

Texas Game and Fish

FEBRUARY

1958

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THIS BADGE IS A SYMBOL OF FRIENDSHIP

It identifies your game and fish warden.

Today he is more than a seasonal game law enforcement officer. He has been, or is being, transformed into a year-round wildlife conservation officer who wears this badge with pride, because he is upholding a cause in which millions are vitally interested.

As a law enforcement officer, the wearer of this badge subjects himself to the chills of winter and the heat with its mosquitoes in the summer to preserve that wildlife which the public owns and enjoys. Many other duties come within the obligation of this officer. He is constantly endeavoring to sell the Game Department's conservation program by discussing the value of the State's wildlife resources with individuals and at public gatherings; helping with wildlife surveys or advising landowners how they can manage their land to produce more wildlife. Many wardens carry out systematic programs in schools, promoting wildlife

conservation and good sportsmanship.

Every effort is made to select men to wear this badge who will be a credit to the community where they reside. Their backgrounds are thoroughly investigated, and every effort is made to choose men who will conduct themselves as gentlemen and good citizens.

After an applicant is selected as a potential game and fish warden, he is given a four-month course at Texas A. & M. College, under the tutoring of the best talent available in the field of game law enforcement and wildlife management. Twenty-two students are now in training at Texas A. & M. who, when they successfully complete this course, will be assigned to specific areas over the State and take their places among you as citizens and public servants.

Know your warden! Ask him to help you with your wildlife problems. The name and address of YOUR game and fish warden is in the list starting on page 5.

Earl Sprott, Director, Law Enforcement

Texas Game and Fish

EDITOR.....Jean Richmond
 ASSISTANT EDITOR.....Janey Bell
 CIRCULATION.....Mervyn Krause

TEXAS GAME AND FISH is published monthly by the Texas Game and Fish Commission. Subscription price \$2 per year. Single copies of current issue 20 cents each.

Subscriptions to TEXAS GAME AND FISH are available from the Austin offices, or from most licensed deputies. Checks and money orders should be made payable to STATE GAME AND FISH COMMISSION, Editorial and Advertising Offices, Walton Building, Austin, Texas. Entered as second-class matter May 19, 1943, at the post office at Austin, Texas, under the act of March 3, 1879.

Postmaster: If undeliverable, please notify TEXAS GAME AND FISH on form 3578-P at the Walton Building, Austin, Texas.

TEXAS GAME AND FISH invites republication of material provided proper credit is given, since the articles and other data comprise factual reports on wildlife and other phases of conservation.

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The Cover



Boat-tailed grackles, the large blue-black birds with long trough-shaped tails, are familiar sights in Texas as they cluster close to civilization. The females display more muted coloring of soft brown. (See story on page 10.) Cover painting by Clay McGaughy.

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

February, 1958

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TEXAS GAME AND FISH COMMISSION

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*With a knowledge of conservation and laws governing wildlife,
the game warden is . . .*

Guardian of the Outdoors

WHEN hunting seasons close, February catches prospective game wardens heading to school and old-hands checking in at the main office in Austin to get reacquainted and briefed. We consider this month theirs—an opportunity to get that second wind, a little more information on recent developments in the wildlife field.

Conducted by the Department of Wildlife Management of Texas A. & M. College and the Texas Game and Fish Commission, the wardens' school covers three phases of the game guardian's job. The law course covers both special and general fish and game laws, presentation of a case in court, and methods of keeping accurate and detailed records of arrests.

A public relations course aids the warden in his vital task of keeping the public informed of the new developments in the wildlife field. They study the best methods of speaking before large groups of sportsmen or school children, and of writing informative articles for newspaper use.

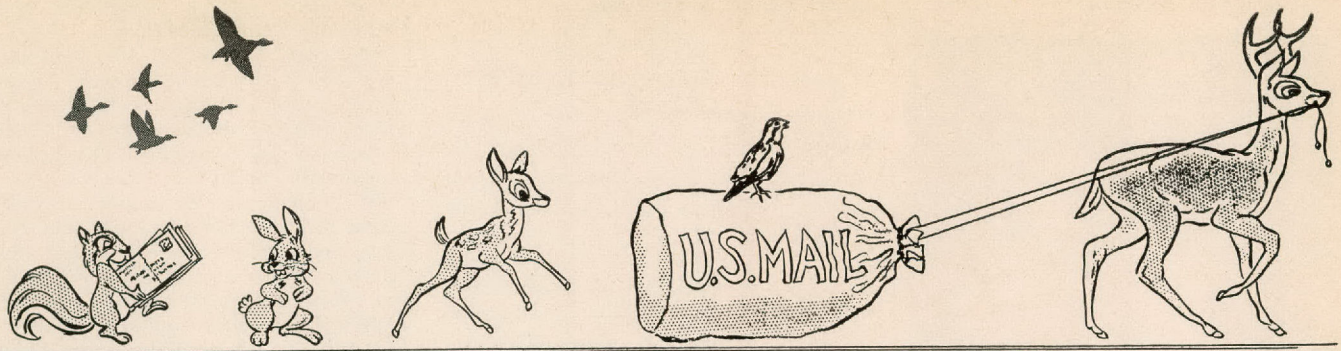
Records and reports training covers the basic but important fundamentals of keeping careful field notes and conveying them to the central office.

Game and fish management courses such as "Wildlife Conservation and Management," "Natural History of Vertebrates," and "Conservation and Management of Fish," round out the education of the warden. Handling of firearms and marksmanship—a skill wardens need to teach gun safety—was added in 1955.

On-the-job experience is backed up each year with a refresher course, called in-service school, which lasts three days. Besides getting abreast of new policies in the Game Commission, the wardens get a chance to discuss their problems and projects with others from different parts of Texas. In this way they get an over-all picture of the Commission's activities throughout the State.

The knowledge of most recent developments in the outdoor field are at the warden's fingertips through cooperation of biologists, supervisors, and key personnel in the main office of the Game Commission.

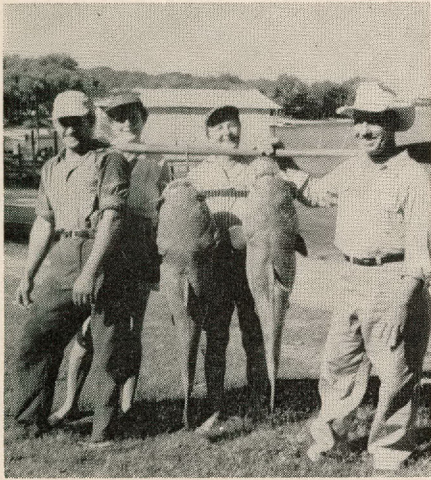
It is our purpose to serve you—and the warden forms the basic link which joins the Commission with each Texas citizen.



Big "Babies"

Editor:

How do you like this picture of two "young, partly grown" flathead catfish from Lake Corpus Christi?



Mr. and Mrs. Arthur Voigt and Mr. and Mrs. Herbert Wohlfahrt of Cibolo caught them on the night of August 16, 1957. Both men work in San Antonio and when they decide to make one of their several trips a year to Lake Corpus, they just fish them up a mess of Rio Grande perch from the San Antonio River, put them in live boxes, and bring them to the lake in barrels.

They usually set their lines so the hooks are almost on the bottom in water about 15 or 20 feet deep. The large hooks are spaced 16 feet apart so that if two large fish are caught on adjacent hooks, they won't lose one while fighting the other. Enough lines are set so that they use about 100 to 200 hooks, and live Rio Grande perch are the only bait they will use. These two fish weighed 40 and 44 pounds. Six blue catfish from 3 to 9 pounds, were also taken, bringing their total two-night catch to 124 pounds.

Two years ago, Voigt spent about

10 days fishing on Lake Corpus Christi and caught a total of 499 pounds of flathead and blue catfish using this same method. He insisted to me that he would not lie about his fish and claim 500 pounds!

Al Flury
Mathis

Menu for a Carp

Editor:

My folks visit Texas nearly every year. Recently they brought back three copies of your magazine. In your July, 1956 issue, there was a story on "Carp Fishing."

A box of Corn Flakes is all you need to make good carp bait. Take a double handful and dip it in the water. Work it into a ball. Break off into balls about three-fourths inch in diameter and put it on your hook. Work it into a pear shape covering the barb and bow and part of the shank.

No special fishing rig is needed for this type of fishing. I use 25 pound test line and 1/0 snelled hooks. I use three-fourths ounce sinker on the end of the line and place the snelled hooks far enough apart so they can't hook each other.

R. L. Evermon
Tri Angle Trailer Courts
Keokuk, Iowa

In Touch

Editor:

I have been a regular reader of TEXAS GAME AND FISH for the past eight years and look forward to each issue. I know of no better way to keep up with our state hunting and fishing laws.

My oldest boy is in Japan, and TEXAS GAME AND FISH is sent to him every month. He writes that he enjoys the magazine very much, and even though he is far away, he can stay in touch with our hunting and fishing.

Perhaps other sportsmen have sons overseas who would like to receive regular copies of their home magazine, TEXAS GAME AND FISH.

A. B. Landry
Port Arthur

Irresistible

Editor:

Who can tie this past Ripley fact? A little more than one year ago Dan Harlows of Buchanan Dam and I were trotline fishing in Inks Lake. The line was baited at 11 a.m. on Wednesday. The same afternoon all baits were gone, but the line was not rebaited. However, the following Monday we removed a 10-pound yellow catfish, a 6-pound blue catfish and a 1-pound blue catfish. All three were hooked inside the mouth. Don't kid yourself. No one else baited the line.

H. S. Garrett, M. D.
Burnet

Unusual Find

Editor:

While dressing a dove the other day, I found a fully developed egg. The egg was intact although slightly cracked in several places. I killed this bird in Collin County.

Although I have hunted doves for 35 years in Texas, I have never seen nor heard of this as late as September 1. I know a late hatch will sometimes find the young still on the nest at this time, but thought I would report the unusual to you.

A hint to pass on to the TEXAS GAME AND FISH subscribers: Don't throw that magazine away. Contact your local grade school teachers. They are happy to receive and pass on knowledge and sportsmanship to our Texas youngsters.

Lynn B. Stitt
6127 Berkshire
Dallas 25

(It is not rare, although it is unusual, to find fully developed eggs in late nesting doves which are killed early in the dove season.—Editor.)

Best Hunts

Editor:

I find TEXAS GAME AND FISH to be the nicest and most up-to-date magazine. I wish more people would get it and see what game officials really do to make this a still better state to hunt in.

H. L. Haverlah
Campbellton

Unexpected Beauty



Editor:

This 13-pound, 2-ounce speckled trout was caught with a light rod, small reel, 12-pound test line, live grass shrimp, and a popping cork. I was fishing in shallow water in the Arroyo Colorado for flounder when the big fish hit. The trout put up a fight for some 15 minutes and broke water once. It was 33½ inches long and 17½ inches in girth.

Walter R. Hentz
Harlingen

Time for a Change

Editor:

Keep up the good work of trying to show the Texas people and hunters that we need a change in the deer hunting laws of Texas. The "buck only" law is going to run our deer herds down to midgets, also weaken them. Nature is trying to help balance the herds, but that's a waste of meat and game.

I hunt in Austin County, and last year and before we had lots and lots of does and fawns. This past summer the screw worms must have killed a number of does and fawns. We only have 346 acres, and have found five dead deer, several of which seemed to be new-born fawns.

Bennie H. Onken
Channelview

Deer Camp Questions

Editor:

It would be greatly appreciated if you could settle a couple of arguments that have developed at the campfire on a deer hunting lease I am on, or please refer me to someone who can.

(1) The law requires that the landowner file a report at the end of each hunting season with the hunters' names, license numbers, and game killed. What I would like to know is: When should this report be filled in? One side says that the game should be entered as it is killed, that is, on the day of the kill. The other side says that this should be entered at the end of the season with total shown as to game killed.

(2) While hunting, a man kills a turkey, a deer, or javelina. He intends to stay out for four or five days, and since the weather is warm, it is necessary to take the game to a locker. Does the law say that the man making the kill must take the game in, or can he give it to another hunter to take in for him? One side says this is the reason for the landowner's report at the time of the kill—the hunter who did not kill the game can still take it in.

(3) While on a lease used by only one group of hunters, all of whom have paid for the lease, a hunter usually enters with dress clothes on and changes into hunting clothes at camp. He usually does not transfer money and other personal belongings to his hunting clothes. Is it the law that the man must have his hunting license in his pocket at all times while on the lease, or would it be considered on his person as long as the license is at camp?

Anything you could do to get the questions answered will be greatly appreciated and will settle some hot arguments.

F. E. Knapp, Jr.
Brownsville

(1. The shooting preserve record should be filled in as the game is killed and as the hunter frequents the area involved. The landowner or shooting preserve license holder will complete the other side upon the termination of

the hunting season, and return it to the Game Department.

(2. One hunter or one individual may convey the game killed by a number of hunters to storage or any other place provided it is properly tagged. Otherwise, the conveyor will be held responsible for it.

(3. I believe the proper interpretation of the law is that one must have the license upon his person when hunting. However, all game wardens are very reasonable, and I do not know of a single instance where a complaint has been filed if the hunter could produce the required license at a local camp or some place reasonably close.—E. M. Sprott, Director of Law Enforcement.)

Indeed, We Are

Editor:

I thought you might be interested that my copies of TEXAS GAME AND FISH are read by many of the members of the Naval Academy Gun Club. Since they have their homes in the four corners of the United States and thus have the opportunity to read other such periodicals, I considered it a compliment that they believed TEXAS GAME AND FISH one of the best.

Mid'n Charles D. Witt
United States Naval Academy
Annapolis, Maryland

Scale-tipper



Editor:

Clifford Telles of San Ygnacio caught this alligator gar with a trammel net in Falcon Lake, while I was working the lake about five miles down from the old town of Ramarenio last year. The gar weighed 159 pounds and measured 8 feet, 6 inches in over-all length. I saw many large gars caught in the lake but this is the only one I have a record of.

H. R. Adams
Fort Davis



Where To Find Your Local Warden

A list of Texas Game Wardens with their addresses

Clip and Save This Directory

Your Game Warden is your local representative of the Game and Fish Commission. He is at your service to issue a license, to explain the work and services offered by the Commission, to interpret the game laws for you, or to help you in any way he can. Get better acquainted with him — he is there to serve you.

Information about game laws . . .

A summary of game and fish laws is contained in a "Digest of Game and Fish Laws," published by the Commission and available without charge from wardens and most license agents and sporting goods stores or from the Game and Fish Commission, Austin 14, Texas. Since laws on some species may vary in different counties, you may find it advisable to check with your warden concerning the laws in the county where you plan to hunt or fish!

GAME WARDEN REGIONAL SUPERVISORS

F. M. Cowsert	1905 Stamford Lane, Austin
J. L. Hardie	516 Peach St., Tyler
A. W. Lewis	First Floor County Courthouse, Dallas
J. H. Maggard	2101 Teckla Blvd., Amarillo
Frank Mebane	Box 562, Alvin
Lewis M. Morris	271 Franklin St., Beaumont
M. B. Mullinax	Box 274, Rockport
G. M. Stricklin	Star Route 2, Beeville
Herbert C. Ward	Box 106, Catarina
A. R. Williams	Box 995, Alpine
John R. Wood	Box 223, Brownwood

LAKE WARDENS

Lake	Warden	Address
Abilene	J. D. Jones	Box 401, Abilene
Austin	Ben Gaddy	604 Josephine, Austin
B. Dam	J. W. (Bill) Kincannon	Box 313, Jasper
	J. B. Weaver	Box 434, Woodville
Belton	Floyd Gaby	Box 3127, Temple
Benbrook	Harold A. Bierman	County Courthouse, Fort Worth
Bridgeport	Harold A. Bierman	County Courthouse, Fort Worth
Buchanan	R. L. Flanagan	Box 747, Burnet
Buffalo	Woody Pond	Box 801, Canyon
Caddo	T. C. Browning, Jr.	Rt. 2, Karnak
Corpus Christi	F. C. Henze	Box 675, Mathis
Devils	J. B. Phillips	Del Rio

Lake	Warden	Address
Falcon	Raymond H. Davee	Zapata
Ft. Phantom Hill	J. D. Jones	Box 401, Abilene
Garza-Little Elm	W. R. Long	Denton
Grapevine	W. R. Long	Denton
Kemp	Chas. Boynton	510 W. 10th, Quanah
Lavon	Charles R. McCallum	Box 531, Wylie
Medina	L. D. Nuckles	Castroville
Oak Creek	C. D. Vann	Box 103, Robert Lee
Possum Kingdom	Leon Stowe	Box 265, Graford
Red Bluff	Robt. Miller	Box 343, Pecos
San Angelo	Henry B. Burkett	204 Glenmore, San Angelo
Texarkana	Phil Brooks	808 Hickam, Wake Village
Texoma	Hill Lawrence	Rt. 1, Pottsboro
Travis	Grover Simpson	Austin
Whitney	Louis Clymer	Box 456, Whitney
Worth	Harold A. Bierman	County Courthouse, Fort Worth

WARDENS BY COUNTIES

County	Warden	Address
Anderson	Clarence D. Kornegay	Box 101, Palestine
Andrews	Noel J. Head	Box 491, Seminole
Angelina	Robert Ogburn	434 S. Bynum, Lufkin
Aransas	James R. Palmer	Box 1414, Rockport
	Earl Sloan	Box 247, Aransas Pass
Archer	W. C. Cave	4316 Cunningham St., Wichita Falls
	Morris E. Stallcup	3114 Sherwood, Wichita Falls
Armstrong	Lake L. Black	829 Maryland St., Amarillo
Atascosa	Billy Ray Hoyle	Box 906, Pearsall
Austin	E. E. Hargett	Box 95, Bellville
Bailey	Patrick L. Donnelly	Box 149, Littlefield
Bandera	R. L. (Dick) Stephens	Box 54-A, Bandera
Bastrop	Ben Gaddy	604 Josephine, Austin
	Grover Simpson	6207 Shoalwood, Austin
Baylor	C. T. Pittman	Box 12, Seymour
Bee	Curtis L. Oswalt	Box 7, Beeville
Bell	Floyd I. Gaby	Box 3127, Temple
Bexar	A. E. Hitzfelder	401 Nueva St., San Antonio
	Alton Willmann	132 Honeysuckle Drive, San Antonio
Blanco	Warren B. Guthrie	Box 195, Johnson City
	John Taylor	Box 204, Marble Falls
Borden	William H. Pratt	Box 176, Lamesa
Bosque	Clifford H. Johnson	Box 237, Meridian
Bowie	B. P. (Phil) Brooks	Box 134, Wake Village
	John A. Shaddix	Box 783, New Boston
Brazoria	W. C. Childress	Box 181, Pearland
	M. C. Hollister	207 Walnut, Lake Jackson
	H. T. Mayne	Box 566, Angleton
Brazos	J. D. Robertson	Box 894, Bryan
Brewster	Sanford J. DeVoll	Box 698, Alpine
Briscoe	Woody Pond	Box 801, Canyon
Brooks	Harvey Schoen	Box 393, Falfurrias
Brown	Frank A. Hamer	Box 80, Brownwood
	Harol D. Penney	Box 473, Brownwood
Burleson	Carl Covert	Box 281, Rockdale
	Marvin C. Wills	1107 Ewing St., Brenham

County	Warden	Address	County	Warden	Address
Burnet	R. L. Flanagan	Circle M Lodge, Buchanan Dam	Goliad	W. D. Henry	Box 35, Goliad
	Billy M. Sprott	409 E. Kerr, Burnet	Gonzales	J. B. Goodwin	Rt. 1, Gonzales
	John T. Taylor	Box 204, Marble Falls		Emmett Wolfsdorff	Rt. 1, Hallettsville
Caldwell	D. W. Bowers	Rt. 1, Box 322, San Marcos	Gray	Jack Woodford	Box 26, Miami
Calhoun	Geo. T. Miller	Box 361, Port Lavaca	Grayson	C. Hill Lawrence	Rt. 1, Pottsboro
Callahan	John D. Jones	Box 401, Abilene	Gregg	Bert G. Cade	2020 Sunnybrook, Tyler
Cameron	Robert E. Middleton	Box 1550, Brownsville		Robert G. (Bob) Goss	Box 651, Kilgore
	William R. Stewart	Box 491, Rio Hondo	Grimes	Robert Lys	Box 604, Navasota
Camp	Robert B. Jessee	Box 366, Gilmer	Guadalupe	F. E. Hollamon	Box 825, Seguin
Carson	Jack Woodford	Box 26, Miami	Hale	Wm. V. Riddle	2608 37th St., Lubbock
Cass	B. P. (Phil) Brooks	Box 134, Wake Village	Hall	Walter D. Hicks	Box 43, Memphis
Castro	Patrick L. Donnelly	Box 149, Littlefield	Hamilton	Clifford H. Johnson	Box 237, Meridian
Chambers	George B. Killebrew	Box 24, High Island	Hansford	Starkey Whitehorn	Box 103, Borger
	Charles A. Short	P. O. Box 852, Anahuac	Hardeman	Charles L. Boynton	510 W. 10th, Quanah
Cherokee	James J. Tisdale	Box 205, Rusk	Hardin	Olan H. Davis	Box 182, Silsbee
Childress	Walter D. Hicks	Box 43, Memphis	Harris	Clarence Beezley	3507 Milam, Houston
Clay	W. C. Cave	4316 Cunningham St., Wichita Falls		Joe B. Brower	3507 Milam, Houston
	Morris E. Stallcup	3114 Sherwood, Wichita Falls	Harrison	Robert L. Cross	3507 Milam, Houston
				Martin A. Peterson	Humble
Cochran	William V. Riddle	2608 37th St., Lubbock	Hartley	T. C. Browning, Jr.	Rt. 2, Karnack
Coke	Clarence D. Vann	Box 103, Robert Lee	Haskell	Jess Felts	Box 727, Dalhart
Coleman	Frank A. Hamer	Box 80, Brownwood	Hays	Harry B. Iverson	Box 176, Throckmorton
	Harol D. Penney	Box 473, Brownwood	Hemphill	D. W. Bowers, Jr.	Rt. 1, Box 322, San Marcos
Collin	Charles R. McCallum	Box 531, Wylie	Henderson	P. D. Moseley	Box 337, Canadian
Collingsworth	G. P. Davis	Box 326, Shamrock	Hidalgo	Fred Gilliam	Box 746, Athens
Colorado	Leo Kohleffel	Box 721, Columbus	Hill	J. W. Frazier	Box 851, San Juan
Comal	W. F. Sumbing	Rt. 1, Box 120, New Braunfels	Hockley	Louis Clymer	Box 456, Whitney
			Hood	Wm. V. Riddle	2608 37th St., Lubbock
Comanche	Maurice S. Dry	207 W. Sadosa, Eastland	Hopkins	J. C. Moore	Box 165, Stephenville
Concho	W. F. Bennett, Jr.	Box 307, Brady	Houston	John L. Jackson	Box 425, Sulphur Springs
Cooke	Travis L. Hobbs	1214 N. Grand, Gainesville		Thomas A. Hughes	Box 511, Groveton
Coryell	Harley Berg	2316 Lasker Ave., Waco	Howard	Allen Woolley	Rt. 1, Crockett
	Hubert Brooks	Box 1623, Waco	Hudspeth	William H. Pratt	Box 176, Lamesa
	Walter D. Hicks	Box 43, Memphis		Edgar Sturdivant	Box 3252, Station A, El Paso
Cottle	T. F. Wheelis	Box 783, Fort Stockton		N. L. Chamberlain	Box 1423, El Paso
Crane	Clifton C. Jung	Box 123, Iraan		George Vickers	Box 756, Van Horn
	John A. Lockett	Box 735, Ozona	Hunt	Charles R. McCallum	Box 531, Wylie
Crockett	Cecil Fox	424 W. Harris, Spur	Hutchinson	Starkey V. Whitehorn	Box 103, Borger
Crosby	George Vickers	Box 756, Van Horn	Irion	Henry B. Burkett	County Courthouse, San Angelo
Culberson	N. L. Chamberlain	Box 1423, El Paso			
	Edgar Sturdivant	P.O. Box 3252, Stn. A, El Paso	Jack	Lonnie R. Wooten	1109 Turner Dr., Jacksboro
Dallam	Jess Felts	Box 727, Dalhart	Jackson	A. W. Henderson	Box 642, Ganado
Dallas	A. A. Stein	1st Floor County Courthouse, Dallas	Jasper	J. W. Kincannon	Box 313, Jasper
			Jeff Davis	Harvey Adams	P. O. Box 514, Fort Davis
Dawson	William H. Pratt	Box 176, Lamesa	Jefferson	W. A. Gentry	271 Franklin, Beaumont
Deaf Smith	Calhoun Lovelace	Box 226, Vega	Jim Hogg	George Holbein	Box 222, Hebbbronville
Delta	John L. Jackson	Box 425, Sulphur Springs	Jim Wells	Harvey H. Schoen	Box 393, Falfurrias
Denton	W. R. Long	Box 871, Denton	Johnson	John R. Hill	Box 124, Cleburne
DeWitt	C. D. Edmondson	509 4th St., Cuero	Jones	John D. Jones	Box 401, Abilene
Dickens	Cecil Fox	424 W. Harris, Spur	Karnes	Curtis L. Oswalt	Box 7, Beeville
Dimmit	James E. Pond	Box 401, Carrizo Springs	Kaufman	Murrell B. Hopkins	Box 407, Kaufman
Donley	G. P. Davis	Box 326, Shamrock	Kendall	Eugene O. Willmann	Box 363, Comfort
Duval	George W. Holbein	Box 222, Hebbbronville	Kenedy	W. H. (Bill) Gooch	Box 653, Raymondville
Eastland	Maurice S. Dry	207 W. Sadosa, Eastland		Fred Lambert	Rt. 1, Box 585, Kingsville
Ector	Walter T. Rinehart	Rt. 1, Box X-33, Midland	Kent	J. L. McDougald	523 S. Lantana, Kingsville
Edwards	Ellis W. Martin	Box 563, Rocksprings	Kerr	W. V. Lowry	Box 704, Jayton
Ellis	A. A. Stein	1st Floor County Courthouse, Dallas		Jack Gregory	511 Josephine, Kerrville
				Bob Snow	964 Barnett St., Kerrville
El Paso	N. L. Chamberlain	Box 1423, El Paso	Kimble	Robert S. Evins	420 S. 16th, Junction
	Edgar Sturdivant	El Paso	King	Cecil Fox	424 W. Harris, Spur
	George Vickers	Box 756, Van Horn	Kinney	C. M. McBee	Box 213, Brackettville
Erath	J. C. Moore	Box 165, Stephenville	Kleberg	Fred Lambert	Rt. 1, Box 585, Kingsville
Falls	Geo. E. (Jack) Schuh	308 S. Ross, Mexia		J. L. McDougald	523 S. Lantana Drive, Kingsville
Fannin	Clarence T. Jones	Box 985, Trenton	Knox	C. T. Pittman	Box 12, Seymour
Fayette	Leo Kohleffel	Box 721, Columbus	Lamar	Reb H. Burks	Box 521, Paris
Fisher	M. T. Reinhardt, Jr.	1409 Campbell, Sweetwater	Lamb	Patrick L. Donnelly	Box 149, Littlefield
Floyd	Alfred W. Fromm	P. O. Box 422, Matador	Lampasas	Ed. M. Lacy	Box 101, Lampasas
Foard	C. L. Boynton	501 W. 10th St., Quanah	LaSalle	J. R. Holbein	Box 230, Tilden
Fort Bend	H. T. Mayne	Box 566, Angleton		Russell N. Lancaster	Box 652, Cotulla
Franklin	John L. Jackson	Box 425, Sulphur Springs	Lavaca	Emmett Wolfsdorff	Rt. 1, Hallettsville
Freestone	Brent E. Bergstrom	Box 324, Fairfield		Carl Covert	General Delivery, Rockdale
Frio	Billy Ray Hoyle	Box 906, Pearsall	Lee	Mervin Willis	304 N. Port St., Brenham
Gaines	Noel J. Head	Box 991, Seminole	Leon	Seth Taylor	Box 95, Normangee
Galveston	R. Z. Finchum	2313 Ave. J, Galveston	Liberty	J. D. Clay, Jr.	Box 803, Liberty
	George Killebrew	Box 24, High Island	Limestone	Geo. E. (Jack) Schuh	308 S. Ross, Mexia
	James W. Worthington	Box 741, High Island	Lipscomb	P. D. Moseley	Box 337, Canadian
Garza	W. V. Lowry	Box 704, Jayton	Live Oak	F. C. Henze	Box 675, Mathis
Gillespie	Adolph Heep	Box 66, Fredericksburg		B. C. Peebles	Box 24, George West
Glasscock	Walter T. Rinehart	Rt. 1, Box X-33, Midland	Llano	Billy R. Swope	Box 283, Llano

County	Warden	Address
Loving	Robert E. Miller	Box 343, Pecos
Lubbock	William V. Riddle	2608 37th St., Lubbock
Lynn	William V. Riddle	2608 37th St., Lubbock
Madison	Seth Taylor	Box 96, Normangee
Marion	Bill Belote	Box 209, Jefferson
	T. C. Browning, Jr.	Rt. 2, Karnack
Martin	William H. Pratt	Box 176, Lamesa
Mason	D. V. Williams	Box 576, Mason
Matagorda	Harold W. Martin	Box 1426, Bay City
	C. F. Ray	Box 1346, Bay City
	R. C. Nichols	Rt. 1, Box 181, Palacios
Maverick	C. M. McBee	Box 213, Brackettville
Medina	L. D. Nuckles	Box 154, Castroville
	August Timmerman	2106 Ave. U, Hondo
Menard	W. G. Craig	Box 776, Menard
Midland	Walter T. Rinehart	Rt. 1, Box X-33, Midland
Milam	Carl Covert	Box 281, Rockdale
Mills	Ed. M. Lacy	Box 101, Lampasas
Mitchell	M. T. Reinhardt, Jr.	1409 Campbell, Sweetwater
Montague	Joe Pigg	511 W. Tarrant, Bowie
Montgomery	Chas. V. Kincannon	Box 188, Conroe
Moore	Starkey V. Whitehorn	Box 103, Borger
Morris	Wardlow Northam	Box 431, Mt. Pleasant
Motley	Alfred W. Fromm	Box 422, Matador
McCulloch	Wm. F. Bennett, Jr.	Box 307, Brady
McLennan	Harley Berg	2316 Lasker Ave., Waco
	Hubert Brooks	Box 1623, Waco
McMullen	Billy Ray Hoyle	Box 906, Pearsall
Nacogdoches	Rix Duke	P. O. Box 64, Nacogdoches
Navarro	Fred L. Gillam	Box 746, Athens
Newton	J. W. Kincannon	Box 313, Jasper
	Olan H. Davis	P. O. Box 182, Silsbee
Nolan	M. T. Reinhardt, Jr.	1409 Campbell, Sweetwater
Nueces	Charles Maynard	4810 Johnston Drive, Corpus Christi
Ochiltree	P. D. Moseley	Box 337, Canadian
Oldham	Calhoun Lovelace	Box 226, Vega
Orange	W. A. Gentry	1393 Pipkin St., Beaumont
Palo Pinto	Wm. T. (Bill) Harris	Box 430, Mineral Wells
	Leon Stowe	Box 265, Graford
	(Possum Kingdom Lake)	
Panola	Joe Riggs	Box 181, Carthage
Parker	John R. Hill, Jr.	Box 124, Cleburne
Parmer	Patrick L. Donnelly	Box 149, Littlefield
Pecos	T. F. Wheelis, Jr.	Box 275, Fort Stockton
	Clifton C. Jung	Box 123, Iraan
Polk	J. C. Manning	Box 214, Livingston
Potter	Lake L. Black	829 Maryland, Amarillo
Presidio	Harvey Adams	P. O. Box 514, Fort Davis
Rains	Carson Seago	Box 687, Quitman
Randall	Woody Pond	Box 801, Canyon
Reagan	Clifton C. Jung	Box 123, Iraan
Real	Charles F. Keller, Jr.	Box 212, Leakey
Red River	Charles W. Burnette	1014 W. Washington, Clarksville
Reeves	Robert E. Miller	Box 343, Pecos
Refugio	Dave W. Sellstrom	Box 123, Woodsboro
Roberts	Jack Woodford	Box 26, Miami
Robertson	Ross Seale	202 Norwood Lane, Hearne
Rockwall	A. A. Stein	1st Floor, County Court- house, Dallas
Runnels	Clarence D. Vann	Box 103, Robert Lee
Rusk	Bob Goss	Box 651, Kilgore
Sabine	Hugh Frost	Hemphill
San Augustine	George E. Berry	Rt. 2, San Augustine
	Rix Duke	P. O. Box 64, Nacogdoches
San Jacinto	Lewis C. Hallum	Box 973, Huntsville
San Patricio	Franklin C. Henze	Box 675, Mathis
	Dave W. Sellstrom	P. O. Box 123, Woodsboro
	Earl Sloan	Box 247, Aransas Pass
San Saba	Junior L. Briggs	Box 275, San Saba
Schleicher	Nolan Johnson	Box 5841, Sonora
Scurry	M. T. Reinhardt, Jr.	1409 Campbell, Sweetwater
Shackelford	N. E. Glover	Box 269, Breckenridge
Shelby	Sherman Bales	Box 627, Center
Sherman	Starkey V. Whitehorn	Box 103, Borger
Smith	Bert G. Cade	2020 Sunnybrook, Tyler
Somervell	J. C. Moore	Box 165, Stephenville
Starr	Raymond H. Davee	Zapata
Stephens	N. E. Glover	Box 269, Breckenridge
Sterling	Clarence D. Vann	Box 103, Robert Lee

County	Warden	Address
Stonewall	Wm. Victor Lowry	Box 704, Jayton
Sutton	Nolan W. Johnson	Box 5841, Sonora
Swisher	Woody Pond	Box 801, Canyon
Tarrant	Harold A. Bierman	County Courthouse, Fort Worth
Taylor	John D. Jones	Box 401, Abilene
Terrell	Clifton C. Jung	Box 123, Iraan
	T. F. Wheelis, Jr.	Box 783, Fort Stockton
Terry	Noel J. Head	Box 991, Seminole
Throckmorton	Harry B. Iverson	Box 176, Throckmorton
Titus	Wardlow Northam	Box 431, Mt. Pleasant
Tom Green	Henry B. Burkett	204 Glenmore, San Angelo
Travis	Gene Ashby	Star Route 7, Box 213, Austin
	Ben Gaddy	604 Josephine, Austin
	Grover Simpson	6207 Shoalwood, Austin
Trinity	Thomas A. Hughes	Box 511, Groveton
Tyler	J. B. Weaver	Box 434, Woodville
Upshur	Robert B. Jessee	Box 366, Gilmer
Upton	Clifton C. Jung	Box 123, Iraan
Uvalde	Raymond E. Custer	Uvalde
Val Verde	John A. Lockett	Box 735, Ozona
	J. B. Phillips	103 Lilac Lane, Del Rio
Van Zandt	Murrell B. Hopkins	Box 407, Kaufman
Victoria	C. D. Edmondson	509 4th, Cuero
	Wm. D. Henry	Goliad
Walker	Lewis C. Hallum	Box 973, Huntsville
Waller	E. E. Hargett	Box 95, Bellville
	Robert Lys	Box 604, Navasota
Ward	Robert E. Miller	Box 343, Pecos
Washington	Marvin C. Wills	1107 Ewing St., Brenham
Webb	C. E. Whitenton	419 Matamoros, Laredo
	J. R. Holbein	Box 23, Tilden
Wharton	Harold W. Martin	Box 1426, Bay City
	C. F. Ray	Box 1346, Bay City
Wheeler	G. P. Davis	Box 326, Shamrock
Wichita	W. C. Cave	4316 Cunningham, Wichita Falls
	Morris E. Stallcup	3114 Sherwood, Wichita Falls
Wilbarger	C. L. Boynton	510 W. 10th, Quanah
Willacy	Wm. H. Gooch	Box 653, Raymondville
Williamson	Aubrey J. Shaw	Box 12, Georgetown
Wilson	F. E. Hollamon	Box 825, Seguin
	R. J. Holstein	Floresville
Winkler	Robert E. Miller	Box 343, Pecos
Wise	Joe Pigg	Box 283, Bowie
Wood	Carson Seago	Box 687, Quitman
Yoakum	Noel J. Head	Box 991, Seminole
Young	Lonnie Wooten	1109 Turner Dr., Jacksboro
Zapata	Raymond H. Davee	Zapata
	Harvey R. Adams	Zapata
Zavala	J. E. Pond	Box 401, Carrizo Springs

CANDIDATES FOR GAME WARDEN SCHOOL

Name	Home Town
Charlie Adams	Georgetown
Chester Burdett	Crystal City
G. A. Crooks	Burnet
Mack L. Davis	Port Arthur
John I. Gerganess	Grand Prairie
Harold Farley	Georgetown
Will Ray Long	Dublin
Calvin L. Tow	Wellington
Ray S. Hanson	League City
Glenn C. Mitchell	McKinney
Arlis C. Payne	Hillsboro
J. D. Murphree	Center
James H. Pratt	Rosser
W. B. Tripplett	Woodville
Calvin Turner	Seguin
Marvin Wills	Brenham
Bentley T. Wood	De Kalb
Norman Swanberg	Lyford
Normin B. Taylor	Littlefield
Frank F. Ordener	Seymour
Bubba Reed	Pleasanton
Weyland Snipes	Fort Worth

Know-how and a little elbow grease give
you fish lures that have

Home-made Appeal



By WILLIAM H. BROWN, Aquatic Biologist

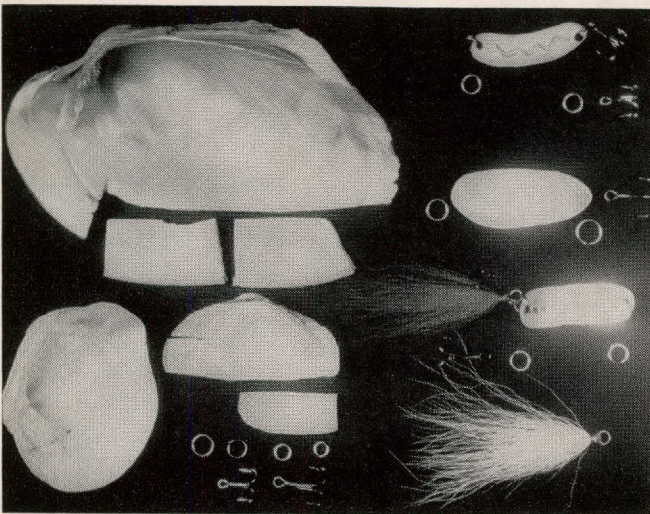
BAITS MADE FROM MUSSEL SHELL and other sources of mother-of-pearl are among the earliest used by man to catch fish. Mussel shell lures have a white, flashy appearance when pulled through the water. They greatly resemble shiner minnows and are excellent lures for black bass, crappie, and sunfish. Making your own fishing lures can be fun, especially if the baits prove to be successful fish catchers.

We will try to give you a little information on mussels—how and where to collect them and how to make your own fishing baits.

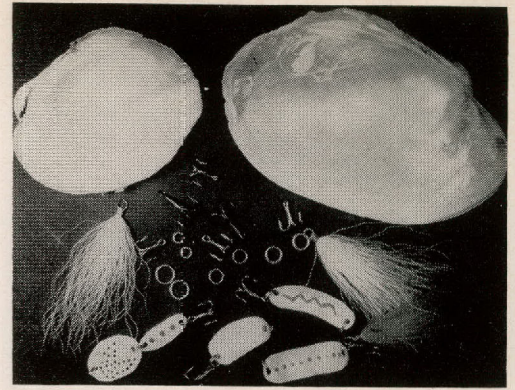
The mussel is an aquatic animal having two shells which are hinged together on one edge. It can open its shells, exposing its body, or close the shells tightly together so that they are water and air tight. Most mussels live partially buried in mud and sand and move by means of a muscular foot which they extend outside of their shell.

By circulating water over its body inside of the shell, the mussel is able to breathe by means of gills. The water also brings in microscopic plants, animals, and organic debris upon which the mussel feeds.

Many times single halves of mussel shells may be



Mussel shells can be cut into various pieces, shaped, polished, and drilled. Treble hooks, attached by means of split rings, and a piece of bucktail complete the lure.



The attractive lures at the bottom of the photograph were made from mussel shells similar to the ones shown. Bass find these lures hard to resist.

Photos by Author

found where the water levels of lakes and streams have dropped. These shells are usually from mussels which have died after being stranded out of water. Animals such as raccoons may feed on mussels, leaving the empty shells along the shoreline. If only live mussels can be found, they may be opened like an oyster with a thin-bladed knife. However, the shells of dead mussels are usually in plentiful supply for anyone interested in collecting them.

Many kinds of mussels live in the fresh water streams and lakes of Texas. The best shells for making fishing lures come from the larger mussels with thick shells. These usually occur in the more alkaline waters of the State. Lake Buchanan on the Colorado River above Austin has several species of mussels with good shells. One type is around two and one-half to three inches long and has a milky-white, pearly color. Another is larger, about four to six inches long, and has a purple luster on the inside of its pearly shell.

There are actually three distinct layers to a mussel shell. The dark colored outside layer is composed of a horny material called chitin and is similar to the nails and horns of other animals. The middle layer is thick and composed of a material rich in lime. The inner layer is a hard substance having a pearly luster or iridescence. This hard layer is actually composed of many thin layers of nacre, often called mother-of-pearl.

Turning the rough shell into a fishing lure naturally requires some tools. It is possible to make lures with simple tools by sawing strips off the shell with a hacksaw. The pieces of shell can then be shaped, using pliers to pinch off small pieces until a rough blank or outline is formed. This blank can then be made into a finished lure using files, followed by coarse and then fine emory or sandpaper. Power tools such as grinding and sanding wheels make the work much easier.

The lures shown in the photographs were made with a small, electric hand tool which comes in a kit complete with saw heads, grinding wheels, polishing wheels and drill bits. Probably the most difficult task in making shell lures is drilling the holes in each end of the lure for the attachment of split rings. It takes a

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Hunting dogs got a real workout at the East Texas field trials



Ranch Manager G. C. Crump and Warden Reb Burks release the birds.



The late Eugene Crockett II

The runner-up, here pointing a bird, was killed by a car later in the month.

One for the Record

By L. A. WILKE

FIELD trial history was made at Camp Maxey, near Paris, the first ten days of December. With 111 entries The Texas Open Championship group staged its largest trial.

Nattie Nettie, a liver and white pointer from New York, won the top purse of \$1,000. Runner-up was Eugene Crockett II, a tricolor setter from Houston.

Nattie Nettie was worked by Bill Cosner of Columbia, Miss. She belongs to A. J. Schopp of Waterloo, N. Y. Eugene Crockett II was worked by Bud Epperson of Stillwater, and is owned by Ed Soph of Houston.

President Carl Duffield Jr., of Abilene, said the field trial was the most successful open ever held in Texas. Judges also praised the location highly. The dogs and trainers were given

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Thousands of acres of grass and timber-laden hills gave the hunting dogs a good workout in their search for birds.



Ike Brannon and Carl Apperson judged.



Paris News staff photo

Nattie Nettie won the Texas Open Championship Stakes. Bill Cosner trained the champ.

BOAT-TAILED GRACKLE



They've Made Texas "Home"

A MALE boat- or great-tailed grackle ("Jackdaw") is a big, glossy black bird with a huge trough- (boat) shaped tail. Each of his mistresses is a smaller ordinary-tailed bird with more brown than black in her plumage. She makes noise; he makes a prodigious racket.

Men unwittingly work for these big grackles almost everywhere the bird ranges. People are always clearing trees and brush, keeping weeds and grass down, and scattering garbage and water over the landscape. These activities, except some of the watering, wreck living quarters of most game and other wildlife, but they bring boom times to boat-tails. In and beside cultivated fields, irrigation ditches, stock tanks, cow pens, lawns, picnic grounds, and garbage dumps, these birds pick up a rich supply of food.

Four hundred seventeen individuals examined by the U. S. Fish and Wildlife Service from the southeastern states during summer, fall, winter, and spring had eaten: corn, 25-50 per cent of their diet; rice, 10-25 per cent; chufa tubers, 2-5 per cent; figs, 2-5 per cent; and bristleglass, oats, bayberry, grape, 1/2-2 per cent. Animal foods included beetles, grasshoppers, crayfish, crabs, shrimp, lizards, toads, frogs, and small mammals. Grackles in Texas add other items. At the San Antonio zoo I have frequently seen them picking over hay and vegetables in the hippopotamus pen, as well as food intended for such various animals as ducks, cranes, longhorn steers, and monkeys. In the Lower Rio Grande Valley where numerous irrigated farms create a super-deluxe grackle paradise, these birds find white-winged dove eggs easy to get because there is not enough brush left for adequate nest dispersal.

So successful is man in creating the right habitat for grackles that they are (1) increasing in their ancestral northern South American, Central American,

Mexican, and southern USA range, and (2) overflowing into areas that can be decidedly frosty. According to *Birds of the Austin Region*, by George Finlay Simmons (the best bird book so far published in Texas), the grackle ranged over coastal and south Texas to as far north as Austin in 1925. Its status in the Capital City was then "rare and local summer resident; early March to July." Since the late 1930's thousands of grackles have spent the whole year in Austin. Their population was about 10,000 in 1957, says Robert K. Selander, a University of Texas professor who studies the subject. The species first appeared near Waco in 1938, according to E. C. Fritz and Hal Kirby.

To learn more of grackle expansion I sent copies of a questionnaire dated October 20, 1957, to members of the Texas Ornithological Society living mostly north of Austin. Some condensed replies from these sharp-eyed observers follow:

EAST TEXAS: The boat-tailed grackle does not inhabit the east Texas timber region around Nacogdoches (Charles W. Deaton, Dr. Howard McCarley, Bill Stephenson, Mary W. Thomson). O. C. Sheffield writes that his first record for Smith County was a female he observed on May 1, 1956, and that 20 miles northwest of Tyler, at the town of Van, there have been three or four pairs nesting for the past two springs. In pastures near Lake Trinidad, about 50 miles west of Tyler, he has seen over 200 grackles. The species apparently has not arrived in Marshall (Vera Allen) or in Paris (Addie E. Beacham). It was first recorded in Commerce in 1949 (Mrs. Mike O'Neil).

EDWARDS PLATEAU: The boat- or great-tailed grackle is not present in Boerne (Dwight T. Smith, Col. L. R. Wolfe), Wimberly (Hazel Green), Kerrville (Wolfe), Fredericksburg (Smiths), Blanco (Eliza-

boat-tailed grackles, hardy pioneers, strike out

beth Galligher), or Brady (Clarence Snider). Mrs. Mary Walker writes that she sometimes sees them pass through Leander in spring and fall, but Georgetown, a lowland grackle haunt, is only about 11 air miles away.

WEST TEXAS: Grackles have long been resident in Del Rio (John Galley, Harold L. Williams) and have been present in El Paso for more than 25 years (Galley, Lena McBee, W. W. Wimberly). They do not live in Midland (Walter L. Ammon, Galley, Williams), but they have been found numerous places along the Pecos River (Ammon, Williams) and in the irrigated region around Balmorhea since 1950 or longer (Williams).

PANHANDLE: The species has never been reported in Lubbock (Ross E. Hammond, W. E. McMillan) or Amarillo (Peggy Acord, J. D. Thompson, Jr.).

NORTH CENTRAL TEXAS: The boat-tailed grackle reached Fort Worth on April 26, 1944 (Mrs. Robert H. Bowman). Warren M. Pulich observes that although the species is absent from a list of Fort Worth birds written by Dr. George M. Sutton in 1938, and from a thorough check-list of Dallas County birds published by Jerry Stillwell in 1939, it was well established and nesting when he arrived in the Fort Worth area in 1952. Dorothy England and Edith Winford first saw this grackle in Dallas on December 9, 1950; but C. E. Kiblinger found his first individual in 1947. He summarizes its increase in the Dallas area thus: In 1951 there were several pairs. There are nesting records from 1952 through 1957. In 1956 Bachman Lake had 100 plus individuals; White Rock Lake, at least 25; Trinity River bottoms, over 100; and Mountain Creek, more than 100. Boat-tailed grackles were seldom seen around Denton in 1950, but by 1956 they were coming in flocks of up to 60 (Kent and Roddy Rylander).

OKLAHOMA: The boat- or great-tailed grackle has just been officially added to this state's list of birds (*Bulletin of the Oklahoma Ornithological Society*, Fall 1957, p. 30), but as far back as June 29, 1953, a male strayed up to a farm near Alva in northern

Oklahoma. The latter bird was way off limits at that time, but Paul Nighswonger says he is confident of his identification because he was familiar with the boat-tail from a visit to San Antonio. More typical of "Sooner" questionnaire replies, however, was one from Julian A. Howard, Manager of the Wichita Mountains National Wildlife Refuge: "If a great-tailed grackle ever shows up on this buffalo ranch we'll send you an air mail special delivery by wire, credit line demanded!"

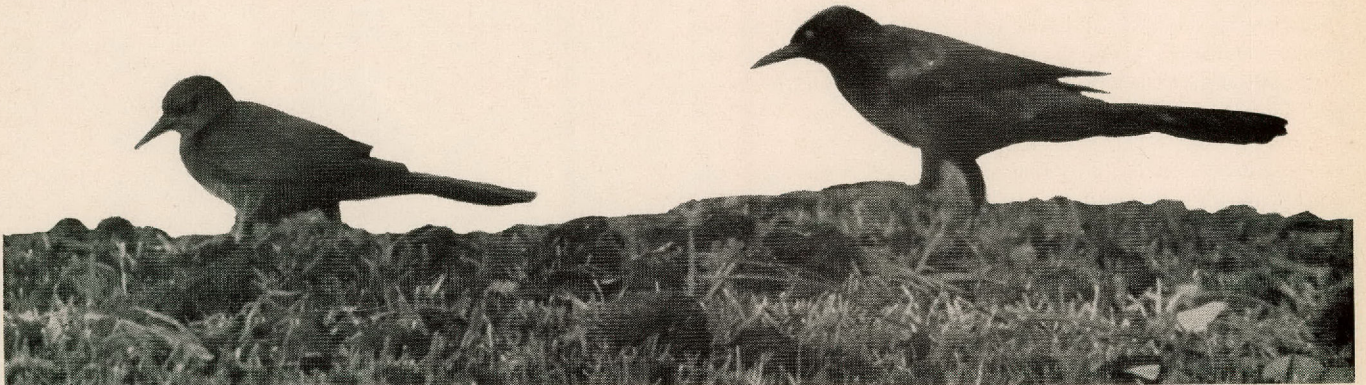
Thus it appears that the old "Jackdaw" is pretty well taking Texas, with the exceptions of the timbered East, the cedared Edwards Plateau, and the sometimes chilly Panhandle, and is even sending advance scouts into Indian Territory.

During the cooler months blackbirds often feed in huge flocks. Some places, as along the Gulf Coast and in the rice-growing district between Eagle Lake and Houston, distant flights of boat-tailed grackles, red-winged and brewer blackbirds, European starlings, and brown-headed cowbirds resemble smoke from oil fires. Early in the morning these blackbirds stream out to the fields from their roosts in cat-tails, bushes, trees, and buildings. Each species and sex tends to keep to itself, so that often "birds of a feather flock together." Perhaps this segregation allows members of the group to have a more equal change at gathering food.

Another fair-dealing device is the leap-frog habit. As a column walks forward over the ground members in the rear frequently rise, fly over the other individuals and settle down just in front of them. After the now front guard has had first chance at the seeds and bugs for a few seconds or minutes, the rear guards fly over to become first again, and so on. Near sundown the blackbirds fly back to their roosts.

Old male grackles are slower fliers than the other field birds; their tails are so heavy that they sag down in the rear. This heaviness of tail often puts them at a disadvantage with hawks. It also keeps them from performing the female habit of picking food off water surfaces while hovering just above. The over-grown tail is useful, though, in "displays."

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Common sights on most Texas lawns are clusters of boat-tailed grackles. Here, a female, left, and male grackle search the grass for food.

*The outdoors gains
a brand new look as*

WOMEN "Man" the Guns

By MRS. GERALD COLLINSWORTH



The author proudly displays the 12-point antlers of her first trophy.

WHEN I found out only one in every fifty Texas women hunted in 1955, I was most surprised. But it was even more shocking to learn that only one in every 128 women in the nation hunted that year.

Remembering my first successful deer hunt as one of the most thrilling adventures of my life, I was naturally concerned. I am sure women's hunting average is somewhat higher since the 1955 survey was made, but I am afraid it is still far below what it should be. Women have made history in sports such as tennis, swimming, and golf. Why not in hunting? Since hunting and fishing are America's most popular sports, it's time to take down that "men only" sign.

My story begins several years ago when my husband asked me to go deer hunting with him. He had already been with the boys earlier in the season, so I accepted the invitation. I had never shot a gun and didn't own one. I went along just for the fun. He killed a nice 8-pointer, and I learned some of the ways of deer and some of the basic rules of deer hunting.

After three years of just tagging along, I became interested enough to want to learn to shoot a gun. My husband bought me a .257 Roberts, and I began target practice.

Deer season arrived. Since I teach school, I couldn't go hunting until the Christmas holidays late in the season. But I was eager and excited as we began to hunt on the Fred Coleman Ranch, 12 miles from Junction, December 26. My husband had bagged a nice 10-pointer earlier in the season, so he was the one who went along for the fun this time.

I was on my own. I hunted two different stands the next three days—mornings and evenings. I watched hopefully for a buck, but only does and yearlings came

to feed in my pasture. Even so, it was a thrill to watch them. To me, who had been born and raised in a small city, it was a new experience to sit quietly on a deer stand as the sun went down and night began to fall. The sounds were different, the stillness almost unbelievable, and a new world began to exist as dark set in.

In early mornings, I returned to the same stand while it was still dark, and watched the glow of daylight begin to change the pasture into a daytime world again. I was there to hear all the waking up sounds. I began to hear movements, and birds began to chirp and fly about.

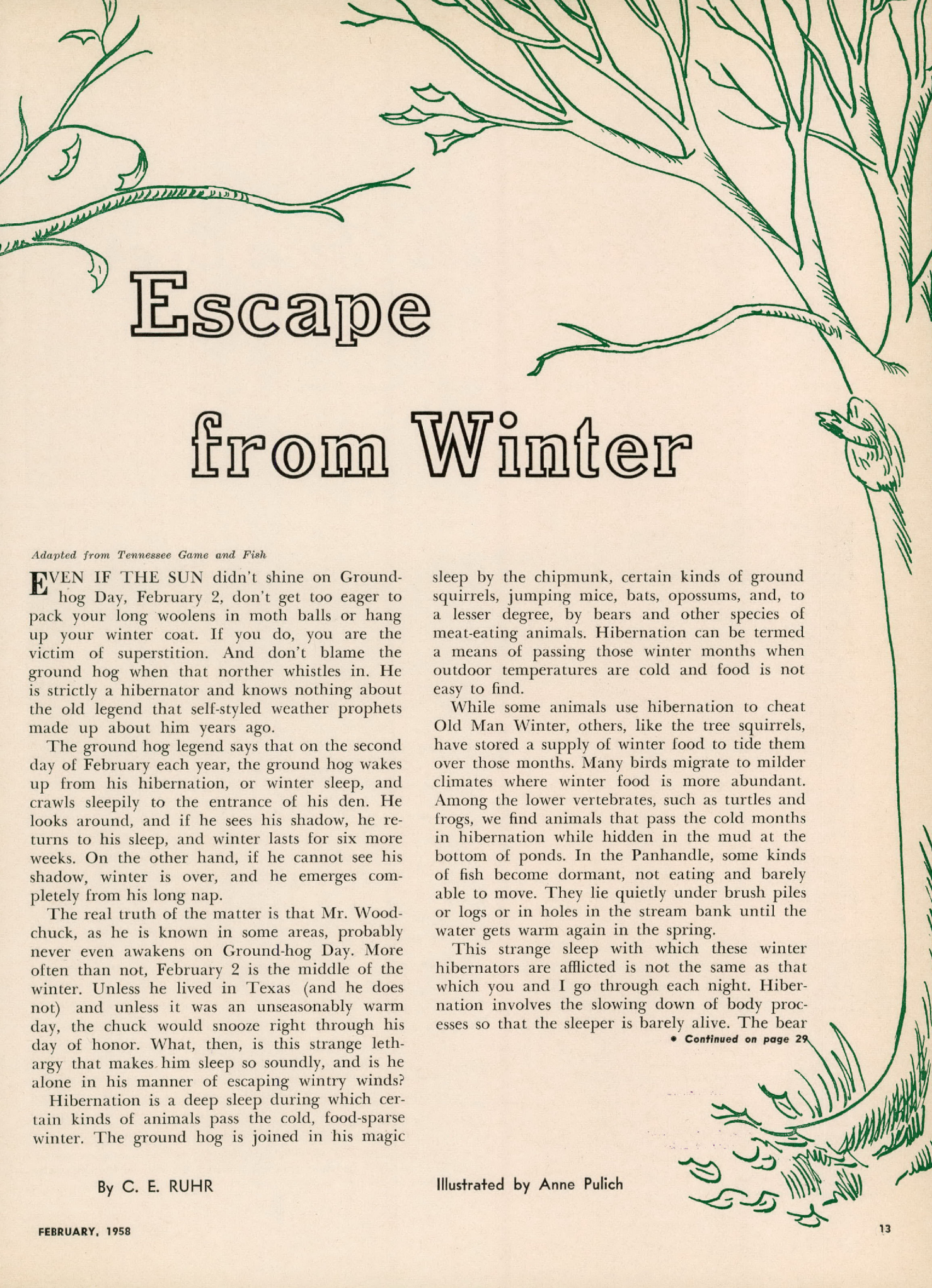
December 30—next to the last day of the season—opened with just such a morning. I had left ranch headquarters at 6 a.m. and had driven about three miles to a spot near my stand. I eased out of the car, walked quietly and carefully, and by 6:30 I was settled on my stand by the hunting pasture, which was about 75 by 100 yards in size.

On my right the first glow of daylight brightened the sky, and I saw the flash of three whitetails as they jumped out of the pasture. The deer had been feeding in the dark. Settling back down, I began my hunt with searching eyes, keen ears, and that necessary supply of patience. Time passed.

A few minutes before 8, at the far end of the feeding area, a nice-sized doe walked casually into the pasture and began grazing about 60 yards in front of me. Although this had happened several times the past three days, it always excited and alerted me. After about 20 minutes of watching Mrs. Doe eat and admiring her quick, graceful movements, I saw HIM!

The big buck came into view at the same place the

• *Continued on page 24*



Escape from Winter

Adapted from Tennessee Game and Fish

EVEN IF THE SUN didn't shine on Ground-hog Day, February 2, don't get too eager to pack your long woolens in moth balls or hang up your winter coat. If you do, you are the victim of superstition. And don't blame the ground hog when that norther whistles in. He is strictly a hibernator and knows nothing about the old legend that self-styled weather prophets made up about him years ago.

The ground hog legend says that on the second day of February each year, the ground hog wakes up from his hibernation, or winter sleep, and crawls sleepily to the entrance of his den. He looks around, and if he sees his shadow, he returns to his sleep, and winter lasts for six more weeks. On the other hand, if he cannot see his shadow, winter is over, and he emerges completely from his long nap.

The real truth of the matter is that Mr. Woodchuck, as he is known in some areas, probably never even awakens on Ground-hog Day. More often than not, February 2 is the middle of the winter. Unless he lived in Texas (and he does not) and unless it was an unseasonably warm day, the chuck would snooze right through his day of honor. What, then, is this strange lethargy that makes him sleep so soundly, and is he alone in his manner of escaping wintry winds?

Hibernation is a deep sleep during which certain kinds of animals pass the cold, food-sparse winter. The ground hog is joined in his magic

sleep by the chipmunk, certain kinds of ground squirrels, jumping mice, bats, opossums, and, to a lesser degree, by bears and other species of meat-eating animals. Hibernation can be termed a means of passing those winter months when outdoor temperatures are cold and food is not easy to find.

While some animals use hibernation to cheat Old Man Winter, others, like the tree squirrels, have stored a supply of winter food to tide them over those months. Many birds migrate to milder climates where winter food is more abundant. Among the lower vertebrates, such as turtles and frogs, we find animals that pass the cold months in hibernation while hidden in the mud at the bottom of ponds. In the Panhandle, some kinds of fish become dormant, not eating and barely able to move. They lie quietly under brush piles or logs or in holes in the stream bank until the water gets warm again in the spring.

This strange sleep with which these winter hibernators are afflicted is not the same as that which you and I go through each night. Hibernation involves the slowing down of body processes so that the sleeper is barely alive. The bear

• Continued on page 29

By C. E. RUHR

Illustrated by Anne Pulich

It happens every year,
yet few people understand
this phenomenon

Why Do Lakes Turn Over?

By KENNETH C. JURGENS, Aquatic Biologist

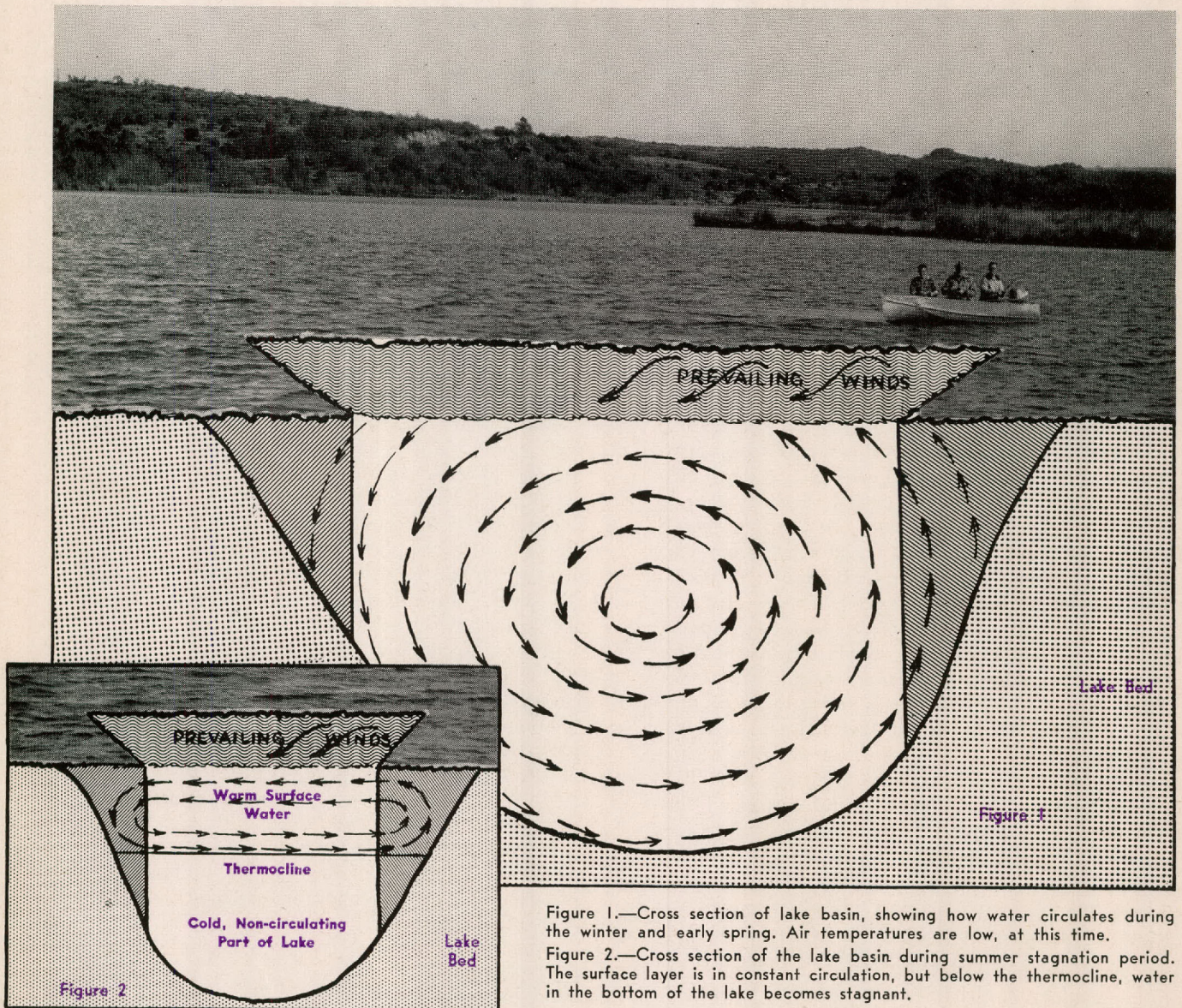


Figure 1.—Cross section of lake basin, showing how water circulates during the winter and early spring. Air temperatures are low, at this time.
Figure 2.—Cross section of the lake basin during summer stagnation period. The surface layer is in constant circulation, but below the thermocline, water in the bottom of the lake becomes stagnant.

THE "turnover" of lakes is a phenomenon of great mystery for many people in Texas.

Talk about the turnover of lakes generally begins in late summer or early fall, about the time of year when water in the tailrace areas below the dams of our deeper lakes begin to give off an unpleasant odor. This odor is explained by local residents by saying: "The lake is turning over." Actually the odor is caused by the draw-off of stagnant water from the lower levels of the lake impounded by the dam above and the release of odoriferous decomposition gases which have accumulated in it during the long summer. The reason for stagnation of water in the lower levels of a lake is bound up in the physical characteristics of water itself and the fact that cold water is heavier than warm water.

To explain the turnover of lakes it is necessary to describe the normal cycle of events which occurs in standing bodies of water in the lower latitudes of the temperate zones of the earth, the world over. Starting with the winter and early spring seasons, water in these lakes is essentially homothermous, i.e., of a uniform temperature from the surface to the bottom. This means that all of the water in a lake is also of a uniform density and this condition permits the constant circulation or mixing of the water through wind and wave action, seiches (or a piling up of water on one side of a lake due to wind action) and convection currents. The mixing and circulation of the water continues as long as air temperatures remain low and wind velocities remain high.

With the coming of spring, air temperatures increase and normal wind velocities decrease. This permits warming of the surface water and, since warm water is lighter than cold water, it tends to remain in a layer at the surface. In time surface water becomes so warm and so light that the gentle winds of late spring and summer cannot mix it with the colder, heavier water below. As a result, thermal stratification of the lake begins and it is at this time when another "mysterious" phenomenon occurs. This is the appearance of the thermocline.

Actually, the thermocline is not at all mysterious. It is merely that portion of a lake in which the decrease in temperature proceeds in a downward direction at a rate of one degree Centigrade per meter (39.6 inches) of depth. In other words, it is that depth or level in a lake where there is a sharp break in temperature separating the warmer "upper" lake from the colder "lower" lake. In the science of limnology, the study of freshwater, these portions of a thermally stratified lake are given the names *Epilimnion*, for upper lake, *Thermocline*, for the layer in which there is a sharp temperature change, and *Hypolimnion*, for the lower lake.

It is in the hypolimnion that summer stagnation occurs. Since the water below the thermocline is too heavy or dense to be mixed with the warmer, lighter water of the epilimnion (upper layer), it gradually loses its supply of life-giving oxygen during the course of the summer months. Toward the latter part of the

summer the hypolimnion (lower layer) is so oxygen-poor that it become a "biological desert" where nothing except bacteria can live. This, in part, explains why sometimes fish are found floating dead or near dead on the surface. These fish, though still fresh, are bloated and their eyes are often bulged out. What probably happens is a pursuit by these fish after food into the lower levels of the lake where they are overcome with toxic or poisonous gases dissolved in the water of the hypolimnion. They become helplessly suffocated and tend to rise to the surface too quickly. As they rise, the gas in the swim bladder expands, and they shoot uncontrollably to the surface like a blown-up balloon.

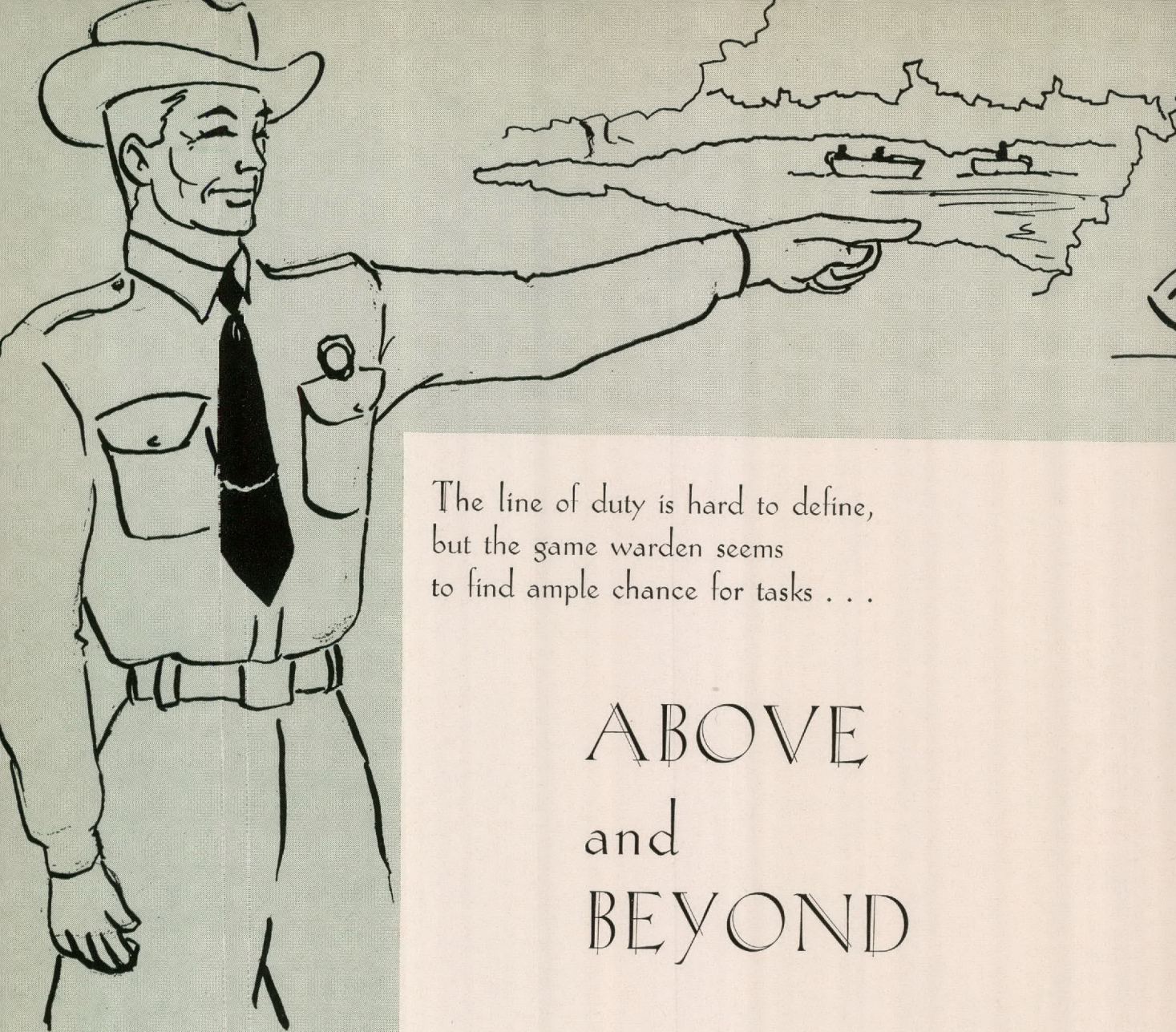
Perhaps it should be explained why the hypolimnion becomes so poor in oxygen. This is due in part to the coldness and inability of the water of the hypolimnion to mix with surface water where normally odoriferous decomposition gases, caused by the decay of organic matter on the bottom, are given off to the atmosphere. At all times of the year fish and other animals die and sink to the floor of the lake. There they decompose and, in the process, dissolved oxygen is used up. In the place of used up oxygen such gases as carbon dioxide, methane and hydrogen sulfide are dissolved. All of these gases are toxic to fish and other aquatic life when they are present in large quantities. These gases account for the unpleasant odor first noticed each year in tailrace areas in late summer or early fall.

At the beginning of thermal stratification in late spring, the epilimnion or upper lake is a relatively thin layer. Furthermore, the thermocline is near the surface. This means that the hypolimnion, or lower lake which is still relatively rich in oxygen, is at first the largest or thickest layer in the lake. As summer progresses, more and more of the water is warmed by conduction and heat radiation, and the epilimnion grows thicker. Since all of the water in the epilimnion is essentially of the same temperature and density, it can within itself be easily mixed by the light winds of summer. Thus the epilimnion remains in circulation and rich in oxygen. It is in this portion of the lake that all living creatures except anaerobic bacteria are found during the summer season. The only time that fish will venture into the hypolimnion during the period of summer stagnation is when they pursue food or are pursued.

The epilimnion, in late summer, may extend as deep as 60 feet. This has been measured by Game and Fish Commission biologists on more than one occasion. It follows that the longer and hotter the summer, the thicker will be the epilimnion and the deeper will be the upper limits of the hypolimnion. Therefore, the practice of fishing just above the thermocline becomes progressively less practical as the summer lengthens. "Thermocline fishing" however has been reported to be effective during the late spring and early summer months.

With the coming of cooler air temperatures in late summer and early fall, the surface waters begin to cool.

• Continued on page 28



The line of duty is hard to define,
but the game warden seems
to find ample chance for tasks . . .

ABOVE and BEYOND

By JANEY BELL



It is not just a job, this task of knowing, enforcing, and teaching the game laws. It is an inspired way of life that consumes much time and effort beyond the dutiful 40-hour week. As the love of the outdoors knows no limits, neither does the job of the man sworn to protect it.

Much of the game warden's opportunity for unusual service occurs on routine patrols. One day while passing through a forest in Southeast Texas, a warden discovered a fire which covered about 30 yards. It was burning backward; that is, against the wind, so the warden decided to tackle it alone rather than risk its spreading while he went for help. He grabbed two tow sacks from the trunk of his car, raced to a small stream nearby to wet them, then used them to beat the fire inch by inch until it was extinguished.

Another fire, this one in the brush, was spotted by a game warden as it was creeping toward pastureland where sheep were grazing. It had too



great a head start for one man to handle, so the warden ran to the home of the landowner. But no help there. The rancher was in bed with a broken leg. The warden ran back to his car and sped into town, where he obtained a portable fire-fighting truck and the aid of one fireman. Back at the ranch, the warden operated the heavy hose on the truck as the fireman drove around the pasture.

During a recent drought in parts of Texas, the Governor requested and received game wardens to help the forest service police dry areas where rashes of fires had erupted. The wardens helped patrol the area, putting out neglected campfires and warning persons of fire hazards. A good heavy rain finally released them from this extra duty.

Farmers and ranchers often complain to the game warden of predators pillaging their crops or livestock. "Though quick to point out that predators have their place in the balance of nature, wardens must sometimes trap the offenders, as well as advise the landowner how to protect his livestock and crop.

"When a wild animal starts killing cattle or deer," one warden said, "there is nothing to do but eliminate him. He will never return to his regular eating habits."

By the condition of the kill, a warden can often tell what animal is responsible and how to lay the trap. A bobcat, for instance, covers his kill with grass or dirt, and the unfinished meal attracts no buzzards. A wolf, on the other hand, leaves its kill uncovered and returns later to feed.

Not much can be done about an accidental "predator," though, such as the over-anxious deer hunter who downed a 1,100-pound steer the day before deer season closed. The hunter was long gone by the time the mistake was discovered by the irate rancher.

Occasionally, a wild animal just makes a nuisance of itself although it harms no one. Bats which had taken a liking to an air base building finally became such pests that the wardens were called in. Killing bats being illegal, and the opening through which the bats came and went was not large enough for anyone to enter to drive them out. It was time for a little ingenuity. The wardens blew ground red pepper into the attic. The bats stirred it into the air with their wings, then fled as it began to irritate their eyes and noses. Air base personnel then screened the entrance to the

attic, and the bats felt no longer welcome.

With their boating equipment wardens are sometimes thrown into life-or-death situations on Texas lakes. One late afternoon as a warden patrolled a lake, a heavy squall-like wind hit suddenly. As the warden headed for shore he heard screams, and turned to see two fishermen floundering in the high waves beside their capsized boat. Gunning the motor, the warden guided his boat swiftly to the spot. He grabbed the first man alongside and strained to pull him from the rising waves into the pitching boat.

In one precarious moment, the warden himself was almost tossed into the lake before he managed to haul the groggy fisherman on board. The warden turned for the other man. He was out of sight. After a tense instant, the man bobbed above a wave. Choking and gasping for air, he grabbed frantically for the warden's outstretched arms. Afraid the drowning man would pull him overboard, the warden took the only choice left to him—he hit the man on the head with an oar, then quickly grabbed his arms before he went under. Finally, with both men aboard, the warden went to shore, where he gave the last man saved artificial respiration until he revived.

All lake accidents do not have a happy ending, however, and wardens are sometimes called upon too late to save a drowning victim.

Just plain good neighborliness comes in handy for game wardens. One warden was making a routine check of a sportsman's hunting license when he found out that the man's car was out of gas and the distributor cap had broken. The warden gave him a lift into town, got the gas and distributor cap, and took the hunter back to his parked car. The warden's courtesy went still further, for he followed the hunter back into town to be sure nothing more went wrong.

As a farmer sold his ripe tomatoes in a make-shift stand by the side of the road, a warden pulled over to buy a few tomatoes. After the two men had talked a few minutes, the warden learned that the farmer had no transportation to get his ton of tomatoes to market. Without further ado, the warden borrowed a trailer, hitched it to his own car, and drove the farmer and some 40 baskets of tomatoes to market.

One rainy New Year's Eve, three teenage boys stranded their car on a side road in sticky, black mud.

Glance at the bulletins prepared
for you by the Commission
you may find just what you need.

the Outdoors in Brief

By JANEY BELL



FEW TEXANS could ever learn everything there is to know about their "wide open spaces" and what lives in them. But a wealth of information on outdoor topics may be yours for the asking at the Texas Game and Fish Commission. Authors of the free booklets are biologists and other wildlife experts in the Commission.

Let's take a closer look at some of the bulletins available—on everything from carp fishing to poisonous snake identification.

Beginning with the dangers in your own backyard, *The Poisonous Snakes of Texas* bulletin covers possible hiding places of snakes; how to protect yourself from being bitten, and how to recognize the 16 poisonous snakes out of the 103 different kinds of snakes which live in the State. Some of these dangerous snakes are rare and seldom seen. Besides the poisonous snakes, a few with mild venom, considered harmless to man, are included. Detailed descriptions of each type of snake covers markings, color, size, and distribution. The booklet closes with a discussion of the way to recognize a poisonous snake's bite from the fang marks and first aid treatment for the victim.

What the Experts Say About Carp Fishing tosses together advice and

opinions of not one, but six, fishermen and two publications. Most Texas streams and lakes have carp, but fishermen will argue about the desirability of these fish. The men quoted in the pamphlet, however, think carp are sporty fighters and delicious eating as well. They give pointers on fishing methods, baits, places to fish, and how to prepare

"Antlerless Deer Harvest," one of the most talked-about phases of deer management today, finds an outlet in a new pamphlet just off the press, now available from the Game Commission in limited quantities. The Hill Country study should help other Texas areas solve their problem of overpopulation of deer before it becomes acute.

In the pamphlet, the first three year of by-passing the "buck only" tradition is looked at under a statistical microscope by Author T. D. Carroll. He reports in detail on Mason, Gillespie, Llano, Kerr, and Medina Counties. The problems deer face on overpopulated areas are explained, backing up biologists' recommendations for new harvesting methods to avoid wasting deer.

Every landowner and hunter should have a copy.

carp for eating. Even canning directions are not ignored.

Can you grow quail like a crop? Biologists say, "Yes!" And *Quail Management Handbook for East Texas* tells how. So far, according to the bulletin, passing laws to close seasons, killing predators, posting the land, and artificial restocking have not helped much. Plant or improve cover, develop food supply, vary crop planting—these and other careful habits in using land will brighten prospects for huntable quail. Photographs and descriptions of favorite foods and plants of quail are included.

Quail in the Rio Grande Plains are given close attention, too, in a bulletin reprinted from the *Journal of Wildlife Management*—*Some Plants Valuable to Quail in Southwestern Texas*. Both bobwhites and chestnut bellied scaled quail share the attention.

Raising game pheasants and quail in captivity is explained with day-by-day details in *Quail and Pheasant Propagation* by the Wildlife Management Institute, Washington, D. C. Equipment is itemized and methods for handling the captive birds are suggested.

With 10 types of freshwater catfishes in Texas, chances are that sooner or later you will end up with

• Continued on page 30

Texas Oyster Drill

The accompanying photographs tell a story much more eloquently than words.

The Southern Oyster Drill (*Thais haemostoma*) is common in most of the saltier bays of the coast. They abound on jetties in waters of Gulf salinity. Fortunately, our oysters prefer areas in which the salt content is lower and actual damage to the reefs is thought to be not very great.

This animal is not the same as the Atlantic coast oyster drill which does pose a serious threat to oysters in that area.

By HOWARD LEE, Marine Laboratory Director

Photographs by Author

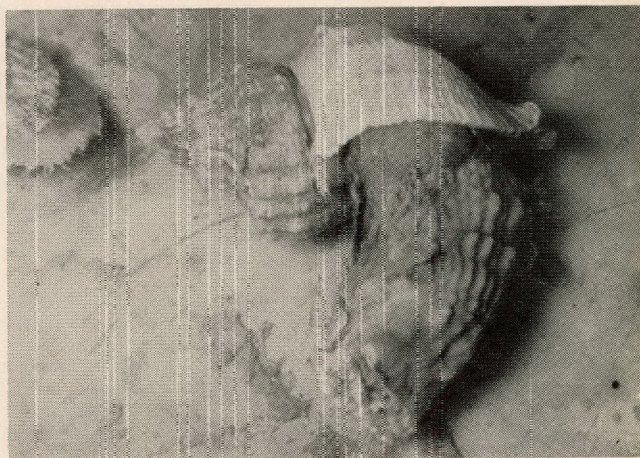


The edge of the shell of the same oyster as seen in figure 2. Note how the drill had chipped away part of the shell of the oyster and inserted its proboscis inside the oyster shell. When the oyster died, the drill was able to open the shell and eat a major portion of the oyster.

A drill actually thrusting part of itself into the shell of an oyster.

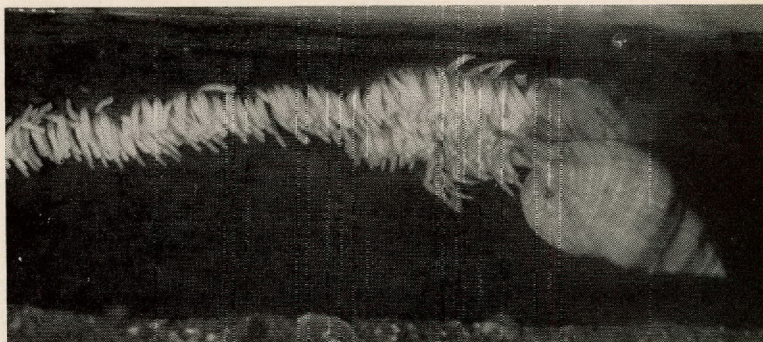
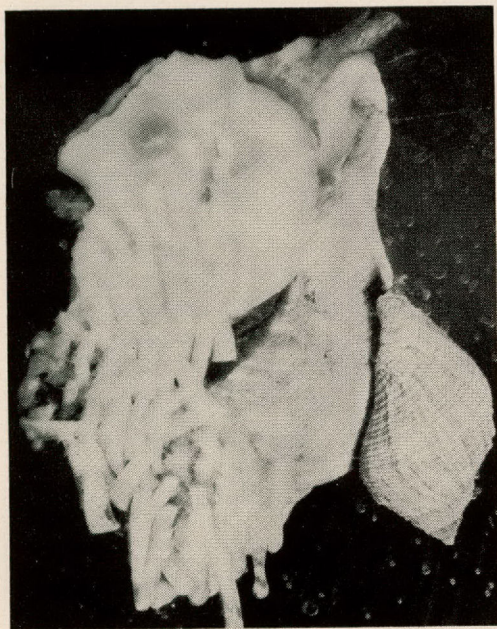


An average sized specimen of the Southern Oyster Drill and a small clam (*Chione cancellata*) upon which the drill was feeding when found.



A female drill depositing egg cases on the glass front of an aquarium. The cases are formed within the "foot" of the adult and attached, full of eggs, to any surface well above the bottom of the water. Each capsule contains a hundred or more eggs.

Lots of egg cases or capsules can be deposited by a single female. These capsules are translucent white but as development takes place and they are exposed to more light and air, they turn yellow or blue.



MUSKRAT



The muskrat, a dark brown animal with a long, scaly tail, is found principally in the coastal marshes of southeastern Texas; on the waterways of the eastern half of the Panhandle; and on the Rio Grande and Pecos River drainages. It is probably the most important fur bearing animal in Texas. Muskrats are usually about the size of a small cat, weighing two to three pounds, and about 24 inches long.



Muskrats build large houses of sticks and mud in shallow water—or they may burrow into a stream bank. Three to five litters may be raised during the breeding season from March to September. A litter may contain from 2-13 young, but usually averages four. Muskrats' diet consists mainly of vegetable matter, including roots, stems, bulbs and seeds of aquatic plants, and any available grain. A very small amount of animal food, such as fish, mussels, and frogs may be eaten.

INSECTICIDES CAUSE ALARM

National Audubon Society Cites Poisoning of Birds

Alarm has spread among landowners and experts in fish and wildlife throughout the nation about the use of highly toxic chemicals for insect control. The National Audubon Society recently recommended that the Department of Agriculture stop all insect control programs in which these toxic chemicals are applied, unless evidence is found that no serious damage to human and wildlife resources will result.

The society specifically requested the Secretary of Agriculture to stop the proposed control program for the imported fire ant on some 20 million acres in nine southern states. John H. Baker, president of the society, said the use of highly toxic modern insecticides, fungicides and so-called pesticides carries with it a much higher potential of harm to humans and wildlife than is generally recognized.

"Insecticide hazards may well rank in seriousness of adverse effects with the dangers of radioactive fallout," Baker said in a recent press release. He cited tests conducted by the U. S. Fish and Wildlife Service which reveal that in the second generation of exposure to insecticides in their diet, birds invariably become incapable of reproduction.

"When you realize that these poisons may well have similar cumulative effect on the human system, it is unthinkable that widespread programs be undertaken in absence of proof that there is no risk of such result," Baker said. "In any case, the burden of proof should rest on the agency employing the toxic substance, and not on the individual citizen. The proof should be available for public evaluation long before mass-spraying programs are undertaken."

Baker said the Department of Agriculture plans to use dieldrin, one of the most deadly of modern insecticides, at the rate of two pounds per acre, in the proposed fire ant control program. For the initial Texas experiments, the United States Fish and Wildlife Service has assigned Biologist Walter Rosene to work in cooperation with the Texas Department of Agriculture to determine the effects of certain pesticides, proposed for use in the fire ant control program, on wildlife. Texas Game and Fish Commission Biologist Dan Lay has been assigned to work with Rosene and the Department of Agriculture in test areas of 4,000 acres each in Hardin County.

Tests by the Fish and Wildlife Service show that one pound of dieldrin has sufficient toxicity to kill approximately four million quail chicks, according to Baker. He said the California Game and Fish Department had found that only one and a half pounds of dieldrin per acre caused the deaths of pheasants, quail, gophers, snakes, jackrabbits, dogs, chickens, geese, and turkeys.

Texas Farm Reports Fish Killed by Toxic Run-off

In Crockett, Texas, dieldrin made a new enemy, as a landowner explained in a letter to the Game and Fish Commission:

"Last spring we constructed a new 12-acre lake on our Trinity River farm and stocked with fish. Later the big Trinity overflow stocked it with still more fish. During the summer the heavy rainfall washed cotton poison (dieldrin) from the watershed fields down into the lake. This killed all the fish.

"This did not alarm us too much because the county agent said the poison would dissipate itself in about two weeks, and we knew that the next overflow would restock the lake with fish. However, this did not prove to be the case. Since then the river has been in the lake three times, and each time we would find many dead fish a few days after the river left the lake. My grandfather has a natural 37-acre lake on his Trinity River bottom farm and dieldrin caused a heavy fish kill in his lake also.

"My conclusion from this is that dieldrin is many times more toxic than some experts claim. I also observed that the gar fish were the last to die. I shudder to think of the many game fish that were probably killed up and down the Trinity River this summer. How long will our lake remain toxic? Is there any neutralizer that could be economically used?"—John A. McCall.

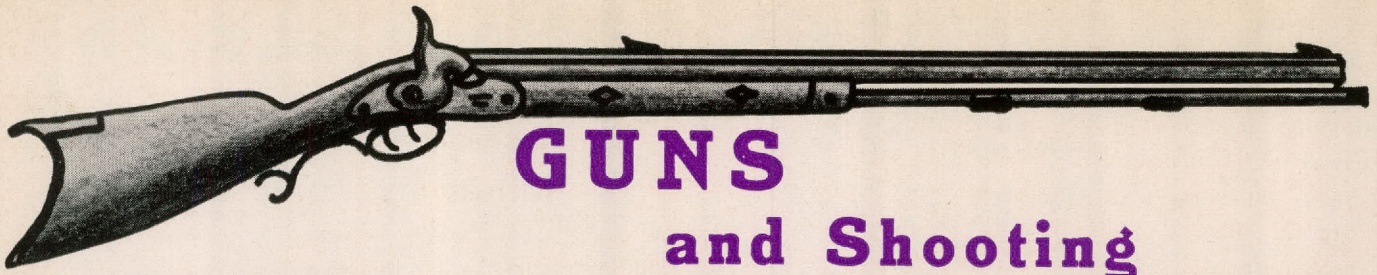
In reply to John McCall's question, the Commission's Chief Aquatic Biologist, Marion Toole, said:

"We have found that dieldrin is probably the most toxic poison for fish that has been introduced for agricultural purposes. Another objection to it is that it has a very long residual effect and waters might be poisoned for years, after just a slight amount of it is introduced into a lake or stream.

"Another chemical, toxaphene, has been used by fishery workers to perform complete kills of fish in lakes, but if the lakes do not contain the proper buffer to counteract the toxaphene, it is possible for that chemical to last for years. Consequently, in its use we are extremely careful to know whether the water will counteract the chemical before it is used.

"At the last meeting of the American Fisheries Society, a paper presented on agricultural poisons stated that worse chemicals than dieldrin have been developed that possibly will be used. Fisheries personnel feel that drastic laws should be passed prohibiting the use of some of these chemicals.

"Thus far we do not know of any neutralizers that can be used for dieldrin. We do know that toxaphene will remain toxic in acid waters, but will neutralize within about a month in highly alkaline waters. Consequently, if any toxaphene should get in the lake, probably the best neutralizer to use would be lime."



GUNS and Shooting

By JOHN A. MASTERS

This Month: Defense of the .22 Rimfire

One can scarcely pick up a piece of gun literature these days without being overwhelmed with the rise of the high-velocity, flat-shooting rifle. Likely, before reading far, you will encounter some derogatory remark about the .22 rimfire cartridge.

Now, I am a devotee of the high-speed cartridges myself, but a word in defense of the little .22 rimfire is long overdue, and I intend to supply same.

As far as I'm concerned, there is absolutely no place for the .22 long cartridge. Evidently the loading companies felt the same way, since not so long ago they tried to drop it from manufacture, but inexplicably, a hue and cry arose, and they were compelled to resume making it.

For my money, the .22 short, with its 29-grain lead bullet and 965 ft./sec. muzzle velocity, is fine for shooting galleries and the like. I use them for just plain plinking, too.

The .22 long rifle, with its 36-grain bullet and 1365 ft./sec. muzzle velocity, is a much better choice

for small game hunting. For one thing, most rifles handle the load much better, particularly the clip-fed rifles. I personally do not like hollow-point bullets for squirrel and rabbit hunting, since the little slug tends to expand and rip a big hole, particularly if you are unlucky and gut-shoot the critters.

I have often in this space condemned the .22 as a deer rifle. Why is easy to see. At the muzzle, the .22 long rifle cartridge delivers 149 pounds of muzzle energy, and at 100 yards this has fallen off to 86 pounds. Need I say more?

These same figures, however, point out graphically that the .22 long rifle is a fine small game and pest cartridge. Might as well point out that the mid-range trajectory is 3.3 inches. All this dope combines to prove that up to 100 yards, a squirrel, cottontail or crow doesn't have a chance, if you place your bullet effectively.

Probably no cartridge has undergone such an intensive develop-

ment. As a result, .22 rifles of almost any description shoot amazingly well, and when fitted with one of the inexpensive scope sights available today, the effective range of the cartridge, on the type of game it was designed to take, makes the ownership of a good .22 quite desirable.

Probably most of us started our hunting careers with a .22 rifle. My first one was a little Model X Iver Johnson single shot, which I still have. When it was new, I could get 12 shorts for a nickel, and the man at the hardware store would break a box. Many's the time that a nickel's worth of ammunition has lasted me for a week.

Today, a bewildering variety of .22 rifles is available to the prospective purchaser. I recently started my son off with a Remington 511 single shot, equipped with a 2½-X scope. Right away, he learned to place his shots on paper, and has accounted for several small game animals, though he is not yet 7 years old. I hasten to add that all his shooting is *carefully supervised*, but in a couple of years, he will be able to go out on his own.

My own .22 is a Remington 513-SA, fitted with a Weaver B-6 scope in a TipOff mount. I have always preferred bolt-action rifles, and in .22 caliber, I like the clip-fed design. This little rifle has a good adjustable trigger, and is capable of amazing accuracy.

One of my favorite game animals is the squirrel. I like to still hunt, and in the winter when the foliage is gone, I not infrequently take a squirrel at 50-75 yards. I have taken a few at 100 yards, but I take such shots under nothing but the most ideal conditions.

Much has been made of the fact

Shootin' Shorts

This gun business is getting sissier all the time. Comes now a couple of samples of .22 rimfire rifles from Remington with pale tan walnut stocks, one done in "Crow Wing Black" and the other in "Buckskin Tan." My first impression was skepticism, but the light-weight and short-stroke slick actions soon changed my mind. After appropriate field testing, I will report further.

In case you are going to put a Sako adjustable trigger on your FN or 98 Mauser, first replace the notched cocking piece with a solid

one, or you will be unable to make the trigger work. Otherwise, it is a really nice single-stage trigger.

Colt has done themselves proud with their new Model 57 big-game rifle, at least as far as appearance goes. My old buddy Sully at the Midland Pawn Shop, Sporting Goods Emporium, and Bear Hunt Planning Center, in Midland, Texas, has a couple of the new guns. FN Mauser Action, Sako Adjustable Trigger, Fajen stock, combined with a nicely contoured barrel supplied by Colt, results in what is essentially a fine custom built rifle.—J.M.

that the .22 bullet will ricochet badly. While this is true, I feel just as secure using the .22 *within its effective range*, as I do whanging away at a prairie dog out at 350 yards with my high-speed center-fire .22 rifles. I see no reason why common-sense shooting with the .22 is any more dangerous than any other shooting. Of course, the fact that many young shooters use the .22 rimfire greatly increases the chances of injury, but here I blame the father more than the boy. A lad who has been properly schooled will create no unusual hazard.

Whether you prefer bolt action, pump or automatic will make little difference. Any of these will perform well. You pay your money and you take your choice.

The fine accuracy of the modern .22 and its excellent ammunition fully justifies the use of a telescopic sight. Such sights are quite moderate in price, and nowadays, come with mounts that fit grooves, thoughtfully provided by the manufacturer.

So don't cross the .22 off your list. It has a definite place on your gun rack, and can provide you with hours of shooting pleasure at less cost than any other rifle.

Sportsmen of Valley Give Game for Vets

Venison, javelina, and wild hog meat were contributed by Valley Sportsmen Club members to the annual Wild Game Dinner January 13 for patients in the U. S. Naval Hospital at Corpus Christi. Brown Express transported the meat from the Valley to Corpus Christi free, after picking up 400 pounds of venison and 63 pounds of wild hog in Harlingen, and a deer and six or seven javelina in Edinburg. The patients had made a special request for barbecued javelina.

The Wild Game Dinner is sponsored annually by Veterans of Foreign Wars Posts in South Texas. Last year sportsmen supplied more than 250 patients and staff members in the Naval Hospital with venison, bear, buffalo, javelina, ducks, geese, and other game.

Ballistics Terms Defined For the Beginning Gunner

When a novice gunner takes up the sport of hunting, he often needs literature on proper loads and calibers to use for different species of game, and why. He can use average ballistics tables, provided free by sporting ammunition manufacturers. The tables contain bullet type and weight in grains, velocity in feet per second, energy in foot pounds, and mid-range trajectory.

To help the hunter understand the technical data, a few explanations should be made:

The velocity of a bullet is the rate, in feet per second, at which the bullet moves. Because of air resistance, a bullet begins to lose velocity as soon as it leaves the muzzle of a gun. Velocities at 100, 200, and 300 yards are included in ballistics tables for this reason.

Bullet energy is determined by its velocity and its weight, and is expressed in foot-pounds, or "the amount of energy required to lift a one-pound weight one foot." Because of the close relationship between bullet energy and striking power, ammunition ballistics tables show energy data at several given ranges, as well as at gun muzzle. Style and construction of a bullet should also be considered vital measuring sticks for the bullet's effectiveness on game.

The trajectory of a bullet is its flight path from the gun to the target. In flight, the bullet is subject to two forces: the force of gravity which pulls the bullet toward the earth and air resistance which slows the bullet as it moves through the air. As a result, the flight of the bullet is in a curved path.

Trajectory data are frequently given in the form of mid-range trajectory heights for various ranges—the distance (at a point midway from muzzle to target) from the trajectory to the imaginary base line joining the muzzle to the target. A knowledge and use of these trajectory data will aid a shooter to set his sights properly to score a hit, or to aim his rifle the proper distance above and below his target.

Remington Arms Company, Bridgeport, Conn.



It Happened This Way...

A game warden was checking the bag of dove hunters in his area. He noticed some hunters sitting near a gate cleaning their birds and started over to check the number of birds they had. About the time he started through the gate a flight of doves passed in front of the warden, and a hunter fired at the birds—in his excitement not noticing the warden until it was too late. The warden received shot in the chest and face, none doing permanent damage, fortunately. The hunter immediately threw his gun down and said, "That's the last of my hunting." The other members of the hunting party immediately agreed with him saying, "You bet it is, and it is the last time you go hunting with us, too. We aren't taking chances on someone else getting shot 'by accident'."

* * *

Just before sundown two wardens on a routine patrol in mule deer country noticed an unoccupied car parked alongside the road. Both wardens strongly suspected the car owner of poaching on the adjoining ranch. Looking across the canyon, one of the wardens made out the figure of a man. He got his "glasses" and took a closer look. The man was cleaning a deer. The wardens figured the man with the deer was the owner of the car, so they decided to wait for him.

It was dark by the time the man got back. He introduced himself and asked if there was any trouble. When the wardens questioned him about his hunting, he readily admitted killing a fine mule deer, then explained that he was just driving out to the ranch when he happened to see a deer. He didn't want to pass up a chance to get a buck, so he parked, trailed the deer, and shot it.

Lake Houston to Stock White Bass

Lake Houston will be stocked with white, or sand, bass within the next few weeks, Marion Toole, Director of Inland Fisheries, has announced. Biologists have begun immediately taking white bass from below the dam at Lake Worth at Fort Worth for transporting to Lake Houston at Houston.

White bass were first introduced to Texas fresh-water fishermen in the early thirties, when a dozen were planted in Lake Dallas. From there, the fish have spread so rapidly fishermen now have a creel limit of 25 a day.

The fish are prevalent in all the major fresh-water lakes of the State, and they usually weigh from one to two pounds. They are caught throughout the year, although most of them are taken at spawning time.

The thrill of the hunt is not for men only.

Women "Man" the Guns

doe had entered. He stood there and looked toward me. I knew, without benefit of scope, that he was huge! After a long moment, he came into the open and stalked down to join Mrs. Doe.

I watched him breathlessly through my scope. He was walking directly toward me, and I frantically waited for him to turn sideways so I could get that perfect shot. After what seemed an eternity, but was probably only a minute or two, he turned. Sighting the exact spot my husband had told me to target, I squeezed the trigger of my .257 while the blood hammered in my temples and my heartbeat roared in my ears.

Both buck and doe bolted, jumped a brush fence, and were gone! I had tried to get off another shot just the the buck jumped, but he was too quick for me. I tried to calm myself. I thought surely I had hit him, but I felt so helpless. Had I completely missed him? Had I only wounded him? Would I ever see him again?

After about five minutes I gathered myself together, and with wob-

It's his, in no uncertain terms.
They've Made Texas Home

• Continued from page 11



Female grackle with a piece of bread.

On clear days in late winter adult males begin separating from their flocks to take up their breeding territories. Each male will station himself on a tree, bush, post, or other eminence and by aggressive displays warn other males to stay off his "property." While puffing out his body feathers, parting his wings, and spreading his tail, he makes break-

ing-stick sounds, rattles, wheezes, whistles, and shrieks. Should another male not be intimidated by this loud-mouthed, inflated, blue-violet-greenish glossed, yellow-eyed ogre, he may approach too closely. Then our hero, or villain (whichever you want to call him), will very likely come to his property line and go into a different display.

He now tries to look as long and lean as possible while pointing his bill to the sky. The intruder usually strikes the same pose. Sometimes the two will continue this position for minutes at a time without moving a muscle. According to bird behaviorists, they are not looking for satellies, or hawks, or even being snooty. They are merely showing that they are all r'ared back and ready to "let fly" with their long-sharp bills. Usually the trespasser goes off after a while, either of his own accord or with the assistance

• Continued on next page

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We discovered the bullet had not gone all the way through the buck. It had hit a rib and exploded, but the big boy had managed 60 yards of running before he collapsed. His antler spread was $21\frac{3}{4}$ inches. Although his estimated age was between six and eight years, he was in good condition from running a lot.

Now, you wives of deer hunters, here's my advice to you. If you have never been deer hunting, drop a hint that you would like to go. If friend husband asks you to go along, you have adventure ahead of you. It may not be as comfortable as sitting at home, but it will be different and exciting. A whole new world will be opened to you, especially if you learn to hunt on your own.

The outing itself, without getting a lucky shot, is worth its trouble. To be close to nature, morning and night, is good for anyone. After the hunt, you won't need a tonic, vitamins, or tranquilizing pills. As you have probably guessed, I'm sold on it! I'm going back every chance I get.

(Mrs. Collingsworth meant it. She downed an eight-point buck this past deer season.—Ed.) **

of the established male, who flies at him.

In the spring females leave their flocks and wander over near or in the males' territories. Males solicit them with *chee-chee-chee* noises. Often a male will chase a female at high speed but she flies faster. Actual mating usually takes place just as the female is completing her nest.

Male grackles don't, like the males of so many other bird species, lend a bill to help out with nest building, incubation, brooding, or feeding the young. However, a male will often "stand guard" near a colony of nesting females which is on or partly on his territory.

Grackle nests are bulky open cups made of grass, weed stalks, rags, strings, and other objects that the hen grackle sees while she is building. Inside, the structures are often

plastered with mud and lined with small fibers. The nests are built in cattails, shade trees and numerous other places. In Central America, Alexander Skutch writes that the favorite of all nest sites is over the growth bud in the center of a coconut palm. Since leaves at this point are rapidly growing up and out, the nest is nearly always tipped over or pulled apart, often before the eggs even hatch. Other grackles in less active parts of the palm keep the colony producing.

The eggs number from 2 to 5, usually 4, in a set and are buffy, grayish-white or greenish-blue in ground color. They are blotched, streaked and scrawled with dark brown, brownish purple, black, and smoky gray. The eggs will hatch in 13 or 14 days, and the young nestlings leave in 20 to 23 days, unless

scared out prematurely. During spring and early summer hen grackles try to raise two broods.

In late summer and early fall all grackles moult. During this time the old males are no longer great-tailed. In fact, their tails may look highly "moth-eaten" or be entirely absent. Even though the grackle may moult all its tail at once, it does not lose all its flight feathers at the same time, as do water-frequenting geese and ducks. A land bird must be able to fly away from pouncing cats and other predators at all seasons. By the time northers are cold enough to be taken seriously, grackles have a full coat of feathers.

Boat-tailed grackles are generally not favorites among outdoor enthusiasts. They are too closely associated with civilization and its garbage, toil, taxes, bombs, and missiles. Still, the big grackle has strong points in his favor. His dark, iridescent colors are handsome, his antics are entertaining, and his varied off-beat noises are amusing. Best of all, it is comforting to know that a native American is able to conquer new territory. The boat-tail isn't as good at it as the alien European starling, but at least he is in there pitching. **

An ancient art again becomes popular.

Home-made Appeal

• **Continued from page 8**

very hard, high-speed drill bit for this operation as the inner, pearly layer of mussel shell is rather hard. Care must be taken not to get burned by the drill bit or shell, as both become very hot during the drilling operation.

The outside, horny layer of the shell must be removed to expose a shiny surface. This task is much easier if the mussel shells are placed out in the yard with the outside of the shell up and exposed to rain, sunshine and insects for several months. Most of this dark colored material will weather away. When grinding and sanding on the outside layer of shell, a noticeable odor like hair or horn burning may be detected. This is the result of heat, due to friction, burning the outside, horny, nitrogenous material.

The finished shell blank, with a hole drilled in each end, is polished using a fine grinding wheel or fine sandpaper. It is not necessary to put a high polish on the lure. Actually, a dull or slightly rough piece of mussel shell takes on an entirely different appearance when held under water.

The necessary hardware required to finish the lure is shown in the lower photo. The items, available from most hardware stores and fish-

ing tackle shops, are inexpensive, especially when bought in quantity. Split rings in various sizes as well as treble hooks are actually the only articles needed.

One split ring is used at the front of the lure for attaching the line or snap swivel from the line. Another split ring is used to attach a treble hook to the rear of the lure.

The small-size treble hooks, sizes 6, 8, and 10 are probably the best fish catchers and allow the lure to have more action when pulled through the water. Smaller lures with size 10 hooks are very good spinning rod baits and are preferred by the author. However, all types of artificial baits including flyfishing, casting and spinning lures may be made from mussel shells.

Small bucktails or streamer flies may be added to the lures, if desired. If these are purchased tied on eyes instead of hooks, they are inexpensive and may be easily attached or removed from the split ring, which also carries the treble hook.

Here's hoping that you try and enjoy this "do it yourself" hobby of making fishing lures from mussel shells. You will find that nothing surpasses the thrill of catching a fish on a bait that you have designed and made with your own hands. **

Are You Changing Your Address?

Then please fill out the following form and send to TEXAS GAME AND FISH, Walton Bldg., Austin, Texas, so that you will continue to receive your copies of the magazine. The magazine is sent second-class mail and cannot be forwarded by the post office or remailed from this office. Allow six weeks for processing.

Name

Old Address

City, State

Please look on the mailing label of your magazine, find the number which appears on the right hand side, and copy it here:

New Address

City, State

One boy hiked to town and phoned the game warden who lived in the area. The warden hopped in a jeep, jogged through the cold, wet night, and pulled the boys' car back to the highway.

Courtesy often adds an extra flair to a warden's standard duties. On a public antelope hunt, one woman sportsman was quite dismayed not to have made her kill. She blamed her poor luck on her rifle. The last day of the hunt, one of the wardens lent her his own rifle; showed her how to handle it then took her to a hunting area and watched her down a good-sized antelope.

About 2 a.m. a warden driving in the hills came upon a young man trying to change a flat tire, as his date waited anxiously in the car. When the warden offered his help, the boy said he was doing all right except that he couldn't keep the car from rolling downhill after he jacked up one side. Hiding a grin,

Texas May Receive 500 Wild Chukars In Game Exchange

Another effort may be made this year to introduce chukar partridge in the Trans-Pecos region, according to E. A. Walker, Director of Wildlife Restoration for the Game and Fish Commission.

Negotiations are in progress with the Nevada Game Commission to exchange 100 Texas javelinas for 500 wild chukars. The birds would be trapped this summer and brought to Texas by employees of the Nevada Commission. The javelinas would be trapped by Texas Game Commission trappers and taken to Nevada for release there.

Several previous attempts have been made to introduce chukars in Texas. The first birds were planted in South Texas. They failed to take hold, however. It is believed the chukars may have a better chance for survival in the Trans-Pecos. Hunting season would be closed on the birds until there are sufficient numbers to assure their spread.

the warden put rocks under the wheels and got the boy's spare tire from the trunk of the car. The boy's face fell when he saw that the tire had only a few pounds of air in it.

"Heck. Guess I'll have to leave the car out here after all," the boy complained. The warden persuaded him to go ahead with the tire change and to travel only about five miles an hour on the low tire. The warden followed him back into town to be sure he made it.

Wardens often join forces with other law enforcement officers to apprehend criminals or to transport prisoners, especially in small counties where the sheriff's staff may be shorthanded. About 1:30 a.m., a warden on the lookout for headlight hunters noticed a car moving slowly down the highway with only its parking lights on. He took down the license number, then sat still and watched. The car rolled through a cattle guard into a pasture, then stopped under a large tree. The driver got out of the car with a bundle, which he deposited under a big rock, and returned to the car. When the man left, the warden strolled up to the rock to check on the bundle. There, within a mass of wet cloths and old newspapers, was \$4,000 worth of heroin! The warden immediately notified the Federal Bureau of Investigation, who arrested the dope carrier.

When a disaster hits a community—such as a fire or flood—every able-bodied man is needed. Wardens stay on 24-hour call for any emergency. When the Trinity River flooded, wardens evacuated people from danger areas by car and boat. A stranded cow was fed by a warden who went to its lonely islet by boat every day until the water subsided.

After a destructive tornado hit a large North Texas city, wardens moved in to help give first aid, search debris for survivors, guard abandoned property to prevent looting, and aid in keeping communications open with their two-way radios. One warden in the stricken city carried 16 injured victims, one at a time, to the hospital in his car.

Individual accidents take a share of the warden's time and training. While strolling along a river one summer day, a warden heard a scream. He hurried ahead to find an elderly woman fisherman who had been bitten by a three-foot rattle-snake. Grabbing his snake bite kit from his pocket, the warden gave the woman emergency treatment before her family rushed her to the hospital.

Frequent traveling often brings the warden to the scene of a highway accident before other officers have had time to arrive. One New Year's night, a warden happened upon a clogged stream of traffic where a bad accident had blocked one full lane of a two-lane highway. A seriously injured man lay in the middle of the street, and a doctor said the man couldn't be moved until the ambulance arrived. The warden took charge of directing the traffic past the area.

Wardens must keep abreast of ever-new developments in the wildlife research field, even after their intensive six-months training at Texas A&M College. To get the new findings into practice, they pass the information on to sportsmen and landowners at meetings, dinners, and just over-the-fence talk. Going modern, some wardens use a newspaper column to cover game laws and hunting prospects. Others use radio and television programs to beam the latest game news to the public.

Demands on the warden's time are seldom recorded unless they are strictly in the line of duty. So add between the lines below, the deeds they performed "above and beyond . . ."

Hours on duty in the field	609,985
Nights in camp	3,706
Time checking pollution	15,499
Time in court	4,192
Time assisting peace officers	4,590
Assisting in fish rescue or water improvement	4,222
Time with wildlife exhibit	1,966

• Continued on next page

Southwell Named to Gulf States Group

Wilson E. Southwell, San Antonio and Corpus Christi businessman and sportsman, has been named to the Gulf States Compact Commission by Governor Price Daniel. Southwell will attend his first meeting of the compact group when its annual meeting is held April 10 and 11, in Clearwater, Florida.

The states of Florida, Alabama, Mississippi, Louisiana, and Texas are members of this group. The compact ties these states together in a program of jurisdiction over fisheries in the waters within their respective boundaries.

The Gulf States Compact Commission was created during the time Governor Daniel was attorney general of Texas. He assisted in the preparation of the compact agreement, and passed on its validity be-

fore it was adopted by the Texas Legislature 10 years ago.

The commission is made up of the executive directors of each of the conservation groups of the state, plus two other members from each state. One of these members is named by the legislature and the other by the governor. The compact has Federal supervision on the part of the U. S. Fish and Wildlife Service.

Howard D. Dodgen, Executive Secretary of the Texas Game and Fish Commission, was the second chairman of the group. He now is serving as vice chairman and is due to be elevated to the chair again next year. Senator Jimmie Phillips of Angleton is the other Texas member of the group.

The purpose of the compact is to



Wilson E. Southwell, new member of the Gulf States Compact Commission.

promote better utilization of the fisheries—marine, shell and anadromous—on the seaboard of the Gulf of Mexico through the development of joint programs. Appointment of Southwell to the commission gives Texas a lay representative with broad knowledge of fishing conditions on the Texas coast.

Southwell was born at Yoakum, but has lived most of his life in San Antonio. He attended Texas A. & M. for three years, and is a veteran of World War I. He has a wife, a son, Wilson (Bill), Jr., and a daughter, Mrs. Joe Roddy of Corpus Christi.

Southwell has long been interested in civic affairs. He and his son hold a record of being the only known father and son to have served as presidents of the Jaycees. Southwell is a director of Sportsmen's Clubs of Texas, which he helped to form.

They open a new world to children.

Above and Beyond

• Continued from page 26

Time assisting in game management . . .	9,021
Repairing or constructing state property	4,043
Rescue, fire fighting, or other emergency	2,288
In-service school	531 days
Number of sportsmen or other civic meetings participated in or attended	2,597

A boy out hunting and fishing and learning about the outdoors is seldom going to get into serious trouble. With this in mind, wardens who are recognized firearms experts in the National Riflemen's Association instruct youngsters in firearm safety and the care of guns. They organize boys' rifle clubs for youngsters between the ages of 8 and 18, and later seek affiliation for the club with the NRA.

In a Central Texas town, wardens each year stock a creek with sunfish and hold a fishing contest for children up to the age of 13. Prizes are given for the biggest fish, the smallest, the longest and shortest, and the most fish caught by one contestant. The wardens, of course, serve as judges and local sporting goods stores donate the prizes.

The wardens carry the stories of

the world of wildlife into the classroom, too. Once a warden starts this task, the entire school district is captivated, and often he is called on to visit each school and each class in the school. One warden said his sample stuffed animals were almost bald from the caresses of interested children.

Many wardens supervise Boy Scout troops. They instruct and judge their boys on outdoor skills which earn the scouts merit badge awards as well as a deep love for nature.

One letter of appreciation for this type of work reads in part, "It is with great pleasure that I bring to your attention the outstanding service to boyhood in this section of Texas rendered by (the game warden). . . . Through his personal efforts some 200 boys have participated in the program. A number of these boys were 'less chance' kids, and several had been in trouble with local authorities. The warden's leadership has resulted in exceptional results in character building. Not one of the youngsters has gone wrong. . . ."

This then is the reward for an inspired life's work—to save a boy, or man, or deer. To help give greater life to the whole outdoors and to mankind. **

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Good ground cover and varied weather gave the hounds added challenges.

One for the Record

• Continued from page 9

an assortment of weather conditions. A few days were clear and bright, while others provided rain and heavy wind.

More than 800 pen-raised quail were liberated for the open. The liberation was spread over a week's time, under the direction of Game Warden Reb Burks.

There was a huge following for the opening. More than 200 bird dog lovers from various parts of the state came for one or more days. Many brought their own mounts, to follow the dogs through the rolling grass-covered hills where thousands of soldiers trained during World War II.

A barbecue luncheon was served daily at the Camp Maxey Club house. One feature of the open was the annual dinner meeting.

Nattie Nettie turned in a magnificent performance to win top honors. The stylish pointer successfully handled three perfect covey finds. One of the points came under unusual conditions. A covey of bobs crossed over a black-top road in the reservation, in plain sight of the dogs and workers. Nettie held her ground until the birds had completed crossing the road and then she followed across, making a per-

fect point. This clinched the championship for her.

Crockett also gave a fine showing of control. He had a big day, with six perfectly handled covey finds. The judges, however, held Crockett ran a shorter race than the champion. The runner-up had won third place in the All-Age sweepstake.

The judges were Carl Apperson of Commerce and Ike Brandon of Carbondale, Ill. Forty-six dogs had competed in the Championship Stakes. The judges said this was the largest Texas Open ever recorded. In addition to the check for \$1,000 Nattie Nettie's owners also will have possession of two trophy cups for a year.

The officials were high in their praise of Camp Maxey as a place for field trials. Grass and timber were

in excellent condition. There was a good crop of native birds on the place. The association bought 800 additional birds which were released over the reservation by the game warden.

Hunting the area also was interesting from the standpoint of the terrain. In many places the quail were found around old concrete foundations of the hundreds of buildings on the site during war training days. The buildings had been removed and concrete foundations knocked over. This furnished ideal cover for the birds.

"All the owners and trainers were highly pleased with the trials," said Mrs. Homer Pittman of Tyler, secretary of the association. "We don't think we could have found a better place." **

Clues complete; mystery solved.

Why Do Lakes Turn Over?

• Continued from page 15

As water grows colder it becomes heavier and more dense and tends to sink to the level in the lake where there is water of the same temperature and density. This sets up convection currents and brings more and more water into circulation within the epilimnion. Thus two things happen: the epilimnion continues to thicken and extends deeper at a progressively faster rate at the expense of the hypolimnion which becomes thinner and is forced deeper. The final result is the bringing into circulation of all the water in the lake and the disappearance of the hypolimnion and thermocline entirely. When this occurs all the water in the lake is essentially the same temperature, it is said that the lake reaches the period of fall overturn.

In the higher latitudes of the temperate zone, where winters are more severe and lakes freeze over, another step is added to the yearly cycle. Late fall and winter temperatures continue to chill the waters of the lakes and the water becomes heavier and more dense until it is chilled to four degrees Centigrade (39.2° F). This is the point at which water exhibits a physical characteristic unlike most other materials. Instead

of getting heavier and more dense from four degrees to zero degrees Centigrade (32° F) it becomes lighter and less dense. Thus the coldest possible layer of liquid water prior to freezing is always at the surface in our northern lakes. That is why ice forms at the surface of a lake rather than at the bottom.

When a lake freezes over there occurs what is called a period of winter stagnation. Like the summer stagnation period the lower portion of the lake is cut off from contact with the air and under the ice cover decomposition gases accumulate. Sometimes they reach the point where all aquatic life in these frozen-over lakes is destroyed. This is what is referred to as a "winter kill." As spring comes on, though, the ice melts and the lake once more has its water in circulation. At this time the lake has its spring overturn. It should be pointed out that unless a lake freezes, there is only one overturn during the year and that occurs in the fall. Correctly, it is the period during which all of the water in a lake is of a uniform temperature and density and is in total circulation. This, of course, may last from late fall until thermal stratification takes place again the following spring. **

Hound Owners Create National Organization

Owners and fanciers of Beagle and Basset hounds have formed a new organization, the American Beagle Club, Inc. The club's objectives include the adoption and enforcement of uniform rules to regulate and govern beagle and basset shows and field trials; to establish standards of conducting the exhibiting, running, breeding, hunting, purchasing and selling of these breeds; and to prevent, detect, and punish frauds in connection therewith.

The A.B.C. will publish an official magazine to report improved practices in breeding, showing, and running of the hounds. The club is designed to be non-profit. Complete details may be obtained from the American Beagle Club, Inc., Towanda, Pennsylvania.

The living death that saves animals' lives.

Escape from Winter

do not sleep so soundly as other hibernators and may rouse frequently. During its hibernation, the cubs are born.

Most mammals that hibernate eat heavily of fat-producing foods shortly before retiring for the winter. Their bodies will use this store of fat during the long months when no other food is taken in. When the ground hog emerges in the spring he is lean, emaciated, and hungry. His first concern is to feast on those first tender sprouts and buds that respond to the warm beckon of spring.

Normal body temperatures of mammals are within a few degrees above or below 100 degrees. The temperature of healthy humans is just over 98 degrees. If that temperature changes much, it means that something is wrong. When the woodchuck, chipmunk, bat, and other hibernators prepare for their long sleep, an adjustment takes place in the mechanism that regulates their body temperatures. In-

stead of the body temperature staying at a point near normal, it falls and hangs near the temperature of the surrounding air. When the air temperature gets to freezing, some bats, deep in sleep, are found to have temperatures near freezing. Ground squirrel temperatures have been found nearly as low. You and I wouldn't stand a chance of surviving such temperatures, but these sleepers nap right on without ill effects. The temperatures of most hibernators go to 55 degrees or below.

Since these hibernators have slowed down from their normal life, their breathing and heartbeat slows down, too. The skittering little chipmunk has a rapid normal heartbeat of 100 to 150 times a minute while he is awake and active. When he is deep in winter sleep, his heart may beat about 5 times a minute. "Though the ground squirrel may breath 187 times a minute when he is awake, he needs to breathe only about 4 times a minute when he is

in hibernation. The ground hog breathes as little as once in 4 or 5 minutes.

Hibernation may last from a few weeks with some mammals in milder climates to as many as eight months with some ground squirrels sleeping to escape food shortages during both dry weather and winter. In Texas, hibernation occurs with each unpredictable cold spell, and ends just as suddenly when the weather gets warm.

Dormice have been kept in hibernation for a year under artificial cold. As would be expected, the duration of hibernation among the animals varies from north to south with the severity of the season. In the far north where there is frost in the ground throughout the year, there are no animals that hibernate because they could not prepare suitable winter shelter in the ground.

Animals under the influence of hibernation are as near a living death as possible. The characteristics of hibernating animals come close to violating all the characteristics of life itself—the animals are inactive, they don't eat, they barely breathe, the heartbeat is barely discernable, and the body temperatures are low. It is indeed ironic that Nature should choose such a means of assisting these creatures in escaping a cold winter death by starvation, for death-like hibernation gives rise, not to death, but to new life itself. **

Six-year-old Shoots First Rattlesnake

Sharpshooting 6-year-old Bill Moore, 45-inch-high son of Mr. and Mrs. Wesley Moore, Corpus Christi, impressed his fellow first-graders as well as everyone else by killing a 47½-inch-long diamondback rattlesnake. Bill shot the snake one Sunday on a ranch north of Mathis.

Bill, who has been toting a gun since he was 3 years old, was walking about the ranch with his parents when Mrs. Moore noticed the snake in their path. Moore went to the car for Bill's gun, a .22 caliber automatic rifle. He shot at the snake several times and missed. Bill took over and shot the rattler twice in the head. His rifle was designed especially for him with a 10½-inch stock.

Rifle marksmanship is a hobby of the Moores, and Bill is the acknowledged expert in the family. His dad first taught him to shoot with a BB gun three years ago. He has broken five stationary targets consecutively.

Hunting season is a favorite time with the whole family. "I like to shoot things that move," Bill as-

serted. "I like to shoot lots of ducks and lots of quails." And he does, his dad added.

"Though a little young to make the final decision, Bill is seemingly on his way to a career in sharpshooting. Right now he would like to be "like Roy Rogers."

Kay McKay, Corpus Christi Caller-Times

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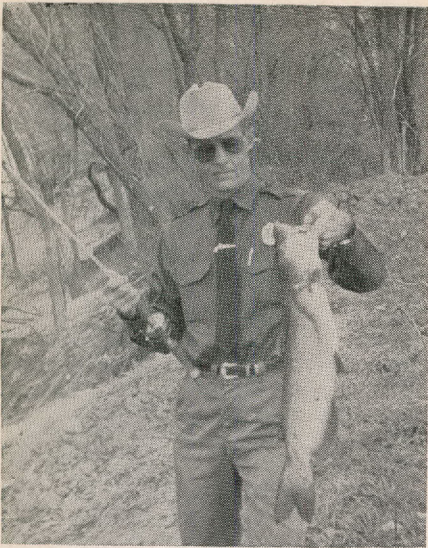
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TO WHOM IT MAY CONCERN: Fishing looks pretty good in Denton County judging by this catfish—so good, in fact, I started not to tell anyone else. Please come up this way in bunches of only three or four, as our accommodations will only handle so many at a time. —W. R. Long.

Solve freshwater, saltwater fish puzzles.

Outdoors in Brief

• Continued from page 18

a catch you cannot name. *Freshwater Catfishes of Texas and How to Know Them* gives you your answer. Descriptions include channel and blue catfish; flathead catfish; bullhead catfishes: yellow, black, and brown; madtom catfishes: freckled and tadpole; blind catfish, toothless blindcat, and widemouth blindcat. Habits and range of each one are discussed, as well as ways to catch the catfish.

Aimed at ranchers and farmers trying to improve their land, *Utilizing Stock Tanks and Farm Ponds for Fish* shows how to make farm ponds serve a double purpose—live-stock watering and fish production. The bulletin points out best vegetation to use, various controls of that vegetation, and specifications of the pond. Fish best suited to pond stocking are described along with spawning aids. Fish for stocking ponds are available from state fish hatcheries.

If you have ever done any saltwater fishing on the Texas Coast, you may have run into trouble identifying your catch. Or maybe you have just wanted to know more about the fish you caught. *Food and Game Fishes on the Texas Coast* can give you just the information you need. Identification of each fish,

Birds Dominate Wildlife Stamps, Now Ready

The National Wildlife Federation has depicted 30 species of plants and animals, as well as four examples of public land scenes in its 1958 series of Wildlife Conservation Stamps. Included in the pictures are:

Birds: Arctic tern, golden plover, snow goose, magnolia warbler, white-headed woodpecker, veery, red-shouldered hawk, oyster catcher, canvasback duck, phoebe, Louisiana heron, and pyrrhuloxia; **Mammals:** fur seal, fisher, sea otter, black squirrel and meadow vole;

Fishes: king salmon, pumpkin-seed sunfish, porgy, hammerhead shark, chautauqua muskellunge, albacore; **Wildflowers:** wild rose, red turtlehead, pale touch-me-not, and narrow blue flag; **Insects and crustacean:** monarch butterfly, honey

bee, and crawfish.

Wildlife Stamps have been issued annually since 1938, when the first series was painted single-handedly by J. N. ("Ding") Darling, noted newspaper cartoonist, conservation leader, and first president of the National Wildlife Federation. Contributions received in exchange for the stamps help finance educational programs and conservation projects of the Federation, which since its incorporation in 1937 has grown to become the nation's largest conservation organization.

The public land scenes were prepared to illustrate the theme of 1958 National Wildlife Week, to be observed March 16-22. The need for wise managements of public land resources will be stressed during the campaign, a nationwide educational effort. In Texas, the observance will be sponsored by Sportsmen's Clubs of Texas.

Available (continued)

Food and Game Fishes of the Texas Coast

The Poisonous Snakes of Texas and First Aid Treatment of Their Bites

Quail and Pheasant Propagation

Quail Management Handbook for East Texas

Utilizing Stock Tanks and Farm Ponds for Fish

The Texas Shrimp Fishery

How to Grow Earthworms for Fish Bait

Some Plants Valuable to Quail in Southwestern Texas

Tracks—Do You Know Them?

Deer Bonanzas—Restoration Procedures Applicable to Deer and Turkey in Texas

Millow Propagation

The Freshwater Catfishes of Texas and How to Know Them

Regulatory Authority of the Game and Fish Commission—an Explanation

Nutritional Requirements of White-tail Deer for Growth and Antler Development

Ten Commandments of Safety

Food Habits and Notes on the Life History of the Ring-Tailed Cat in Texas

Aransas National Wildlife Refuge The Need for Conservation

Specifications for a Buzzard Trap

Menhaden—Facts and Fallacies

Hunting with Bow and Arrow in Texas

with both scientific name and nickname, is made easy by illustrations and descriptions of size, color, range, habits, and food of each. An index makes this booklet a handy reference for your fishing trips to the coast.

The most important commercial fishing industry in Texas—shrimping—is discussed in *Texas Shrimp Fishery*. The five kinds of commercial shrimp are shown in both photographs and sketches. Life histories of shrimp are given, beginning with the offshore spawning in the open waters of the Gulf, to entering of the juvenile shrimp into the low salinity "nursery grounds" near the mouths of rivers and streams. From there, the moving of the larger shrimp in late October and November into high salinity bays and the Gulf is explained, as their life cycle runs out its course. Shrimping operations are discussed for both commercial shrimp and bait shrimp.

Glance through the selection of booklets available and get out your paper and pen. Don't let this knowledge slip by unnoticed.

AVAILABLE FOR THE ASKING:

What the Experts Say About Carp Fishing

Entry Affidavits Ready For Annual Fish Contest Held by Field & Stream

The 1958 affidavit forms for entries in the 48th annual Field and Stream fishing contest records have arrived at the Game and Fish Commission office in Austin, and are available for distribution to interested contestants.

A total of \$8,125 in U. S. Savings Bonds will be awarded. First prize will be a \$100 bond; second, \$50; third, \$50; fourth, \$25; fifth, \$25, and 150 honorable mentions will be named.

The competition is open to all anglers, from January 1 to December 31, 1958, for fish caught in the United States and territories, Canada, Bermuda, Bahamas, and Mexico. No entry fee is required.

Contest rules accompany the affidavit. Although an honor badge will be given for every eligible entry meeting the minimum weight requirement, fish need not meet the honor badge minimum weight to be eligible for contest prizes.

Good Catch, Without Wasting Bait

One morning a strict believer in game laws, a game warden, was



Things You May Not Know

The United States has a smaller area than Europe, yet it has nearly five times as many kinds of fresh water fishes.

A firefly is not a fly but a beetle.

Caddo Lake Hyacinths Finally Under Control

Hyacinth control in Caddo Lake has been highly successful, reports Marion Toole, Director of Inland Fisheries. Caddo was almost solid with water hyacinths before being treated the past three years by Game Department biologists. The hyacinths are practically gone, but eradication work will continue so they will not spread again.

The plants were so bad three years ago huge rafts of them made boating impossible on the lake except in the deep channels. Lack of oxygen in the lake, caused by the hyacinth blanket, was also affecting fish life.

watching a crew of men with heavy equipment cutting a hole in the old Lake Dallas dam to make it a permanent part of Garza Little Elm Lake. Unexpectedly, he saw a violation of the law and reported it thus to us and to the newspapers:

The drag-line operator swung the boom of his machine out over the lake, lowered the bucket, and came up with half a ton of mud and rocks. However, right on top of the load was a 6½-pound catfish, very much alive and flopping.

Now, being a strict believer, the warden naturally climbed up on the machine and asked the man for his license. The law prohibits anyone between the ages of 17 and 65 from fishing with a "winding device" without a license. If ever there was a winding device, that was one—14 tons worth. (The accidental "fisherman" was not filed on, of course, but even if he had been, he had his fishing license.)

Of the 150 different kinds of sharks, only five are usually regarded as man-eaters.

The snapping turtle can feed only under water and unlike most other turtles, cannot draw its head or tail into its shell.

Geckos are the only lizards known to have voices. They can emit a faint squeak when excited.

Male sea horses and male pipe-fishes belong to the only group of fishes that has the kangaroo-like pouch for incubation of the young.

The bumble bee is the largest of the bees. Because of her long tongue, she is the only insect that can pollinate clover.

Youths May Not Work Power-driven Winches

Commercial fishermen may hire boys 16 years old for work on their fishing vessels as long as the boys are not allowed to operate winches and other power-driven hoisting apparatus. This apparatus falls under Hazardous Occupations Order No. 7, even though commercial fishing as such is not classified as being dangerous under Federal law.

Parents may employ their children even younger than 16 on their fishing vessel as long as the children do not operate the power-driven hoisting apparatus. Ordinarily, all children not yet 16 may not engage in any manufacturing operation, and none under 18 may be employed in a hazardous occupation.

CATCH 'EM *alive* AND UNHURT!

AMAZING HAVAHART TRAP CATCHES MORE Rats, Coons, Squirrels, etc. CAN'T HARM Children & Pets



EASY TO USE!

Humane HAVAHART Trap captures animals alive—without any damage to them, to you, to your children! Takes raiding rats, rabbits, squirrels, skunks, weasels, mink, coons, etc. Straying pets and poultry released unharmed. Fully guaranteed. Easy to set—open ends give animal confidence. No jaws or springs to break. Rust-proof. Sizes for all needs. Send today for valuable FREE 36-page booklet on trapping secrets (price list included). HAVAHART, 149-F Water St., Ossining, N. Y.

Outdoor Books

HATCHER'S NOTEBOOK by Julian S. Hatcher. 629 pages. Well-illustrated with black and white photographs and drawings. Includes index, numerous ballistics charts. Published in second edition 1957 by the Stackpole Company, Telegraph Press Building, Harrisburg, Pa. \$7.50.

As an outstanding firearms expert, Major General Hatcher, retired U. S. Army officer, slides from history and definitions into details of firearms with an ease that carries hunters, gunsmiths, and all interested riflemen along with him. Hatcher's positions as director of the National Rifle Association of America and technical editor of "The American Rifleman" as well as his military career, lend evidence of his firearms authority.

Background on each model of gun and cartridge includes materials with which they are made and supplies the reasons supporting each design. Data from test experiments show whether or not the design attains its desired results.

"The Pedersen device," the automatic bolt with little recoil which was created for the Springfield rifle, is described in detail, even down to its vague name, dubbed during World War I when the invention was kept

secret. Recoil problems, gunpowder developments, and the search for a non-corrosive primer are related with highlights of both failures and successes. Recent cartridge developments cover .280 Remington, .458 Winchester, 7.62 mm NATO, and .44 Remington Magnum. New army weapons discussed are British EM 2 rifle, U. S. T 44 and T 47, Rifle automatic 7.62 mm, M 15, and the all-purpose machine gun caliber 7.62 mm, M 60.

HATCHER'S NOTEBOOK should be read by every gun enthusiast and kept on hand for convenient, authoritative reference.—J.B.

GREAT AMERICAN AUTOMOBILES by John Bentley. 375 pages generously illustrated with black and white photographs. Published 1957 by Prentice-Hall, Inc., 70 Fifth Ave., New York 11, N. Y. \$7.50.

Today, all over the United States, there are clubs and organizations whose primary purpose is the study and appreciation of the automobile, and particularly the automobile in America. Few county fairs are without an exhibit of "ancient" automobiles which have been kept in running condition. Most of these cars had superb workmanship; far advanced styling (the Cord looks good in comparison

with today's models); and through them the groundwork was laid for the precision models of today.

Two items which would be of particular interest to the average reader are the account of the first "500," or in layman's language, the first Indianapolis Speedway race; and the extensive account of the life and accomplishments of Harry C. Stutz, designer and builder of the famous Stutz Bearcat.

The fascinating anecdotes of the people who designed the cars, the famous races, the cars and their performance, which together make the most fabulous years in the history of the American automobile, are combined in this excellent book by John Bentley, internationally recognized as a leading automotive journalist in the United States. Rare and original photographs of great cars, many from the famous Lazarnick collection, add to the enjoyment of the book.—J.R.

ANIMAL FRIENDS & FOES by Osmond P. Breland. 259 pages, including selected references and detailed index. Black and white illustrations. Published 1956 by Harper & Brothers Publishers, 49 East 33rd Street, New York 16, N. Y.

Handpicking the most unusual aspects of animals and sea life, the author turns out an informative book, chock-full of entertainment, for the layman. The facts are flavored with exciting anecdotes about some of the species and surrounding superstitions are explained away. Light-hearted black and white drawings illustrate the animals' noted characteristics.

For instance, did you know that a fur seal keeps a bigger harem than any other animal? Or that birds have occasionally caused airplane crashes? Or that crocodiles have been known to attack boats? Or that bluefish destroy all the fish they can, far more than they can eat? That boll weevils so changed the economy of Enterprise, Alabama, that the citizens erected a monument to the cotton-eating insect? That 'tho house cockroaches are undesirable, outdoor cockroaches are part of nature's "sanitation department"? That squids and octopuses were using jet propulsion and smoke-screen devices long before man thought about them?

The balance of nature is traced throughout the book with decisive frankness—even little "nuisance" animals and insects provide "buffers" in nature, food for more desirable species. Although **ANIMAL FRIENDS AND FOES** was not written as a technical book, it contains biologists' reports as well as the authority of Breland, the author, who is professor of zoology at the University of Texas. The book should be highly interesting to readers of all ages.—J.B.

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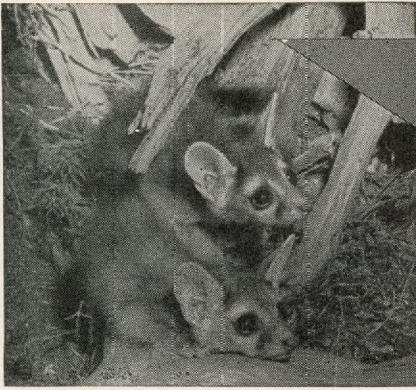
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Junior Sportsmen

Wildlife Looks To You

For Help

LETTER OF THE MONTH

Editor:

I would like to help Texas because I know fishing and hunting will be a problem in the future, and I would like to help the Game and Fish Commission. If you would send me some orders I could carry them out. I know the woods very well around Somervell County.

I know the Brazos, Paluxy, and Squaw Creeks very well. I know every good fishing spot, every watering hole, every creek, river, and branch, every mountain, every cave and rattlesnake den, every coon tree and rabbit hole around here.

I have been in the outdoors ever since I was 2. I spend 75 per cent of my time in the woods admiring the birds and animals. Maybe in a few years I can be a game warden or a State trapper to protect people's goats, sheep, and cattle. My hobbies are making artificial bait lures and flies and amateur photography.

Gene Bass
Glen Rose

(Keep up the good work, Gene, and continue your study of nature and the outdoors near your home. The things you learn will always help both you and your buddies. We feel you are doing a great job already. You can help the Game and Fish Commission most by telling others how to enjoy nature and live up to the conservation code.—Editor)



Gene and his pet skunk, Lucky

WHO'S WHO?

He's a Mighty Good Hunter

Joe Taylor Lock of Laneville, Rusk County, has dropped his limit of two bucks a season since 1954 when he was eight years old, except in 1956, when he shot only one. His seven bucks have been 5- to 9-pointers. Each was brought down by only one shot from his trusty 30-30 Marlin with a 4-power scope.

Joe has also added three gobblers to his credit since he was eight. He hunts on the Lewis "W" Ranch, 17 miles northwest of Fredericksburg in Gillespie County.

COLLECT TRACKS

Outdoor Project for February

Mammal tracks in soft earth are easy to preserve, and make a fine start toward a museum of your own. After learning to identify them, you may even learn to tell how big the animal is that made the track, and how fast it was moving.

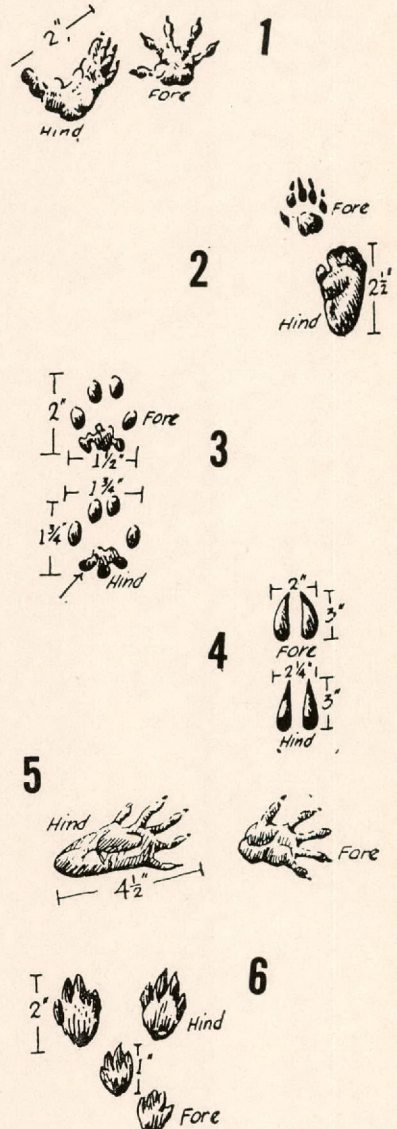
To preserve the tracks, you will need plaster of Paris, some tin cans without tops or bottoms, and a small, soft brush. First, you clean twigs and loose dirt from the tracks with your brush. Select a tin can a little larger than the track and cover the inside with vaseline. Place the can over the track. Mix your plaster and water until it looks like thick cream. Pour it in the can about an inch thick.

Leave the plaster alone until it is dry, about an hour. Remove the cast from the can, clean it, and it is ready for a label and a place in your new museum.

To Junior Sportsmen:

You may know your wildlife, but do you know their tracks? The rabbit and possum are easily recognized, but some others may be hard. At first glance, deer tracks may look like pig tracks. A bobcat may be confused with a housecat. Tracks in the snow are easiest to follow, but prints made in soft mud are best for study.

TRACKS: Who made them?

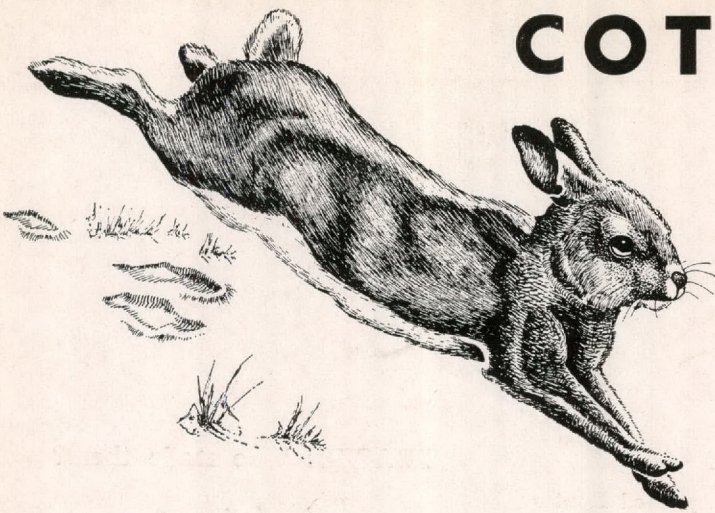


Answers:

1. possum
2. skunk
3. bobcat
4. white-tailed deer
5. raccoon
6. cottontail rabbit

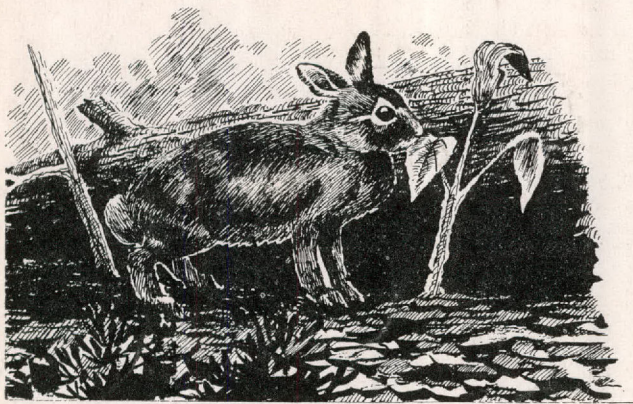
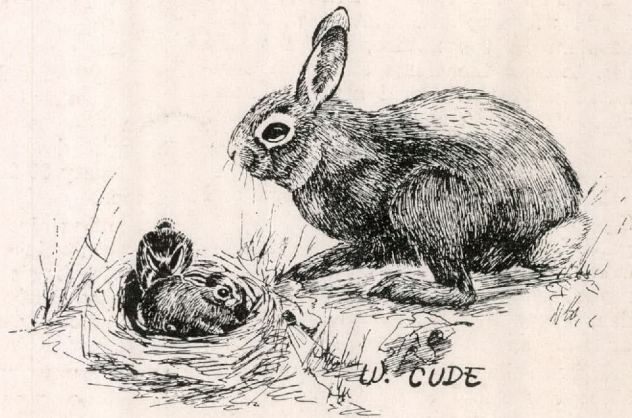
Send for free bulletin on tracks. Write Mr. E. T. Dawson, Texas Game and Fish Commission, Walton State Building, Austin, Texas.

COTTONTAIL



Cottontails are found throughout Texas but are more abundant in the wooded and brushy areas. Although they are not listed as Texas game animals, cottontails are hunted for both sport and food and are a favorite of small bore rifle enthusiasts. Its name comes from its white tail, which resembles a tuft of cotton.

Cottontails usually build their nests underground in a shallow burrow or in a windfall of brush and grasses. Litters will consist of 3-8 young. The number of litters a year is not known, but is believed to be two or three. The appealing young are often taken for pets, but they seldom survive in captivity.



Slower than its jack rabbit relative, cottontails depend more on their coloration of brownish gray than on their speed, for protection. Cottontails' food consists mainly of grasses, with twigs, buds, and bark being eaten in winter. Probably this rabbit's greatest value is that it is a staple food for many predators, including the fox, bobcat, coyote, hawks, and owls.

Texas Game & Fish

To:

Published monthly by
The Texas Game and Fish Commission

Walton State Building
Austin 14, Texas

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