

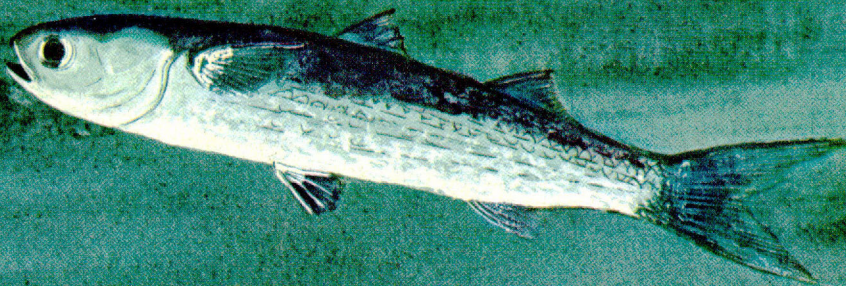
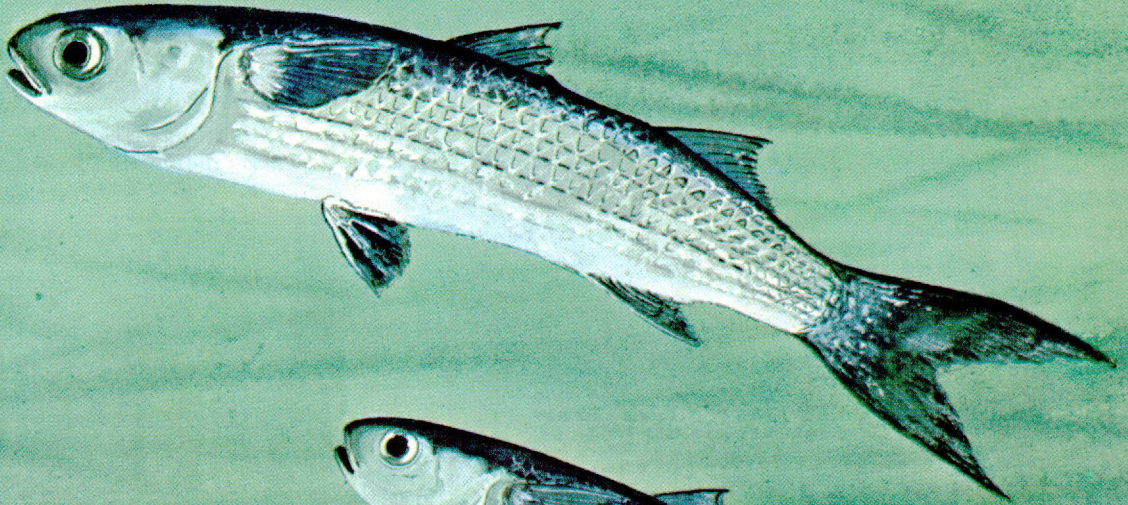
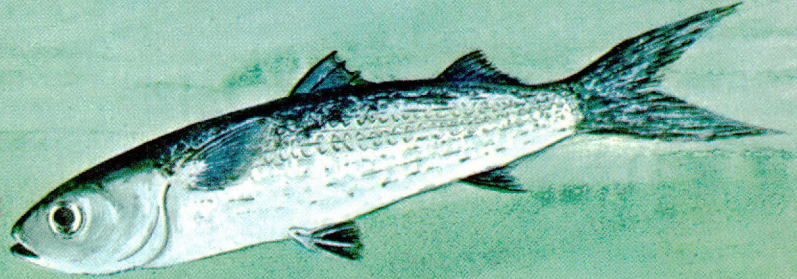
# Texas Game and Fish

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Hunters shivered the last few days  
of the Black Gap Area public hunt.

*Photo by Curtis Carpenter*



BLACK GAP WILDLIFE  
MANAGEMENT AREA

TEXAS GAME AND  
FISH COMMISSION  
FEDERAL AID PROJECT



**PICK YOUR POISON:** There are such things as target-specific pesticides. The new discovery, Mirex, is one. This is a corn cob grit-crude soybean oil-mirex mixture which apparently is harmless to just about everything except fire ants and which is now being used almost exclusively in the massive, USDA-sponsored fire ant control program in the Southeast. The slaughter of pets, livestock, fish and wildlife in the South due to the use of dieldrin and heptachlor during the first years of the fire ant program was unnecessary. The public should insist that target-specific, short-life pesticides be substituted for poisons that kill everything, permanently.

**POLLUTION SOLUTION:** Twenty thousand schools, colleges and universities are currently receiving from the U.S. Office of Education a brochure on the threat of water pollution throughout the country. This is the first in a series prepared for teachers discussing today's health problems. This booklet, "The Struggle for Clean Water," may be bought for 15c from the Superintendent of Documents, U.S. Govt. Printing Office, Washington 25, D.C. (PHS Publication No. 958.) The foreword points out that water pollution is a major threat to our present welfare and will inevitably concern young people in the future. This guide explains the problem of pollution, and the need for clean water, and discusses what can be done about it by cooperative action in the community.

**EAGLE TURNS LEGAL:** The golden eagle has come under federal protection with amendment of the "Bald Eagle Act." Where one is known to be damaging agricultural interests, the rancher may apply to the Governor of his state for permission to take the bird causing damage. The Governor in turn must apply to the Secretary of the Interior and obtain permission before any golden eagle may be legally destroyed.

**FISH HEROES:** Scientists have discovered that fish, when injured, use a chemical alarm system to warn other fish to stay away from them. The system is based on the highly sensitive sense of smell which fish are said to have. A research team reported that the chemical signals are precise in saltwater fish. Injured fish are special prey for predators, and they warn other fish to keep away, lest they also become prey.

**DESIGNS ON SEA LIONS:** For the first time, professional hunters have been hired by the Department of Fisheries in an attempt to reduce the depredations of sea lions in important fishing areas along the British Columbia coast. For years sports fishermen have complained and sea lions have always plagued the gill net and troll fisheries in better fishing areas. The total population of sea lions in waters adjacent to British Columbia is estimated at 7,000 to 8,000 animals.

**SKIN CARE:** Full benefit and enjoyment may be had from your deer if you use every scrap of meat for table fare and save the hide for a garment. Buckskin or elkhide garments wear for 10 years or more. When skinning the animal, one should use the knife no more than necessary. Pull the hide off the animal as much as possible, beginning at the head and pulling downward. Thin spots in the leather will result from cutting the hide off. To preserve the hide, spread the skin out flat, flesh side up; cover with two pounds of salt. Allow to dry overnight, then fold the edges in and roll the hide into a bundle, salt and all. The hide will stiffen in time, but salted as described, it will keep and still be suitable for tanning two or three years later. Don't use iodized salt. The iodine will turn the hide pink and ruin it.

**\$\$\$ FOR SCREWWORMS:** The screwworm eradication program will come to a halt if funds for its operation are not raised. Some million dollars are needed toward a goal of \$3 million, to carry the eradication effort to completion. The eradication program is being financed by agreement between the Southwest Animal Health Research Foundation and the Federal Government, with the government matching non-federal funds on a fifty-fifty basis. It will take at least \$12 million to eradicate screwworms from the Southwest.

# Texas Game and Fish

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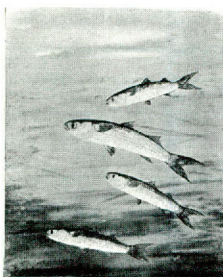
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## The Cover



Mullet, though they are far inferior in popularity to the game fish kings, are important in the ecology of Texas' coastal waters. Because of this, they attract to the fisherman's hook the arrogant game fishes including sailfish, tarpon, large redfish and trout.

Painting by Sandra Pounds Leary.

OFFICIAL MAGAZINE OF THE GAME AND FISH COMMISSION DEDICATED TO PROTECTION AND CONSERVATION OF NATURAL RESOURCES; AND TO IMPROVEMENT OF HUNTING AND FISHING IN TEXAS.

FEBRUARY, 1963

Vol. XXI, No. 2

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# Shared Responsibility

**I**F ONE PERSON were charged with the guarding and caring for the last deer herd on earth, he would have a great responsibility. He couldn't relax in his efforts if his objectives were to manage this herd and restore deer in surrounding areas as the surplus became available. All sportsmen in the world would watch his every move with much concern. Undoubtedly, this caretaker of the world's only deer herd would get reams of advice from those who watched.

Some of this advice would be useful, but much of it would be based on speculation and imagination. The man who watched over the deer would know that if he made one mistake he had everything to lose and nothing to gain; he would be very careful to study a condition well before acting.

The Game and Fish Commission is a team, one body, made up of people who have been trained academically and by experience to manage and care for the only wildlife Texas has. Everyone who is interested in the outdoors in this state is looking on and many offer advice—all of it is helpful, and some of it is very useful. Those charged with the management of this wildlife must carefully study all possibilities before taking action. Progress until now is good. With your continued help it will improve in 1963.

The objectives of your Game and Fish Commission are many and varied. The major one is to provide the best possible hunting and fishing for the greatest number of people. This means that there is always the effort to improve hunting and fishing conditions in the face of an increasing population and decreasing land area for wildlife.

The product of the Commission is good wildlife management. Before this product can be used, it must be sold to the citizens of this state. Without their understanding and confidence, those people entrusted with the care of wildlife cannot do the job as well as they would like to.

In wildlife management, there is little room for individualists. Every citizen, whether he is a professional conservationist or an amateur naturalist, must respect the rights and loves of others. And each individual can serve himself and others only by playing well his position on the team or in the rooting section.

Together the professional workers and interested citizens can lick any wildlife management, restoration or conservation problem that may be encountered in 1963 and in the years to come. The employees and commissioners of the Game and Fish Commission pledge to work with you and for you this year. We'll do our best to do the best job for you. You can help by keeping yourselves well informed on the needs of wildlife in your area and by pledging your interest and support to its protection and care. \*\*

HOWARD D. DODGEN  
Executive Secretary  
Game and Fish Commission



Photo by Scott Moore

The night before the hunt expectations are high and campfire tales of past bucks are wild.

**T**HE MOST noticeable trend in Texas' public hunts is the steady increase in the number of hunters applying for the hunts each year. The first public deer hunt was held on the Kerr Management Area in 1954. It was just the beginning of something which has grown far beyond the expectations of most Texans. The following year, 1955, two more management areas were opened to deer hunting and one was opened for a small quail hunt.

The first multiple area hunt of '55 included the Kerr, the Black Gap and the Engeling areas. When the applications were tallied, 3,337 citizens had applied for a chance to hunt on one of the areas. Three years later in 1958, hunts were held on five areas and the number of applicants had climbed to 12,857. In 1961, 17,450 Texas hunters applied for a chance to hunt deer on one of the five wildlife management areas.

This past season, a new record was established when 21,208 applications for deer hunting were received for the public drawing. This is a fantastic 17,871 more applications than were received in 1955, just seven years earlier. This is an average increase of 2,553 applications per year. At this rate, by 1972, nearly 50,000 persons will be applying for a chance to get on one of the five areas now open for deer hunting.

In 1955, 831 applicants received permits to hunt deer on the three areas open at that time. By 1958, two more areas had been opened to public hunting, and 1,523 permits were issued. The trend in increasing applications was being matched with an increase in permits being issued each year. By 1961, 2,136 permits were issued and then it began to level off. This past season, 2,201 permits were issued, indicating that a peak may have been reached in the number of deer that can be harvested on the five areas.

In proportion to the increase in applications and permits, the number of deer killed showed an increase until 1961 when it began to level off. The desired kill for 1955 was about 300 deer for three areas. In 1958, biologists hoped that hunters would harvest 663 deer from five areas. By 1961, 825 deer needed to be removed from the areas, and last year the number of excess deer dropped back to 735. A slight fluctuation can be expected because of changing conditions from year to year.

In 1958 the number of deer killed by hunters on the five areas reached the 350 mark. By 1961 it was 704, and this past season hunters removed 690 deer. The hunter success was 31.56 per cent for 1958, 44.6 per cent for 1961 and 42.72 per cent for 1962.

The only figure which continues to climb at a rapid pace is the num-



One more lace and he's ready for camp coffee.

ber of people applying for the management area hunts. Since only so many deer can be removed from each area in a given year, the number of permits must reach a peak and the same thing holds true for the number of surplus deer which can be removed each year.

Hunting on the Game and Fish Commission's experimental demonstration areas as a means of removing extra deer was authorized by the Commissioners in the early 1950's.

Hunting on these areas has demonstrated well the fact that a given area can provide food and cover for a specific number of deer and no more. And, when this number of deer is reached, healthy populations can be maintained if the surplus deer are removed. Instead of the populations decreasing as some might have suspected at first, the

# Playback on the Public Hunts

by CURTIS CARPENTER



A prize like this is worth the effort.



Deer bagged and field dressed, the men are ready to swap adventures before the trip home.

populations have increased until in the past few years a fairly consistent number of deer are being harvested and used by hunters each year.

This harvest is a necessary part of the total management program being carried out on each area. Other areas, such as the Matador in Cottle County and the Gene Howe in the Panhandle, have been opened

to quail hunting. The Angelina and Engeling areas are sites each year for some outstanding squirrel hunts as well as deer harvest. Whatever the species, the surplus must be removed. Game and fish cannot be stockpiled.

A complete breakdown of the management area hunts this past season is shown in the accompanying chart. \*\*

## SUMMARY 1962 PUBLIC DEER HUNTS

Name of Area	Applicants	Permits Issued	Hunters Reporting	Number of Days	Desired Kill	KILL			Per Cent Hunter Success
						Antlered	Antlerless	Other	
Black Gap	5,256	501	384	2	190	86	103	44	49.21
						189		Javelina	
Kerr	6,478	400	316	2	200	90	106	---	62.02
						196			
Engeling	5,069	360	267	2	100	42	101	---	53.55
						143			
Sierra Diablo	1,075	103	77	2	45	28	27	---	71.42
						55			
Gene Howe	548	32	17	2	25	6	0	1	35.29
						6		Turkey	
Angelina	2,782	805	554	1	175	46	55	---	18.23
						101			
<b>TOTAL</b>	<b>21,208</b>	<b>2,201</b>	<b>1,615</b>	<b>---</b>	<b>735</b>	<b>298</b>	<b>392</b>	<b>---</b>	<b>42.72</b>
						690			

### PUBLIC SQUIRREL HUNTS

Engeling .... 50 Permits Issued .... 43 Hunters Reporting .... 278 Killed .... 6.47 Kill per Hunter  
 Angelina .... 850 Permits Issued .... 639 Hunters Reporting .... 1,229 Killed .... 1.92 Kill per Hunter

# Game Guardians

by J. B. PHILLIPS  
Coordinator Law Enforcement

**T**ODAY'S game and fish law enforcement officer is a versatile man, whose duties include many activities besides writing citations. The modern concept of law enforcement emphasizes the prevention of violations as well as apprehension of violators. To perform his myriad conservation duties, the officer must be well trained in facts and methods. The Game and Fish Commission carefully selects each candidate and trains him thoroughly before he goes into the field as a qualified law enforcement officer.

### Selection

The first step in selecting a trainee for the enforcement function is taken by each prospective officer. An application form, which may be obtained from the office of the Personnel Director, Texas Game and Fish Commission, Austin, must be completed and returned to the personnel office. This application contains basic information such as name, address, age, marital status, physical description, past employment record, educational background and record of military service. A photograph must be attached to the application.

Applications for employment are screened by the personnel office according to minimum acceptable standards set by the Game and Fish Commission.

According to these standards, an

applicant must be (1) male, at least 21 years of age and less than 40 years of age on the date of appointment as a trainee; (2) in sound physical condition; (3) a bona fide graduate of an accredited high school; a certificate of equivalency is not acceptable. Completion of at least 15 hours of college work with a C average is acceptable in lieu of a high school diploma.

(4) A citizen of the United States and a resident of the State of Texas for at least one year immediately preceding the date of application, unless a resident applicant has been out of the State because of military service during this period; (5) of good moral character and habits; he will be investigated as to the truth of statements made in his application and during interviews, as well as to his character, habits, previous employment and other background material necessary to establish his qualifications.

(6) Willing to accept assignment anywhere in the State of Texas. Assignments will be made in the best interest of the Commission.

Candidates who do not meet these standards are notified by mail. Those who meet the minimum requirements are invited to take a series of competitive examinations, both written and oral, either at regional headquarters sites or in centrally located cities that will serve a number of

applicants. Candidates indicate the city in which they prefer to take the examination when the applications are submitted. Dates are set by the Commission.

Written tests, requiring an hour, are used to determine the general mental ability of the candidate. An interview team including three or more supervisory personnel of the Enforcement Function and Personnel Office, tests the applicant for general knowledge and aptitude for duties in the enforcement field. Interviews are from 20 to 30 minutes long, and a written evaluation of the candidate is made by each interviewer. To qualify, each applicant must complete and obtain a satisfactory score on the written examination and on the interview.

The next step is a background investigation of the applicant. This investigation is conducted in the region where the candidate lives by supervisory personnel. Previous employers are contacted, sheriff and police offices are checked for any law violations, citizens in the area are contacted and a visit is made to the candidate's home. A written report is submitted by the investigator through channels to the Personnel Director. This report includes the opinion of the investigator and his recommendations as to the capabilities of the applicant and his future value to the department.

Results of the examinations and investigation are correlated and scored by the Personnel Director. Each record is carefully examined by a selection committee composed of the Personnel Director, Law Enforcement Coordinator and one other member of the headquarters staff. The selection committee recommends the best qualified applicants to the Executive Secretary for appointment.



Instructor shows trainee proper method of checking hunters afield.



This competitive method of selection was first employed in 1961 when 325 men were examined and 40 trainees were selected. In June of 1962, 293 applicants were tested and 30 men were selected.

### Training

Candidates selected for law enforcement training report Sept. 1 for a 10-day pre-service training and orientation session. Actual per diem and a beginning salary of \$291 per month, which will continue until he enters the Game Warden School at Texas A & M College, are paid the trainee at this session. Upon entering the school, the trainee's tuition and registration fees are paid and his salary continues as before, but no per diem is paid during this period.

This first training moves at a fast pace. A typical day's schedule is as follows:

- 6 - 6:30 a.m.—physical education
- 8 a.m. - 12 noon—lecture periods—basic law
- 1 - 5 p.m.—departmental procedures, records and reporting
- 7 - 9 p.m.—field problems.

These men are under close supervision of the Training Officer and three District Chiefs assigned as instructors during this 10-day period.

At the conclusion of this session, trainees are assigned to wildlife biologist project leaders in the field for further study and work in census methods and other management procedures. This training continues until Nov. 1 during which time the men are under direct supervision of the project leader to whom they are assigned.

On Nov. 1, trainees are assigned to conservation officers in the five regions and receive their law enforcement commissions. These men travel with the conservation officer to whom they are assigned, observing different phases of enforcement work during a time when most seasons are open and the workload is at its peak. The trainees may be used for limited work, but they are always under the direct supervision of the conservation officer to whom they are assigned.



Instructor explains illegal apparatus and operations that trainees probably will encounter.

Valuable experience is gained by the trainee during this period; the on-the-job training and instruction from the seasoned conservation officer make the classroom lectures that come later much more interesting and understandable.

On January 1, the recruits are placed with Inland Fisheries and Coastal Fisheries Project Leaders for training in that phase of Commission work. Some will assist with the drum fish program on the coast, others will be assigned to hatcheries to observe and assist and a limited number will be assigned for training and work on Inland Fisheries projects.

The trainees continue in these capacities until the last week in January, at which time they report to Texas A & M College for the warden school. The first week's instruction consists of physical education and Civil Defense training.

At the beginning of the regular

school term, trainees register for a beginning and an advanced course in wildlife management, fish conservation and management, public speaking, first aid and physical education. These are regular college courses taught by staff instructors of Texas A & M College. The program presented by the college is, by most standards, a full-time course of study. For game warden trainees, it is only a portion of their activities at Texas A & M.

Two District Conservation Chiefs serve as instructors in law, records and reports and the practical application of this subject. In addition, trainees receive instruction from experts in the field of firearms, driver education, boat operation, patrol methods, preservation of evidence, court procedures and pollution control.

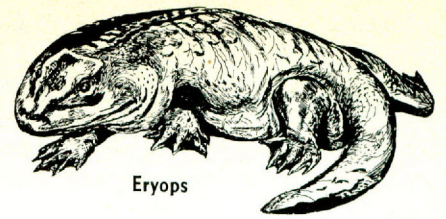
To give the trainees an understand-

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# Far back Fauna

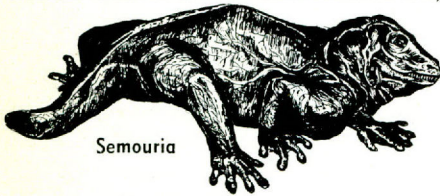
by C. C. REEVES, JR.

Art by ROSEMARY REEVES



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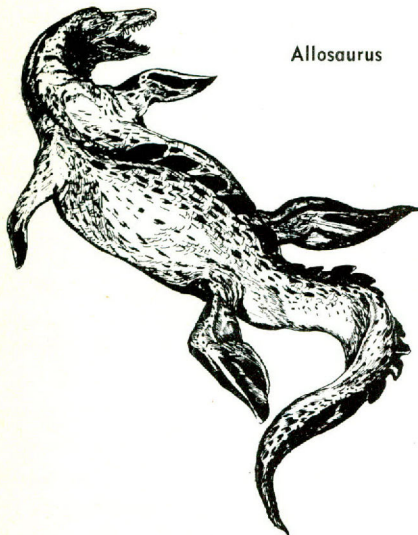
**M**OST PEOPLE are dinosaur conscious because of publicity perpetuated by Hollywood movies, oil companies and newspaper and TV comics, yet few realize that the dinosaurs represent only one small group of animals that once lived in the rather dim past. For instance, most people have heard that the great grizzly bear once roamed Southwest Texas, the antelope grazed the Llano Estacado, the black bear beat the East Texas thickets and elk,



Seymouria

bighorn sheep and buffalo enjoyed the solitude of various locations, but few people know that great 50-foot "crocodiles" once lived in the Trans-Pecos or that 30-foot sea monsters terrorized the seas of southern Texas.

This type of reminiscing may chagrin the hunting fraternity; however, records do indicate that prehistoric "big game" of Texas far preceded the advent of man. A look at this prehistoric "big game" is awesome. Although these early animals are not directly or genetically related to present game species, they are, nevertheless, ancestral predecessors of



Allosaurus

modern Texas game. An educated understanding of present and possible future wildlife trends is best gained by such hindsight into wild-life history.

Primeval life in Texas, in the form of small bivalves, first appeared 400-500 million years ago, but it was only about 210 million years ago, in what geologists call the Permian Period, that the reptiles and amphibians for which Texas is best known, suddenly appeared.

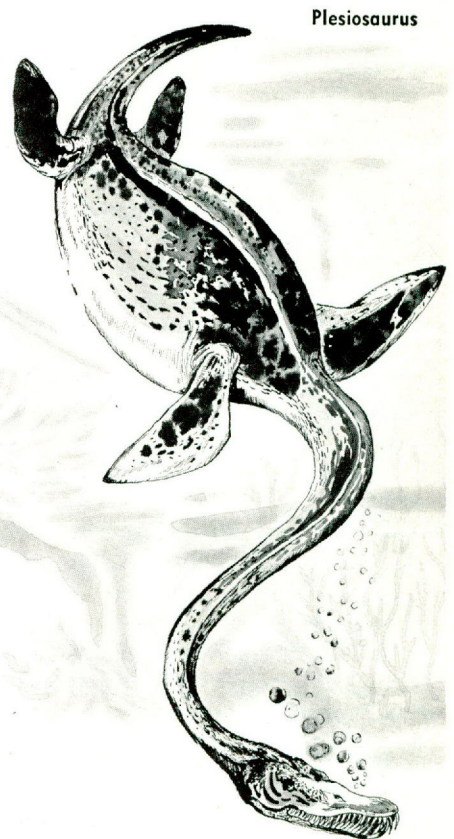
Although Permian amphibians of Texas were primitive, they were highly specialized. All were characterized by long tails, rather heavy bodies and short stubby legs. Typical of these was *Eryops* whose remains have been found throughout northwestern Texas. *Eryops*, only about five feet long and two and one-half feet wide, represents about the maximum development of the amphibians. The wide mouth, high-set eyes, webbed feet and heavy low-slung body indicate that *Eryops* probably spent most of his time flopping in the red mud flats of Permian streams not too unlike the present Red River, or cruising, crocodile-like, through the murky waters.

The Permian reptiles of Texas are perhaps best illustrated by *Seymouria*. Named for Seymour, Texas, it was only about half the size of *Eryops* and had somewhat different body features. The head was proportionally smaller and the legs proportionally longer, yet the heavy, low-slung body form with heavy tail persisted. The presence of short, singular teeth points out that *Seymouria* was carnivorous while the absence of webs on the feet indicates adaptation to a terrestrial environment.

*Seymouria*, which lived throughout north and north central Texas, built their nests and laid their eggs on dry land. Since amphibians must lay their eggs in water, *Seymouria* may be considered a confusing amphibian-

reptile combination which well illustrates the reptilian's amphibian ancestry.

Almost immediately Texas and, of course, other areas, were overrun by the hordes of rapidly evolving reptiles, so much so that the following Mesozoic Era of geologic time is everywhere known as the "Age of Reptiles." Many of Texas' reptiles, attempting to adapt to growing competition, were distinguished by long-



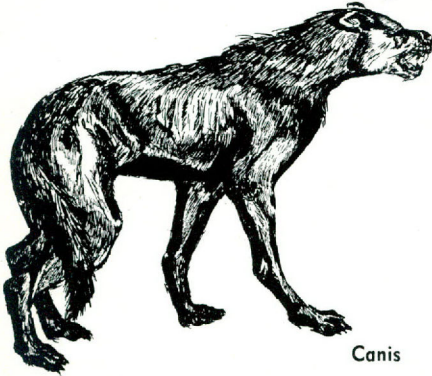
Plesiosaurus

er legs (for greater speed), a tall dorsal fin (possibly for balance) and a mouth full of sharp teeth.

*Dimetrodon*, which lived in north central Texas, was a 6-foot, carnivorous fin-back which, with larger legs which carried the body off the ground, was undoubtedly much more vivacious than *Seymouria*. With its six-foot length, three-foot "sail," and mouth full of double-sized teeth,

*Dimetrodon* was at the time "king of beasts."

Apparently not content with gaining control of the Texas landscape, the reptiles took to the sea. Plesiosaurs, which were probably the original sea monsters, had a short streamlined body, four powerful flippers and a long snaky neck. Plesiosaurs 20-30 feet long once terrorized the seas of southern Texas as they fed on small fishes and ancient squid;



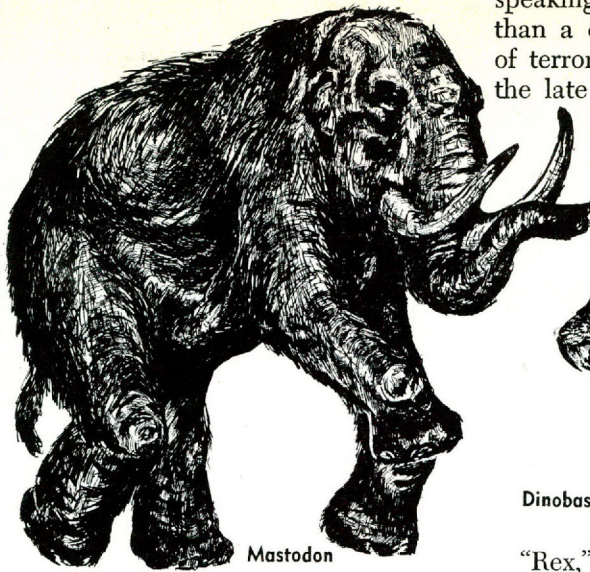
Canis

to the north in Kansas 50-footers held sway. Although undoubtedly a gigantic, vicious demon of the deep with highly specialized limbs for swimming, the plesiosaurs rapidly disappeared.

At about the time plesiosaurs reached their climax a new form of terror, the mosasaurs, appeared in the seas of southern and north central Texas. The mosasaurs, or marine lizards, had a long thin body, small head and a tail used for swimming, thus best characterizing the "sea serpents." Their scaly skin and great lower jaw, which had three extra joints to permit swallowing large prey, are features identical to present serpents.

Along the shallow mud banks and in the clam infested rivers of Texas some 200 million years ago, scurried the phytosaurs. The phytosaurs, about 10-12 feet long, but often up to 25 feet in parts of western Texas, closely resembled modern crocodiles, yet there is no apparent genetic connection. The phytosaurs, with their webbed feet, long tail and long narrow snout filled with sharp teeth merely served as nature's warning of the terrible crocodiles to come.

The prehistoric crocodiles and alligators are naturally of particular interest since they have persisted, with little change, to the present. Crocodiles, the older of the two, were



Mastodon

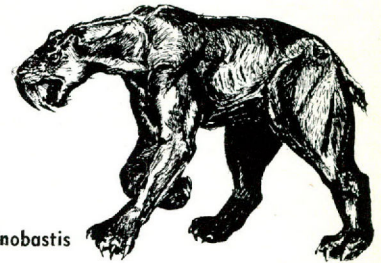
not habitually unlike present individuals: they were fiercely carnivorous but undoubtedly spent most of the day in the stream shallows or sprawling on the adjacent mud banks. However, physiologically the Texas crocodiles, and particularly those of the Trans-Pecos area, were much different: specimens up to 50 feet long with gigantic, almost unbelievable six-foot skulls and four, six inch teeth were common.

Culmination of the Mesozoic reptilian "big game" hordes of Texas took place in the dinosaurs. Although characteristically pictured as gigantic flesh eating monsters, many dinosaurs were unmistakably vegetarian and no longer than the family hound. Following is an examination of a few of the dinosaurs, particularly those that once roamed Texas, to see what a Mesozoic hunter (had there been one!) would have faced.

Dinosaurs could be divided on the basis of size, mode of movement (bipedal or quadrupedal) or preferred environment, but scientific division into only two zoological orders rests on structure of the hip bones. Only the Saurischia dinosaurs, with the normal reptile pelvis, are considered here.

The best known Saurischia dinosaur of Texas is *Tyrannosaurus rex*. "Rex," as he is affectionately known, evolved from *Allosaurus* who, during the middle part of Mesozoic time was the greatest carnivorous beast the Trans-Pecos and southwestern parts of Texas had yet seen. Yet within a very short time, geologically

speaking, in what was nothing more than a culmination of development of terror, we find "Rex" dominating the late Mesozoic landscape.



Dinobastis

"Rex," with his 50-foot length, 9-ton weight and terrific armament, is often termed the "king of dinosaurs"; without a doubt he was the strongest and most feared of all the 'saur. The reptilian pelvis expanded to accommodate gigantic, muscular rear legs as the front legs shortened into stevedore-like claws which were used for hooking and holding victims. The head expanded as the mouth increased its gape and the jaws increased their muscular development.

Although "Rex" was the terror of Texas, he was by no means the largest 'saur. *Brontosaurus*, who was up to 85 feet long and probably weighed 50 tons, was herbivorous and quadrupedal; thus he was no match for "Rex." Even so *Brontosaurus* prospered for some 30-35 million years in the shallow lakes, swamps and rivers of central and southwestern Texas.

About 50-70 million years ago a "great dying" took place whereby the dinosaurs, as well as a great many other species, became extinct.

At last the terrible "Age of Reptiles," which had lasted some 160 million years, gave way to the Cenozoic "Age of Mammals." The mammals, animals that are born alive, initially reared by the female, air-breathing, warm-blooded and the parent stock of all mankind, were well distributed throughout Texas.

One of the most interesting of the early mammals of Texas was *Glyptodon*. Nothing more than a gigantic armadillo (but with a solid shell), *Glyptodon* had a huge bony tail

• Continued on Page 27



Scott and Steve with their mother, Mrs. Monroe, find plenty of geodes along the rocky banks of the Guadalupe River.

were the same height as the river above the falls, were a few scattered tracks. This is where our real adventure began.

As we tried to brush dirt from a track, a little half ball-like bunch of crystals was exposed. As our oldest son Andy, 14, took his knife to pry out the crystals he said, "Looks like half of a geode." There was a vein-like extension to the knob of crystals. "Could have been a bone of some prehistoric animal," he explained. "Maybe a dinosaur." He had studied rocks and minerals at school more extensively than Steve, 12, and Scott,

**O**NE beautiful afternoon we were in an exploring mood so decided to look for some dinosaur tracks, which, according to rumor, lay in Kerr County. Our three boys like adventure, especially when it is a family affair. We knew the tracks were somewhere on the North or South Fork of the Guadalupe River. These two forks converge near the small community of Hunt. That was to be our starting point.

Leaving our car by a low-water crossing, we worked our way down to the river's edge. The wide shallow South Fork Guadalupe River ran over a solid rock bed, pockmarked (we later learned) with dinosaur tracks. On the rock banks we found a few tracks, some plain, others just a hint. Then abruptly we came upon a marvelous section of rock. A section about 40 or 50 feet long and 15 or 20 feet across—with perfect imprints of several three-toed animals with long tails. It appeared they had walked side by side, tails dragging. The animals must have been passing through because the one-time clay or mud was not trampled; only one set of tracks were visible. Had a herd of those ponderous, fearful tyrannosaurs passed through here? Or had the footprints been made by gentle trachodons? Both these primitive reptiles had walked on their hind legs. We marveled at our find and wished for a camera.

That was two years and two river-widening floods ago.

With a new camera, we set out again to locate and photograph the tracks.

We couldn't get close to the river's edge. The river was flowing over the

## Follow the Track



The family finds some dinosaur tracks, which leads to an eerie vision of prehistoric Texas.

bank where we had seen the tracks, but the water was shallow enough that we could see countless tracks under the ripples.

Disappointed over losing unusual pictures, we slogged our way down the river's edge hoping to be able to positively identify "our" piece of tracks underneath the water.

Marsh and water narrowed at a series of low waterfalls and the banks were a series of ledges. On the highest ledges of solid rock which

7. Glancing around, we saw many circles of crystal exposed on the surface of the limestone. They looked as if they could have been balls at one time, with the tops having been worn or washed off long ago, leaving the bottoms half exposed.

On the second of the ledges, the edge closest to the river was clay. Recent rises on the river had loosened the edges and large chunks had sloughed off. It was along this ledge that we found our treasure—geodes.

Andy found a whole geode. It looked like an oval-shaped mass of clay. Breaking it open revealed the inside filled with crystals pointing inward toward the center, with an open space in the middle. It was hard to realize that that "clay-looking rock" could hide such beauty. "A geode," our rockhound son told us, "is a lump, or irregular ball of rock, or clay, containing a hole partly filled with crystals, or minerals in layers, or both." This first whole geode we found was filled with dogtooth spar, better known as calcite.

We looked around. Geodes lay on

of these beautiful calcite geodes!

The geodes reminded me of a Brazil nut—large outside nut, with many smaller loose nuts inside. Some of the crystals could be plucked out piece by piece. Or sometimes, when the clay covering was not hard enough, the whole geode would break apart. Unlike a Brazil nut, there was always a definite center left in the middle of the geode. In some, the pieces of crystal seemed to completely mesh. In the clay cliff were crystals, too, sometimes in scattered pieces, sometimes in clusters not encased in a protected cover,

but always in that same dogtooth shape.

With rock pick and sharp eyes recognizing the now familiar oval shape, we gathered more than enough geodes for ourselves and our boys to take to their teachers.

It was hard to tear ourselves away from this treasure field. Dinosaur tracks were completely forgotten. We had been launched on a new hobby for our family—rock hunting and all that goes with it.

A trip to the library revealed many things about geodes. We learned that a few rocks such as geodes and meteorites do not fit into any of the three rock groups—igneous, sedimentary and metamorphic.

We also learned how a geode was formed. In the first place a cavity had to be in the surrounding rock. As the water leached through the surrounding rock, the water became saturated with one or more minerals. Then the water came into the cavity and the minerals were deposited, either as crystals or as a non-crystalline mass. Gradually, the cavity became lined with a cluster of bristling crystals or layers of chalcedony of various colors.

Some geodes are three or four feet in diameter. Many geodes have been filled, becoming solid nodules of minerals. These nodules provide many of the finest banded or concentric agates. Lacking cavities, however, they no longer are geodes.

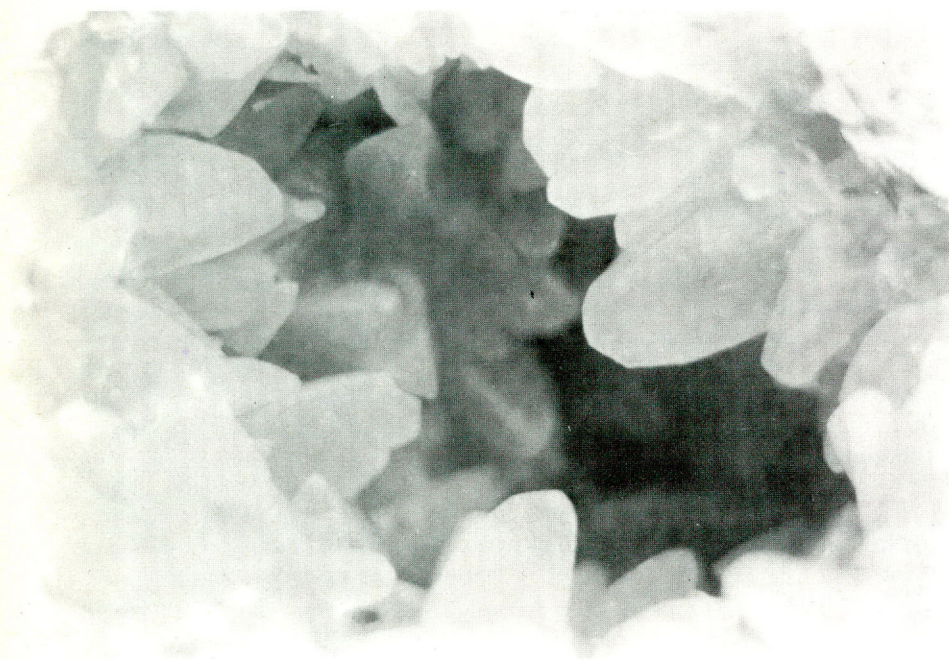
The geodes we found were lined with calcite crystals. However, they can be lined with many minerals including chalcedony, jasper and amethyst.

The first cluster and vein of crystals we found in the rock near the

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## to Timeworn Treasure

by PEGGY S. MONROE

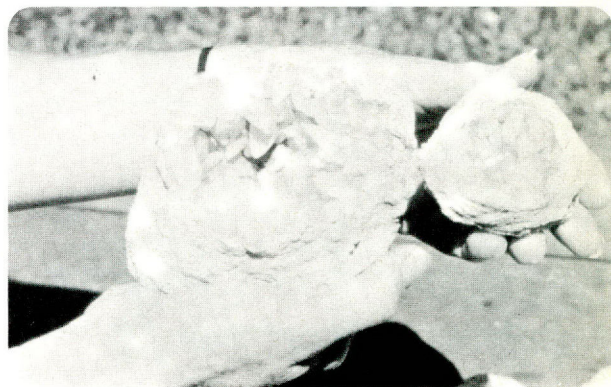


It's not a cave. This inside view shows the dogtooth spar formation prevalent in geodes.

the rock shelf, in the clay cliff and along the bank of the river. They seemed to be everywhere. All sizes and shapes, but still unopened. The crystals and the clay coverings were in various degrees of hardness.

At one time or another, in museums, looking at beautiful crystal clusters, each of us had wished we would find something similar, at least once during our life—like wishing to find a perfect arrow. And here we were in the midst of a whole field

Geodes come in all sizes. An ugly clay covering hides delightful crystals.



**T**HE FLAT continuation of the High Plains with plowed field after plowed field, grassland after grassland, usually draws bored remarks from the traveler. But 75 years ago a journey across the Texas Panhandle was not boring. Travelers gazed across a majestic sweep of open prairie devoid of fields, fences and highlines. Raw natural beauty, rather than cities and fields, greeted early pioneers.

In this wide expanse of prairie the Lesser Prairie Chicken lived and thrived until man built fences and exclaimed, "This land is mine!"

The chicken's unbelievable abun-

townsfolk, market hunters and sportsmen share equal guilt.

Settlement was sparse until 1886, when the Santa Fe Railway extended its lines into the Texas Panhandle. New towns sprang up and populations began their inevitable increase. Farmsteads and ranches took shape, and while ranchers and farmers waited for marketable goods to grow, they were content to live off the land. Prairie chicken, sourdough and beans were a common diet.

Local markets for prairie chickens were good in rapidly growing towns and railroad camps, but not until

Children could pick up three or four prairie chickens in a few hours along telegraph lines near Waynoka, Oklahoma, and Canadian, Texas, and sell them for 20 to 35 cents each. Many successful hunters killed wagonloads of chickens at waterholes on the High Plains. These hunters claim chicken populations were so great that "their numbers would darken the evening sun."

It didn't take long for news of such game abundance to reach eastern sportsmen. Railroads quickly took advantage of their chance to fill new coaches with paying customers who, in turn, would fill box cars of

# Plight of the Prairie

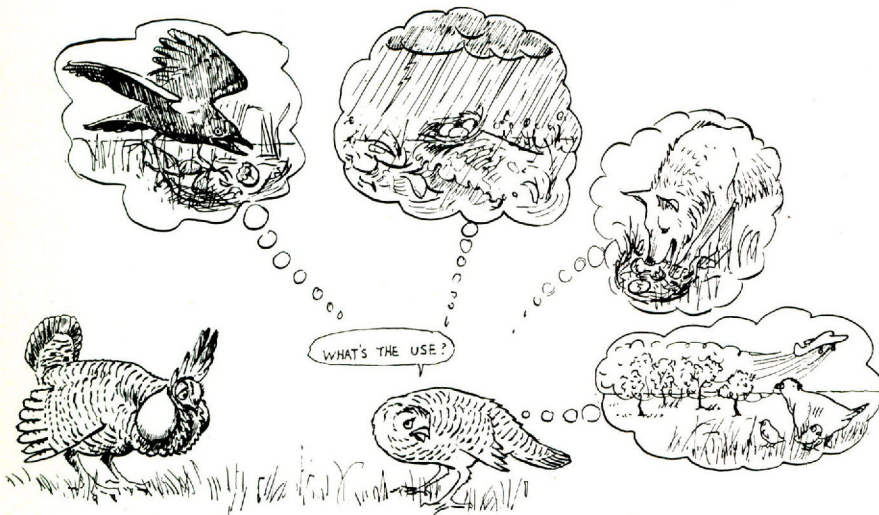
by NORREL WALLACE  
I&E Officer Region I

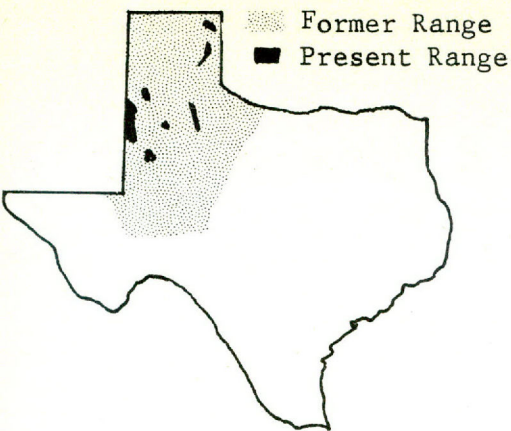
dance was the beginning of his annihilation. Early settlers believed the wild prairie chicken was an inexhaustible supply of fresh meat, and they used it lavishly. Tales of great hunts in which hundreds of birds were killed are common in the early records on prairie chicken. But hunting alone did not wipe out chicken populations. Farmers plowed up ancestral breeding grounds, cattle ate away protective tall grasses and unfavorable weather took a heavy toll. Isolated homesteaders, ranchers,

eastern cities offered 35 cents for prairie chicken and 15 cents for quail did market hunting begin in earnest. Railroads were eager to transport the highly perishable meat to Kansas City, Chicago and New York where a crate of chickens would bring \$8 to \$12. With this turn of events, almost everyone became accomplished market hunters. Those who could not afford ammunition to shoot prairie chickens picked up birds that had been killed by flying into telegraph lines along the railways.

returning trains with valuable cargoes of game meat for sale in the East. Sportsmen trains were highly advertised. On these trains hunters could shoot game from slow-moving flat cars or rented buckboards until they, or their ammunition, were exhausted. Game killed during these hunts was placed in ice-filled box cars for rapid shipment to eastern cities. Texas sportsmen from Fort Worth, Dallas and Amarillo shared in this sport with their eastern cousins. Annual shoots were organized with as many as 50 shooters to the group. Often, game killed during such hunts was left to rot on the open prairie. Old settlers have reported seeing as many as 500 hunters assembled in Canadian, Texas, for one day of prairie chicken hunting.

Heavy shooting pressure continued to take its tremendous toll, and in 1905, as flights became fewer and more sparse, the Game and Fish Commission placed an eight-bird bag limit on prairie chicken. Perhaps this act slowed the destructive harvest of prairie chicken, but legal protection alone could not prevent death due to empty stomachs and the absence of cover. Farmers contin-





ued to plow up native prairies and ranchers heavily grazed their ranges,

# Chicken

reducing the chicken range and concentrating them in small, inaccessible portions of their once expansive range.

With only a few hardy flocks remaining, the severe drought of the 1930's and its accompanying dust storms struck chicken populations another crushing blow; one, perhaps, from which they would never fully recover. In Kansas many chickens were found dead with their nostrils clogged with choking dust. No doubt many chickens in Oklahoma and Texas suffered a similar fate.

Despite overshooting, bad farming practices, severe drought and overgrazing, some flocks survived and man in the early '40's accidentally initiated farming practices that briefly benefited this persecuted species. Before grain combines were widely used, grain fields scattered throughout the prairie chicken range were cut and shocked with the heads still on and hauled from fields to hungry livestock as needed. To chickens long deprived of natural food, grain shocks were a welcome sight. Populations increased noticeably despite frequent shooting by irate landowners protecting

their grain fields. By the mid-'50's the use of grain combines was widely accepted. Fields of shocked grain began disappearing, and the vitally-needed winter food supply of the prairie chicken faded from the scene.

Accurate records of fluctuating prairie chicken populations date back to 1942, but the outbreak of World War II and resulting manpower shortages stopped Game and Fish Commission research and left a 10-year gap in records. Work was again resumed in 1952 and populations were only slightly below the 1942 counts, but since that time flocks have continually decreased except for minor fluctuations when favorable spring weather permitted an unusually good hatch of young.

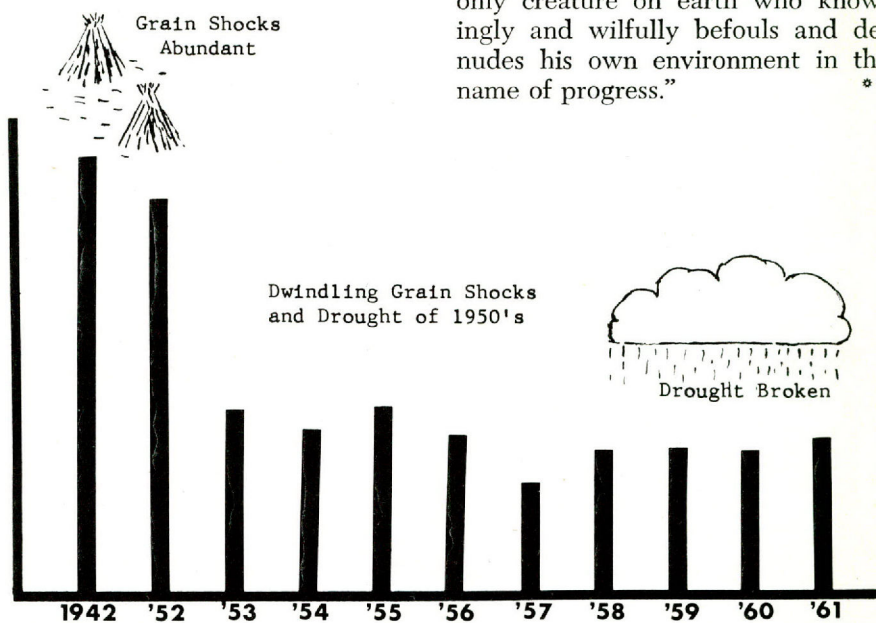
During the drought of the '30's tall grass stands were unable to withstand the dry years and were replaced by more drought resistant mid- and short-grass associations. In the early '40's when grain shocks were abundant, chicken populations were high enough to stage a comeback, but because ancestral nesting areas of tall grasses were absent, the increase could not occur. Kansas and Oklahoma ranges suffered tall grass losses also, but not as completely as did Texas, perhaps explaining why Kansas and Oklahoma have huntable

prairie chicken populations today while Texas does not.

The inaccessible areas in Texas into which prairie chickens have been crowded are no longer inaccessible. Sagebrush and shinnery pastures at one time were ignored because there was an abundance of "better land" for ranching and farming. Man and his civilization needs more and more production, even from heretofore "waste areas."

If a prairie chicken could look at his dwindling home range with the foresight of man, he could see the last stage of his harrassed existence in Texas approaching. Newly developed herbicides are being used to destroy shinnery and sagebrush on large areas. Pesticides are destroying insects. The prairie chicken needs shinnery and sagebrush for cover since little tall grass remains. They need shinnery acorns for winter food since other natural food and shocks of grain have passed from the scene. Insects now being rapidly destroyed were once an important summer food.

Can man continue to impose his iron will on our lands with the intolerable attitude that can destroy other species? He can, and perhaps he will. The late Aldo Leopold, famed naturalist, summed up man's inability to live in harmony with other species by saying, "Man is the only creature on earth who knowingly and wilfully befools and denudes his own environment in the name of progress." \*\*



PRAIRIE CHICKEN POPULATION FLUCTUATIONS AND CAUSES

**I**T DOESN'T make much difference what you call him. No name seems to make an easier target out of a snipe.

Most hunters agree that the snipe is one of the toughest targets a smoothbore shooter can go after. A few fellows say they wouldn't walk across the street to shoot snipe. If the truth were known, chances are these fellows tried and found the little rascals beyond their ability.

Years ago, when snipes were plentiful, hunters seldom wasted ammunition on the long billed bird. Only city "sports" were interested. Since the curtailed limits of most every

game bird available to smoothbore fanatics can be obtained without much effort nowadays, snipes are getting more play.

It doesn't really make any difference where you are, what you are shooting, how good a shot you claim to be or how many snipes you have bagged, eight snipes, a limit, are hard to come by.

Try it Charlie Price style, and it is still tougher to limit out. Charlie is a gun engraver. He also has hunted all his life, at least that part since he was old enough. Muzzle loaders had always appealed to him, so when opportunity knocked Charlie opened

the door. He completely restored a Belgium-made double-barrel percussion muzzle loader. It was a 16-gauge gun.

Since appearance was to be only part of the battle, Price headed for wide open spaces with powder, shot, percussion caps, sheets of paper and an open mind. This was something new, for him (shooting a muzzle loader, not the open mind).

The weapon patterned much like an L. C. Smith he normally used—modified and full with both number five and number seven and one half shot. Two and one half drams of FFg powder and one ounce of shot

## *Eight - - the Hard Way*

by HAL SWIGGETT  
San Antonio Express-News







As soon as Price steps from the boat, he loads up; first, the powder goes into the muzzle.

seemed to be right for the gun.

A couple of rounds at trap proved targets could be hit.

Dove season was open. Charlie soon discovered he shot a better average on dove with the muzzle loader than with his Smith simply because a man is more careful when he has to pour in powder, ram home a couple of wads, pour in shot, tamp it down with another wad and place a fresh percussion cap on the nipple. It takes longer than dropping another shell in the chamber of a shotgun equipped with automatic ejectors.

The showmanship usually associated with muzzle loading shooters is lacking in Price. He just likes to shoot the gun. He doesn't own a fringed buckskin jacket or a 'coon-skin cap. His powder horn is a small glass jar with a screw-on lid. His shot pouch is the left hand pocket of his hunting coat. He measures with a dip cup.

I talked him into a snipe hunt for some pictures. Actually, it didn't take much talking; I just asked him to go. He wouldn't promise any hits, but he was willing to try.

Our duck club is blessed with the best snipe shooting to be had anywhere. We are on a 1000-acre flat land lake. The shores slope so gently that there is marsh land on three sides, which is almost 300 yards deep in places. We decided to try an area across the lake from our boat-house.

A ten-minute boatripe put us on the marsh we wanted. Charlie loaded



Next, he must ram home the over powder wads.



This is the eighth and limit-making snipe.

up his ancient smoothbore and away we went. Just steps from the boat a snipe flushed. A charge of number seven and a half's caught him midway in his jump. I discovered how fast Price could load that thing. There was no wasted motion. A couple more shots, both misses, leveled things off. The next bird was bagged with a long shot, one I wouldn't have tried with my duck gun.

While I was looking for this downed bird, the muzzle loader blasted twice. Charlie, grinning from ear to ear, said since we were hunting jacks he figured a rabbit would be as good as a snipe.

Two hours and five snipe later we started back. The limit is eight birds. There were seven in the bag and we were about 200 yards from our boat. One snipe came across our marsh. I snapped a picture as it passed overhead. A split second later Price fired. The bird set its wings and glided down about 30 yards away.

I didn't count the shots fired during the trip. Charlie claims he didn't either. All I know is that he had a limit of jacksnipe. So far as I am concerned it was EIGHT—THE HARD WAY. \*\*



Price discloses a hint of satisfaction over his bag limit of snipe.

# Big Old Buck

by L. A. WILKE

**T**HROUGHOUT the world are landmarks with characteristics that make them almost human. Lake Buchanan is one of them.

Topmost lake in the Highland chain on the Colorado, it has earned the affectionate name of Big Old Buck. And that it is called by real fishermen from Dalhart to Port Arthur and points between.

Big Buck is not the largest lake in Texas. It is even smaller than Lake Travis. But it covers 23,000 surface acres of the most conglomerate make-up, from fine sandy loam through layers of limestone and a floor of solid granite.

Lake Buchanan was created when the Lower Colorado River Authority built a dam 150 feet high and two miles long across the Colorado. This massive concrete structure, which ties into walls of solid granite straddles not only the Colorado but also the line between Burnet and Llano counties.

Behind this dam at spillway level can be stored a million acre-feet of water that rush across the prairies of West Texas at flood time. Normally the water backs up 32 miles, and the main body of the lake is

more than two miles wide.

If a landmark possesses human characteristics, then it also must have its ups and downs. Although the greatest service of this dam has been in flood control, it was conceived for its power output.

Buchanan Dam was started back in the early 1930's as one of the power projects of Samuel Insull, greatest utility dreamer of all time. But Insull soon became involved in a financial web that led to the downfall of the empire he was building.

Shortly thereafter LCRA came into existence. Its purpose was to provide flood protection for the country below the Colorado. But the project was intended to pay part of its way with the sale of power generated with a normal let-down of water from Lake Buchanan.

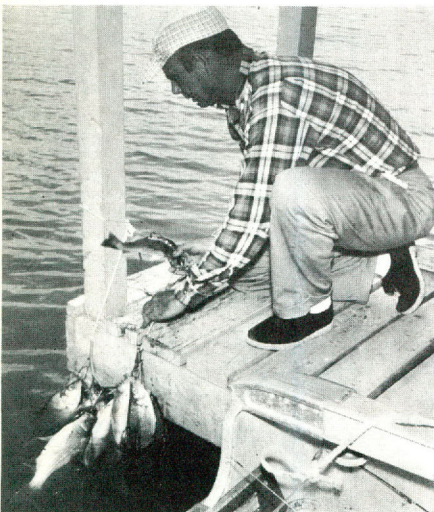
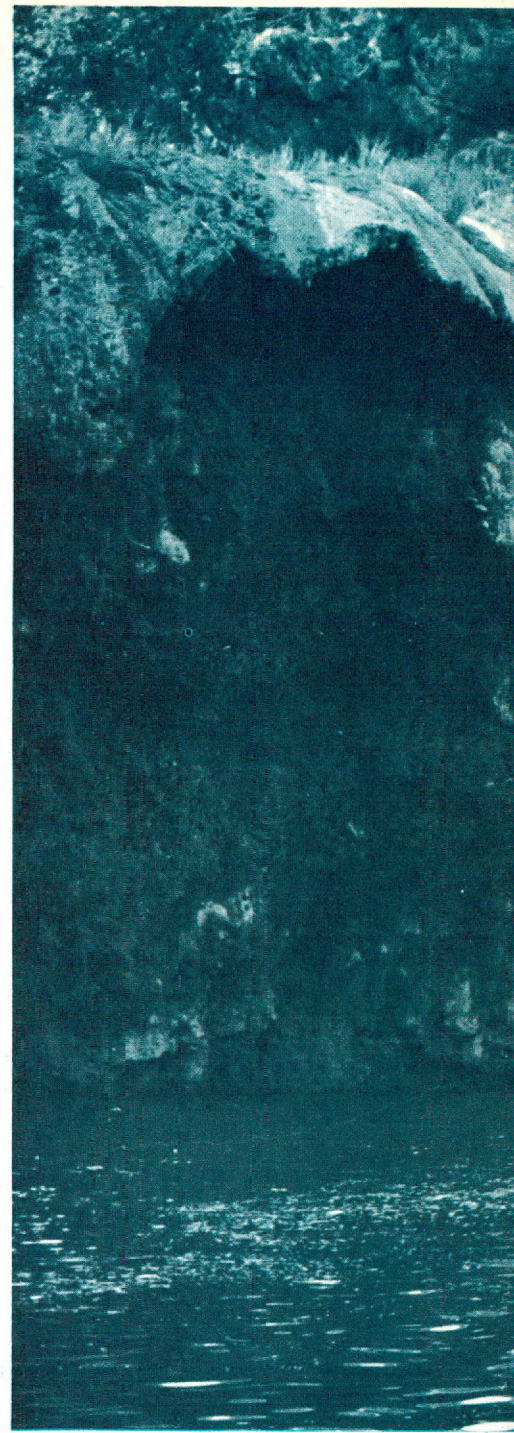
Rice farmers on the Texas coast also looked forward to the dam's providing additional irrigation water when the summers got long and hot and rain quit falling.

So it was a multiple purpose dam, first to provide flood protection, then industrial water and finally power to flow into lines combined with similar projects to supply all of Central Texas with electricity.

But the Colorado always was a good fishing stream. It was only natural that Lake Buchanan should draw fishermen to its rugged shores. At first they were catfishermen, setting out their trot lines and throw lines for the monstrous catfish which have inhabited the Colorado for many years. Then bass and crappie were introduced; then came that miracle fish, the white bass, or sandie, as it is called in some areas.

The rocky bottom of Lake Buchanan provided a wonderful habitat for fishes. The smaller fish would hide in the crevices, and the big fish would chase them out.

Because the floods of West Texas swept across fertile acres, the water



Bob Hill, 1961 state bass champion, spends a lot of time fishing prolific Lake Buchanan.

was rich in fish food. Bass, like the catfish, grew big and sassy. And because it was the largest body of water nearest that tremendous expanse of lakeless West Texas, it soon became the playground of the cotton and sorghum farmers of the Panhandle. And the urbanites from Fort Worth, Dallas, San Antonio and Houston joined with the oil fraternity of the Permian basin until today the fishermen of Lake Buchanan are as heterogeneous as the formation of the lake bottom.



Many fishermen assert that when they really want to go out for fish, Big Old Buck is the place to go.

But while it is piscatorially productive, it also is treacherous. It lies in the path of north-south winds that sweep across a land with few barriers. It can be as calm as a baby's prayer, and within a few minutes whitecaps will whip from shore to shore.

Moody though it be, Buchanan is loved by fishermen. Perhaps they love it because Old Buck is just

naturally a fishing lake. Right now it is one of the favored recreation spots of Texas, with a dozen or more developments going in all around the lake. In plenty of places open water is available for water sports, and many holes back in the granite walls provide exclusive water for fishermen.

Because it is a lake that rises and falls according to the abundance of water, it is easy to study. Although the spillway level is at 620 feet, it frequently drops down during the

hot summer months to an even 600.

This helps fishing. It gives many fishermen an opportunity to pick out spots, when the lake is down, which fish will inhabit when the water rises. This fluctuation also permits a cycle in which vegetation grows and then is inundated to provide substance in the water.

There are many modern fishing camps around the lake, with several good crappie barns where all-night fishing is available. Developers of

• *Continued on Page 30*

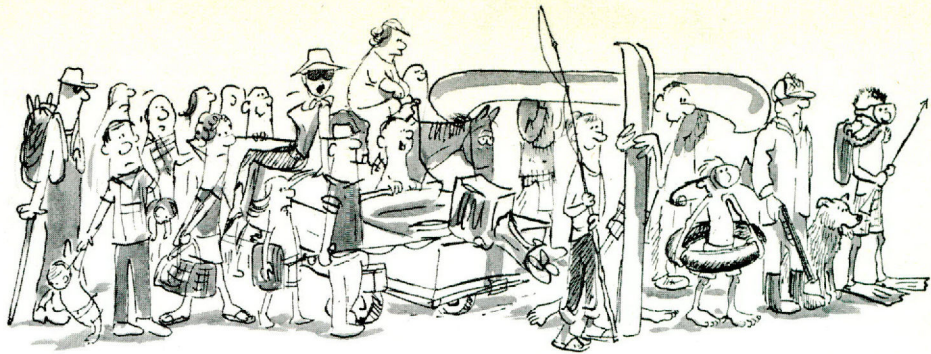
**NOT LONG AGO** an article in the newspapers told about the electricians of New York City getting a contract for a 25-hour work week.

They had asked for a 20-hour week, but finally settled on the five-hour-a-day, five-day-week schedule. This means these people have 143 hours a week for activities other than working on the job! Of course time is needed to sleep, eat, travel to work, and all the other time consuming activities that go along with living. But, it also means there will be more time for recreation. And assuming New Yorkers are like most Americans, a good deal of this recreation time will be spent outdoors.

In fact, 90 percent of all American adults participated in some form of outdoor recreation in the summer of 1960. This was brought out in a report by the Outdoor Recreation Resources Review Commission. We Americans participated in some form of outdoor fun on about four and one-half billion separate occasions. Pleasure driving, walking, swimming and picnicking were the most frequent of all activities. Water-based recreation was sought by most people and fishing was also among the top ten activities.

In 1960, one of every four men fished, while one of every 10 women did likewise. Predictions are that the number of anglers will increase 50 percent in the next 15 years, and 150 percent by the turn of the century.

By the year 2,000, new reservoirs are expected to add 10 million surface acres of impounded water, about double that of our present fresh water surface. These new waters will take care of about one-third of the expected increase of fishermen. Marine waters can absorb another one-third, while the remaining



one-third are expected to benefit from the improvement of existing waters. This can be accomplished through better management and use of our present lakes and streams.

The 1960 economic survey of the U. S. Fish and Wildlife Service shows Texas to be one of the top states in fisherman-hunter increase in the last five years. Population-wise, our state also has been climbing. This means that Texas is certain to have its share of the fishermen and other water-related sportsmen from the estimated 225 million population by the end of the century.

Just how does all of this concern the water works people of Texas?

With more people comes a greater demand for more municipal water. Hardly a day passes without a report that another community has approved a bond for expansion or improvement of their municipal water system. With the underground water level receding in many parts of the state, more and more communities are turning to surface supplies to meet their increased demands. Today 13 percent of our communities depend on surface water for their supply; however, this is consumed by approximately 31 percent of the state's population.

When new municipal reservoirs

are built they will do their share in accommodating the one-third of the increased fishermen mentioned earlier. City lakes that have been improved and managed for fishing can help take care of another one-third of these new anglers.

In an effort to determine something of the sportsmen's present use of municipal reservoirs in Texas, a questionnaire was prepared and sent to 170 communities and agencies having water processing plants using surface supplies. There are many more communities that use surface water, but it is provided by larger cities, private companies or water districts. For example, the North Texas Municipal Water District processes Lake Lavon water for 11 towns and cities in North Texas, but only one questionnaire was used.

In all, 124 questionnaires were returned, but 27 reported that water was pumped from rivers or streams, thus these cities had no municipal lake or reservoir. The information was used from 97 communities and agencies owning or controlling surface reservoirs used for municipal water supplies.

There were 163 reservoirs mentioned in the returns, with 54 cities or agencies each in charge of but a single lake. Twenty-six cities own

# Plan for Leisure

by ED BONN  
Biologist III



two lakes, while ten have three and four cities use four reservoirs in their water system. San Angelo has five municipal lakes and Greenville has built six reservoirs.

These impoundments vary in size from one acre for the village of Early in Brown County, to several covering over 20,000 surface acres. The larger reservoirs are usually built as a joint undertaking with other agencies for flood control, irrigation or power generation.

The recipients of the questionnaires were asked what activities were allowed on the lake, or lakes, under their control. Fishing was the most accepted recreation and was permitted in 89 percent of the impoundments. Picnicking was second with 67 percent and boating was third, being allowed on 60 percent of the waters. Other activities accepted were camping, hunting and water skiing with 44, 42 and 37 percent respectively. Swimming was sanctioned in only 41, or 28 percent, of the lakes.

Reasons for not allowing these outdoor functions, while not asked, were given on many of the returns. Some small cities did not have an adequate filter system. On these lakes most activities were banned where people actually came in contact with the raw water. Some city lakes were too small to have a restricted zone near the outlet valve, thus the entire lake was closed to recreation. Speedboats were excluded due to wave action on levees and dams. Hunting was restricted because many lakes are inside city limits and others have been designated as waterfowl refuges.

While "fishing in the drink" was anticipated to be one of the most accepted recreations, other questions

concerning angling were asked. It was found that fishing has been allowed on 28 lakes since they were built and for an average of 19 years on those where it was later permitted.

Sixty-six percent of the returns indicated the lakes provide good fishing. Some 22 percent felt their lakes had poor fishing and the remainder gave no reply.

In the group labeled, "good fishing," there were many lakes on which fisheries surveys have been made and conditions are known. Some of these should have been placed in the "poor class."

Many conditions can contribute to making a body of water a poor fishing lake. Some of the most common in our part of the country include overabundant rough fish, unbalanced populations, low fertility, excessive turbidity, interference from aquatic vegetation, and lack of access.

Often these factors are inter-related and together prevent good fishing. For example, if rough fish, such as carp, buffalo and other bottom feeders, are too plentiful, they keep a lake stirred up and murky. This turbidity then causes low fertility, and before long the lake has very few fish that can be caught by anglers. Then the water ends up with an unbalanced fish population.

In recent years more than 50 fisheries surveys have been conducted on municipal reservoirs at no cost to the cities. The Game and Fish Commission has made these as part of a major watershed investigation, in conjunction with a specific fisheries study, or at the request of some city official. Normally the survey is followed by a report of the conditions found and recommendations

for improvement are given.

Often these recommendations are little things that have been overlooked by the city administration. They have a lake and allow fishing and boating, but fail to provide all-weather roads to the area. Ample parking space and suitable boat launching ramps are also often lacking.

Sometimes the lake is in such a poor condition, from a fisheries management view, that it is best to clean out all the fish and start over. And a complete renovation of a reservoir can be expensive. The cost of fish toxicants alone runs about \$1 an acre foot of water, not including labor and necessary equipment.

A few city officials are afraid the water will be made unsafe to use by the toxicants or the fish affected by it. But recent studies made in Texas have proven this is not true. The greatest problem that can be expected is a slight change in the taste and odor of the treated water. However, a small increase of activated carbon, normally used in processing water, will eliminate all the change encountered.

Some cities do not want to get into the "fishing business." But few are the cities today that do not provide parks, play grounds, stadiums and other places for the recreation and relaxation of their citizens. Fishing also is recreation.

Cities considering construction of new reservoirs could easily plan to include recreation along with their municipal water usage. In most cases it is easier and less costly to provide these facilities at the beginning instead of adding them later. Such things as control of native fish, correct stocking of game fish and harvest regulations are available for the asking.

If a city lake does not provide good fishing at present, a fisheries survey can be made and recommendations given for improvement. With long range planning, cooperation and work, another good fishing hole can be created.

Who knows? Maybe your children will be among the millions of new anglers looking for a place to fish in the next few years. I know mine will be. \*\*



# Mullet Millions

by SANDRA POUNDS LEARY

**M**MULLET are rabbits of the watery world. Just as rabbits are prey for most landlubbing carnivores, mullet fall prey to all their larger cousins of the sea.

Mullet belong to the family, *Mugilidae*. Two major species of the fish, striped mullet (*Mugil cephalus* Linne) and white mullet (*Mugil curema* Valenciennes) inhabit Texas waters. *Mugil cephalus* are also called black mullet.

Spawning in Texas takes place around December. Young mullet, which are silver, swarm in Texas bays during winter and spring. Adult striped mullet, which are more common than the white species, are dark blue to black on the back and silver on the undersides. Three-pound mullet are not uncommon, and in some isolated ponds and areas the fish may reach 10 or 12 pounds.

Mullet are probably best known for their habit of jumping out of water, often many times in a run. They are found both in shallow and deep water and gather in huge schools moving around jetties, piers and boat basins like shadows. Sometimes these schools are so dense that fish in the "top layer" are almost out of water. Hundreds of little round heads with black eyes bobbing ride the current around the end of a jetty.

Mullet are vegetarians, and for that reason are seldom caught on a hook. They feed on marine plant life growing on rocks, piers, sides of boat basins and boat hulls.

These fish can tolerate a wide range of salinity and, therefore, are often found far upstream. They have been seen in the Colorado River as far up as Austin. Likewise, they are found in areas of high salinity such as Laguna Madre. Sometimes mullet become isolated in ponds which are nearly fresh and grow to a large size.

Last year there was a die-off of mullet in Texas because of an unusual bacterial disease which apparently affected the species. Hundreds of thousands of pounds of dead mullet covered the length of Texas' coast.

The mullet industry, while practically nil in Texas, flourishes in other parts of the country. In Florida the industry was a thriving business during the war years of 1942 to 1945, when 56,000,000 pounds of mullet were produced annually. This was, of course, influenced somewhat by food rationing, but that is still a lot of mullet. The industry suffered a near fatal blow when Florida imposed a closed season during the spawning months. In 1957 the Florida Legislature opened the closed season and once again the industry began to climb. In 1960 Florida produced 2,866,735 pounds of

mullet at a total value of \$116,335. Mullet roe sells for about \$1 per pound.

Since the majority of consumers are still dubious about purchasing mullet for food, the industry in Florida cans and sells most mullet under the name of "Lisa," which is the Mexican name for mullet.

Texas had a mullet industry in 1943, 1944 and 1945. The industry fell off considerably soon after. In 1959 Texas produced 27,771 pounds and in 1960 reported a total of 136,217 pounds. At present, however, Texas has no cannery; it is assumed that all or most of those pounds reported were used for bait.

The mullet industry has experienced little success in Texas because the quality of the fish is not dependable. Gulf mullet, such as those taken in Florida, are slim and firm with a good flavor. But bay mullet are usually pot-gutted and have a muddy taste. This may be due in part to feeding habits in their particular habitats. Attempts to establish mullet canneries in Texas ended in failure because of this quality inconsistency.

Because mullet are prime food for several game fish, the greater part of mullet production is for bait. Tarpon, sailfish and other billfish as well as large trout and redfish feed on mullet. Since they are such a major food item of the diets of so many fish, mullet are naturally an important link in the ecology of coastal waters. For instance, in the Laguna Madre, where salinity is too high for many fish to tolerate, there is an excellent ecological relationship between mullet, which can stand salinity as pointed out, and trout and redfish. In that area mullet abound, feeding on marine vegetation, and in turn, being fed upon by large trout and redfish. Drum there feed to a great extent on mollusks.

Mullet, long downrated as food fish, are beginning to enjoy the respect and desirability of those fish which are more familiar to the gourmet. They are all around fish in that they are fat and oily; they can be fried, smoked, barbecued or broiled. Since they are not mild, mullet are excellent when broiled with plenty of lemon juice and butter. Smoked mullet is a delicacy.

Mullet, canned much as tuna and salmon, have a meaty texture and a full flavor. These fish also are frozen as mullet fillets, breaded fillets and fish steaks.

Mullet, like rabbits, usually are underrated and disparaged. But as a forage fish, they perform an important function in fish ecology. And, they provide fishermen with good bait and constitute tasty meals for the table when in the hands of a good cook. \*\*

# Dance on the Brazos Breaks

by JACK HITTSON



The hep polecat was on the drums.  
Opossum played the flute.  
A strolling fox, (a passerby)  
Remarked it sounded cute.

And there was old Jack Rabbit, too;  
Dancing with all his might.  
What happy entertainment 'twas  
This lovely moonlight night.

A plump raccoon (Old Fatty Boy),  
Had waddled in to boast  
That music stirred him not a bit.  
Of taste, he had the most.

"I do not like to hear," (he said)  
"A polecat pat the drum.  
I'd rather hear with my fine ear  
A lonesome locust hum.

"That grinning possum on the flute  
Plays discords, I would say.  
You ought to hear the cool crawdads  
On fiddles when they play."

Now, over yonder 'cross the ridge,  
In a cabin by the hill,  
Lived a houn'dog fancier  
His nick-name "Coon-Dog-Sill."

'Twas his hour, too, to ramble 'round,  
On this fine moonlight night.  
To hear his houn'dog mouthing sweet,  
And promote a big coon fight.

Meanwhile, the dance in the meadow  
green  
Was in its utmost glee,  
When a big grey squirrel, in alarm,  
Dropped out of a near-by tree.

"Hear ye! Hear ye! Hear ye, my friends!"  
The nervous squirrel cried,  
A houn'dog pack is coming close  
And don't you think I've lied!"

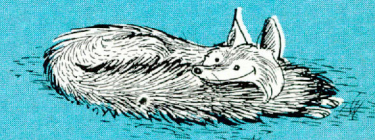
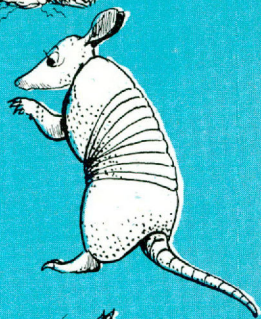
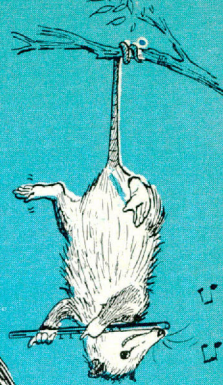
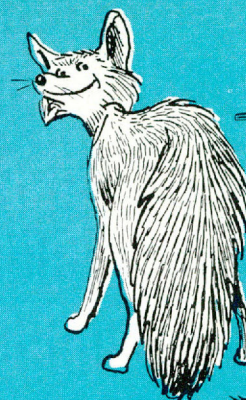
No one seemed to get upset  
Except for poor raccoon.  
He had to make his getaway  
And make it very soon.

"Old Fats," Miss Armadillo said  
(The hostess for the night),  
"Pray get yourself together, dear.  
Don't try to make a flight."

"We've hired Colonel Lobo Wolf,  
Howl Champ of the Brazos Brakes.  
He'll stop any coondog barging in  
And give him the quivering shakes."

The howling was started right away  
Using wolfcall, yippitee-ipe;  
The hounds were utterly dumb-founded,  
And the chase was stopped *that* night.

So the polecat went on patting the drum,  
The possum played smooth on the flute;  
Fatty and Jack danced along again.  
And the fox remarked it was cute.





Art by C. W. SHAW

**A**N ARTICLE in the January issue of *Texas Game and Fish* (second in a series of three articles), referred to the successful re-establishment of a huntable population of the Rio Grande Wild Turkey in Bee and Goliad counties. The restoration move started on what was known as the Blanco Creek Deer-Turkey Restoration Area, through cooperation between the Texas Game, Fish and Oyster Commission and nine participating landowners. It was my privilege to have more or less association with the undertaking from July 1940 to late 1944, as a biologist with the Commission. From early 1942 to July 1943, my schedule included one week out of each month on the area and imme-

diately vicinity. I sought out roost sites, tracked feeding flocks of turkeys and observed their activities in general. I also maintained contact with local residents, including landowners and ranch hands, for the purpose of learning all possible, concerning numbers of turkeys, their distribution and population trends.

The Blanco Creek Area contained 44,924 acres, belonging to nine landowners, as follows: J. J. O'Brien and the late Ira Heard of Refugio; R. J. Welder, Claude E. Heard and the late J. H. O'Connor of Beeville, the late Mrs. Clara Driscoll of Corpus Christi; Skidmore State Bank of Skidmore; J. A. Handy of San Angelo and the late W. M. Griffith of Sinton. It lay in western Goliad and

an example  
of wild tur  
key restora-  
tion

BY **W.C. GLAZENER**  
welder wildlife foundation

°Contribution No. 74, Welder Wildlife Foundation





W. G. ...

Extremely dry weather, on the other hand, may have almost equally adverse effects on nesting, incubation and survival of young turkeys.

Ecologically, the Blanco Creek Area (Figure 1) is barely within the eastern limits of the Rio Grande Plain Land Resource Area of Texas. Proximity of the Blackland Prairies on the north, Post Oak Woods extension of the East Texas Timberlands on the northeast, and Coast Prairie on the east results in evidence of all these regions within the Area. Consequently, it shows a highly varied vegetative cover, which quite possibly enhances its quality as turkey range.

Vegetatively, the Blanco Creek Area approaches a combination oak woodlands-brush country aspect. The timber stand consists of live oak, post oak, and some blackjack oak, with mesquite, huisache, and rough-barked hackberry in openings. There also is a definite understory, composed largely of granjeno, Mexican persimmon, lotebush, Brasil, agarita, blackbrush, prickly ash, and hog plum. Mescal bean occurs on some high ridges on the north side, near Highway 59. Bottomlands have stands of cedar elm, smooth-barked hackberry, mulberry, anaqua, pecan, mustang grape and willow.

Principal herbaceous species over the area include the following grasses: silver bluestem, seacoast bluestem, side oats grama, windmill, bristle grass, Hall's panic, brownseed paspalum, bahia, Texas winter, sand bur, common Bermuda, lovegrass and three-awn. Forbs of particular interest are doveweed, western ragweed, sunflower, chilipiquin or wild pepper, iceweed and bullnettle. Prickly pear and tassajillo are also common.

Wildlife present on the Blanco Creek Area prior to release of the Rio Grande Wild Turkey and white-tailed deer, was typical of native species for the general region of South Texas, within limits of soils and vegetative types. On the basis of sight records and tracks, the principal mammals were coyote, bobcat, collared peccary or javelina, raccoon, armadillo, striped skunk, spotted skunk, opossum, cottontail, fox squirrel,

eastern Bee counties, extending from southeast of Berclair to a point southeast of Skidmore. Practically all the acreage was ranch land, devoted to cattle grazing, with a few widely scattered cultivated fields used mostly for production of grain sorghums and other livestock feed. Terrain over the area is level to gently rolling and drainage varies from poor in spots to generally good. The Aransas River crosses near the southwestern corner and Blanco Creek flows across near the eastern edge, with Medio Creek about midway between. Soils in the vicinity are largely loams and sandy loams on upland portions, with heavy clays in creek and river bottoms. Off to the north, there are rolling black-

lands with calcareous outcrops along ridges and on some slopes.

Climatic conditions for the Blanco Creek Area is adequately portrayed by data compiled at the U. S. Weather Station, Beeville, over the period from 1901 to 1941 (TABLE 1). Rainfall is the one most pertinent factor subject to the greatest seasonal and annual fluctuation. The average annual precipitation over the 40-year period was 30.81 inches. The lowest annual total was in 1917, when only 9.5 inches fell. In 1903 and 1919, the annual totals were approximately 49 inches. A critical time for heavy and excessive rains is the mid-March to mid-June period. Within that time, heavy or continued rains may have disastrous effects on eggs and young.

rel, ring-tailed cat and pocket gopher.

Although neither collections nor detailed records of bird species were made, general notes indicate that common nesting raptorial species included the red-tailed hawk, red-shouldered hawk, great horned owl, barred owl, barn owl, turkey vulture, black vulture and Audubon's caracara. Other typical nesting birds for the locality were the roadrunner, mockingbird, cardinal, black-crested titmouse, yellow-billed cuckoo, mourning dove, Inca dove, ground dove, lark sparrow and bobwhite quail.

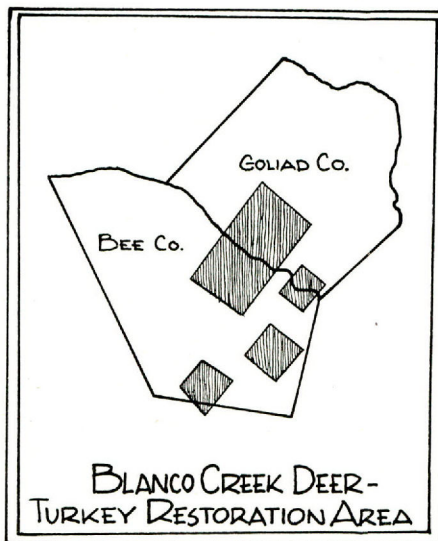
The Blanco Creek Deer-Turkey Restoration Area was initiated in 1939, under Federal Aid Project W-10-D, providing for reimbursement of 75 per cent of the costs from Federal Aid in Wildlife Restoration Funds. Operations later were transferred to FA Project W-15-D, under similar financial arrangements. Original developmental plans called for construction of a 20-acre holding pen for confining a few turkey hens as decoys to localize movements of newly released birds, and the installation of several food plots for the production of certain species particularly attractive to wild turkeys. By the time of my first intensive association with the area in 1942, the foregoing activities had been dropped because they obviously were neither necessary nor effective.

Turkey releases on the Blanco Creek Area were spread over four trapping seasons, 53 early in 1940, 44 in 1940-41, 50 in 1941-42 and 33 in 1942-43. There was a total of 180 birds released, 41 males and 139 females. As of June 30, 1943, I estimated the population at no less than 1,200 birds (Project 15-D, Section B, Unit B, Statement of Status). By July 1944, the time of my last personal contact with the area, the population estimate had risen to 1,500 turkeys. These estimates were based on my observations, together with reports secured from ranch riders and other residents of the vicinity. They included roost counts and counts of feeding flocks, including broods of young seen at watering places and other points.

The turkeys had dispersed widely over all timbered country south of

Highway 59, between Goliad and Beeville; east of Highway 181, from Beeville to a point south of Skidmore; north of a line from near Papalote to Refugio and west of the present route of Highway 183, from Refugio to Goliad. Even then, a few flocks ranged outside the above area, with hens going considerably farther out to nest each spring. Each fall, they returned to the central portion of the area, accompanied by their young.

Observation of feeding turkeys revealed that a few food items probably were significant. By the time the first poults hatched early in May, grasshoppers were available. They remained available to both poults and adult birds until late fall and sometimes well into the winter.



Meantime, grass seeds, particularly those of brownseed paspalum, were stripped and eaten in abundance. By fall, turkeys were feeding on doveweed seed just as rapidly as they matured. Acorns were another important item later in the fall and on through the winter period. At other times, as seeds or fruits matured, turkeys fed on hackberry (including much scratching for dried fruits in leaf litter under trees through the winter), anaqua, granjeno, Mexican persimmon, prickly ash, agarita, mulberry, mustang grape, cedar elm, bristle grass, bullnettle and tassajillo. Also, the birds displayed readiness to pick green buds and leaves, including foliage

of shrubs, forbs and grasses. In the summer, and particularly in the fall, turkeys took chilipiquin fruits. According to tradition, this endows their flesh with a highly distinctive flavor.

Because of a stabilized landownership and land use pattern over most of Bee and Goliad counties, relatively little change in habitat in general has occurred. Only two examples of land treatment have been observed that appear to adversely affect turkeys. In one instance, an intensive clearing operation eliminated practically all timber from more than 20,000 acres of good turkey range. Even then, birds moved out into the treated area for nesting, until stopped by early spring mowing of regrowth on the treated acreage. If such mowing were postponed until late June or July, turkey nesting would be completed and the broods able to move out ahead of mowing equipment. In the second instance, another rancher conducts an annual mowing program on about 2,000 acres of pasture land for weed control. In this case also, the work usually is done at such a time as to disrupt any nesting that might be in progress. Again, postponement of mowing until a late June or July date would save some turkey nests and young.

Wardens W. D. Henry of Victoria (formerly of Goliad) and C. L. Oswald of Beeville currently estimate the two-county turkey population at 5,000 to 8,000 birds. Practically all timbered country within both Bee and Goliad counties south of the San Antonio River, east of Highway 181 and west of Highway 183, is well populated. This portion of the two-county range contains approximately 470,000 acres. If the total population of 5,000 to 8,000 birds were confined to just this acreage, the turkey density would fall somewhere between one bird per 95 acres and one bird per 59 acres. For range of the quality involved, this is not yet up to full carrying capacity for years of optimum condition. Even so, it truly is a substantial population.

In addition to the above area, there are other localities in the two counties where turkeys occur, and in which their numbers obviously

• Continued on Page 27

# Regional



# Roundup

## Region I—San Angelo

**QUAIL POPULATIONS** in the 90-county area of Region I vary from a 20 per cent reduction in far West Texas to a 50 percent increase in the northeast corner of the Panhandle. Primary reasons for these wide variations are long periods of cold weather last winter in most of the Panhandle, which reduced brood stock, and a dry summer nesting season, which hampered production in the rest of Region I. Isolated spots still boast good quail populations, but these are definite exceptions.

Pheasant hunting in the top 10 counties of the Texas Panhandle was highly successful; this year most hunters filled their two-bird bag limit. Hunting pressure has not increased noticeably since the first pheasant season in 1959, but hunting success has climbed continually. Two reasons account for this: Texas hunters are learning how and where to hunt pheasants, and populations have increased gradually since 1959.

Rabid wild animals are not as abundant as many folk assume, but so far as Conservation Officer Walter Carpenter is concerned, even one rabid animal is TOO many. During December Carpenter was sneaking through the brush near San Angelo toward a group of illegal turkey hunters with a walkie-talkie in his hand. He checked the squelch to properly tune his radio, and a fox viciously attacked him, inflicting deep gashes in Carpenter's pistol holster. Carpenter knocked the fox away only to be attacked again. Before Carpenter's pistol finished the fox, his pants were ripped from pocket to cuff. The animal's head was shipped to Austin and, as suspected, the fox had rabies; Carpenter grimly faced seven painful hydrophobia shots.

Salt water fish transplants in Red Bluff Lake and Imperial Reservoir on the Pecos River are still growing by leaps and bounds. Two-and-one-half year old red-fish now weigh 12½ pounds. Flounder have grown to 7½ pounds in the last couple of years. Larry Campbell, fishery biologist in charge of the project, says rapid growth was hoped for, and so far has been well above expectations. According to Campbell, reproduction should occur next year.

Public deer hunt figures show that hunters participating in the 1962 Black Gap Wildlife Management Area Public Hunt had a five per cent drop in hunting success from last year. Warm, late summer weather extended well into the opening days of the season and held back normal rutting movement, consequently reducing the kill.

On the Sierra Diablo Wildlife Management Area, north of Van Horn, Texas, hunting success jumped

from 66 per cent last year to 71.43 per cent this year. Since the Management Area is a relatively small block of land, hunts spaced with a one-day interval permitted deer that were driven from the area to return and face other hunters' guns, increasing the kill somewhat.

## Region II—Waco

**RESULTS** of using polyethylene under gravel spawning areas for black bass in the Ingram Fish Hatchery are still being tabulated and are encouraging enough to justify an expanded testing program in 1963.

Mr. Rather of Waco has suggested a campaign to provide duck shooting for those who are willing to do something about the present situation. His plan is to encourage people or clubs to raise ducks for their own hunting. The ducklings are to be hatched in incubators, by chicken hens or any other way possible. After they are four or five weeks old they are to be released on ponds and lakes where they will be allowed to become wild. It is expected that they will return each year to their release site to raise a family and thus supply hunting targets.

Mr. Rather has started contacting state game departments over the nation, sportsmen's clubs and ammunition manufacturers, soliciting their interest and participation in the program.

During the 1962 deer harvest on the Kerr Wildlife Management Area, 316 people out of a possible 400 permit holders appeared to hunt and killed a total of 196 deer—99 males and 97 females. The average hunter success was 62 per cent compared to 61 per cent in the 1961 season.

The first accident was recorded for the Kerr Wildlife Management Area during the 1962 season when an experienced hunter let his hunting knife slip while field dressing a buck. The knife ripped the hunter's leg above the knee, severing an artery. First aid was administered and recovery was expected soon.

## Region III—Tyler

**A TWELVE-YEAR-OLD BOY**, Wesley Jordan of New Boston, killed his first deer this year, a nice six-point buck. Naturally he felt good about it, as a 12-year-old should. He could have returned home surrounded by glory, knee-deep in triumph and been the envy of the neighborhood kids. But, not so Wesley. He knew that the Texarkana Society for Crippled Children fed a lot of boys and girls and that the Temple Memorial Treatment Center was part of that unit. He wanted and saw to it that his deer went to them. That first deer was a part of himself—and he wanted others to enjoy it too. REAL sportsmen are in the making for the future.

• Continued on Page 29

# GUNS



By L. A. WILKE

## ... and Shooting

This Month: [Ammo Info](#)

**D**OWN through the years it always has been a pretty good guess that almost half the shotguns sold were 12 gauge. During the last several years Col. Sheldon Smith, president of the Ithaca Gun Co., has been making a careful analysis of sales.

During 1962 his company made and sold 55 per cent of its shotguns in 12 gauge, against 54.8 in 1961. The 16 gauge took a slight drop and represented 22 per cent of the sales as against 22.4 for the previous year. The 20 gauge sold 23 per cent, passing its 22.8 of last year.

Another significant figure was that for the Deerslayer, special slug model of the Ithaca brand. In this the 12 gauge sold 58 per cent; the 16 gauge, 23 per cent and the 20 gauge, 19 per cent. Both the 12 and 16 gauges showed a slight increase, while the 20 dropped 1.7 per cent.

This perhaps was natural for a slug gun because, after all, the 20 gauge is a little light for anything but closeup shooting with slugs, despite the fact that it is a wonderful gun for upland game.

There is no denying that the 12 gauge generally is the most effective gun under all conditions. It does have considerably more recoil than

the 20, but it also carries more powder and more shot in the regular loads.

However, here are some figures regarding the effectiveness of the little 20, which may startle you. A standard of  $2\frac{3}{4}$ , 12 gauge loaded with 3 drams of powder and  $1\frac{1}{8}$  ounces of  $7\frac{1}{2}$  shot has a muzzle velocity of 1200 fs, with a remaining velocity of 865 at 40 yards. The 16 gauge with  $2\frac{9}{16}$  case,  $2\frac{3}{4}$  powder and  $1\frac{1}{8}$  shot, leaves the muzzle at 1185 and hits 30 yards at 855. The 20 gauge with  $2\frac{3}{4}$  case,  $2\frac{1}{2}$  drams powder and  $1\frac{1}{8}$  ounces shot departs at 1165 fs and reaches 40 yards at 845 feet.

Thus it can be seen that the 20 gauge loses only 35 feet at the muzzle and 20 feet at 40 yards, certainly a negligible figure from the standpoint of killing power.

The spread of the shot at 40 yards, of course, depends upon the choke or constriction. But regardless of the choke the gun still shoots just as hard at 40 yards, which is about the maximum distance for consistent hitting qualities.

Speaking of ammunition, Federal Cartridge Co. now has entered the commercial production of rifle and pistol cartridges. For many years

Federal has been one of the top manufacturers of shotgun and .22 ammunition.

Now this old Minneapolis company has started commercial production of all the popular calibers in metallics. Although these new Federal rifle cartridges will have a variety of weights, there will be but one bullet type. It will have a soft point with a flat base and spitzer profile.

Making of metallics won't be a new job for Federal. This company for many years has loaded military ammunition and has had long experience in every form of ballistics. Another bit of information on new products results from the announcement almost two years ago that Winchester had perfected a new caliber in the .256. Finally now there are two guns for this new type of Magnum ammunition. Marlin has introduced it in the Model 62 lever action rifle, and Ruger has announced its new Hawkeye pistol. It will be a single shot.

The ammunition will sell for about \$6.50 for a box of 50. The empties can be reloaded, however, by serious shooters. The cartridge will carry a 60-grain, open-point expanding bullet, which will have a 735 foot-pound knockdown from an  $8\frac{1}{2}$ -inch barrel. Its designers say it will be effective on anything from jackrabbits to lions. Traveling at 2350 feet per second, it will have a very flat trajectory.

Now that we've discussed new guns, let's not forget the old ones. You'll be putting them away now for another season. Be sure they are cleaned and oiled well. Don't store them in sheep-lined cases. This wool absorbs moisture and may result in unnecessary rust. And speaking of oil, Browning has just announced a new gun oil in a pushbutton container which is very effective in both lubrication and rust prevention. \*\*

### COMPARATIVE SHOT SIZES

SIZE:	9	8	7½	6	5	4	2	BB
Diam. in inches	● .08	● .09	● .095	● .11	● .12	● .13	● .15	● .18
APPROXIMATE NUMBER OF PELLETS TO THE OUNCE								
	585	410	350	225	170	135	90	50
NO. 4 BUCK    NO. 3 BUCK    NO. 1 BUCK    NO. 0 BUCK    NO. 00								
	● .24	● .25	● .30	● .32	● .33			
APPROXIMATE NUMBER TO THE POUND								
	340	300	175	145	130			

**Only three bands were returned.**

*Turkey Restoration* ————— *From Page 24*  
are increasing. Such country would include from 120,000 to 150,000 acres. Most of this is not quite of the same high quality as the central range, but it can support a large number of turkeys. One block of this "outlying" range, approximately 60,000 acres in extent, was stocked only about two years ago. In the two intervening nesting seasons there has been a promising rate of reproduction and survival.

It may surprise some people to learn that the Blanco Creek Project began, developed and paid off without benefit of any special closed seasons. There were relatively few public roads into that area; in fact much of it still is not readily accessible. This lack of easy access, together with local respect for trespass matters, enabled turkeys to proceed with a minimum of hazard from humans. My observations revealed only two instances of poaching, both of which apparently involved roost shooting of turkeys near the outer edges of the Area.

Up to this time only three turkey leg bands have been sent to the Game and Fish Commission, from turkeys released on the Blanco

Creek Area. A number of turkeys doubtless lost their leg bands. It also is possible that hunters never did report on some banded birds they took on or adjacent to the Area. Gobbler No. 13,285 was reported as "killed in Bee County" on December 1, 1942. Gobblers Nos. 13,276 and 13,279 were reported as killed seven miles northeast of Skidmore in November 1945. These two bands were given to me by a resident of Sinton in the fall of 1955. This accounts for three of the 41 gobblers originally released.

TABLE 1. CLIMATOLOGICAL DATA FOR BEE COUNTY  
(Beeville Weather Station)

Temperature		Killing Frost		Growing Season								
January Average °F.	July Average °F.	Maximum °F.	Minimum °F.	Last In Spring	First In Fall	In Days						
55.3	83.8	108	5	Feb. 22	Dec. 2	283						
Average Precipitation (Inches)												
Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1.79	1.74	2.26	2.20	3.68	3.09	2.84	2.19	3.75	2.45	2.31	2.51	30.81

(From CLIMATE AND MAN, 1941 Yearbook of Agriculture, U.S.D.A., p. 1,129)

Turkey hunting in the Bee-Goliad region was extremely light until about 1954. A succession of favorable years, with resumption of normal rainfall and good turkey hatches, was followed by a gradual increase in hunter harvest. Shooting preserve records

of the Game and Fish Commission show turkey kills of 16, 39 and 27 for Bee County in 1958, 1959 and 1960, respectively. For Goliad County, the same records show kills of 6, 2 and 1 turkeys over the corresponding period. However, this is just a small portion of the picture.

Relatively few landowners within the above two counties operate under Texas shooting preserve licenses. Instead, they control hunting by limiting it to invited guests and members of their immediate families. Consequently, it is difficult to get complete data pertaining to game harvest. In this instance, game kill estimates by wardens provide the only clue to turkey harvest. From this source, the legal turkey kill for Bee and Goliad counties last season (1961) was put at approximately 625 gobblers. For a region where wild turkeys did not even exist 25 years ago, this represents progress. \*\*

**The imperial mammoth grew massive tusks, each weighing up to 500 pounds.**

*Far Back Fauna* ————— *From Page 8*

tipped with a mace-like ball which, with its seven-foot length, was undoubtedly a formidable weapon. The glyptodonts migrated to Texas from South America.

Two early carnivorous mammals were *Dinobastis* and *Canis diris*. *Dinobastis*, whose remains have been found throughout Texas, was a saber-toothed cat whose front canine teeth were elongated for tearing, stabbing and holding victims. *Canis*, a bit smaller than the saber-toothed cats, was the first wolf of Texas and, although he lacked the enlarged canines, he was well adapted to the typical carnivorous life, or preying on smaller animals.

Two of the best known prehistoric mammals of Texas were the mammoth and the mastodon. The mastodons resembled modern elephants but had a lower skull and larger tusks—often nearly 10 feet long. A very significant difference could also

be found in the jaw and tooth structure. The mastodons had a longer jaw with several teeth formed of rather blunt, paired cusps; whereas, elephants have a shorter jaw only able to accommodate four teeth at a time. The elephant's teeth, highly specialized for browsing, became much larger and wider with the paired cusps reduced to tightly folded enameled ridges.

Mammoths, the modern elephant's ancestors, lived in Asia, Europe and throughout North America, but the woolly mammoth is without doubt the best known species. Woolly mammoths, though now extinct, once lived and roamed the lands as we now know them. Their disappearance was only a matter of some 10,000 years ago.

The imperial mammoth, the species common to Texas, stood about 14 feet high and bore tusks nearly as long. Weight must have been

tremendous since each tusk alone often weighed 500 pounds! The Texas mammoths grazed the luxuriant pluvial plains and, like modern elephants, probably spent considerable time hosing one another in lakes and streams.

Although these are only a few of the prehistoric beasts that once roamed the Texas plains, they were the principal "game" types. A knowledge of these past species and of their ultimate extinction by natural evolutionary trends should emphasize the current need for tight restriction of man's activities as they tend to infringe upon and inevitably destroy the natural habitats.

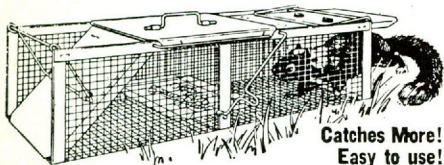
Of course we need not be concerned with nature's evolutionary trends since we ourselves are only playing a small part in an overall life history which is now some 500 million years old. Yet it is certainly well to be cognizant of unnatural acceleration which, in only two generations has eliminated many game species from our state. \*\*

Crystals might have filled in a bone. *Timeworn Treasure*—From Page 11 dinosaur track was composed of dolomite, which resembles calcite but is harder. We also learned that geodes can be formed by deposition inside shells, bones or fossils. When enough material was deposited, the minerals broke out of the original form and spread, filling the cracks as well as the cavity. Perhaps Andy was right when he said that first cluster of crystals we found might have been formed in a dinosaur bone.

Geodes still hold much mystery for us. We've been back to the field many times, and each time we return home to do more research.

One thing is certain. From now on, we're tracking down all rumors. We can enjoy family outdoor adventure and there's no telling what we will discover! \* \*

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# What Others Are Doing

by JOAN PEARSALL

**WHEN THE PIE WAS OPENED.** . . : Noting that starlings devoured \$4.5 million worth of farm crops in the state last year, New Jersey's Farm Bureau has launched a campaign to promote broiled starlings as a gourmet dish.

**TEXT FOR THOSE NEXT:** Rachel Carson's new book, *Silent Spring*, describing the dangers of the new chemical insecticides and other agricultural poisons, is now on the required reading list for ninth grade students in a Maryland school near Washington, D.C.

**EAGLE EAGERNESS:** More than a half-million acres of privately-owned ranch lands in south central Florida have been dedicated as the Kissimmee Cooperative Bald Eagle Sanctuary. Landowners have entered into cooperative agreements with the Florida Audubon Society to safeguard to the best of their abilities all bald eagles on their properties from persecution. They have also agreed to protect eagle nests on their property and to leave standing, when clearing land, enough tall trees to provide future nesting sites for eagles.

**KENYA AWAKENING:** Kenya's African politicians have hitherto shown little awareness of the country's wildlife. Their lack of interest has long concerned conservationists, who have been calling on African leaders to use their influence with their own people to persuade them that the large-scale slaughter of wild animals is contrary to the best interests of the African people themselves. The Member for Mombasa now has urged that efforts be made to deal with the receivers who trade in illicit ivory and rhino horn and to ban rhino hunting completely, on the grounds that it is difficult to persuade Africans to cease kill-

ing them when foreign sportsmen may do so on license. He said their present government is becoming seriously concerned about the indiscriminate slaughter of their animal population.

**GUN MONEY:** A public auction held recently by the New Hampshire Fish and Game Department to sell firearms confiscated from persons convicted of illegal night hunting was termed "quite successful." A total of \$574 was secured for the nine guns put on the block. Amounts received for the guns ranged from a high of \$125 to a low of \$3.

**DOWN TO FAME IN A FRAME:** A New York City artist recently held an unusually provocative exhibit of paintings of rare American birds threatened with extinction. Instead of the usual titles, the actual condition of each bird was given. To emphasize the reduced population of every threatened bird species, each subject was shown in the reduced dimensions of jewel size paintings, recognized as the smallest established form of modern paintings in the fine arts. The painter concentrated attention on the rareness of his native American subjects by framing the rare birds in precious metal frames.

**TALL HAUL:** During July 1959, in Tanganyika, a Ranger and his scouts captured 47 poachers, 150 wire snares and 60 bows and quivers of poisoned arrows. A previous sweep had yielded 1,036 steel-wire snares—enough to destroy over 30,000 animals in one season—and more than 1,000 portions of dried meat. Poachers' rewards are as follows: Wildebeeste tails, used as fly-whisks, 35 shillings each; lion claws, used as charms, 5 shillings each; lion fat, 5 shillings a bottle; hairs from giraffes' tails, a penny apiece; a good leopard skin, 20 pounds.

# Texas

# Tackle Talk

by CURTIS CARPENTER



**A** FISHERMAN cannot learn how to fish out of books. However, he can learn the fundamentals of fishing from them and constantly turn to the good ones for tips and suggestions. I quite often turn to some guide authored by a man who knows his fishing, especially when I plan to try some new type of fishing. I learn a great amount of helpful suggestions based on the experience of authors. And when I arrive on the fishing scene I'm not completely in the dark. I will know what to expect and something about the best tackle and baits to use. With a little practice and some experience, soon I am ready for a battle-field commission. Don't be surprised if you see me sitting in a boat somewhere reading up on my fishing.

## Sharp-Eyed Archer Brings Home the Venison



Bill Marshall of Sanger is credited with bagging the first buck at Possum Kingdom Lake during the special archery season. A nine-pointer, it weighed 98 pounds, field dressed.

Numerous books, most of them filled with good information, are on the market right now. Here's a short list of some good ones you may not know about: *Beginner's Book of Fishing*, by John McCallum and Dave Stidolph, Prentice-Hall, Inc., Englewood Cliffs, N.J., \$3.50; *The Saltwater Fisherman's Bible*, by Erwin A. Bauer, Doubleday & Co., Inc., Garden City, N.Y., \$1.95; Bauer also has a Bass Fisherman's Bible out through Doubleday & Co.; *Night Fishing in Texas*, by John W. Honea, The Naylor Co., San Antonio, Texas, \$3.25; *Practical Fresh Water Fishing*, by Francis E. Sell, The Ronald Press Co., 15 East 26th Street, New York 10, N.Y., \$5.50; and *How to Fish in Saltwater*, by Vlad Evanoff, A. S. Barnes & Co., 11 East 36th Street,

## Lake o' the Pine is under study.

Regional Roundup—From Page 25

Cypress River studies by Region III and IV Chemists John Dorchester and Charles Gray are being made largely concerning affluents from industry being dumped into the headwaters of Lake o' the Pines. Fish kills seem to be more prevalent after rains. Industrial officials and the Health Department are cooperating in an effort to control the situation.

Joe Davidson, quail biologist, reports two more FFA chapters are participating in the quail program. Livingston and Mauriceville have begun their projects.

The Tyler fish hatchery, according to Supt. Glen Caddel, had a good year as far as fish distribution. Report follows: bass, 1,348,935; warmouth, 19,125; redear sunfish, 78,675; catfish, 349,065; crappie, 43,925; redbreast, 21,600.

New York 16, N.Y., \$5.95.

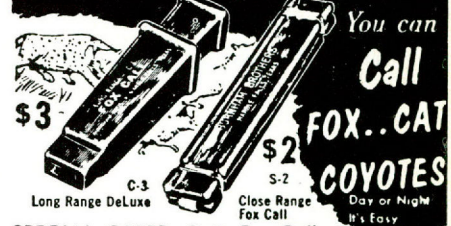
There are many others. I will try to list a few each month. If you have a question or suggestion concerning fishing, feel free to write. I'm here to help if I possibly can. \*\*

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*Game Guardians* ————— *From Page 7*

ing of the departmental functions, the functional coordinators for wildlife restoration, information and education, law enforcement, inland fisheries and coastal fisheries each spend at least 18 hours in explaining the operation of his particular function. Extra emphasis is placed on the areas in which the game warden assignments coincide with the duties of another organizational unit of the department.

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cycle on June 1, trainees are assigned districts and begin operating as district game and fish wardens.

New personnel are assigned to meet the department's requirements and are subject to transfer by administrative decision and notice.

Wardens are equipped with State-owned, radio-equipped automobiles, complete uniforms, boats and motors (where needed), binoculars and other needed items. A pay increase to \$331.33 per month is made with per diem as per directive. A game and fish enforcement officer is entitled to: (1) 12 vacation days per year, (2) holidays as prescribed by the Legislature, (3) sick leave accumulative to 36 days, (4) retirement pay based on age and length of service and (5)

Scenic Lake Buchanan also provides top deer hunting.

*Big Old Buck* —————

*From Page 17*

sites around the lake have almost encircled the area with good roads, and electricity is available at most spots around the lake.

Thus Big Old Buck, with its scenic beauty has become one of the principal play spots in the state. Added

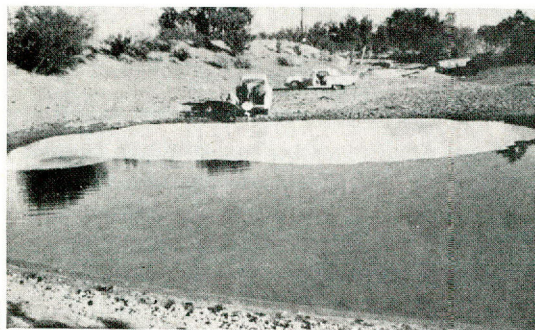
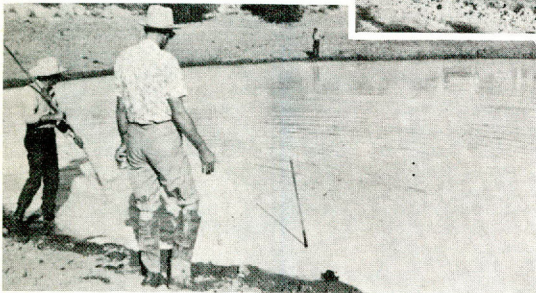
participation in group and mutual insurance programs.

Enforcement personnel are subject to increases in salary as set forth in the Classification Salary Schedule which was provided by the Fifty-seventh Legislature.

After months of study and on-the-job instruction, new law enforcement officers are capable of handling many responsibilities necessary for the protection and conservation of game birds, game mammals, fur bearers and fish of the State. The trained officers stand by, at all hours, to investigate illegal activities by hunters and fishermen and to provide information about the laws and the work of the Commission as well as to assist biologists in field operations. \*\*

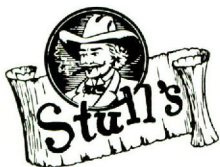
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# Outdoor Books



**LIFE HISTORIES OF NORTH AMERICAN WILD FOWL**, in two parts, by Arthur Cleveland Bent. Published by Dover Publications, Inc., 180 Varick Street, New York 14, N. Y., 244 and 314 pages, \$2.35 each.

Rare is a life history of species which is both zoologically thorough and cleverly written. But Bent has given readers the bonus of artful prose founded on an uncanny understanding of wildlife with sound information. Bent, who was one of the well recognized and respected naturalists of this century, first published the information on wild fowl in bulletin form for the Smithsonian Institution in the early 20's. Other Bent volumes on shore birds and birds of prey originally published for Smithsonian Institution are now available in unabridged Dover paperbacks.

In this two-part volume on wild fowl, as in all his other works, Bent makes species come alive—not through cartoon-type characterization or heavily drawn humanization but through vivid descriptions of the birds just as they are.

Bent's description of the ruddy duck is typical of the quality of pages throughout the book.

"This curious little duck is in a class by itself, differing in several peculiarities from any other North American duck. . . . One must see it on its breeding grounds, in all its glory, to appreciate what a striking picture is the male ruddy duck. In the midst of a sea of tall, waving flags a quiet, sheltered pond reflects on its glassy surface the dark green of its surroundings, an appropriate setting for the little gem of bird life that floats gently on its surface, his back glowing with the rich, red brown of his nuptial attire, offset by the pure white of his cheeks, his black crown, and above all his wonderful bill of the brightest, living, glowing sky blue. He knows he is handsome as he glides smoothly along, without a ripple, his saucy sprigtail held erect or even pointed forward till it nearly meets his upturned head; he seems to strut like a miniature turkey gobbler."

Some of the most colorful Bent passages describe the elaborate courtships of wild fowl. In the following one, the female mallard seems to have her choice of drakes.

"Many of them are already mated when they arrive and the flocks of mated birds soon break up into pairs and fly about in search of suitable nesting sites. Others are busy with their courtships, which are con-

ducted largely on the wing. I have seen as many as three males in ardent pursuit of one female flying about, high in the air, circling over the marshes in rapid flight and quacking loudly; finally the duck flies up to the drake of her choice, touches him with her bill and the two fly off together, leaving the unlucky suitors to seek other mates."

The book is arranged in sections by species and subspecies with each portion including subheadings on habits, breeding range, courtship, nesting, eggs, young, plumages, food, behavior and seasonal activities. In the discussion of these classifications Bent has included more than general information; he points out some details of the birds' lives and makeup that give readers a more intimate than encyclopedic acquaintance with the birds. Often these details are given in passages relating a particular field incident which occurred to the author. A passage about a family of Canada geese is a case in point.

"While the family party is moving about on the water the gander usually leads the procession, the goslings following, and the goose acting as rear guard. The old birds sometimes lead their young for long distances over large bodies of water. While cruising on Lake Winnipegosis on June 18, 1913, we came upon a family party fully five miles from shore and evidently swimming across the lake. The two old birds when hard pressed finally took wing and

flew away, leaving the three half-grown young to their fate. The young were still completely covered with down, and their wings were not at all developed, although their bodies were as large as mallards. They could swim quite fast on the surface, could dive well, and could swim for a long distance under water. They were surprisingly active in eluding capture, and when hard pressed they swam partly submerged, with their necks below the surface and their heads barely above it, in a sort of hiding pose."

Bent supplements his own observations with accounts of his contemporary naturalists as well as reports from great wildlife experts of the past including John James Audubon.

In convenient but sturdy paperback form, this publication can be enjoyed in the field by ornithologists or in the living room by anyone interested in birds.

—Ann Streetman

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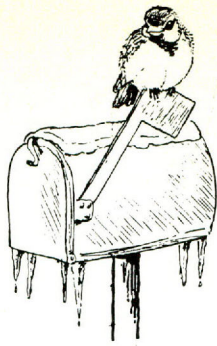
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# Letters

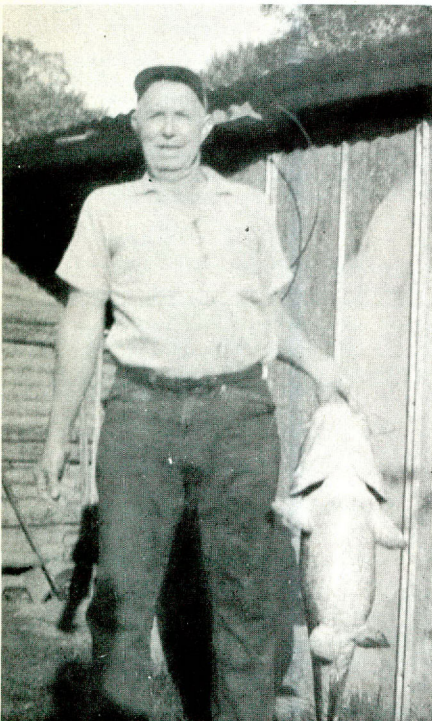


# to the Editor

## Beefy Flathead

Editor:

This is a picture of my husband and a 22½-pound flathead catfish he caught re-



cently from his five-acre fish pond, which is only six years old. In 1961 he caught a 15¾-pound cat. Both were taken on cane set poles with live perch for bait.

There have been several three- to five-pound cats as well as many white perch and bass. The largest bass went five pounds. Several of the white perch weighed one and a half pounds each.

Mrs. Hobart Hudson  
Orange

(Thanks for telling us about your husband's fine fishing pond.—Editor.)

## Sitting Quail

Editor:

I am a regular subscriber to *Texas Game*

and *Fish* and look forward to this magazine each month.

I am writing you in hope that some day we may get some laws passed regarding "pot shooting quail."

I have known people who drive up on a covey sitting under a bush and start shooting, killing three-fourths the covey and injuring the rest.

Well, I just received some pamphlets from the state of Nebraska pertaining to hunting. They show a footnote under quail which states, "must be shot in flight." I think this would be a very good law, and I hope this letter will do just a little good along this line.

W. H. Midkiff  
Moran

(Of course, shooting any game bird or animal from "any type of motor powered vehicle or boat under sail or power" is illegal in Texas as stated in the Game Law Digest and Supplement. Texas does not, however, stipulate that quail be taken on the wing, mainly because our abundant supply has not necessitated such action. The question of the sportsmanship of the matter is one that can be decided by the individual hunter, and acted upon accordingly. Thanks for giving us your views on the matter.—Editor)

## Garza-Little Elm Lunkers



Editor:

Garza-Little Elm reservoir deserves to

be listed among Texas' best fishing spots.

Shown in picture are Ralph E. Austin and C. S. Williams of Dallas with their catch of large mouth bass—four pounds, 14 ounces and five pounds, seven ounces—caught with creek minnows. Mrs. Williams deserves credit for a four-pound, 10-ounce large mouth bass caught in Hickory Creek, which is an arm of Garza-Little Elm.

C. S. Williams  
Dallas

(Thanks for letting our readers share your fishing experience.—Editor.)

## Record for Montague?



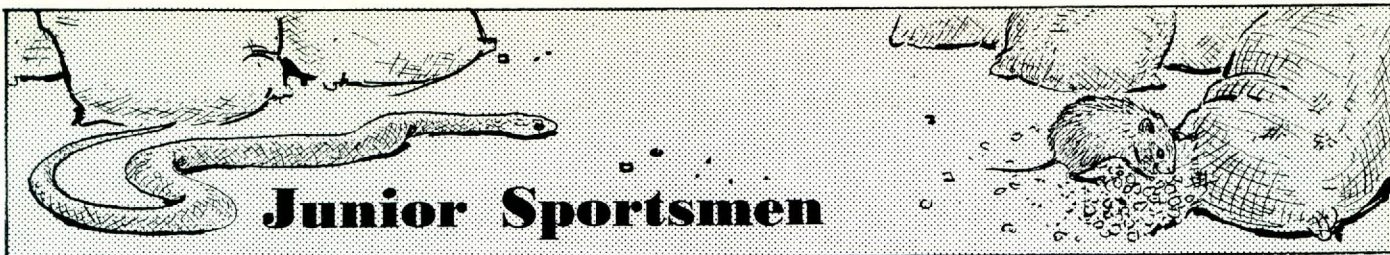
Editor:

I am enclosing a snapshot of a bass that I recently caught in Montague County. He hit a small black-bladed spinner. He weighed nine pounds, four ounces. The bass was mounted by Bud Lucas, Wichita Falls. This photo is following mount. As far as I know, it's the biggest to come out of Montague County. The bass was caught out of a flood control stock lake.

I'm an avid bass fisherman and bird hunter, and I look forward to each new issue of your fine magazine. Working in a post office, I see many different state game magazines, but I believe *Texas Game and Fish* is the best.

Jimmy G. Hoover  
Wichita Falls

(Thanks for letting our readers see your prize.—Editor)



# Junior Sportsmen

**T**ABLE MANNERS are either unknown or unheeded by the rat snake as well as by his relative, the rattlesnake. They have never learned that stuffing the mouth is simply uncouth. In fact, they don't seem to care. They go on swallowing a whole rat whenever they can snare one.

The rat snake is quite active in getting his meals. An agile hunter, he climbs trees to snatch birds and their eggs and noses around the haunts of his favorite prey, the rat.

When the snake finds the rodent, he quickly wraps his body into several coils about it. With deadly accuracy he gives the unlucky animal a series of rapid squeezes in rhythm with the victim's heart-beat or respiration. The prey does not die because of broken bones but because of suffocation and stopped circulation.

When the snake is sure his meal has been killed, he noses around a bit over the creature's body to find the head; he begins downing the fellow from that point. He extends first one side of the mouth and then the other over the body, gradually working the meal into the mouth and into the stomach, whole. Soon the rat disappears and the only sign of conquest is a bulge in the upper part of the snake's long curving body. (See art sequence of rat snake.)

Unlike the rat snake, which is in a class called constrictor, the rattlesnake usually gets his prey by ambush and then kills it by biting. Instead of squeezing the life

## ONE RAT MEDIUM RARE

by ANN STREETMAN

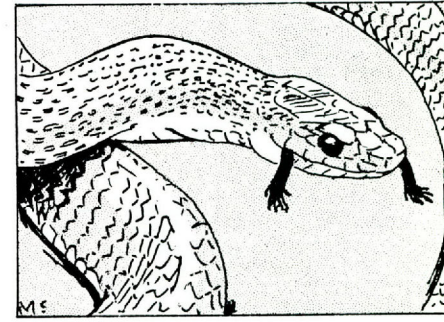
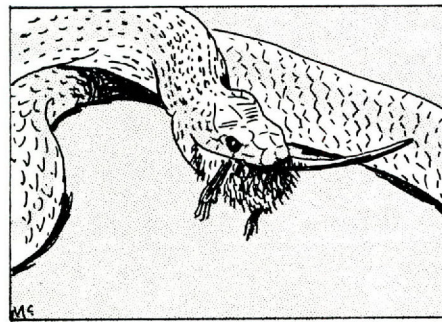
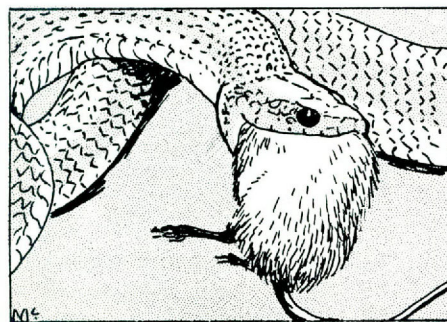
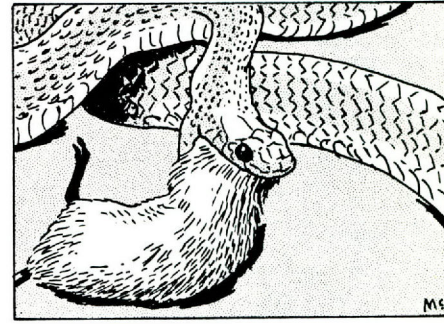
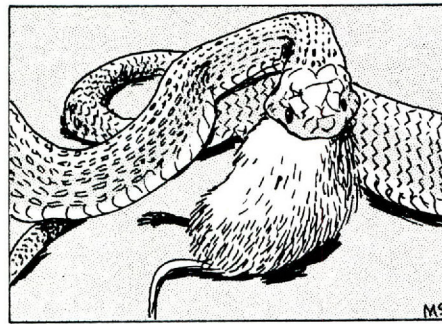
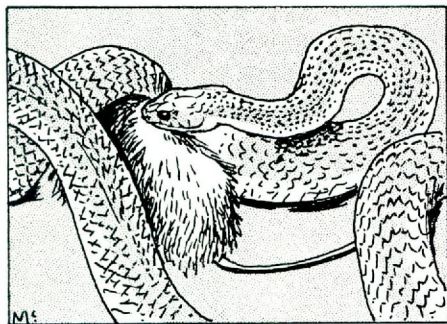
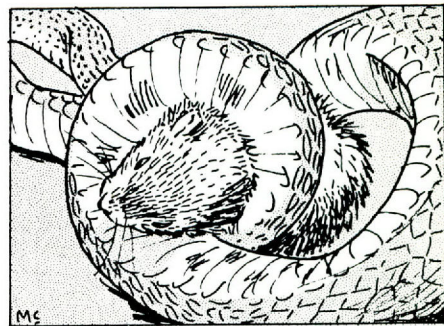
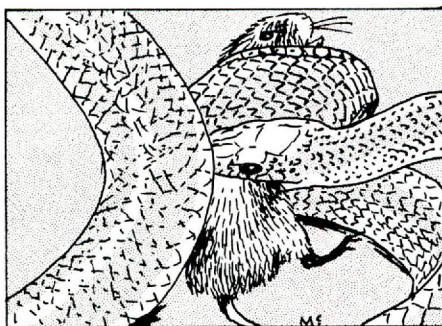
from a rat or rabbit, the rattlesnake, a reptile of the viper class, injects his deadly venom into the animal and waits for a swift death. The rattlesnake noses about the animal, sometimes getting several trial grips, before he settles on one, usually the head.

The rattlesnake has one big advantage over his nonviper cousin, the rat snake. The rattler uses his fangs to help his teeth action in maneuvering the meal into his throat. He can rotate his fangs and swing them downward and forward from their resting position folded up against the roof

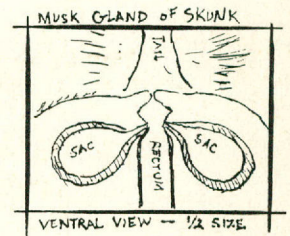
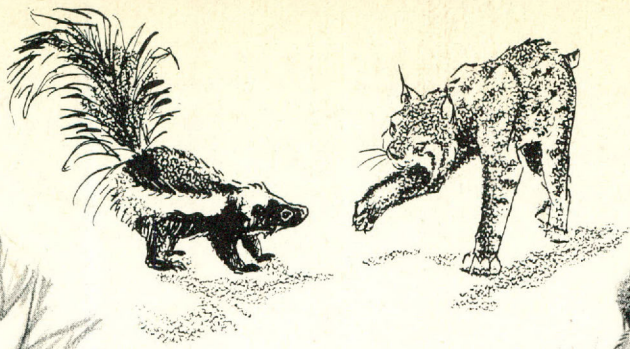
of the mouth. The fangs can be moved independently, which is a great aid in the swallowing process.

His jaws are attached to each other at the front and the bones are thin and pliable so that the whole jaw action is elastic. The rattler can breathe during the five or more minutes it takes for him to swallow a victim because the outer end of his windpipe protrudes from his mouth during this process.

Viper or nonviper, these snakes devour their food with relish and with no regard for the looks of their performance. \*\*



# Skunked!



Here is one curious bobcat which will carry the mark of a lesson learned for weeks to come. The skunk's clinging odor is a liquid musk stored in twin sacs beneath the tail. Normally hidden, the ducts can be projected for instant action. They can operate separately or together and be directed with noxious accuracy. Many brave naturalists state that a skunk can't shoot when held up by the tail as the feet must be firmly anchored and tail cocked at right angles

to the spine before the powerful weapon can be used. The firing range is six to eight feet, and a well-prepared polecat contains enough musk for 10 or 12 squirts. Only a week is needed to fill up the sacs again. Mercaptan, a sulphide, is the main ingredient of the fluid. A direct hit will cause immediate blindness, usually temporary, suffocation, nausea and occasionally fainting. Show respect for him; he's quick on the draw.