

TEXAS Game AND Fish

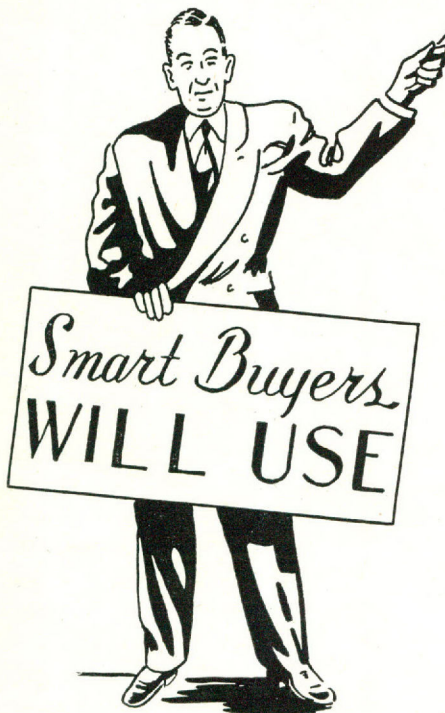
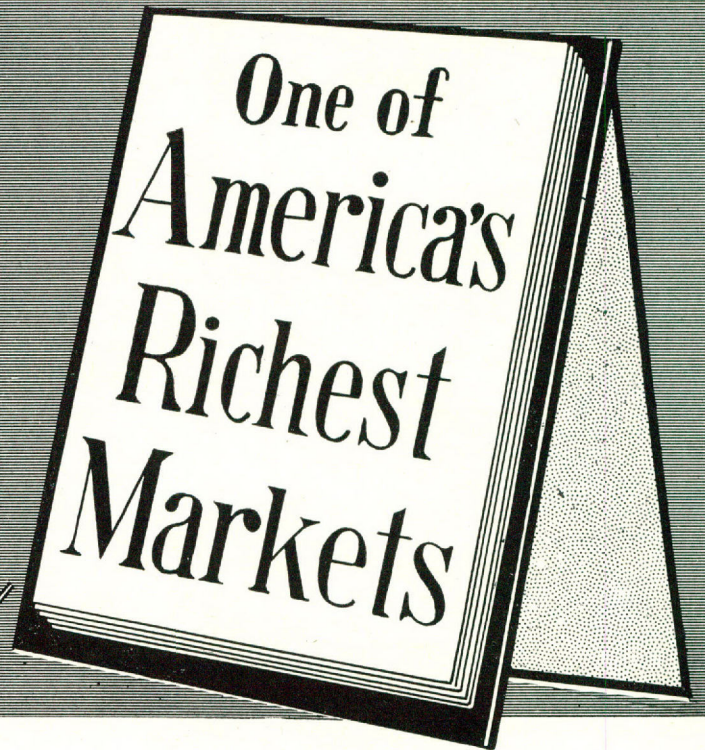
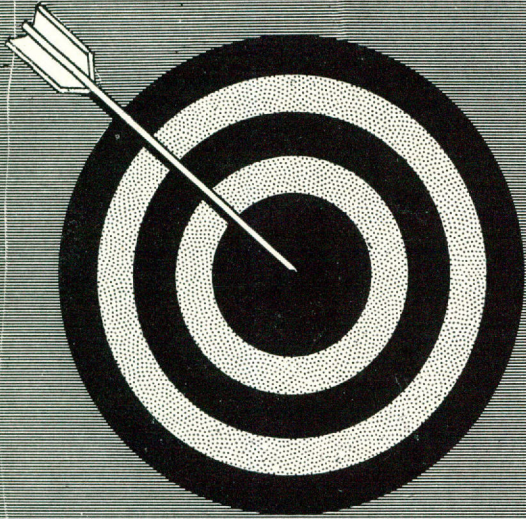
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TEXAS Game AND Fish

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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ROGER M. BUSFIELD
Editor

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The Biologist Grows Up

It wasn't so long ago that many scoffed at the idea that science is vitally concerned in the welfare of man or beast and scientists were known as bugologists.

EARLY in this century a certain school of thought (if you could call it a school) held in contempt the idea that Science is vitally concerned in the welfare of man or beast. A biologist was facetiously dubbed a bugologist. In those days a candidate could hardly hope to be elected Commissioner of Agriculture if he was not a "dirt farmer," or to be appointed on a game commission if he was not a "good shot and interested in game." An unquestioned qualification for the game post was found in an ammunition dealer or a dog fancier. Buffalo Bill, who aided in the extermination of the Buffalo, if still living, could have been chosen by acclamation to head a conservation department. However, no offense is intended to the many excellent gentlemen who have served in that capacity.

After long-continued uses and abuses of the gifts of nature there came the inevitable break-down and the biologist and the agronomist were called into consultation. When the oyster supply of the Texas coast began to dwindle in 1913, the Federal Fish Commission was called upon to make a diagnosis of the trouble. Dr. H. F. Moore investigated and left a prescription. Colonel Bill Sterett, commissioner at that time, sent his representative to Chesapeake Bay to make a study of oysters. Years later the Colonel, in commenting on his work as Commissioner, said he spent some time in studying the oyster and reached some very definite conclusions. One of them was that he could always tell whether an oyster was fried, broiled or raw. Again in the years, 1925-26 and 29, Drs. P. S. Galtsoff and A. E. Hopkins of the Bureau of Fisheries made oyster studies, while in 1925-26 John Pearson spent a year on vertebrate fisheries.

Although it is very interesting to learn what is the matter with the coast, and to prescribe rules and regulations for the administration of its affairs, it must be admitted that results are sometimes disappointing. The answer is that we are often in conflict with the untamed forces of nature, and even with human nature itself. About all that can be done, besides planting oysters, is to watch trends, collect and distribute information, and apply checks and balances in the taking of the products of the sea.

Problems in the interior of the State are quite different, and much more can be done in dealing with the animal kingdom. Rich is the field for exploring opportunities of land management in the interest of wildlife. Such studies have been carried on in many parts of the country, and the Texas Commission has kept abreast of the times; but the most significant gesture was made in 1935 when the Cooperative Wildlife Research Unit was begun in Texas, and other states.

This new venture into the field of research was prompted by a recognition that many states, which are willing to take advanced steps, are without the educational facilities necessary for carrying on a constructive program in wildlife practices. An ordinary college degree does not turn out workers qualified with that technique. Hence, it was nec-



By J. G. BURR



essary for Research Units to blaze the way, which is being done cooperatively by the Game Departments, the Fish and Wildlife Service, the Land Grant Colleges (A. and M. in Texas), and the Wildlife Management Institute of Washington, D. C.

The work done by the Cooperative Unit in opening the way for research quickly developed a demand on the part of students for specific training in wildlife. The result has been that such training has been provided in the Land Grant Colleges in ten states. They are: Texas, Maine, Ohio, Pennsylvania, Virginia, Alabama, Iowa, Missouri, Utah, and Oregon. From these institutions have come more than 600 graduates.

The Texas Research Unit is headed by Dr. Walter P. Taylor as senior biologist, and Dr. W. B. Davis as first assistant and head of the Department of Fish and Game at A. and M. College.

On the starting of this work Dr. Taylor made the following statement:

"Texas is fortunate to be one of the nine states selected (at first) by the United States Biological Survey for a Cooperative Research Unit. Competition of the states was keen, and it is understood that Texas was chosen in virtue not only of the tremendous possibilities of game increase, but also of the intelligent and progressive cooperation offered by the Texas Game, Fish and Oyster Commission, and the Agricultural and Mechanical College of Texas."

In this virgin field of research methods were to be studied for the increase of game that we now have, but consideration was to be given also to vanishing and extinct species. Among Texas extinct species are: Merriam elk, Texas grizzly bear, jaguar, Greater prairie chicken, and passenger pigeon. Species threatened in Texas include: Attwater prairie chicken, Lesser prairie chicken, chachalaca, black-bellied tree duck, Ivory-billed woodpecker, White-fronted dove, Red-billed pigeon, Black-footed ferret, Collared peccary, Mississippi Valley wolf, lobo wolf, buffalo, ocelot, Texas beaver, Texas otter, Texas bighorned sheep, Prong-horned antelope and Mule deer.

The graduates in wildlife, having found places in the conservation departments of the nation, have entered the game fields equipped with a "know how" that has inspired faith in the minds of land owners who have game or who would like to have game. The Land Grant Colleges are especially interested in land management and, working as they do with farmers and ranchers in solving their problems, it is but a short step from domestic to wild animals. Therefore, the men trained in biological research can meet the land owner on common ground as valued helpers. Their training in animal husbandry provides a knowledge of the diseases of animals which may sometimes baffle a stock man when the college man might readily have an answer to the problem.

The research work includes fisheries as well as game, and other forms of wildlife and these workers are finding places in a variety of ways. Besides the State and Federal Agencies, which use many of them, some are in demand by private concerns, such as rod and gun

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Fish Are Funny

THE Pacific salmon lives most of its life in the ocean, then pushes its way up stream over and under all obstacles to the heads of fresh water streams, where it spawns and dies. It never sees its offspring, and the offspring never see their parents. The eel does not agree with the salmon regarding the best manner of continuing the species, so reverses the whole process, spawning in the seas and spending most of its life in fresh or brackish waters. The flounder starts life in an upright manner, but apparently tires of that position, and lies down on one side or the other and stays that way the rest of its natural life. The grunion spends all of its life but 30 seconds in the ocean, but if it were not for that half minute there would be no baby grunions.

There are five species of Pacific salmon; the Chinook or king, also sometimes called tyeek; the sockeye, also known as blue-black and red salmon; the coho or silver salmon; the humpback or pink salmon. Of course there have to be subspecies, but let's forget them. The chinook may attain a weight of over 100 pounds. Salmon return to the streams from which they migrated. If the young are transplanted from one river to another, and migrate down that stream, they will invariably return up the stream in which they were planted. In other words whatever stream they descend to the sea, they will ascend to spawn. The Fish and Wildlife Service has used this ancient and confirmed habit to good effect on the Columbia River system where impassable dams have been erected. They capture the spawning salmon below the dams and carry them to and plant them in undammed streams where they spawn. Salmon eggs have been transported to New Zealand where they have done fairly well, although they have not yet increased to where they are of any great importance commercially. The humpback and chum migrate almost as soon as hatched; the chinooks remain in fresh waters from a few months to two years.

The eel is a catadromous, that is it lives in fresh waters most of the time, and spawns in salt water. Much mystery surrounded the spawning habits of the eel until its breeding grounds were discovered, after years and years of search, in the Atlantic Ocean about southeast of Bermuda, in the general area of the Sargasso Sea. All eels are of marine origin; some, like the conger, never enter fresh water. Our American eels begin

the journey from the spawning grounds as little transparent things that do not in the least resemble eels, and are called "elvers." These little fellows push on and on until they reach our coast, and up our fresh water streams until they meet some impassable obstruction like Niagara Falls. All the eels we catch in fresh waters are females; the males must get tired, or like our coastal waters, for they remain in salt or brackish waters, while the females struggle on and up. The female of the species grows to a length of three feet or more, while the male will average about 14 inches. So all the big eels you catch in fresh inland waters are females. In the November, 1944, Pennsylvania Angler there is a record of an eel taken from the waters of Island Lake, Wayne County, that measured 47 inches, and weighed 9 pounds, 2 ounces. This is about the maximum size, and may be a record.

When the urge to reproduce reaches the female away up some place in the mountains of an Atlantic coastal state, she starts to retrace her "steps" to the sea. The females are joined by the

time. Somewhere down in its system there must be a lazy streak, for he turns over slowly on one side or the other, and descends to the bottom, and stays there the rest of his normal life, as it is a "bottom" fish and spends most of its life on the mud. This would put one eye on the bottom side of the flounder where it would be useless, so nature steps in and moves the eye around or through the fish's head until it is on the same side as the eye that will be on the top side. With both eyes on top side it can lie contentedly on the bottom and watch for your bait. Sometimes the roving eye gets lost in the head and never shows up. The transformation takes place during the first twelve weeks of life, when the flounder is less than an inch in length.

Flounders of the same species turn over in the same direction. Most U. S. flounders are "right handed," that is their eyes, eventually, are both on the right side of the fish. Many tropical flat fishes have them on the left side, so they are "left handed." The individuals of each species apparently never make a mis-

Most American Flounders Are "Right Handed" With Both Eyes, Eventually, on Right Side of the Fish

smaller males on reaching brackish waters, and together they journey back to the spawning grounds a thousand miles out at sea. Females with ripe eggs have never been taken, as they develop after the eels have left our coast. Scientists say they probably die after spawning. But who knows what goes on down deep in the dark sea? They are never seen again, it is true, but perhaps they live for a time far below the surface, grow large and are taken for sea serpents. Both the American and European eels spawn at the same place; yet never—well hardly ever—will you find an American eel in European waters and vice versa. How does each species know which way to turn? It takes the little elvers a year to reach the U. S. Coast, and three years to get to Europe. The female takes from one to two months to reach the sea, after spending from 8 to 15 years in fresh waters. All this is the reverse of the habits of the Pacific salmon.

Another fish with queer habits is the flounder. When the little flounder hatches out it swims around upright, like decent, respectable, normal fishes, for a

take; how does the baby flounder know where he is, what species he is, and which way to turn over? The two eyes of the flounder work independently; perhaps they take time to get acquainted after one has moved around.

An entirely different manner of spawning than that of either the eel or the salmon, and also one that gives us something else to think about, is the spawning of the grunion. Never heard of such a fish? Perhaps that is because you do not live in California where this interesting little smelt-like fish can be found along the sandy beaches. Grunion spawn from March until midsummer. The eggs become ripe every two weeks at the very time there are unusually high tides, caused by the conjunction of the pull exerted by both the sun and moon. As though at a signal these spawners come up on the beach on the crest of a big wave, just after high tide is reached. Each female drills a hole in the wet sand after the wave has receded and lays here eggs therein, which are quickly fertilized by the nearest male; both sexes

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Tarpon

Back in 1676 The Tarpon Was Considered Good, Sweet, Wholesome Meat by Dampier, the Pirate

A PREHISTORIC hangover from the ancient world, tarpon belong to one of the royal families of the sea, a family whose pedigree reaches back in an unbroken line to the warm seas of Cretaceous times, when numerous members of the tribe competed with horrendous monsters whose only surviving record is in the book of rocks.

Today only four members of the family are alive, but each one of them is a king in his own right. In American waters, besides the tarpon, we have the bonefish and the ten-pounder, or skipjack, and then far away, on the other side of the world, is the ox-eye of the Dutch East Indies, a fish similar to the tarpon, although less than half as large.

As is to be expected with such a large and showy fish, the tarpon has a multitude of names, although this seems to be the older form. Dampier, that ancient pirate, who says in his "Voyage to the Bay of Campeche," in 1676, that "the fish which they (the Indians) take near the shore with their nets are snooks, dogfish, and sometimes tarpon. The tarpon is a large and scaly fish, shaped much like a salmon, but somewhat flatter, with scales as big as a half crown. A large tarpon will weigh from 30 to 50 pounds. 'Tis good, sweet, wholesome meat, and the flesh solid and firm. In its belly you shall find large scallops of fat, weighing from 2 to 3 pounds each. I never," continued Dampier, "knew any taken with a hook and line; but either with nets or striking them with harpoons, at which the Mosquito men are very expert." Such were Dampier's ideas, which differed greatly from those now prevalent in the United States.

The name in most general use is tarpon. On the Texas coast at one time the name Savanillo was common, while the apt descriptive name Grande Ecaille (pronounced grandkye), meaning large scale, was given by the French settlers of Louisiana. It also has been called silverfish (about Pensacola), jewfish (in Georgia and parts of Florida) and on the island of Barbadoes in the British West Indies the negroes have given it the name "caffum," the meaning of which no one knows.

Tarpon range over a wide domain. Nova Scotia, in Canada, has reported

them once or twice, while they are found as far south as the Argentine and are common off the coast of Brazil. They also have been caught in the Bermudas and several have been reported from the West African coast. On the east coast of Panama, the San Blas Indians catch them by means of brush corrals, into which they scare the fish, later spearing them, while in Gatun Lake, formed by the building of the Panama Canal, tarpon are numerous, having worked their way up from the sea, through the locks and into the lake, where they have managed to survive.

On our coast, and just to the south, the greatest concentration of these fish is in the Rio Panuco, at Tampico. Here the tarpon, which during the course of the summer months inhabited the coasts of the United States, winter in this tropical climate and each spring return north along the shores of the Gulf of Mexico until the entire seaboard, from Texas to Maine, is once more populated by the silver horde.

Up to the present no one knows much about where or when the tarpon breed, and it is only in recent years that any advance has been made on the problem.

Dr. William Beebe, New York scientist, during his stay in Haiti, in 1928, found immature fish. In one haul of the seine he took 36 ranging from two to eight inches in length. In 1930 a three inch specimen was caught in a cast net at Aransas Pass and then, in 1933, quite a large number were obtained at Sanibel Island, Florida. Of course, the presumption is that the adult fish spawn at or near these places, but so far it has not been possible to say so certainly. Recently the New York aquarium has also had a station for research in Florida and Dr. C. M. Breder writes that they have been making some progress in determining what stages the 13,000,000 eggs of a seven-foot tarpon will spawn must go through before they turn to fish.

One thing that makes it exceptionally difficult to trace such developments is the fact that tarpon apparently go through what is known as a leptocephalid stage, when the body is flat, thin, long and so transparent that print can be

read through the flesh, yet these, like the similar young of the eel, can travel some distance. As only two of these have ever been caught, it has not been possible to localize the spawning grounds from their occurrence.

On our immediate coast the three-inch specimen from Aransas Pass is the smallest that has ever been recorded, although there is some doubt in my mind that this was a tarpon. Several times persons have brought in fish that they considered young tarpon which proved to be only small 10-pounders or skipjacks, and once a man insisted that a small thread herring was a young tarpon because of the long filament that follows the dorsal fin in this fish, as it does in the silver king. Nevertheless, Texas has two exceptionally large concentrations of these fish, both within easy driving distance of Houston. The first and best known is, of course, that at Aransas Pass, to which sportsmen from all over the world have been coming over years, to fight these mighty battlers of the deep. The mature fish arrive here in considerable numbers about the end of March, but probably the best fishing begins later, in May or June. This continues until about November, when the fish begin to disappear to the south, probably to Mexican waters, numbers of small tarpon have been reported to spend the winter in the ship channel at Brownsville.

The second concentration is in the other direction, in that area in the mouth of the Calcasieu River, which lies about 30 miles east of the Texas line at Orange, in Cameron Parish, Louisiana, where it issues from the southern end of Calcasieu Lake.

These fish are highly prized as food fish throughout most of the countries surrounding the Caribbean and the Gulf of Mexico. They are sold in the markets in Mexico and Cuba and, in the early days, were much in demand, not only in the Florida market but also along the coasts of Mississippi and Alabama, it being held that "as a food fish the tarpon is excelled by few."

Be that as it may, it is not the food qualities of the silver king that have endeared them to thousands of people all over the world, but rather the sheer, smashing, fighting savagery of his attempt to escape after he has been hooked. Added to this is another feeling that a lot of them won't admit.

Dave Newell, a good tarpon fisherman himself, has expressed it well when he says, "What gets 'em all is the indescribable beauty of the silver king." He looks good even when he's dead.



The old wheeze that ostriches "bury their heads in the sand" was probably started by early desert nomads who saw ostriches feeding on the horizon. From this distance the birds' heads would appear to be "buried in the sands." Usually the ostrich depends on his great speed for safety.

Red Ears Are Real Battlers

TEXAS fishermen are overlooking a good bet for some of the finest fishing in the world! It's fishing for those large red-eared bream, often called Georgia blue gill bream, on light tackle. Believe it or not, foot long Georgia bream are not uncommon in Texas waters.

Many lakes in Texas are overrun with Georgia bream because so few people fish for them and so few know the proper method of snagging them. Ounce for ounce, there is twice as much fight in those red-ears as there is in bass, but Texas fishermen have run riot over bass and consequently they have neglected the scrappy bream, but bass have too much to eat in the way of natural food, and the bass fisherman, with his artificial lures, often is just like a man offering spinach to a person full of cake.

There are many species of fish carrying the broad label of bream, but most of them are shore feeders and do not grow as large as the Georgia red-ear, which is almost entirely a bottom-feeder. Consequently, few people know how large the Georgia bream grows and few have fished for it. Red-ears reach a weight of more than a pound in Texas waters and a foot-long red-ear, taken on light tackle, is more sport than even the most ardent bass angler realizes.

There are several methods of fishing for red-ears which can be used successfully. It makes no difference whether the angler prefers artificial or natural bait.

Remembering that these scrappy little fish are bottom-feeders, the artificial lure addict rigs up his fly rod with light line, a small leader, a tiny trout fly and to this he attaches a piece of pork rind more narrow than a paper match, and approximately a half inch long. This is split in the middle. A small split shot is attached to the line as a weight. After the cast, the bait is allowed to sink to the bottom of the lake and the wiggling pork rind attracts the big red-ears. Once he is hooked the man who is using light tackle is guaranteed plenty of thrills before landing Mr. Bream.

If the fisherman prefers natural bait, he can use either an ordinary pole and line or a fly rod, but the lighter the tackle the more sport the angler will have. Attach a leader to the line and use either a small fly or narrow crappie hook. Put on as many angleworms as you can and leave an inch or two of the worms wiggling. Cast or drop your bait into the water and let it sink to the bottom. Leave it there for a few minutes and it is likely the wiggling worms will attract your fish. If not, try again in a location two or three feet away.

The only baits ordinarily good for bream are worms and flies, which is consistent with their natural bill of fare. Only the green perch eats other fish. Most bream make their meals of worms, flies and grubs.

Why Two Marine Laboratories on The Coast Are Not Duplications

It is very natural for a layman to wonder why one laboratory would not serve all purposes on the Texas coast. Certainly, one laboratory could be made to take care of a great many things, but it is easy to point out why a single laboratory can not fit all purposes. To illustrate: The Game, Fish and Oyster Commission erected a small, temporary laboratory at Of-fats Bayou in Galveston, in 1929 for a study of oyster behavior, Dr. A. E. Hopkins being in charge. It was equipped with a small motor and running water from the bayou, and oysters were placed in the running water, and automatic gadgets were used to measure the extent of feeding and the growth of the oyster. Daily samples of oysters and plankton from the various reefs were brought into the laboratory for observation and study. Studies of the conditions most favorable to oyster growth can thus be made in the interest of those who wish to engage in the oyster business. To do this economically and efficiently, both the water suitable for oysters and the oysters themselves should be adjacent to the laboratory. This and other products of the bays which will be studied, make it logical to locate the Commission's labora-

tory at Rockport or in some similar area.

The University laboratory to be located at Port Aransas will be more of an ocean laboratory. Its range of study should be the entire Gulf of Mexico with its coral banks and the deep sea fishes, and other species such as are found both in the bays and the Gulf. Such a need has been long felt. It will give University students in zoology an opportunity to learn something not to be found in text books, and they will come down in droves, as they have done before, with their former limited facilities, and make full use of their laboratory. They should have a free hand which would not be entirely possible in a laboratory operated by two governing heads.

The University laboratory will be interested mainly in qualitative and taxonomic definitions. The Commission's laboratory will deal mainly with quantitative and economic problems of the bays. The latter will be concerned with applied science, and the former with pure science. Each can and should collaborate with the other.—J. G. Burr.

Bream are one source of food for bass, but with few persons fishing for them, bass have plenty of natural food and when you drop your plug or fly in front of Ol' John Bass he naturally turns up his nose at it nine times out of ten.

If you want better bass fishing, take time out to catch bream now and then. You'll enjoy it, and you'll help to make bass fishing better.

Trumpeter Swan Count Up 60 in Year

The trumpeter swan, classed as America's rarest waterfowl, increased its United States population during the past year by 60 birds, to reach a new total of 361 for the flock, Albert M. Day, Director of the Fish and Wildlife Service, has announced.

This population figure is based on the census made in August on the Red Rock Lakes National Wildlife Refuge in Montana, the Yellowstone National Park, and adjacent nesting areas by personnel of the Fish and Wildlife Service and the National Park Service.

Of the 361 birds, 170 were found on the Red Rock Lakes Refuge, and 57 in Yellowstone National Park. The others were scattered over adjacent territory and on the National Elk Refuge in Wyoming and the Malheur National

Refuge in Oregon. Forty-six cygnets were found on the Red Rock Lakes Refuge and 10 on Yellowstone Park.

Since 1924 the trumpeter swans have been given complete protection in the United States so that none of the species could be taken for any purpose. Canada affords the same protection.

Adolph P. Toepperwein

Performer of many miracles of rifle marksmanship, Adolph P. Toepperwein, recently retired dean of exhibition shooters, was responsible for what a group of devout natives of the Southwest border considered a genuine miracle. Toepperwein was hunting with friends along the American side of the International Line when a member of the party saw a bell dangling from the belfry of an abandoned mission several hundred yards distant. Toepperwein was challenged to hit this target. He took aim and got off a ringing bull's eye. The bell had a fine sound, and Toepperwein rang it a number of times with his rifle. By the time the party reached the mission, a crowd of awe-struck, gesticulating Mexicans was gathered about the old mission.

"A miracle, a miracle," they were murmuring. "Our old bell has been ringing without a clapper."

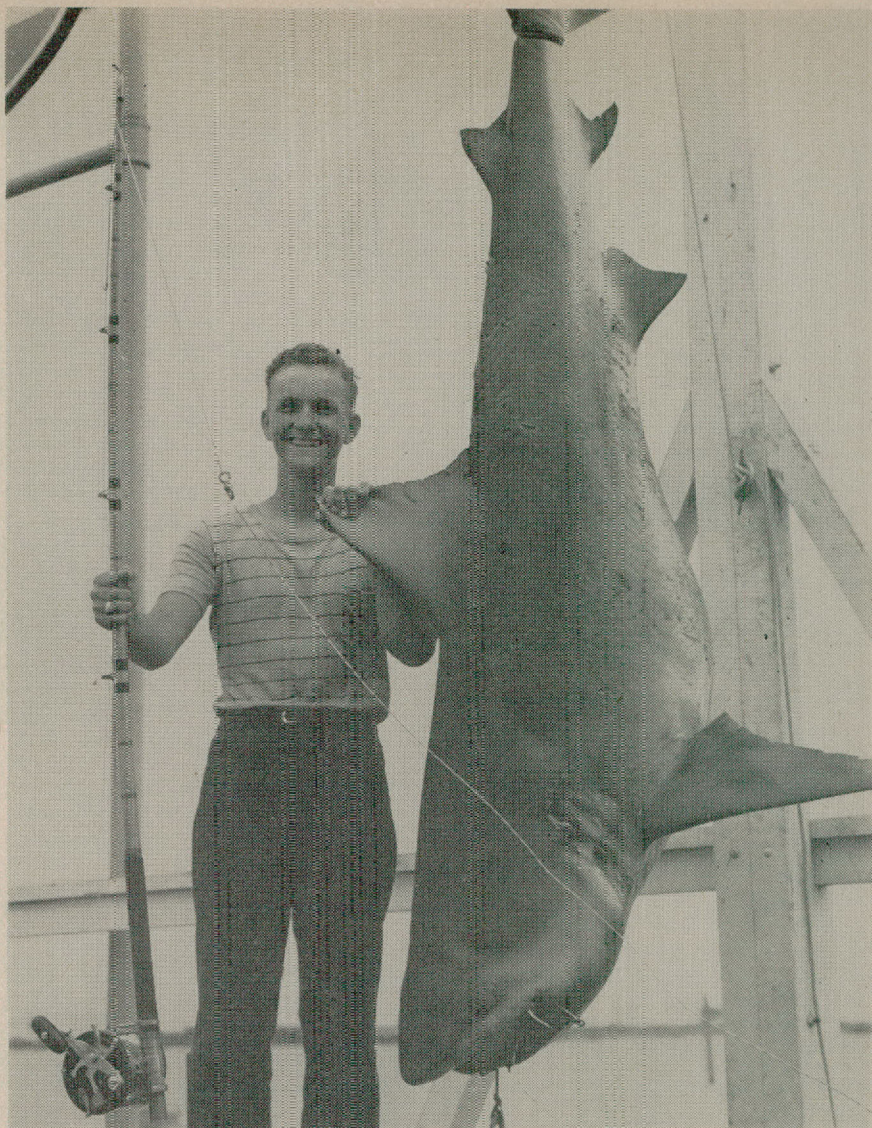
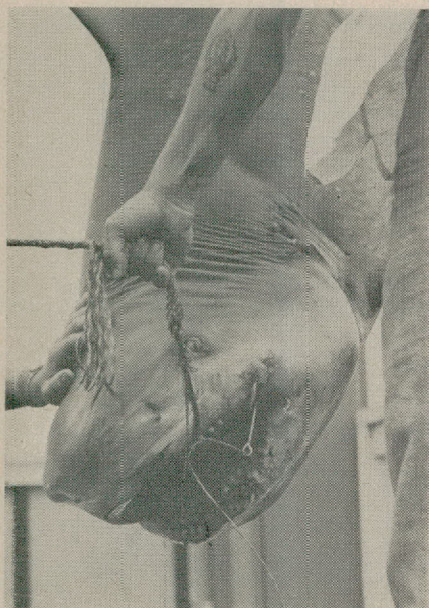
Sharks

Even though the old Hawaiian kings preferred to use human bait for sharks because it was cheaper than pork, most sharks are not man-eaters and, in fact, two of the largest sharks would have a difficult time eating a man, even if they wanted to, because their teeth and mouths are designed to consume the minute plankton.

By J. L. BAUGHMAN

THE old Hawaiian kings preferred to use human bait for sharks. It was cheaper than pigs and just as acceptable to the sharks. Nevertheless most sharks are not man-eaters. Ranging in size from a few inches long to pre-historic monsters 100 feet in length and 120 tons in weight, the multiplicity of things taken from their stomachs well earns them the title of garbage cans of the sea.

Ever since earliest man, sharks have exercised as great a fascination on the popular imagination as do the lions and tigers of the land. The idea that a fish may be large enough, strong enough, and well enough armed, to destroy man, the mighty, is a never-ending source of



THE SHARK is a formidable looking creature and they are worthy antagonists when hooked. This one was brought to gaff on the Texas coast by an angler who was after a tarpon.

wonder and comment. It is true that at times they do attack and destroy swimmers, yet, despite the popular belief, sharks do not hunt human prey as the puma does deer, or the otter, fish. They merely gather him in as an unexpected, but nevertheless delightful, tidbit.

As a matter of fact, the two largest sharks of all would have great difficulty eating man, even if they wanted to, so small are their teeth, and so ill fitted are they for consuming any food except the minute plankton of the sea. These are the huge basking shark of the Arctic regions, which may reach a length of 30 or 40 feet, and is hunted for its oil, and the whale shark of tropical waters, which is even larger, sometimes reaching a length of 60 feet or more, and a weight of many tons.

There are a number of sharks commonly designated as "man-eaters," most of them belonging to the genus *Carcharhinus*. To this belonged the greatest

of all sharks, a giant in whose mouth several men might stand, and whose fossil teeth are over five inches in length. Dr. George Browne Goode once estimated the length of this shark at 80 feet, and in such case the weight was enormous, probably reaching well over 100 tons in large individuals. More modern members of the family are also of great size. The white shark reaches a length of 40 feet occasionally, and is capable of tremendous feats of swallowing. Hugh M. Smith, for many years commissioner of fisheries, reports a 30-footer which had in its stomach an entire sea lion. A second species, the great blue shark, attains a fairly large size, and the writer has an illustration of a third, a tiger shark, supposed to have been 21 feet long, and to weigh 1760 pounds. Undoubtedly to such huge engines of destruction man would be an acceptable, but not too filling, cocktail before a meal. Many of our Texas sharks also belong to this genus, among them the bull

THE MOUTH of this shark is designed to scoop in minute plankton on which it feeds.

★Continued on page 14

DO YOU HAVE A
Dipsy-Doodle?



THE best way to hold a canoe in place on top of a car is to use two old inner tubes. Cut them in two, tie a piece of rope to each end and throw the tube over the canoe, tying ropes to any solid part of the car or bumper. There is never any slack in this hitch and the canoe always stays where you place it.

To prevent cracked agate tips simply buy an ordinary replacement pencil eraser (the cap shaped kind that fits over a pencil) and slip it over the tip whenever the rod is not in use—rubber tubing is also good.

Safety pins make good rod guides in a pinch. Cut off the clasp head and point end and bend the two ends at right angles and flatten ends with hammer so they may be wound in place more firmly.

Cover your flashlight or electric lantern with red cloth or red cellophane when gathering worms at night. Worms don't become alarmed in this light but will rapidly pull themselves into holes if you shine a white light on them.

GARMENT FASTENER PROTECTION

Many sportsmen's garments now come equipped with either zippers or snap fasteners and these often become damaged in washing. To prevent this close the fasteners before putting them in the water.

TROUT FLY RENEWING

To revive crushed feathers used for tackle making shake them in a paper sack with hot salt. Trout and bass flies can be renewed in the same way.

RESTORING A FLY LINE

To restore a worn, frayed, oil-processed fly line first wash it perfectly clean in plain luke warm water (no soap). Dry the line thoroughly then rub in powdered graphite until the line shines like metal. Do not use any dressing on the line until the graphite has worn off. The line finish will absorb the graphite giving it a hard surface

★Continued on page 20

Do Catfish Purrr?

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THE LEGISLATIVE FRONT

Newsletter
for
April, 1947

FOR YOUR INFORMATION:

NEW GAME AND FISH LAWS

H.B.200. It is now unlawful to catch fish with traps, seines, and nets in the waters of the Angelina and Neches rivers in Cherokee County.

S.B.166. Sets the open season on wild deer in San Augustine, Sabine, Jasper, Newton and Tyler Counties from August 15 to September 15, and from November 16 to December 31; and permits the use of dogs in hunting deer.

S.B.165. Sets the open season on squirrels in San Augustine, Sabine, Jasper, Newton and Tyler Counties from November 10 to December 31; and sets the daily bag and possession limit at five squirrels per day.

S.B.129. Opens the quail season in Rains County on each Monday, Wednesday and Friday of each week between December 1 and January 16, and sets the bag limit at 12 in any one day and 36 in any seven day period.

AMENDMENTS TO BILLS INTRODUCED

H.B. 39. By Willis. This bill has been amended by the House Game and Fish committee to exclude the payment of a fishing license for sport fishing in salt water.

BILLS INTRODUCED

H.B.646. By Slimp. Would permit the use of seines and nets, the meshes of which are not less than one-half inches in size, to catch carp, buffalo, shad and to succor fish from any waters in Wise County, including that portion of Lake Bridgeport and that portion of Eagle Mountain Lake which lies wholly in Wise County.

H.B.653. By Crawford. This bill would prohibit the firing of explosives in any of the tidal waters of the State without a permit from the Game, Fish and Oyster Commission.

H.B.687. By Smith of Hays. Would close the season on wild deer and wild turkey for a period of three years in Caldwell County.

H.B.686. By Gregory. Would close season on wild deer in Coryell County for a period of three years.

H.B.758. By Gilmer and Moore of Val Verde. This bill would make it legal to hunt and kill peccary or javalina at any time in Val Verde and Crockett Counties but would prohibit the sale of peccary or javalina in those counties.

H.B.614. By Walker. This bill would increase the number of members of the Game, Fish and Oyster Commission to 31, all to be appointed by the Governor and confirmed by the Senate. The bill also would provide that no two members shall reside in the same Senatorial district.

H.B.607. By Fant. This bill would make it unlawful to carry on, or over, or into the waters of Caddo Lake, its adjoining lakes and tributaries, in Harrison and Marion Counties, any seine or net, except a cast net used for catching bait, or hoop nets, set nets and trammel nets, having meshes three and one-half inches square and over, or a minnow net not exceeding 20 feet in length, or to carry by vehicle or any other way, any such seine or net, or have in possession, within one mile of Caddo Lake, its adjoining lakes and tributaries, within Harrison and Marion Counties.

H.B.587. By Overton. Would prohibit the sale of fish caught in the Neches river in Anderson County.

H.B.583. By Heatly. Would prohibit the use of nets, seine, snag line or trap in Comanche County.

H.B.575. By Craig. This bill would close the season on wild deer and wild turkey in Roberts and Hemphill Counties for a period of five years.

H.B.569. By David Read. This bill would close the season on wild turkey for a period of five years in Hardin County, and provides for the killing of foxes at any time, and would prohibit the use of dogs in hunting or chasing deer in Hardin County.

H.B.563. By Walker. Would authorize the Game, Fish and Oyster Commission to enter into cooperative agreements with the United States for the establishment of hunting grounds and fishing areas in the national forests of Texas.

H.B.558. By Willis. This bill provides for the removal and regulation by the Game, Fish and Oyster Commission, by crews or contracts, of rough fish or turtles from all fresh waters of the State and would permit the sale of rough fish to the highest bidder.

H.B.546. By Stump. This bill would close the season on wild deer and wild turkey in Williamson County for a period of five years.

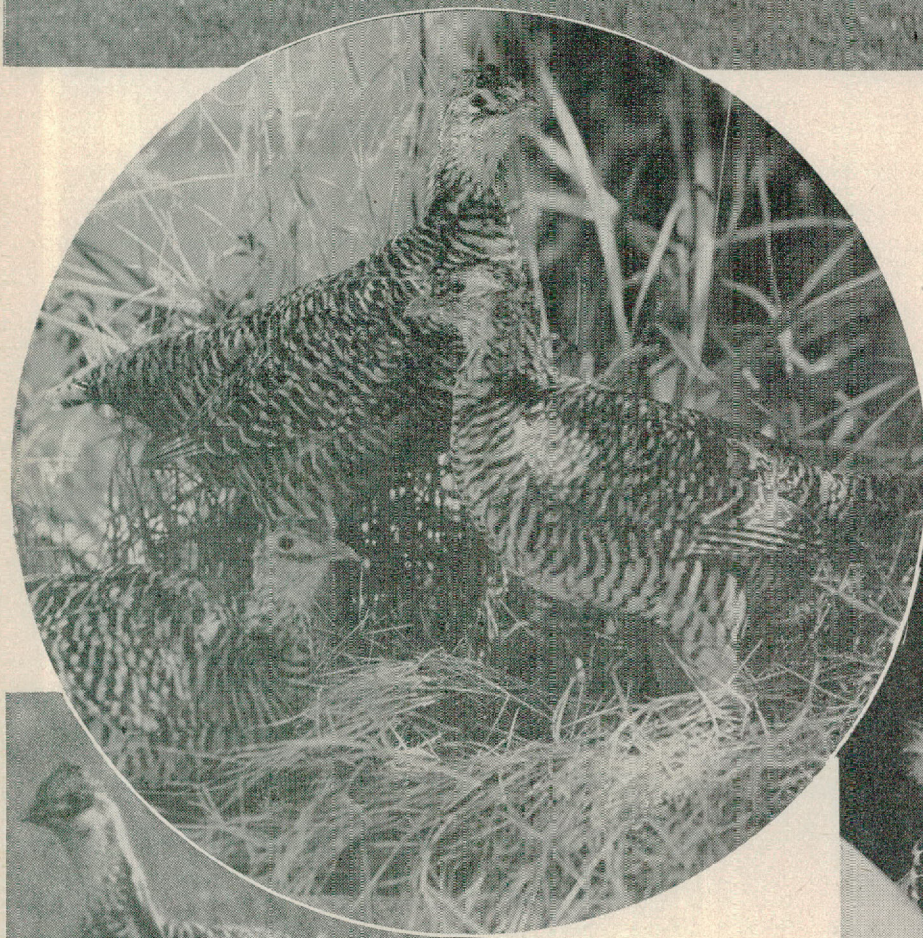
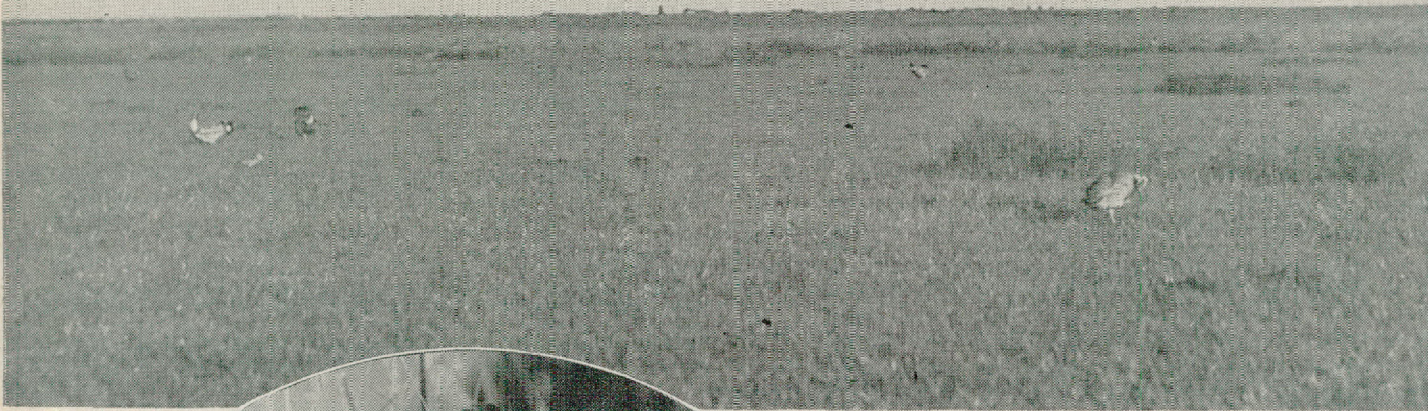
H.B.537. By Hughes, Spencer, Wilson, et al. The State Health Officer would be authorized by this bill to define areas infected by foxes with the rabies, and to pay a bounty for their destruction.

H.B.522. By Johnson. This bill would limit the tackle or gear to be used in the Colorado River and the lakes on the Colorado River from Lake Austin to the headwaters of Buchanan Lake to ordinary pole and line; rod, reel and line; hand line; set line; throw line; trotline; artificial lures; and minnow seines not more than 20 feet in length when used for taking minnows for bait. This bill also would set a limit of 30 hooks on any and all gear used.

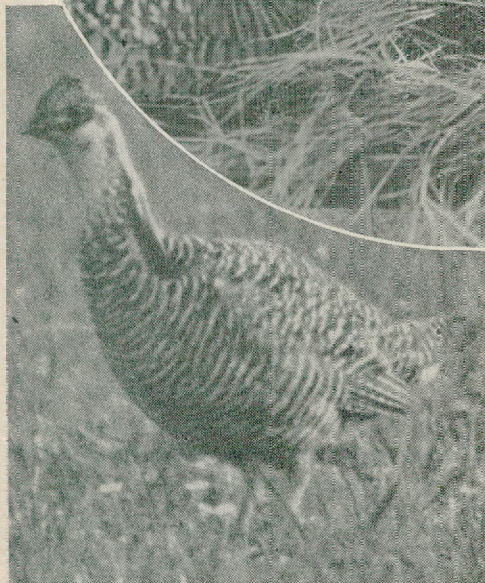
S.B.118. By Weinert. Would prohibit the firing or discharge of pistols and rifles, into, on, or along or across any public river or creek, lake, reservoir, lagoon or bayou.

S.B.128. By Crawford. This bill would regulate the taking of minnows in Erath

Drums of the Dying



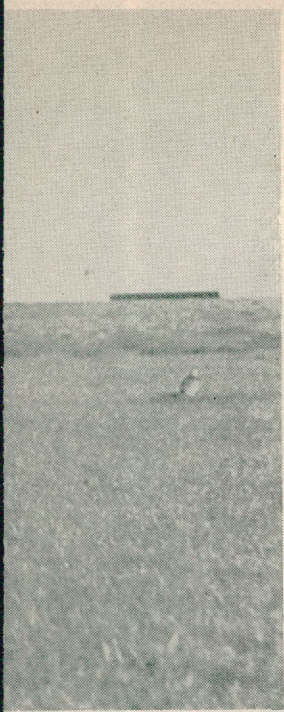
Cocks on the booming ground during mating season take over the booming grounds, defend them against encroachment, and shatter the early morning booming.



Prairie chickens are a good game bird. In the oval above are three hens; at the right two prairie chickens just hatched; and at the left, a hen on the booming grounds.



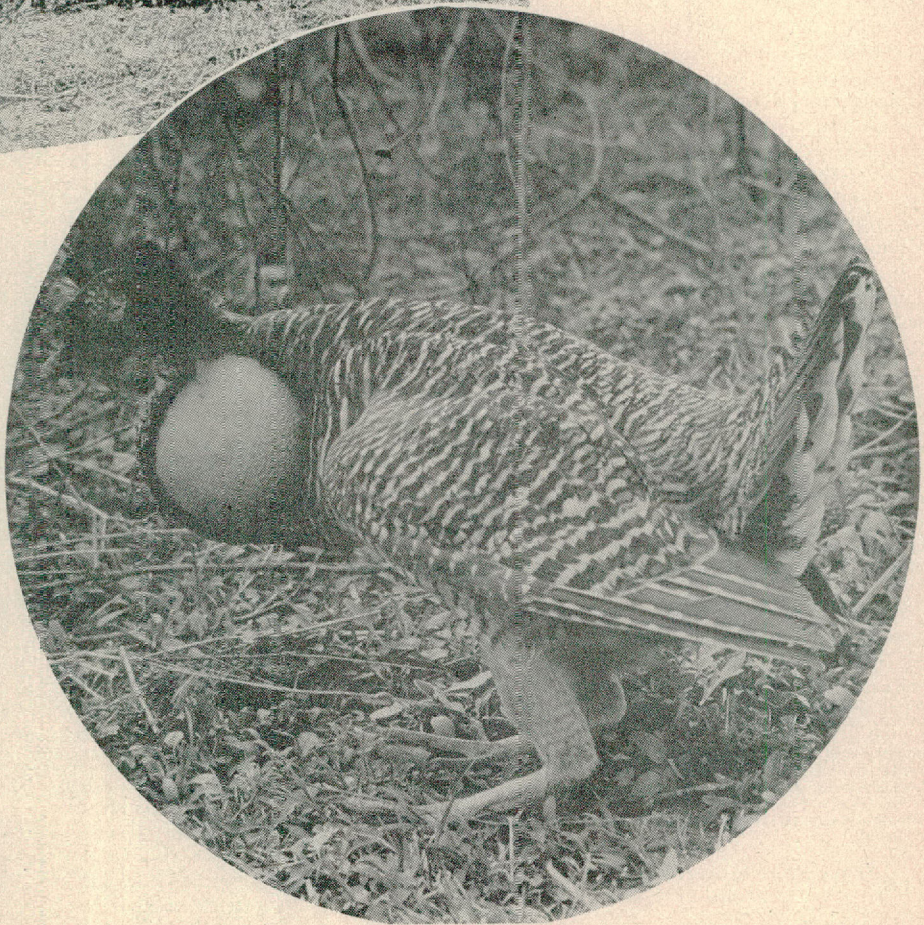
During the winter when feed is scarce the game department sets up feeding stations for prairie chickens.



... During the
position on the
lea they have
other cocks,
ance with their



A cock just after boom-
ing and the lower
shows a closeup view
of the cock's booming
sack.



Sharks

★Continued from page 8

shark so common about Galveston and Aransas Pass.

Another very interesting shark is the thresher, or swingle tail, which is easily distinguished by the huge and flail-like dorsal lobe of the tail, used in pursuit of its prey. It was long believed to associate with swordfish in attacks on whales, which it was reported to thresh with its tail, inflicting great wounds. It is not capable of this and the teeth are so small that even if it were near a disabled whale it would not be able to bite through the tough skin. The tail is used, however, to herd small fish into a compact mass, which the shark attacks with open mouth. Moreover, it is used to attack or stun its prey at times. W. E. Allen in a letter published in Science says:

"I noticed a small fish frantically swimming just in front (of the shark). A moment later the pursuer, a six-foot thresher shark, passed partly ahead of the victim, when it turned quickly, giving the coach-whip lash of the tail which I had seen before. The victim was much confused, if not actually injured by the whip-like movement, which seemed to be accurately aimed. The whip stroke was instantaneously repeated with very confusing speed, and it then became apparent that the victim was seriously injured."

We have spoken of the giants of the shark family, but it will be a surprise to many to know that there are sharks which, when full grown, measure as little as four inches long, and weigh only a few ounces. Only two of these are known, taken in the Philippines at a depth of 1000 feet. Still others of the family, almost as small, have been taken in the Gulf of Aden, at a depth of 6000 feet. These deep-sea forms are generally dark in color, in contrast to the more brilliantly-colored species of the surface waters.

There are many curious forms in the family. The angel wing (so named because of a fancied resemblance of its fins to angels' wings), and the saw shark are like nothing that most of us have ever heard of. The goblin shark, also seems to fully deserve its name, and

rarely do we see anything as curious as the common hammerhead of Texas.

Sharks will eat almost anything, and while none of them are vegetarians, everything else seems to be found in their stomachs. Even the whale shark, which ordinarily feeds on microscopic plankton, is no exception. The late Dr. Jordan recorded one from the Philippines, and notes that in its stomach were found "seven leggings, 47 buttons, three leather belts and nine shoes. He had probably captured the castoff garments of a company, otherwise the question arises—what became of the odd legging and the odd shoe?" Tiger sharks have been reported as preying on birds, crabs, turtles and other sharks, as well as an occasional man. Other species live variously on sharks, rays, porpoises, horse-shoe crabs, mackerel, shad and other fish, and the bones of many domestic animals, such as sheep, cattle, horses, pigs and goats have been taken from their stomachs, as well as tin cans, bottles, pieces of chain, shark hooks, lobsters and rats. Dr. Gudger of the American Museum further lists a hammerhead from the jaws of which he removed 54 stingray spines.

Mark Twain tells the story of a shark that swallowed a copy of the London Times while cruising in the Thames (This was before the days of oceanic cables, when communication still depended on the mail boat). Seized with the wanderlust, it headed for Australia, reaching there some time ahead of the steamer. Cecil Rhodes, then in Australia, caught the shark, opened it, and, seeing the paper, read the financial news. As a result of this advance tip he made a killing on the stock market that founded his fortune. You can believe that or not, but there is a story similar to this, but so strange and so wonderful as to be almost past belief, yet well attested by many people.

There is, in the museum at Kingston, Jamaica, a set of ship's papers, known as the shark papers. These papers belonged to an American privateer, the Nancy, which was operating in those waters during the War of 1812. Chased by a British man-of-war, the captain threw his papers overboard, in order that they might not fall into the hands of the British, and reveal him and his ship in their true colors. Captured and placed on trial, there was no evidence against him; but during the trial, another British ship docked, bringing the missing papers. They had been taken from the stomach of a shark that had evidently snapped them up when they were thrown overboard. The log of the second ship is on exhibition in London, and in the records of the British Admiralty there is a sworn statement as to the manner of finding of the papers.

"One of the great American needs is a shark-eating man," once declared Commissioner of Fisheries Hugh M. Smith, meaning thereby that if a market value could be given sharks it would not be long before they were one of the major fisheries of the country. So far,

this man has not been found, but an acceptable substitute has arisen, because of the great demand for various products of the shark which are of commercial value. These may be listed in order of their value as oil, hides, fins, fertilizer and food for human consumption.

Oil long ranked second in importance to the hides. However, with the advent of the war, and the shortage of cod liver oil, it was found that the oil produced from various shark livers was even more valuable as a producer of vitamins. These livers are enormous. An Australian station reports a 15-foot shark whose liver weighed 200 pounds. Generally the liver is about 15 per cent of the body weight and the oil 10 per cent of the body weight. Much experimental work has been done with this oil, and while it is used in the curing of shark leather, the making of tarpaulins, of paint and of soap, its main value is as a substitute for cod liver oil; that of low grade making a fortifier for poultry and stock foods, while the better quality is prepared for human use, the vitamin A content being as much as 40 times that of cod liver oil, per unit of vitamin D.

For many years it was not possible to utilize the shark hides for anything except a substitute for sandpaper, known as shagreen, and for sword grips. This was because the skin was covered with hard, tough particles, of the same material as the teeth, which it was impossible to remove. However, in 1919 a process was patented whereby the denticles, as they are called, would be destroyed without damaging the skin, and at present shark leathers are used in the manufacture of shoes, belts, luggage and number of other articles. Some of the leather thus made has a beautiful pattern and all of it is remarkable for its toughness and lasting qualities.

The fins are usually saved and sent to the Chinese markets, where they command a price of about \$2.50 per pound for the choice grade used for soup and from the balance of the body steaks or filets are sometimes prepared. There is also a small West Indian trade in salted shark meat, which is sold in competition with dried codfish, and the Belgian Congo consumes large quantities. When not used in this manner the flesh may

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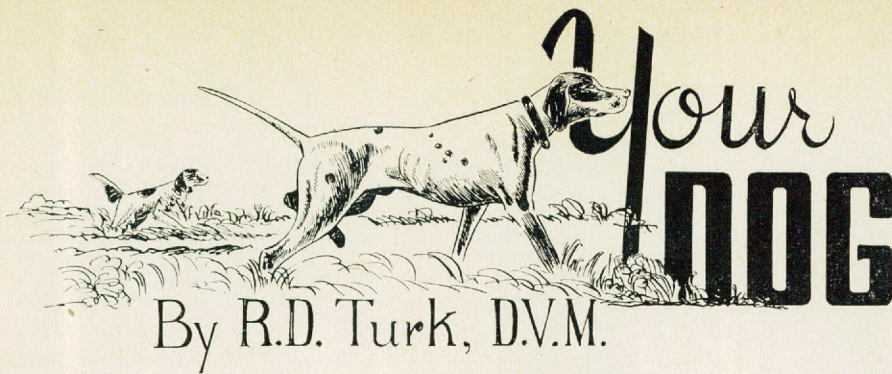
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RABIES

THE recent outbreak of rabies among foxes and other wild animals in East Texas has again emphasized the fact that the incident of rabies has nothing to do with "dog days." It is a disease of warm blooded animals and although there may be a difference in susceptibility of various species of animals to rabies none are naturally immune. Because the infective agent is present in the saliva it is usually transmitted by bites. Rabies is generally spread by carnivorous animals such as dogs, wolves, foxes and the like. It is of interest to note that in certain parts of Mexico and South America, rabies is transmitted by the vampire bat. Rabies not only occurs in all species of domestic and wild animals but man also is susceptible. Rabies is invariably fatal in all animals.

When the infective agent, a virus, is inoculated into an animal by the bite of a rabid dog, fox or other animal, the virus attacks the nerve endings and is carried by way of the nerves to the spinal cord and brain. The more virus inoculated and the closer the wound to the central nervous system the greater the possibility of the animal contracting rabies. Not only is the possibility greater but the actual time required for the disease to develop is of shorter duration. For example, a horse or cow bitten on the front leg may require several weeks or months for symptoms to develop, whereas one bitten on the head

or face may develop symptoms within a few days. Persons, particularly children, are often bitten about the face. Such wounds are always extremely dangerous and many times the symptoms of rabies will develop regardless of any treatment employed.

The symptoms of rabies are similar in all types of animals. In all there is a change of temperament and usually a period of excitation. Cats and dogs in particular may utter a strange cry or howl and a normally gentle animal may become vicious. They often travel considerable distances biting animals or people. If restrained they may often chew metal chains or bars of the cage. They often have a depraved appetite and will eat indigestible objects or material that ordinarily would not be touched. After a few hours the excitement gives away to a paralytic stage which ordinarily lasts only a few hours to a few days then death occurs.

In horses which are developing rabies, itching at the site of the original wound often occurs. This itching often is so intense that a horse may rub or bite the parts severely and may even tear great chunks of flesh out of himself. Such animals are extremely dangerous. They may attack man or other animals. Often such animals refuse food but may eat ravenously of some abnormal substance such as wood, gravel or manure. They may attack the manger or side of a stall with their teeth with sufficient force to

break them out. As in the dog, paralysis eventually sets in and the animal goes down and dies. In cattle the symptoms are similar to those in horses with the exception that cattle bawl continuously and paw the earth and will charge the attendants, or any moving object such as pieces of paper, chickens or similar things in motion. Among wild animals the most constant and characteristic symptom is their sudden loss of fear of human. If a skunk, squirrel or fox goes out of his way to attack human beings it is not only "news" but it is usually suggestive of rabies.

Since a positive diagnosis of rabies is made by the characteristic changes in the brain and those changes do not develop until the disease is well advanced, animals should not be destroyed when a person is bitten if it is at all possible to confine the animal and observe it a few days. If an animal is killed care should be taken to not destroy the brain since this is needed for diagnostic purposes.

The question often is asked why should we or need we send the brain to a laboratory to be examined? The reason is this, there are other diseases affecting the nervous system which may show symptoms similar to rabies and it may not be infective to man at all. Since the treatment to persons known to have been exposed to rabies is a series of 14 to 21 injections of vaccine, naturally one would not care to take such a treatment needlessly.

Although rabies occurs in all warm blooded animals, including man, the dog and members of the dog family are the most efficient in its transmission so the ultimate control of rabies lies primarily in the control of the stray and homeless dog and in the proper care and vaccination of dogs that are worth keeping. If rabies is suspected in either wild or domestic animals a graduate veterinarian should be consulted. If any persons are bitten they should contact their family physician at the earliest possible moment. If possible confine or otherwise restrain the suspected animal and observe. If the animal bit as a result of rabies infection, marked clinical symptoms will develop shortly and the animal will usually die within the week.

be dried and ground to make commercial fertilizer.

Most of the commercial shark fisheries are conducted by the use of great trot-lines or nets, and in a single haul there may be as much as three or four tons of these great fish. In recent years a great deal of sport fishing with rod and reel has also been done, and sharks and sawfish up to 1300 pounds in weight have been taken by this method; the species most sought being "man eaters" and mackerel sharks, both of which give a hard battle.

Occasionally a whale shark is taken by harpooning, but the most remarkable method of any was recorded by Dr. E.

W. Gudger, of the American Museum, who says that C. F. Kraus, of San Francisco, narrated the story of a capture of a shark such as has never been told before.

The incident occurred during a voyage of the Munson liner "American Legion" along the eastern coast of South America. Mr. Kraus told members of the department that the ship struck a giant shark about a third of the distance from the snout back towards the tail.

So perfectly was the fish balanced that it hung on the bows for several hours, and was only detached with some difficulty. He said the fish was about 30 feet long. It was a whale shark.

This is strange fishing, but no more so than that of the Polynesian fishermen who caught sharks with their bare hands. This was no more than we should expect of people who prayed to a shark god, and who staged battles between

★Continued on page 19



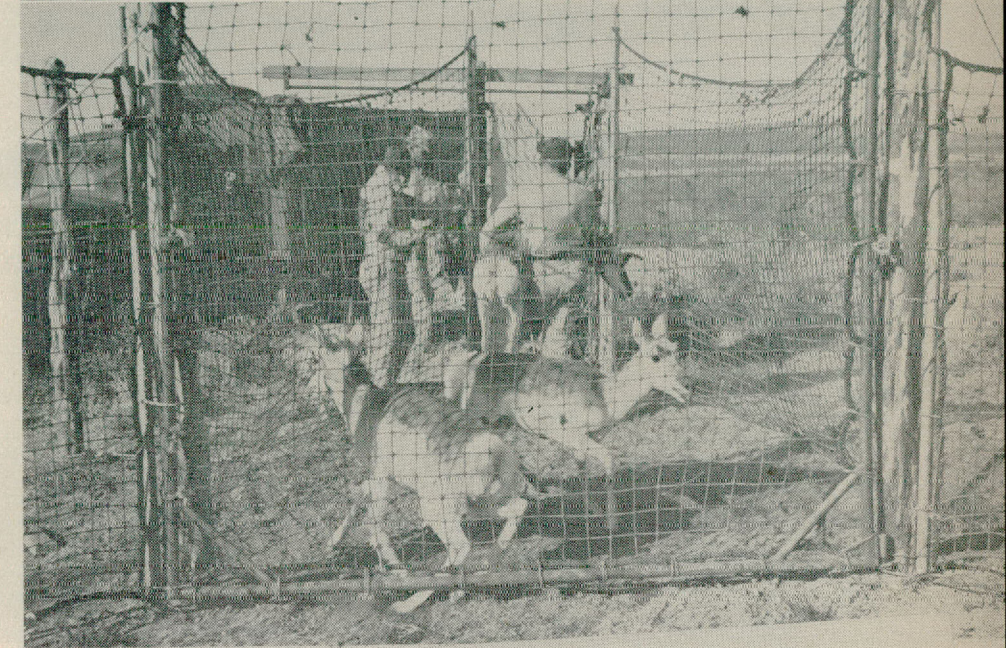
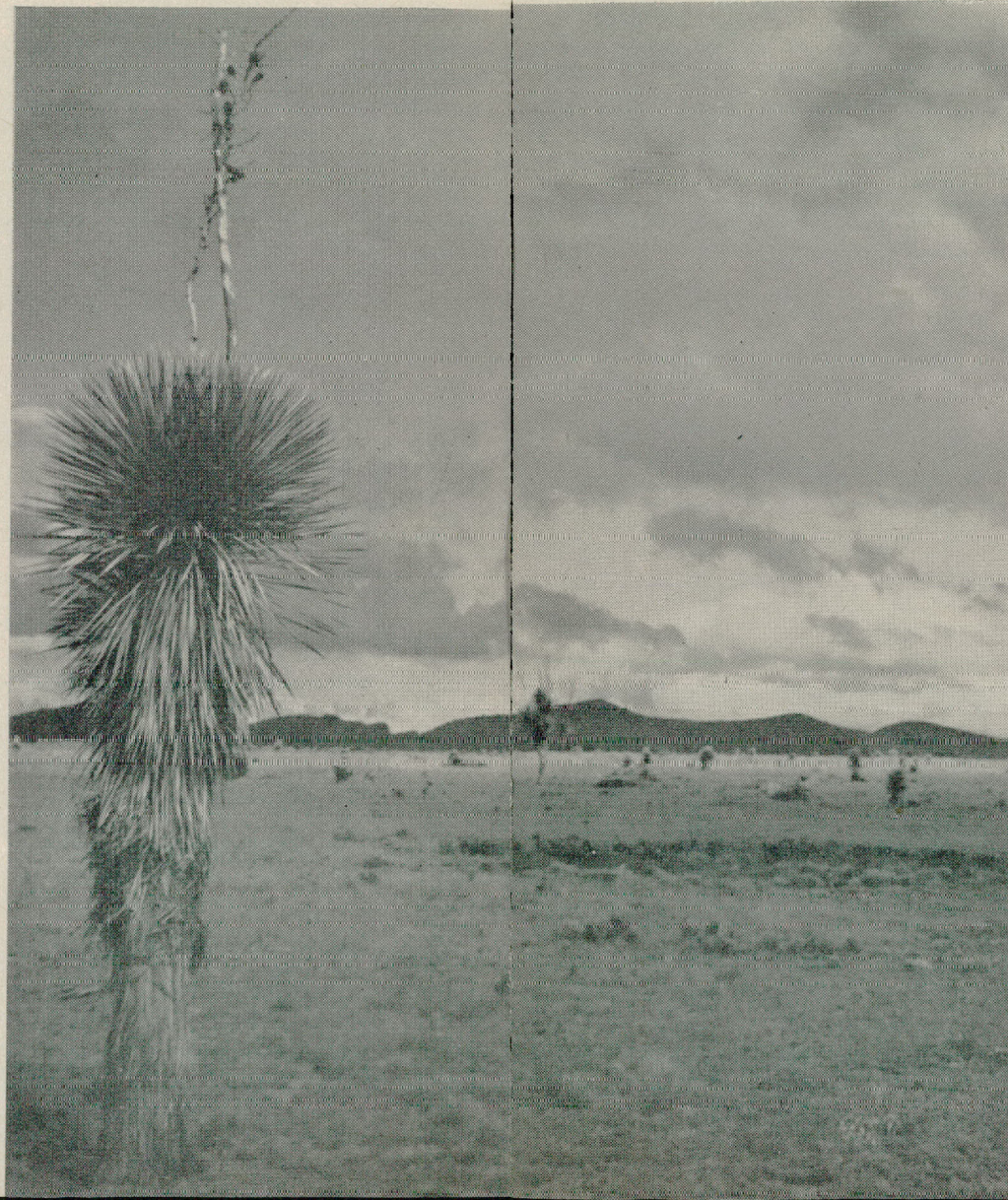
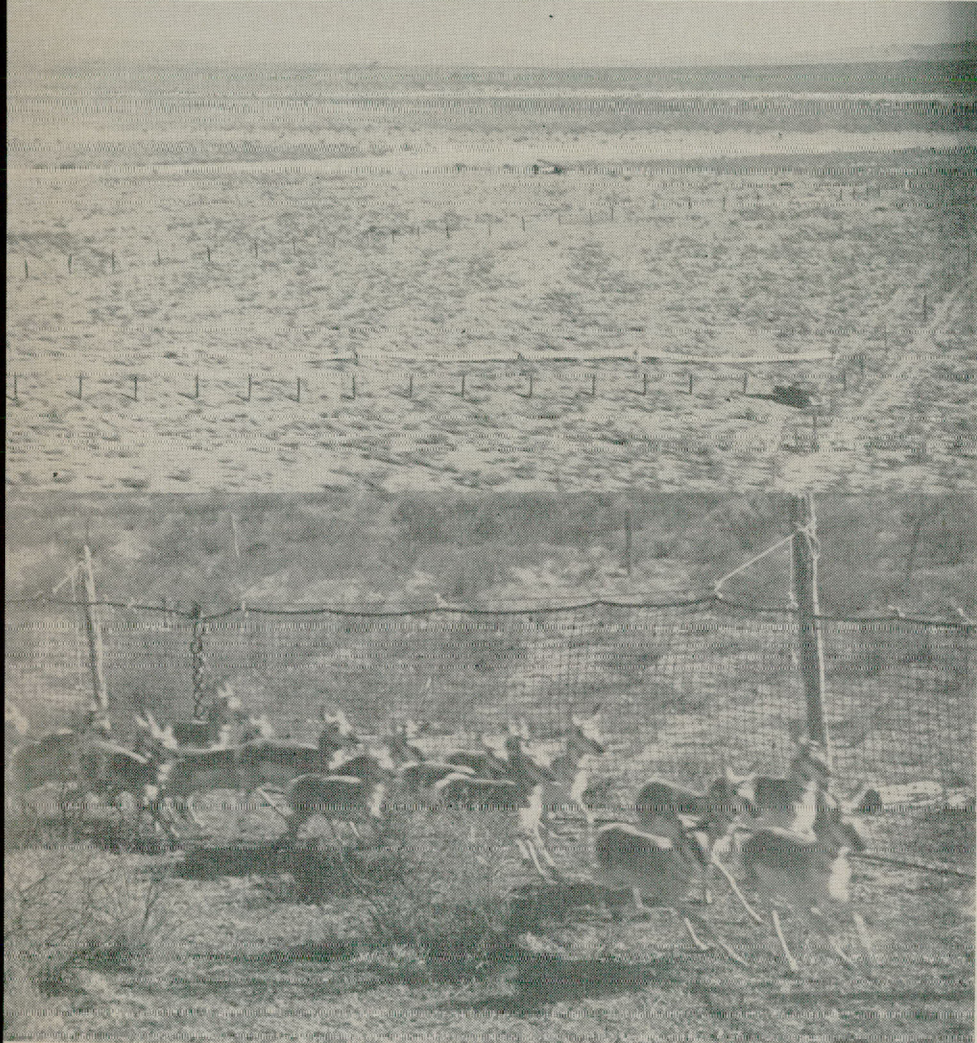
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★ Antelope ROUNDUP TIME

Antelope are trapped during the late herd the antelope from the wings fall and winter months in Texas. Sumto the cord net holding pen. The two plus animals are taken from ovedottom pictures at the left show ante-stocked range and moved by trucks tope in the holding pen which is visible other regions of good range. Thesn the right background. Upper right photographs show part of the operapicture shows how the trapping crew tion. The top left photo is a view withcuts a few head out of the herd for the heavy cord net trap showing thoving into the crowding pen. Picture gate from the holding pen into thust below shows how antelope are crowding pen and the rear gate through loaded by hand into trucks which are in which the antelope are loaded into the rear of the trap. But before the trucks. Just below is an aerial view of antelope are placed in trucks they are the complete trap. The plane is holding tagged and their age is determined. The lower right picture shows how the antelope within the net wire wing antelope are released on a new range. The bottom picture is a view of good cross fence in the foreground. The stri antelope range. During the 1946-47 season, some 500 antelope were trapped in antelope within the wings until the the Trans-Pecos and moved to new cross fence is completed ; then it is use homes, mostly in the Panhandle region.





ARMS AND AMMUNITION

Edited by ADAM WILSON III

14,383 Kinds of Shotgun Loads

FEW shooters realize that only thirty years ago the six companies loading paper shotshells produced an estimated total of 14,383 different kinds of loads.

This fantastic figure was compiled unofficially by George R. Watrous of the Winchester Repeating Arms Company, who, in the past thirty years, has been associated closely with the program to simplify the number of shotshells.

This figure seems almost incredible today when the scarcity of lead has produced an ammunition shortage so acute that shotshells of any kind are difficult to find on dealers' shelves.

In 1916, ammunition companies gave shooters a latitude of loads so wide that a large percentage produced practically duplicate results even though they were made up of a wide range of different types and quantities of powder and shot. Today, each loading company generally confines itself to one type of powder, one type of shot, and a limited range of quantities of both.

Thirty years ago shotshells were made up of the following needless components:

- 8 different kinds of smokeless powder
- 3 different kinds of black powder
- 11 variations of powder quantity by dram
- 11 variations of powder quantity by grain
- 13 sizes of "chilled" shot
- 20 sizes of "dropped" shot
- 11 sizes of buck shot
- 7 variations in weight of "chilled" shot
- 7 variations in weight of "dropped" shot

One of the early moves which automatically reduced the variety of loads made by one company was the introduction of the Super-X brand of progressive burning smokeless powder which eliminated the choice of eight different kinds of powder.

The loading companies voluntarily eliminated 5,200 different loads in 1921, which accounted for less than 10 per cent of the demand.

The same year Herbert Hoover established the division of Simplified Practice in the National Bureau of Standards

of the Department of Commerce. Its purpose was to assist industry in the reduction of needless variety of products. Two years later this agency was called into action on behalf of shotshells. At a preliminary conference among hardware association, ammunition and powder manufacturers, a survey revealed that a total of 4,067 different loads were still being produced in 1923.

On January 1, 1924, when the first revision was announced, 2,320 loads were lopped off leaving a total of 1,747. The 2,320 loads eliminated represented only 5 per cent of the previous combined sales of all paper shotshell loads.

Described by the Division of Simplified Practice as the most consistently progressive program of reduction industry has ever inaugurated, the shotshell group has whittled down its line steadily throughout the years until on January 1, 1947, its ninth revision, the total number has now been reduced to 137. This figure includes the total number of varieties required for all normal shooting purposes.

Center fire and rimfire ammunition were subjected to simplification in 1926. Neither offered the tremendous variety involved in shotshells. Following the five revisions made in the last twenty years, the total number of rimfire calibers has been reduced by 25 per cent, the number

of rimfire items by 40 per cent, the number of center fire calibers by 33 per cent, and the number of center fire items by 35 per cent.

Today the most important ammunition problem for shooters is not variety, but how to get almost any kind. When normal conditions return, shooters won't have to flounder among thousands of different loads to make their selection. Thirty years of continuous simplification has given the shooter the cream of the ammunition crop.

How to Become A Marksman

You don't have to be a "born marksman" to perform unusual feats of marksmanship, says Herb Parsons, reputed to be one of the country's fastest gun handlers. Patience and practice, plus good guns and ammunition, are the principal ingredients, according to the Winchester exhibition shooter who gives some of his tips on hitting flying targets with a .22 rifle.

Some of the most spectacular feats of shooting require mastery of relatively simple factors. Hitting two bottles, one standing on the other, with two rapid fire shots, requires only that you shoot

★Continued on page 20

SCOPE MOUNTING

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Sharks

★Continued from page 15

men and sharks just as the Romans staged gladiatorial contests.

A great stone shark pen at Pearl Harbor, Honolulu, was the scene of these contests in which man, armed only with a shark-tooth dagger, was pitted against shark. Shark teeth were also used by the women of the islands, who studded mitts of skin with them, so that they might protect themselves from assault by raiding tribesmen.

Polynesian kings were known by their prowess as shark fishermen, and Kamehameha was proud of his title as "Great Shark Fisherman." He was one of those who used human bait, keeping the candidates (mostly personal enemies) for this doubtful honor in a specially constructed pen near the sea.

Tickling sharks into captivity was a method much in vogue with those people not able to exercise the king's privileges.

This was simple. In all the coral islands the wash of the waves and ebb and flow of the tides have eaten great holes in the coral beneath the surface of the water. In these the sharks take their siesta. The natives, paddling slowly along in a canoe, spot the shark, and stopping the canoe, one man slips overboard. Gently the man swims downward; gently he strokes the back of the great fish with his hand; and gently he slips the noose of the rope which he holds over the tail of the shark. Then, shooting to the surface, he clambers into the boat. The rest of the crew tail on to the rope, and Sir Shark is snatched to the surface, tail first.

A gentle variation on this method was that whereby one of the fishermen used his hand as bait. In this a lively, wide-awake shark was sought, and when it was sighted one of the occupants of the canoe would trail his hand slowly in the water. Sighting it, the shark moved slowly forward, and as the fish came alongside the canoe a noose was gently lowered between it and the hand.

To this the shark gave no heed, passing through till the rope was past the first fin. Then the "bait" gently withdrew his hand, the rope was snatched taut, and another shark was caught. The secret lay in the manipulation of the hand. If it moved slowly, the shark moved slowly, but if the movement was abrupt the strike was sharp and quick, and off would come the hand.

Familiarity never bred contempt of sharks among the Polynesians. Fight them they did, but among the rank and file of the people a healthy respect for these fish held sway, for whatever may be the case of the cooler waters of the north, most tropical sharks are not in the least shy of taking a helping of dark meat.

In a long and accurate article on sharks, Doctor Townsend, formerly of the New York Aquarium, gives some interesting data. He lists numerous instances where men have been devoured

Things You May Not Know

The southern fox squirrel is the only squirrel in America which has a white nose and white ears.

The jumping mouse is only about three inches long in body, yet it can jump from 8 to 10 feet.

The porcupine cannot "shoot" his quills. His defense consists of erecting his quills and quickly striking a strong sidewise blow with his tail.

The mountain sheep successfully defies all enemies except two—man and domestic sheep. From

the former he receives bullets, from the latter disease.

The young of nearly all round-horn deer are spotted at birth.

The "demon of the seas" is the killer "whale" or Orca. It has the appetite of a hog, the cruelty of a wolf, the courage of a bull dog and the most terrible jaws afloat.

The sloth, one of the slowest of all animals, eats so slowly that before he has finished one meal it is time for the next.

by these fish, and even some where the sharks, mad with desire to reach their prey, have seized the oars, or the outriggers of the boats in their teeth. He concludes that sharks of tropical waters are more dangerous at night than in the day. Moreover, he believes that the most dangerous time for a shark attack is just at dusk.

Species involved in the attacks are the great white shark, the blue, the tiger, the grey nurse, the waler, the cub, and the hammerhead, most of which are found in the waters of the United States, and all of which have been accused of man-eating at one time or another.

Why some places should be afflicted with man-eaters and others should not, is not definitely known, but a possible explanation may be found in the customs of the people of those places. In the Solomon Islands, and off certain river mouths in India, sharks are very plentiful, and tales of shark attacks from both of these places are numerous.

In the Solomons, the dead are cast into the sea, while in India half-consumed or only slightly scorched bodies are tumbled from the burning ghats into the sacred rivers, to float downward to the ocean. In both places the sharks have become so accustomed to feed on human bodies that they have not the slightest hesitancy in attacking swimmers or persons who may be unlucky enough to fall into the water.

When the Spaniards held Cuba, the garbage dump of Morro Castle was a chute leading through the wall, and ending in a little cove in the harbor of Havana. This cove was known as "El Nido de los Tiburones" because of the great number of sharks attracted there by the food. Here too, were dropped the bodies of Cuban prisoners, slaughtered wholesale.

Even today, great numbers of sharks are found about the "Shark's Nest," and though reports of attacks are few, it is considered extremely foolhardy to enter the water at or near this point.

During the time that Tasmania was used as a penal colony by the British, these fish were utilized as prison guards

for the Port Arthur settlement, near where Hobart now is. Situated on the end of a narrow peninsula, the prisoners were prevented from escaping by a line of vicious dogs and equally vicious guards, who were stationed at the narrowest portion of the land. Several prisoners having escaped by swimming around the ends of this line, the governor of the colony ordered the waste from the kitchens to be thrown into the water at these points, and from that time on there were no further escapes, the great swarms of sharks seeing to this very effectively.

The casting of refuse into the sea bay explains the numbers of sharks present in the harbor of Sydney, Australia, as the packing houses of the city discharge their waste into the bay. It also offers an explanation of their extreme viciousness, as Dr. Townsend believes that when in such feeding swarms the ferocity is increased greatly by the competition for food, and that at such times sharks are more dangerous than at any other except when they smell the blood scent, when they become utterly crazed.

It is certain that never less than two people a year for many years was the toll paid by bathers on the Sydney beaches. In one week, three men were taken in water less than four feet deep, and to further show the fallacy of the belief that shallow water is safe, a commercial company made one haul with their nets in the surf, and caught 20 sharks.

Most of them were "man eaters" and four of them, including a huge tiger shark, were taken right in the breakers. As a result of the continued deaths, shark-proof fences of woven steel were erected around the beaches, and tall shark towers, on which look-outs were stationed, were built along all the beaches. When the shark bell sounds there is no question about obeying. Everyone leaves in a hurry.

Shark attacks on humans are not common in the United States waters but in many parts of the world they are an ever-present menace to bathers.

Herman Oelrichs at one time offered

a \$500 reward through the New York papers for authentic news of a shark attack in our waters. It was never claimed. Despite this fact, there have been such cases. E. M. Burton, director of the Charleston, S. C., museum, gives proven records of five attacks, and says that he has knowledge of two more in which the attackers was not certainly known.

Doctor Gudger of the American Museum, records two more, in one of which an eight foot hammerhead was the offender. These records extended over a period of about 18 years so it can be seen that such attacks are not common in the United States.

In 1932, when shark scares were disturbing the Atlantic coast, officials of the United States Bureau of Fisheries and of the New York Aquarium investigated the reports, and C. M. Breder present director of the aquarium, concluded at that time that none of these were authentic.

The late Doctor Lucas, of the American Museum, after thoroughly investigating such reports for years, believed that the danger of shark attack on man in our waters was "infinitely less than that of being struck by lightning."

The Biologist

★Continued from page 4

clubs, or large land owners, of which the King Ranch is a notable example. Admiral Byrd has been using one of these graduates in his south pole explorations. Many of them are in the army doing pest and rodent control work, including malaria control.

At the Texas Agricultural and Mechanical College there have been some fifty graduates with wildlife degrees, and about 100 students are now majoring in wildlife. In that connection there is also a game warden school. When one wishes to enter the game warden service, if he has certain qualifications, and there is the prospect of an opening, he is given the training suitable for game warden work.

Out of wildlife research has grown the practice of wildlife management. Research has led the way for bettering land conditions which are conducive to the welfare of both wild and domestic animals. Control of ranges to prevent over-grazing, the thinning of populations where there is a game surplus, and their transfer to sections where game is scarce or entirely absent, have received emphasis and introduction by the cooperative Research Units which have opened the way for the enlarged research and management program inaugurated with the coming of the Pittman-Robertson appropriation. This made possible the hiring of game managers in every state in the union and, by the grace of the Fish and Wildlife Service, in some of the islands of the sea.

Truly, the fate of wildlife is now committed to the keeping of those who have the "know how."

Fish Are Funny

★Continued from page 5

then flop back into the sea on the next wave that comes in. The spawning takes about 30 seconds, and the time they leave and return to the sea does not take three minutes.

The spawning goes on at night time only, for if it continued through the day, millions of grunions would be destroyed by birds and other enemies.

In about ten or eleven days the eggs are ready to hatch—a little ahead of time to be on the safe side; they are ready but do not hatch until the high tide reaches them. When the wave comes in and covers the eggs they immediately hatch, and the old and the young go out to sea with the next wave. Compare this with the slow process of the eel in continuing the species.

The female sea horse, which swims through the water standing on its tail, lays her eggs in a pouch, somewhat like that of a kangaroo, located on the abdomen of the male, where they stay until hatched, and where the young stay until they can swim. The female of this species may not be more deadly than the male, but surely is the dominant sex.

Yes, there are lots of queer things about fish that we would never dream of. The next time some one asks you to tell a foolish "fish story," tell them one of these interesting but true stories.

Hints

★Continued from page 9

making is possible to cast as well as when the line was new.

MINNOW NET WATERPROOFING

To waterproof a minnow net shave up a cake of paraffin and dissolve it in benzine. The net can be dipped in this waterproofing or its can be applied by placing the net on a flat surface and the mixture put on with a paint brush. Hang the net up in the open air. The benzine will soon evaporate leaving the net material impregnated with the paraffin.

KEEPING LEMONS FRESH

Lemonade is always a favorite drink on a hot day in camp but lemons dry out quickly in hot, dry weather and fresh ones are hard to find in isolated sections. Take all the lemons you need with you. When your summer camp is reached put the lemons in a tightly covered 2-quart or gallon jar of water and they will stay fresh and juicy for a month.

DRYING BOOTS

An easy and safe way to dry out the inside of leather boots and shoes and rubber footwear is to pack them tightly with wadded newspapers. The paper quickly absorbs the moisture and prevents the leather from shrinking.

INDIAN SHARPENING STONE

Dozens of the same kind of sharpening stones the Indians used can be found along the shore of almost any lake or stream. Look for a small, smooth oval or round shaped stone with no cracks across the surface. Try your pocketknife on several. When you find one that quickly gives an edge to your knife blade slip it in your pocket to carry with you.

RENEWING, SOFTENING AND PRESERVING LEADERS

Old gut leaders can be renewed and kept soft and pliable in a solution made of ½-ounce of glycerine, 2 ounces of distilled water and a pinch of common baking soda—what can be held between the thumb and forefinger. Keep the leaders in this solution and soak the felt pads of your leader box with it.

WATERPROOFING A SILK CASTING LINE

Mix together 1 cup of BOILED linseed oil and ½ cup of clear varnish. Heat in a double boiler then run line through it. Repeat twice more then rub off excess waterproofing with clean cloth. This method gives the line a polish and helps to "shoot" it through the guides of your rod better than when new.

HANDY CAMPFIRE TOOL

The handiest utensil a camp cook can carry in his kit is a putty knife. It can be used for scaling fish, as a flapjack, meat and fish turner, for cleaning pans and skillets, and a dozen other uses.

RENEWING CORK ROD GRIPS

The cork grips on your fishing rod can be made like new by first going over them with fine sandpaper and then giving them a coat of clear floor or automobile wax. When the wax becomes soiled it can be removed instantly with turpentine and a fresh coat given the grips.

Arms

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twice at the bottom bottle. The first shot breaks the bottom bottle. The top bottle falls in approximately the same position as the lower bottle and can be broken without changing aim.

Swinging targets are much easier to hit than the tyro realizes, Parsons explains. Don't follow the target back and forth with your aim. Just catch it at one of the turning points.

Once you accustom yourself to the reverse position of things in a mirror, you can aim a rifle with a mirror with little difficulty.

Shooting with the sights of a rifle covered by a card seems extremely difficult, but this feat can be mastered without much trouble. If you shoot with both eyes open, you can see both the target and your sights, reveals Parsons.

Wherever you shoot, the first rule to observe is safety.

and Hood Counties. One section of the bill provides that it would be lawful to take minnows with a dip net or a minnow seine of not more than 20 feet in length. The minnows could not be sold in Erath County but it would be legal for a resident of Hood County to sell minnows in that county.

S.B.165. By Ramsey. This bill would make it unlawful to hunt, shoot, or kill any squirrel in San Augustine, Sabine, Jasper, Newton and Tyler Counties except during the period from November 10 to December 31 of each year and would set a bag limit of five squirrels per day.

S.B.244. By Kelley of Hidalgo. Provides for an open season on quail in Kleberg and Kenedy Counties from December 1 in one year to January 31 in the following year, both days inclusive.

S.B.267. By Kelley of Hidalgo. This bill would close the season on quail in Duval County for a period of five years.

S.B.258. This bill would permit the taking or catching of suckers, buffalo, carp, shad, or gar in any of the fresh waters of Bosque, Dimmit, Zavala, Medina, Uvalde, DeWitt, Coryell, Gonzales, Lamar, Bell, Collin, Grayson, Gillespie, Kendall, Menard, Kimble, McLennan, Mills, Jefferson, Blanco, Llano, Mason, McCulloch, San Saba, Cooke, Denton, Orange, Mitchell, Fisher, Nolan, Chambers, Travis, Hardin, Lampasas, Fannin, Burnet, Williamson and Parker Counties with a seine or net, the meshes of which shall not be less than one inch square, and would further permit the taking or catching of suckers, buffalo, carp, shad and gar with wire, rope, or gig at any time of the year in the above named counties. The bill also provides that any bass, crappie, or white perch, catfish, perch, bream, or trout caught by the above-mentioned methods shall be released in the waters from which they were caught.

S.B.259. By Vick. This bill would make it unlawful to take minnows from McLennan County for sale outside of the county. However, the bill provides that licensed bait dealers can take minnows for sale in McLennan County and individuals can take minnows for personal use.

S.B.268. By Jones. This bill would make it lawful to kill quail in Fannin County on Monday, Wednesday and Friday of each week after the first day of December, 1947, and continuing until and including the 16th day of January, 1948, and during the same time each year thereafter on the same days of the week. A daily bag limit of 12 quail is provided for. The bill also provides that a person shall be presumed to be hunting if found with a gun and bird dog upon the premises other than his own.

H.B.380. By Crawford. Would close the season on salt water shrimp between July 15 and August 31, and between December 15 and March 1.

H.B.492. By Storey. This bill would prohibit the use of a gig or spear for catching or taking fish in that part of Caddo Lake which lies in Harrison and Marion Counties. Also, it would set a daily bag limit of 35 on bream and goggle-eye fish, and would remove all bag and size limits on blue catfish, channel catfish and yellow catfish taken from those above-mentioned waters.

Winter Duck Loss a Major Factor

WILDFOWLERS throughout the nation are becoming concerned over the possible indeterminate loss of ducks that they believe takes place each year during migration and on the wintering grounds. The U. S. Fish and Wildlife Service does not attempt to discount the claims, and the answer is that "more investigation and research is needed."

Many oldtime sportsmen now maintain that incalculable losses are occurring during the fall flight and on the wintering grounds where aside from illegal hunting—predation, disease, and pollution are taking heavy tolls. In the past such losses were accepted as "natural," but with North America's duck population on the decline, migration and winter disappearance is of growing importance.

The experts know that in some areas such as the Great Salt Lake marshes and

at a few points in North Dakota, botulism in some years will destroy countless thousands of birds while in heavily shot areas, the ever present menace of lead poisoning may be responsible for the loss of additional thousands. Occasionally, as happened last year in the Panhandle of Texas, fowl cholera gets into a flock and practically decimates it and there is also the unknown but certainly heavy loss due to cripples. At times oil pollution, particularly in some coastal waters, is directly responsible for the death of hundreds if not thousands of ducks and other birds. However, so far as is known, there is no important predator of healthy adult ducks.

It is clear that under optimum conditions the Alaskan and Canadian breeding grounds are capable of producing many more ducks than can be properly

cared for in the areas available to them while in the South, and efforts to improve and expand the wintering grounds are sure to receive increasing public support.

This question, "Does mortality from other causes have a greater effect on waterfowl populations than the hunters?", is of prime importance, but until it is possible to single out and control the other limiting factors, regulating the hunter is the only means of obtaining immediate results. The Federal authorities in fixing the open seasons and bag limits each year, are guided by waterfowl population trends and the hunters' estimated harvest, and if a high percentage of unknown losses occur during migration and in the wintering grounds, then more intensive studies will provide the knowledge for better management.

Cover, Not Food, Would Have Saved Birds

THE shortage of cover is more serious to upland game birds in winter, than a shortage of food. Tragic stories appearing in recent midwestern newspapers, illustrated with pathetic pictures of game birds that died by the hundreds during severe storms, prove that a lack of cover is even worse than a scarcity of food, it was reiterated.

Experience shows that wildlife food requirements can be provided by emergency winter feeding, but there is no way of supplying last-minute cover needs to birds in the wild. Most birds are able to withstand extremely adverse weather conditions so long as they are well fed, nevertheless, even the rugged and hearty

ring-necked pheasants picked up in the last few weeks had ample food, yet they perished for a lack of cover.

All too frequent reports are received of heavy mortality throughout the northern part of the United States due to a dearth of protective covering. One grazed woodlot was found to be a death trap for 23 pheasants, whereas an evergreen windbreak sheltered a score or more birds during a blizzard. In another disaster, clean corn fields offered some food but no cover, the trimmed fence rows gave no protection, so the birds were lost. The deaths were traced to a lack of adequate, permanent cover for upland game.

A few terse statements extracted from a recent newspaper picture-story tell us the climax of one February storm. "No cover, no birds. Those which we found died of choking and freezing. Ice packs in the eyes and throats of unsheltered birds, blinding and suffocating them. Unless they face the wind, ruffled feathers collect snow and they freeze into iceballs. All they needed was shelter. The dead birds were not hungry and artificial feeding would not have helped. If we only had good farming, even windbreaks, sound land management would have afforded a place for these birds."

Wildlife Is Big Business

ESTIMATING the capitalized value of wildlife resources at the staggering sum of \$14,000,000,000, Frank DuFresne, of the U. S. Fish and Wildlife Service, sounds some worthy words of warning to the sportsmen of this country. Says Mr. DuFresne:

"Fishing and hunting is big business, really big business. The sportsman in this year of 1947 is going to spend close to three billion dollars for hooks, bullets, gadgets and vehicles to go places on; for the pleasure of wading the cool rifles of a trout stream; for tramping the open fields with a gun under his arm; for camping and sleeping under the stars.

"It is fitting and proper at this time when sales of hunting and fishing licenses are pyramiding into the stratosphere to post a few warning signs along

the trail to better fishing and hunting, because if we don't it's soon going to mean poorer fishing . . . poorer hunting.

"The signs can be simple little things that all of us will understand:

"No game department can hope to keep pace with present accelerating demands.

"Try to understand, to tolerate, to support shorter periods of open season, smaller bag limits, when your game department prescribes them.

"Help to conserve this resource from which you get so much pleasure.

"It's your game. Give it a break.

"From here on there is no more room for free riders; every one of us must help put back as much as we take out."

Reid Enters Lake Improvement Field

Cecil Reid, assistant chief aquatic biologist, resigned on March 1 to enter the private lake improvement field. He has organized the Lake Improvement Company with offices in Austin.

Reid joined the Game Department staff on February 8, 1946, after his discharge from the Navy. He was assigned to anti-pollution work.

Reid is a graduate of Texas A. & M. and a former instructor in the game and fish school at College Station. He is a member of several scientific societies.



Very young mussels, called glochidia, attach themselves to birds' feet and feathers and thus get a free ride to other waters.

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(ANSWER BELOW)



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2. Good investment! "Getting back \$4 for every \$3 I invest—the way I will in ten years' time with U. S. Bonds—is my idea of a *good investment*. I know it's safe and sound, too, because it's backed by Uncle Sam. Buy Bonds, I say."



3. Plans for the future! "Ten years from now, the money I'll get for my U.S. Bonds will help to send my kids to college, or buy our family a new home. I think that buying U. S. Bonds is the wisest thing a family man can do."



4. Fights inflation! "I want America to stay economically sound. That's why I'm putting all our extra dollars into U. S. Bonds. It's like buying a share in our country's future prosperity!"



5. Rainyday! "Maybe a rainy day's coming for me. Maybe it isn't. But I am taking no chances. That's why I'm buying all the U. S. Bonds I can through my Payroll Savings Plan."

THE ANSWER

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