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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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COVER—
By John H. McClelland

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ROGER M. BUSFIELD
Editor

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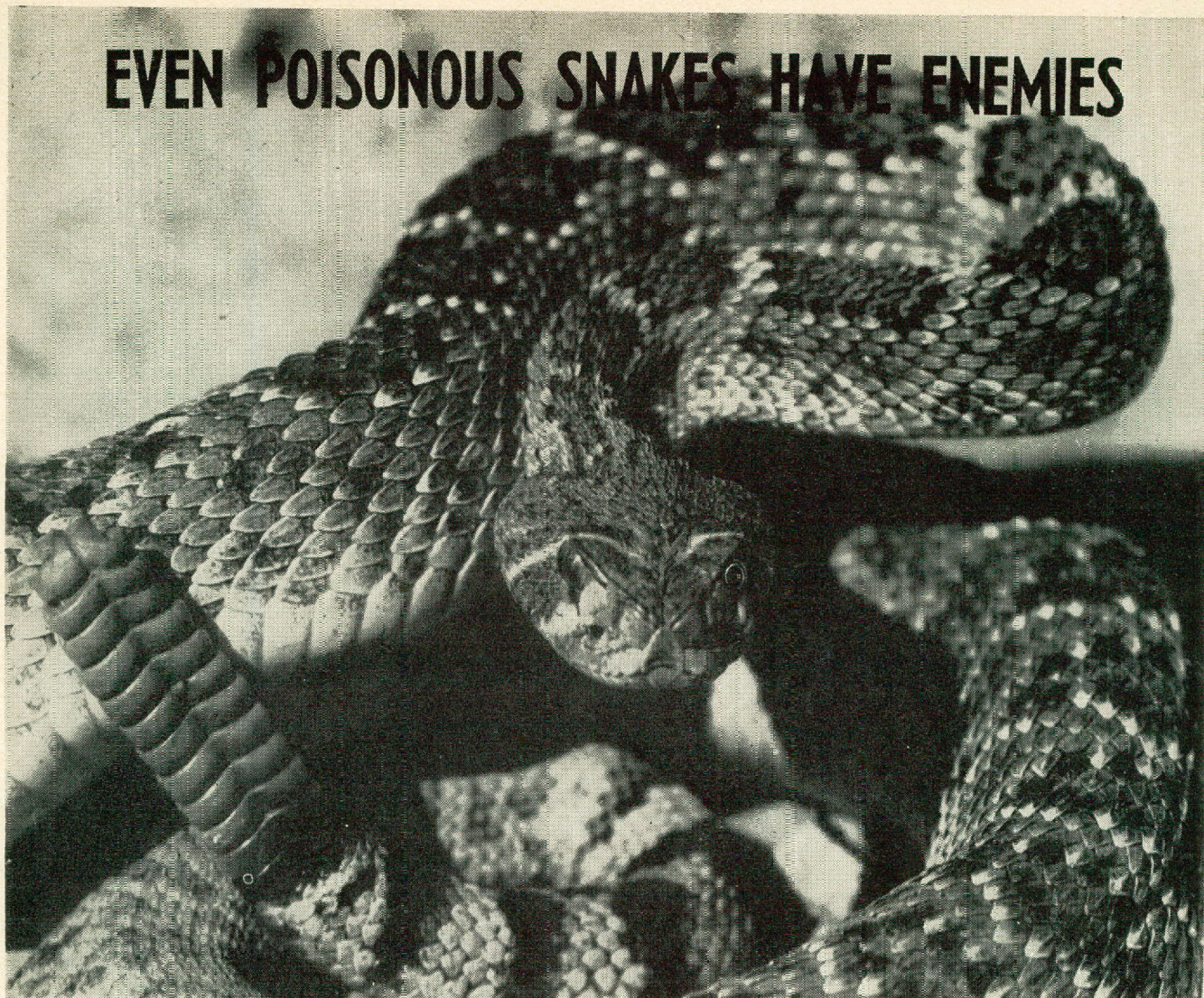
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EVEN POISONOUS SNAKES HAVE ENEMIES



MOST people regard venomous snakes with such fear that it never occurs to them that these reptiles have a host of enemies—animals which seem to recognize the danger of being bitten but attack in spite of it.

Snake meat is tender and has a delicious flavor, as I can testify. I have eaten it frequently—fried like chicken or frogs' legs—and found it better than either. It is not surprising that many animals relish such a delicacy and, being accustomed to fighting for their food, are willing to take the risk involved in getting a dinner of fresh snake.

Large poisonous serpents, imbued with the wisdom of experience and armed with potent fangs and venom, have comparatively few enemies; their size makes them of little interest to the smaller carnivorous animals. But little snakes, and especially juvenile ones, have innumerable foes.

Young rattlesnakes, copperheads, moccasins, and coral snakes are killed and eaten by quite a number of birds and mammals; many harmless serpents feed upon them, too. Very young snakes are unable to strike far and are too small to have learned the necessity for exercising

extreme caution in a world teeming with dangers.

Birds have various techniques for catching snakes. Ravens, crows, and the road runner or chaparral cock, of the southwestern states and Mexico, dart in from a safe distance and peck at the snake's head until it is dead. Such birds can deliver quite a blow, and a few such raps with their sharp beaks quickly put the snake out of action. Owls and hawks usually kill with the powerful talons of their feet. Their claws are capable of piercing to the vital parts of small animals. In subduing snakes, however, these birds also often resort to the use of their strong beaks.

I know of no naturalist who has observed the snake-killing technique of these raptorial birds, but I think I have found a clue to it. While collecting reptiles in the Marysville Buttes, in central California, I inadvertently frightened a hawk away from a meal it had just started. It happened to be a non-poisonous gopher snake, but the method by

which it was dispatched probably would be the same for all snakes. The talons of one foot had seized the body a few inches back of the neck, and those of the other foot had gone through the head, penetrating the thin skull and entering the brain. The bird apparently had held the snake firmly in this manner while it ate away the flesh on the back of the neck. This made the victim powerless to strike even if the head had been released and the injury to the brain had not incapacitated it.

Snakes for Nestlings

Many birds which relish a good worm—even robins—find snakes to their liking. Herons, cranes, and other carnivorous aquatic species eat large quantities of both harmless and poisonous species. In the rookeries where birds of this type breed, they may be seen industriously carrying snakes to their nestlings—snakes caught along streams or in swamps while the birds were engaged in fishing operations. While driving across the Everglades in Florida, on the raised highway known as the Tamiami Trail, I have seen as many as a dozen water birds an hour carrying such prey.

By A. PIERCE ARTRAN
Illustrations by HARRY GROFF

The snakes almost always hung limp, showing that they had been killed before being taken aloft. Possibly birds do not distinguish between poisonous and non-poisonous species and attack all serpents as though they were dangerous.

It is hard to believe that downy little chicks can grow up to be fearless snake killers, but chickens and other domestic poultry seem to enjoy eating young snakes as much as do the wild birds. Colonel M. L. Crimmins has told me about a female rattlesnake, kept in a cage in his backyard in San Antonio, Texas, which gave birth to a litter of young during the night. The babies crawled through the meshes of the chicken wire screening the front of the cage, and the next morning the Colonel looked out the window from his breakfast table to see his hens industriously killing and feasting on the newborn baby rattlers.

Turkey raisers often report finding their birds eating snakes. A turkey ranch was established a few years ago in the prairie region of southeastern Colorado—in an area noted for its great number

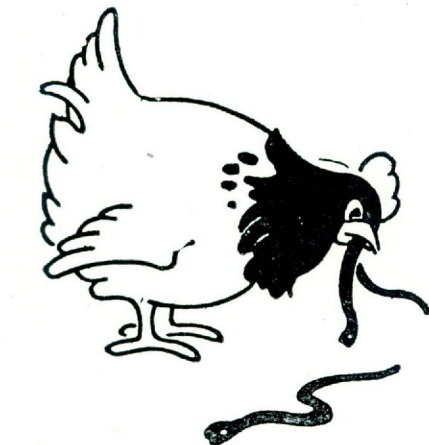
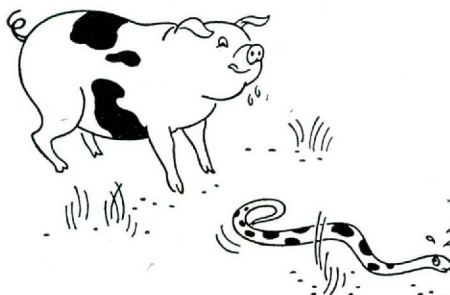


of the body where there is little fat, it suffers from venom poisoning in the same way as any other animal, although swine rarely die as a result of snake bite.

Deer and antelope are noted enemies of poisonous snakes and other animals which they fear may molest them or their young. These large mammals are strictly vegetarian, however, and do not eat anything they may kill. Does, with fawns to protect, seem especially prone to attack snakes. Their method is to leap into the air and come down on the victim with all four sharp hoofs. The feet are then driven up and down like pistons. The snake has little chance to strike the slender, fast-moving legs before it is cut to ribbons.

Several kinds of nonvenomous snakes will eat other serpents, even ones of their own kind. Some of the most spectacular animal battles I ever have witnessed were between snakes. The ability of the various kinds of king snakes to kill poisonous serpents is known to most people. Presumably they are immune to the venom of the pit vipers—rattlers, copperheads, and moccasins. They are not continually spoiling for fights with venomous snakes, as some popular accounts have it, but will kill and eat them if they come upon them when hungry. These snakes are powerful constrictors and can easily subdue serpentine prey.

The indigo snake and the racers—black racers, red racers, coachwhips, and other species—are just as prone to eat poisonous snakes as are the king snakes. These species are not constrictors and have no way of killing poisonous prey before eating it, but it doesn't prevent them from enjoying a meal of this kind. Their technique is to fence until an opening is presented and then grab the victim by the side of its head. The strong jaws gradually are worked around to the



of prairie rattlesnakes—and within a year the large flock of turkeys had so reduced the rattler population that the ranch owners rarely saw one.

Both wild and domesticated swine are especially fond of reptile meat, if one may judge by the way they fight over it. Killing and eating a snake seems to be a highlight in the otherwise monotonous diet of these animals. The hog's method of attack is to rush in, grab the snake near the middle of the body, and shake it violently. The head is whipped about so rapidly that it is difficult for a poisonous kind to strike. But it is by no means impossible; hogs frequently are bitten in these forays.

Such bites seldom cause any injury, however, for under its thick, tough skin the hog has a layer of fat covering almost the entire body. The fat is so oily that the venom, which is a water solution, makes little progress, and the layer so poorly supplied with blood and lymph vessels that the venom is absorbed into the general circulation slowly and causes little harm. If the hog is bitten in a part

front and the snake is then swallowed alive.

Weasels and badgers are reputed to be reptile eaters, and in South America there is a skunk which feeds largely on snakes. There is some evidence that certain species of North American skunks also may eat poisonous snakes. Serpents of this type also are sometimes the victims of the turtles and of the more voracious fish, and some strains of domestic goats are said to attack snakes much as do the deer.

In short, the poisonous snake's life is certainly no bed of roses—he is killed because he is liked and because he is disliked.—*Pennsylvania Game News*.

Teamwork

A story of a male red wolf that brought freshly killed meat to its trapped mate is told by T. T. Waddell, state game warden at Eagle Lake.

Waddell set three traps on the Bernard River prairie 10 miles northeast of Eagle Lake after ranchers had reported that red wolves had killed some turkeys and several calves. The first night a female red wolf was caught in one of the traps. Waddell killed the wolf and found fresh rabbit and calf meat in three places just out of reach of the female in the trap. The trapped wolf tried to reach the meat but the drag on the trap held her securely.

Waddell drove around the prairie and located the male wolf about one mile from the spot where the female was trapped. After a chase of about three miles in his car, Waddell ran down the wolf and shot it. It was a large wolf and Waddell reports he is certain that the male carried freshly killed meat to the trapped female.

No further reports of damage to turkeys and livestock have been made since the two red wolves were killed.

Is I Is or Is I Ain't

The theme song of the Maryland black bass could well be "Is I is or is I ain't a Game Fish." Physically speaking, there's no doubt about its status, but legally speaking, the answer is something else again.

The ink was hardly dry on House Bill 835, which prohibited the netting and sale of black bass in Maryland, when along came H.B. 844, designed to protect pike, but which also protected the black bass from commercialization for a three-month period only. According to Deputy Attorney General Hall Hammond, the Governor's signature on this bill nullified the year-round protection granted by H.B. 835, for which the sportsmen of the state had fought for eighteen years.

Maryland sportsmen are hopeful that the conflict between the two laws may be reconciled on the basis of intent, and that they will not be robbed of victory by a mere technicality.

Exploding a Myth

By J. G. Burr

THERE is no proof that with the coming of cool weather Spanish mackerel leave their summer haunts and retire to some region not yet explored, "the middle strata of the ocean, or the floating beds of sargassum, which drift hither and thither under the alternate promptings of the Gulf stream currents and the winter winds." Yet, some such belief is held by most fishermen.

We see the mackerel appear at the warm surface in spring and summer and disappear when the surface water cools in the fall and winter. They are a warm water fish and very sensitive to changes in temperature and salinity.

Writers for the past hundred years have eulogized the glories of this sea sprite and added mystification to their

alleged migrations until it is almost treason to question their romantic conduct. However, these are days of realism and one hundred years is quite long enough to hug the unrealities of the past.

A French authority, Louis Roule, a few years ago got down to the facts. By the use of deep sea equipment it was found that the mackerel, instead of migrating in winter to some far-away hide-out, merely dropped down to the deeper, warmer water not far from the shelf.

"This short journey," says the authority, "caused and directed by the seasonal warming of the surface water, follows a definite course. Beginning earlier in the south than elsewhere, it gradually extends. The fish appear by

Migration of Spanish Mackerel in winter is found to be a myth

echelons in the upper layers, as the season affects the different waters in turn. Hence, as in the case of the sardines, and for the same thermic reason, it looks like a migration. But this is only in appearance. In reality, they simply rise by series to the fishing grounds in a pseudo-migration. It is nothing more or greater than that."

This quotation has reference to the Common Mackerel *Scomber scomber* or *scombrus* of the Atlantic Ocean. This pseudo-migration habit of the common mackerel would seem to be the same as that of the Spanish mackerel, a fish of the warm southern seas. So, the Spanish mackerel, in looking for warmer winter quarters would look no where else than to the Gulf Stream. There is no need to question the matter for the answer is at Key West where the Gulf Stream washes the island shore.

George E. Roberts of Port Isabel, known along the coast as "Florida" Rob-

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A FINE SPANISH MACKEREL catch at Port Aransas, Texas



SOME CHARACTERISTICS OF

Ocean Waters

AND LAGUNA MADRE

By **GORDON GUNTER**

*Institute of Marine Science,
The University of Texas*

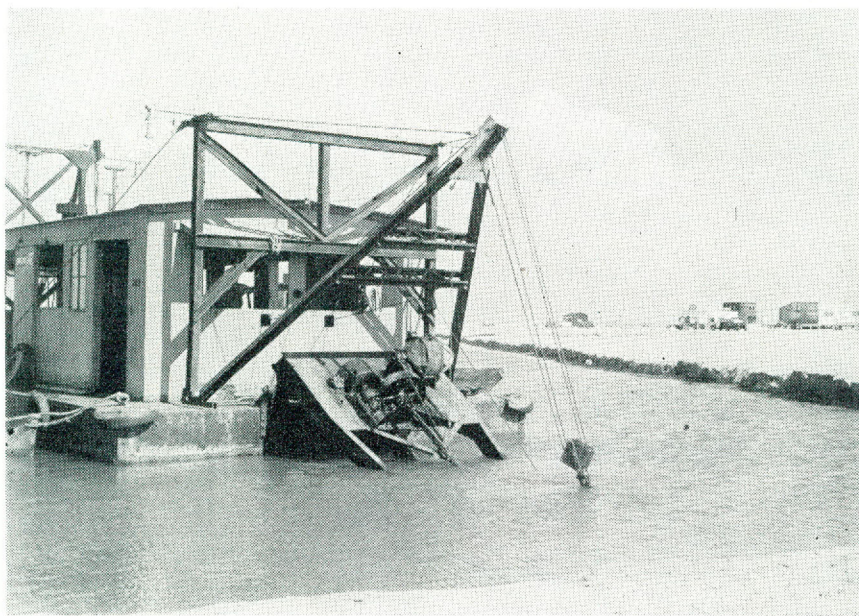
OCEAN water is a remarkable substance in many ways. In the first place, although it is a solution of a large number of dissolved salts, it is remarkably uniform and unvarying, all over the world. As most of you know, there are many kinds of salts. Common table salt is one of them. Several kinds of salts are dissolved in sea water. The total amounts are very nearly but not quite the same in all the major oceans, and these small differences are of great importance. The ratio of dissolved salts to one another is practically unvarying, regardless of the total salinity. Therefore, oceanographers are enabled to analyze any one component of ocean salts present. This measurement of salinity can be made chemically, and also by means of hydrometers. Salinity is measured in parts per thousand. The salinity of most oceans is 35.0 parts per thousand. In other words, if you had a thousand pounds of sea water, it would contain 35.0 pounds of salt.

The proportions of salts in our

own blood is very similar to that of sea water, but the sea water is more concentrated. Therefore, it has been said that the hemoglobin and other organic materials in our blood are carried around in slightly modified, diluted sea water.

I said a while ago that the very slight differences of salinity were very important in the realm of oceanography. This is a matter of density or difference in weight. The addition of salt to water increases its weight, if the salt is completely dissolved, without increasing its volume. This is because the molecules of dissolved substance come to lie in the space between the water molecules, which dance around at a given distance from one another. Anyone can demonstrate this to his own satisfaction by filling a glass brimfull of water and

slowly adding salt to it. A half teaspoonful of water will run the glass over, but a tablespoonful of salt can be added, if it is done slowly. Water of different salinities are therefore of different densities. Oceanographers find that differences



THE GAME DEPARTMENT'S DREDGE, "A.E." cutting a pass in Corpus Christi Bay

in density as small as thousandths of 1 per cent are important and significant in large masses of ocean waters, for it will amount to differences of several thousand tons of weight in say a cubic mile of ocean water.

Waters of different density have different viscosities, surface tensions and other properties and will not mix easily. Therefore they maintain their individuality as separate bodies of water in the oceans for a long time. All of you who have ventured out on the Gulf have observed this phenomena in the different colored streaks of water as you leave the shore. A vessel of one of the oceanographic expeditions in the north Atlantic stopped once at a place where the bow was in the cold water of the Labrador Current, which had a temperature close

to the freezing point, while the aft part of the ship was in the warmer waters of the Atlantic. When two bodies of ocean waters of different densities meet they flow over or around one another. Very often the heavier water sinks under the lighter water. The waters of the ocean depths are freezing, even in the tropics. This is because there is a high evaporation rate near the South Pole and the density of polar waters is increased, so that the water sinks and flows into all ocean basins. A somewhat peculiar result of this fact is that members of oceanographic cruises in the tropics find that fishes and other organisms brought up from the great depths are as cold as ice and, if the fish must be handled over an extended time, gloves are needed.

The large ocean currents exhibit the fact that ocean waters of different densities won't mix with ease. The warm Gulf stream is a huge river of water of high temperature flowing up our Atlantic coast and across to Europe. It has a different salinity, tempera-

ture and density from the surrounding waters and carries a different animal and plant life with it. Very slowly it meets waters of the same density or has its own density changed, largely by temperature, and loses its individuality along the coasts of Europe. The Humboldt Current of the Pacific Coast of South America, the Labrador Current and many others could be mentioned.

The characteristics of enclosed basins of ocean waters are also well-known. In dry areas they are saltier than the surrounding waters, because there is no adequate connection with them. The heavier, saltier water sinks to the bottom of the basin and cannot flow out. In the same way, in regions where there is drainage from the land, the basin waters become

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Bushy Tails on the Llano

THE first faint rays of light were showing in the east as two over-bold birds, in the tree above where I was camped, started telling the world a new day had arrived, and I awoke for the beginning of a much looked for hunt.

It was the first day of my vacation, and as I shivered in the crisp morning air, while I pulled on my trousers, I thought of how many times I had counted ahead, during the long winter



"I drew a careful bead on his head—"

months, to the day when this would be a "reality" again. For this was my third year to spend my vacation on the Llano River, 'way down in Mason County, Texas, and I knew my friend, "Pat" Rogers would be waiting some half mile up a country road, at the ranch house, as he had promised to take that day off and hunt with me.

We had had other hunts together in previous years, and I knew his all-seeing, woodman's eye and his uncanny ability to seemingly ferret out Mr. Bushy-tail's hiding place in the top of the tallest tree, or behind the biggest limb, would be a revelation, if not a seeming miracle to the average city man, and it was a joy and a treat for even an old hunter like myself to see him display his prowess.

Arrived at the ranch house, I was invited in and we made short work of country bacon, hot biscuits, algerita berry jelly and steaming hot coffee.

When we stepped out of the house with our rifles in hand, "Snooks" (three-fourths hound and one-fourth cur—but ALL squirrel dog) could hardly contain herself for delight. She would bound off toward the river then come bounding back, as she voiced in excited yelps her reaction to the prospect of a hunt.

Pat and I piled into his Ford "Pick-up," with Snooks in the back, and

A vacation is turned into a glorious adventure with a good hunting companion and an alert squirrel dog

By W. E. Anderson

headed for a place on the river, where we transferred to a boat, and rowed the two hundred fifty yards across the glistening Llano, which shimmered in the early morning sunlight, to a place near where a creek, on which we would hunt, emptied into the river. "Snooks" jumped from the boat as we touched shore and raced away for the trees just ahead.

We had hardly adjusted our hunting bags and loaded our Remington bolt-action twenty twos before we heard "Snooks" let out a squeaky "ugh-e-ugh-e-ugh"—, which is a loud whine, and her way of letting us know that she had already found our first squirrel, and yet not arouse the whole countryside with unnecessary barking.



"I shot two in one tree—"

I experienced a tingling sensation up and down my back-bone, better known as "goose-flesh," as I realized we were already in the "game country," and on the verge (I hoped) of bagging my first squirrel. I walked to the other side of a big elm tree, while Pat stood still, but after several minutes of "neck-craning" I was about to decide that "Snooks" was "all wet," when Pat's uncanny ability asserted itself and he said, softly, "I see him—just part of his tail—'way up in those leaves, in the very next fork to the top. Finally I spied the "tail," but was unable to tell just where his head

was hidden in the leaves. However, I made an estimate, and "pling—" went the little rifle. Mr. Bushy-tail promptly disappeared, and a second later I saw Pat draw a bead and knew the squirrel had shown himself on the other side of the tree.

With the shot from Pat's rifle, out he tumbled. I hurried over and took him away from "Snooks" who had grabbed him while Snooks looked up at him. Pat took our picture, on the edge of the little creek. Our "first" squirrel, and hardly one hundred and fifty yards from the boat. Boy what a country!

We had gone perhaps two hundred yards, when we heard "Snooks" a short distance ahead—but out of sight behind the trees—give several yelps, announcing to us that she had found squirrel number two. Pat and I, without a word, always take to opposite sides of our tree, when we find a squirrel, for, as all old timers know, "Mr. Bushy-tail" will invariably go to the side farthest from a man if possible, and as a man circles a tree the cunning little fellow will always attempt to keep the tree between himself and his enemy. Thus it was when Pat circled while I stood quietly watching, that I saw the little sleek grey fellow edge around on my side, and a well aimed shot tumbled him to the ground at my feet, a bullet through his head.

Snooks grabbed him immediately, but seemed reluctant to let loose—as I, with



"He hated to let go—"



"The glistening Llano—"

rifle in right hand and squirrel in left, stood holding to that bushy-tail and pleading with her to wait till we got home for her share, (See illustration No. 3.)

Pat shot the next one that tried hard to hide on top of a limb away up in a big cottonwood, then I shot two in one tree, (see illustration No. 2) that were scampering about trying to decide which



"I held up my prize and told Snooks I was convinced she was the best dog yet—"

way to jump, as we came up to where Snooks "treed" again. A few minutes later we heard Snooks giving several highly excited yelps, and there was a crashing in the brush about fifty yards ahead as three deer (two does and a beautiful big buck) came dashing by us, with Snooks in close pursuit. I experienced a real thrill as we watched them dash by, and Pat called Snooks from the chase, as of course deer season is in November and December. Mason County—wild and rugged with lots of timber too, is said to be the best single county in Texas for white-tailed deer, there having been many hundred killed in that one county last season alone.

A few minutes later Snooks "treed" in a big elm, in the center of a little clearing. After much looking for him, we finally spied the wary little rascal in a handful of leaves on one of the tip top branches. I drew a careful bead on his head, and Pat snapped my picture (see illustration No. 1) just a moment before I pulled the trigger. He took another picture as I picked up my plump little prize, and told "Snooks" I was convinced she was "about the best dog yet," before putting Mr. Bushy-tail, along with the others in my rapidly filling game bag.

We were walking along scanning the trees about us, as we followed the crooks and turns of the little creek, when a cry from Pat, "look out," made me stop suddenly and look quickly about me. There only several feet away lay coiled, a giant, five-foot cotton mouth water moccasin. I drew a quick bead on the ugly writhing head, and as the shot echoed away a splash just a little behind and to the right made me turn quickly in that direction. It was the mate of the snake I had just killed and as it lifted its poisonous head for a moment out of the water as it swam away I took a quick snap shot and was rewarded by

seeing it thrash about, and the water nearby become stained a bright red. "Ugh," said I, "about two more steps and it might have been too late, if it had not been for those never-failing, all-seeing eyes of yours. Thanks."

As I uttered those words, from far up the creek came the "bow-wow—bow-wow" of our hunting companion; for Snooks had been doing other things while our little drama was being enacted. We hurried along, and soon saw Snooks in a little grove of scrub oaks and thorn trees, and even from the distance we saw a squirrel jumping about. Then as we came close, another, and still a third. The trees were all comparatively small and there was not a



"On the edge of the little creek—"

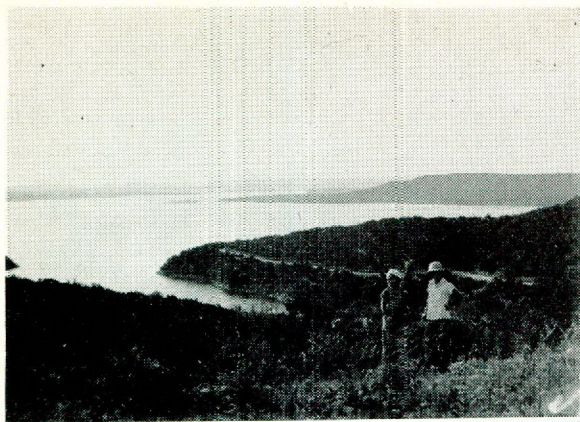
good hiding place for the Bushy-tails, hence the jumping about from one little tree to another, and Snooks' undue excitement from trying to keep her eye on all three, and her attempts to keep each from jumping to the ground and racing away to some nearby giant elm trees. The squirrels each tried unsuccessfully to hide as we came up and I shot quickly, followed closely by the "splat" from Pat's rifle. We each accounted for

★ *Continued on page 15*



"Pat took a close-up picture of me with our morning's kill—"

Reclaiming The Basin of The Colorado



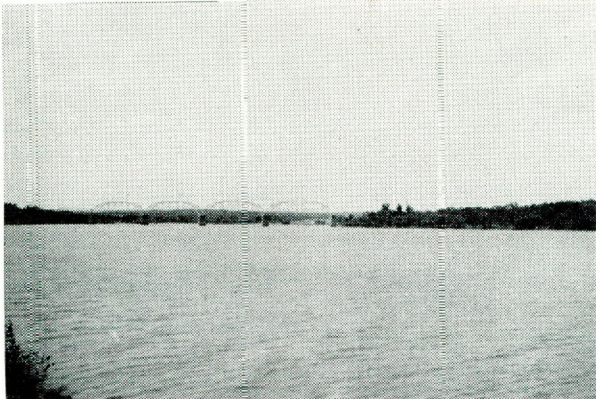
Travis Lake just above the dam

THE creation of lakes in the Colorado River basin above Austin has had a salutary effect on the region around about if one may judge by the changed attitude of many with respect to the conservation of wildlife. Not all the credit goes to the lakes but the pace toward better conditions has been accelerated by their coming. The game wardens did their part, as did also a few public spirited men of the area.

It was twelve or fifteen years ago that the writer gave a conservation lecture to boy scouts at a summer camp on one of the tributaries of the Colorado. He told the boys that the region of the upper Colorado, almost in the shadow of the State's Capitol where laws are made, had as many law breakers as any similar area in the State and that it was up to them to bring about the rule of law-observance.

In those days it was useless for a ranchman to undertake to build up his game supply. To stock a place with deer and turkey was to invite poachers who would quickly clean the game out. It was a sort of common hunting ground where an indiscriminate public helped itself to the then meager supply of game. It would be unfair to say that *all* the poaching was done by the local people. It is but too well known that some hunters in nearby large cities are always ready to grab their illegal share of game.

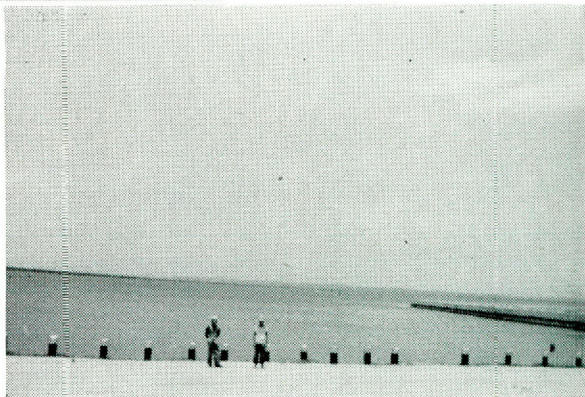
Also fishing ethics was at a low stage. Points now deeply buried in the waters of Travis and Buchanan lakes were once the scenes of fishing irregularities the worst of which was dynamiting. Once in those days the countryside was startled by a report that the game warden had run into a bunch of dynamiters who



Roy Inks Lake

fired on the warden. He claimed to have returned the fire and to have wounded one of the men. As they were on the opposite side of the river immediate pursuit was not attempted. The game department at once offered a reward of one hundred dollars for information that would lead to a conviction of the offenders. Peace officers and others scoured the country hoping to find some clew. If a man had been wounded some doctor would certainly be called and the fact of the shooting would doubtless leak out, but no evidence of a wounded man was ever found.

The writer rode over the territory spreading the word that a reward had been offered. It was on this trip that he ran into Buck Simpson, hero of the first world war. Buck had nearly as many medals as Goering. They were awarded because he had raided a German machine gun nest. Simpson made no reference to his war record, of which I was unfamiliar at the time. We discussed only



Buchanan Lake at the dam

the incident of the dynamiters. He said that they ought not to dynamite fish but that if he knew who did it he would not tell for one hundred dollars. Those who know Buck believe he meant what he said.

Simpson is one of those awkward fellows in a quarrel and doesn't like to be ordered around. When the Germans were driving the Americans back and they were ordered to retreat, Buck showed his stubbornness with the remark that he didn't come over there to retreat and he didn't. Instead, he slipped along until he got within range of a German machine gun nest and hurled a hand grenade into their midst, killing seven of the eight men. Peeking over the edge of the nest he saw the live German and shot him with his revolver. Then he climbed in, took possession of the machine gun and turned it on the German lines. There was no knowing

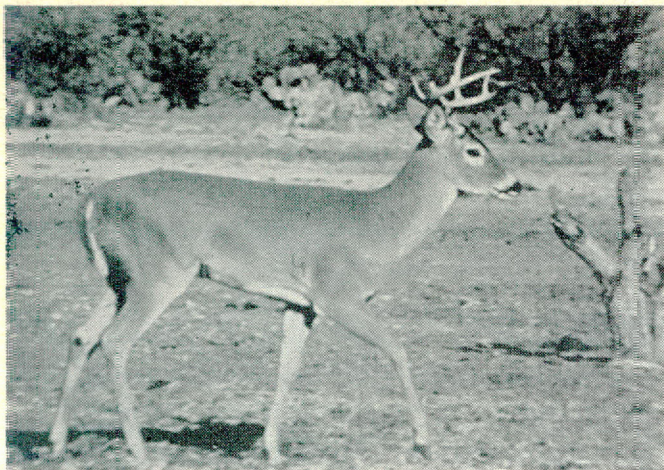


By J. G. BURR



Illegal hunting and fishing ends when a few dams are constructed almost in the shadow of the state capitol where laws affecting game and fish are made

★ Continued on page 16



When W. J. BRYAN Went Bear Hunting

FORMER Governor Jim Hogg was full of fun and loved his jokes. In the early days when Bryan was out to capture the presidency, Hogg invited Bryan to visit him and go bear hunting. There were no wild bear in that vicinity but Hogg had a pet bear, or maybe it was one he had borrowed from a zoo. Just where he got it was not relevant to the story. The bear was taken to a wooded area and tied to a tree. The hunting party of several persons who were in on the joke, together with Bryan, went in search of a bear. Hogg had supplied the guns and ammunition and had seen to it that no harm would come to the bear. All guns were loaded except the one carried by Bryan which had blank cartridges.

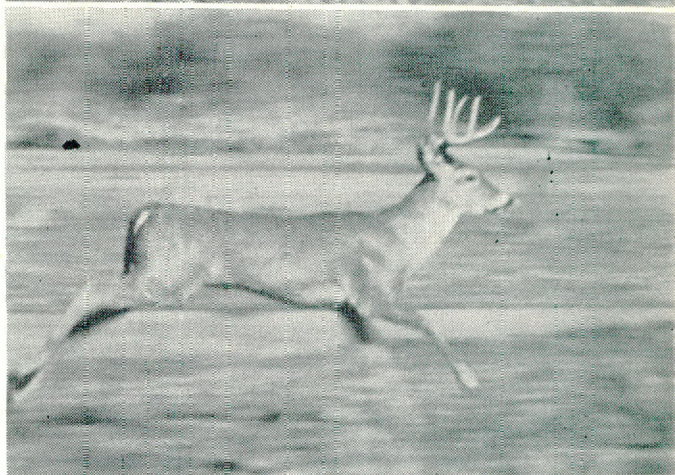
To be courteous they would allow Bryan to have the first shots. At a safe distance from the unoffending bear the party came to a halt and Bryan was given the signal to fire. One, two, three shots and the bear did not flinch. With a show of impatience Hogg and the others joined in the firing and we suppose the bear looked up to see what the noise was all about. "Bryan didn't even hit the tree where the bear was tied," said Hogg who pointed out that it was the poorest marksmanship he had ever witnessed. Then pointing to a tree thirty feet away he said: "This is what you have been hitting."

"I must have been shooting blank cartridges," said Bryan.

"On the contrary," said Hogg, "your gun was the only one that was loaded."

Former Senator Willacy told the writer of a duck hunt with Bryan. Both had killed about the limit and Bryan had bagged some nice red heads. When they were ready to start home Willacy had interchanged Bryan's red heads with some mud hens. Opening up the bag Willacy, with feigned surprise, exclaimed: "So that is what you have been shooting at!"

Bryan, looking down at the miserable sight, inquired: "Where are my red heads?"



A HILL COUNTRY BUCK getting underway is a sight that will thrill any sportsman. At the top left is a buck walking in front of the blind concealing the photographer. At top right the buck has caught the soft whirring sound of the movie camera. Unable to locate the source of the sound the buck wheels and picks up speed until he is heading for the dense brush at full flight.

It's EASY to Learn to Shoot

Any person who is possessed of a healthy body, steady nerves, fairly good eye-sight . . . and will TRY, can learn to become an excellent marksman with shotgun, rifle or pistol, or all three, according to Ken Beegle, internationally famous exhibition shot, who has just completed a tour of instruction at many army camps and naval bases throughout the country.

Beegle, whose home is in Atlanta, Georgia, has been devoting his marksmanship talents for the past three and one-half years in instructing G. I. Joes and Jills in the art of small arms shooting. He has appeared before approximately 2,500,000 members of America's armed forces at over 500 military centers, stressing the efficiency of America's military small arms in the hands of efficient marksmen.

"The fundamentals of shooting are simple," said Beegle. "The most important factor is proper coordination of mind, nerve and muscle. Many persons have expressed themselves to me as being exceedingly dubious concerning their ability to ever learn to shoot well. They give as their reason for this existing doubt the fact that they are extremely nervous, especially when shooting. My answer is always the same . . . simple and direct it is the solution to their problems: SHOOTING TEACHES NERVE CONTROL!

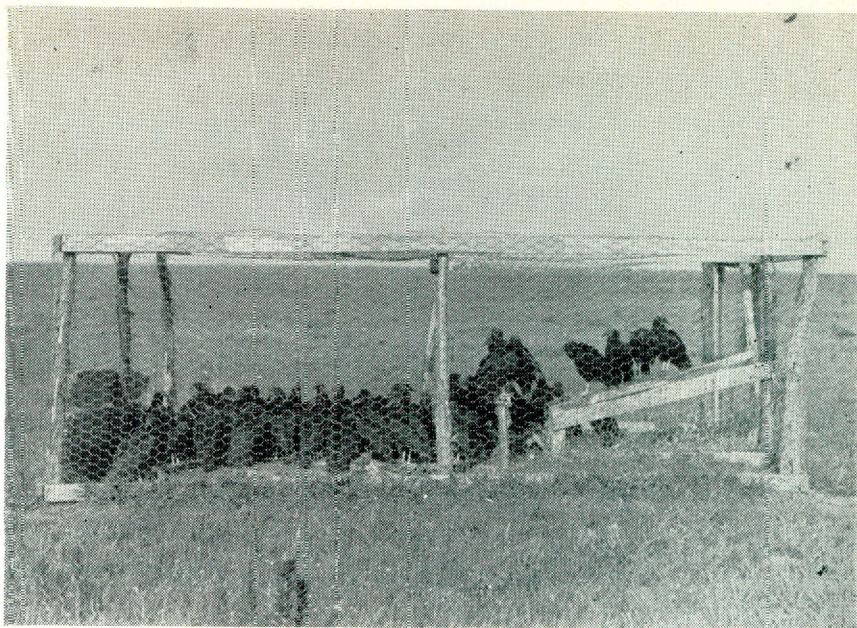
"Many shooters TRY TOO HARD. In doing so they aggravate nervous tension, which has a tendency to prevent or at least retard proper coordination.

"The first thing a shooter should do is to firmly fix the 'Sight Picture' in his mind. What do I mean by 'Sight Picture'? In shooting at stationary targets with a rifle or pistol the 'sight picture' is simply the position or correct alignment of the front and rear sights in relation to the target aimed at. In shooting at moving targets the 'sight picture' is somewhat different, due to the fact that the element of proper lead must always be considered. One may hit a moving target by shooting in front of it . . . but the bullet or shot charge fired with too short a lead will go behind it and score a miss.

"The shooter should align his sights properly and then concentrate his vision on the target. He then sees the sights without really looking at them and the target is constantly in proper view. His eyes are focused on the target but his field of vision also includes the sights. Thus the correct 'sight picture' embraces the instruments of sighting properly aligned with the target.

"Next in importance," continued Beegle, "is the application of proper TRIGGER SQUEEZE. This is par-

★ Continued on page 15



A SIDE VIEW of a buzzard trap near Columbus, Texas. The 64 birds in the trap represent a two day's catch after it had been baited with a dead cow.



A CLOSE-UP of some of the 64 turkey buzzards which were trapped and later killed.

BELL THE BUZZARD

It is said that some years ago an effort was made to learn something of the buzzard range. Some were trapped and a small bell was attached so that the ring would attract attention. They were reported to have traveled all over the southern states. One that was belled in Louisiana was found in Georgia.

It was probably at the time of that experiment that Frank Hill, who had a ranch about thirty-five miles west of Austin, offered to furnish the buzzards if anyone would supply the bells. He had a buzzard trap and was ready to have his ranch hands attach the bells but

no one came forward to accept the offer so far as known.

A buzzard has no beauty or attraction of any kind. It has not the intelligence of an eagle or a hawk. A buzzard will not pick up a dead rabbit on the highway but will squat there and eat where cars pass continually, and take to the air with each passing car. How simple it would be to remove the carcass a few yards and proceed with the banquet without interruption! Buzzards do a worthwhile job for which they receive full credit, but why should they by sitting in the public view advertise their good works to the world "that they may be seen of men?"—J. G. Burr.

LEAD 'EM IF YOU WANT 'EM

In any form of shooting at moving targets "lead" is all-important. *Lead them and you will get them.*

No man can figure out by mathematical calculation, just how far to lead a flying target, whether it be game birds or thrown targets. Each presents an individual problem.

Each target in Skeet presents a problem in leading. Each target at the traps presents another problem, both dependent upon the wind and the weather.

In game bird shooting, the picture is still the same—in relation to lead. A high-flying duck, a zooming grouse, and erratic timber-doodle, a crackling pheasant, the booming burst of Mr. Bob White Quail, and all the rest of them, present each individual with the problem of leading.

Though articles long enough to fill many books have been written on the subject, no one YET has ever given or will ever give the proper prescription for SURE-FIRE effective leading.

The art of leading comes only through experience in shooting. No "shot" is ever the same, whether it be in the field, at the traps or at Skeet. A puff of wind, a twig in the way, a slip of the foot, a faulty swing, and many other factors play important parts in shooting that brings "home the bacon"—or the trophy.

No sportsman can tell any novice just exactly how far to lead any certain target. Yet he instinctively knows, through experience just when to touch the trigger. That knowledge comes only through experience.

But *lead them and you will get them.* Use your own judgment as to how far to lead—but *LEAD THEM.* No one can ever hit anything by shooting behind it.

Closed Season in Garza County

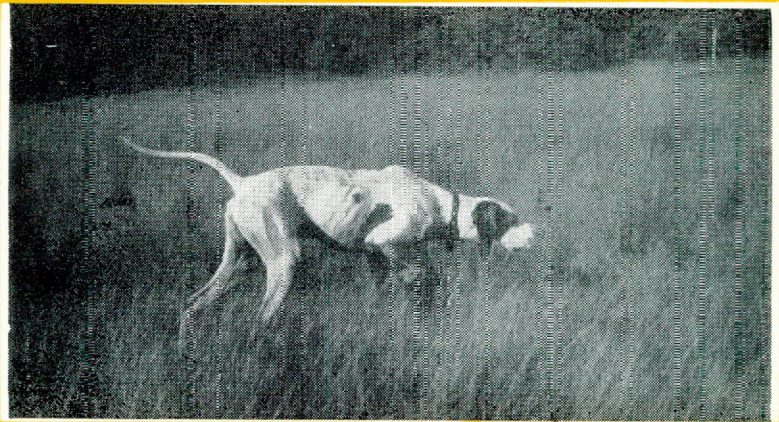
Senate Bill 170 passed by the last session of the Legislature puts a closed season on doves and quail in Garza County for a period of three years from April 19, 1945. It was erroneously reported in the September issue of the magazine that House Bill 170 provides a closed season on quail in Garza County for a period of five years.

The penalty for a violation of this act is not less than \$20.00 nor more than \$200.00.

☆

Very young red and gray foxes sometimes closely resemble the young of wolves and coyotes. One sure way to distinguish between the species is to "look 'em in the eye." The pupils of foxes are slanted like those of a cat's eyes, but the pupils of wolves and coyotes' eyes are round, like those of a dog.

The Hunter's Dream



Dedicated to: One Who Is Now Serving Uncle Sam

When the golden sun is sinking
In the Crimson Flaming West
And a tired bird dog beside you trots—
Who's earned a good night's rest—

You call to mind the morning—
When dawn broke cold and clear;
The dew was on each blade of grass,
And the "bob-white's" call you hear.

You feel a tingling up your spine
As you release your tether;
Your lips breath words of silent prayer,
"Thanks Father, for such weather."

Your bird dog, pal of many a hunt—,
Now's working out the cover,
Then all at once he stops dead still—
And seems almost to hover!

It seems your heart leaps to your throat,
All o'er you feel the "thrill,"
As up you step to flush those birds
And "try" to make a "kill"!

A whir-r-r- a boom-m a running dog,
To get the fallen bird!
Between you is complete accord
Without a spoken word.

When he retrieves, with a doggish grin,
There's a word of praise from you,
Then you wave him off with a friendly pat,
Toward where the covey flew.

Now the day is done, and the shadows fall,
As you're treading your homeward way,
But there's game in your bag, and a song
In your heart, 'tis the end of a hunter's day!

Yea, you dream of "those days" while hunting
'Way off on the World's Fighting Front
And confidence gained in those days afield
Helped you in a bigger hunt.

There's many good things that we fight for
But now that the Victory is won,
We can hear you say, "I'll 'unlax' this way,
Just give me my dog and gun"!

—By W. E. ANDERSON



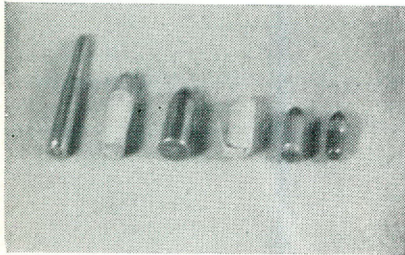
ARMS AND AMMUNITION

Edited by ADAM WILSON III

FREAKS

IF A member of the canine family has as many as two or three litters of puppies during her lifetime, at least one or two of the individuals will be off-color. All of us have seen pictures, or maybe actual specimens, of automobiles which came before the public in early years that are now parked in a corner of a museum under a sign marked "Oddities." Even though Mother Nature has the reputation of producing the *perfect* and *unexcelled*, every now and then a freak—may it be a rock, tree, bush, or small plant—will present itself. Appearance of freaks was not untrue in the development and production of cartridges.

Many of these freak loads never reached beyond the experimental stage. Mr. J. Q. Public never saw or heard of some of them, but just the same they



What were cartridge cases made of? That question can't be answered with one word. Here are a few examples to prove that statement, reading from right to left; a very rare .44 Colt skin cartridge. The intestine of a small animal was used to make the powder container. The skin is transparent after being prepared much in the manner we prepare sausage containers. An iron case .45 auto. A 54 cal. paper cartridge. A copper case .58 cal. rim-fire. The .52 cal. linen cartridge. A brass case 8m/m Mauser. Rubber has been used.

accomplished their bit. If for no other accomplishment, manufacturers learned what type of cartridges *not* to make any more of.

I am going to show and mention just a few of the many odd numbers that cropped up along the way while inventors were striving to perfect suitable, as well as safe, loads for the various shooting irons. I purposely didn't men-

tion these until now as I think they deserve a little individual attention aside from all others—not because of their contribution in the advancement toward modern ammunition, but for reason of their uniqueness. Among those not called to your attention are cartridges which have no visible oddness. Unusual characteristics are found in primer construction, propellant mixtures, and case materials.

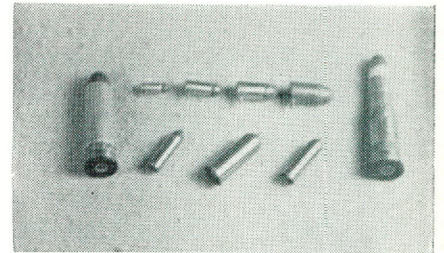
If we start between 1835-60, the first "off-color" number to bear interest is the pin-fire—a self-exploding type brought out by Monsieur Le Fauchaux of Paris. Soon afterward, it found its way into chambers of American, English, and German guns. Sizes are sure to please as calibers range from 12 m/m down to 2 m/m.

As can be seen by the several examples in the picture, a pin protrudes through the side at the rear of the case. When the cartridge is pushed into the firing chamber of a revolver or long gun, the pin remains on the exterior of the cylinder to allow the hammer to fall vertically and explode the load. Since this number has little or no rim, the pin prevents it from moving too far forward in the chamber. It also aids in extraction.

A rare number in any man's collection is the freaky .45 Tit cartridge—a first, if not *the* first, in the center-fire category. The .32 calibers are comparatively common, but the 45/100 of an inch size are few and far between—at least I have found that to be true in my rounds over the country in search of hard-to-get items. As far as I know rifles and shotguns were never manufactured to take this form of ammunition; however, I've seen several Tit cartridge revolvers. The gun receives the load from the front end of the cylinder. As the cylinder revolves, the "tit," which protrudes from the back, comes around into position to receive the blow from the hammer. The lead bullet seated down flush with the funnel mouth case is sealed with wax or heavy grease. Records state different dates as to the exact time this cartridge appeared—anywhere from 1850 to 1865. It was only semi-successful.

The Snider, with a paper case and brass head, is another center-fire of about 1866. At a glance it reminds one of a modern slug-loaded shotgun shell. The brass head, or base, bearing an up-to-date type primer is glued to the stiff paper body of the cartridge. The .577 specimen in my collection contains a 530 grain lead bullet and 58 grains of black powder.

About five years later bottle-necking (the drawing down of the neck of larger cartridge cases to take smaller bullets) was attempted. The .577 caliber was selected for the operation. It came out "from under the ether" with a trimmer figure and an increase in muzzle velocity. Loaded with a .45 caliber bullet it was called a .577-450 and adapted to the Martini-Henry rifle. Construction of the



Top row. Pin-fires from France, Germany, England and America. Left to right they are: 5m/m, 7m/m, 9m/m, 12m/m. Bottom row: A .31 caliber Thuer; the rare .45 caliber Tit cartridge; and a .32 caliber Tit cartridge. On the extreme left is an early .577 Snider. On the extreme right is a .577-450 Martini-Henry made of brass foil. The first model Maxim machine gun was chambered to handle this number with a solid drawn case.

cartridge was similar to the former. The same type of brass head was glued on, but brass foil was used instead of paper for the main body of the case. Both the .577 and .577-450 have an English background. I have been told that these black powder types of ammunition are still used by natives of some British possessions.

Another "first" hand gun metallic center-fire cartridge is the Thuer. Like the old Burnside, its tapering case from

front to rear, required it to enter the firing chamber from the forward end. One of Colt's six-shooters was altered to handle the Thuer about the year of 1869. Since misfires were frequent, very little advancement was gained with the creation of this load. The primer had to be made very sensitive or the blow from the firing pin would have a tendency to force the cartridge forward, consequently fail to ignite the charge. Calibers .31, .36, and .44 appear occasionally in the collector's display.

"The Volcanic is Back." That's the heading *The American Rifleman* gave an article concerning an old unique cartridge that stepped into the limelight about the middle of the 19th century—the patterns of which is being used against us today. It's the Volcanic pistol load—a cartridge without a case. Both the propelling charge and primer are located in the hollow base of the bullet. The Volcanic pistol I have had the privilege of handling had a magazine under the barrel and as the trigger-guard-loading lever was operated, the cartridges were brought into the breech.

W. H. B. Smith, nationally known authority on firearms, states that the Japanese are now using a 40 m/m automatic cannon which fires projectiles carrying their own powder charge and ignition copied after the early Volcanic. Therefore, maybe all the sweat lost by some of our inventors of freaks wasn't wasted after all—even if their products are being used to the advantage of our enemy.

I am sorry I didn't get my Volcanic cartridge on celluloid before this article went to press, but to the casual observer of the load, it appears to be nothing more than an ordinary lead bullet.

The scarcity of these interesting odd numbers has prevented me from learning many things first-hand about their performance. Even if all of them would yet "make smoke," a few hours of target practice at three to five dollars-a-roar would certainly make my pockets cease to jingle at all. In several cases I have had to take the word of others that these forms of ammunition were not so hot.

Bushy Tails

★ Continued from page 9

our squirrel, but the third took a long leap to the ground, and was almost caught by the ever watchful Snooks, who, tho she didn't catch the fast turning little speed merchant, finally put him up another small tree before reaching the big elms. Pat and I (unknown to each other, in the excitement) each draw a bead, and each fired at exactly the same second. I went to pick up my (?) squirrel but Pat did likewise, and then to our mutual amazement we found upon examination, FOUR holes in the head of a very dead squirrel.

On the way back to the river we stopped on a rocky shoal by the little

creek, and Pat took a "close up" picture of me, with our morning's kill which photo was later published in the Dallas paper, along with a write up mentioning Mr. and Mrs. August Simon, friends of my wife and mine, who own the ranch on which we camped and spent our vacation.

A short time later, near noon, we trailed into camp, tired, but happy and with appetites obtainable only in the "Great Out Doors."

Correction Please

In the June issue a couple of statements were made concerning a Burnside cartridge in my collection that aren't exactly correct. Statements such as: "... having no hole in the base for ignition," and, "... with the detonating compound of fulminate located in the bulge." Well, I'm wrong, 'cause it does have a flash hole, and there is no priming compound in the bulge.

Since I have never been altogether satisfied with the dope I gathered on this particular number, last week I opened my display case and withdrew the old Burnside. Out to the wood shed we went, where I was determined to find out just what did make it click. After punching and prying around (a procedure not recommended where fulminate could possibly be present) I discovered that somebody had "monkeyed" with that cartridge. The small hole had been neatly sealed with a soft metallic element. The trick almost worked. I really thought I had something.

The powder charge of this Burnside load is ignited in the same manner as the Maynard, or other separate ignition ammunition.

Sorry.

A.W. III

It's Easy

★ Continued from page 12

ticularly true in shooting at stationary targets, for if the trigger is yanked or jerked the barrel has a tendency to sway out of proper alignment. To many, the SQUEEZING of the trigger may not seem so important in firing at moving targets, but the same principle applies. The only difference lies in the fact that in stationary target shooting the trigger is squeezed with greater deliberation. In shooting at running or flying targets, the shooter does not have so much time and must apply his squeeze faster. But he should squeeze just the same. If, in shooting at moving targets, the trigger is yanked or jerked, the tendency to stop the gun becomes greater and the very important swing and 'follow-through' is often forgotten. Constant trigger-squeeze and swing-and-follow-through practice with an empty gun will soon cause the shooter to perform these functions almost unconsciously.

"Proper body position is extremely important in any type of shooting," the expert stated. "Awkward positions only

tend to increase muscular strain and foster nervous tension. If two shooters of equal ability are engaged in a lengthy shooting match, the chances are that the fellow who adopts a comfortable stance, which affords freedom of movement with ease and rhythm, will win out in the long run over the chap who chooses an unorthodox position and works himself into a lather through its use. The latter has his muscles continually cramped, his nerves tight, and consequently his coordination lags through unnecessary exhaustion. Rhythm in shooting is just as important as it is in golf, swimming, baseball or any other sport. It embraces free, easy, graceful swing and follow-through and perfect timing. It is not found in the form of the shooter who resorts to unnecessary exertion and undue haste.

"Field shooting," he continued, "offers, of course, all kinds of cover and terrain conditions which often provide difficult shots. However, the experienced field shot has taught himself to approach his game with an easy stride which allows him to get himself and his gun into proper position with the least effort and with the greatest speed, thereby exercising perfect timing, coordination and nerve control.

"Many shooters have a tendency to 'fight or wrestle' with the gun. This, of course, is the wrong technique and means plenty of misses for them. The chap who controls his nerves, practices an easy swing and makes the gun become a part of himself is the lad who will generally finish the day with a good score at the club or have the satisfaction of scoring clean kills and securing an ample game bag in the field.

"Shooting is only as difficult as the shooter himself makes it. If the novice gunner possesses fairly good health, steady nerves and average eyesight and will conscientiously practice the simple fundamentals of shooting, there is no reason why he shouldn't become a proficient marksman at the traps, on the range or in the field," Beegle concluded.

☆

The first trail-makers in America were buffaloes.

☆

The bee can raise each of his six feet 1,200 times in a minute.

☆

The young of the antelope is not a calf. It is a kid.

☆

One cord of pulpwood will make sufficient smokeless powder for 90,000 rounds of .30 caliber military cartridges.

☆

In the Bronx Zoo in New York there are 2,500 or more animals. For a person to see them in their native habitats, it would require more than \$200,000. It would be necessary to visit more than 100 countries. The Bronx Zoo is the largest in the world.

By R. D. Turk, D.V.M.

DISTEMPER is one affliction that is known to everyone who has had any experience at all with dogs. This disease has been the subject of more discussion and investigation than any other single malady of dogs. In addition to the actual number of animals that die from distemper many of the ones that do not die never fully recover. They may be blind, lose their sense of smell, or have a persistent twitching of one or more groups of muscles.

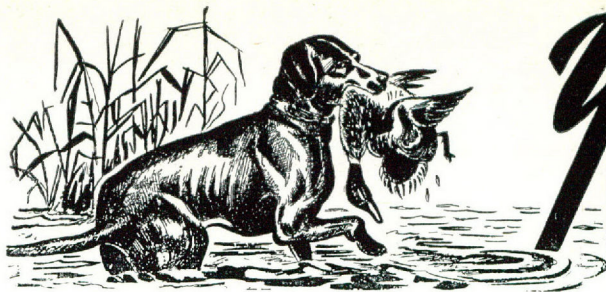
Canine distemper is caused by a filterable virus, that is a disease producing agent so small that it will pass through filters that will retain bacteria. It is an acute, highly contagious disease, affecting principally young dogs. Occasionally cases occur in older animals but most cases develop in animals between the ages of two months and one year. The disease rarely occurs in unweaned puppies. Distemper occurs in all countries where there are dogs and in all parts of the United States. It may occur at any season but is more prevalent in the late fall and early spring. No breed of dog is resistant but highly bred animals are more susceptible than mongrels. Any of those factors which decrease the resistance of a puppy such as rickets, worms, lack of exercise or faulty feeding practices make an animal more susceptible but it can not be over-emphasized that distemper is a specific infectious disease.

In a clinical case of distemper two separate and distinct factors are usually present: (1) the specific virus which produces the early symptoms, and (2) the secondary invading bacteria which produces the complications usually associated with the disease. Just as pneumonia may follow an attack of influenza in the human so may pneumonia or other complications follow an attack of distemper in dogs.

The actual source of infection is many times difficult to determine but it is known that the infection may spread by direct or indirect contact. The infection is so wide-spread that practically every dog comes in contact with it sooner or later.

The incubation period, that is the time necessary for the first symptoms of disease to develop following exposure, varies from three to ten days, but usually averages about a week. The disease usually lasts about thirty days, barring complications. The early symptoms are usually too mild to be noticed by the average person. The animal may refuse its feed, have a slight discharge from the eyes and nose and show a marked rise in body temperature. In five or six days the symptoms become marked, there is a marked discharge from the eyes and nose and the classical symptoms of distemper are evident to anyone.

The treatment of a well developed case of distemper is one of the most un-



**Your
DOG**

CANINE DISTEMPER

satisfactory and difficult of tasks. Like similar diseases caused by specific infectious agents, distemper runs a definite course. The nostrums, quack remedies and so-called "sure-cures" are for the most part worthless. Anti-canine distemper serum is of value in the earlier stages of the disease but of doubtful value in well developed cases.

Sick dogs should be provided with clean, warm, dry, well ventilated quarters and fed good food. Raw eggs, beef broth, or raw beef are indicated. The eyes should be washed daily with boric acid solution to prevent eye trouble. Greasing the edges of the nostrils with vaseline may prevent cracking. In other words good care, good nursing, comfortable surroundings and common sense are much more valuable than assorted medicines. The animal should not be given drugs except those prescribed by a capable veterinarian. Many times an after-effect of distemper known as chorea occurs. This condition is characterized by a twitching or jerking of certain muscles. There is a tendency for the jerking to grow worse and eventually end in paralysis of certain muscles. A well balanced diet, high in vitamins and protein of good quality, and clean comfortable surroundings may assist in the recovery of mild cases.

There has been considerable progress made in immunizing dogs against distemper in the last few years. While occasionally a vaccinated dog develops distemper, the majority do not. The occasional one that does develop the disease usually recovers. The vaccination of dogs against distemper should be undertaken

only by a qualified veterinarian as proper immunization involves not only an understanding of the principles of immunity but the choice of immunizing agent and the age and condition of the animal in question.

Most veterinarians prefer that the dog be at least three months of age and many prefer them older before immunization. When danger of infection is present, puppies six to eight weeks of age may be given vaccine or anti-canine distemper serum and revaccinated at four to six months of age. If vaccination is to be successful the dog should be free from internal parasites and in good physical condition. Weak, rachitic animals or those suffering from some other diseased condition are poor risks.

Inasmuch as distemper is caused by a specific virus all sick animals should be isolated and all objects that have come in contact with distemper dogs be thoroughly cleaned and disinfected. All old beddings or litter should be burned. Some of the drugs now available such as the sulfonamides and penicillin have shown promise in the treatment of the secondary conditions that accompany distemper. It should be remembered that a dog with distemper is seriously sick and drugs should only be given upon the advice of a qualified veterinarian. Even under the most favorable circumstances a distemper dog is dangerously ill and may die or be left permanently incapacitated. The only satisfactory way to control distemper is by properly vaccinating healthy puppies before they have been exposed to the disease.

Reclaiming

★ Continued from page 10

how many he killed. He had plenty of ammunition and mowed down the Germans until the Americans fought their way back over the lost ground. When the American captain peered over the edge Buck recognized him just in time not to shoot.

I would not say that my search for dynamiters was fruitless. I had met a remarkable man who perhaps had more courage than most of the plumed knights

of legendary fame. *He got what he went after* which was more than could be said of the warden who chased the dynamiters.

Yes the Colorado River Basin is improving. The pack of hounds that once chased deer out of the country is no more. Fish are plentiful enough to discourage dynamiting. It is a playground rather than a battlefield where tired dwellers of the great cities may come for rest and recreation. Summer cottages and cabins are dotting the shores of these lakes and a new day has dawned.

THE FLIGHT OF BIRDS

It is pointed out by Wm. Rowan in a recent issue of *Science* that the "homing instinct" of pigeons is not related in any way to the migratory instinct of birds in general. It has been shown that the homing pigeon is entirely devoid of any migratory sense and that their ability to return to their lofts is the result of training and their familiarity with land marks.

On the other hand it has been demonstrated that the migration of any species of birds is not based on any training or chaperonage of adults. For example, "The young of cow birds, or European cuckoos, reach their predestined wintering grounds without either parental or foster-parental guidance, while certain species of the flightless penguins migrate annually by swimming from the antarctic to South America and back with infallible precision, through a murky ocean from which they are presumably incapable of getting bearings and on which there exist no land marks.

"On November 9, 1940, approximately a month after the last resident crow had gone south, I liberated 54 young crows of the year near Edmonton, Alberta, from the area on which they had been hatched and subsequently trapped as juveniles in July and August. They were merely held in a spacious flying cage during the intervening period; no adults were with them. By November 20 over 50% had been retaken, the furthest 250 miles southeast of the point of liberation on a line directly joining Edmonton and central Oklahoma, the wintering ground of 95% of Alberta crows. None of the recovered birds had deviated materially from this line and some of them were traveling at 50 miles per day, a remarkable rate for crows. The temperature was below zero F. and the ground blanketed with snow."

This marvelous gift of nature is in the interest of self-preservation and contrasts in a remarkable way with the character that the Creator has given the ostrich as described by the prophet Job: "Which leaveth her eggs in the earth, and warmeth them in dust, and forgetteth that the foot may crush them, or that the wild beast may break them. She is hardened against her young ones, as though they were not hers: her labor is in vain without fear; because God hath deprived her of wisdom, neither hath he imparted to her understanding."—J.G.B.



No state in the Union is entirely without some big game, although the white-tail deer population of Kansas is only 15 and Delaware has only 19. The white-tail population of Pennsylvania is estimated at 750,000.

Rare Birds of the Rio Grande

THE
BLACK
BELLIED
WOOD
DUCK
which
was
once
plentiful
in the
Valley.



At one
time
this
fowl
was so
numerous
that
they sold
for five
cents
each
in
Brownsville.

Black-Bellied Tree Duck

By CHAS. G. JONES

THE black-bellied tree duck is as rare as a fifty carat diamond. Only a few remain in the lower four counties of the Valley. People seeing them for the first time usually ask: "What kind of a bird is that?"

This rare bird is quite large, stands erect, and has an unusually long neck and legs. Some biologists look upon the black-bellied tree duck as a link between the goose and the duck.

The black-bellied tree duck gets its name from a cinnamon colored breast and a belly of deep black. When in flight a large white band stretches across each wing. When banking for a landing the bird is easily identified by this conspicuous marking.

Its habitat is timbered areas near water. A cavity in a dead limb is a favored nesting site. A nest usually contains from 12 to 15 eggs.

I am told by old Mexican residents of the Valley that 50 years ago this duck was common along the lower reaches of the Rio Grande and in many instances was domesticated. But this practice led to some trouble as the duck would take up in small patches of corn and destroy quite a bit of the grain. To this day the black-bellied tree duck is known to the Mexican people as the "cornfield duck."

In years gone by black-bellied tree ducks were sold on the Brownsville market for five cents each. Today its limited range and number has made it an oddity. About 18 of the black-bellies are found on the federal game refuge on the river due south of Alamo, and they seem content because this two thousand acre tract is as it was a hundred years ago, virgin timber where nature reigns supreme.

Pigeon Flies 7,200 Miles

The longest racing homer flight in history was registered by a bird which flew approximately 7,200 miles from Arras, France, to Saigon, Indo-China, across many seas, mountains and deserts.

The longest United States record was established by an Army bird which reached San Antonio, Texas, after a flight of 2,100 miles from Vanceboro, Maine. The longest American record was set by a pigeon which picked its way back to Brooklyn from Caracas, Venezuela, a distance of 2,200 miles.

These are three of the longest flights

and are generally accepted as authentic marks.

Flights of 1,000 to 2,000 miles are now common in the United States and most clubs hold at least one marathon event of a thousand miles each year. Five hundred miles in a day is gradually giving way as the standard yardstick to six hundred miles a day.

From the standpoint of speed rather than distance, a pigeon from East Moline, Ill., in June, 1936, broke a record of 35 years by covering 256 miles with an average speed of 2,104.32 yards per minute—71.7 miles per hour.



Broiled Squirrel

- 1 young squirrel
- 2 tablespoons butter or bacon drippings
- 1 tablespoon lemon juice
- Salt, pepper
- 1 tablespoon minced parsley

1. Clean, wash and drain squirrel; split in half, cutting along backbone with heavy shears.

2. Brush with a mixture of melted fat and lemon juice. Preheat broiler to moderate heat or 350° F. with oven temperature control set at broil and broiler door open or closed; if closed it takes but a few minutes.

3. Arrange halves, skinned side down, on greased hot rack in preheated broiler pan; place 2 to 4 inches below heating unit with broiler door open or slightly ajar. Broil about 30 minutes, turning when lightly browned. This should take about 15 minutes. Baste every 5 minutes. When browned on other side, season with salt and pepper.

4. Arrange on hot platter, brush with butter and scatter minced parsley over surface. Garnish with parsley or water cress and tangerine or orange sections.

5. Serve hot with mashed potatoes or fried hominy grits, buttered peas, tossed green salad, hot biscuits and cranberry and mulberry jelly, or any tart jelly. Makes 2 to 4 portions.

Breaded Squirrel

- 1 squirrel
- Salt, pepper
- 2 tablespoons flour
- 1 egg, beaten slightly
- 1 tablespoon water
- ½ cup sifted bread crumbs
- ⅓ to ½ cup fat
- Hot water

1. Clean, wash and drain squirrel; cut in pieces for serving.

2. Sprinkle pieces with salt and pepper, dredge with flour, dip in egg and water mixture and drain slightly; roll in crumbs.

3. Drop pieces in hot fat and fry at moderate heat 10 to 15 minutes, turning pieces to brown both sides. Add one tablespoon hot water, cover tightly and bake in slow oven (300°-325° F.) for 40 to 50 minutes, or until tender and well browned, turning meat to cook evenly. Each piece should be completely covered with a browned crumb coating.

4. Arrange pieces on hot platter, garnish with parsley and lemon wedges and serve hot with cranberry and orange relish, baby limas, broccoli and muffins. Makes 2 to 4 portions.

Brunswick Stew, Northern Style

- 1 squirrel
- 1 cup dried lima beans or 2½ cups butter beans
- ¼ pound salt pork or fat bacon, diced
- 1 small onion, sliced

Skinning Deer Heads

HUNDREDS of deer heads are ruined beyond repair every season by sportsmen who would be delighted to have the heads mounted as trophies but who have no idea of the proper method of preparing the scalps for the taxidermist.

The hunter should take with him a sharp knife, 10-inch screwdriver, hacksaw with new blade, large needle with about three yards of stout thread, ice pick, ground to three-cornered point, and a ten pound sack of salt. All except the knife may be left in the camp while hunting.

Never cut off a deer's head right behind his ears, or split the skin up the front of his throat. Leave the neck skin as long as possible. Make the opening cut down the back of neck, ending in a Y shaped cut around antlers.

Pry skin from around antler burrs with screwdriver; cut ear cartilages close to skull with screwdriver. Pry thick skin from frontal bone, taking care not to cut eyelids. Work closer to bone than to skin. Use screwdriver to scoop skin from "tear ducts" below eyes. Leave all dark-colored skin on inside of lips attached to them. Cut across nose cartilage and remove scalp from skull. Remove any lumps of flesh that may be attached to scalp.

Turn the scalp wrong side out, and using the ice pick as an awl, punch holes about a half-inch apart in the fleshy part of lips. Sew lips together loosely. Do the same the entire length of the cut on back of neck.

Now stuff the scalp as tightly as you can with dry newspapers, excelsior, leaves, pine needles, rags, or anything, just so the stuffing material is dry. Remember the scalp must be wrong side out.

Rub all the salt you can into the flesh side, which is now outside. Pack salt thick around nostrils, lips, eyelids and bases of ears.

Run a piece of haywire at least a foot long through one nostril, twist the end of wire. Run other end through large tin can, and hang scalp in cool, shady place, out of the reach of dogs. The tin can will prevent mice from gnawing the scalp. Allow scalp to dry stiff before sending to taxidermist.

With the hacksaw, beginning at eye-sockets, saw through skull, coming out at least two inches behind antlers. Leave antlers attached to top of skull.

The rest of the skull and the jawbones may be thrown away. The scalp and antlers are all the taxidermist needs to do a perfect job.

- 2 quarts boiling water
- 1 teaspoon salt
- ¼ teaspoon pepper
- Dash of paprika
- 6 drops Tabasco sauce
- 3 medium potatoes, cubed
- 1 cup corn
- 4 ripe or 1½ cups stewed tomatoes
- 1 to 1½ teaspoons sugar
- 5 tablespoons butter or other fat
- 2 tablespoons flour (opt.)

1. Use a large squirrel or 2 small ones; clean, wash and drain. Disjoint and break back in half; place in Dutch oven or heavy kettle.

2. Add soaked lima beans, salt pork or bacon, onion, water and seasonings; bring to a boil, cover tightly and simmer 2½ to 3 hours, or until meat is very tender and beans mushy. Add potatoes, corn, tomatoes, baby beans if used and 1 teaspoon sugar; bring to a boil and cook ½ hour, or until vegetables are tender, stirring occasionally if thick.

3. If thin add the butter by combining it with flour to make a roux, stir and boil about 10 minutes to thicken slightly. Add salt, pepper and sugar as needed.

4. Turn into a heated tureen or large vegetable dish and ladle into heated soup plates or bowls. Serve with bread spread with garlic-flavored butter and toasted, and coleslaw, and with a bowl of fresh fruit for dessert. Makes about 4 portions.

Squirrel With Dumplings

- 1 squirrel
- 2½ cups boiling water, about
- 1 teaspoon salt
- ⅛ teaspoon pepper
- ⅓ cup sliced onion
- ½ cup chopped celery and leaves
- 1 cup carrot sticks or 6 to 8 small carrots
- 2 to 3 tablespoons fat
- 1 to 2 tablespoons flour
- 1 recipe dumplings

1. Clean, wash and drain squirrel; cut in 7 or 8 pieces for serving.

2. Cover with water, bring to a boil and skim off scum. Simmer, covered, about 1 hour, adding salt and pepper when partly cooked. Add vegetables, and more water if needed; cook 10 to 15 minutes, or until vegetables are partially done. Thicken slightly with roux of fat and flour and season to taste.

3. Drop dumpling batter by spoonfuls on boiling meat and vegetables, or in top part of greased steamer. Cover tightly and boil gently or steam for 15 minutes without lifting or removing the cover.

4. Serve at once on heated plates, in heated vegetable dish with dumplings on top, or on heated chop plate with dumplings around the stew. Garnish with parsley sprigs or water cress. Serve with grape jelly, hominy grits or kernel corn and tomato salad or aspic. Makes about 4 portions.

Exploding a Myth

★ Continued from page 6

erts, lived and fished at Key West for many years and says that Spanish mackerel are caught there on the surface of the Gulf stream the year round. All winter long commercial fishermen, with gill or purse nets, dropped down about twenty-six feet, bring in the Spanish mackerel.

Then why not look for the mackerel at other points in the Gulf stream in winter? "That is an experiment I will be glad to make this winter," said Roberts. He said he had fished for red snapper at the banks some fifty miles out from Port Isabel but had never pulled up a mackerel with the tackle used but now he would let down some nets and find out if the mackerel are in the Gulf Stream in cold weather. There, it is only forty miles from the shore, the closest of any point on the Stream except Key West. So, if the experiment proves a success Texas may have more and better deep sea fishing winter and summer.

Again quoting the French writer: "The mackerel was once a fish that could be had only at certain seasons. It was caught only in summer and could be found in the shops only at that period of the year. But the recent extension of fishing with drag-nets with boats larger than those of former days, using larger appliances which drag at a lower depth, enables the fisherman to catch mackerel in mid-winter in the depths where they have made their winter quarters. The species, while seasonal, is practically sedentary and never moves very far."

As to just how sedentary the common mackerel may be in the western hemisphere where the Gulf Stream is a factor may be open to question. At times in summer they appear in great numbers as far south as Port Isabel, said Florida Roberts, though they are not taken commercially. The movement of mackerel of all species is very uncertain and varies greatly from season to season. It is quite conceivable that the mackerel of the upper Atlantic, accustomed to the influence of the Gulf Stream, would exercise its prerogative of following the warm current "down Mexico way" but there is the possibility that these common mackerel had been making their home in the deep waters of the Gulf rather than the Atlantic. They are fished successfully in the Mediterranean and their southward range may be considerably greater. Just how extensive their presence may be in the Gulf it might be commercially profitable to ascertain.

Mackerel insist on clean water. At Port Isabel water from the Rio Grande, which is four miles down, is sometimes murky and drives them away. High winds roil the surf and mackerel remain far from shore. Such has been the situation along the coast most of the past summer and but few Spanish mackerel have been taken.

However, on May 30, at a point well

off shore, 1700 pounds were brought in at Port Aransas after five days of fishing. They were caught about 35 miles out in the region of a red snapper bank where the mackerel were said to be abundant.

This was evidently surface fishing. A check of the mackerel caught, as disclosed in the annual reports of the Game, Fish and Oyster Commission, shows that few were caught in cold weather. In 1937-38 a total of 11,199 pounds of mackerel was taken by commercial fishermen, but none in November, December, January and February. In 1940-41 there was a total of 16,000 pounds, 202 pounds of which was taken in December and January. No mackerel catch was reported for the year 1942-43, but in the fiscal year of 1943-44 there was a big commercial catch of 40,000 pounds, but none in October, November, February and March. The winter catch of that year in December and January was 114 pounds. What gear was used in these winter catches we are not told but they indicate that the Spanish mackerel were not hibernating in some remote region and that fishing in winter has potentialities that might well be explored for the benefit of the industry.

Even the summer catch at its best is not imposing. Successful surface fishing depends too much on the weather. The writer visited coastal points the past summer to learn that excessive winds had prevented boats from going out. Even on the jetties at Port Aransas the lashing waves made fishing difficult and unsatisfactory.

Perhaps for these and other reasons Texas fishermen have retired behind a chain of islands content to take what is found in the bays instead of pushing out to the open seas for bigger business. The red snapper industry is the one exception and this will be discussed in a future article on deep sea fishing.

Tropical storms are, of course, a serious hazard in the Gulf but meteorology is providing the safeguards of advance information and one can sit by his radio in the middle of the ocean and trace the path of the storm. Man cannot control the storm but he can give it the right of way, and if he can not "lay him down in peace to sleep" he can keep a weather eye on the elements, and he should do so, for no man can predict with certainty which way a tropical storm will go.

Those who fish for Spanish mackerel have often found a larger and different type called kingfish. It is a huge Spanish mackerel reaching a weight of 100 pounds. It is dark iron gray in color, one of the best of food-fishes, says Jordan, and is unspotted, and its firm, rich flesh resembles that of the barracuda. Its technical name is *Scomberomorus cavalla*. That of the Spanish mackerel is *Scomberomorus maculatus*. The range of the Spanish mackerel follows approximately the course of the Gulf Stream from Cape May on the Atlantic along the tributaries of that stream in the Gulf and to the

equatorial currents on the shores of Brazil.

Ocean Waters

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fresh and remain so for a long time. That is the reason our Texas bays are always fresher than sea water. Sometimes they become very fresh and remain that way for months. In 1941 Copano Bay became very fresh, but it took 5 months for this fresh water to show up in lower Aransas Bay, although the two bays are connected by a pass two miles wide.

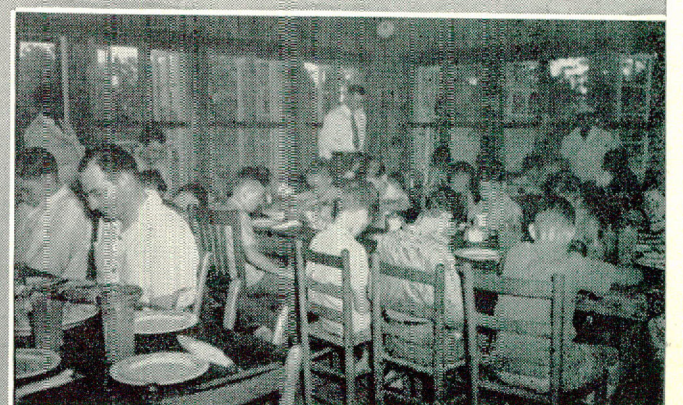
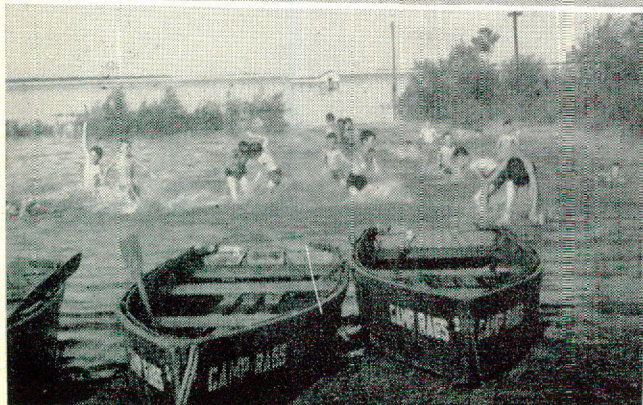
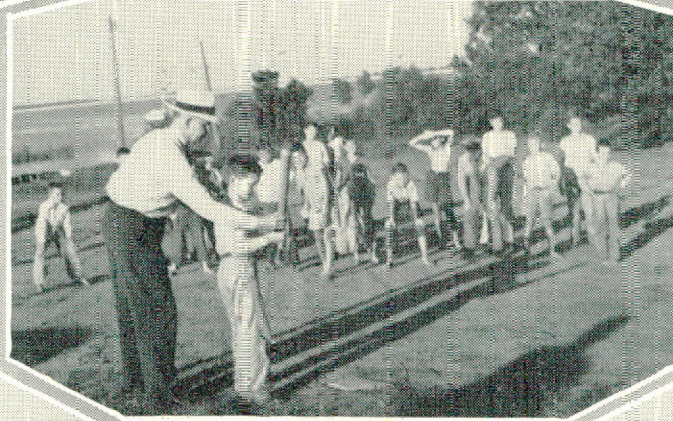
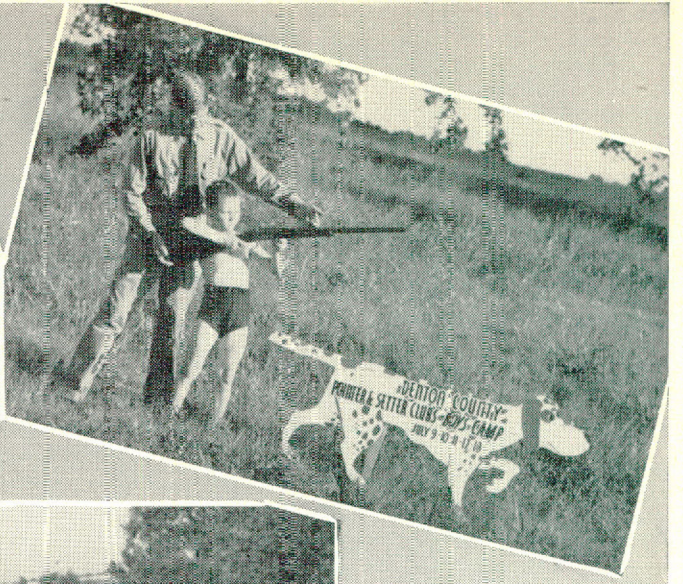
And now we will turn to the Laguna Madre.

The Laguna Madre is approximately 130 miles long. It lies in the driest part of the Texas Coast and nothing except dry arroyos drain into it. For some unknown reason it produces more fish than all the remainder of the Texas Coast, although it is not the spawning or rearing ground for all Texas salt water fishes, as had been stated by some people. While fish thrive in the Laguna, no oysters grow in it, except for a small patch near Port Isabel, and no shrimp are caught there in commercial quantities.

Because of its abundant fish life the Laguna Madre is very important to Texas, and especially to South Texas. It is an enclosed basin, having a high evaporation rate and no major land drainage, so that it becomes very salty. As a matter of fact, it is consistently the saltiest body of marine water in the world, with the possible exception of another very similar laguna just south of the border of Mexico. Although the Laguna becomes too salty for marine life in certain years, and causes the death of thousands of fish, it seems that in some way high salinity, when it is not too high, is connected with the high production of fish. The salty Laguna in Mexico is also a great producer of fish.

As stated before, the salinity of sea water is about 35.0 parts per thousand. The average salinity of the Laguna runs around 40 to 60 parts per thousand when it is in good condition. When it is bad it runs between twice to almost three times as salty as sea water. There is some indication that a salinity of around 72 parts per thousand, or twice that of sea water is the crucial point, and above that salinity the fishes begin to succumb.

Periods of high salinity in the Laguna Madre have come with drouths and dry years since around 1880 and probably before, but before 1919 they were many years apart. During the 1919 hurricane, sand from Padre Island blew across the Laguna and dammed it up below Baffin Bay for a distance of twenty-five or thirty miles, effectively dividing the Laguna into two parts, which are unconnected except by a few inches of water flowing across at the very highest tides. High salinities, deadly to marine life, have come much more often since



then, or apparently about every 10 years. The reasons for this are obvious. Both ends of the Laguna now have only one entrance instead of two, and are blind alleys not having the benefit of the full sweep of the winds extending the entire length of the Laguna, and without the advantage of waters from Corpus Christi Bay and Brazos Santiago Pass flowing in and out from either end. Considering the northern end of the Laguna, the waters are merely backed up by high tides, and since they do not mix readily, the Corpus Christi Bay water pushes down as a solid mass for a few miles, separated almost as definitely from the Laguna water, as if there were a bulkhead between them, and then can go on further. This helps the Laguna all right, but the situation is not what it used to be when the water could sweep on down the Laguna, forced by the winds and tide.

Realizing the fundamental need for greater exchange of water in this region the Game, Fish and Oyster Commission set out some few years ago to put a pass at Murdoch's Landing. This little pass has, unfortunately for everybody concerned, turned out to be a forlorn hope and it has modified the Laguna salinity less than 1/2 of 1 per cent. A moment's consideration will show why. The pass, which has been cut four times since the

spring of 1941, was only 80 feet wide. This is only 1/3300 of the length of the upper Laguna, which is very close to 50 miles. Stated another way, the width of the pass was .03 of 1 per cent of the Laguna length. It is obviously, utterly impossible for such a small pass to modify the salinity of between 250 and 300 square miles of water. It is like trying to change the salinity of a large pond by connecting to another by means of a soda-pop straw.

As I stated before, waters of different densities do not mix easily and water flowing in the Laguna does not mix with the Laguna water, it merely displaces or flows out over the Laguna water for a short distance around the mouth of the pass. Then, when the tide changes, all or most of it flows back out again. Salinity determinations I made showed that Gulf water could not be detected more than 1/2 mile from the pass. These were made three weeks following the first opening of the pass. The Pilot Warden of the Game Commission told me a few weeks ago that the Gulf water could easily be observed from the air and that it never covered an area greater than a square mile.

The pass is too small to do any good and it will not stay open. It has been opened four times and each time has closed shortly thereafter. Pass cutting has been a difficult and costly job. Dredging of the pass at Murdoch's Landing was begun on December 5, 1940. The pass was first opened on April 14, 1941. Water still flowed through at high tide in early September, but there were definite signs of the pass closing in July, 1941. It was closed completely during October, November, and December, 1941, and January, February, March, April, May, June, July, August, September and October, 1942. From the time the pass was first closed until November, 1941, the dredge was engaged in digging its way out of the Laguna Madre. It arrived in Rockport for repairs on November 20, 1941. The dredge left Rockport for Murdoch's Landing on April 16, 1942.

On November 9, 1942, reopening of the pass was completed. It stayed open through December, began to close through January, February and March, 1942. It was completely closed in April, May, June, July, August and September, October, November and December, 1943, and January, February and March, 1944. The dredge returned to Corpus Christi for repairs after the second opening and arrived on March 26, 1943. On June 9, 1943, it left again for Murdoch's Landing. It cut a channel connecting the Naval Base and Humble Channels through the flats of the upper Laguna, to move the equipment through, and arrived at Murdoch's Landing in the middle of November, 1943.

The pass was re-opened about the middle of May, 1944, making the third opening, and it closed again shortly after. A fourth opening was completed on November 21, 1944. The pass was

completely closed again by the latter part of December and has remained that way ever since. The dredge left Murdoch's Landing in the latter part of November, 1944, and after cutting its way out of the Laguna, arrived in Corpus Christi on March 19, 1945, where it has been ever since. This information is from records of the Game, Fish and Oyster Commission office in Corpus Christi.

Since the pass was cut the first time it has not remained open at all more than 10 months, and not what could be called well open more than 6 months. The pass has been closed every summer. This is because the pass does not extend north and south like all natural passes on this coast, and does not get the sweep of the winds. It runs east and west and the wind works against it. The little pass the fishermen have recently opened down at the same locality will stay open only a few weeks and in the meantime, it will not modify the salinity of the Laguna more than a few hundred square yards around the mouth of the pass. The effort is futile.

The salinity changes in the Laguna have followed the rains and weather and have had no correlation whatsoever with the state of the pass. Nevertheless, it has been stated over and over again in some newspapers that the pass brought about change of salinity in the Laguna. That statement is simply incorrect. It has been said that many fishermen "defy" marine biologists theories about the matter. Unfortunately, they are not defying theories but the physical facts of oceanography, and those laws won't change one whit for any man's opinion. The physical reasons why passes will not effect interchange between two bodies of ocean water are as immutable as the laws of gravity and have long been known to oceanographers. It is because continuous currents flowing in one direction are not set up. Only relatively small volumes of water rock back and forth with tides around the pass and within. Only wide surface areas where lateral mixing can take place will allow mixing of ocean waters. Relatively narrow passes, will not suffice. I could give you examples from our own Texas Coast and many from other parts of the world, but it would prolong this talk too long.

The last time the Laguna Madre got in bad condition was 1936-38. The water slowly became fresher again due to rains and in 1939 fish began to work back into the Laguna. The best observations available to me are those of Mr. Bob Tanner, Pilot Warden of the Game, Fish and Oyster Commission, who patrols the coastal waters in an airplane. I quote from a letter of his dated August 13, 1945.

"I have been flying over the Laguna as Pilot Warden for the Game, Fish and Oyster Commission from October, 1939, to the present. When I first started flying in October, 1939, there were no fish in the Laguna south of Bird Island. Be-

SPORTSMEN OF TOMORROW. *Most sportsmen's clubs like frequent meetings at which yarns of field and stream can be spun along with some discussion on hunting and fishing can be improved. But the Denton County Pointer and Setter Club goes one step further. It trains tomorrow's sportsmen as the photos show. Last summer a group of boys was taken to Camp Rags on the shores of Lake Dallas and what a time the youngsters had. They did everything that normal and healthy boys like to do in camp and in addition they showed a lively interest in the field trips to study wildlife. In the upper left photo W. S. (Bill) Hurst and C. H. Greef are keeping tally of the votes as the boys select the best all-around sportsman in the camp. Richard Ayars, of Fort Worth, the tall, shirtless boy, third from the right, was selected. Prizes donated by Denton merchants are displayed on the ground. One of the prizes was a year's subscription to Texas Game and Fish. The upper right photo shows State Game Warden T. O. Bobbitt of Denton giving a lesson in gun handling to Charles Svalbda of Lewisville, Texas. The top center photo shows some of the boys getting instruction in the proper manner to hold a bat. And that youngster holding what looks like an elephant gun has just about all he can hold. The photo shows the boys in the camp on the shores of Lake Dallas. Horseback riding was not neglected and many of the youngsters got their first taste of how it feels to ride to the hounds, although there weren't any hounds. Morning and afternoon swims were a big feature of the camp as the lower left photo shows. In the lower right photo, Rev. J. L. Roden, of Denton, returns thanks before the evening meal in the dining hall of Camp Rags. The Denton Ministerial Association furnished speakers for a short devotional period each day.*

tween Pieta Island and Bird Island only a few mullet in poor condition were seen. Between Corpus Christi Bay and Pieta Island there were few drum and redfish. In the late spring and early summer of 1940 drum and redfish began to work down the Laguna. They progressed slowly and by early fall had reached the vicinity of Point of Rocks. When the flights were first begun the water of the Laguna and Baffin Bay was reddish colored and turbid. Following the high tides and rains the water became clearer and greener in color from the Corpus Christi end, progressively, and the movement of fishes corresponded with the change in the appearance of the water. Fish were never seen to migrate into the reddish colored "bad" water. Due to turbidity caused by the northers, fish are not easily seen during flights in the winter. Fish boats and trot-liners were observed in Baffin Bay in the early part of 1941. I stopped by several boats and catches by most of them were small and consisted mostly of drum.

"Concentrations of fish were observed to become progressively less from the upper end of the Laguna towards the Point of Rocks. On a few occasions large numbers of fish were seen in Baffin Bay. In the spring and early summer of 1941 more fish were seen on the north shore of Baffin Bay between Point of Rocks and Alazan Bay than at any previous time. The concentration of fishes in this area is always greatest in the late spring and early summer following the rains and in late fall following the high tides. These observations are borne out by the amount of fishing in the area at the same time.

"After the pass was cut in April, 1941, at Murdoch's Landing I observed several schools of redfish around the bar outside of the pass, but at no time did I observe fish entering the pass or going through the pass or around the vicinity of its mouth in the Laguna. When the pass was opened there was no visible change produced by the entrance of Gulf water into the Laguna except around the immediate vicinity of the inner mouth of the pass. The area where a visible change was seen was approximately a square mile or less. Large numbers of trout were seen trapped in the holes left along the pass when it filled in. Large numbers of fish, mostly redfish, were often seen milling around in the pass at ebb tide, as close to where the pass was closed as they could get. At high tide a little water flowed through the pass and probably a few fish got through at that time. This condition was observed as long as there was any flow of water in the pass. After the pass is completely blocked the water apparently be-

comes stagnant in the inner end of the pass and no fish were seen to enter.

"In my flying over the Laguna I have never seen any indication that the pass effected any essential change in the Laguna water or put more fish into the Laguna, because I observed that the fish progressed down the Laguna from the direction of Corpus Christi Bay and into Baffin Bay."

Some fish have died in the Laguna every summer for the past three years. Again I quote Mr. Bob Tanner, the Pilot Warden.

"In the summers of 1943 and 1944 quite a few fish were observed dying in the Laguna, mostly on the Padre Island side. Flounders were always seen first, and later dead redfish and trout began to appear. These mortality periods came in July and August. In the summer of 1944 this mortality seemed to be a little heavier than it was in 1943. During this year mortality was not as high in the lower Laguna as it was in previous years, but it seemed to be heavier at the upper end near Corpus Christi Bay. This resulted, I think, from the fact that in the first three weeks in June heavy winds from the south pushed water across the dry flats from the lower Laguna for a sufficient length of time to benefit the water of the lower part of the upper Laguna and to push the Laguna water towards Corpus Christi Bay. This 'bad' water evidently caused death of fishes in Dead Man's Hole and the adjacent areas. During June the Laguna water was seen extending as far as a mile out into Corpus Christi Bay. At the time an inspection trip was made with the Marine Biologist on July 17 the water south of the old Don Patricio causeway looked good and very few dead fish were seen south of that point. The reddish 'bad' water lay between the old causeway and the Dead Man's Hole area. The most extensive mortality was observed in Dead Man's Hole. Following the small Gulf disturbance which was reported to have gone ashore at Riviera on July 23 and which put a two-foot tide into the Laguna through Corpus Christi Bay, the condition cleared up and practically no mortality was observed on a flight down the Laguna on July 25. As a whole, in my opinion, mortality of fishes in the Laguna was less in 1945 than it was in 1944, but it was more concentrated at this end near the population center and therefore attracted more attention and created more commotion."

This recent high tide entering from Corpus Christi Bay and some small rains have apparently stopped the fish mortality for the time being. The connection between Corpus Christi Bay and the Laguna is the only place where interchange of Laguna water with other

waters can take place. The connection is 5 miles wide and in high tides water flows over the whole area, although at mean low tide the depth is only six inches. Sealing off this area by a causeway, except for two narrow channels, as has recently been proposed, would block interchange at high tide and go far towards turning the Laguna into a brine pool. This is the reason I opposed the causeway at a hearing held by the U. S. Army Engineers here on March 21. No one else objected, although later the Game, Fish and Oyster Commission in Austin and the Fish and Wildlife Service in Washington also objected.

In view of the facts already discussed, the pass at Murdoch's Landing has not done any good and it is impossible for it to do so.

Now there is a possibility of doing something for the Laguna Madre, and my purpose in delivering these remarks is not to start arguments with the numerous firm-minded gentlemen who subscribe to the false doctrine of pass cutting, but to divert their attention to constructive efforts, if possible. You will note that I remarked before that the periods of high salinity have come much more often since the hurricane of 1919 dammed the Laguna. If there were an adequate water connection between the upper and lower Laguna most of our trouble with this body of water would be over. If the Intracoastal Canal goes down the center of this flat it should be a great help. It will be 140 feet wide and 12 feet deep and since it runs north and south would have the whole sweep of the winds and waters with it, instead of at right angles, as the pass at Murdoch's Landing has. It is even possible that the canal would be automatically widened by the surge of water. The canal can not be expected to take the place of the wide Laguna area that formerly existed in the dry flats region, but as an addition to the exchange across the shallow flats at high tide, it may prove to be a considerable benefit to the Laguna. Furthermore, if a deep channel connected the Laguna with Corpus Christi Bay, the heavy Laguna water would have an opportunity to flow along the bottom into the basin of Corpus Bay and thus into the ship channel and out into the Gulf. There is an alternate proposal to cut the intracoastal canal along the mainland shore and not in the Laguna proper. This would be of no benefit, so far as changing the Laguna salinity is concerned.

Therefore, it seems that concerted effort should be directed towards getting the Intracoastal Canal cut down the Laguna and as soon as possible, not only for the commercial benefit it will bring to South Texas, but because it will help some to restore the Laguna to the state it was in before the 1919 hurricane.

A talk delivered before the Corpus Christi Rotary Club on August 23, 1945.

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