

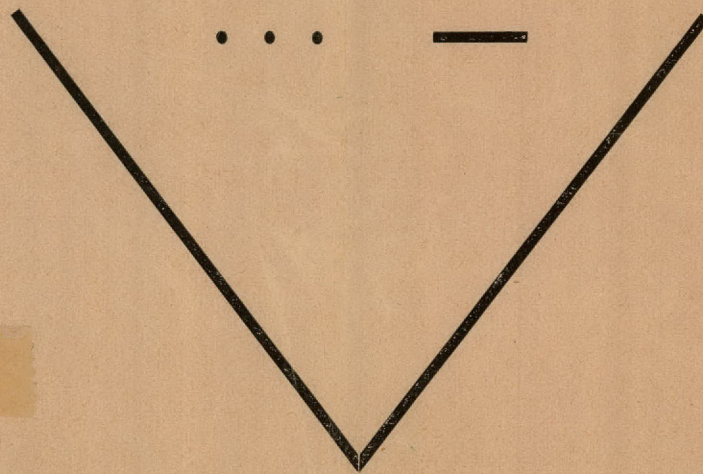
TEXAS
Game AND *Fish*

OCTOBER
1943



TEN
CENTS

Back the Attack



Buy More Bonds!

Game after the WAR

NEW times require new devices. In the fish and game field we shall soon be face-to-face with problems which will likely be more serious than any we have encountered heretofore.

For example, in a recent Texas newspaper it is stated that "among the various 'needed and meritorious public works' which may be utilized to cushion this country's transition from a wartime to a peacetime economy, highways must play an important part." A bill is pending in the Congress authorizing the expenditure of a billion dollars annually on roads for the first three post-war years. If this bill becomes law, Texas will likely be spending about three times as much on new highway construction as it spent in an average pre-war year.

Not only fine new roads and more of them, but more efficient automobiles, and doubtless greatly increased numbers of airplanes as well, will be in general public use during the post-war period.

Furthermore, increasingly efficient communications (through newspapers, telegraph and cable companies, service stations, hotels, and sporting goods dealers) will widely advertise to all interested where to hunt and fish. It will be almost as if the location of every covey of quail, every buck deer, and every tom turkey were plotted on a map. Every pond, lake, stream, or lagoon will be made known. Millions of soldiers and defense workers will be back home, anxious to take the field in pursuit of their favorite sports of hunting and fishing. Every available wildlife resource will be subjected to increased pressure.

With airplanes in the skies and super-highways on the ground, hunters and fishermen will descend by scores, hundreds, and thousands on the remnant of fish and game remaining in the coverts and waters of this and other states. No fastness will escape. Game surpluses built up during wartime will be but a drop in the bucket.

New times require new devices. If we are to maintain the resources remaining to us we must act now with intelligence and vigor. More necessary than ever are general laws for the scientific protection of game and fish, enacted as nearly as possible on a state-wide basis. Local and county laws simply do not meet the needs. The universal hunting license, desirable before, is vital now. The granting of full regulatory powers (state-wide) to the Texas Game, Fish and Oyster Commission is equally needed. Everything that can reasonably be done to increase the rapid and effective multiplication of game species under natural conditions should be strongly supported. Scientific determination should be made of available amounts of game and fish, and the harvest rigorously restricted to these surpluses.

Unless prompt and effective action is taken, the fish and game resources face an extremely dubious future. Additional species will be depleted and may even become extinct. The outdoor sports, so enthusiastically followed by such a large number of American citizens, will be severely reduced through the lack of wildlife resources.

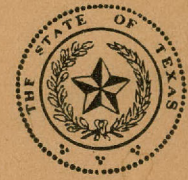
All owners and operators of land might well give conscientious consideration to any adjustments of farm and ranch practices which will encourage the increase of wildlife. (Some of these: avoidance of overgrazing; making definite provision for game on the range; earnest regulation of hunting and fishing; reduction of surpluses; building up of deficiencies.)

More preserves of all sorts might well be created. This writer doesn't like restrictions any better than anybody else, but better some regulation than extermination of an entire sport!

More important, perhaps, than any single measure is the exercise by each sportsman of moderation in the field in the face of what is probably the most serious situation that has ever confronted American wildlife.

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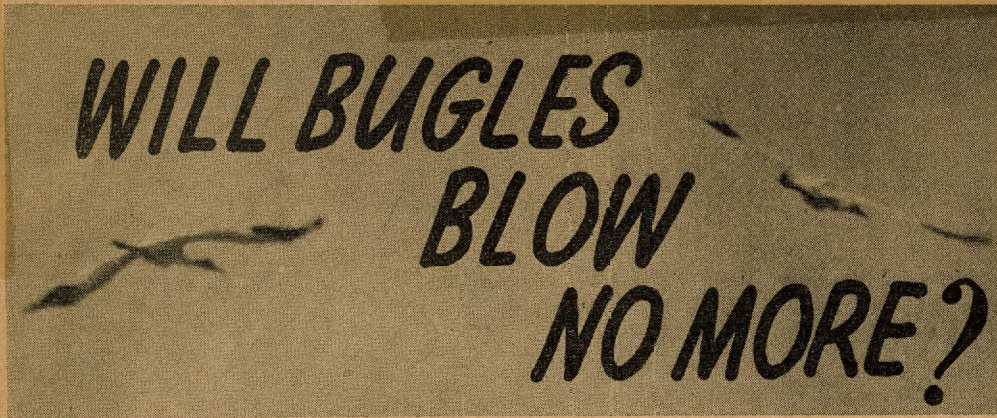
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It Won't Be Long Now —





BACK IN 1937, the boys used to gather around the old coal burner in Cap Daniel's store at Austwell, Texas, commenting from time to time on the fate of the farmer. A visitor could have heard them mulling over the latest news: "I hear the government is buying up 'the Blackjacks' for a pile of money just to protect a couple of them squawking cranes! They tell me they ain't bad eating but there's no open season on them." To this came the inevitable reply: "If you can't shoot them, what the — good are they?"

FACTS ARE INVARIABLY garbled in any hot-stove league. The Blackjack Peninsula, lying on the Gulf Coast of south Texas, near Austwell, was purchased as a national wildlife refuge not only to protect a remnant of the endangered whooping crane but also waterfowl, upland game and big-game animals. The Aransas National Wildlife Refuge, administered by the Fish and Wildlife Service, also furnishes feeding grounds for such fine waders as reddish, snowy and American egrets, Louisiana herons and the rare roseate spoonbill. These birds nest on the nearby Second Chain of Islands in San Antonio Bay, a sanctuary guarded by the National Audubon Society.

HEART-SHAPED, THE peninsula is fringed with salt marshes which are dotted with brackish ponds and bayous. The gently-rolling interior of the refuge is prairie-like, much of it covered with oak and sweet bay brush. There are scattered mottes or groves of large, windswept, gnarled live oaks, wrapped with mustang grapevines, and an undestory of mustang French mulberry and palmetto.

WHILE THE PURCHASE of this land for wildlife purposes was not made until 1937, it had served as a sanctuary since 1921. Mr. Leroy Denman, former owner and active conservationist, had protected wildlife on the area, and through his efforts herds of white-tailed deer and flocks of Rio Grande turkeys had increased tremendously. These animals still range through the mottes, parks and brushlands, together with the oft-persecuted peccary or javelina, native wild pig of the Southwest.

OF THE 285 SPECIES of birds now known to have visited this 47,000-acre sanctuary, it was the whooping crane, largest of them all, that most intrigued me. Even before going to Texas, I anticipated seeing these birds on the refuge, one of their ancestral wintering grounds.

the whooping cranes! All too soon they flew, revealing another distinctive marking, the black wing tips.

EACH AUTUMN WHOOPING cranes come to this avian winter resort for a five or six-months' vacation. Old-timers, who once owned small cattle ranches in the Blackjacks, told me that back in the '70s and '80s, hundreds of the big white birds were present from October to April. Their occasional raids on sweet potato patches near ranch-houses made them none too popular with housewives. Generally, though, they preferred to feed on shellfish and mullet, which they picked up in the salt marshes and ponds near St. Charles, San Antonio, or Mullet bays. The sand-hill crane, a much commoner bird, usually stayed inland on the prairies or in brushlands. Mexican cowhands recognized this habitat preference of the whooper and, with their penchant for picturesque names, called it *Viejo del Agua*—the old man of the water.

MOST LOCAL NAMES are based on the color of this species or on its call notes. Adults are known as white cranes or *Grulla Blanca*; immature, cinnamon-colored birds as red cranes. One accepted name in Texas is bugle crane—since the loud piercing notes sound like a trumpet. But if you have ever heard a child's intake of breath while suffering from whooping cough, you'll know why the crane is called a whooper. Imagine the volume multiplied many times—and then crouch within thirty feet of the birds, as I have—the result is ear-splitting and blood-curdling. No wonder this warwhoop can be heard at a distance of more than two miles!

FOR THREE WINTERS we kept careful count of the cranes on the refuge. In 1938-39 there were 10 adults and 4 immatures; the next winter 15 adults and 7 young; in 1940-41, 21 adults and 5 young—the largest population noted in recent years. We were inclined to consider this growth

(Continued on Page 17)

ly after I assumed my duties as manager of the Aransas Refuge, I accompanied some visiting officials on a tour of the area. At that time the roads were mere sand ruts cut through pasture land, winding, where necessary, to skirt "the brush." As we came around a thicket into open grassland, we heard the guttural croaking of sand-hill cranes, alarmed at our approach.

By James O. Stevenson

Fish and Wildlife Service

Looking ahead, we saw about forty of these birds gathered around an artesian well. Our binoculars picked out from this group two stately white birds, much taller than their companions. How magnificent they were! Their plumage gleamed in the bright sunlight. We could see a carmine crown, forehead and lores, and a patch of red along the lower part of each cheek giving a walrus mustache effect. To watch these wary giants teeter from one foot to the other while awkwardly scanning the vicinity for danger was a never-to-be-forgotten experience. Here at last were those rare, beautiful, spectacular birds—



Male crane (calling) and immature bird in Mustang Lake, Aransas Refuge.

ONE LATE OCTOBER afternoon, short-

The Pointer

THE POINTER comes by his name honestly. He was the first dog, so far as we know, that was used to stand game in the sense in which we use the term today, and was developed as a distinct breed much earlier than any of the setters. For years it was believed the first Pointers used in England were importations from Spain and Portugal, but the theory has been pretty thoroughly disproved and it seems far more likely that Pointers came into general use in Spain, Portugal, throughout eastern Europe and in the British Isles at approximately the same time. Whether or not the dogs from which they sprung were native to all these places no one can say, but it can be stated with confidence that the development of the English pointer took place within the confines of Great Britain, most probably in England itself. Later on Spanish pointers were brought in, but, from the first they were considered as a different strain, if not a different breed, from the English dogs.

THE FIRST POINTERS of which there is any dependable record appeared in England about 1650, some years before the era of wing-shooting with guns, and the use to which they were put is interesting. Coursing with greyhounds was a favorite sport of those times and the earliest accounts of Pointers reveal that they were taken afield to locate and point hares. When the hare had been found, the greyhounds were brought up and unleashed, the game was kicked from cover and the fun began. But early in the eighteenth century, at least by 1711, wing-shooting had come into vogue and, from that day on, the "short-hair" has been considered by the majority of sportsmen the equal, if not the superior, of any of the gun dogs.

AS TO THE POINTER'S lineage, as usual we find it something of an enigma, but there is no question that the foxhound, greyhound and very possibly the bloodhound, all had a share in his making. Individuals of all three breeds were probably crossed with the inevitable "setting spaniel," which played such a prominent part in the creation of all our modern bird-dogs.

THE ADHERENTS of the foxhound cross were especially persistent and active. Even as late as 1868 many English breeders were using it, or at least strongly advocating it as a means to improve the Pointer. A well known authority who wrote over the nom de plume of "Sixty-one," came out with the statement that "as far as my experience goes, I consider the foxhound cross with the pointer most valuable," and we find Idstone expressing himself as follows: "If the pointer must be crossed, would it not be advisable to combine foxhound, bulldog and greyhound?" While it is doubtful if any such radical measures were actually used, it was not until the stud book and dog show era that the idea was definitely discarded. The im-

portance of our official record of breeding and the value of bench shows in establishing and maintaining the correct standards can hardly be overestimated. Without these two institutions it is terrifying to consider the chaos that might well have resulted, not only in Pointers, but practically every breed recognized today.

DURING THE FIRST years of the eighteenth century the Spanish pointer began to appear in England, and he, too, was used for a cross, but as he was exceedingly heavy and very slow in comparison with the English, French and German pointers, subsequent breeding operations not only left him out but definitely attempted to correct the faults he had introduced. It appears that his real value was not to improve type but to fix and intensify the pointing instincts, in which, we are told, he was particularly strong.

IF THIS WAS the purpose it seems to have been exceedingly successful. Remarkable (and incidentally quite unbelievable) stories are to be found in British sporting papers of the early nineteenth century, relating the prodigies performed by certain English pointers of a former day. Col. Thornton's Pluto and Juno, for example, are said to have held a point on a covey of partridges for an hour and a quarter by the watch. But when we find so solid an authority as Stonhenge telling as gospel truth the now famous yarn of the sportsman who lost his Pointer on the moors, and returning a year later, discovered the skeleton of the dog pointing a skeleton bird, we realize that the statements of these pre-Victorian worthies must be taken with considerably more than a pinch of salt.

DURING THE NINETEENTH century the English pointer was repeatedly crossed with the various setters as they came into existence and favor. This, it seems, was partly to improve his disposition, for an old-time writer, commenting on the breed says: "They have a ferocity of temper which will not submit to correction or discipline, unless taken in hand very young." While the pointer of today is anything but ferocious, it may be that this characteristic, tempered by judicious breeding and in combination with the natural independence that made him object to correction and discipline, has made him the superlative field-trial dog he is today. He certainly possesses the competitive spirit to a greater degree than is usually found in other bird-dogs, a quality that makes him especially suited to public performance.

THE MODERN POINTER is a specialist and looks the part. He is every inch a gun-dog. Clean-limbed, lithe and muscular

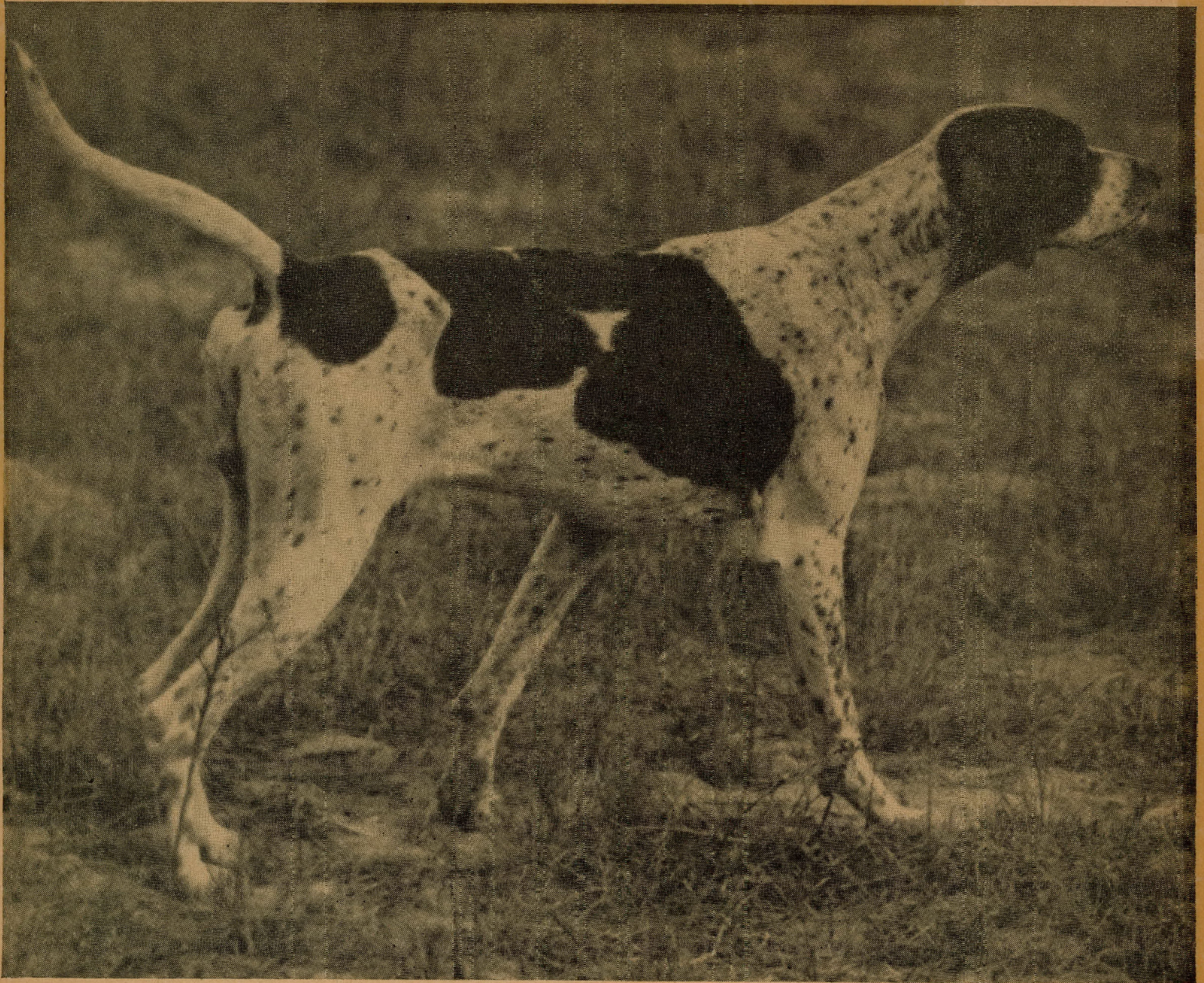
without being coarse, full to the brim of nervous energy and "hunt," put together for speed and endurance, courageous and with the ability to concentrate on his job, he is the ideal dog for the man or woman who is looking for results when afield. Then, too, he has other and equally important virtues. His short hair makes him neat and clean around the house and his disposition makes him perfect for the kennel. Affectionate as he is, he has hardly the "softness" of the setters in that respect. As a result he requires less personal attention than the latter and is more willing to work satisfactorily for someone other than his own master and handler.

IN ADDITION TO all this, he has another characteristic—one that has had much to do with his brilliant successes as field trial dog. This is his faculty for early development. As a breed, Pointers seem to acquire the hunting instinct at an exceedingly tender age, puppies of two months frequently pointing and even backing. For this reason they are especially suited for derby and puppy stakes and therefore favorites with professional field trial handlers.

FOR SHOW PURPOSES, while hardly as attractive in some ways as the Irish Setter, the Pointer is in many respects quite satisfactory. His short coat makes his outline, conformation, and quality easily seen at a glance and he is a superb poser. His color, usually white with rich liver markings, is striking and decidedly showy and, like the Irishman, he has an ideal orange and white, black and white and sometimes solid black are other colorings. Daniel Lambert, an English sportsman, developed a strain of solid blacks as long ago as 1820 and self-colored dogs are still seen in the shows today. But, as already said, the liver and white, lemon and white or black and white specimens are most popular in the ring.

THE POINTER IS peculiarly fortunate in one all-important respect. He has always been bred for type as well as field ability, and as a natural result, we have in this case no divergence between the two insofar as appearance goes. The Pointers being shown and winning today are, almost without exception, dogs that look and in many cases are, practical and thoroughly trained bird-dogs. From the very beginning, type has been carefully developed and intelligently preserved. An illustration for Col. Thornton's book, "A Tour Through Scotland," shows Captain Fleming of Barochan out hawking. This picture was drawn or painted about 1786, yet a Pointer, which is among the dogs shown, would pass muster today as a really excellent specimen of the breed. A reprint of this illustration is to be seen in James Watson's excellent work, "The Dog Book," and deserves your attention. It would be well for the other sporting breeds if their sponsors had taken the care and used the good judgment in

English Used Pointers as Hare Spotters For Greyhounds Before Era of Wing - Shooting



their breeding operations that have made the modern Pointer, not only a prime utility dog, but a consistently type one as well.

DESCRIPTION AND STANDARDS OF POINTS

HEAD.—Skull long, moderately wide with forehead rising well at brows, showing marked stop. Full development of the occipital protuberance with slight furrow between eyes. Muzzle long, square and straight with widely opened nostrils cleanly chiseled under the eyes. Nose black or dark brown except in the white and orange and white and lemon where deep flesh shades are permissible. The ears should be thin and silky and of such length as to reach just below the throat, that is, when hanging in usual position. They should set on just below the square of the skull and hang flat to the cheeks. Eyes soft and of medium size, color black, in the white and black, hazel in the white and liver, black or deep hazel in the white and orange, brown varying in shade with that of coat in the white and lemon. In all colors of dogs the darker the eyes the more desirable. Lips well developed but not flewlike.

NECK.—Long, clean and firm, arched toward the head without suggestion of dewlap or throatiness.

SHOULDERS AND CHEST.—Shoulders should be long, oblique and free from excessive width with top of blades close. Chest, deep and as wide as a proper shoulder will permit. Ribs deep and well-sprung, not narrowing too abruptly at the brisket.

BODY.—Back should be strong with slight rise to top of shoulders. Loir of moderate length slightly arched. Hips wide which should fall slightly to the tail. Tail should be straight, strong, tapered and carried level with or slightly above the line of the back. Quarters very muscular.

LEGS AND FEET.—Stifes moderately bent. Legs should be moderately short rather than long, with plenty of bone. Front legs straight but with no tendency to knuckle. Elbows should be well down and straight. Hocks should be square with

the body and well bent. Both front and back pasterns should be short, strong and nearly upright. Feet should be round, closely set, deep, well padded, and toes well arched. Coat should be short, flat and firm.

SYMMETRI AND Quality is most essential. A dog well balanced in all points is preferable to one with outstanding good qualities and defects. A smooth frictionless movement with high head carriage is required and will always receive preference.—*Courtesy American Kennel Club.*

Another suggestion for the utilization for dog food of carcasses usually wasted has come from Art Swanson of the Chicago Herald-American. This comes on the heels of Art's recent suggestion that crow meat be used for this purpose. Again he quotes Dr. George R. Leonard of the Chicagolani Field Trail Club and nationally known dog authority to the effect that woodchucks might be even more valuable than crow meat for the purpose.

The Modern Pointer Is the Ideal Dog for The Man or Woman Who Looks for Results Afield

I'M ONLY pinch hitting for the regular author of these fantastic stories, so let's not expect too much. Besides, I am by nature too cautious to get myself involved in any serious controversy over what some wild animals may do. I know by experience that Nature is quite unpredictable. Even truly fantastic at times.

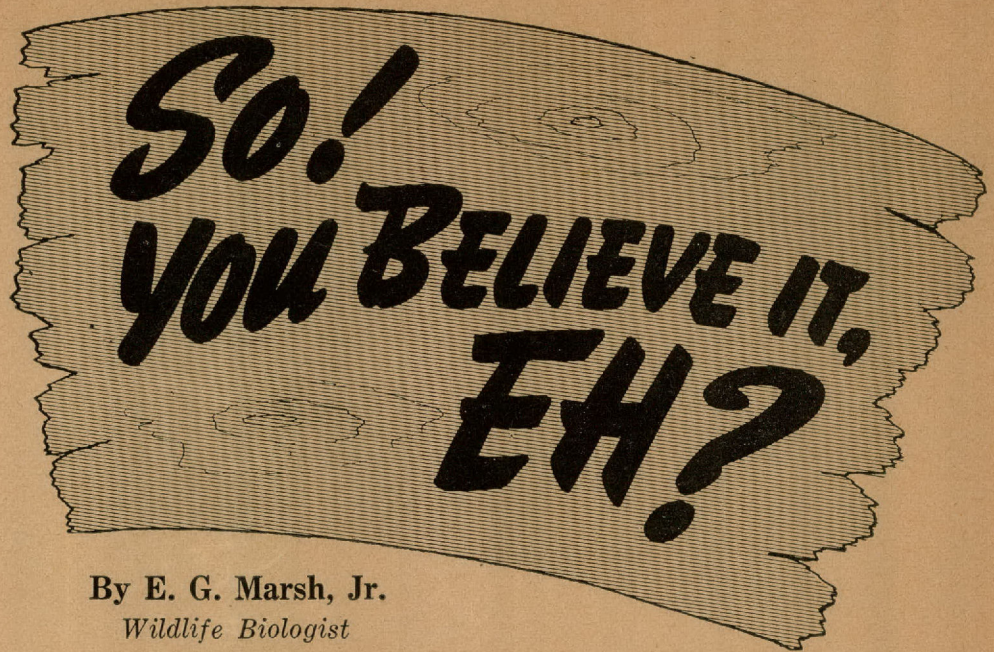
IN MUCH OF the Southeastern United States, including East Texas, the so-called Hoop Snake is a terrible creature almost universally feared. This strange animal reportedly grasps its tail in its mouth, making a hoop of its body, and rolls speedily up and down hills in search of unwary travelers. One slight prick of the Hoop Snake's tail is sufficient to cause immediate death. Trees, attacked in some moment of intense rage, have been found afterwards turned black and dying! At least that's the story you hear, and you hardly dare contest the truthfulness of it when someone tells you that "I seen it with my own eyes down on Black Bayou"—even in spite of the fact that fabulous rewards have been offered for single specimens, dead or alive, and to this day not one has been delivered to the laboratory of any authority on snakes.

TALES JUST GET started, maybe from some unintentional mis-statement, and they seem to grow in inaccuracy with each passing generation—perhaps it's only a way to keep life from becoming completely humdrum. Perhaps our belief in them is an expression of a subdued desire to have been a pioneer.

AS A BOY I grew up in a part of Texas that had long since lost almost every feature of its original wild state. People lived everywhere and raised lots of children and milk cows and chickens and cotton. Yet, periodically through this ordinarily peaceful community the word would come flying around that a panther had been seen over on Cedar Creek. The thrill of such occasions was always great. Children were cautioned to stay out of the woods for fear that they would be eaten. Coon dogs would refuse to hunt at night and squirrel dogs, though they could be coaxed into the woods in the daylight, would often quit the trail and go streaking for home. Occasionally a pig or even a grown hog would be carried away out of the pen and whole flocks of sheep would disappear overnight from outlying pastures. All the while, the panther would be seldom seen but his huge tracks were found even on doorsteps where he had tried to enter a house, and there was not a night passed that his blood curdling screams, like those of a dying woman, would miss being heard in some more remote section of the community!

ALL OF THAT was my experience as a boy. At least, with my imagination wildly inspired by the talk of adults, I found signs that were taken to be tracks of the panther. I heard noises, too, at night in the woods, and to me they were distant panther screams. I never say the panther, but I have a vivid remembrance of talking to a woman who was telling that she did. The huge cat jumped into her hog pen and carried away a pig while she was slopping the hogs. She had fallen into a death faint at the first glimpse.

NOW THAT I look back on those experiences, though, I find little basis for



By E. G. Marsh, Jr.

Wildlife Biologist

believing that they were little more than fantastic workings of the community's imagination. Actually, there is no authentic record of occurrence of the panther, commonly known as a mountain lion, in that neighborhood during the last fifty years and my experience dates back only 15 years. Besides the mountain lion or panther doesn't scream like a dying woman!

BUT THE SCREAMING of mountain lions is another story for which you can find almost as many versions as there are people in the Southwest.

LET ME REMIND you again that I don't mean to call anyone a liar. I do not question the veracity of my friends. That they may have heard lions trampling all around screaming with their utmost might is a fact that I cannot dispute.

ON THE OTHER hand, it is equally true that the lions with which I have had abundant occasion to associate were not the screaming kind. I worked in Mexico off and on from 1935 to 1940 and from then until the present I have ranged considerably over Western Texas. Lions are present over most of that territory and in many sections they are very common. I trapped one six months old cub by accident and tried hard to capture others. Also I have been present when three were caught by dogs. None of these screamed or even made a loud sounding noise. The best they seemed to be able to do was snarl.

FOR TWENTY MONTHS at one time, I lived mostly alone and trekked by pack train over hundreds of miles of lion infested mountains of Northern Mexico. I sincerely tried to find one screaming cat. This is attested by the following excerpt from my diary, written under date of August 17, 1936, 7000 feet up in Viboras Canyon of the Del Carmen Mountains of Northern Coahuila, Mexico. I was alone in camp at night and inclined toward the romantic, as you can see.

"August 17: The moon rose early tonight and spilled over into the Canyon just as the sun fell behind the western foothills. The craggy peaks above me are now quietly surrendering their shadows to the golden light.

"Today has been a memorable one in several respects. I met a pack train on the trail to Boquillas this morning. One of the drivers was an acquaintance of mine and he told me that there was a party in Muzquiz who was starting out to visit my camp. He didn't remember his name except that he was an official of the Mexican government known as Don Joaquin. It matters little for I have been here alone too long and anyone who visits me would be royally welcomed.

"Late this evening with the campfire crackling in the crisp mountain air, I was startled by a noisy commotion up the canyon from here. It ended in a screaming cry that went through all the keys from high to low. And for a full thirty seconds thereafter, I could hear it echoing and re-echoing in the canyons beyond. Surely it must have been a lion. I have sensed the presence of one for days and poor Pancho, the burro, from his actions, I judge, has done the same. Neither of us likes to think of ourselves as possible victims. Anyway, you can bet that the camp fire will be kept burning big all night and that the ramshackled door to this old grass shack will be securely fastened."

AND I WENT to sleep that night positively convinced that I was under siege by lions!

NEXT DAY I found a freshly eaten carcass of a rabbit beneath a pine tree several hundred feet above camp. Strangely, though, essentially all of the skeleton was intact and I found rabbit hair on the ground and in bushes over a large area. Two days later just at dusk, as I was returning by the same spot, I heard the swishing of wings, and looking up, I saw a huge owl settle into the pine with the limp body of a rabbit clasped in its talons. Momentarily it hesitated, then without seeing me it looked down at the carcass and let out a scream worthy of any lion. When the cry died out it fell to eating viciously.

THAT'S ALL OF the story. My screaming lion turned out to be an owl. . . .

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The Texas Shrimp Industry

THE shrimp fishery is the largest fishery on the Texas Coast. It produced an average of 12,776,000 pounds of shrimp every year since 1927 and from 1937 to 1942 the annual production was 15,379,000 pounds. The Game, Fish and Oyster Commission must take advantage of all information relating to the fishery and the natural history of the shrimp, if the fishery is to be maintained at the present production level. This article is written with the aim of summarizing essential information about the shrimp industry in Texas.

THE COMMERCIAL SHRIMP is a member of the animal group known as decapod (ten-legged) crustacea. To this order belong the crabs, lobsters and crawfish. Superficially shrimp resemble the fresh water crawfish in general appearance, but the forepart is not as large in proportion and large pincers are lacking. Various families of shrimp are scattered all over the world. The Gulf shrimp belongs to a tropical and subtropical family, known as the Penaeidae. This family extends up into the south temperate zones.

THE SHRIMP FISHERY of the South Atlantic and Gulf States is the largest food fishery in the South. It extends from North Carolina to the Rio Grande. The shrimp catch is exceeded only by that of the menhaden, which is taken primarily for oil and fertilizer. From 1927 to 1940 the total shrimp catch for the whole shrimping area averaged 117,737,000 pounds a year, for the years in which statistics were collected. Figures are not available for 1933 and 1935. The catch for that period was over one and a half billion pounds.

By Gordon Gunter
Marine Biologist

TABLE I GIVES the annual shrimp catch of Texas from 1880 through 1942. The figures are compiled from Fish and Wildlife Service publications and the Annual Reports of the Game, Fish and Oyster Commission, cited at the end of this article. From 1880 to 1918, for the nine years for which figures were collected, Texas produced an average of 278,000 pounds of shrimp a year. In 1923 the annual catch had risen to 3,422,000 pounds and in 1927 it amounted to 11,832,000 pounds. The rise in catch was due to the advent of the otter trawl, which first came into use in Texas right after World War I. From 1927 to 1942 the average shrimp catch on the Texas Coast was 12,776,000 pounds.

OTHER STATES, LIKE Texas, did not reach a high level of shrimp production until about 1927. Table II shows the average yearly production of all South Atlantic and Gulf States from 1927 through 1937. There are no statistics for 1933 and 1935. The average annual production from 1937 to 1940 is also shown. The figures given for Louisiana and Mississippi take into account the fact that three-fourths of Mississippi's production comes from Louisiana waters (see Fishery Industries of United States for 1936 and 1937). Louisiana exceeds all other states in shrimp production. From 1927 to 1937 Florida was second and Texas was third. Since 1937 Texas has ranked second as a shrimp pro-

ducing state, with Georgia third and Florida fourth.

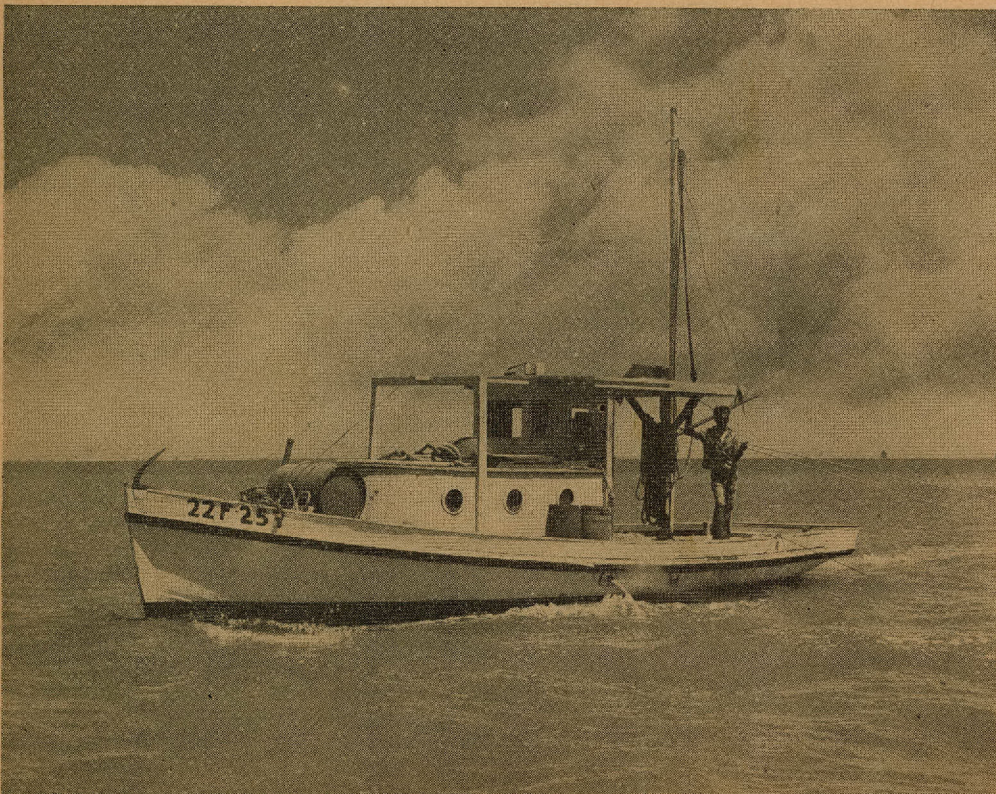
SHRIMPING IS CARRIED on in the coastal bays and along a narrow strip not far offshore in the Gulf of Mexico. For the seven fiscal years from 1936-37 to 1941-42, statistics collected by the Game, Fish and Oyster Commission show that 46.8 per cent of the catch was from the bays and 53.2 per cent from the Gulf of Mexico. Boats in Texas waters very seldom make catches as far offshore as ten miles or beyond. In Louisiana there is a winter concentration of shrimp about 25 miles offshore in the Gulf of Mexico, south of Morgan City. No similar concentration has been discovered off the Texas Coast.

IN TEXAS THE major inside fishing grounds are Matagorda Bay, Corpus Christi Bay, and Aransas Bay. Galveston Bay waters are closed to shrimping. This bay would support a large shrimp fishery if it were open. The largest outside fishing areas are off Port Aransas, with the Galveston-Freeport region ranking next in importance. Outside fishing is also done along most of Matagorda Peninsula and Matagorda Island, south to part of Padre Island below Corpus Christi Pass. Shrimping is also carried on in the Gulf off of Port Isabel. Table III shows the shrimp catch of the four chief fishing areas along the coast for the fiscal year 1941-42.

IN THE EARLY years of the fishery, shrimp were caught by means of large seines with a mesh measuring 1½ inches stretched. They were pulled by a crew of several men and some of them were a thousand fathoms in length and over. Some seines were put down by poles and operated in water up to 20 feet deep. Seines are still used to some extent in shallow water in Louisiana, where a little over two per cent of the total catch is taken by seine crews. Over 2,000,000 pounds of shrimp were caught there by seines in 1937. With the advent of the otter trawl, shrimp seines became a thing of the past in Texas waters.

ON SOME PARTS of the coast a negligible amount of shrimp is caught in cast nets, by men who sell their catch to pole and line fishermen, to be used as bait. A small per cent of shrimp are taken in small bait trawls and some of them are sold for food.

ALL COMMERCIAL SHRIMPING in this state is done by otter trawls pulled behind power boats. The otter trawl is a long, funnel-shaped net with wings extending out from the open end on both sides. The wings have a lead line at the bottom and a cork line at the top. The average wing-spread of a trawl is from 50 to 60 feet. The wings are tied to heavy wooden boards with strap-iron runners along the bottom side. The boards are attached by four chains, like strings of a kite, to ropes leading to the boat, so that the boards are pulled downward and outward when the boat moves ahead, keeping the trawl on the bottom and the wings spread open. One



A typical shrimper in Texas gulf waters.

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Contrasting Traits of Certain Wild Animals of the West

By J. G. Burr

Aquatic Biologist

LOOKING UPWARD at one of the mountain ranges of the Big Bend area some one made this remark: "Thank God, nobody can turn this into a farm." It was the citadel of a wilderness that could not be taken by agriculture, the home of the exclusive wild animals fond of the privacy of mountain peaks. In choosing a habitat a wild animal is governed by two considerations: food, and safety from its enemies. Crags and declivities afford a protection against pursuit that is more valuable than speed in the open plains. That is probably the reason why the little Sonora deer, *Odocoileus couesi*, has chosen the rugged uplifts of Chisos Mountains and the ranges south and westward. These little creatures, weighing from 50 to 75 pounds, range from 5000 feet at the upper edge of the Lower Sonoran zone through Upper Sonoran and Transition to the top of the mountains at 9,000 feet. They are most numerous on the plateau top at 8,500 feet where a steep, 3000-foot slope pro-

a few hunters of the region." They have enjoyed a continuously closed season since 1903.

LESS GIVEN TO the higher elevations, the mule deer, *Odocoileus hemionus canus*, is found in the United States west of the 100th meridian. It is a creature of the half open, dry hilly country typical of the lower Sonoran desert regions. They choose the high slopes of the mountains in summer, and in winter they return to the lowlands. The mule deer is regarded as one of the most imposing of the Cervidae in appearance. It holds its head and neck erect, and its antlers are much wider than those of the white-tail. "It is a proud-spirited, high-headed animal," says Dr. Hornaday, "a bold traveler and like the mountain sheep is often found where the scenery is wild and picturesque." In winter the coat is blue; in summer, reddish. When seen alive the deer appears to be large with immense ears and a white face with a large black patch on the forehead. From behind it shows an angular whitish patch taking in the tail, which is small and mainly white with a black tip (Seton 1929).

that touched our hearts. The poor, devoted mother, in despair, dropped back behind—deliberately it seemed—at least her young should have a chance, and my blood rushed hot. My hand sought the gun in reckless determination to stop those dogs. Only 25 yards ahead the mother now, when all at once an inspiration came. The unseen prompter whispered wisdom; and the mother turned aside, made for the rugged piling hills so near; she—all three—soon reached their base and tapped with their toes, then rose in the air to land some 15 feet above, and tapped again—and tapped and tapped all three; and so they rose and sailed and soared. The greyhounds reached the rise and there were lost; their kingdom was the level plain; on the rugged hills they were hopeless, balked and left behind. But the mother and her two were bounding, soaring like hill-hawks, and so they sailed away till hidden in the heights and safely at peace. That day I learned the meaning of the bounding. These are the deer of the broken lands; theirs is the way of the uplands; this pace is their gift, their power, and their hold on life."

MEARNS (1907) SAYS "the fawns made gentle pets, fawning like dogs on those they knew and climbing upon one to be petted. They like to rub their heads against those whom they knew well but would butt and kick vigorously if strangers tried to pick them up or carry them." Owing to the gentleness or stupidity of the mule deer and the openness of the country that it occupies, this fine deer is perhaps doomed to an early extinction, says Mearns. In recent years their dwindling numbers in the trans-Pecos brought a shortening of the open season down to two weeks and one buck to the season. Again quoting Mearns, "no wild animal of the region is so valuable to man as this deer, especially to the Indians whom it supplied with meat, clothing, shelter, and numerous utensils made from its skin, tendons, or skeleton. Its charred bones and various tools fashioned from the bones and teeth were usually found in the deserted buildings and cave dwellings formerly occupied by the extinct people known as the Cliff Dwellers, in the Verde Valley of Arizona." That the mule deer is a creature of the high elevations became evident when an effort to stock them in Kerr County was made a few years ago. Several importations were made from the Kaibab forest of Arizona, but all died in a few months from hemorrhagic septicemia.

THE TACTICS OF the mule deer contrast widely with those of the antelope, *Antilocapra americana americana*, whose original range was over most of the states west of the Mississippi, but now limited to scattered areas. They are an animal of the open plains, though they are driven by winter weather into the shelter of the woodlands. There are perhaps 2000 in Texas, mostly in the extreme west and a few in Jim Hogg County. It is estimated that at one time the antelope was more numerous than the buffalo, between 30 and 40 million, not that their herds were so large, but because the area occupied was so much greater than that of the buffalo.

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"... Nobody can turn this into a farm."

fects them from most hunters and where the sweet acorns of the little gray oak are abundant (Vernon Bailey, 1905).

OF SIMILAR EXCLUSIVE habits is the mountain sheep or Texas Bighorn, *Ovis canadensis texiana*, which inhabit the Upper Sonoran and Transition zones of the desert ranges of extreme west Texas with other races to the north and west. They are found in the Guadalupe and other mountain ranges. They come into the Grand Canyon of the Rio Grande mainly from the Mexican side, says Vernon Bailey, and continuing, he says "most of the ranges are steep, extremely rugged, and barren with deep canyons and high cliffs. Here the sheep find ideal homes on the open slopes of terraced lime rock or jagged crests of old lava dikes, and, thanks to the arid and inaccessible nature of the country, they have held their own against

The white patch is suggestive of the antelope.

THE MULE DEER is not so swift as the white-tail deer which prefers the level country. When they hurry away from danger it is with leaps and bounds. Their bounding is what lessens their speed. They leap from 15 to 25 feet. Seton speaks graphically of their style. "I watched them bounding along the level bottom-lands, bounding, bounding, oh, it was beautiful, it was glorious, but it was sad: For they were losing time. The greyhounds far behind at first were low, skimming like prairie hawks, were making three yards to the deer's two, were gaining, would surely win. In vain we tried to call the dogs off. On and on the chase. The little ones suffering now—it was a mother doe and her twins. It was a question of barely a quarter mile. Then we riders saw a thing

FISHES OF TEXAS

THE MISCELLANEOUS CATFISHES

THE MORE important species of catfishes have been discussed in previous issues of TEXAS GAME AND FISH. These were the yellow, channel and bullhead catfishes. This article deals with catfishes that are so small throughout their lives, they are significant to the average angler and are presented merely to complete the discussions on the fresh water catfishes found in Texas.

THESE LITTLE CATFISHES are the Madtoms, (*Schilbeodes*). Two species of madtoms are found in Texas; the tadpole madtom, *Schilbeodes gyrinus* (Mitchell) and the freckled madtom, *Schilbeodes nocturnus* (Jordan and Gilbert).

WHEN A TEXAS madtom attains a length of five inches it can be considered a giant among its kind.

THE MADTOMS HAVE poison glands. Forbes and Richardson (1920) writing about the tadpole madtom in their "Fishes of Illinois" state that "like the other species of this name, it is provided with poison glands, placed just beneath the epidermis surrounding the spines of the pectoral and dorsal fins, and the wound from either of these spines is little less painful than a bee's sting. These glands are ductless, and the poison which they secrete is only liberated when the epidermis of the spine is torn."

THE BEST CHARACTERISTIC for

By Marion Toole
Chief Aquatic Biologist

identifying the madtom is that the adipose fin, which is the fleshy fin on the back of the fish, is continuous with the tail fin. Where the two fins join there is never more than a slight notch. The other catfishes have a definite break between these two fins.

THE TADPOLE MADTOMS are flesh colored and the freckled madtoms have small flecks of black covering all their body except their breast and belly.

TADPOLE MADTOMS ARE found in lakes, rivers and creeks. They like muddy bottoms, sluggish currents and weeds. Freckled madtoms like either rocks or weed to hide around.

FORBES AND RICHARDSON (1920) report their food "consisted almost wholly of amphipod and isopod Crustacea, various forms of Entomostraca (Water fleas) and of insect larvae (caterpillars, day flies, and grubs) of kinds likely to be found on the bottom." They further state "A single specimen had eaten a small fish, and another a planarian worm." Spawning probably occurs during April and May.

THESE LITTLE CATFISHES have no economic importance except they are occasionally picked up by bait seiners and are used for bait.

13 Million For Licenses

Sportsmen spent \$13,921,974 for 8,532,354 hunting licenses during the 1941-42 season, according to a compilation by the U. S. Fish and Wildlife Service.

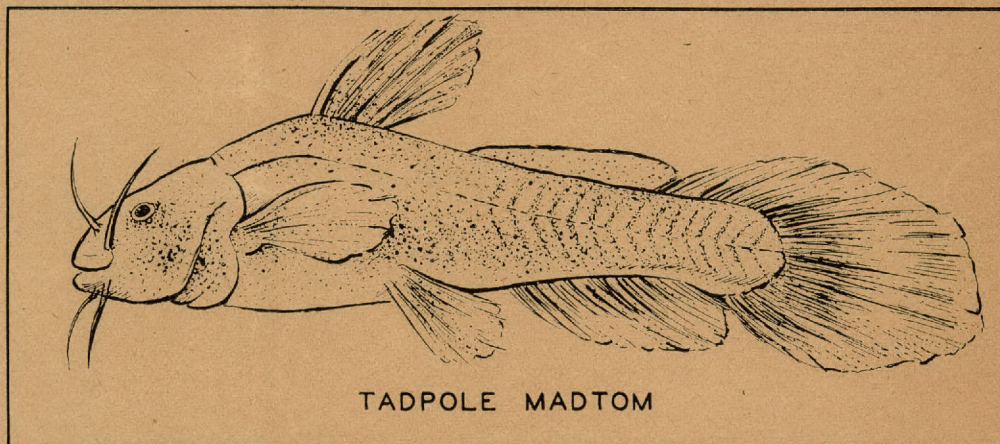
Compared with the previous year, this represents an increase in the number of licenses issued of 607,532, but a decrease in revenue of \$542,504. The decrease in revenue, Service officials point out, is due to the fact that the previous year's figures included the total revenue from the combination licenses which permit fishing as well as hunting, whereas in this year's report the amount applying to fishing is not included.

Michigan again headed the "big ten" in the list of States with the issuance of 846,896 licenses. Pennsylvania was second with 687,153, followed by Ohio, 614,106; New York, 612,911; Indiana, 400,896; Illinois, 342,832; California, 329,643; Wisconsin, 327,740; Minnesota, 295,665; and Washington, 233,764.

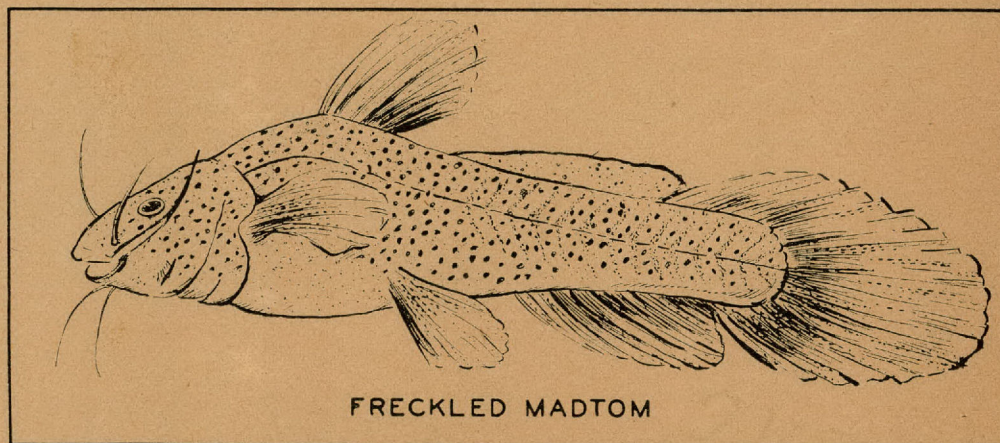
Texas issued 137,073 hunting licenses for a total of \$287,072.

Federal migratory-bird hunting stamps, commonly called "duck stamps", were issued to 1,437,220 sportsmen for use during the 1941-42 season. This figure is 176,410 higher than the amount sold during the preceding year. The Federal stamps, at \$1 each, are required of all waterfowl hunters over 16 years of age, in addition to state licenses. Texas hunters bought 83,593 duck stamps for the 1941-42 migratory waterfowl season.

The total paid for State licenses and Federal duck stamps amounted to \$15,360,000.



TADPOLE MADTOM



FRECKLED MADTOM

Contrary to general belief, rabbits can and will swim. Most of them don't like to, and with the exception of the swamp rabbit they swim as little as possible. When they have to go into the water to elude pursuit, they usually give a tremendous leap to carry them as far out as possible so they won't have to swim any more than is necessary.

Once the female locust has laid her eggs, her life mission is done. She flies away and soon dies. In a square yard as many as 50 to 75 separate deposits of eggs are often found, which means that from 5,000 to 7,500 locusts will emerge from a space 36 inches square. The only effective way to destroy the eggs is by ploughing the ground, for once exposed to the air the eggs never hatch.

Gadwall Duck

(*Chaulelasmus streperus*)

Other Names

Gray duck, gray widgeon, creek duck, speckled belly.

GADWALLS ARE FOUND breeding on the southern prairie provinces west to British Columbia, east to Ohio, and south to Nebraska and California. Primarily a bird of the west, it is not plentiful east of the Mississippi. It winters along the south Atlantic and Gulf coasts to central Mexico and California. It is not abundant on the Atlantic flyway, but relatively common on the Pacific, central, and Mississippi.

THESE DUCKS OFTEN migrate in large flocks and inhabit ponds, marshes, and rivers. They are seldom found on salt water. Feeding in shallow water, more than 95 per cent of their food consists of seeds, pondweeds, algae, grass, and other aquatic and semi-aquatic plants.

IN THE AIR gadwalls present a slender silhouette and the generally gray coloration, pointed wings and white speculum are good characters for identification. They rest lightly on the water where their slender appearance is apparent. They fly swiftly in compact flocks without definite formation.

OCCASIONALLY THE CREST on the head of the male shows prominently. It is a generally gray bird with a dark head, and black bill, gray cheeks and throat, dark breast, with each feather half-ringed with white, white belly, chestnut fore wing, white speculum, and gray tail with black coverts above and below, and orange feet. The female is a brown bird mottled with white above. The breast is brown, mottled with black, and the belly is white. The female has no chestnut on the fore wing, but possesses a white speculum. The upper and under tail coverts are brown, white mottled below. Immature gadwalls resemble the adult females. They have duller wings, with no chestnut coloration. Spotted feathers are scattered over the underparts. Change to adult plumage is gradual, becoming complete by March of the first year.

THE WHITE PATCH on the hind wing of the gadwall separates it from the baldpate, which has a white fore wing patch. The gadwall is also darker on the rump and back. The pintail has a green speculum, larger bill, longer neck and is paler below. The smaller size, slender outline, rapid wing beat, and white belly and speculum

By Harold Alexander



Female

Male

of the gadwall separate it from the female mallard, which it resembles.

DURING THE DROUGHT years, the gadwall was severely depleted in numbers. Its southerly nesting range has made it vulnerable to the devastating effects of drainage, drought, and the agricultural activities of man. Fully two thirds of the gadwall's former range has been made untenable for any further nesting activities. Nevertheless the birds show a considerable increase from their depleted numbers in 1940 and 1941. They are not considered particularly wary, and decoy well.

The prairie dog is not a dog but a ground squirrel. These rodents are gregarious by nature and live in large colonies, or prairie-dog towns, whose populations range from a few individuals to thousands.

Wild mountain sheep, of which there are several hundred in the mountains of West Texas, are among the most keen sighted of animals. They take fright at moving objects as far as two miles away.

**Out of Shells?
Then Try This One**

Evidently the editor of an official publication for American soldiers in Iran has been sold a new twist on the threadbare "snipe hunt" wherein the credulous victim is left alone on a dark night with an open sack and told to whistle obliging snipe into the bag. We have it on the authority of Iowa's "Conservation Notes" that the Iran publication gives the following instructions for duck hunting in all seriousness:

"You will need a large flashlight, a dishpan, a butterfly net and a club. Plant yourself in the reeds at night, turn on the flashlight, bang on the dishpan with your club, and scoop up the duck in the net when he flies at your light. It is not as easy as it sounds, and more fun than banging away with a gun."

Who's kidding whom?

Shrimp is a major marine crop of Texas. Approximately 12,000,000 pounds are taken annually.

The swordfish carries his identification mark where any one may see it—a long sharp-edged "sword" nearly half as long as the fish itself.

The prong-horned antelope is not a true antelope. Unlike the true antelope, the pronghorn has branched horns and sheds the horn sheath.

Texas has a greater variety of climate and environment than any other state, and as a result has more species of bird and animal life.



Nature's Sanitary Corps

By Werner O. Nagel

EVERYONE has heard of the legend of the elephant burial ground. Elephants, when they are about to die, are said to travel until they reach a mysterious valley where, amid the bones of their contemporaries and their ancestors, they await the coming of death. No one has ever found this valley, but natives are sure it must exist, because they know that elephants die, and that their carcasses are seldom found.

SCIENCE HAS PRETTY well disproved the legend: Nature has a way of disposing of the bodies of her folk in an efficient, unobtrusive manner. If this were not true, the outdoors would be unsightly and odorous with the decomposing bodies of the birds, mammals, fishes, and all manner of living things that fall daily in the struggle for survival. Yet, how rarely do we come across the bodies of wild creatures in our walks through field and forest, and along the streams. Only on the highways and in times of unusual disasters are we reminded that death visits the wild animals as well as the human race, and in these cases it is usually man's constant presence that deters the swift work of Nature's sanitary engineers.

THEY MUST BE exceedingly efficient, these natural scavengers, to keep the coun-



Buzzards—Nature's sanitary shock troops.

tryside as clean-looking and sweet-smelling as they do. Birds, mammals—the old and weak and foolish die every day, because of man's activities, and from accident and disease. How are they disposed of? How does this scavenger system work?

IN NATURE, NOTHING is ever wasted. The greatest struggle among all living things is to get enough food. Directly or indirectly, every living thing is potential food for another living thing, and whether it is killed for that purpose or dies from some other cause, is converted into nourish-

How Nature Desposes of the Bodies of Her Folk In an Efficient and Unobtrusive Manner

ment as flesh to be eaten or nutrients to be absorbed and made into plant issue. The wild creatures which eat animals after they have been killed or have died in any way except through predation, are called scavengers, and their work, while not exactly pretty, is indispensable.

SOME OF THE animals of this profession are well known, others are seldom observed at their work. The buzzard's whole existence depends on finding enough dead animals for food; his special equipment—telescopic eyes and ability to soar timelessly above earth—is geared to that end, and he is perhaps the best known scavenger of them all.

ON THE OTHER end of the scale, the butterfly is so colorful, fragile, and dainty, that few would ever suspect him of being a roistering drunkard, an inveterate inebriate, to say nothing of a carrion eater. Yet some species do feed on juices exuded from dead flesh, and go on terrific sprees as a result of imbibing the fermented sap from various plants. The amount of car-

of this species and their ground-searching habits probably lead them to most of the carcasses in the woods sooner or later.

IN THE STREAMS, scavengers are numerous. All the large catfish will take dead flesh, while channel cat are enticed in proportion to the ripeness of the material, savoring the more spicy bits as an epicure does cheeses—of which the channel cat is also a connoisseur. Turtles will consume meat not too far gone, while crayfish do about the cleanest job of bone-stripping imaginable.

CROWS AND JAYS, and sometimes red-tailed hawks, work on fresh carcasses, as do many other birds at some time or other in their lives. Foxes, wolves, and roving dogs will take carrion when fresh meat is not readily available, and will frequently perfume themselves with very lush specimens, rolling in the material with every evidence of extreme delight. Practically all the carnivorous animals work on bones as well as flesh.

"WHERE DO THE deer antlers, annually shed, disappear to?" is a common question. Observations show that these are quickly disposed of by rodents, including squirrels, chipmunks, and mice. Even forest folk must have their minerals, and bones are a good source of calcium and phosphorus.

IN TIMES OF emergency—cold weather, deep snow, shortage of natural food—almost all rules are off. In February, 1940, rabbits were seen feeding on the carcasses of other rabbits, along with quail, juncos, cardinals, and other birds.

IN THE WORLD of insects, there are many that feed on carrion. Flies and others lay their eggs on dead meat, and the larvae feed on it. Carrion beetles and dermestids strip the flesh from bones almost as efficiently as crayfish do, and a swarm of ants can reduce a carcass to a skeleton in short order. In the days of horses, tumble-bugs were the most famous scavengers of them all. Even the microscopic putrefying molds and bacteria play their part in reducing solid flesh to gas and liquids, after which they find their way into the soil and plants and start the cycle all over again.

THIS WORK IS carried on so secretly that it is usually unnoticed by the casual person out of doors. It is done so well that the knowledge that all animals eventually die is more easily arrived at by reasoning than by observation. However, in spite of the fact that relatively few animals die natural deaths, the number killed by factors other than predation is considerable.

PROBABLY THE GREATEST contribution to scavenger material is made by man. Crippling losses (which usually mean a

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tion disposed of by butterflies is, however, too small to be of much note.

NEXT TO THE buzzard, the opossum is probably the champion scavenger of them all. In fact, he is almost as non-selective in his diet as hogs or domestic chickens. Most hunters know that the carcass of a farm animal is a favorite dining place for opossums; trappers frequently bait their sets with "ripe" flesh, the more redolent the better. Snakes, frogs, birds—even his own kind—all dead things are grist to the opossum's hungry mill, and the great numbers

Traits —

(Continued from Page 10)

STATE LAW HAD to come to the rescue of the antelope in 1903 to avert extinction, and there has been no open season since. The fleetest of all wild animals, the safest from all his natural enemies, he could not protect himself from man. With his keen eyes to discover danger and the certainty that he could outrun any pursuer, the antelope had a great sense of curiosity which was his undoing. A hunter could lie down on the ground and wave a handkerchief to and fro and cause the animal to approach within firing range. They would sometimes trot towards the object and run away, then overcome by curiosity, return for a closer inspection. But it is said they overcome this curiosity to a great extent when the ruse was practiced too often. Their habit is to see everything with those keen eyes, thus they prefer the open spaces and will invariably see a man before they are seen. The antelope is equipped with a heliograph by which he can transmit the danger signal to his fellows, and this habit of seeing everything that is going on makes the heliograph effective. On the buttocks are two white circular patches of hair. According to Seton, under the skin is a circular muscle by means of which the hair can, in a moment, be raised and spread radially into two great blooming chrysanthemums, more or less flattened at the center. When this is done in the bright sunlight, they shine like tin pans, giving flashes of light that can be seen farther than the animal itself, affording conspicuous identification mark. At the sight of danger all the long white hairs of the rump-patch are raised with a jerk that makes the patch flash in the sun. Each grazing antelope sees the flash, repeats it instantly and looks in the direction toward which the first was looking. In addition to this there is a musk gland in the center of the disk from which a quantity of musk odor is set free as an additional sign of danger. Both these signals may be also a serving of notice to its attacker that the antelope as such can not be caught, so why bother him. At any rate his shining disks are the reverse of protective colors used by most animals to evade discovery and constitute the highest kind of self-advertisement and an implied boast to come and get me if you can.

IN SOME RESPECTS the antelope is a perfect symbol of what a man ought to be. He comes out and faces the world without fear, though he has great caution. His life is such that he has nothing to hide; he defies the world to get him if it can, and he has the fine judgment to fall back in an orderly way in the presence of danger. I once knew a man of great physical strength who boasted that he had never been whipped. He said "You have got to catch a man before you can whip him." The antelope is the perfect example of non-resistance. But his fatal defect was that he had a single-track mind. He was not versatile in self-protection, and he could not survive in great numbers.

THE WHITE-TAIL deer was versatile and highly adaptable to all conditions. He could run, but he preferred to hide. He did not accept that notion of getting out

and facing the world. He made his color conform to the seasonal landscape; in summer reddish and in winter slaty. His power of smelling an enemy is another means of self-preservation. They can doubtless smell a man a mile away when the wind is right, and possibly they could smell some men that far when the wind is not right. I assume that an occasional bath might improve the hunter's success.

THUS, THE WHITE-TAIL has survived and is destined to remain the most useful of the large game. Its range is throughout the United States, except California, Nevada, Utah, and portions of Arizona and New Mexico, extending well up into Canada and over into Mexico and Central America. Seton estimated a few years ago the total white-tails of the United States to number around three quarters of a million. The Texas form, *Odocoileus texanus*, numbers perhaps 50,000 to 75,000. The annual kill in Texas is about 10,000. Seton estimates for the nation a 20-per cent annual drain. This is not too low, when we consider that only bucks are shot. White-tail deer in Texas have been increasing during the past 15 years and on certain ranches for longer than that. The white-tail has followed the frontiersman into the forest, possibly because his farm furnishes certain forage and also because where livestock is multiplied, the cougar and the wolf, great enemies of deer, subsist more on the young of domesticated animals, thus diminishing the pressure on wild game. A further increase in deer became possible when ranchmen provided watering places in desert areas for their stock, thus extending the deer range and at the same time preventing their concentrations at few waterholes where predators laid in wait.

BUT THE GREAT herds of deer that were once known are no longer possible even if all hunting were stopped. Competition with livestock for food is the insurmountable barrier. Over-pasturage with sheep and goats is the unpardonable crime to all game. Cattle do not so much compete with wild animals. The maximum production of wild game rests with the land owner. Many ranchers of the West and Southwest have converted the nuisance of hunters into revenue by selling hunting rights, and sometimes they make as much money on game as they do on livestock. This is possible because they reap a natural harvest which costs them nothing. Domesticated animals must be cared for and often at considerable expense, and there was of course, the original investment. The wild animal will take care of itself.

WE HAVE HAD much to say about the relative speed of deer and antelope and some exact figures might be more to the point. Capt. R. B. Marey (1852) in his exploration of the upper Red River says: "The greyhounds have upon several different occasions run down and captured the deer and the prairie-rabbits, which are also regarded as very fleet, but although they have had many races with the antelope under favorable circumstances, yet they have never, in one instance, been able to overtake them; on the contrary, the longer the chase has continued the greater has been the distance between them. Our deer have usually been considered the fleetest animal upon the continent after the

horse but the pronghorned antelope of the plains is much swifter."

FOLLOWING IS THE racing table of some wild animals compared with the race horse, according to Seton.

Race horse, speed for a mile, 34 miles per hour.
 Pronghorned antelope, speed for a mile, 32 miles per hour, though there are claims of 43 miles per hour.
 Greyhound, 30 miles per hour.
 Jack Rabbit, 28 miles per hour.
 Common fox, 26 miles per hour.
 Coyote, 24 miles per hour.
 Foxhound, 22 miles per hour.
 American gray wolf, 20 miles per hour.

ANCESTORS OF THE antelope had four hoofs to the foot, but the back pair have been dropped. Deer, living in swamps, could utilize the little hind or mud hoofs, but antelope, living on the hard dry upland, had no use for them and they were eliminated by evolution.

AS STATED IN the outset, food and safety from its enemies determines the habitat of the wild animal. With the coming of men both the food and the safety have passed to a large extent from natural to artificial conditions, and man has become the custodian of the future of wild-life.

IN GENESIS WE read that the Creator caused creeping things and beasts to appear on the earth and birds to fly in the firmament above the earth and gave man dominion over them. It is only in recent years that man has begun to make intelligent use of that dominion, and now the journals of the nation are shouting from the housetops the conservation of wild life and the preservation of all useful species.

WITH THE WARDENS

Marvin L. Pullin, game and fish warden of Hebronville, resigned, effective October 1.

H. W. Williams, assistant hatchery superintendent at San Angelo, resigned, effective September 30.

T. R. Wright was appointed a game and fish warden effective September 1. He is located at Cayuga.

C. F. Ray of Buckeye joined the Game Department as Game and Fish Warden on August 14.

You can use cigarets with which to measure your fish if you are ever in doubt, as to whether one is legal, and you are in the middle of a lake without a rule. The length of any standard cigaret is 2¾ inches and that of the "longies" is 3¼ inches. Lay as many cigarets end to end beside the fish in doubt and add the total. It may save a fine.

Texas is among the first five deer and wild turkey states in the Union.

Tony and Cleo Among First Fishermen

By J. G. Burr

Aquatic Biologist

ANTONY and Cleopatra were among the earliest sport fishermen of history. Peter, James and John were among the earliest commercial fishermen on the sea of Galilee.

ANTONY AND CLEOPATRA had the latest gadgets for a successful catch and they usually brought them in. Once when it was too long between bites Antony sent his diver down to put a fish on his hook. After a few such catches by hook or crook, mostly by crook, he began to boast about his catch and to razz Cleopatra about her poor luck. As a wit Cleopatra was Antony's superior and soon turned the laugh on him. She had her diver go down and place a pickled Newfoundland codfish on Antony's hook. Thus was Antony shown up as a fake fisherman.

I THINK THE story has been garbled because Antony and Cleopatra fished in about 40 B. C. and Newfoundland fisheries had not then begun exporting codfish. Instead of a codfish it was probably a sardine from the Island of Sardinia.

TO JUMP FROM sport to commercial fishing statistics show that most of the fish caught in the Mediterranean in modern times are consumed locally; however, small quantities of sardines from Sardinia, before the war, were exported to the United States to satisfy the taste of Italian-Americans who have a particular liking for this especially cured and packed-in-olive-oil little fish. The American sardine comes from the Atlantic or Pacific, packed as a rule in Maine or California. Some have been imported from Norway, France and Portugal.

DURING THE PAST year or so fishing in the Mediterranean has virtually ceased, but with the collapse of Italy the industry may start again. The output of fish in the Mediterranean was normally above 100,000 tons annually which would be a welcome contribution to the European larder and a big saving in transportation.

FURTHER TO THE east on the shores of the Holy Land there is a fish story that ante-dates the story of Antony and Cleopatra. Jonah went down to Joppa and took ship to Tarshish. Joppa is said to be the most dangerous harbor, or one of the most in all the world. That more lives have been lost there than in any other known place in the world. Steamers anchor out at sea and travelers are landed by means of small boats. So Jonah was living dangerously, (just as Mussolini does) when he sailed out of the port of Joppa. The popular belief is that a whale swallowed him but the Bible story says nothing about a whale. It says a "great fish had been prepared" for that gastronomic feat. It threw him up on dry land and Jonah went

his way. This was another in the long list of proofs that you can't keep a good man down.

Wildlife Facts

The rattan palm, a giant sea-weed growing on the coast of California and Calamus, is the longest plant known. It may exceed 970 feet in length.

Experts have never been able to agree as to whether or not a panther ever screams.

About the most dangerous animal in America is a deer—during the mating season.

Pelts of southern muskrats are more valuable than those taken in Canada. Texas is producing more and more muskrats each year.

When the United States was settled, most predatory animals were driven back in their range, but the coyote seems to thrive with civilization and has actually extended its range.

Texas wildlife resources are valued at approximately \$94,000,000 annually.

The crocodile is the largest of living reptiles.

Nature's-

(Continued from Page 13)

dead animal later) in hunting may run as high as 50 per cent of the entire number shot. Frequently even animals cleanly killed in heavy cover are not recovered. Kill of rabbits by traffic is enormous, and the number of snakes, turtles, rough fish and other species killed by man is also high. Poisonous substances introduced into water habitats, and drainage, explosions, and other byproducts of man's activity kill large numbers of aquatic animals, as do rough methods of handling unwanted fish in removing them from the hook. Against the total of these, deaths of wild creatures from causes other than predation bulk comparatively small. Finally, in the case of furbearers and game brought to bag, parts or entire carcasses are often thrown away, to become carrion.

YET, WHATEVER THE size of the burden, whatever the cause of death, wild scavengers are apparently not fussy. Food is food, no matter what its source or what its name or how it came to die. By the automatic, unreasoning functioning of these necessary cogs in nature's machine, all creatures are benefited except those that are eaten, and even these are not harmed, but made to be beneficial. As for man, he can thank the scavengers for putting to good use the victims of some of his mistakes, and for maintaining the outdoors in a wholesome condition for his continued enjoyment.—*The Missouri Conservationist*

Game Harvests 255,400,000 Lbs.

Hunters who harvested the wild game crop during the 1942-43 hunting season took 255,404,000 pounds of usable meat, according to a report made by the U. S. Fish and Wildlife Service.

Based on data taken from State Game Departments and other sources, the tabulation reveals that deer alone yielded more than 59,000,000 pounds, with elk 9,000,000, and antelope, moose, bear, mountain sheep and goats totaling 1,650,000 pounds.

Among upland game, wild rabbits amounted to 68,735,000 pounds, squirrels more than 22,000,000, while raccoon, opossum and woodchuck totaled 14,222,000 pounds.

Ducks accounted for 32,500,000 pounds and geese, 3,000,000.

Upland game birds, including quail, pheasants, grouse, partridges, and wild turkeys, totaled 42,243,000 pounds, with pheasants (15,000,000 of them) accounting for 30,377,000 of the total.

Doves, bandtail pigeons, and woodcock added 2,405,000 pounds.

"With the present severe shortage of domestic meats due to the necessity for shipping such large quantities to our armed forces and to our allies, these wild species provide a food resource that is becoming increasingly important," said Albert M. Day, assistant director of the Fish and Wildlife Service. "A deer or an elk or a pheasant or a creel of fresh water fishes taken by a sportsman and used in the home or given to his friends releases an equivalent amount of beef, pork, lamb or poultry that can be consumed by the public or made available for military needs."

Will it be 'possum pie, fried prairie rabbit (alias muskrat) or raccoon roast? A Washington news-story reports these will be victory victuals if Secretary Harold Ickes' five-year plan is successful. Ickes foresees greater use of wild game as a means of bolstering the meat supply in sufficient quantities to feed 10 million persons. In recommending these products of nature, he points to the prospective annual yield of 220,000 pounds of opossum, 440,000 pounds of raccoon and 1,100,000 pounds of muskrat.

Alligator steaks, costing \$1 apiece when garnished with potatoes, green vegetable, salad and dessert, have made their appearance in a Daytona Beach, Fla., restaurant. The proprietor says tails of three-foot 'gators make the best steaks and extolls the merits of his product by adding that alligators are clean because "they subsist principally on fish and frogs." Alabamians shouldn't get too enthused, for—delicacy or no—the trapping or shooting of 'gators for business or sports purposes is forbidden.

Persons bothered with bats inhabiting attics, barns or sheds can get rid of them by lighting the places these eerie little animals inhabit.

FUR ANIMALS Of TEXAS

DESCRIPTION: About the size of a house cat; total length including tail, 30 to 35 inches; tail length about 12 inches; tail naked; fur generally grizzly gray, varying from nearly black to almost white; female with a pouch on the belly in which the young are kept.

DISTRIBUTION IN TEXAS: Common over practically the entire state. The opossum has responded well to the advance of civilization and is probably more abundant at present than at any other time in its history.

FOOD: Insects, rodents, birds, eggs, reptiles, frogs, crayfish, fruit, carrion, practically any edible animal or plant material. The opossum may occasionally damage poultry or the nests of game and song birds. However, it is too slow and awkward to regularly capture adult and healthy birds. It is not particular about the freshness of its food and is quick to take advantage of even badly decomposed carcasses. In 42 opossum stomachs examined by the Texas Cooperative Wildlife Research Unit, insects were the most important food, being found in practically all stomachs and forming 68% of the total. Domestic chicken, probably carrion, was found in three stomachs. When available, such fruits as persimmon, grape, blackberry, blue haw, and French mulberry are readily taken.

HAUNTS AND HABITS: The opossum is found most frequently in wooded areas near water. It is most active at night and is rarely seen at other times, spending the daylight hours asleep in a hollow tree or similar sheltered hideaway. It is probably the slowest and most stupid of our fur bearers. Nevertheless it is one of the most successful, judging by its large numbers and wide distribution.

Due to its common occurrence in rural areas, its peculiar anatomical structure, and difficulties of observing intimate details of its life history, some misconceptions are prevalent as to the opossum's methods of reproduction. It has even been reported, for example, that copulation takes place through the nose. As a matter of fact, mating occurs as in most other mammals and the young are born twelve or thirteen days later in the usual manner. The young are very small at birth—about the size of a pea—and weigh 1/10,000 as much as the mother. Immediately after birth they make their way unassisted to the pouch of the mother and attach them-

selves to a teat, to which they remain attached for about two months. Milk is pumped into the bodies of the young by muscles around the teats of the mother. The young remain with the mother for about three and one-half months. Two litters a year are born to the opossum in Texas; one in January or February and the other in May or June. The number of young may vary from three to fourteen at birth but the average number becoming attached to teats is seven.

The opossum is a solitary animal. Almost never are two seen together except during the brief breeding period. The male takes no part in rearing the young. The opossum's habit of appearing to feign death when molested is familiar to every country boy.

ECONOMIC IMPORTANCE: With the exception of the comparatively rare cases of damage to poultry or game, the food habits of the opossum are beneficial or of little economic importance to man. Its destruction of insects and rodents usually offsets any such damage. The fur of the opossum is of rather poor quality but due to the large number of pelts taken, the opossum ranks fifth in monetary value as

a fur bearer in Texas. It ranks first in numbers taken.

The opossum is popular in rural areas as a game animal for hunting with dogs. In addition, it is considered quite a table delicacy in the fall when it is fat and in certain sections it is of considerable economic value as a source of fresh meat. Its flesh is rather greasy but when properly prepared has an excellent flavor not unlike pork.

A whale may be a whale to you, but scientists recognize at least 18 kinds: blue, sperm, little piked, pygmy, sei, finback, humpback, gray, bowhead, bottlenose, True's beaked, Cuvier's beaked, pygmy sperm, blackfish or pilot, killer, white, false killer and narwhale.

Moles spend most their lives underground, often in a series of subterranean tunnels 12 to 18 inches beneath the surface.

Some birds cannot walk, while others walk with difficulty. Swifts, for example, never walk and never set foot on land; while swallows and nighthawks, whippoorwills, and goatsuckers walk clumsily, having weak legs.

Cowbirds do not build nests but lay eggs in nests of other birds which unknowingly raise the cowbird young.

The young eel is ribbon-like and so transparent that print may be read through its body.

During the mating season, bighorn sheep rams often face each other, back up as much as 100 feet, and then, running at the rate of about 20 miles an hour, crash into each other head-on.

The bait casting reel was originated in Kentucky during the first half of the last century. The first multiplying reel was supposed to have been made in Paris, Kentucky, by George Snyder in the 1820's.



The opossum is the most common and widely distributed fur animal in Texas.

Cranes-

(Continued from Page 5)

in numbers as a hopeful sign that the species was increasing until we realized that possibly it was due to "foreign" birds from the Louisiana marshes supplementing the usual wintering flock. The number of young birds which have been coming down from Canada with their parents each fall has been pitifully small. Although whoopers ordinarily lay two eggs, the hazards of hatching and rearing young birds were such that most parent birds, that had had any success in nesting, were accompanied by an "only child." Very few family groups ever contained rusty-colored twins. Confronted with such low nesting success and survival, how can this species persist, let alone increase?

PERHAPS WHOOPING cranes could not have survived this long were it not for their natural wariness. They prefer broad expanses of prairie or open salt marsh permitting an unbroken view of the surroundings for miles around. On the refuge, they favor the salt flats, lagoons and brackish bays where crabs and mollusks abound. Sometimes, birds venture into the brush in search of blackjack or liveoak acorns, but bay flats are more to their liking and there they find greater safety. They feed in small groups, a few adults or a pair with its young. Immature birds are almost invariably flanked by their parents whose ever-watchful eyes scan the countryside on the lookout for signs of danger.

CRANES HAVE A CRAVING for fresh water and will fly long distances for a drink. In the fall of 1939, fresh water was at a premium and cranes frequented an artesian well on the refuge twice a day. Here was a chance for some close-ups of the birds! One day John Lynch, biologist with Fish and Wildlife Service, and I hopefully set out with Leica and movie camera to photograph one of the most difficult subjects in the American bird world.

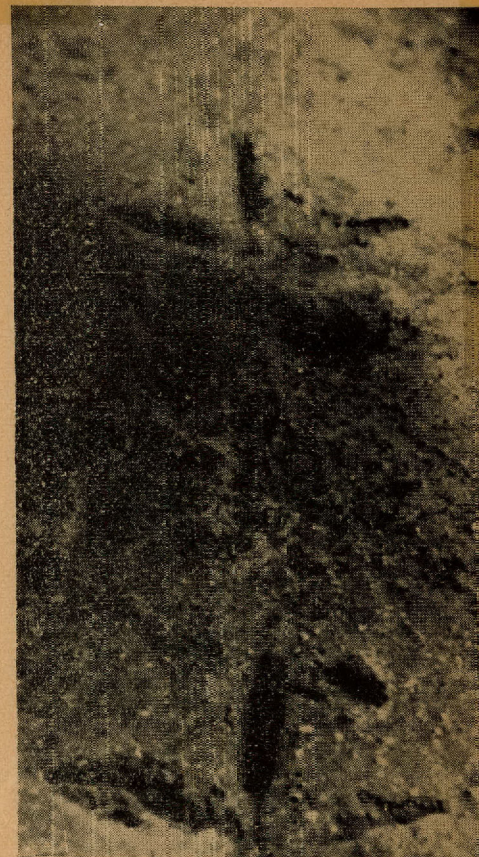
WE SNEAKED UP to the well on hands



A family group feeding in Mustang Lake.

and knees, collecting stinging nettles and grass burs all the way. Then as luck would have it, a cowboy flushed the cranes and geese resting there. Hiding in the corner of an old corral about fifty feet from an overflow pool near the well, we made a makeshift blind of boards and dead weeds while we waited. Two hours later, in came two groups of cranes—a family of three and a group of three adults. We expected a fight for we had noticed that family groups on the feeding grounds resented the intrusion of other cranes. However, a truce was called until all thirsts were satisfied. The male of the family group was not enthusiastic about the strangers but tolerated them. Flocks of Canada geese, widgeons and pintails flew in and lined up for water, awaiting their turn, but did not drink until the cranes had finished. The male of the family group took pokes at geese when they got "out of line," and once he jabbed at another crane that got in his way. This bird, caught off guard, tripped and fell over a much surprised Canada goose resting nearby. We got our pictures—although we were more nervous than the birds!

I WELL REMEMBER another memorable occasion. One April morning, patrolman Everett Beaty and I were on the east-shore flats trying to determine how many cranes remained of the winter's population. The few birds we saw appeared nervous as though impatient to be off for their summer home in Canada. As we watched a feeding pair, the larger of the two suddenly approached its companion, jumped into the air with outstretched wings, then alighted and began to flutter his wings and bow. Could we believe our eyes? Yes, we were watching the first stages of the famous courtship dance of the whooper! This dance, if it can be dignified by such a term, never lasted more than a minute or so. It did, however, take place occasionally throughout the day between extended periods of feeding.



Crane tracks.

THIS STATELIEST OF birds loses all its dignity while courting. Picture, if you will, Ichabod Crane of Sleepy Hollow at a jitterbug contest. The male jumps into the air, beating his wings, then flutters about his mate. Sometimes he bows low, an ungainly curtsy, with head and body near the ground. While in a crouching position, his wings droop, he charges toward his mate, circling her and perhaps letting out a few whoops. At times both

The Endangered Whooping Crane Presents A Challenge to Conservation - Minded Birdmen

birds face each other, jumping up and down while their wings beat the air. Most of the dance is performed by the male, the hen playing the role of interested on-looker. She often acts coyly, blithely feeding while walking away from him. Then, if her mate's ardor lags, she turns about and flies to him as though begging for more attention. This leads to more bowing and scraping on his part.

A LATE-STAYING FAMILY group, lingering on through May, in 1941, gave us the opportunity to observe how the young birds are treated during the season of courtship. It was comical to find that the young bird of this group, so jealously guarded during the previous winter by its parents, was an unwanted wallflower when the male asked his mate for a dance. At this season, the male had no use for his offspring and would threaten it every time it came near; the young bird then wandered off to feed alone. The pair couldn't be blamed, of course, for wanting a little privacy for their wild hopping and ungainly antics which kept up until late June.

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Cranes-

(Continued from Page 17)

After that, the courtship subsided, and the immature crane was allowed to rejoin the older couple. Although the birds remained on the refuge all that summer, it is doubtful whether they attempted to nest. We had hoped, of course, that the birds would nest on this southern refuge, a custom which, it is said, they practice in the Louisiana marshes. There, some cranes spend the year-round, and it is rumored by some persons, and sworn to by the Cajuns, that they have nested there for many years.

WHAT IS LEFT OF the flocks of thousands and thousands of whoopers that formerly crossed the Plains twice a year in passage between their nesting grounds of Canada and the Prairie states, and their winter home in Mexico and the Gulf region? A sorry remnant at best—probably not more than two hundred birds. They formerly wintered by the hundreds in the lagoon country of northeastern Mexico, but none has been reported from that region in recent years. As far as is known, the only important wintering grounds are now those in the White Lake region of southern Louisiana, and in the Aransas Refuge and vicinity on the south coast of Texas. It so happens that only 15 birds (13 adults and 2 immatures) spent the winter of 1941-42 on the refuge; and persons who searched the Texas bays and marshes for other groups were unsuccessful.

EVEN ON THESE coastal marshes, once a safe haven for wintering cranes, the birds were threatened. Bombing and machine-gun ranges for Army Air Corps use have been created on the barrier islands because "the areas are isolated and comparatively few people will be affected by their use." Cranes, unfortunately, have not yet come to fear the target shooting boatmen on the Intra-coastal Waterway which invades the heart of their feeding grounds. Exploration for oil and the drilling of wells in the marshlands and bays also continue. Are the birds to be driven from their last stronghold?

IN THE PAST, some toll of cranes was taken by angry farmers of the Great Plains who resented the birds' fondness for sprouting wheat. No doubt others were killed simply out of curiosity—the fate of many a large, spectacular species. On the prairies of central Texas, a favorite stopping point in migration, cranes were once held in favor as birds for the pot. According to John K. Strecker, the noted Texas ornithologist, the whooper was a favorite game fowl in McLennan County, Texas, in the middle of the last century. "It was only after the wild turkey, prairie chicken and whooping crane began to become scarce," he wrote, "that the bobwhite came into repute as a game bird." (Quail must have been considered small fry in those days!)

MARKET HUNTERS IN Texas did kill and sell some whoopers but favored the sand-hill, a vegetarian, as a better tasting bird. The bugle crane was considered inferior because "it ate sea food and tasted fishy." However, ranchers in the Black-jacks did vary their diet of frioles and

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BOOKS



The Roseate Spoonbill by Robert Porter Allen, Research Report No. 2, National Audubon Society XVIII+142, 20 plates, 43 fig. New York \$2.50. Reviewed by Gordon Gunter, Game, Fish and Oyster Commission.

THE ROSEATE SPOONBILL is one of the most beautiful birds in the world. It is rosy pink, with wing and tail coverts of carmine and a tawny orange tail. Since 1902 the National Audubon Society has taken a deep interest in the Roseate Spoonbill. Up-to-date life history and biological data on this rare bird, once threatened with extinction in the United States, was sorely needed so that the proper steps for its protection could be taken. This report supplies that need. It is the result of a long and arduous work in the field, work in the museums and historical research. The author spent sixteen months in the field and nine in museums.

In the introduction he discusses the relationship of our Spoonbill to all the other Spoonbills in the world. The non-specialist may be surprised to know that there are at least five other Spoonbills in Europe, Asia, Africa and Australia. The American Spoonbill is the only one possessing the pink and carmine colors over the whole body. It is also the only Spoonbill in the Western Hemisphere. It extends from the Gulf region to southern South America.

In Part One the author takes up distribution. It is evident that he has done a great deal of research and followed every possible lead in ascertaining the former distribution of the Roseate Spoonbill in the United States since 1850. In Part Two the present and past abundance is discussed. Here again there is evidence of extensive research for all available information. Between 1890 and 1919 the Spoonbill reached an all time low in numbers in the United States and the author concludes that the bird would have become extinct, if its only range had been in the United States. After better protection was initiated, the species was rehabilitated by migrations from farther south and in 1941 approximately 5,700 birds were present in the United States. Almost 90 per cent were in Texas. In Florida, however, the Spoonbill population continues to decline. Part Three discusses migration and postnuptial wanderings. Here again a large number of observations, both historical and otherwise, are presented. It is surprising to learn that Spoonbills have been seen in northern California, northern Utah, Pennsylvania and even the Great Lakes region. A number of non-breeding birds wander into Texas after the breeding season. Under Part Four, Limiting Factors, Allen discusses most of the known ecological factors which are necessary for the life of the Spoonbill and those factors which tend to decimate the species.

Many interesting facts are brought out,

which cannot be discussed here. The Spoonbill is one of the shyest of birds and the slightest disturbance during nesting will cause them to abandon eggs and young and wander away, making no further attempt to nest again that year. Under breeding cycle behavior, Part Five, the writer discusses pairing, nest construction, incubation and rearing of the young, on the basis of personal observations. Part Six discusses food and feeding habits. To those interested in the fishes of the coast this is one of the most interesting parts of the volume. The food of the Spoonbill is made up chiefly of small fishes and certain crustacea that inhabit the shallows of the bays. Allen made close observations and in many respects his work is the most extensive and informative that we have on the relative abundance of the animal life of this environment.

Part Seven takes up plumages and molts. The age of Spoonbills, up to their fifth year, can be ascertained by specialists by examination of the plumage. Apparently the birds do not breed until they are four or five years old. In Part Eight the author discusses the future and steps that should be taken to maintain and increase the population of the Roseate Spoonbill in the United States. The volume contains an appendix listing the names of animals and plants mentioned in the text. There is a bibliography of four pages and an index of four pages.

The whole report shows evidence of long thought and of the broad viewpoint of the author. The viewpoint is ecological, that is to say, the relation of the bird to all factors of its environment, both physical and biological. Our knowledge of these factors is never complete, but the writer has discovered a great deal and clearly points the way to things which should be learned in the future. In short, the report describes a fine piece of ecological work and is written in an informative and entertaining style. Both the author and the National Audubon Society are to be commended for the production of this volume.

I have only two minor adverse criticisms. In one place the author states that I believe the snapping shrimp, *Crangon*, to be more abundant than the penaeid shrimp, *Penaeus* spp. Since the penaeid shrimp in total species mass probably is greater than any other marine animal on the coast, this statement is an error and is doubtless due to some misinterpretation of statements in my papers or misunderstanding in conversations which I had with the author when he was working in Texas. The other concerns the numbers of Spoonbills. In one place Allen gives the population of Spoonbills in the United States as 5,698 in the year 1941. This implies an accuracy in estimation and census counts which is unobtainable. It would have been better to give the approximate population as 5,700.

Shrimp-

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line from each board runs to the power winch on the boat. The winches are powered by the boat engine. The back end or bag of the trawl is open and is tied with a rope when in operation.

IN SEARCHING FOR shrimp, fishermen use a small net called a try-net, which in reality is a miniature otter trawl. It is used to find out if shrimp are on the bottom. If after a few minutes drag a try-net contains ten or twelve shrimp or more, the fisherman concludes that he has a chance to make a fair catch and so puts his trawl overboard. If shrimp are not caught in the try-net, the fisherman concludes that chances of making a catch are slim and he hunts another place.

HAULS ARE MADE by dropping the trawl overboard and pulling ahead with the boat. The speed of a boat while making a haul is about three miles per hour. A drag may last from thirty minutes to over three hours depending on the abundance of shrimp. Fishermen can tell when they have a load by the pull of the trawl. After the catch is made the trawl is pulled aboard by the winch and emptied by untying the bag or, if the catch is large, it is pulled to the side of the boat and emptied by dip-nets made for the purpose.

THE MESH OF a trawl is 1½ inches stretched. Some trawlers use a mesh that measures 2 inches stretched. Trawls of ten feet wing spread or less are used for catching bait shrimp. A fisherman must pay a regular trawl license for any trawl over ten feet in width.

EIGHTEEN FEET IS about the maximum depth of the bays. In the Gulf of Mexico trawling is not often carried on in water over 60 feet in depth. At this depth the trawl is paid out on 300 feet of line and a little more. It is seen that a ratio of 5:1 between the length of line and the depth is used.

THE AVERAGE TEXAS shrimp boat is from 25 to 40 feet in length and has a draught of three to four and a half feet. The cabin or pilothouse is aft of the hold and the largest deck space and is a little forward of the engine. Practically all boats have a winch connected to the engine shaft by a rotary belt, which can be turned on or off by a separate gear when needed. The boats are equipped with a boom attached to the mast, with which the loaded trawl can be swung around to the sides or deck space as needed. The hold space usually consists of a large built-in icebox, covered by a hatch, in which blocks of ice are carried out to the shrimping grounds. Shrimp should be iced down as soon after they are caught as possible.

WHEN SHRIMP SEASON is in full swing shrimp fishermen often leave the dock by 3:30 A. M. and try to return by mid-afternoon, so that the catch can be disposed of before nightfall.

ACCORDING TO THE reports of the Game, Fish and Oyster Commission for the seven fiscal years from 1935-36 to 1941-42, ending on August 31, licenses for

Table I. Annual shrimp production in pounds for the State of Texas from 1880 to 1942.

YEAR	POUNDS	YEAR	POUNDS
1880	637,500	1929	9,415,317
1887	254,633	1930	10,189,318
1888	259,333	1931	13,814,373
1889	241,500	1932	9,244,246
1890	175,800	1934	16,358,600
1897	360,530	1936	9,962,500
1902	290,815	1937	16,904,800
1908	119,000	1938	16,364,700
1918	164,067	1939	11,754,746
1923	3,421,638	1940	14,779,200
1927	11,832,033	1941	15,454,801
1928	7,774,272	1942	17,015,585

Table II. The average yearly production of shrimp for all South Atlantic and Gulf States from 1927 to 1937, inclusive is shown. There are no figures for 1933 and 1935. The average annual production from 1938 to 1940 is shown in the third column.

STATE	POUNDS	
	1927-37	1938-40
Louisiana	59,278,287	99,695,100
Florida	18,434,502	9,097,800
Texas	11,721,718	14,105,600
Georgia	8,685,619	10,187,300
Alabama	3,766,560	3,444,300
Mississippi	3,475,358	2,011,900
North Carolina	1,719,007	4,512,300
South Carolina	1,262,104	3,198,400

Table III. The shrimp catch for the fiscal year 1941-42 for the four chief areas of the Texas Coast is shown. The figures are in pounds.

	POUNDS	
	Lower Laguna Madre Area	Aransas and Corpus Christi Area
Bay	Closed waters	6,234,060
Gulf	1,428,086	2,264,325
	Matagorda Bay Area	
	Galveston Area	(taken in bait trawls)
Bay	3,154,047	120,153
Gulf	1,340,947	4,253,836

trawls were paid by 286, 251, 300, 216, 351, 400 and 495 men, respectively. This gives a fair idea of the number of boats in operation. The license is paid for the privilege of operating a trawl. For a regular trawl it is \$15.00 a year and in addition each man must have a \$3.00 commercial fisherman's license. The crew of a boat usually consists of two and occasionally three men.

So You Believe-

(Continued from Page 8)

AT OTHER TIMES I have been similarly convinced by circumstances. But down to this day, as far as I personally know, the strange cries which I have heard in the night came from less ferocious animals such as badgers and coons. Both of which, if you ever have had the occasion to hear, can utter most alarming vocalizations.

I KNOW A man who has spent 40 years killing lions, wolves, and coyotes from Alaska to Mexico. In his opinion, lions do not scream like dying women. I know two other men, one a hunter who is famous for his cat hunting expeditions in both Texas and Mexico, and the other a trapper

Cranes

(Continued from Page 18)

sowbelly with crane meat. One man, knowing of my interest in the species, assured me that his family never shot more than one every week or so. He then added as an after-thought: "I wonder where they all went to?"

PERSECUTION BY MAN and reduction in nesting areas due to drought and drainage, has brought the species to a low point from which it may never recover. Probably some of the adults we now find are old, sterile birds incapable of producing young. There are few of them left and the gauntlet they fly twice each year is a hazardous one. True, they are protected by international treaties and some help is given them on wintering grounds, but little pot-shooting here and there could easily wipe out this conspicuous bird.

IS THE OLD WHOOPER doomed? What can be done to help this bird? For one thing, we need a complete life history study that will point out the specific requirements to save this species from oblivion. This approach to the problem is fundamental; it has already been used by the National Audubon Society in the case of the roseate spoonbill and the ivory-billed woodpecker. We know there is need for additional patrol, for an educational campaign to be carried out in the vicinity of the birds' wintering grounds. The Canadian breeding grounds are now mainly restricted to southern Mackenzie and northern Saskatchewan, and possibly sections of Alberta; however, the exact location of nesting areas is shrouded in mystery. The summer homes of these cranes must be found and a study made to determine factors limiting nesting success and rearing of young. The information will be basic to wise conservation and management. Possibilities for a refuge on the resting grounds in Nebraska where the birds stop in migration are now being explored. It will be necessary for conservationists to muster every available resource in the last faint hope of saving this crane.

MAY THE OLD WHOOPER continue to trumpet down through the years! Though the outlook for his survival is dark, may the day never come when the last bugler blows taps for his race.

who has caught and killed more than one hundred lions in the South Texas brushland since 1920. Both of these truly experienced outdoorsmen have heard lions growl, and meow, and purr but never a scream.

ALL OF WHICH reminds me that it makes little difference whether Hoop Snakes roll or lions scream. If you have seen or heard one, than that's your experience and I am sure that the occasion added something of interest to your life. Civilization must be kept from being monotonous. And so long as we have rats that die and go to Heaven and return as bats, and so long as bull snakes suckle cows and cause calves to die of starvation, we will continue to have an inspiring world around us. Believe it or not!

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New Game Regions Will Aid Enforcement

