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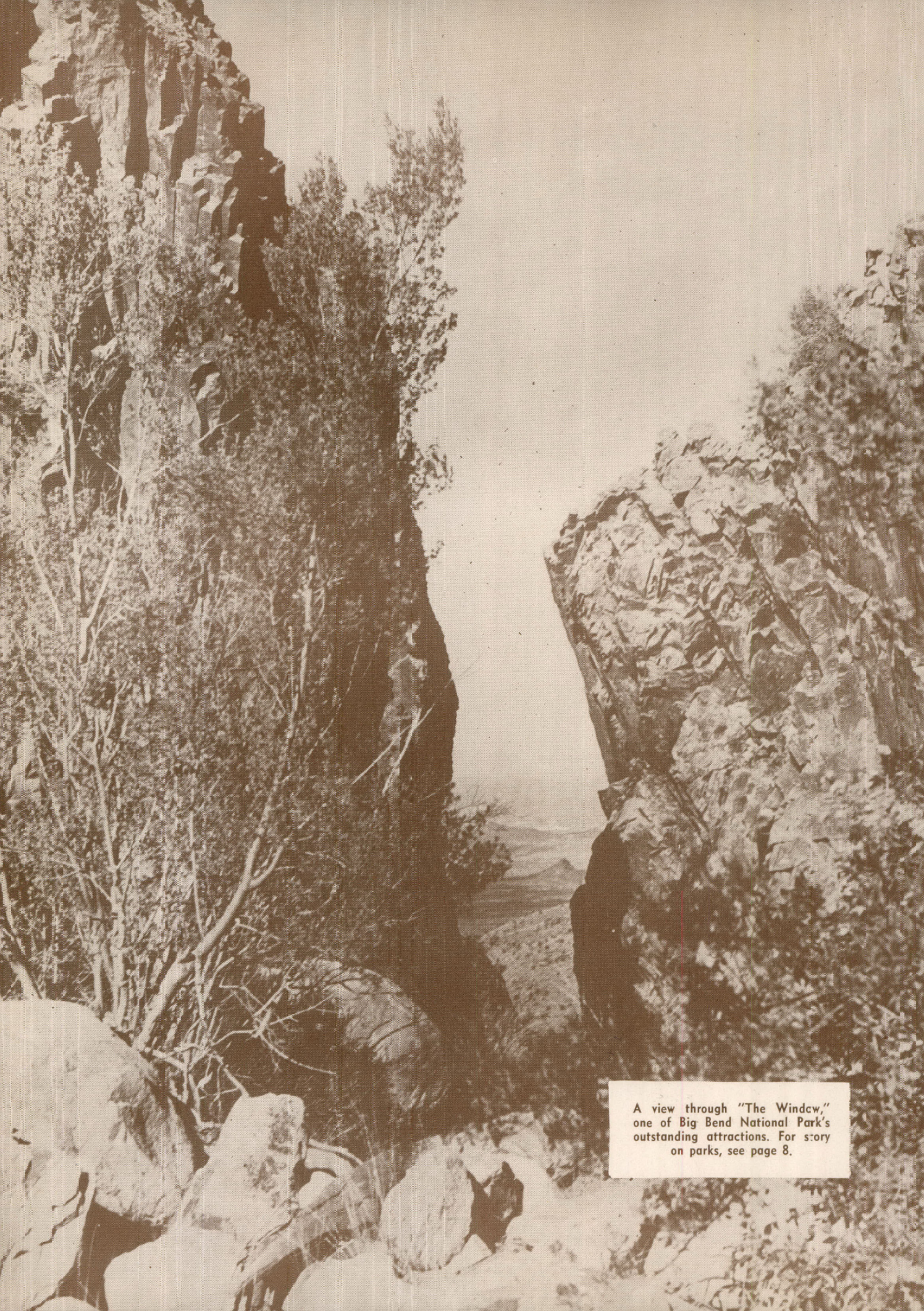
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Texas Game and Fish

JULY 1951 TEN CENTS

JUL 1 1951
Dallas, Texas





A view through "The Window," one of Big Bend National Park's outstanding attractions. For story on parks, see page 8.

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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TEXAS GAME & FISH invites republication of material since the articles and other data comprise factual reports on wildlife and other phases of conservation.

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The Cover

The brown pelican, this month's cover by Sidney A. Wooldridge, is strictly a coastal bird, always being found in sight of shore. It avoids river mouths because its method of fishing requires clear water. When these pelicans sight fish, usually when flying at an altitude of 25 or 30 feet, they dive completely under water with a terrific splash. Members of the herring family and menhaden are the fish on which they feed. These birds sometimes wander north to North Carolina and British Columbia and south to the mouth of the Amazon and southern Chile.



The outstanding show cave of Texas, Cave-Without-A-Name, near Boerne, is small, but remarkable for its beauty. This travertine-rimmed pool is called the Wishing Well. (All photos on these two pages are Zintgraff photos, courtesy of J. L. Horne.)

THE idea that Texas has caves may be a new one to a Texan from the plains of the Panhandle or the piney woods of East Texas. However, the fact remains that Texas does have caves, many of them, and they are perhaps more varied and interesting than those of any other state.

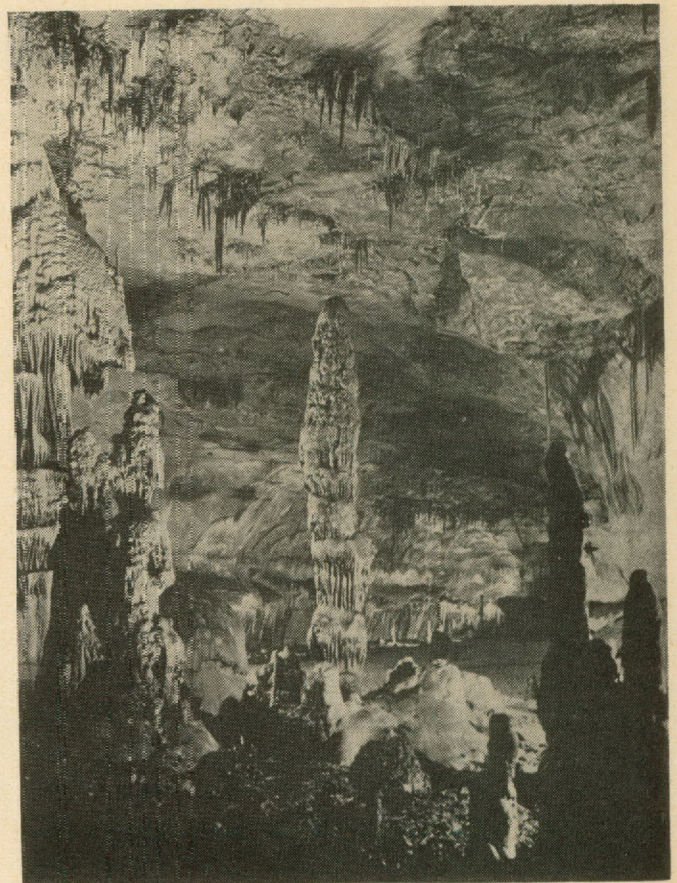
Nowhere in this country is there a more remarkable collection of living cave animals than in Texas, while the few excavations made for fossils in the caves of the state give rich promise of future finds. Ney Cave, near Bandera, supports the largest population of bats in the United States, far exceeding the much more famous Carlsbad Cavern. The country's largest series of Indian paintings decorates the walls of Texas caverns and rock shelters and one of the most beautiful caves in the United States, Cave-Without-A-Name, is found near Boerne.

On top of that, there are so many partially or completely unexplored caverns in the state that they offer a tremendous challenge to speleologists and spelunkers (cavemen to you).

Ezell's Cave, near San Marcos, holds one of the world's strangest creatures, a blind, white salamander which was first discovered, not in the cave itself, but in water flowing from an artesian

well at the San Marcos fish hatchery. This water, it was later found, rose through the well hole from a water-

To the right, entrance to Cave-Without-A-Name. On the opposite page, left photo, weird stalactites and stalagmites give to this portion of the cave its appellation of "The Witches' Den." Right, stalagmites, 18 feet tall, and massive terraces of flowstone create a fantastically beautiful underworld. Where the rock is exposed, fossils are numerous and clearly seen. This is the Queen's Canopy in Cave-Without-A-Name.



filled cave 190 feet below the surface that connected with Ezell's Cavern by an underground river. Only three other species of these salamanders are known, one from the Ozarks, one from Georgia and the other from Europe.

By J. L. BAUGHMAN

Salamanders are not the only inhabitants of underground Texas. There are cave crickets, daddy-long-legs, scorpions, cave frogs and half-a-dozen other strange creatures. Flat worms, or planarians, blind and white, alternately flatten and lengthen as they appear to flow along. There are isopods (small crustaceans), also white and blind, that live in the underground streams, resembling nothing so much

Caves of Texas

as the pill bug of the upper world, and even cave shrimp are occasionally found, which blind catfish probably use for food.

However, by far the most interesting cave dwellers are the bats, and by

Chief Marine Biologist

far the most interesting bat cave is the Ney Cave, near Bandera.

Clambering up a barren hill, you come to a broad opening in the rocky hillside that eventually leads (if you enter) far down into the limestone of the Edwards Plateau. Here, everywhere you look, are bats. Every bit of the walls is covered with a living velvet formed by millions of furry bodies hanging quietly until it is time to

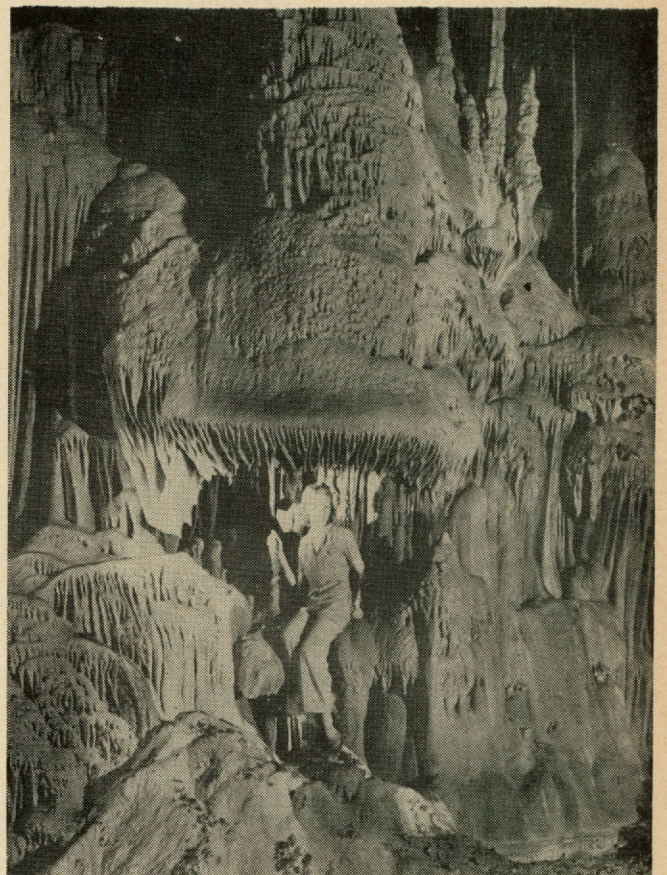
emerge at dusk. The cracks and crevices of the ceiling are the bat nurseries, where the tiny pinkish hairless babies cling with the claws of their hind feet (as do all bats) while their mothers go forth to search the night for the insects which are their food. Over all is the sharp acrid odor of the guano, which is the home of untold millions of dermestid beetles, the scavengers of the cave.

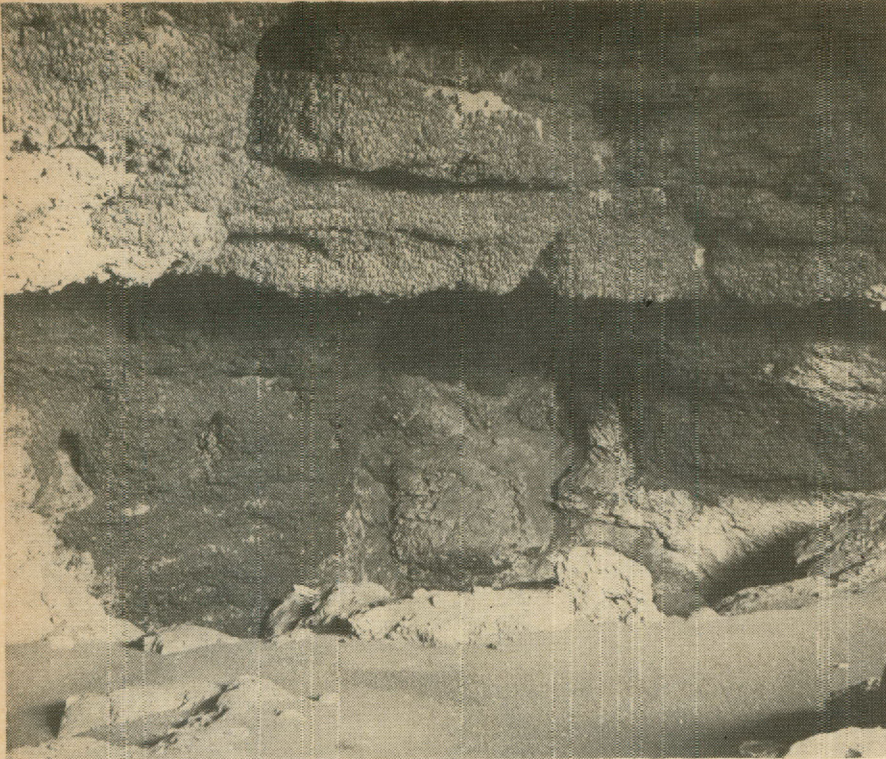
Every evening about 4:00 p.m. the bats from Ney Cave, 37,000,000 of them, come forth to get their food. At first the flight is thin, then, as it increases they pour forth from the cave in a long column, like smoke that travels far out over the valley until it is lost to sight.

The evening I was there it was most interesting to watch the birds, for hawks feed freely on these animals of the night. One falcon, the most mag-

nificent flier I have ever seen, swooped and missed, the bat ducking downward and to the left. Just as calmly as an outfielder after a fly, the falcon reached down with his talons, made a one-handed catch, and then went on about his business, devouring the bat in the air.

Strangely enough, Texas bat caves have played a prominent part in three wars. During the War Between the States, when Texas ports were effectively blockaded by the Northern fleet, a powder factory was established a few miles below San Antonio and saltpeter for its manufacture was made from the guano of the bats. In World War I, when there was a great shortage of nitrates for fertilizer, guano from Texas bat caves helped fill the gap. However, the strangest use of all was that developed during the war just past.





It was called Project X-Ray, and possessed all the characteristics of a Rube Goldberg cartoon, except that it worked.

Bats were chilled, so that they became dormant, fitted with incendiary bombs, and then released over areas which it was desired to burn out, the idea being that, when dropped over Japanese industrial centers, fleet concentrations, ammunition dumps, or underground or other storage depots, the bats would seek shelter, in inaccessible cracks or crevices above and below the surface of the ground and set off without warning a multitude of explosions and fires.

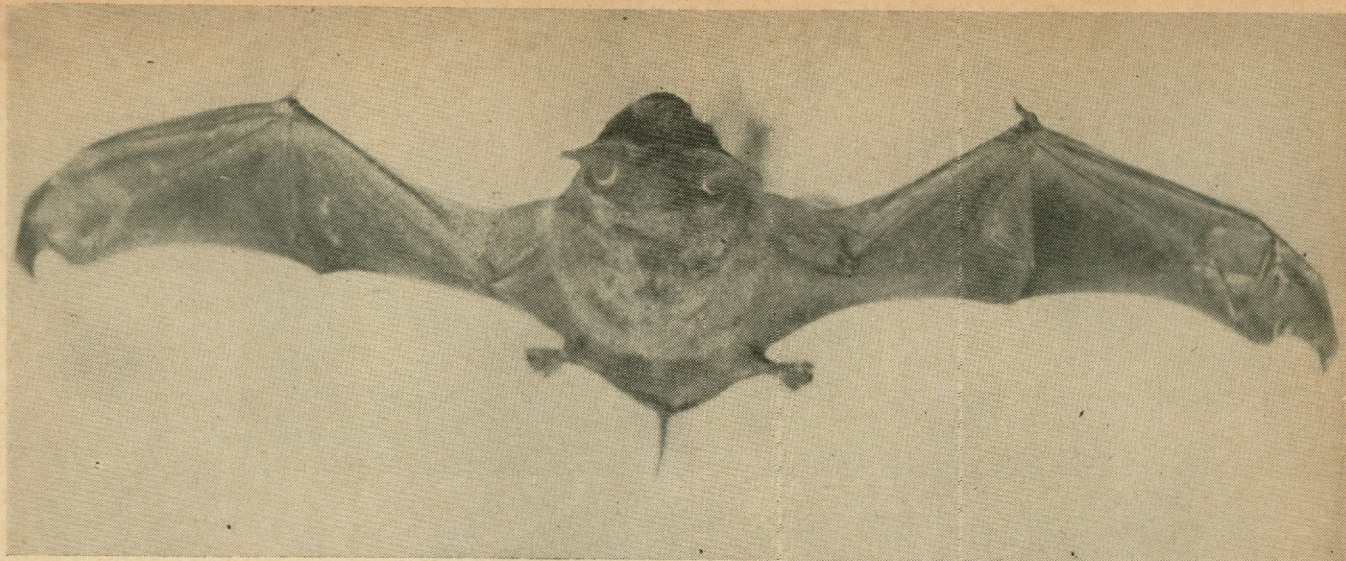
In preliminary tests a dummy village built in the desert was burned to the ground. An even more convincing demonstration took place when a couple of bomb-equipped bats escaped from a careless handler and set fires that consumed most of an auxiliary air



Top: Ney Cave, near Bandera, just inside the entrance. The appearance of the walls in the upper portion is due to the thousands of Mexican free-tailed bats which cling there just prior to taking off on their evening flight.

(Photo courtesy R. W. Strandmann.)

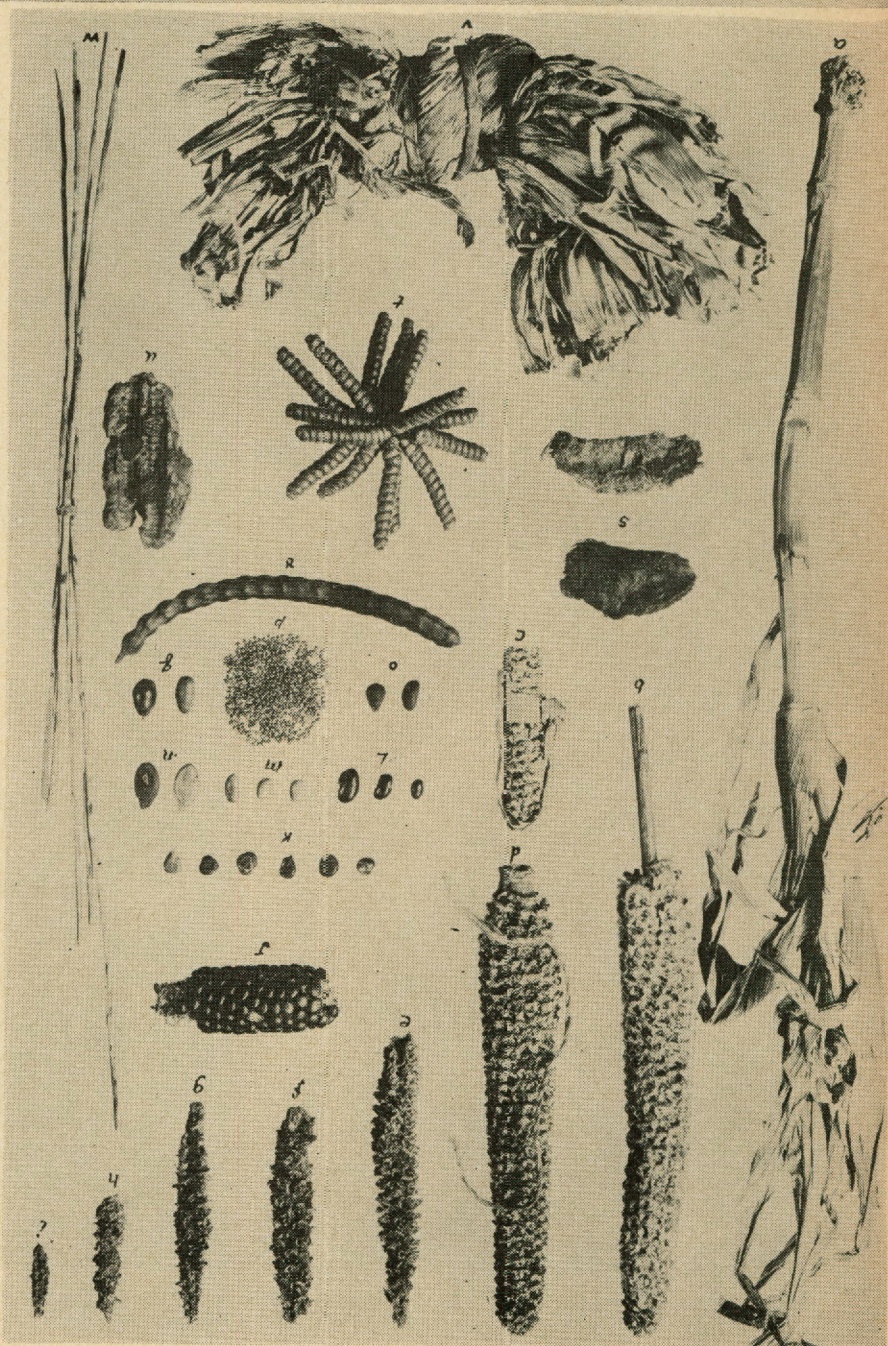
Bottom: An evening flight of bats as they leave their cave. (Game, Fish and Oyster Commission photo.)



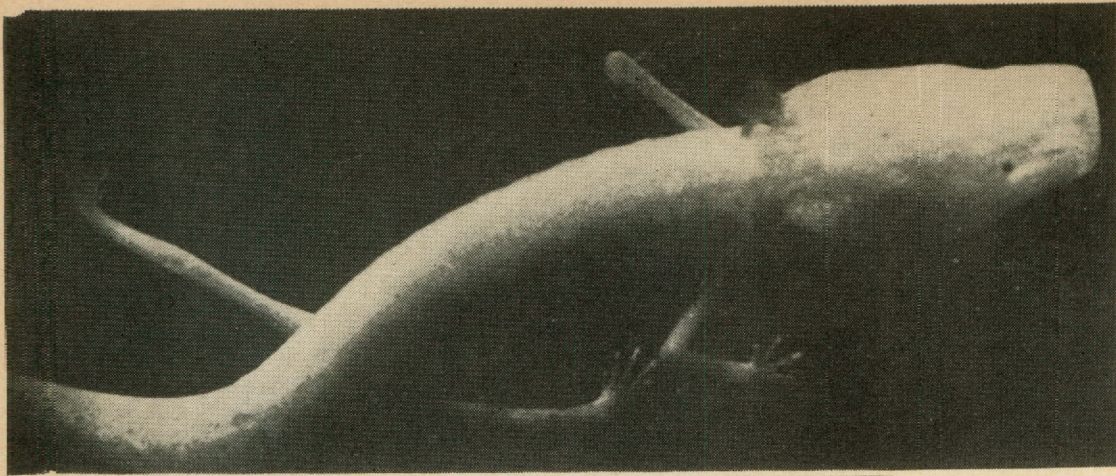
base at Carlsbad, New Mexico. However, after \$2,000,000 had been spent on the project, it was abruptly abandoned, perhaps, as has been suggested, because top government officials had reason to believe that another and far more deadly weapon would soon be ready in the atomic bomb.

Not all Texas caves are noted for their bats, however. Many of them are famous for an entirely different reason; namely, their pictographs, or Indian paintings.

Bartlett, on his march to El Paso, over 100 years ago, noticed these, particularly in the Hueco, or Waco, Mountains. Since his time, explorations by modern archaeologists have shown, as might be expected, that these caves were the dwellings of early Texas troglodytes (cave dwellers, if you want to use English), and that these troglodytes had left many of their possessions behind them besides pictures. From these possessions it has been possible to learn a great deal about them.



Above photo, a Mexican free-tailed bat. Thirty-seven million of these small, sooty-brown animals inhabit the Ney Cave near Bandera. (Vernon Bailey photo, courtesy U. S. Fish and Wildlife Service.) To the right, plant remains from southwestern caves. Preserved from the weather, they give a good idea of what the Indians of that time ate. Included are corn, black and white beans, squash seeds, pinon nuts, grass seeds, acorns, mesquite beans, quids of agave, tornillo beans, yucca pods and seeds. (Courtesy Peabody Museum.)



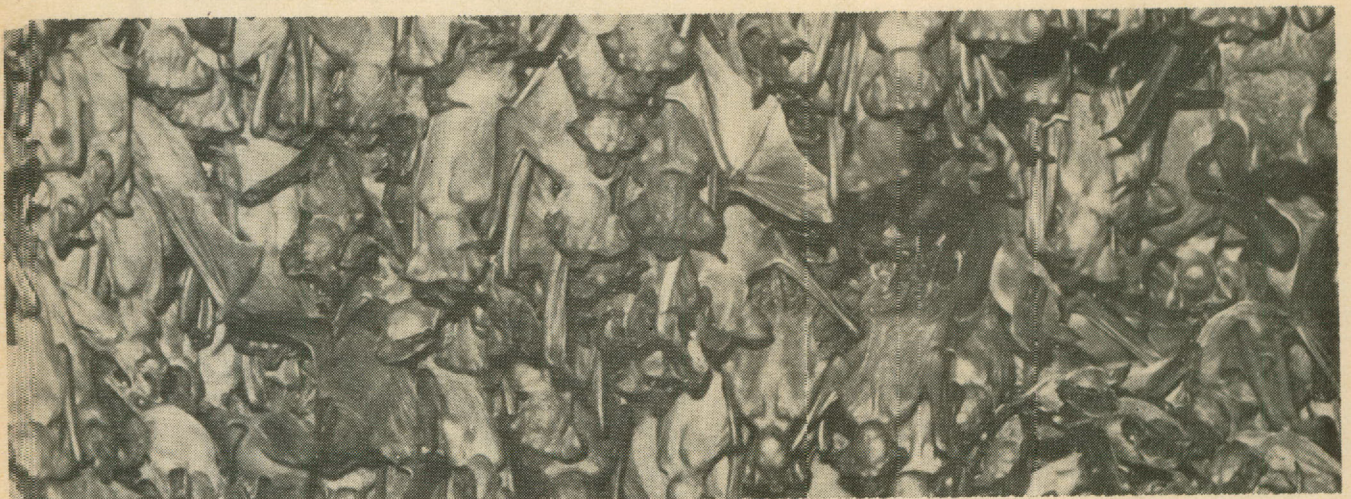
The blind white cave salamander of Texas has tiny, skin-covered eyes. It has no lungs, breathing through gills. Rarely exceeding four inches in length, it is now very rare.



Square-toed sandals made of yucca leaves show evidence of hard usage over the rocky terrain of Culberson County. (Courtesy A. T. Jackson.)

They buried their dead in pits, along with their earthly possessions, such as grass mats, nets made of yucca fibers, rhythm sticks, bone beads, buffalo horn pendants and flint projectile points. They wore "fishtail" sandals, so named from a V-shaped protrusion—made from the leaves of bear grass and Spanish dagger. These sandals they tied on and, when worn thin, half-soled with pads of fiber or leaves of the yucca. They ate corn, black and white beans, squash, pinon nuts, grass seeds, acorns, mesquite beans, agave, tornillo beans, yucca pods, and seeds.

Not all Texas caves were inhabited, however, and among these is apparently Cave-Without-A-Name, near Boerne. Dating from the Cretaceous this cave, though small, is remarkable

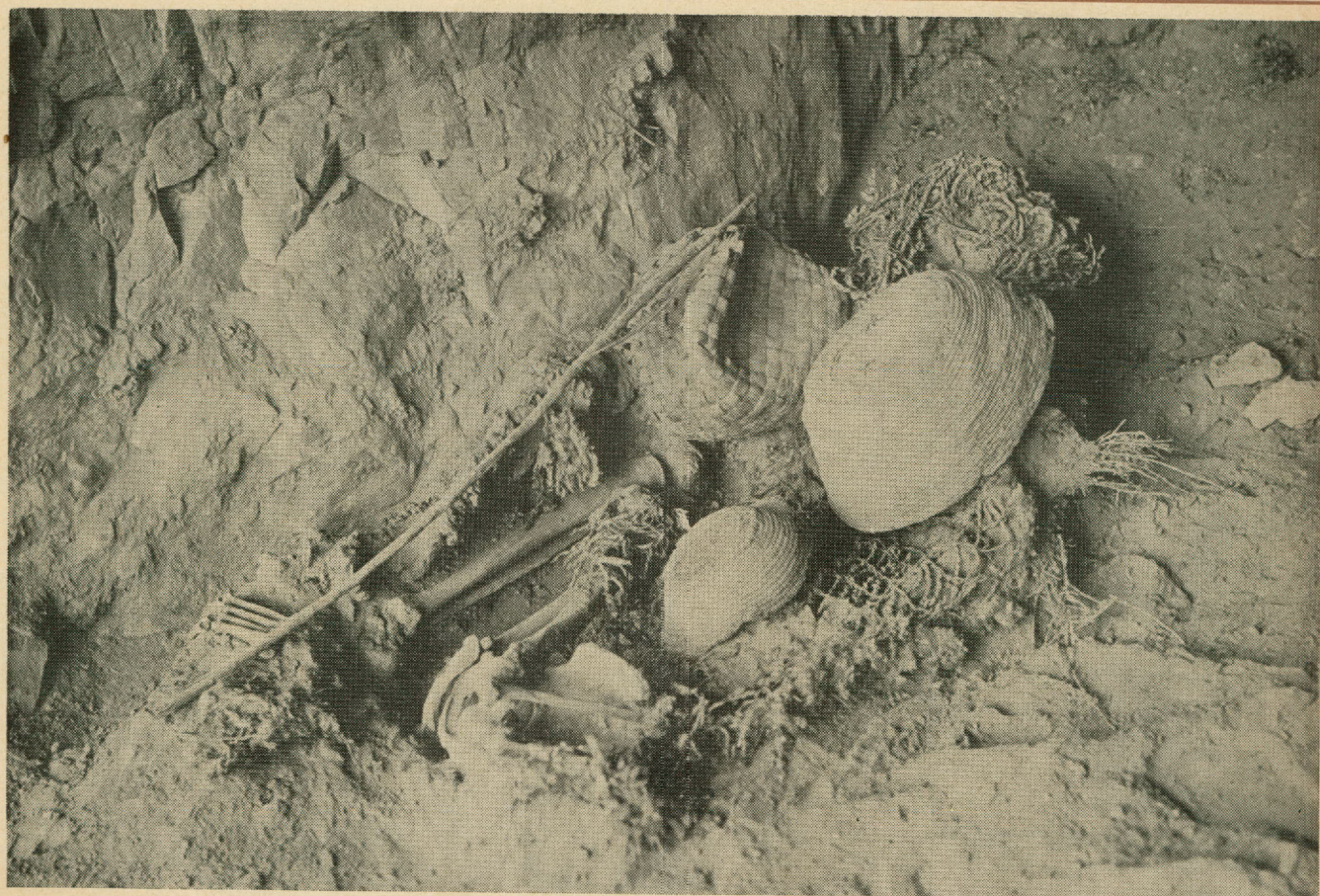
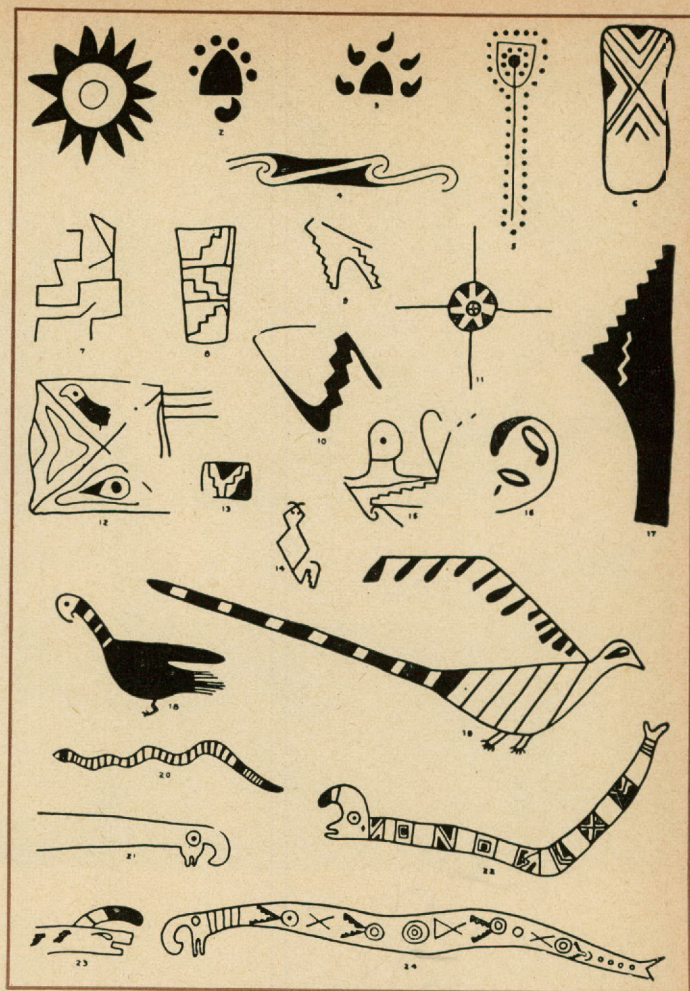


Week-old naked bats cling to the ceiling alongside their mothers. The females leave the cave to hunt insects in the early evening, return later to nurse their younglings. Bats begin to fly when they are three or four weeks old. (Game, Fish and Oyster Commission photo.)

for its beauty. The first view of the cave is, according to Victor Craun, "startling for its impression of spaciousness and color; above all, color. Bland, muted color, coral and dull gold, salmon and amber, white and ivory, blended and contrasted seemingly with little regard to the scientific rules governing their creation from prosaic red oxide of iron." In the Gold Room, a magnificent, lofty hall 150 feet long, 35 wide and 30 feet high, the walls are hung with stalagmites and draperies of a rich dull gold. The Papoose Room glitters with fairy-like stalactites, icicles in stone; the room containing the Queen's Canopy and the Wishing Well is noted for its iridescent beauty. Beyond this the cavern continues between walls of marine fossils, past the Room of the Crystal Ceiling, to the stream which ducks out of sight beneath a wall, marking the end of the cave.

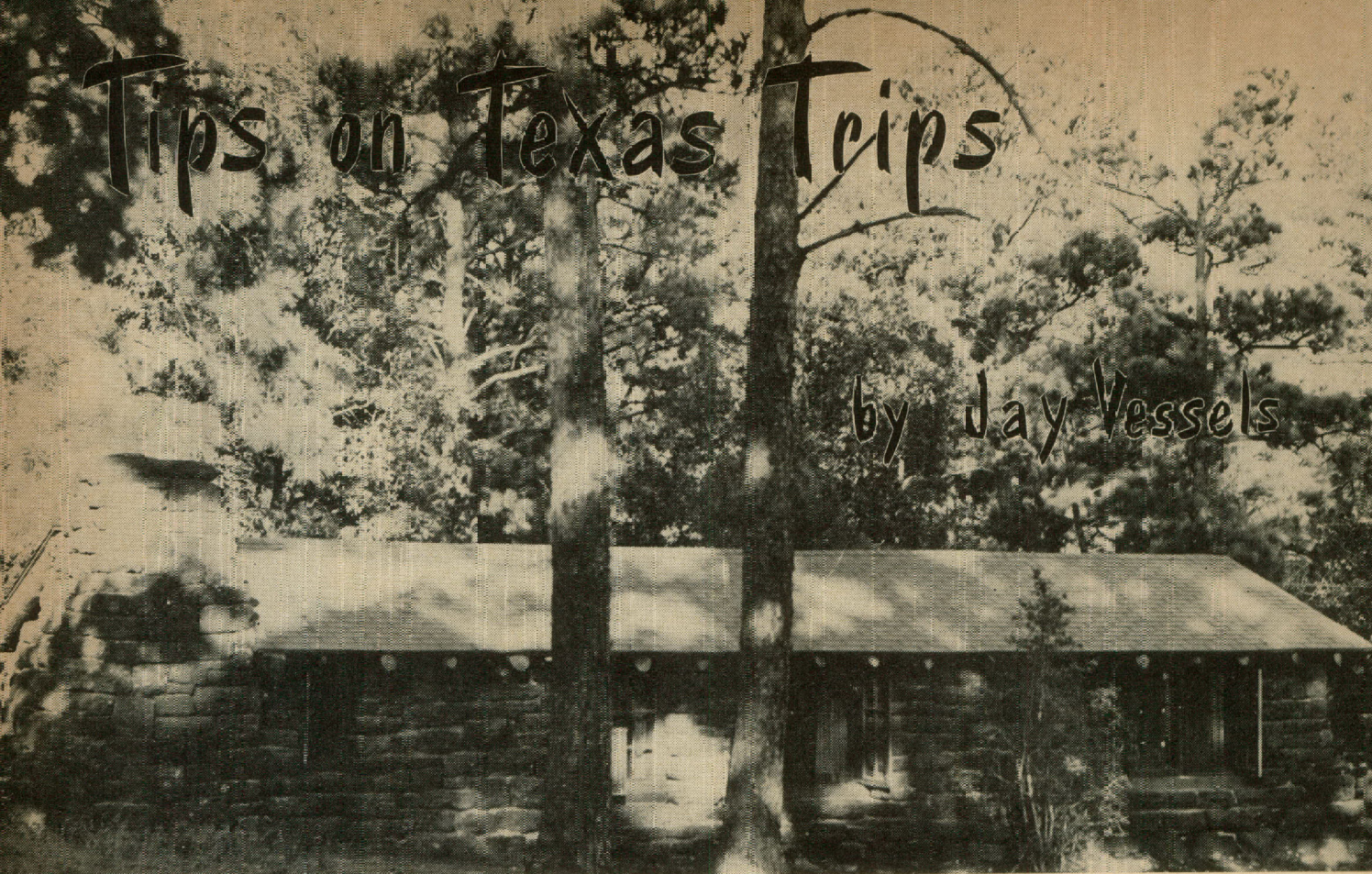
A whole new world is spread out for the surface dweller who visits the caves of Texas.

Right, pictographs from Picture Cave, Hueco Mountains. Below, an Indian burial in a Hueco Mountain cave. These are the bones of an adult male and a very young infant, wrapped in fur cloth blankets and covered with baskets. (Both photos courtesy Peabody Museum.)



Tips on Texas Trips

by Jay Vessels



THE trail leading toward scenic wonders and toward confirming childhood memories of the rugged old to get back to nature.

Tourists may follow the hardship route and take their own chuck wagon to get back close to nature.

However, since conveniences are the current vogue, the average traveler probably prefers camping and lodging facilities now provided in almost every region.

If overcome enroute by the challenge to rough it, the vacationer may submit with the realization that the accommodations range from quarters for the most fastidious to quarters for the hardiest type.

Aside from the privately sponsored lodgings, there are 46 state parks, plus Big Bend National Park which is the nation's sixth largest, and more than 800 roadside parks in Texas.

The roadside havens, provided by the State Highway Department, have limited equipment but there usually is shade, a place to build a fire, oftentimes water and always room to pitch a tent for stopover rest and adventure close to the open spaces. The roadside places are not designed for overnight use.

The State Park Board's own prospectus aptly describes the range of scenic opportunities in the Lone Star State:

"From breath-taking canyons in the broad plains of the Texas Panhandle to the sunny islands and beaches of the Gulf of Mexico and from the towering mountains of the West to the cypress bayous and fragrant pine forests of the east, they (the parks) offer the widest possible variety of majestic scenery and healthful recreation."

For those heading back to their own home places, or to their favorite historic spot, they will find many of them have been preserved in their natural condition or restored in all of their primitive grandeur.

Wildlife abounds in many parks. Fishing facilities are almost standard. Swimming is commonplace. Horseback riding likewise is generously supplied. Hikes to caves, peaks, lakes and other scenic areas are offered.

The range of opportunities for vacationers and sightseers is indicated:

At Ealmorehea State Park, in West Texas, is the world's largest walled swimming pool fed by natural springs of 26 million gallons a day.

At Bentsen-Rio Grande Valley

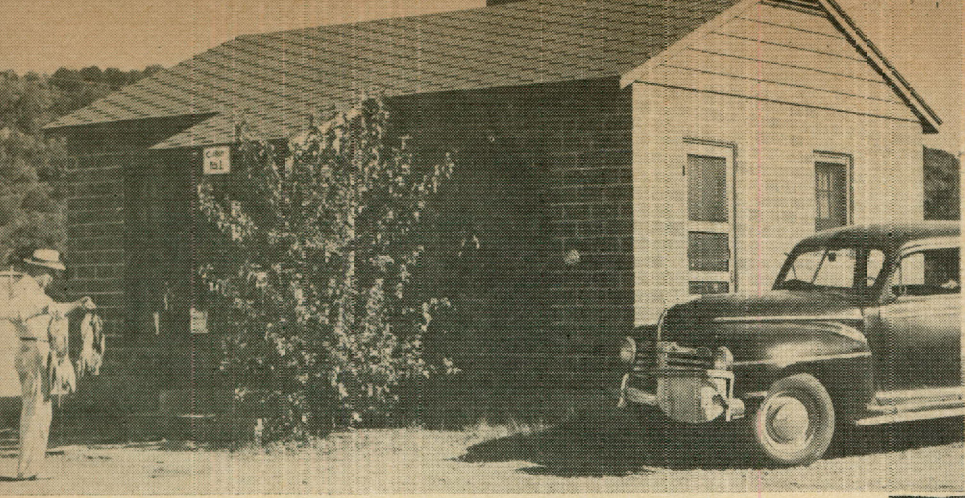
State Park, in the Mission-McAllen region, on the Old Military Telegraph Road and the Rio Grande, there are unique birds and wildlife in the semi-tropical area.

At Big Spring State Park, there is an unusual scenic drive and lookout point on a high mesa. Of course, the Davis Mountains in far west Texas provide an unmatched view through the drive leading to the famed McDonald Observatory.

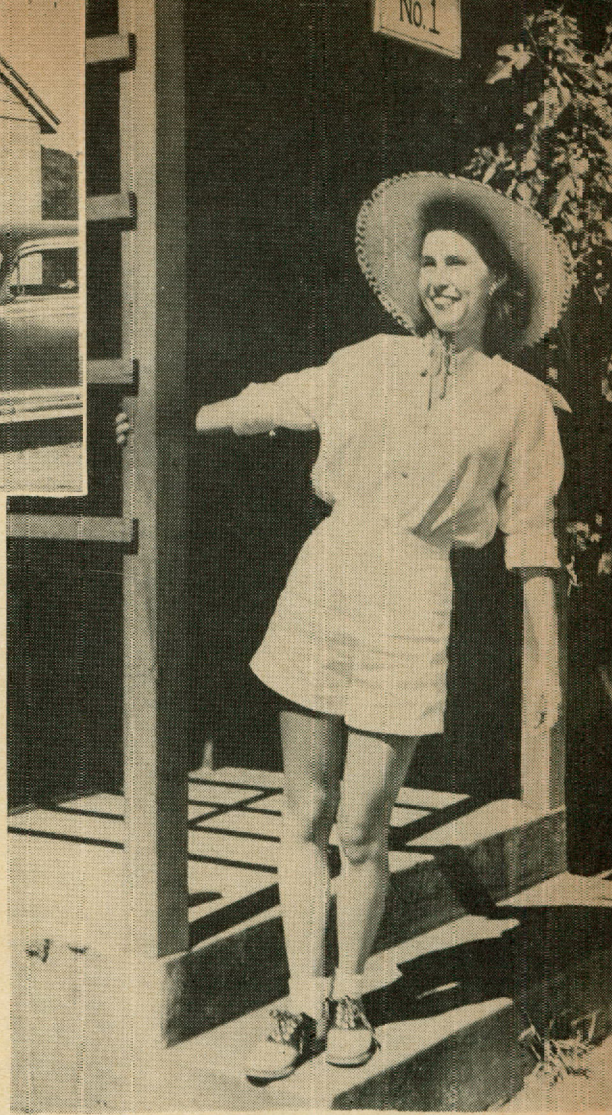
At Fort Griffin State Park on the Brazos River, 15 miles north of Albany, there are ruins of the old fort as well as the Old Ranch House and the Longhorn herd.

At Goose Island State Park, 10 miles northeast of Rockport, center of interest is The Big Tree, a giant oak, branches of which spread over 6,000 square feet of ground.

There is a prairie dog town at Mackenzie State Park and unusual tropical plants in the swamps of Palmetto State Park. Thus for the family or for groups up to 120 persons served by some larger camp layout, the state park system provides a veritable bonanza for the tourist. The State Park Board at Austin can provide inquirers with precise data.



The range of outdoor subjects restful to the eye is indicated here, with the cabin hideout upper left, the rugged scenery, left; and the attractive lassie at the right. The serious business of keeping one in an observable mood is shown at the bottom — that's food on the fire, pardner.



Biography of a Covey



THE day-by-day hazards of life as lived by a quail is graphically described in Aldo Leopold's "Game Management," under "Biography of a Covey."

The narrative follows the birds from one year to the next, showing how this particular covey begins and ends the twelve-month period with the same number—15.

Leopold's description is based on a Southern Wisconsin scene but the covey's problem of survival, even though details vary greatly, are considered typical even in the contrasting climate of Texas.



Here is shown the tragic results of a raid on a quail nest by a marauding predator.

The first scene of this grim wildlife play is set on a farm where the birds feed on corn shocks inadvertently left in the field. They use several grape tangles as daytime cover and fly to a nearby marsh to roost.

Timed in January, "Change One" finds the ground frozen to permit the farmer to drive into the fields. He belatedly husks out and hauls the corn to the barn. His place is posted and he is a quail-lover, but he is unaware that he is jeopardizing his birds.

Now, the covey falls back on the ragweed in the oat stubble. There is plenty of corn one-half mile away but no cover. Thus, the birds' short flying radius prevents them from reaching this substantial source of food.

In "Change Two," snow buries the ragweed so the covey begins to fly to the barnyard to feed. The farmer notes this and feels a glow of hospitable pleasure over his guests. The farm dog and cat note it too. The cat gets one quail. Another dies of cold when the dog scatters the covey one afternoon too late for the stray to rejoin the unit. Motor traffic gets another bird during a sudden disturbance, leaving twelve.

The farmer, providing "Change Three," by accident begins to scatter manure on snow in stubble. That gives the birds a temporary break because the fertilized area is much better for the quail than risking the barnyard, so they feed there. The birds use a

fencerow as a street and do not need to fly.

Comes February and every day the manure spreader moves farther from the fence, while snow covers the nearby manure. This sets the stage for a tragedy. A Cooper's hawk happens along and catches the covey in mid-field. It gets one bird, leaving eleven.

This new hazard, under "Change Four," prompts the covey to give up the manure covered range. Shadowed by the hawk, the covey holes up all day under the grapes. It is foodless for two days. All quail lose heavily in speed and strength.

"Change Five" finds the birds staying in the marsh where they roosted. They find they can scratch up enough seed to live. The hawk gives up and leaves.

But now comes a very deep snow, hiding all the marsh food. The quail, in "Change Six," sally forth, forced by hunger, to the locust trees within flying range. The food is poor and the effort burns up almost as much energy as it develops. The average weight is now 160 grams. One night, a wandering mink flushes the roosting birds, which scatter in the dark. One alights in the open where a horned owl picks it up. Two others die of cold. Eight are left.

A March thaw, marking "Change Seven," exposes the old manure near the fence. The covey remnant eagerly resumes feeding there. But now, the

farmer burns over the marsh, forcing the birds to roost under the grape. Here a passerby flushes them one evening so late the owl scores. Seven left; weight going up. Many migrant Cooper's hawks this month, but on the snowless ground, with the educated birds, they fail to score.

Comes April and comes spring, definitely. Feeding on green alfalfa and waste corn, the birds begin to pair on warm days and to look for nesting territories. The unmated cock whistles his disappointment.

Three pair begin nesting in May, one in the alfalfa, one in the greening marsh, another on the ditch.

Romance yields to tragedy as May gives way to June. A rain gets the marsh nest; the haymower gets the alfalfa nest. Both bereaved pairs try again, one nesting in the oats and the other in the ditch.

In July, the mower gets the oats nest, but the early ditch nest brings off a dozen young (total 14) and the late ditch nest produces all but four chicks which were killed by the cat. The total is now 24.

During August, cats, dogs and cars get four chicks, reducing the total to 20. There were no losses during September.



Gentle hands guide the routine of banding a bobwhite quail.

October finds the birds eating ragweed and foxtail in corn and oat stubble. A pheasant hunter pots four birds; total 16. In November, a rabbit hunter pots one; total 15.

So the intrepid new covey, represented the complete new cycle, gets through December without new losses and the balance in January is the same as last year.



This animated scene depicts the results of good quail management—and at least a few breaks from nature.

EVER since Dame Berners wrote her treatise on fishing, a hot controversy has raged among fishermen as to whether fish can see color. Some expert fishermen say that they can take fish on red, blue, green or yellow flies at will. They back up this argument by saying: "What under the sun looks like a Royal Coachman that has taken more fish in America than any other fly?" An equally large group and equally vehemently insists that trout cannot only distinguish color but they can also distinguish shades of color. "Why, I've merely changed the shade of color of a fly, and put the trout down, time and again."

Because of this controversy, which has been pretty evenly divided, I felt that there must be justification in both points of view: that fish can see color clearly; and that fish cannot see color. Sounds like nonsense, but with this new Firelacquer, which is activated, I pretty well proved the point.

As every fishing editor knows, the Germans have conducted a lot of careful research on fish vision, feeding trout on colored tiles and building up conditioned responses so that when the fish was moved out of his tank into another he would hurry to his particular color for his food. In this research, it was found that the fish were particularly alert in distinguishing the colors which ranged toward the brilliant hues. Toward the dark colors, the fish did not react as well.

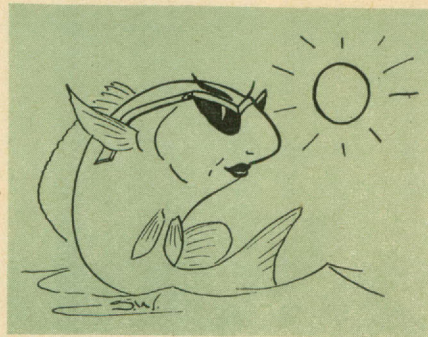
This pretty well convinced me that the fish were being tested on color within the human range of vision and it was my contention that the fish could see farther into the ultra-violet colors which did not register in our eyes.

First, I studied the things trout fed on naturally and I found that practically all of this material—nymphs, worms, insects, fish eggs, and fish scales gave off a certain amount of ultra-violet coloration.

With this in mind, I studied some of the popular flies—such as the Royal Coachman—which, as has been said

before, looks to the human eye like nothing under God's heaven. Under an ultra-violet lamp, I found that the peacock herl fluoresced slightly. The same with bucktail, junglecock, barred rock. And as any trout angler can tell you, put together these combinations—peacock herl, bucktail, junglecock and you have a good trout fly which will kill fish, day in and day out. That was an exciting find.

Then the war came along and in my war work, I went aboard the carrier, USS Enterprise. There I saw some exceedingly bright signal flags. As a matter of fact, they were the most brilliant flags I had ever seen. Following a hunch, I put them under an ultra-



violet lamp and they glowed as though on fire, from within. Again, in the Aleutians everyone was assigned a blue shoulder patch. This, too, glowed, and in the fog identified our troops. Again, in Africa, on returning from a "round-the-world" mission, I saw panels of this material used to identify our troops on a very fluid front. The American pilots could spot the panels two miles away, and therefore knew where our lines were.

After the war, I located the material at Gantner & Mattern's, San Francisco, the bathing suit manufacturers. John O. Gantner, Jr., the man who put the American male into a trunk with his Wikies, had already had some so-called Fireflies tied up. He gave me some of the Gantron Firefibre. I could not wait for the fishing season to open. I got special permission from the game com-

mission of California to conduct some experiments with hooks cut off just in front of the bend. Then, when the trout season opened, I found that the trout hit this new material very vi-

ciously. In several instances I found that the trout would hit the flies so hard that the hook would have to be removed from deep in their throat. This had never happened to me in more than 20 years of dry fly fishing. And so I knew that I was on to something very important. And big.

Mr. Gantner allowed me to send more than 200—about 210 samples, to expert fishermen throughout the world. Some were in South America, Africa, England, Scotland, Sweden, France, Norway, Iceland, New Zealand, India, Canada, Mexico, and of course throughout the United States.

Of these, 153 replied, giving me very precise answers. One hundred and fifty said that the material was a decided advance; that, under the proper conditions, it would take fish where the old materials would not take fish; that the fly tied with Gantron Firefibre was much easier to follow; that it would float better (being waterproof). Two said that they could see no difference whatsoever between Gantron Firefibre and the new materials. One, a Scot, said that he felt the brilliant UV-activated material actually frightened the fish away.

But much more important, almost every fisherman said (there were five exceptions) that the Gantron Firefibre worked best during heavy overcast, early morning, and evening fishing. In short, during the shadow hours of the day.

Now, this was significant, but I couldn't make heads or tails of it. Just why should this new material, which put out the same U-V activation that many insects put out that fish feed on, be no more effective than the

a Fish See?

ordinary material during bright daylight. In experimenting I found this to be true, too. But why?

The answer came very unexpectedly. And of all places, in New York City.

BURNS

Two years ago, I was visiting with fisherman Harry Miller. His office was darkened, almost like the inside of a theater. I thought he was trying to simulate bar-like conditions. Fishermen are odd that way sometimes. The lunch hour approached. "Harry, let's feed the old man inside?" I proposed. He accepted. But before he stepped out of his room, he put on a very heavy pair of dark glasses which covered about one third of his face. "Are you ashamed to be seen with me?" I asked. "No, Gene," he said, "I have a very rare eye affliction. My pupil will not contract. And when I step into the bright daylight, I really catch it. My eyes feel as though they will kill me."

Right there was my answer.

"Can you see color under these conditions?" I asked.

"Not unless I keep these heavy glasses on," said Harry, "and then only if I let my eyes get accustomed to the glare a little while. Why, you know what it is when you look directly into the sun."

As for the fish, I knew that they have very large eyes and their pupils are fixed—just like Harry Miller's except that the fish has a very much larger pupil and it will not contract at all.

For the next twelve months, I tried to test out this theory and I found some very interesting results.

I found that if I presented a fly to the fish in bright daylight, and if the fish were in daylight, he would take a yellow, black, red, green or blue fly without discrimination. Apparently, he saw only a silhouette. The size of the fly and the pattern it cast made the difference. Certainly not the color.

And there is where the angler who

says that the fish cannot see color is right: in bright daylight, if the fish's eye is in sunlight, he cannot distinguish color.

But, I found too, that the fish can distinguish color if he is in the shade and looks out from the shade into the light. Much as we can see when we are sitting in a darkened room into a bright area. As long as our eye is shaded.

Asking plug fishermen to experiment along this line, I found that they confirmed my statements. The bass, for example, would be lying in the shadows and among the weeds. In the shade, when a lure was cast, he would hit it.

(Editor's Note: Mr. Burns has been a University professor, he was a war correspondent for the Associated Press during the last war, is considered an authority on Polynesian civilization and the author of books and articles on many subjects. An ardent angler, he has done much research on fish vision and is the originator of a new theory as to whether a fish can see color and if so how, to what extent and when.)

Study the stream behavior of fish, it is pretty well recognized that trout will remain behind rocks, in shadow, or along ledges. For a long time, the popular belief was that the trout were hiding out from natural enemies. Actually, most of the fish's enemies work these very areas. While a forest ranger in the Olympics, hours at a time, day after day, I have lain motionless on a log across a river and watched the fishes' natural enemies stealthily slip into the water, cruise into these "protected" areas and seek out their prey.

Anyone who has done much trout fishing, knows that as soon as the shadows fall the fish will move out into the shallow water, near banks, into the quiet water to feed. This, in contrast to daytime feeding, when the trout will seek the deep places or if he must

feed—when hunger triumphs, he goes into the broken water ripples where comparatively little light enters the water.

Incidentally, in quiet water, about five to eight percent of the sun's rays—including the ultraviolet rays, enters the water. Of these, the ultraviolet rays keep boring down, deep down. In extreme depths of three thousand feet, the water is absolutely black to human eyes, but yet, the ultraviolet ray is present, and, I believe, from my still incomplete experiments, that the fish see in part in this wave length.

Among some very unusual work done in the northwest, I observed salmon. These fish tend to roll early in the morning and toward evening. During the bright intense hours of the day, they seem to head down. They will come up, briefly, during bright daylight to thrash among schools of candlefish. Then they wound as many as they can with their tails, and drop down and pick up these cripples. But the salmon, too, avoids the bright daylight. In this connection, salmon were taken with baits coated with Fire-lacquer, which is activated by ultraviolet to depths of 650 feet.

With the experimenting I have done, which is admittedly inconclusive because I have been working with these ultraviolet-activated materials for only three years, I have found indications of the following:

1. That fish see in a color range which is between that of a bee and a human, with overlapping both ways.
2. That most of the insects fish feed on, give off colors in these wavelengths.
3. That fish, in bright daylight, and with their eyes in bright light can see no color.
4. That fish can distinguish colors within the human range, in the bright colors, very distinctly during the "shadow" hours of the day.

Now I am going to experiment with fish vision by moonlight. It remains that there is a little ultraviolet activation during these hours.—*Pennsylvania Angler.*

Lure of the Lakes

By KATIE CASSTEVENS

WATER lapping softly on the shoreline, whispering a lullaby of quietness and peace. White sails of a trim sailboat tilting gracefully in the breeze, silhouetted against a background of blue sky and deeper blue waves. Splash of parting water, as a small boy dives from a dock into deep ripples from the wash of a surf-board behind a speed-boat zooming past. A reel's busy hum, as a perfect cast is made, or the tranquility of a lazily held fishing pole, poised for a nibble. A stringer full of fish against the boat's side. Overhead, the serenity of a soaring water-bird.

All this, and more, is the lure of the lakes—Eagle Mountain and Lake Worth, at Fort Worth's door.

The attraction that carried us to the lakes one frosty morning late last fall, was birding. Water-birds were migrating and we felt could be observed in large numbers. Five local bird enthusiasts were on the expedition: Mrs. Will Lake, Mrs. Robert Bowman, Mrs. George Adams, Mrs. Wade Smith and Mrs. J. E. Casstevens.

Lake Worth, while smaller in size, is nearer the city limits and a very popular lake. In 1938 a survey by the National Park Service showed more than 80,000 persons visited Lake Worth in a 77 day period. They came from 39 states, Canada, and the District of Columbia. It is assumed visitation to the lakes has vastly increased since that time.

With its wooded shores, cat-tail fringes, islands and inlets, Lake Worth seems ideally suited to bird life. In the natural areas birds are usually plentiful, but civilization's encroachment has affected bird habitation materially. Many brushy areas have been cleared, depriving birds of shelter. Grass and weed areas have been burned over, destroying seeds for feeding. Gradually the birds are being pushed out.

Secluded Goat, Snake and Brush Islands, and the cat-tail fringes, provide a winter home for thousands and thousands of red-wing blackbirds and clamorous starlings. In 1890, sixty specimens of this Old World immigrant, the starling, were released in Central Park,

New York. Since that time its increase and spread has been phenomenal. Now, slightly more than sixty years later, the starlings in the United States probably number in the millions and are considered real nuisances in many localities. They are a winter resident in the Fort Worth area, arriving usually in October and departing in March. Late on winter afternoons, a nearly continuous stream of starlings, red-wings and cowbirds may be seen flocking westward to the shores of Lake Worth to roost, after a day's feeding on city lawns, parks, and surrounding farms.

Intriguing rustic picnic shelters and tables featured in the park areas at Lake Worth provide ideal outing spots. Lunch had an added zest, eaten to the accompaniment of inquiring scoldings from a jaunty titmouse and perky little chickadees hanging upside down pecking at us. Late blooming wildflowers, grasses, and trees all came in for their share of discussion, along with birds. There is so much of beauty and interest in nature to be seen, for those whose eyes are opened to the wonders of God's world.

Habits of the cliff swallows, summer residents that have a colony beneath the Lake Worth bridge, are watched with interest by Lake Officer O. D. Carroll. The swallows had already gone. Some of them migrating as far south, probably, as Argentina to winter. The cliff swallows usually leave the lake area the latter part of September or first part of October, to return the following early April. We inspected the hundreds of clay nests vacated on the underneath side of the bridge. English sparrows had usurped some of the abandoned nests in the swallow colony, enlarging the almost tube-like openings for easier entry.

Pelican Island at Eagle Mountain Lake was an ornithologist's paradise. Here, far inland from a sea coast, was a multitude of water-birds for observing.

A thrilling sight, that of a dozen or



"A stately blue heron stood like a frozen statue, carefully observing our movements." (Photo courtesy of Don Bleitz.)



"Here was a multitude of birds for observing: American and Snowy egrets, white and brown pelicans, Louisiana herons and Roseate spoonbills."—(Photo courtesy of Wilburn Davis.)

more huge white pelicans, standing in disdain, using their great scoops of yellow bill to fish with ease. As they rose, their giant wings flapped awkwardly, showing vivid contrast of black trim on white. Noisy gulls displayed their superb powers of flight. An osprey, or fish-hawk, soared menacingly overhead.

Stately blue herons stood like frozen statues, carefully observing our movements. They are spectacular birds in flight. A green heron, perched motionless with arched neck, looked like a limb of the dead tree on which he sat. There were little blue herons and black terns. Both, despite their names, were white. The little blues are white until they are more than two years old, as are the immature black terns. Even the adult terns are almost completely white in the fall and winter, then are black again in the spring and summer.

We saw numerous water turkeys, or Anhinga, with long snaky necks stretched straight before them as they sailed away, but they had a true turkey tail. Black cormorants are distinguishable from water turkeys by their narrower, more rounded tails, their hooked beaks, and faster wing beat.

Picturesque white American egrets gazed inquiringly. And the smaller dainty snowy egrets were there in number, proudly standing in the golden slippers on their slender black legs.

Prince of them all, wild geese, fore-runner of many more to come, were floating on the surface, then rising to flight formation.

Eagle Mountain Lake is a large lake, with many interesting coves and bays. The lake has a surface area of approximately 10,000 acres. The dam is 4,200 feet long and 82 feet high.

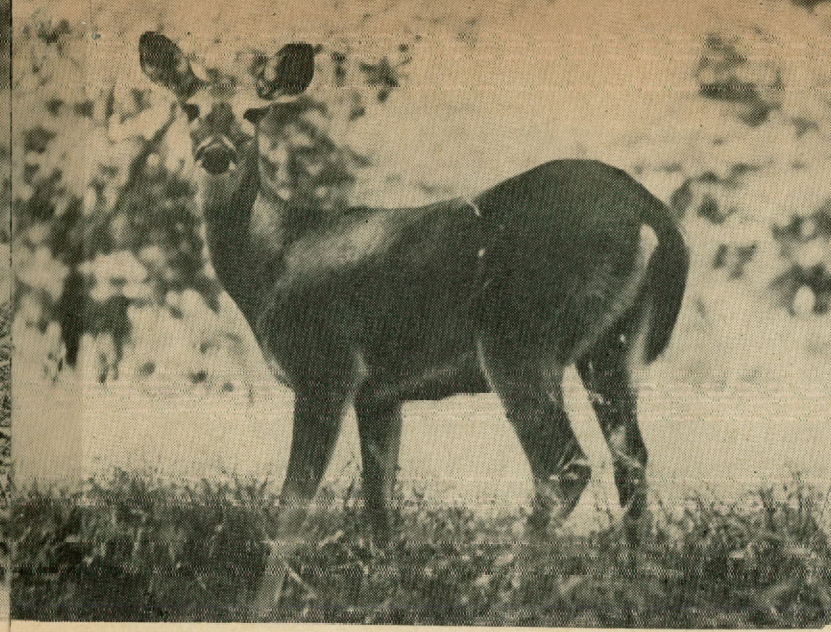
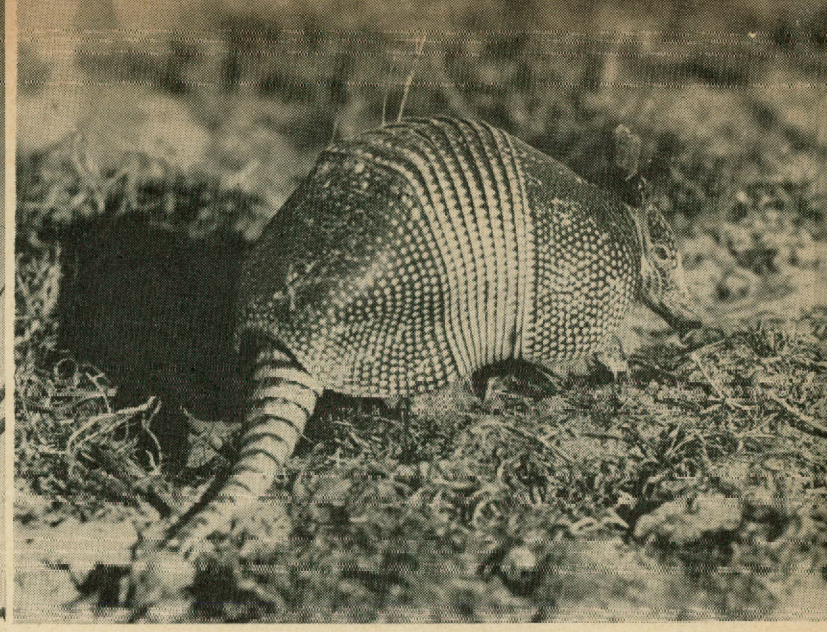
So essential to Fort Worth's water supply and flood protection, Eagle Mountain seems almost a living personality. We observed some moss floating on the surface and Lake Custodian B. W. Bentliff told us it was one indication of the lake's water "turning over." Twice each year the phenomena is supposed to occur, once in the spring or early summer, again in the late fall. Probing the depths revealed the water's temperature was 72 degrees at 25 feet deep.

Returning by way of the State Fish Hatcheries, we were rewarded with

sight of the minute solitary and least sandpipers and lesser yellow-legs, busy feeding in the mud flats. And in the ponds, along with the larger species ducks, were a few blue-winged teals, little half-sized marsh ducks. And sweeping along in their wake, a stunning little buffle-head or butter-ball duck, one of the smallest of the ducks. His black back contrasted sharply with the vivid white of his body and white face patch on his puffy head. A tiny little pied-billed grebe, sometimes known as a Di-Dapper, went swimming along with only his head extended above the water, then dived entirely to escape the swoop of a red-shouldered hawk.

Forty-two different species of birds—land, shore and large numbers of water birds—were observed in our day's birding on and near the lakes.

Birding is a wonderful hobby for pleasure, relaxation and information. And Tarrant County is wonderful birding territory, for in our country there have been definitely identified approximately half the some seven hundred species known for the whole state of Texas.



Denizens ofouth Texas

A ready-reference to some of the Animal Km celebrities in South Texas, and some of the flora and fauna:

In the upper left hand corner, that's a bloo Yucca plant. In the opposite corner, as the animal specics in this cluster well know, is pic a blooming cactus.

In the upper panel, the nosey armadillo pfor his daily diet of ants, roots and so forth, while the dashing white-tailed deer glances wfor a possible intruder.

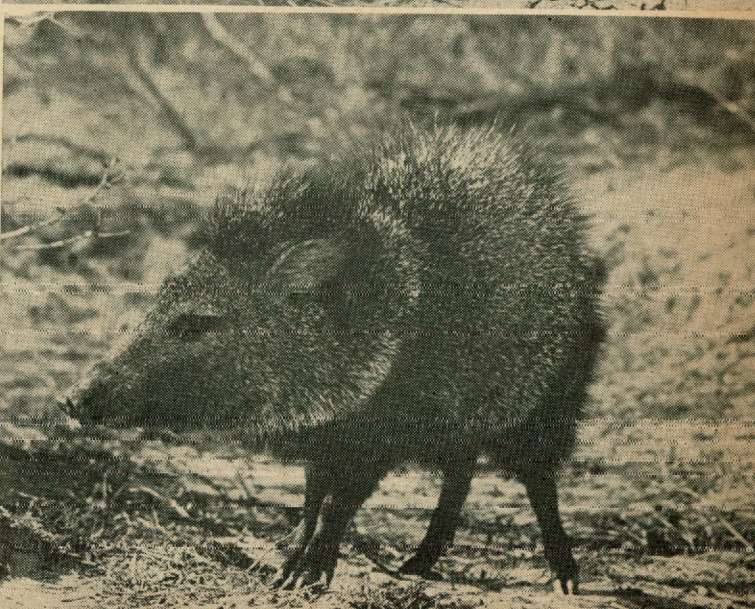
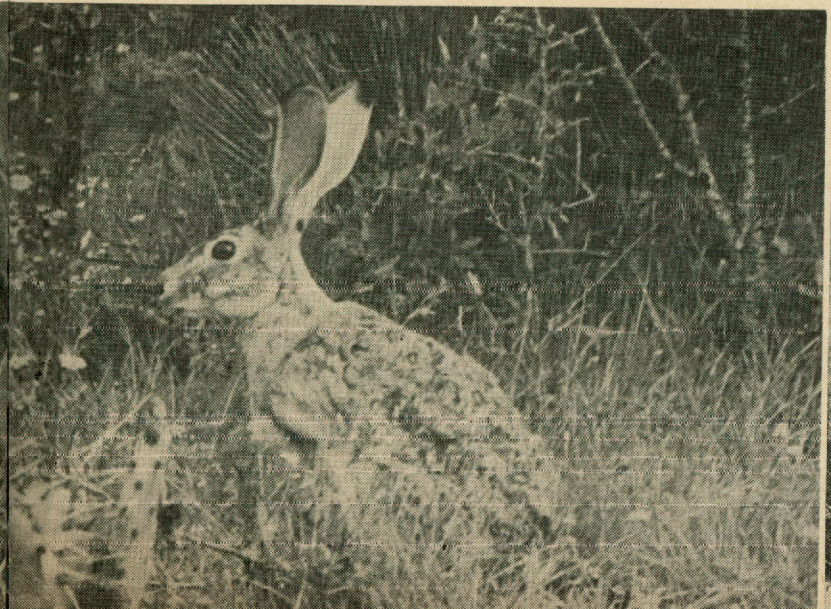
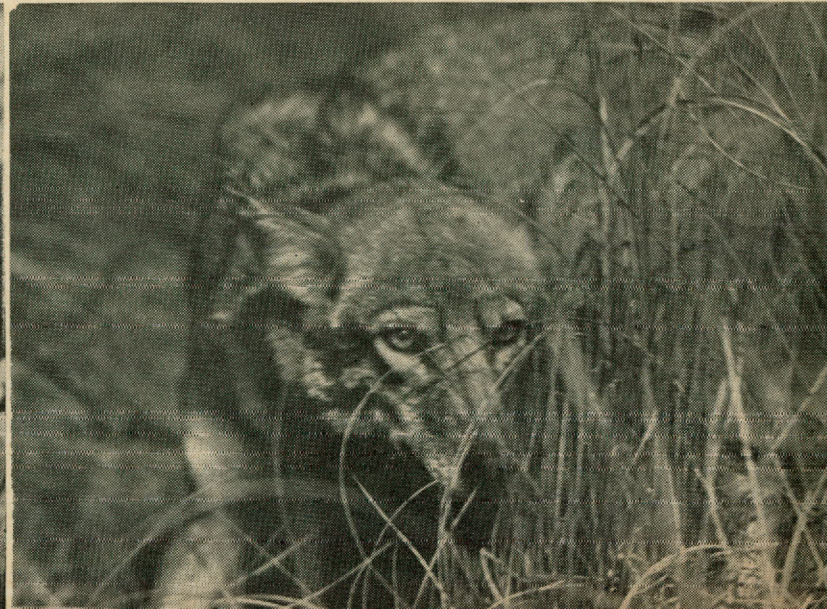
At left center, the Texas Mountain Lion nee introduction as he works up a hate for his predacious raids on game.

At right center, the picturesque road runnerls alerted for friend or foe.

In the lower panel, extreme left, a marauding; snoops around for possible game bird nests.

Next, a coyote skirts a clump of vegetationhe prowl for bird or animal prey.

The harrowing life the Jackrabbit leads is r accurately portrayed, squeezed as he is, between the coyote and the javelina or collarecary, the latter in the lower right hand corner.



CONSERVATION

MEANS

HUMAN

RESOURCES

TOO!

By

THAD

A.

BUKOWSKI

FOR many years now we have practiced conservation in nature. We have tried to prevent forest fires. We have tried to keep the soil from eroding to the sea. We have tried for a number of years recently to provide adequate food and cover for our game in order that it may live, flourish, and replenish itself in our game lands. We attempt to keep the water in our streams as pure as possible in order that we may not only have better recreational activity such as fishing, swimming and outdoor sports of all sorts, but also that all the citizens may get a more adequate supply of a God-given commodity in the way in which they should get it—as fresh as possible.

But conservation should reach out farther than that. In fact, it is reaching out farther than that, and we should all familiarize ourselves with its new aspect which directly and indirectly concerns itself more and more with the human being himself.

For years we have been doing an excellent job in the conservational field, to reiterate, in trying to prevent waste of any kind. In the human field we have been apprehending arsonists who periodically burn the forests, we have been apprehending dynamiters who wilfully killed fish, we have been apprehending poachers who have shot game out of season; in other words we have been trying to prevent waste anywhere in the field of nature. Our program of preventive measures has been especially successful and at the present time we are looking forward to an era in which we expect greater caution, too, among all careless individuals. However, we must do better, more adequate work along the line of establishing correct attitudes among those of our coming generation who in future years will inherit the outdoors and who will spend much of their time in our forests, parks, and along our streams and lakes.

It is definitely a fact that we learn by imitation; in other words we learn through the experiences of our environment. It is also an established fact that we learn most of what we keep with us in the line of character and moral integrity in our lives through those innumerable teachings which come incidentally and coincidentally from the family. The family unit from time immemorial has been the most significant unit in keeping our nation strong and all of us healthy in our outlook upon life. It is important, therefore, that the family unit contribute a great amount of correct teaching even in the conservational field.

How does this concern for the family unit and what it does have anything to do with the outdoors? Well, let's take the problem of learning to hunt and to fish. Generally speaking, practically all of us as sportsmen have learned this very satisfying leisure time activity from someone older than ourselves right in the family. And most of the time probably from our fathers. Also, the chief reason why we are avid sportsmen now is in great part due to the fact that the learning experience was a pleasure while we went through it. It was not a task, or something distasteful that had to be done.

Any youngster in the family will be tickled "literally to death" to go on his first few fishing or hunting experiences with his dad. It is tremendously important for a father, therefore, to arouse a spirit of com-

panionship between himself and his son and include him on his sporting ventures at least a nominal number of times each year in order that he may have this feeling of pleasure. Not doing so may make the son feel unwanted and cause him to receive tremendous psychological shock which in later years may make him exactly the type of individual with whom conservationists have the greatest trouble, because in effect he is hitting back at what his father liked but did not provide for him—the enjoyment of both this needed companionship and the pleasure of the outdoors. The reason the outdoors may become distasteful to him and make of him a problem may be due to the simple fact that he always associates the outdoors with his father and he realizes that he lost his father's friendship to his father's liking for the outdoors to the extent that he didn't take his son with him.

This is the son's manner of reasoning:

1. I love my father
2. He loves fishing and hunting better than me because he prefers them to being bothered with me
3. Therefore, I hate anything that takes him away from me.

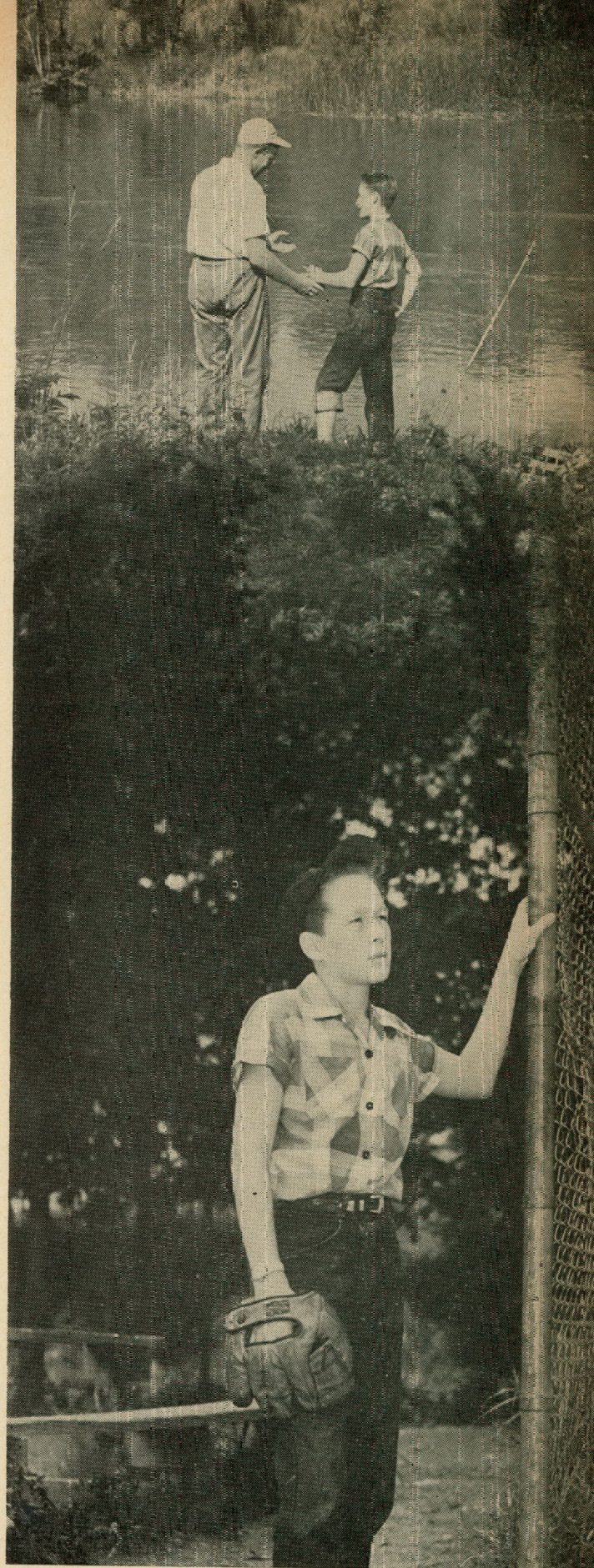
This may sound a bit far-fetched but in the subconscious mind of each individual such thoughts exist and may later cause trouble relating to anti-social behavior and anti-sportsmanship.

Now to get back to our original discussion and put it in the form of a question. How can a father teach his son the true love of the outdoors and make of him the kind of future sportsman that this country needs?

First, and foremost, there must be that definite spirit of companionship between father and son which will enable each experience to begin in the right manner. The father should evidence a broadmindedness and permit a sense of equality to exist between himself and his son. Most of the teaching about the outdoors should also be of the incidental type. When questions are asked, they should be answered in the most interesting manner possible. When the son misses observing something particularly interesting or worthwhile his attention should be called to it. If it is an unusual specimen of wildlife, a bird, animal, or the like, the observation can be made too, with emphasis often placed on the conservational aspect. How better can the son learn this association of wildlife to conservation measures? In this manner, by precept or example rather than by command can the idea not only of conservation but love of the outdoors be installed.

When the boy begins to learn how to fish he should be permitted to learn by himself after the first simple explanations or instructions are given. Most of the time his immediate learning by observation of his father or others will be sufficient to get him started. The worst possible thing that a father could do is to continually tell his son what to do. Tell him where to fish, tell him what bait to use, tell him how to throw in the line, tell him when to yank the line. This repeated telling and criticism is the quickest way in making him not only disinterested but actually antagonistic towards anything which even resembles the outdoors. We see, therefore, a second way, by which a child can be led to a dislike of the outdoors.

● Continued on Page 31



Dear to the heart of every youngster is an outing in the woods or an adventurous trip to the favorite fishing hole with his Dad. Many a lad, however, spends his time in these haunts only in dreams.

Hunting -

In the 1830's

MY LIFE began in a large country. In 1824 Texas was attached to Coahuilla, and Saltillo was the capital. No man born in the day I was, can be narrow in any sense of the term, in as broad a place as Coahuilla and Texas. It is but natural that I should love the broad outdoors. In 1826-27, Victor Blanco was governor of Coahuilla and Texas, and I was born under the Blanco administration.

I was trained to shoot a gun when not more than five or six years old. At eight years of age I was as good a marksman as most grown men. I killed turkey before I was ten years old, yes, even before I was ten; I killed them when I was so small that in walking with the head in my hand and the neck over my shoulder, the tail of the turkey would drag on the ground.

I was taught to hunt by the Indians. There was a number of small bodies of Indians about Nacogdoches and other places in Eastern and Southern Texas. One of the most intelligent and influential chiefs among them was John Dunn Hunter; one of Hunter's subjects, Storm Cloud, formed a great attachment for my father.

This Indian whose village was somewhere about Nacogdoches, had no family except a wife. He would start out with his wife, their ponies, and camping fixtures and hunt all the way from Nacogdoches to my father's home on the Red River. He would camp near our house, often a month at a time. From there he would hunt over the country for about fifteen or twenty miles in all directions.

I had a light Choctaw rifle, and I would often spend the whole day in the woods. It was from Storm Cloud that I learned this method of hunting.

He taught me two methods of getting within gun shot of deer and all other kinds of game when they were out on the smooth prairie where there was no object to screen him from view of the wild animals. The Indians would say to watch the movement of the deer's tail instead of the movement of its head; that a deer never raised its head to look about until it had given its tail a little shake. So when the deer had its head down grazing, and you saw it give its tail a little shake, you were to stop and stand as fixed as a statue, with both arms placed close to your sides so that no light could pass between them and your body.

The Indian said to be so still that if the deer saw you, he would think you were a stump or some other inanimate object. Then the deer would give its tail another little shake and start eating grass again. After this, the Indian would shoot, kill the deer, and take it to camp.

Now I will give you the second method of getting within gun shot of game when out on open ground. The Indian goes just as close to the deer as he dares without being discovered; he then finds a secluded hiding place, pulls out his gun-stick or rod (an article all Indians love) and ties a red handkerchief to one end of it and then waves it in the air until he gets the attention of the animal. Instead of running off, the animal becomes interested with the novelty of the handkerchief and comes right up close to it, so that fresh meat is almost a certainty.

There was another peculiarity of this Indian's hunting that impressed me at that time. He walked at a brisk step until he came to the section where he supposed game would be. When he

reached that place he would stop and stand perfectly still from three to five minutes; sometimes for a much longer time. I soon found that there was a great advantage to this. When perfectly still we see much more readily everything that moves—the falling of a leaf, the flying of a bird, or the moving of large objects like wild animals. These rules for successful hunting of game I soon found out to be excellent.

As I have said, I had been trained to the use of a gun from the time I was five years old. By the time I was nine years of age I had been killing turkey, squirrels, and other things for some time. I had been bred and born in the woods; game of some sort was in sight of the house almost every hour of the day. The bottom of the North Sulphur and its tributaries abounded in bear, panther, and all the small varmints.

My father loved the sport and excitement of bear hunting; he kept a pack of trained bear dogs. Soon after we moved to this place near Clarksville, the dogs began to go out on a hunt before day. Often before dawn they would have their wild varmint treed and be baying it when father woke up. He always went to them and killed whatever they had.

At this time I had never killed a bear and had no thought of such a thing, but soon unlooked for, I had the most exciting experience of my life. I was out enjoying my daily hunt and not far from the house, following the dim trail made by buffalo and deer. As I approached the head of the branch, I noticed a waterfall and cave extending up under the bank.

Coming a little closer I noticed something that looked exactly like a large bear skin rolled up in a large

I WAS TRAINED TO SHOOT A GUN WHEN

bundle. But in a moment, I knew that it was not a mere bear skin. I soon discovered that it was a veritable bear and no mistake.

Boy like, as soon as I discovered that it was a bear, I took a powerful scare. I ran, I suppose, at least a quarter of a mile; when I stopped I was out of breath and covered with perspiration. I sat down to rest supposing that I was out of danger. While resting, I recovered my senses; reason told me that I had played the coward; that I had such a good chance and that I ought to have been braver.

I gathered all the courage I could and decided to slip back to the place to see if the bear were still there and lying just like it was when I left. I had to go within forty-five or fifty feet of the bear to get a good view of him. When I reached that position, I could see a little white spot on the bear's breast. I had a load for deer in my gun and I said to myself that if I could put the load in about that spot, it would kill the bear instantly.

There was a sapling on the bank that made a good rest for my gun. When I placed the gun against the tree, I was so excited and nervous that I could not hold the gun against the tree. I shook as though I had an ague. Again and again I would try to steady my nerves, but with the same result. Finally with my excitement somewhat subdued, I pulled the trigger.

The instant before the smoke cleared from before my face so that I could see what I had done, I ran for dear life. I didn't stop until I reached home and reported to my father. I did not think that I had killed the bear. He said he would, and he took his gun and dogs to the place. The dogs took the track of the bear and began to bay when only seventy or eighty yards distant. The bear was still alive, but would soon have died.

When I found I had killed the bear, I felt as big as Alexander did when he thought that the world lay conquered at his feet. A few days after I killed the bear, ten or twelve scouts came to father's house. When he told them that I had killed the bear, one of them said that he had at home a nice cub bear, a gentle pet he would give to me as a re-

(Excerpts from the Autobiography of Andrew Davis, pioneer Texan and early day Methodist minister among the Circuits of Northern and East Texas. He was the father of B. L. Davis, attorney in Corsicana for over 50 years, and grandfather of Mrs. B. W. George who was kind enough to permit the use hereof.)

ward for my bravery. Another gave me a good pocket knife, which was a great treat in that day, when such an article could scarcely be obtained at any price. Another gentleman said that as I loved the woods so well he would give me his pocket compass, so that I would always be able to find my home. This recognition of my courage made me feel both rich and brave while my pride and vanity were increased beyond measure!

My boyhood life would have been completely happy on the frontier, but for the fact that the Indians were a just occasion for alarm. They were in the country during the light of every moon. There never was a month that passed that horses were not stolen and many valuable lives taken all along the frontier line for fifty or sixty miles.

It became necessary to go into a fort for safety. Mr. Isaac Liday was elected captain and the fort was given his name. There was not much hunting done while we were in fort, but wild game was plentiful, and the scouts were constantly killing game and bringing the meat to the fort.

Often buffalo would come and mingle among the cattle of the fort. Our cows would get greatly excited at the presence of buffalo. They would collect in great numbers and bellow furiously, showing the wildest excitement. When you observed the cows so excited, you knew the buffalo were among them. The captain always sent out a few men to kill them and it was remarkable that they were so mixed with our gentle stock; the men could ride close to them without being noticed and shoot them down.

My father finally settled on the Tenaha, a tributary of the Sabine. Father opened a farm, clearing up a large cane bottom. This was great country for hogs, but these large cane breaks abounded in bear, panther,

catamounts, wildcats and wolves. These were all hard on the hogs. As my father's favorite recreation was in bear hunting, to enjoy this favorite sport and to protect the hogs kept him from the house more than usual. This exposed him a great deal, and sometimes he ran very narrow risks.

Often it is the case that bear and panther will not take to the tree. As soon as they weary a little, they stop. Selecting their own battleground, and it is always the least favorable for the enemies, the huntsman and the pursuing dogs. As soon as the bear or panther stop, the dogs change their tune from a yelp to a bark. The first yelp always indicates to a huntsman a cheerful, hopeful pursuit. But when the dogs begin to bark loud and furiously they say to the huntsman that the chase is ended and the enemy is now determined to fight unto death.

Father said that the dogs would always hold the animal in bay until he arrived, but as soon as they saw him they would pile in on the bear or panther and fight unto death. On one of these occasions as father arrived, he saw the dogs in deadly combat with one of the largest bear of the range. With all possible speed he pushed his way through the briars and undergrowth and as soon as within reach of the bear he jabbed the muzzle of his gun against the side of the bear. But to his surprise the gun pulled fire and just at that moment, the bear gathered father's favorite dog in a fatal hug. Father pulled from his scabbard his butcher knife and attempted to stab the bear, but at that instant the bear turned the dog loose and caught father by the hand tearing his hand badly. His thumb was so bruised and damaged that he later had to have it taken off at the first joint. Father suffered a long time with his crippled hand, but he was brave and never seemed to think of danger until it was too late to escape. Many were the risks that he ran and many were the narrow escapes that he made.

Having dwelt at some length upon the surroundings of my first years and also upon the sources of pleasure and enjoyment of childlife in that early day, I now leave those things with you for thoughtful meditation.

NOT MORE THAN FIVE OR SIX YEARS OLD

Fishes of Texas

THE CRAPPIES

By MARION TOOLE

Chief Aquatic Biologist

THE crappies are composed of two species, but the two fish are so similar in appearance most anglers think they are catching only one species. Many fishermen think that the male white perch, as these fish are called in Texas, is darker colored than the female, so when they catch a black crappie they know they have taken a male. Because these fish are so similar in appearance it is imperative that they be treated together in this article.

There are several external characteristics that are so different in the two species that it makes it extremely easy for any person having information relative to the differences to readily distinguish the two types. One of these species is the white crappie, *Pomoxis annularis*, and the other species is the black crappie, *Pomoxis nigro-maculatus*, also called calicc bass. Both fish are silvery in color, mottled with green. The green ranges from a light green to a dark blackish green.

The difference found in the manner in which the mottling occurs on the two fish constitutes one of the distinguishing characteristics between the two fish. On the white crappie we find that the mottling is found chiefly on the upper portion of the fish and that it tends to form vertical bars. Its dorsal or top fin and the caudal or tail fin are marked with green. The anal or bottom fin near the tail is nearly pale. On the black crappie, however, we find that the mottlings occur all over the body and that the green is much darker in color. These mottlings tend to form

in small bunches and seem to form horizontal bars. Its dorsal and caudal fins are marked with blackish green and its anal fin is marked as heavily as the dorsal fin.

Another difference found in the two fish is that the black crappie is deeper bodied, i.e., the distance between the dorsal and ventral or bottom of the fish is greater than that of the white crappie. The easiest method of determining one species from the other is by counting the hard spines found in the dorsal fin. The white crappie will usually be found to have six spines, but occasionally five, and the black crappie will have either seven or eight spines.

Spawning habits of the crappies are also very similar. Both species are reared in the state hatcheries, so it has been possible to observe their ways. They seem to prefer deep water in which to build their nests, since most of these fish select water from four to six feet deep. They have even used drain boxes to build their nests in and these drain boxes are the deepest part of a pond. Gravel spawning beds are always provided for both of these fish and they usually use the gravel beds except where they sweep the nest down to the concrete bottom of the drain boxes.

In nature, it has been observed that the white crappie likes to place its nest near a stump or some brush. The spawning season for these fish in Texas is March to May. The male prepares the nest before bringing in a suitable female who deposits her eggs on the

nest. After fertilizing the eggs, the male guards and fans the nest until hatching occurs which takes from seven to fifteen days, depending upon the temperature of the water. The young fish or fry are carefully watched over by the parent male for three or four days after hatching. After this time they are left to shift for themselves.

For years in the state hatcheries, it was the custom to place about one hundred pairs of crappie broodfish to each acre of water in rearing ponds. The initial hatch was terrific and the ponds would be found teeming with fry. When such ponds are drained, however, the recovery of fingerlings was low. Sometimes as many as two thousand would be produced. The state hatcheries have gradually reduced the number of broodfish per acre of water year after year and are obtaining greater yields. One pond in the Tyler hatchery stocked with 10 pairs of 7-inch black crappie adults produced 65,673 fingerlings when the pond was drained. This pond was less than an acre in size. Of course when the above is analyzed it is easy to see what occurred. When large numbers of broodfish were used there were so many fry produced that the pond was not able to produce the food necessary for their survival and most of the fry would die from starvation, leaving only the largest and strongest fish. On the other hand when fewer adults were used they produced fewer fry that were able to find food enough to carry all baby fish through the fingerling size.

The environment requirements of the two species are very similar. Many times both species will be found in the same waters. Black crappie prefer sandy or gravelly bottoms and do well in cool or warm water. White crappie like muddy bottoms and warm water. The young are often found in backwaters of rivers and many are lost when these backwaters dry up after rises and during the fall droughts. Observations and population studies that have been made by the department seem to reveal that these fish will do best when planted in waters of different hydrogen ion concentrations (determines acid and alkaline waters). White crappie do best in alkaline waters and black crappie do best in neutral or slightly acid waters. An example of this was graphically portrayed in a lake located on the Devil's River. This lake had a rocky, gravelly bottom. The water was clear and cool. Apparently it offered an ideal environment for black crappie and was stocked accordingly year after year. When population studies were made we were unable to find any black crappie, but white crappie were present in large numbers. The water in this lake is alkaline. In the alkaline lakes of north, central and west Texas white crappie dominate, while in the neutral and acid lakes of east and southeast Texas, the black crappie seem to be the dominant fish.

Both species of crappies are strictly carnivorous. Their food consists of fish, crustaceans and insects.

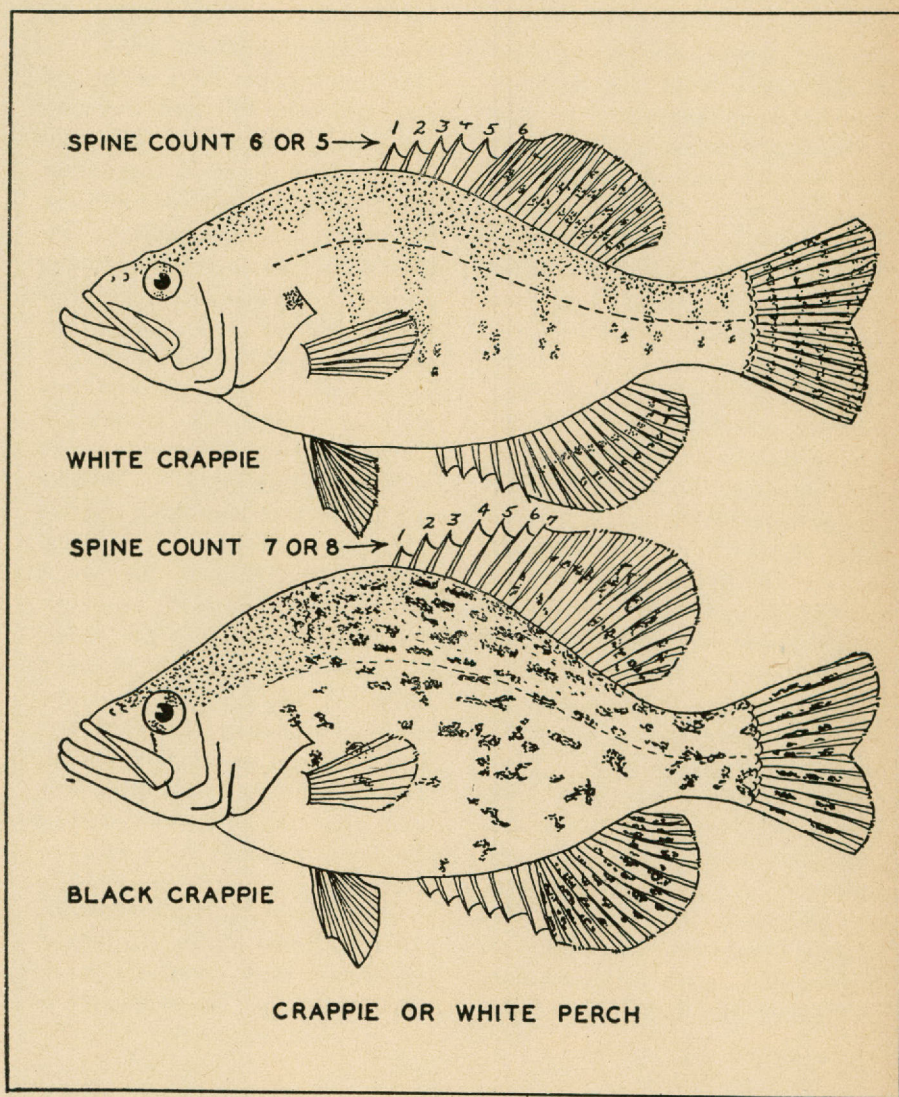
The crappies have a large following of ardent anglers. Crappie are caught on both natural and artificial baits, but most of them are taken by natural baits. These fish travel in schools and when a school is found it is simply a matter of getting the limit. White crappie can usually be found around submerged brush piles and stumps.

The crappie is seldom a fast striker. They seem to examine the bait before taking it. When hooked they usually give one hard pull and then give up without much of a fight. Live minnows two to three inches in length are the best bait and can be hooked either through the upper lip or through the back behind the dorsal fin so that the minnow will not die too quickly. Stonerollers (steelbacks) and silverside minnows are the choice of most of the successful crappie fishermen. In some localities redfins (red horses) are used

with success. Other natural baits used consist of grasshoppers, grubs of insects and some cut baits. No. 3 or 4 long shank hooks are the ones used most frequently. Artificial baits used are flies, small spinners and small strips of pork rind. Trollers produce catches with deep running white lures. Some people fish with cane poles about 10 feet long, but ardent crappie fishermen like to fish tightline from a boat. Tightline fishing requires only a line equipped with a hook and small sinker or weight. The minnow is placed on the hook and allowed to descend to the bottom. The minnow is then lifted a foot or so from the bottom and the line above water is wrapped around a finger. Every nibble from a fish is then felt by the angler

and he can tell more easily when the fish has taken the bait.

To facilitate the catching of crappie, brush shelters should be placed in lakes since brush shelters are particularly attractive to these fish. The best material for the construction of such shelters is willow trees. The shelter, when completed, should be about fourteen feet in diameter and about four feet deep. They should be placed at various depths in the lake if the water level in a lake fluctuates excessively. These shelters produce the best results when covered by eight to ten feet of water. Cottonseed cake or meal may also be placed in a sack and submerged in the middle of the shelter. This will serve as an added attraction.



White crappie, *Pomoxis annularis*, and black crappie, *Pomoxis nigro-maculatus*. The difference in spine count of the dorsal fin is the best distinguishing characteristic between the two fish. The black crappie has a higher arched back than that of the white crappie.

Some Facts About

The Cooper's Hawk

By JACK M. INGLIS

Assistant Wildlife Biologist*

IF YOU'VE ever heard stories of chickens being taken right out of a chicken yard while the farmer leans on a fencepost too dazed by the audacity of the intruder to act, chances are you were hearing about a Cooper's hawk. Its scientific name is *Accipiter cooperi*. It is the crow-sized reddish-bellied hawk that you've probably seen every once in a while if you get around in the woods very much. He has a blue-colored back with black stripes across the long, rounded tail and his wings are about one-third wider than length of the tail and body. The Mama is bigger than the Papa but they're both rough on birds and mammals caught napping in their hunting area. So that you might know them better here are a few facts about these "not so trustworthy" neighbors. Don't get me wrong, though, they're bad only where harm is being done and shouldn't be killed indiscriminately.

Other names for this bird include chicken-hawk, hen-hawk, quail-hawk, pigeon-hawk, pheasant-hawk, and it is evident from the recorded food habits of the animal that most of these are well deserved. It is essentially "the" chicken-hawk, a ferocious bird characterized by momentum in flight and audacity in his relations with man. His flight is low, swift

and dashing, consisting of a few quick strokes of the wing and then a swift glide, but the bird has more tendency toward circling and soaring than does its close relative, the sharp-shinned hawk.

In hunting, the short wings and long tail make this bird very maneuverable, a decided advantage to a bird which dwells in the woods. His hunting method is to surprise his prey by a sudden pounce. This is often accomplished by keeping a tree between himself and his prospective dinner and ending the silent attack with a quick turn, killing with a blow from his feet. Often after he strikes, the momentum carries him beyond the prey and he is forced to turn quickly to retrieve it. On the other hand he is capable and does catch birds on the wing, chasing them through the woods and catching them with his claws. The Cooper's hawk is the enemy of all woodland forms of small birds but his presence does not seem to intimidate the flycatchers and kingbirds as much as others. These small tyrants have often been seen attacking and even chasing the larger marauder from their territory.

The Cooper's hawk lives throughout the United States. His habitat preference varies from the white pine forests in Massachusetts to

locations around streams in the West down to shrubbery in desert conditions. In Texas he is more often found in heavily timbered hardwood forests of river bottoms.

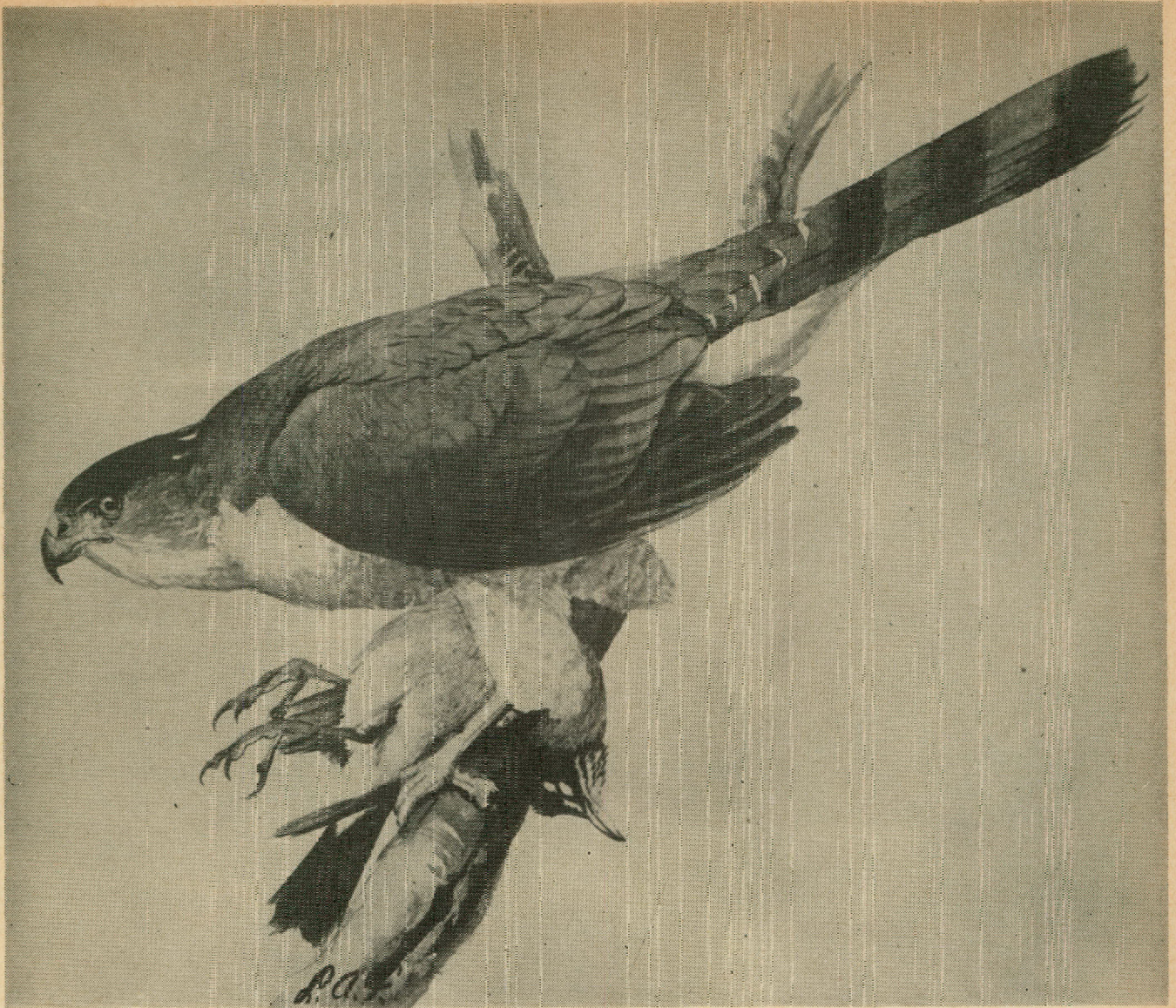
The Cooper's hawk's nest is a clean, substantial structure of sticks and twigs with a lining of chips of bark and usually some down feathers. This structure is built by both birds who work rather silently at the task, flying close to the ground with the sticks in their bills and zooming up to the nest platform to arrange the material. The two birds are generally timid in the nest area and when approached will most of the time leave until the intruder is gone. Both are seldom at the site at the same time while building.

A new home is built each year, often on an old squirrel's or crow's nest or even using their own old site for a platform on which to build. The dimensions of the nest vary, but they have an inner cavity about seven inches wide and two to four inches deep. Nests are usually found at some prominence averaging about thirty-five to forty-five feet high but some have been found as low as ten feet above the ground where higher nesting places were not available.

Four or five eggs are generally laid by the Cooper's hawk at two

*F.A. Project 51-D.

IT IS FOUND THROUGHOUT THE UNITED STATES



The Cooper's Hawk, larger of the two "Blue Darters" found in Texas. (Courtesy U. S. Fish and Wildlife Service.)

or three day intervals with a clutch occasionally having three or six eggs. They are smooth with no gloss and vary in color from a bluish or greenish white when new to a dirty white later in the incubation period. Some have scattered pale spots which are brown or buff.

Incubation is shared by both parents and started after all the eggs have been laid. The incubation period is generally around twenty-four days, after which the bright and active young are hatched. They tear up their own food at an early age, eating the intestine of the prey first and drinking the blood. At five

weeks, the young hawks fly experimentally.

Some people say that if one of the adults is killed during incubation or raising of the young, the other takes another mate who carries on in the first mate's stead.

The Cooper's hawk stands accused of being the "chicken-hawk" and in fact does more damage to domestic poultry than any other hawk according to most reports. Of 422 stomachs examined in one case, 65 contained mammals and 73 had poultry and game in them while 146 contained other kinds of birds. Many of the stomachs contained

frogs, snakes or insects or were empty.

Game birds eaten by this tough little feathered "rondre" include smaller ducks such as teal (and probably the young of other ducks), quail and doves. Some of the mammals eaten are rabbits, squirrels, rats and mice. Generally the food consists of anything slow enough and small enough to be handled by the hawk.

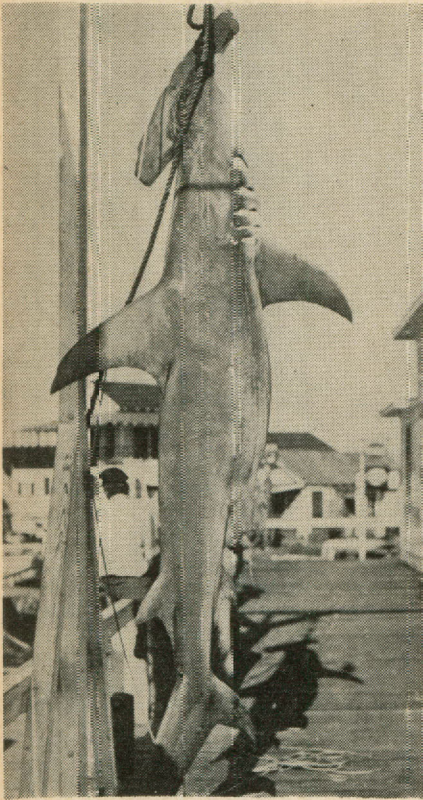
Wildlife managers have found that in the presence of plenty of food and cover *together* game species can stand the depredations of this hawk well.

Marine Fishes of Texas

The Great Hammerhead Shark* *Sphyrna tudes*

By J. L. BAUGHMAN

Chief Marine Biologist



S. *TUDES* is found in practically all the warm seas of the world. On the North American coast it has been recorded definitely only from Florida, but as it is probable that many of the records for the common hammerhead are applicable to this species, the limits of its range are not definitely known. It has been recorded from a number of locations off the West African coast, and occurs in the Pacific and Indian Oceans.

This shark is known in Texas

* Abridged from Baughman, J. L., and Stewart Springer, Biological and Economic Notes on the Sharks of the Gulf of Mexico, Amer. Midl. Nat., July, 1950.

only from a photograph of a specimen taken at Port Aransas.

Although only about 28 or 30 inches long when born, this is the largest of the hammerheads. It matures at a length of about ten feet, but commonly reaches 13 to 14 feet, with one 15 foot specimen reported.

Small specimens are brownish gray above and a paler shade of the same tint below, with the dorsal fins, caudal and upper surfaces of the pectorals dusky toward the tips. Large ones are reputed to be dark olive above and pale olive below without conspicuous fin markings.

Three females with embryos were taken at Englewood, Florida, all in early June. Of these a twelve-foot specimen contained 30 embryos, and two thirteen-foot specimens contained 37 and 38 embryos, respectively.

One female caught in March, 1939, contained 25 embryos, averaging 450 mm in length. Sixteen were males and 9 females. Three litters examined in May contained 62 embryos, 28 males and 34 females, averaging 620 mm in length, and a litter of 31, taken in December, averaged 625 mm. There were 17 males and 14 females in this last.

The skin of this species is thin and not especially desirable for the American trade. It can be used for some purposes to advantage, however, and is usually sold, although graded down. The liver oil potency ranges from 5000 to 100,000 U.S.P. units of Vitamin A per gram. The fins are good, and the flesh is edible, although as it is soft, it spoils easily. This species is sold in the markets of Jamaica and is frequently sold in the Panama markets.



Upper left, a large hammerhead shark caught at Port Aransas. Left, another hammerhead, about 16 feet long, bitten in two with only two bites by a still larger shark. This shark was also taken at Port Aransas.

Legislature Passes New Game Laws

LEGISLATION covering a wide range of wildlife subjects was approved by the Texas lawmakers before adjourning June 8.

A major measure increases the Game, Fish and Oyster Commission from six to nine members. It also drops the "Oyster" from the title, for the sake of simplicity since the word "oyster" is covered by "fish" as are shrimp and other shell fishes.

Thus, beginning September, when the law becomes effective, the name will be "Texas Game and Fish Commission."

The three new members of the Commission will be appointed by Governor Allan Shivers. The six present members were appointed in that manner.

Under the new law, the present Commission Chairman, W. Scott Schreiner of Kerrville, continues in that capacity until his term of office expires. The next Chairman will be elected by the Commission.

One important bill authorizes courts, handling game and fish law violation cases, to revoke hunting and fishing privileges for such violations.

Loss of these licenses is automatic under the old law.

Another act affecting hunters provides for a single, all-inclusive hunting license costing \$2.15. It replaces two separate statutes, providing for a \$2.00 license for hunting small game and a \$2.15 license providing for hunting both large and small game.

A new law, designed as a safety measure, requires boat-for-hire operators to provide life preservers for each person using a rented boat and empowers Game Wardens to enforce the act.

First Fish!

By LEIGHTON B. DAWSON

WELL, I guess you think you're pretty big, old man, now that you've really caught a fish. You'll probably catch a lot more in your time, and maybe a lot bigger ones, too, but none of them will ever quite equal that first fish.

He's not bad, either, for a bream. Ten inches long, and a little over a pound in weight.

He kind of took you by surprise, didn't he, when he hit your line? You know we've been trying for a long time to tell you what it is like to catch a fish, but I guess that's really something that nobody else can tell you.

There you were, fooling around as usual, pulling your line up every minute, shifting it around, shaking the boat, and in general doing all the things you are supposed not to do.

You thought fishing was pretty dumb, didn't you? Just holding a pole in your hand, and having to mess with minnows and worms and some other kinds of bait that don't always smell too nice.

But something happened when that fish hit your line. That pole that was so dead in your hands a moment ago, came alive, didn't it? You hadn't been watching your cork, and so the first you knew about that fish was when your pole began to twitch and jerk.

You reared back on that line like you had a whale. But that fish wasn't exactly taking it lying down. You tie in to a good size bream like that and

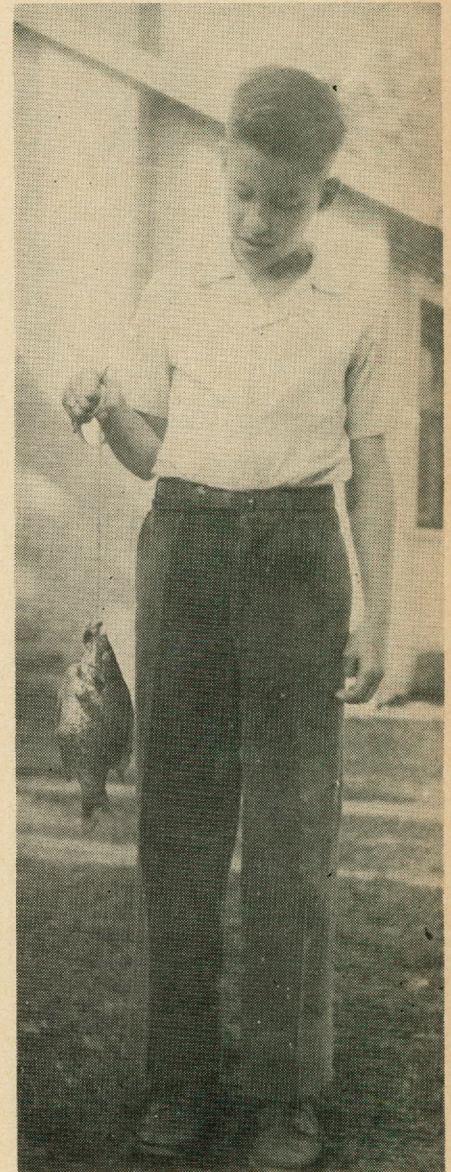
he will make you know you've got something.

He sorta carried you a little bit fast there for a while, didn't he? Dipping and surging around like that in the water. And when you pulled back, he really felt *heavy*, didn't he?

When you pulled him out I thought you were going to jerk him up to the sky. It's really not necessary to swing 'em up that high, old man. If that hook hadn't been swallowed so deep you would have slung him over in to the next county. But you got him in the boat, didn't you? And that's the main thing.

First fish! I'll bet Alexander the Great didn't feel any bigger when he conquered the whole world. But that fish did something more to you than just make you proud. He made a fisherman out of you. You learned that fishing was something more than just waiting. It's *expecting*, for one thing. You naturally wouldn't know what to expect, until you had caught your first fish. But fishing is something more than just *expecting*. It's *connecting*, too, that counts. Yessir, it makes all the difference, when you know that on the end of your line, there is life.

Yes, you know something about all that now, because you have experienced it. And now you know why guys will go all the way to Possum Kingdom, Buchanan, Texoma, Rockport, Caddo, and some other places here in Texas, just to go fishing.



The Faubion Story

☆

By JAY VESSELS

Assistant Director, Department of Publications

☆



THE small, neat man leaned back in his chair. He clasped his hands behind his head.

Then, H. E. Faubion said quietly, calmly:

"The outlook for game is not too good because of the shrinkage of available habitat. But fish life seems destined to hold out. The pressure, of course, is terrific on both."

Faubion, a Texan all of his 75 years, saw his native state when wild game was so plentiful that the people didn't bother about restrictive laws. Now, he appraises his native state when all available resources are being mustered to save enough game stocks for even limited future hunting.

But Faubion is not convinced there won't be a way out. Pessimism has never been a part of this man who came all the way up from the cedar brakes of the then primitive Burnet county to become a successful newspaper publisher and to help start the Game, Fish & Oyster Commission along a road of constructive work.

He has unshakable faith in our game management, in our scientists and in our sportsmen.

Some of the personal opinions H. E. Faubion has so well concealed in his characteristic modesty have been coming to the surface now that he is about to retire. On August 31st, Assistant Executive Secretary H. E. Faubion of the Game, Fish and Oyster Commission, will again become plain "Pete" Faubion to his old neighbors and friends back in Burnet County.

At 75, Faubion, he with the warm smile, the indispensable counsel and

the strong constitution, wasn't interested in stepping down. But he and Mrs. Faubion had finished a new home over at Marble Falls and they finally decided to move there and turn the job over to younger talent.

This pleasant man, whose amazing vitality, flat waistline and strong eyesight shames men half his age, thus is returning to the scene of his childhood.

Faubion, one of nine children, knew what competitive routine was right in his own family because there were eight sons. He did all right, although never the mightiest physical specimen among the eight.

Of course, Young Faubion knew about wildlife the old-fashioned way. Burnet county then was so abundantly stocked with big game and small game that the folks helped themselves the year around. Fishing was pretty good, too, although not as extensive as now, since the big dams have been built, two near Marble Falls.

"There was much to excite a young fellow then," said Faubion. "Deer were plentiful as were all the other animals. But wild turkey were scarce. Lots of furbearing animals but no market for the furs. We used to load a wagon and camp out on our fishing trips to the Colorado river. Take some sugar, flour, coffee and a little bacon to grease up the skillet. And we never had to worry what went into the skillet because there were some fine catfish and we always managed to catch plenty."

That was how "Pete" Faubion got to know nature. So when he went on up through the newspaper publishing route and finally ran for the Legislature thirty years ago, he naturally became chairman of the House Game and Fish Committee.

That didn't mean he was swamped

with committee duties back in the winter of 1921. "I suppose there weren't a dozen bills affecting game and fish," he explained.

But Faubion got some things underway. He could see that a start had to be made to help check the pressure on wildlife. He introduced a bill to forbid sale of game fish caught from the Colorado River in Burnet county. Other lawmakers amended the measure to include their own counties. The proposal helped establish the present ironclad statute barring the sale of fresh water game fish.

From that start, Faubion, who had served in Cuba in the Spanish-American war, became a legislative factor in laying the groundwork for other conservation measures. He was able to help spread the gospel of conservation through his newspaper connections.

Finally, Senator A. E. Wood successfully sponsored the bill in the Senate creating the Texas Game, Fish & Oyster Commission, and later became its first chairman. Faubion's first title with the Game Commission was "Director of Natural Resources." He early aided in stemming pollution of the state's waters, a field in which he has specialized with the advent of the mushrooming oil wells and other industrial wastes, all major pollution problems.

Early in his long career with the Commission, Faubion was commissioned as supervisor of law enforcement. "That was a far different situation to what we have now," he recalled. "We had only a handful of game wardens. They had 254 counties to cover."

He chuckled. "Most of them had nothing better than Model T's and none of them had any special training in this field. They were just born good game wardens."

Weather or Not

NO ONE, except some of these dry ice experts, can do anything about the weather, but if a camper or picnicker has some idea of what it will be like on the morrow, he can prepare for the worst . . . or best.

Luis M. Henderson, noted artist and outdoorsman, has an interesting chapter on weather signs in his new book, "The Outdoor Guide." These signs are not infallible, but they are not based on superstition and warrant the attention of any one who plans to take a camping trip this summer.

Regarding weather signs, Lu says: "If the smoke from your campfire rises highly in a long, spiral thread, there's good weather ahead, but if it rises slug-

gishly for a short distance, drifts off slowly and settles, then break out the rain gear.

"If all the trees (particularly the maples) are showing the undersides of their leaves, look for rain within 24 hours.

"Heavy dew on the grass presages fair weather, lack of it is likely to mean rain.

"Red at night, sailor's delight . . . red in the morning, sailors take warning! The same rule applies to rainbows in reverse. A rainbow in the morning bodes no good but a rainbow in the evening portends a fair tomorrow.

"When the moon wears a halo, or has a ring around it, look for rain. The

same goes for a red moon. But when the moon is a clear, bright 'white' you are pretty safe in planning a trip next day.

"When the sky is like black velvet and the stars seem especially brilliant and more numerous than usual, look for rain or snow the next day.

"Big white, puffy clouds that look like balls of cotton mean fair weather, if they stay scattered, but when they gather in a mass over one spot, such as a mountain or wooded hill, look out!

"Cirrus clouds, or 'Mare's tails,' those little wispy affairs high up, are a bad sign. If they are drifting rapidly across the sky, there is likely to be a storm within the next 24 hours.

He compared that meagre force with the present day staff of 170 wardens, and still growing, which is being shaped around school-trained personnel, equipped with high speed modern communication such as air-to-ground radio facilities, and ample transportation.

Now, after having a pioneering hand in many of these up-to-date facilities, "Pete" Faubion is going back to the area of his old print shop at Marble Falls; he's going back up there with his wife whom he first met as Lenora Lacy.

These two esteemed Texans are going to relax and enjoy themselves and let the younger folks take over.

"Pete" Faubion, inwardly reluctant to quit his 7 a.m. to 5 p.m. game department routine, smiled just a little when he contemplated going back to Marble Falls where he used to squire Lenora to the school box socials.

He smiled more than just a little when he contemplated greater access to the Faubion cuisine.

Now, if this noble Texan loses that perfect 36 because of a few extra helpings of black-eyed peas; not one citizen of this state will begrudge him the luxury.

Known Range of Oak Wilt Extended in 1950

Oak wilt, a fungus disease which is causing grave concern in forestry and wildlife circles, has been discovered in six new states as a result of the joint survey made by the individual states and the Division of Forest Pathology of the U. S. Department of Agriculture, the Wildlife Management Institute reports.

Freshly discovered points of infection were mapped last year in Pennsylvania, Ohio, Arkansas, Nebraska, and Kansas. The disease also was found to be spreading actively in southern Missouri. Many infected trees were found in otherwise healthy stands and, at one infected location first surveyed in 1949, nine separate infection areas were found last year in a 160-acre tract around the original center. Trees in 19 additional counties were found to be diseased in 1950, although many of these represent previously undiscovered infestations of earlier origin.

Neither the agent which spreads the disease nor its cure has yet been discovered by scientists, although many of them are working overtime on these jobs. Until the manner by which the fungus spores are spread is discovered, there is little that can be done to control the disease. It is known that local spreading takes place

through natural root grafts between neighboring trees, but this does not account for the broad leaps from western Indiana to central Ohio to central Pennsylvania which are indicated on the distribution map of the blight. Neither does the pattern of spread hint at windborne spores. Many believe that some insect, bird, or rodent may be the host. To date only the prompt cutting and removal of diseased trees can be recommended. Where valuable shade trees are involved, ditching to sever the interlocking root systems between infected and healthy trees has been used.

Fortunately, there is no indication to date that oak wilt is developing anything like the whirlwind momentum attained by the chestnut blight that swept like a forest fire through every stand of chestnut in the United States during the second decade of the century. The more gradual and sporadic spread of the disease, coupled with advances in forest research, give substantial hope that a control method may yet be devised. Much depends, however, upon the funds and manpower made available to the still underfunded and understaffed forest research laboratories at both state and federal levels which, together, share a monumental task.

Letters

Dear Editor:

Here is proof that fish really bite in the ship channel below Brownsville, Texas. The fish were drums, redbfish and trout, weighing from 2 up to 5 pounds. Just a day's sport for C. V. Jacques, Troy; and W. W. Barth, Mercedes.



Another good catch made by W. W. Barth, his son, Shell Barth, and children, Shell, Jr., and Brenda, of San Angelo. These fish weighed 2 up to 9 pounds, also caught below Brownsville.



Mrs. W. W. Barth
Rt. 2, Box 146
Mercedes, Texas

Dear Editors:

I have been deeply fascinated for many years by the flights of wildfowl, hence the article published in a recent issue of your

magazine on this subject was very interesting.

It is amusing to read that learned men like Aristotle advanced such weird theories about the habits of wildlife.

Somehow, the bi-annual migration of the various flocks impresses me as being governed by a force greater than man, and I have attempted to express this feeling in a feeble way, through the following poem.

MIGRATION OF WILDFOWL

Often I wonder how they know
Just when to flee from ice and snow,
And then again when time is best
To soar back home and build their nest.

Sure our Creator must reveal
Both to the mallard and the teal
Such time apart each fall and spring
When day is nearing to take wing.

Does he chart their flight as rills flow,
From upland hill to delta shore;
Then teach them how to fly a beam
And course air lanes from stream to stream?

How can they find their grit and grain
When fog and mist hide all terrain;
Have they a sense unknown to man
Which guides their way o'er sea and land?

And still I ponder and know not
Such ways of nature or her lot
Then humbly pray that we mere men
Were near to God as our feathered friend.

MEYER L. WILE
1450 West Arlington
Fort Worth, Texas

Dear Editors:

An old fisherman never dies,
He just lies, and lies, and lies.

EUGENE SHERROD,
SEYMOUR ROAD,
WICHITA FALLS, TEXAS

Dear Editors:

Could you give me any information or literature about deer shedding their antlers every year after the deer becomes a certain age? We have had quite a bit of controversy over this subject, and I would appreciate any light you could throw on the subject.

ALLAN SCHROEDER
49 Jenkins St.
Houston 3, Texas

(Deer normally shed their antlers each year at the close of the breeding season. Most antlers are dropped during the

months of January, February, and March. New antlers begin to appear shortly thereafter and by mid-summer grow to full size in the fleshy, velvet stage. Between then and November, the beginning of the breeding period, the antler hardens and the velvety covering is rubbed off. The sites for this rubbing are referred to as deer scrapes.

A 1950 buck fawn, born in June, would grow his first set of antlers in the spring of 1951. The size, shape and points of these first antlers, and subsequent antlers, is controlled by the physical condition of the deer, with the number of points having no relation to age.

Bucks that have lost their virility, through an accident or from old age, may not shed their antlers annually. Antlers on such deer generally remain in a rough and often contorted velvet stage. E. G. Marsh, Assistant Director, Division of Wildlife Restoration.)

Dear Editors:

Today was the first time I had an opportunity to see and read one of your magazines. I like the magazine TEXAS GAME AND FISH so well that I am enclosing a money order for a five-year subscription.

It will be a wonderful magazine to use in my biology classes, especially, the Unit on Conservation of Our Natural Resources.

LEE B. MUENZLER,
Head, Science Department
Gonzales High Schools,
Gonzales, Texas

Dear Editors:

I am enclosing one dollar for the renewal of my magazine; I appreciate it more than any other I read. If all the people of this state would read this magazine, it would make them respect our game laws.

W. E. FAULK,
Trinidad, Texas.

Dear Editors:

Please accept my renewal to the "Biggest Little Book" on the press. I get many hours of enjoyment from each and every copy. I personally do not see how you can publish such a fine magazine for so little.

EUGENE SMILEY,
640 Liberty Ave.,
Port Arthur, Texas.

(Actually, your dollar only helps to pay a small part of the cost of publishing TEXAS GAME AND FISH. It is made available to you at this price as a part of the Game Commission's conservation education program.—The Editors.)

In his fishing endeavors with his son there should be some attempt at making it more than just a journey. A lunch which both of them can share, man to man, is a wonderful way by which a child gains the type of ego recognition that any happy and healthy youngster needs. Every father is a hero in his son's eyes. The more time he spends with his boy in friendly companionship, the greater hero he will be. Every boy needs this element of hero worship in his youth but far too often many of us do not care to provide such situations for our children. When they are youngsters, it is the best thing that we could ever provide for them, for wholesome spiritual and emotional growth.

I can remember my early days as a boy. Having been fortunate enough to have the type of a father who provided my brother and me with this significant experience, I can see in retrospect how badly it is needed by every boy. Childhood days are the days when the greatest amount is learned because it is all so new and it is important to learn it correctly, with wholesome and optimistic attitudes towards life. In later life, impressions are not so vivid because the world no longer is so large, so new, so amazing, and probably for too many who have already set a rigid pattern of living, not nearly so interesting.

Now, why, we might ask ourselves, should we provide this type of recreational learning for our children:

1. Because through this warm human companionship we provide our children with the affection that all human beings need to become happy adults.

2. Because we teach them something which can't be as readily taught elsewhere, nor under as exceptional wholesome conditions.

3. Because correct teaching within the family unit is the best preventive medicine that we can ever provide in the conservational field. If the child learns correctly from youth because of satisfying experiences with his father or elders within the family, he is much less apt to be any type of a

problem to the conservationist in later years. Preventive medicine is not so much right when we punish the wrongdoer for doing wrong but in going further to the situation in which we provide adequate opportunities to interest more youngsters in doing right.

Let's conserve our human resources, then, by providing adequate, wholesome and emotionally satisfying experiences for our children in nature so that they may grow with the correct attitudes to continue the work which so many concerned people have already begun. For it is imperative that we of our generation not only leave the heritage of excellent natural resources among our wildlife and excellent means of conservation for our land, but that we also leave among our children correct knowledge and attitudes. With these the children will know how to get the best out of their lives in happiness and enjoyment of living, besides continuing that which we passed on to them. It is important for us to individually teach them in our families all those simple elements of good wholesome living that are so badly needed. Then when they venture into the treasure chest of the outdoors we shall be safe in the knowledge that what they do will be right.

In closing we must take on a few added words of warning. Society is full of problem cases now, and many of them would not have existed if they would have had more satisfying human emotional experiences as between parent and child. It is environment in all its ramifications which may cause emotional shocks in life resulting in anti-social action. It is up to us all therefore, to provide wholesome environments for our children in order to insure against this.

What then, could be more wholesome than the outdoors, properly presented?

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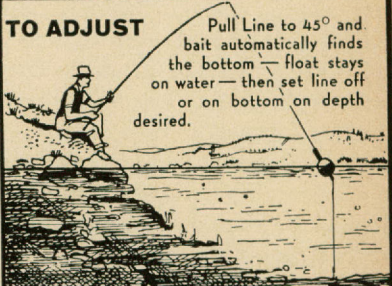
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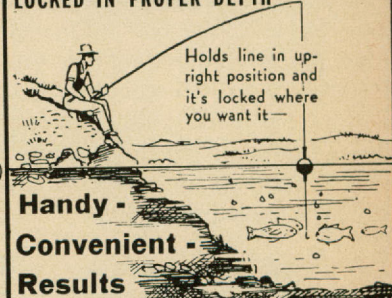
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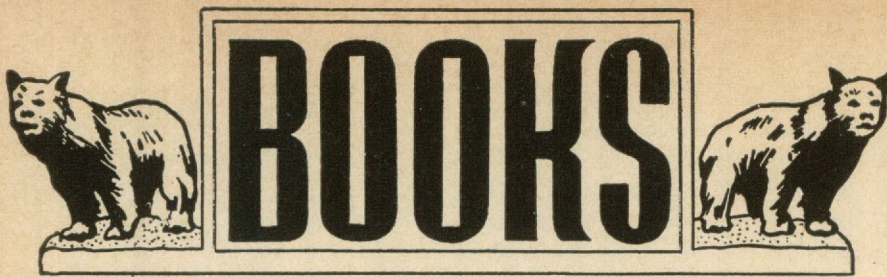


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BOOKS

TREE CROPS, by J. Russell Smith. 408 x pages. Illustrated with 137 half-tones and numerous tables. Published by the Devin-Adair Company, 23 and 25 East 26th Street, New York 10, New York; 1950. Price \$6.00.

This challenging volume could, a century or so from now, be looked back upon as the book that revolutionized agriculture in America. Whether or not that will be the case will depend largely upon whether Americans, as a people, can change fixed habits passed on from earlier generations. Dr. Smith's philosophy is as logical as it is clearly stated. He contends that an agricultural economy based almost entirely upon annual crops such as corn and wheat is wasteful, destructive of soil fertility, and completely illogical. In the attempts to improve strains of corn, wheat, oats and other field crops, agriculturalists have completely overlooked the abundant food produced by such trees as the oaks, honey locust, persimmon, walnut, and other trees which, he contends, can outproduce, acre for acre, the best efforts of the grass family on most lands in formerly forested areas. Moreover, tree crops require less care, bind and improve instead of depleting the soil, and provide a permanent source of income which increases annually.

Although Dr. Smith recognizes clearly the conservatism of the American public in adopting new foods, he points out the nutritional value of many fruits which could profitably be used for human consumption if prejudices could be overcome. The book is based primarily, however, upon growing trees to provide food for livestock. In this respect, he makes some startling comparisons.

The average annual yield of corn in the Appalachian Mountains, for instance, is approximately 1,100 pounds per acre. The yield of chestnut orchards in the mountains of Europe is approximately the same. The chest-

nuts, however, yield year in and year out for centuries. Corn "burns out" the soil so rapidly that crops on most soils either cannot be planted every third year or the land must be retired from cultivation after 11 years. The food value and palatability of the chestnut to livestock are comparable to those of corn.

The chestnut is only one of hundreds of tree crops which could be employed by American farmers for producing food for livestock and humans.

Dr. Smith, who has studied nut-producing trees around the world for the past 50 years, writes with authority in a delightfully down-to-earth style. As Emeritus Professor of Economics Geography at Columbia University, he has analyzed and appraised agricultural practices from Indiana to the Orient. His findings are outlined in this book. "The great question," he says, "is, how can we shift from the grain type of agriculture and ruin to the permanent tree agriculture in those localities where the change is needed to save the land from destruction?" His answers make interest-

ing and thought-provoking reading matter.

DICTIONARY OF FISHES by Rube Allyn. 108 pages. Illustrated with four full-color plates and more than 500 drawings. Published by the Great Outdoors Association, Pier 63, Central Basin, St. Petersburg, Florida; 1951 (second edition). Price \$3.00.

For the angler who fishes unfamiliar waters, a book of this kind is a handy addition to the library. It contains brief illustrated descriptions of nearly all fish found in North America. If an unfamiliar specimen is caught, all one needs to do is thumb through the pages until the proper illustration is found.

Because of the scope of the material covered, the details on any one species are not as complete as they might have been if more space had been available. More information on the range and habitat of the various species covered would prove helpful in identification even if this addition had to be made at the expense of omitting descriptions of the deep ocean fish or some of the exceedingly rare species which are practically never encountered by the fisherman.

The artist, Maggie May, has used a number of different techniques in the numerous black-and-white illustrations. The drawings throughout are diagnostic, but the wash technique.

The book is attractively bound, of generous size, and should prove valuable to any fisherman who lacks a good fish identification guide. More species are illustrated in this volume than in any other non-technical book on fishes with which this reviewer is familiar.

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Let's Go Fishin'

Not long ago a member of the Commission staff was preparing for a luncheon club address, and recalled the standard description of Game Department operations.

He would tell what happens to the sportsmen's license dollar. He would describe the new wildlife experimental projects designed to enhance hunting and fishing; and relate the Commission's law enforcement program, with infusion of new warden blood into stimulating respect for the game and fish code.

He would brief the meeting on the vital resource-use education program which is cultivating grass roots of conservation through the schools; he would outline game propagation and fish hatchery production progress, and go on to tell how deer and turkey are transplanted from saturated areas to depleted areas.

He would picture the Game Department's growing responsibilities under the broadening regulatory power acts by which wildlife biologists apply scientific methods toward conserving and restoring game species.

That was the standard approach; the factual approach.

But at the meeting place, an old friend blurted; "How about throwing away your script and telling us how to catch a fish?"

He did just that, to the best of his ability and found his audience unusually responsive. And promptly decided to sell his colleagues on adopting the old fishin' hole as a short cut to reducing pressure from the work-a-day world. . . .

Naturally, the Commission cannot provide the personal service of one public-relations minded Game Warden who tells the folks how to raise angle worms and even carries along a sample of his own breed.

But it can reduce some of the high-level phraseology to the layman's level. This it proposes to do beginning in the August issue of TEXAS GAME AND FISH on: "How to Fish!"

If any of you subscribers want to beat the experts to the punch and tell how it's done, your letters will be gladly received by the "Letters" column of this magazine.

Jay Vessels,
Assistant Director of the
Department of Publications

CONSERVATION



THE POINTER IS PROBABLY THE MOST COMMONLY KNOWN OF THE HUNTING DOGS. BECAUSE OF THE SHORTNESS OF HIS COAT, HE IS USUALLY BETTER ADAPTED TO HOT WEATHER AND ARID TERRAIN AND IS LESS SUSCEPTIBLE TO BURRS. AS A RULE THE POINTER IS A DOG OF RUGGED CONSTITUTION IN WHICH THE DESIRE TO HUNT AND THE POINTING INSTINCT ARE DEEPLY INGRAINED.

