.s., while the insignificant 9 m/m's *lead* number leaves the muzzle at 750 feet per second. Ranking Red officers prefer the auto-loaders; the double-action revolvers are found mostly with the common, cannon-fodder type of soldier.

Russian military equipment has been poured into the fighting zones. Since Russia has turned to simplified manufacture and mass-production, their small arms are not in a class with the majority of ours, even though theirs are a direct copy of many of ours. Most commonly encountered are the 7.62 m/m Tokarev pistol, the 7.62 m/m Nagant revolver, along with the old bolt-action Moisin, and auto-loading models 36, 38, and 40 in the rifle line. All the long arms handle the 7.62 m/m Russian Service cartridge—a good one, shoving a 148-grain slug at 2,830 feet per second. The 85-grain pistol bullet moves along at 1,390 f.p.s.; revolver muzzle velocity is 726 f.p.s. with a 108-grain bullet.

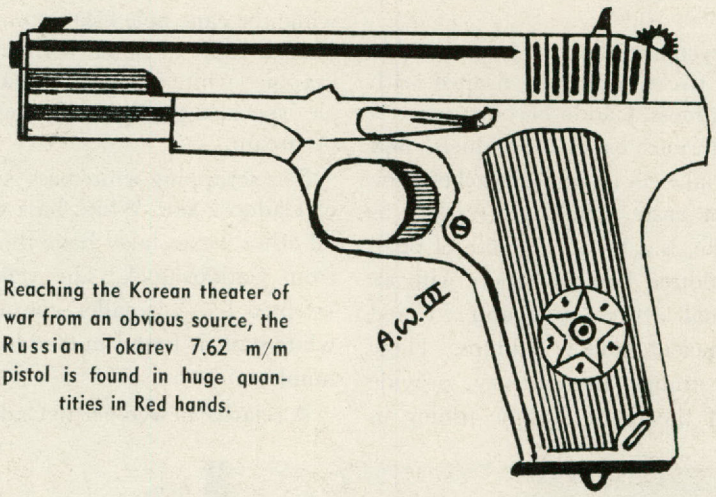
German arms found their way into China and Korea through an obvious channel—by way of Japan during our trouble with both of the countries. Those of us who have had experiences with this brand of firearms know that they are good, reliable, and well-made pieces, showing above-the-average workmanship. The only exceptions are those turned out by slave labor of inferior materials during the latter part of World War II. Luger pistols, Mauser pistols and rifles, are a favorite with the Communist soldier. Pistols come in 9 m/m Luger, 7.65 m/m Luger, and 7.63 m/m Mauser calibers—velocities being 1,150 f.p.s., 1,250 f.p.s., 1,420 f.p.s., varying with barrel lengths. The Mauser rifle chambers the German 7.9 m/m Service cartridge, paralleling our .30-M2 Service cartridge, ballistically.

Firearms, for war or peace, from the famous Belgian Fabrique Nationale d' Armes de Guerre plant are of equal, or better, quality to German arms; therefore, their reputation as excellent fighting tools needs no elaboration. The Reds—as well as Allied Forces—are making good (or bad) use of Belgian Mauser rifles, and Belgian-made 9 m/m Browning Hi-Power pistols (China's Service sidearms).

Just how they got there this writer has not the slightest idea, but arsenals of cheap, mail-order type of American revolvers, in .22 calibers and .32 calibers, are making a lot of smoke opposite our ridge. They are very inadequate as military weapons, needless to mention, but I am sure the pieces are capable of dirty enough work when their target's hands are bound and eyes are blindfolded.

A prized weapon by our enemies is our service pistol—the .45 A.C.P. Highly esteemed, too, by the Red boys, is our fine old Model 1903 Springfield which is found in quite noticeable numbers in their hands, since the U. S. has provided China with thousands of the 1903's in past years—not realizing at the time that there would be a change of color among some of the people of that nation.

Looking, impartially, at the whole picture of firearms which are the side of the opposition, then glancing at the familiar representations of the Allies' military small arms, I see much poor-to-good against a limited amount of good-to-excellent. In other words—great quantities abreast of superior qualities.



Reaching the Korean theater of war from an obvious source, the Russian Tokarev 7.62 m/m pistol is found in huge quantities in Red hands.

The North Korean and Chinese Communists are making extensive use of captured Japanese military equipment — such as this Jap 8 m/m Nambu service pistol.

Let's Explore

CADDO LAKE

By ROBERT KEMP

Aquatic Biologist

CADDO, lying half in Texas and half in Louisiana, is the largest natural lake in the South. It has an estimated area of 35,000 to 45,000 acres, but so much is made up of swamps and water-filled cypress breaks that the lake has an average depth of something less than ten feet. Caddo is roughly thirty-five miles long and three miles wide.

Honeycombed with impenetrable cypress picturesquely draped with Spanish moss, Caddo becomes a series of mysterious bayous, channels, and hidden lakes in its upper reaches. The lower or eastern half, referred to as Big Lake, is a broad expanse of open water, dotted here and there with an occasional cypress tree and covered with ancient hollow stumps. These hollow stumps, by the way, provide some of the finest crappie fishing in the Southwest.

The greatest variety of game fishes found anywhere in Texas may be had in Caddo Lake. No matter what time of the year or what method of fishing is preferred, the angler is sure to find sport here. The largemouth bass and the pickerel (pike or jackfish) head the list for the casting enthusiast, while the cane pole fisherman will find himself right at home with the white crappie (white perch), the black crappie (speckled perch), and many species of bream.

The scrapping white bass is a native of Caddo Lake. White bass found in all other Texas lakes have their origin from Caddo stock. The yellow bass (striped bass), smaller cousin of the white bass, is found in Caddo in large numbers.

A relative newcomer to Caddo is the Kentucky spotted bass, which was stocked by the Game, Fish, and Oyster Commission about ten years ago. This fish is somewhat similar in appearance to the smallmouth bass, and is so called by most natives. Fishing for this bass is very specialized, due to the fact that they are seldom caught except on sandbars, live crayfish being used for bait.

Several species of catfish await the trotline fisherman, including channel, blue, and yellow cats. The largest catfish taken in recent years was a huge 172 pounder caught in 1946.

The first white men ever to see Caddo Lake was a group of exploring Spaniards who stumbled upon it during their wanderings in 1536. At that time Caddo was a swampy chain of small lakes and winding bayous. Then in 1811, according to Indian legend, a chief of the Caddo tribe was warned

Entering Mossy Break from Blind Slough, we come to the portion of the lake that is most often free of muddy waters. Floating through Mossy Break, below, we observe some of the huge cypress trees from which hangs Spanish moss.

of impending disaster by the Great Spirit. Heeding the vision, he led his people to higher ground, whereupon the earth trembled, the ground sank, and floods poured over the land where the tribe once lived. Less romantic historians say that this was the great New Madrid earthquake which shook all the Southern states, giving birth to Reelfoot Lake in Tennessee as well as enlarging Caddo Lake in Texas-Louisiana.

Later, in the 1330's, a tremendous log-jam clogged the Red River, into which Caddo empties, making the watershed navigable. Steamboats traveled all the way from New Orleans through Caddo Lake and Cypress Bayou to Jefferson. For almost half a century this area was a scene of great plantations and a center of culture. Jefferson was a bustling city of 30,000 inhabitants when other Texas cities were mere trading posts.

It was during this era that Caddo suffered its greatest single tragedy. On February 11, 1859, the steamboat "Mittie Stevens" caught fire and burned to the waterline. More than sixty passengers perished in the blaze.

With the blasting of the Great Jam by the government in 1873, the flourishing steamboat area of Caddo ended.

Around the turn of the century Caddo boomed again with an influx of pearl hunters. A colorful Japanese, George Murato, is said to have found several thousand dollars worth of pearls in Caddo's fresh water mussels. When the pearl boom subsided, Murato shipped catfish eggs to a Midwest firm which packed them as Russian caviar.

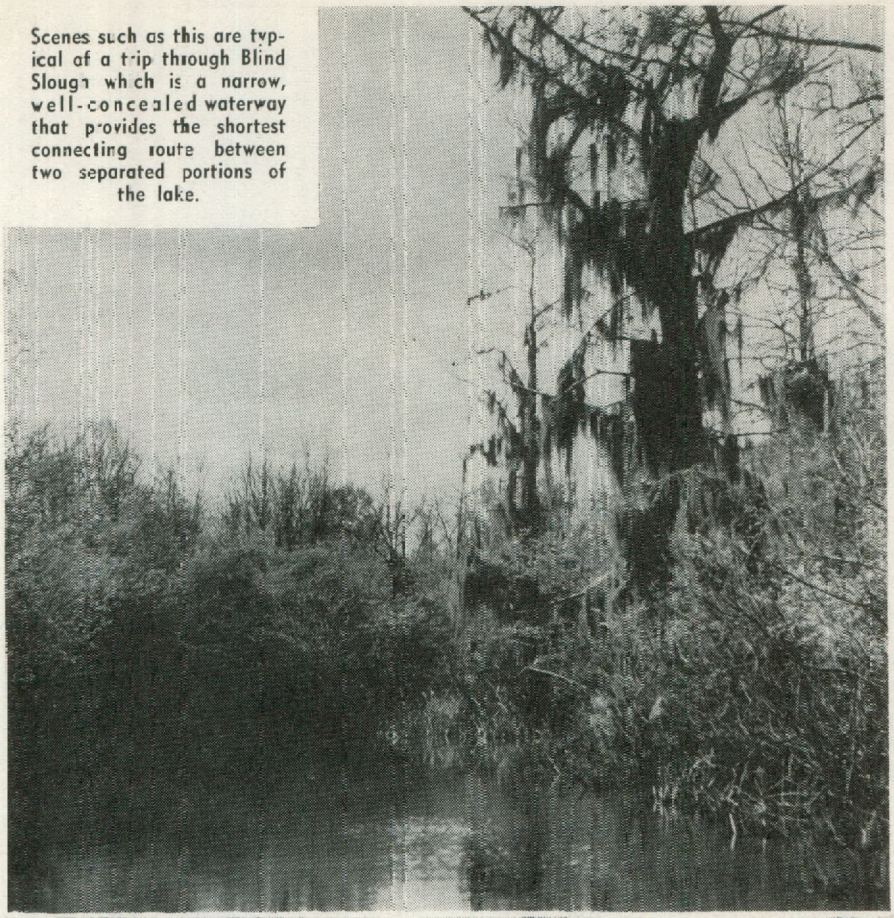
When oil was discovered in East Texas, more than a hundred wells were drilled on Caddo. A few of these wells may still be seen on "Big Lake," but a few old pilings are the only reminders of most of them.

The colorful names given to various localities around the lake is a fascinating phase of Caddo lore. Places such as Hog Wallow, Alligator Bayou, Turtle Shell, and Tar Island all have a significant meaning to the "old timer." However, the origin of a few names, such as Whang Doodle Pass, for instance, has become obscured with age.

As indispensable as rod and reel to the Caddo fisherman is that picturesque character, the Negro guide. None but the long experienced ever venture far from camp without a guide. Born to the tradition of the lake, most of these Negroes are following in the steps of their fathers who have handed the lore and legend of Caddo down to them through generations. If the fish are biting at all, these guides can be depended upon to find them.

As would be expected, tall tales abound in this land of legend and history. One of the most unbelievable is told by genial Allen Ellis, Game Warden on Caddo for the last fourteen years. This story concerns a local angler who was casting for bass one day a few years ago. It seems the fisherman made one particularly long, high cast with a small, heavy bait. As the bait fell, a huge bass came up out of the water to meet it in midair. Somehow the bait passed through the fish's gills to the outside where it was immediately seized by another bass. After quite a struggle the angler managed to land both bass, and for the benefit of all non-believers, Warden Ellis was an eyewitness to the whole proceedings.

In addition to twelve foot alligators and 200 pound "logger-head" turtles, another fresh water monster, the alligator gar, is found in Caddo. The largest gar on record from Caddo was caught in a net in 1909, and is reported to have weighed in excess of 400

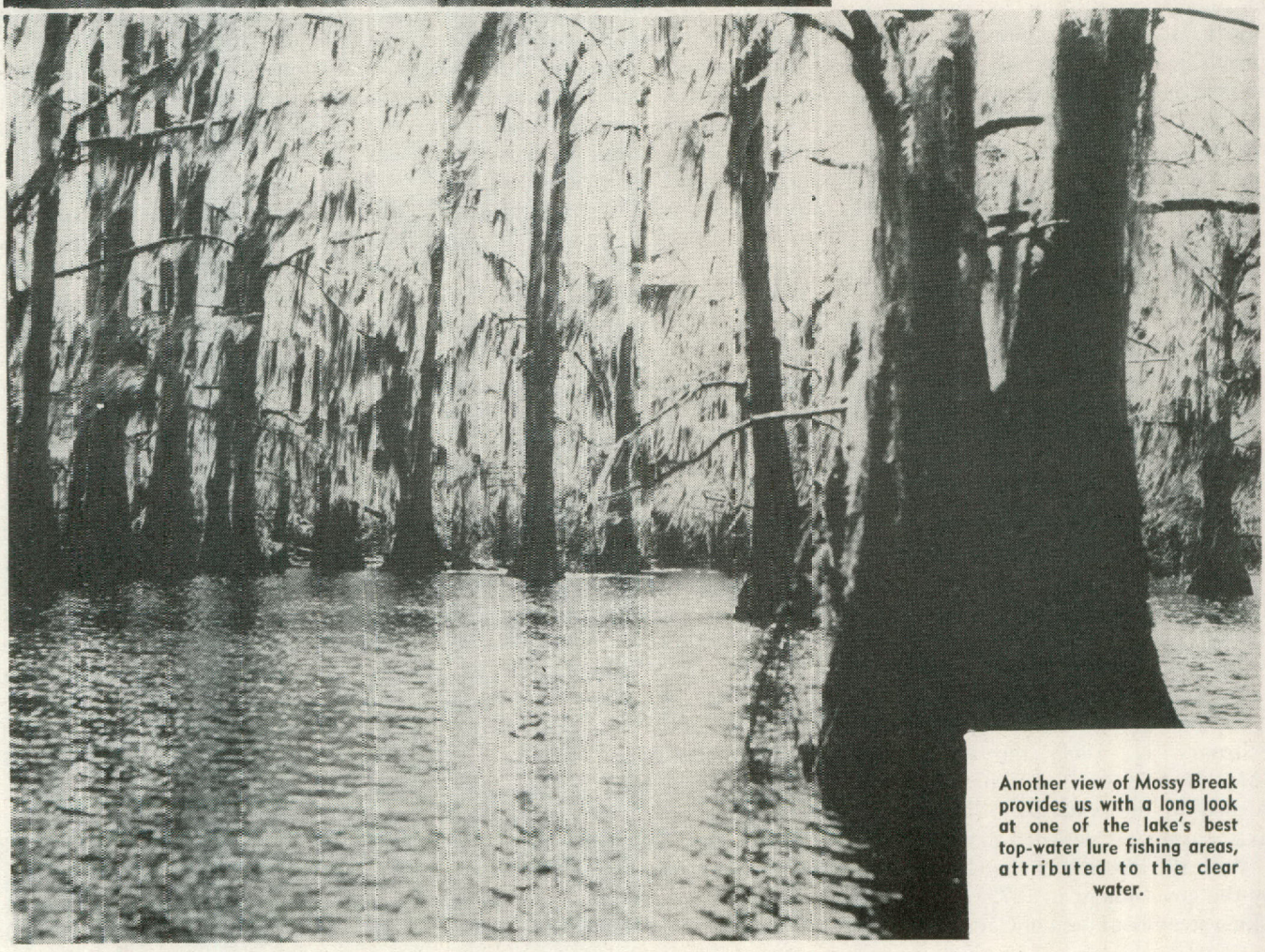


Scenes such as this are typical of a trip through Blind Slough which is a narrow, well-concealed waterway that provides the shortest connecting route between two separated portions of the lake.

pounds. In March, 1950, a 142 pound gar was taken on bass tackle with fifteen pound test line.

A well-known local fisherman, prominent in the East Texas Wildlife Association, recalls the night a few seasons ago when he had been gigging buffalo in the shallow waters of "Turtle Shell." He and his companion spotted an unusually large gar, and when they paddled over to where it was lying just beneath the surface, they found to their amazement and alarm, that it was slightly longer than their fourteen foot skiff. After some rather hurried deliberations, the fisherman gathered sufficient courage to plunge the heavy three-pronged gig deep into the monster's back. Unable to hang on but for a brief second, he watched the gar leap and plunge for thirty or forty minutes before gar and gig disappeared together in the darkness.

Fishing isn't the only attraction found on Caddo. The lake is situated near a major flyway, and nimrods come from all parts of the state for



Another view of Mossy Break provides us with a long look at one of the lake's best top-water lure fishing areas, attributed to the clear water.

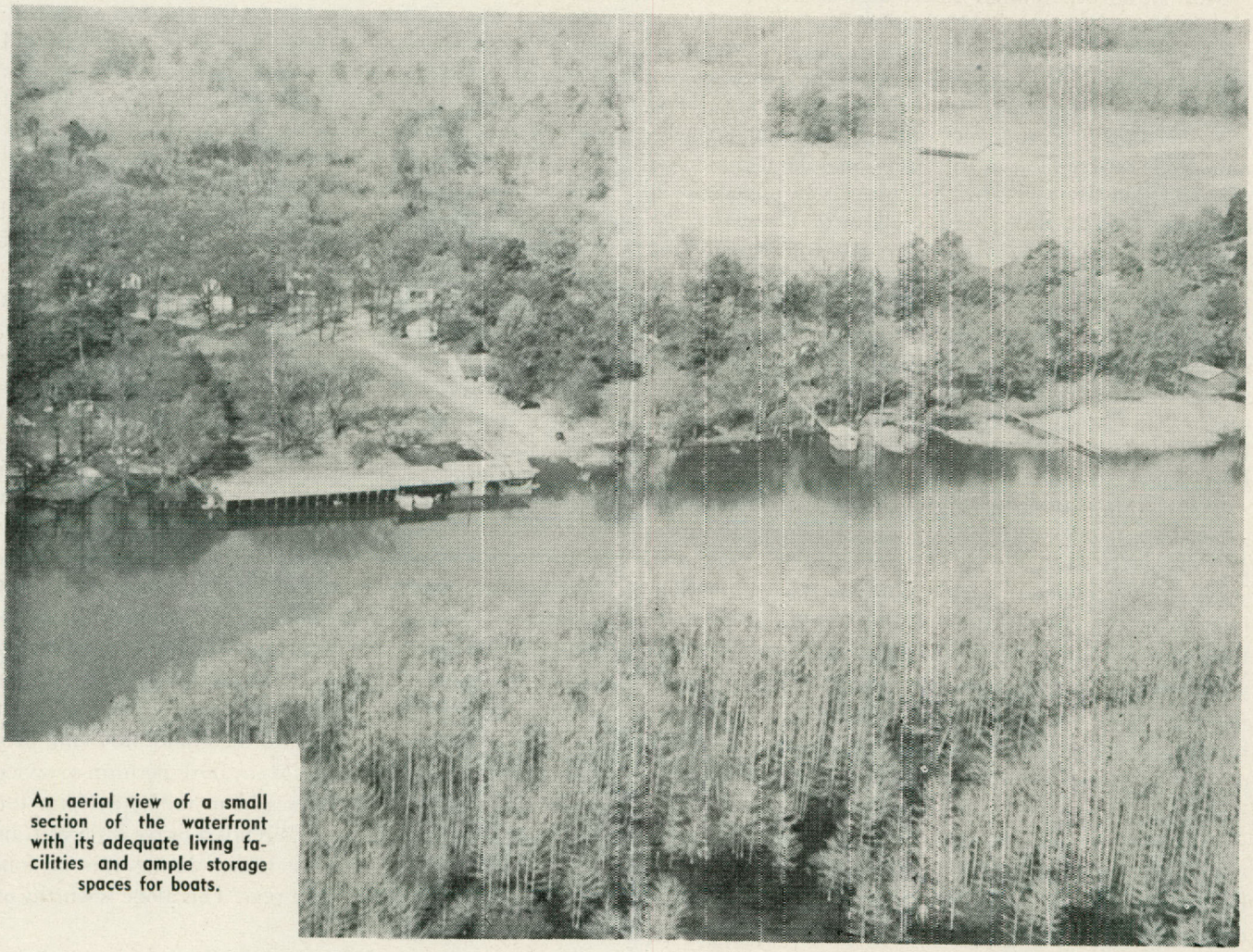
Caddo's duck hunting. Mallard, teal, and black ducks make up the greater part of the bag. However, Caddo is one of the few places in Texas where there is an abundance of the rare and beautiful wood duck.

Although the season is closed at present, deer abound on the islands and in the heavily wooded areas around the lake.

Camping facilities on or near the lake are plentiful. At present there are more than twenty camps on the Texas side of the lake, most of which provide very good boats, guides, and cabins. Many of the camps are well known for their fried fish dinners. An added attraction to the lake is the recently completed air strip, Beer's Field. Air minded sportsmen may now land right on the water's edge.

Down through the ages Caddo has remained wild and primitive. With fish in her waters and game on her shores, Caddo stands unspoiled and untouched by civilization, claimed almost alone by the grateful outdoor sportsman.

A duck blind typical of the scores found all over the lake.



An aerial view of a small section of the waterfront with its adequate living facilities and ample storage spaces for boats.

The Carolina Wren

By C. E. CHAMBERLIN

THERE are forty-six different kinds of North American wrens, ten of which breed in Texas, with an additional eight being occasional visitors. The wrens are of the family *Troglodytidae,* and the Carolina Wren is known to scientists as *Thryothorus ludovicianus.* They are the largest and the best singers of all of our Texas wrens.

The Carolina Wren is about six inches in length. The color of both male and female is a chestnut brown above; the wings and tail are barred with clear brown. There is a whitish stripe over the eyes and the chin is whitish. The bill is nearly straight and about the same length as the head; it is dark in color. The feet are dusky flesh color. The female is somewhat smaller than the male. And their song of, "Sweetheart, sweetheart, sweet!" or "Teakettle, teakettle, teakettle!" is joyful in its melody and harmony. It may sing, also, many varied mocking notes.

Most all the wrens build rather large nests in tree-holes, bird-boxes, or in most any hidden place such as an old hat, old boot, fern on the front porch, top plates on the back porch, or some unthought of place out in the store-room, or garage. I found a nest one time in the two-inch brace pipe of my backyard fence. In the wild places, it builds in the undergrowth. The nest in the bushes may be more or less pensile. I have seen several of these nests in the undergrowth along the Medina River south of Pearsall. Generally, the outer part of the nest is composed of sticks and grass and the inside is lined with soft grass, feathers, or other soft material. The birds lay from five to seven white eggs, which are spotted with purple and reddish brown. They may raise two or three broods a year. They breed from as far north as Massachusetts southward to Central Texas and the Gulf Coast. The Carolina ranges from the eastern part of the United States into the Plains and from New England to the Gulf Coast.

The Carolina Wren is one of several birds which sing nearly the whole year 'round, and its notes are clear, sweet, and strong. It always has been astounding to me that so small a bird can burst forth with such a clear, joyful, bubbling song. It is the *Caruso* of the bird world. It seems to have a special fancy for weird and unusual sounds. It is a great mocker and has a number of songs at its command. About the time one thinks he has learned to recognize the bird by its song it adopts a new tune, and the listener is at a loss to "place" the song. Just a few days ago I heard a bird singing in the trees of my backyard and I was wondering if it were a yellow-throated vire, a titmouse, or some other such bird. Finally, I located the little fellow and found him to be none other than my old friend the Carolina. While the Carolina wren sings enthusiastically and strong, its song does not express the bubbling, out-pouring, irrepressible ecstacy that characterizes those of most of the other wrens. It has the same wren inquiring nature, however, and may be seen flitting about odd nooks and out-buildings, and peeping and prying into every old shoe, box, knothole, and other hiding place about the home. Usually, it sings from the top of a bush or small tree with its head raised and its tail dropped in Catbird fashion. During the autumn it may feed largely upon berries, but during the rest of the year it feeds chiefly upon bugs, butterflies, and upon insects collected from the bark of the trees.

The male wren usually begins the house building before the female arrives upon the scene. He proceeds to fill almost every nesting place in his chosen vicinity full of sticks and may even build a rather good nest. When the female arrives and accepts him as her mate, she may not at the same time accept the house he has prepared for her. Should she decide to use the place he has selected and the nest he has already started, she proceeds, usually, to throw away all the material he has collected and to make a nest to her own liking. She will very likely use the same material. The male works with the female in the nest-building, but like most other male birds which help with the nest, he does little work. His real duty is to see that his mate may work unmolested and he merely pretends to work while he accompanies her back and forth on her trips. It is his duty to see that no other bird of the same species, either male or female, intrudes.

The feeding of the young of any bird is an enormous task and often taxes to the utmost the efforts of the parents. Wrens raise a large family and must work unceasingly to support such a family. Usually, the young do not require much food at any one time but the process of digestion is so rapid that they must be fed almost continuously. Wrens have been recorded as feeding their young 1,217 times in 15 hours and 45 minutes. I have timed them and found that they do work at about that rate of speed.

In the year of 1848 the Gulls saved the crops of the Mormons around Salt Lake City by destroying great hoards of crickets which were feeding upon the grain. In recognition of this service, the people of Salt Lake City erected a granite monument in honor of the Gulls. It stands today as a reminder to all those who may visit it, of the many such incidents which have been performed, and are being performed each year by the birds. Many birds perform a service in helping mankind, and they seldom fail to perform the task well. The little Carolina Wren is a brave little warrior whose caroling song may be heard during fair or foul weather throughout the entire year. This alone is worthy of a monument of appreciation.

The Carolina Wren

Fishes of Texas

SPOTTED BLACK BASS

Micropterus punctulatus

By MARION TOOLE
Chief Aquatic Biologist

THIS bass is very similar in appearance to the large mouthed black bass described in a previous issue of TEXAS GAME AND FISH. Many anglers do not realize that we have more than one species of black bass in our Texas waters, but we do have the two species. There are several differences betwen the two fish. It will be remembered that the mouth of a largemouth bass extends behind its eye. The mouth of the spotted black bass extends only to the center of the eye. As can be seen, this would mean that its mouth would be smaller than the mouth of a largemouth bass of the same size and explains why numerous anglers call the spotted black bass a smallmouth black bass, which is another species of black bass that occurs from Minnesota through the Mississippi River and Tennessee River watersheds. Also scales can be found betwen the rays of the soft dorsal and anal fins which are absent on the same fins of the largemouth black bass. The lateral stripe or side stripe of the largemouth bass is more regular than that of the spotted bass. The stripe of the spotted bass is made up of regular spots making the lateral stripe more irregular. The spotted bass is primarily a creek or river fish.

In order to further complicate the black bass picture, we find a subspecies of the spotted bass occurring in the rivers and streams west of the Brazos River. These fish don't have any particular common name, but we in the Game, Fish and Oyster Commission call them Texas spotted black bass since they occur only in Texas. Their scientific name is *Micropterus punctulatus treculii.* They look very much like a smallmouth black bass and as previously pointed out, many an angler will argue long and loud that he has caught a smallmouth when a *M. p. treculii* is caught, but the men who classify the fishes, the taxonomists, say no, they are spotted bass.

Many people wonder why the size limit on black bass was reduced to seven inches in Texas. These spotted bass are the reason. From scale studies it was found that many of these fish failed to reach the former eleven-inch size limit until they reached a fairly old age for a bass. As a result most of the Texas spotted black bass that were caught were thrown back to compete with the more desirable largemouth black bass. By reducing the size limit on black bass, it was felt that many of the Texas spotted black bass would be removed from the waters in which they occurred which in turn would lessen their competition with the largemouth black bass.

The spawning season for the spotted black bass is March through May. They prefer to construct their nests in gravel in shallow water but will use the exposed roots of vegetation. The male sweeps the area clean and the female is attracted to the nest to deposit the eggs which adhere to the bottom. The male then guards the nest until the young hatch and he continues to guard the fry (newly hatched fish) until they are about one-half inch in length, after which they are left to shift for themselves. The eggs of one female number from 5,000 to 20,000 depending upon the size and condition of the fish.

The spotted bass has the same general food habits as the largemouth black bass and is taken by fishermen with artificial lures and live minnows. Its striking and fighting characteristics are very similar to the largemouth black bass and the average fisherman is as pleased with his catch of the spotted black bass as he is with the largemouth. The propagation of the spotted black bass in Texas is confined to the hatcheries in the eastern section of the State where waters suitable for their environment predominate.

Letters

MOVIES

Dear Sirs:

I would like to thank you for your promptness and carefulness with which you handled my film orders for this school year. Your films are excellent and my school children enjoyed every one of them very much. I consider them excellent as teaching films, too, and very valuable to us as informative films about wildlife in our own state. Your department is to be commended for putting them out and for making them available to our school children.

Mrs. Emory E. Anderson
No. 1 Circle Drive
Palestine, Texas

THANKS!

Dear Sirs:

Enclosed you will find my remittance for a renewal of my subscription to TEXAS GAME AND FISH.

I was greatly pleased with each and every copy you published during the past year and hope you keep up the good work. Keep them coming.

Bill Frost
Box 311
Bryan, Texas

Dear Sirs:

A well deserved pat on the back for you is enclosed with my check for a five year renewal to TEXAS GAME AND FISH. It is a real pleasure to read facts and figures instead of fiction and fabrication.

Keep it coming and above all, keep it Texas. If I can ever be of any assistance in the Chocolate Bay-Galveston West Bay-San Luis Pass area, please call on me.

J. R. Dollar
Route 1
Alvin, Texas

Dear Sirs:

. . . I like TEXAS GAME AND FISH especially because it gives information as to what progress the Game, Fish and Oyster Commission is making in our own big state, Texas. As long as I am able, I shall subscribe and also help preserve game and fish for the future.

Thomas A. McPherson
314 Blevins
Fort Worth, Texas

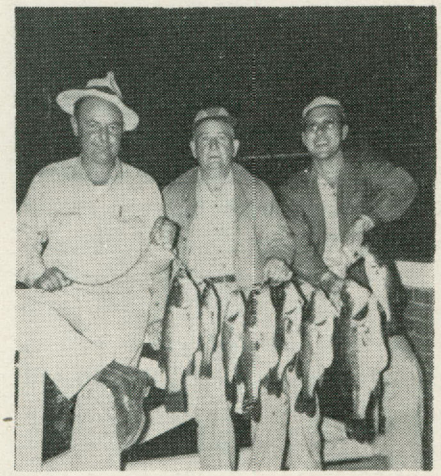
FISHING

Dear Sirs:

Here is a photo of a nice string of black bass which were caught at Inks Lake, Texas. The bass weighed a total of thirty pounds with a seven pounder leading the parade. The others were weighed in at the following weights: 4½ lbs., 4½ lbs., 4 lbs., 3½ lbs., 2 lbs., 2 lbs., 1¼ lbs., and 1¼ lbs.

Clinton Roberts
209 Dashiell St.
San Antonio, Texas

Reading left to right are Paul Moody, Bill Belohlavek, and Clinton Roberts, all of San Antonio.



BUFFLE-HEADS

Dear Sirs:

I have read in a well known bird book that buffle-head ducks may be extinct by the next century. Is this so? I like to hunt very much and have 19 ducks to my credit. I like to help provide cover for ducks as my daddy has some good duck water. I have never seen a buffle-head, but it must be a good game bird.

Jerry Craft (age 13)
Box 825
Jacksboro, Texas

(Buffle-heads are not nearly so numerous as some other species. They could all be extinct by the next century! The current trend in industrialization, farming of nesting grounds and drainage of winter range, plus increasing gun pressure—all these are in the direction of extinction. W. C. Glazener.)

THE COVERS

Dear Sirs:

The cover pictures on your magazines are worth the price of the subscription. I hope the biology teachers of Texas get as much good from the magazines as I do.

Evelyn B. Byler
214 N. B. Street
Blackwell, Oklahoma

Dear Sirs:

". . . My wife and I really enjoy your wonderful magazine. It's helpful in so many ways that we look forward to its arriving every month.

The artist, Orville Rice, is wonderful. We save all the covers that he has painted so that we shall have a fine collection of his life-like pictures some day. Keep Mr. Rice busy.

Hubert V. Sims
817 East Denver
Pampa, Texas

Acknowledgments

Dear Sirs:

During preparation of my article, THE POISONOUS SNAKES OF TEXAS, which appeared in the February 1950 issue of TEXAS GAME AND FISH, and which has since been reprinted in bulletin form, various persons kindly provided locality records for which acknowledgement was not made. For these data thanks are due the following people:

Ralph Axtell, University of Texas.
Bryce Brown, Strecker Museum, Baylor University.
Lawrence Curtis, Southern Methodist University.
Alvin Flury, University of Texas.
Ed V. Guidry, Port Arthur.
Ted Klein, San Antonio.
William Milstead, University of Texas.
C. A. Schutze, Austin.
Don Sellers, Abilene.

John Werler
San Antonio Zoological Society
San Antonio, Texas

FLY DOPE

FLY DOPE definitely is not what it used to be. The romance is gone out of it. Gone, or going fast. is the day when a closet or a whole cabin smelled subtly of pennyroyal not just in fly time but throughout the year; when every man who affected to know the woods was his own bugdcpe chemist and mixed sweet scents from all over the world; when you learned that the proprietor of the local store dealing in Gen'l Merchandize had perfected a new and secret formula that would make the local brand of gnats get right down and say Uncle for many many hours, maybe days if you didn't wash too much; when you could fish and smear O'Keefe's Own Mixture, The Fly Dope That Really Works, fish and smear all day, then come home, take a shower, and still smell deliciously of O'Keefe's Own. Then you could put some of O'Keefe's own ammonia on the bites that still itched.

Now, all this is changed. The War did it. During the War what we laymen used to brew up and smear on and call Bugdope became what the scientists discovered and distilled and distinguished as Insect Repellent. Adirondack Murray's prescription of a "small bottle of sweet oil and a vial of tar" (to be mixed by the goyd) became, simply, 6-2-2.

We must be tolerant about this. No doubt the scientists meant well. They had a job to do, which was to protect a large number of G.I.'s in far flung places from even farther flung insects, which job they did, and it is probably best to give them credit for it. If in the process, they destroyed an era and a tradition, and substituted a mere formula for individual enterprise, mass production for home industry, science for romance—then we may as well take it philosophically, shrug, and mutter C'est La Guerre. Because that's what did it—World Guerre II.

The evolution of fly dope is interesting. We have discovered, at least we think we have, that it works for two distinct reasons: it may have a *masking* effect, which means that the dope disguises the human smell and so causes the insect to look for dinner elsewhere; or it may have an *irritating* effect, which means that the insect goes ahead with his plans for dinner all right, but when he settles down on some dope-covered skin to grab off the first course he gets a sensational hot-foot and departs forthwith, sadly upset and with no further plans for eating dopey people. (More about this later.)

The *masking* principle was the first recognized. At least it was recognized a hundred years ago when the Reverend Adirondack Murray, with a conviction and willingness-to-give-forth-with-something-definite seldom found in scientists but not so infrequently in Reverends, wrote: "All manner of insects abhor the smell of tar. When, therefore, you have need to fish or hunt or journey where they may be expected, pour out a little into the palm of your hand and anoint your face with it. I may add that it renders the skin soft and smooth as an infant's."

There followed the Golden Age of Fly Dope, built on the masking principle. People smelled of pennyroyal, citronella, essence of camphor, tar—but not of themselves. The bug population took it and survived.

Then came the *irritating* (or hot-foot) principle. Now then, it appears that bugs have six legs, which would seem an extravagantly large quota of legs if the bugs used them only for walking and standing around. But they use them for other things too. Confirming our poor opinion of insects in general, we find that many of them taste things through their feet, the feet on the front set of legs being favored for this purpose. So the next time you see a fly rubbing its front hands (feet) together in a self-congratulatory manner, you'll know what it's up to.

It is obvious where the irritating (or hot-foot) fly dope fits into this picture. It is further obvious that when a fly dope combines the masking and irritating principles, as many of the latest dopes do, a maximum of discomfiture, unpleasantness, foot-soreness and possibly nausea is inflicted upon the hapless bug, which is expected to retire in confusion.

It should be pointed out, however, that the bug population is far from licked in this fight. A fly dope that works for one person may not help another at all, and a dope that utterly disgusts one species of insect may appear to be just a pleasant garnishing—like a tasty dressing on a salad—to another species. Thus the insect world demonstrates a nice variety which, in view of a corresponding variety in the human world, should keep the bug-dope chemists on the go for some time to come.

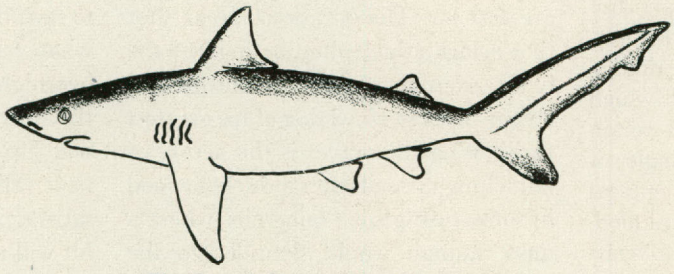
Also, according to an accurate count conducted by us personally, there are as many bugs as ever. DDT may have knocked off a few, but in our opinion its principal effect has been to cause the bugs to regroup and consolidate their forces in strategic areas where, with whetted appetites indicated by a great stomping of their front feet, they eagerly await your undoped presence.

—*New York State Conservationist*

Marine Fishes of Texas

By J. L. BAUGHMAN

Chief Marine Biologist



The Ground, Brown, or Sand Bar Shark

THIS shark, the ground, brown or sand bar shark is found in the western Atlantic from southern Brazil to New England.* It is still an open question whether repeated reports of its presence in the Mediterranean and from neighboring parts of the eastern Atlantic actually refer to the same species. This is perhaps the most numerous of the sharks that are caught in southern Florida in winter. It may occur generally in the Caribbean also at the season, for it has been recorded from Yucatan and from the coast of Nicaragua. In summer, on the other hand, so many visit the coast of the United States between New Jersey and Cape Cod, that there is record of fourteen of them harpooned by one single fishing boat near New York in one day. It is not known whether the entire stock shares in this migration, or whether some remain in more southern waters throughout the year.

We have no positive evidence of the occurrence of this shark in Texas. Nevertheless its indicated range is such that its presence in these waters is very probable. We include it here because of this reason alone, and for the sake of completeness.

Its color varies from slate gray to brownish gray or brown above, perhaps depending on the color of the surroundings; a paler tint of the same hue or white below. The fins have no conspicuous markings.

Usually about 22 inches long at birth, the sand bar shark matures at about 6 feet; occasionally growing to 8 feet or so. Weights are from about 100 pounds at 6 feet to about 200 pounds at 7 feet 8 inches.

An inshore species, most often seen at river mouths, in shallow bays and similar places, it is often taken in pound nets or harpooned, but it seldom shows at the surface. It feeds chiefly on small fishes—including skates and dog fish, a wide variety of which have been found in its stomach—also on crabs, bivalves, mollusks and octopuses to some extent.

Seemingly its young are produced chiefly in the northern parts of its range in summer. So far as is known, it is wholly harmless.

* Taken from "Guide to Commercial Shark Fishing in the Caribbean area. U. S. Fish and Wildlife Service, Fishery Leaflet No. 135.

New Boy's Magazine Released

Just released and available at all newsstands is a new and lively quarterly magazine called *Mark Trail,* a publication written specifically for boys in the 9-to-17 age group.

The scope of the magazine, edited by Ed Dodd, creator of the Mark Trail comic strip, is extremely broad. The first edition covers everything from the life history of the mole through movie reviews and a pictorial tour through an airplane factory. There are similar articles on Forest Service smoke jumpers, illustrated instructions for building a log cabin, and such high-adventure material as an impromptu wrestling match with a wolf. Other articles include a conducted tour of a rifle factory and instructions for skiing.

The theme, often repeated throughout, in one way or another, is "What Makes America Great?" The publishers hope to show their young readers the answers to this question in this and succeeding issues. In addition to Dodd, whose handsome and resourceful hero appears as an instructor in outdoor living on several pages of the new publication, *Mark Trail* is backed by Ted Kesting, editor of *Sports Afield,* and Jack Cornelius, executive vice president of the advertising agency, BBDO.

Newsstand prices are 25 cents a copy and annual subscriptions, available from 1109 Northwestern Bank Building, Minneapolis 2, Minnesota, cost $1.00 a year.

The youngsters should go for this in a big way.

The Retriever—

MARK OF THE CONSERVATIONIST HUNTER

When you meet a hunter who is accompanied by a well-behaved, sleek-coated retriever, you usually may place the man in the ranks of the wildlife conservationists without knowing anything more about him.

Each year, many game birds are shot but not recovered by hunters. Inexperience at judging range and poor marksmanship account for many birds which are brought down but which retain enough life to slip into a tangle of rushes where the most conscientious search will fail. Others, clean-killed, may drop in water inaccessible to boats or into impenetrable thickets. Whatever the cause, the result is one more bird, uncounted in the bag, eliminated from the game population and wasted. In making these humanly impossible recoveries, the retriever finds his greatest joy. The occasional freak shot that brings a duck plummeting into the blind, exciting enough to the hunter, cheats the waterfowl dog of his greatest thrill. What he craves is the action of launching himself after a duck downed in some rush-grown quagmire where a mere human would flounder to the crown of his cap. The use of a dog, in such cases, means the difference between bitter disappointment and a red-letter hunt.

Another waterfowl season has just passed into history, but it is not too late to start thinking of the next. Retrievers, whatever the breed, are not trained overnight. The hunter who gets a pup this spring and who trains him properly will have a real shooting companion next fall. Moreover, he will have the satisfaction of knowing that each bird hit will mean a bird humanely bagged.

Wildlife Fundamentals

• Continued from Page 5

be considered open sewers like some of the streams in the northeast, concerted action must be taken. Industry as well as municipalities need large investments in pollution and sewage control facilities. This will increase prices and taxes. The public must decide what clear streams are worth, remembering that waiting makes the problem more difficult to solve.

Lack of concern and interest on the part of sportsmen is another fundamental part of the picture. In spite of the good and energetic activities of some individuals and groups, their numbers are a minor percentage of the licensed hunters and fishermen in the state. Less than five per cent of the sportsmen of Texas subscribe to this magazine, and the percentage of these writing in, voicing their approval or disapproval, is even smaller. Yet the opinions of sportsmen could do great good — even towards influencing the landowners for the protection and improvement of habitat.

Texas is so large and comprises so many different types of country, from coastal marshes to mountains and desert, that it seems impossible for the public to be concerned with more than their own regional and local problems. This is unfortunate because wildlife must be produced where it is adapted and our Texas sportsmen don't mind driving several hundred miles to go afield. If the local groups were more interested in wildlife affairs throughout the State, the work of the Department would be much more effective.

Snake Facts

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snake to be an enthusiastic fellow-tenant, and while he deplored the situation, there was little he could do personally about it other than hunting down each snake and belaboring it with a hoe-handle. So, he called upon Nature for help. This, he did by burning the mountain-ash (*Sorbus americana*) whose fumes the Indians (former tenants of the land), had used in their tepees to prevent snakes from being in places usually found occupied by squaws and papooses.

From the Indian, he got the snake-calabash (*Lagenaris vulgaris*) which he planted. Unfortunately, this weed grew in such luxurious abandonment, that the tenacious plant tendrils would finally overgrow the cabin and then smother the garden plot, all the while providing an excellent cover for the 'cropper's worst enemy, the cotton-mouth moccasin.

Another snake repellent was the horseshoe geranium, a vile, evil-smelling plant that finally discouraged even the planter.

If the snake was an unsatisfactory companion for the sharecropper, he was an important weather prophet in the Missouri Ozarks.

"Kill a snake and leave it belly-up to bring rain," went the old saying. This superstition was quite popular there when I was a boy. And I remember having the tar whaled out of me for once killing a copperhead during the rainy season. Coincidentally, we had a regular toad-strangler the following day!

Snakes, according to the old Sac-Fox Indian legend, were supposed to end their hibernation with the first clap of Spring thunder. This belief was highly romantic if not imaginative, for if the weather is mild, you'll find them out—without umbrellas. They like to bask in the sun, although undiminishing sunshine will kill a snake. To enlarge upon the basking theme, if you found one basking on a stump, it was a sign there would be an early Spring flood.

The neighboring state of Illinois had an interesting belief concerning the effect of rattlesnakes upon violins.

"Keep the rattles in your violin case to make the instrument play better," it advised. However, more practice might have had the same result.

With the advance of civilization, snakes will become increasingly difficult to find, except those species subsisting on rats and mice. It looks like the rodents are here to stay, if the losses reported by the insurance companies are true. Man needs his harmless reptiles, and wiser communities are providing penalties for the wanton slaughter of non-venomous snakes, having realized they are benefiting man.

So, it might be a good idea to learn as much as possible about our slithering friends. In this world, we need all our friends to help us survive. Superstitions must succumb to knowledge—and like killing a venomous snake, you eliminate superstition the same way—by hitting it sharply on the head!

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have said: "What are a few fish worth compared with our industries?" Fishing and hunting is big business in Texas, too. More than 320,000 resident citizens of the State buy hunting licenses each year and 315,000 citizens purchase fishing licenses. This does not take into account those who hunt on the land on which they reside or fish in the county of their residence without licenses. These same hunters and fishermen spend annually in Texas $200,000,000.00 for fishing tackle, guns, ammunition, food, gas, hunting leases, clothing, etc.

The commercial fishing interests on the Texas Coast have investments in fishing gear and equipment running well into the millions of dollars and the annual catch of edible fish and shrimp is worth well over $25,000,000.00. The landing of fish, shrimp, crabs and oysters on the Texas Coast last year including menhaden totaled 85,233,237 pounds. These compilations do not take into account the recreational and aesthetic value of clean water to the thousands of our citizens who neither hunt nor fish. If municipalities and industrialists of Texas could come to a realization of the value of clean water not alone because of those who hunt and fish and enjoy the outdoors but as pollution affects their own public relations, we think the problem could be solved more easily and more economically.

Cities, towns and communities must provide pure water for their citizens. Industries require clean water for the operations of their plants. Rice growers, stock raisers and other interests must have clean water or retire from business. This being true, we feel that it is the duty as well as a privilege for industry to join with our law enforcement agencies in a campaign to abate pollution and keep the public waters clean. Certain plants in the Houston area have already spent approximately a million dollars this year on waste purification systems. Large appropriations we understand to make additional improvements in 1951 have been authorized.

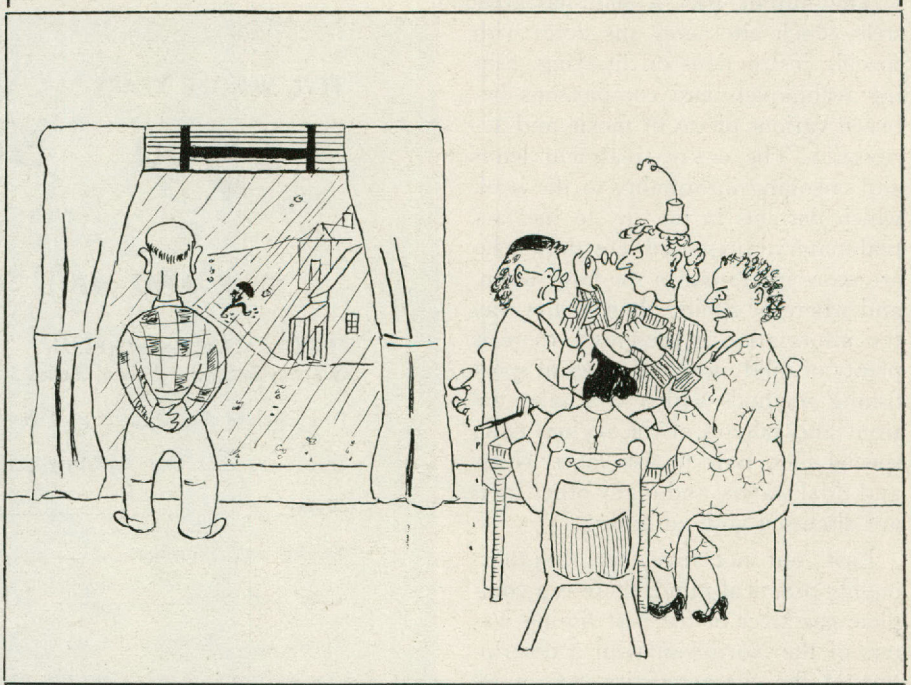
In the past, we have enjoyed the confidence and have had the cooperation of a very large per cent of the industrialists of the State and to this relationship we attribute much of our success in the enforcement of the pollution laws. But until those who violate the law amend their attitude toward the enforcement of the pollution laws, our efforts to keep the public waters of this State clean will not be fully appreciated.

Oil field brine, domestic sewage and industrial waste are all problems separate and apart from each other. With the proper approach, expenditure of the necessary funds and the aid of competent sanitary engineers, chemists, efficient game wardens and other experts in the field of research, these problems can and will be solved. If you have a pollution problem, it is your responsibility. Don't wait until an investigation is started by a law enforcement agency to do something about it. Let us cooperate with you in solving the problem.

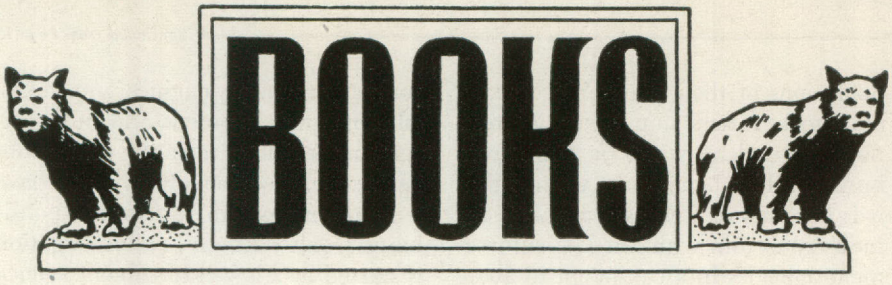
The Game, Fish and Oyster Commission is concerned primarily with that section of the law which concerns the protection of fish and other edible aquatic animals in the streams, lakes, ponds, bays and the Gulf of Mexico, co-extensive with State jurisdiction (3 marine leagues or 10½ miles). However, it is not difficult for the average layman to understand that water polluted to such a degree that it will not sustain fish life is definitely unfit for human consumption and for all other purposes including industry.

We trust that the fair and impartial manner in which the pollution laws have been administered merits the approval of you who represent industry. We invite your cooperation in our efforts as servants of all the people to render the most efficient and the most helpful service possible.

EGBERT **BY FITZ**



"I don't know why Egbert's hanging around the house. I told him he could go fishing today."



NORTHWEST ANGLING, by Enos Bradner. 239 v pages. Illustrated with two color plates, 20 line drawings, and photographic frontispiece. Published by A. S. Barnes and Company, 101 Fifth Avenue, New York 3, New York; 1950. Price $5.00.

In addition to being a treatise which contains a wealth of information for those fishermen fortunate enough to be within reach of the famed steelhead and salmon waters of the Northwest, this new book is extremely well-written and will make entertaining reading for any angler no matter where he lives. Probably, no one is better qualified to write this volume than its author, who has fished nearly every piece of water large enough to float a fly in the Northwest, who has originated a number of well-known flies especially suited to western waters, who is president of the famous Washington Fly Fishing Club, and who also is outdoor editor of the Seattle "Times."

The author uses a semi-narrative style which alternates anecdotes with specific instructions on fly-tying, fishing techniques, and comparisons between various pieces of tackle and accessories. The entire treatment lends and engaging informality to the book which detracts in no way to the factual material presented. For those who are more interested in the how, when, and where of fishing than in the way the information is presented, there is plenty of solid meat. All types of sport fishing methods which will take the trout and salmon of the region, tying special flies, how to fish lakes, rivers and tidal waters, and many other facts are discussed with authority.

Last, but not least, for the thoroughly practical mind, there is a complete gazetteer of the best fishing waters of the Northwest with a description of the characteristics, accommodations, and transportation facilities to each.

THE WATER SEEKERS by Remi A. Nadeau, 309 pages. Illustrated with one double-page map and six half-tones. Published by Doubleday and Company, Inc., 14 West 49th Street, New York 20, New York; 1950. Price $3.00.

This book offers a dramatic commentary on the complete dependence on water of our major population centers. It is a story of conflict; of disaster and violence of great engineering triumphs; of displaced people and of great urban growth. It is the story of the conquest of the Southwest where rivers flow from the mountains and trickle to an end in the middle of blistering deserts. It is more specifically the story of Los Angeles, which, with nothing but local water supplies, would today be a small, unknown town on the Pacific Coast, and the story of the battle to bring water to it from the Owens River nearly 200 miles away.

The problem of water in southern California is that of most of the Southwest although it is more acute there than in any other well-known city. During recurring years of drought, the land around Los Angeles may receive an annual rainfall of less than six inches; in wet years it may receive twice that much in a single rain which tears down the rivers and gulches in uncontrollable floods. The city virtually outgrew its local water supply in the first years of the century. The fact that Los Angeles had an imaginative and forceful leader in its water department kept it from stagnating and possibly dying of thirst. Much of this book is woven around the career of William Mulholland, an Irish immigrant who rose from the ranks of the laborers to the position of chief of the water department in a city which had little water. How Mulholland found water and brought it to the parched city, the battles between the city and the ranchers whose lands and water had to be appropriated to carry out the engineering work, the court fights, the dynamiting of aqueducts, and the terrible flood of 1926 are graphically told by the author.

As background material on one of the nation's major problems, that of maintaining reliable water supplies in the face of expanding industry and human populations, this book is excellent.

AN EDITORIAL—

The Crime Wave

There has been considerable discussion lately about a crime wave that is sweeping the nation. Newspapers, radio stations and solid citizens have cried out for investigations, law enforcement and conviction of the guilty. The alleged crimes have been and are being committed against society, and each violation carries a penalty, too often not commensurate with the offense committed. But there is a crime of another nature being committed every day. We do not see banner headlines in the newspapers about it, nor do we have any grand jury investigations. There are no judge or jury trials and there are no appealed cases, but there is a penalty to be imposed that is commensurate with the offense. The penalty is imposed without favor against every person who breaks a law of nature.

History tells us that before the advent of the white man there was ample wildlife in our country. Grasses and timber covered the land, for nature—in the raw and unhampered—was at work. But what has happened since the white man invaded the western world is familiar to everyone. The home, the habitat, the food, the natural environment are all being taken from the wildlife and many of our fields and pastures have become semi-living symbols.

One of the most fascinating and informative speeches it has ever been our privilege to read was delivered by a Mr. Melvin O. Steen in San Antonio a few years ago. The speech deals with the history of America with reference to what has happened to our wildlife and our land. "Look at history," says Mr. Steen, "and you will see nation after nation march across its pages to rise and flourish in the rape of a fertile land, and to pass on into national decay and oblivion with the depletion of that fertility."

Whither are we bound? Does history repeat itself? Is America headed for national decay and oblivion because of the abuse of its once fertile land? Is it true that our philosophy with respect to the land is "rip it off the hills; gouge it out of the soil; get it into the bank in one generation, if possible?"

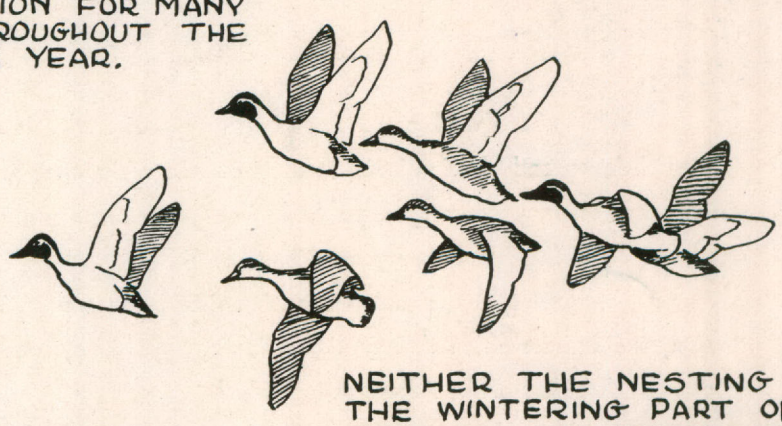
These are questions only we, as Americans, can answer. The Congress cannot supply the answers either through legislation or any dole system. It is a responsibility upon the shoulders of the American individual.

B. M. Collie
Auditor, Sand, Shell & Gravel.

CONSERVATION

THE SPRING MIGRATION IS IN FULL SWING AND TEXAS IS STILL GIVING ITS SUPPORT TO THE DUCK AND GOOSE POPULATION OF NORTH AMERICA. TEXAS IS PROVIDING STATEWIDE FOOD, SHELTER, AND PROTECTION FOR MANY DUCKS AND GEESE THROUGHOUT THE COLDER HALF OF THE YEAR.

THE NUMBER OF DUCKS AND GEESE THAT RETURN TO THE NESTING AREA IS INDICATIVE OF OUR PRACTICE OF CONSERVATION



NEITHER THE NESTING NOR THE WINTERING PART OF THIS PROBLEM IN CONSERVATION CAN BE SAID TO BE MORE IMPORTANT THAN THE OTHER

WOOLDRIDGE