

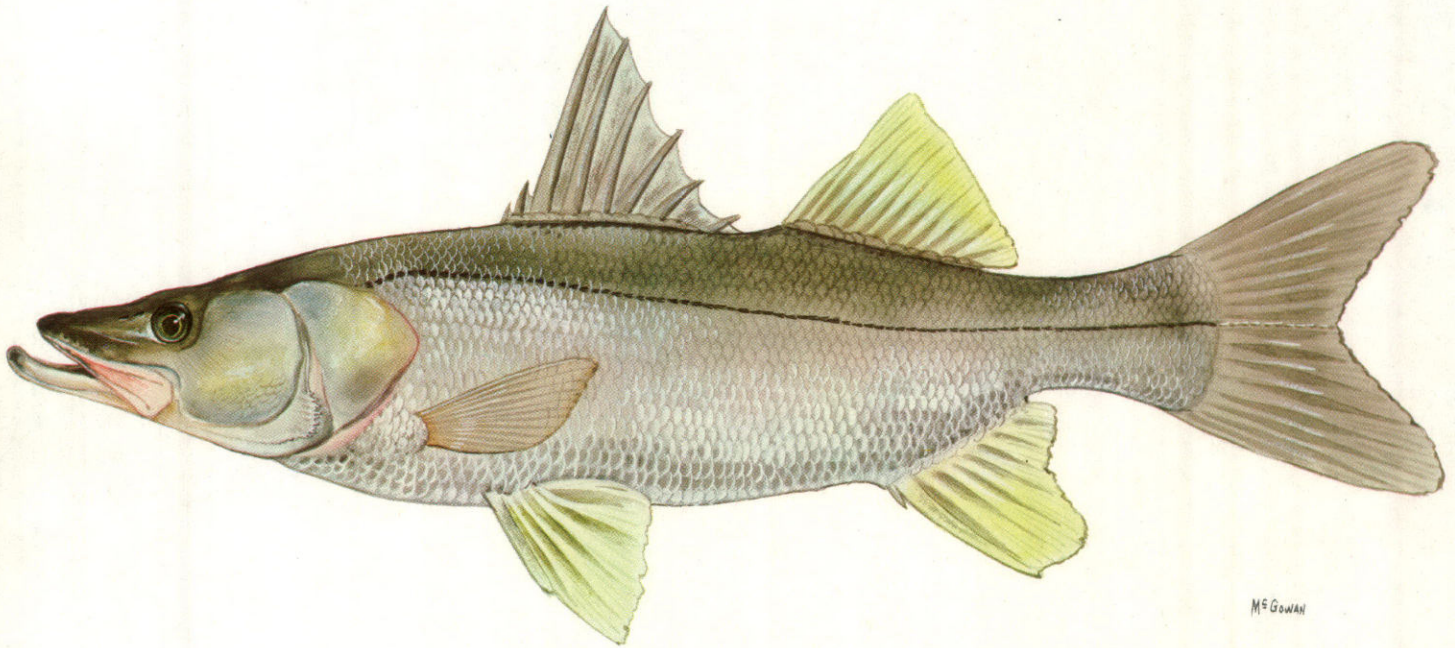
TEXAS

PARKS & WILDLIFE



July 1970 • 50¢

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OUTDOOR NOTEBOOK

The snook, *Centropomus undecimalis*, is a coastal fish of warm waters. Also known as a robalo, it is a superb game fish. The Texas coast is its northern limit, and then usually during the warm months. Brackish water, inlets, around jetties and pilings are areas favored by prowling snook. Fish, crabs and shrimp are high on this predator's list of edibles.

Powerfully built and streamlined for speed, the snook is a battler on the hook and will often leap to throw the lure. Hooks will tear free of the fish's mouth if it is "horsed." A flopping snook is armed with spines, needle-sharp teeth and sharp gill plates. Some care must be exercised in handling.

The record snook weighing 50½ pounds was caught in Panama.

Closer to home, a 49½ pounder was landed in Florida. No Texas record is known. Average size of snook taken by anglers is two to four pounds. Once caught, it is as edible as most salt-water fish. Snook is especially delicious in ceviche, a recipe printed on the inside front cover in the July 1969 issue of the *Texas Parks & Wildlife*. — Nancy McGowan

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**TEXAS PARKS & WILDLIFE
magazine**

Dedicated to the conservation and enjoyment of Texas fish, game, parks, waters, and all outdoors.

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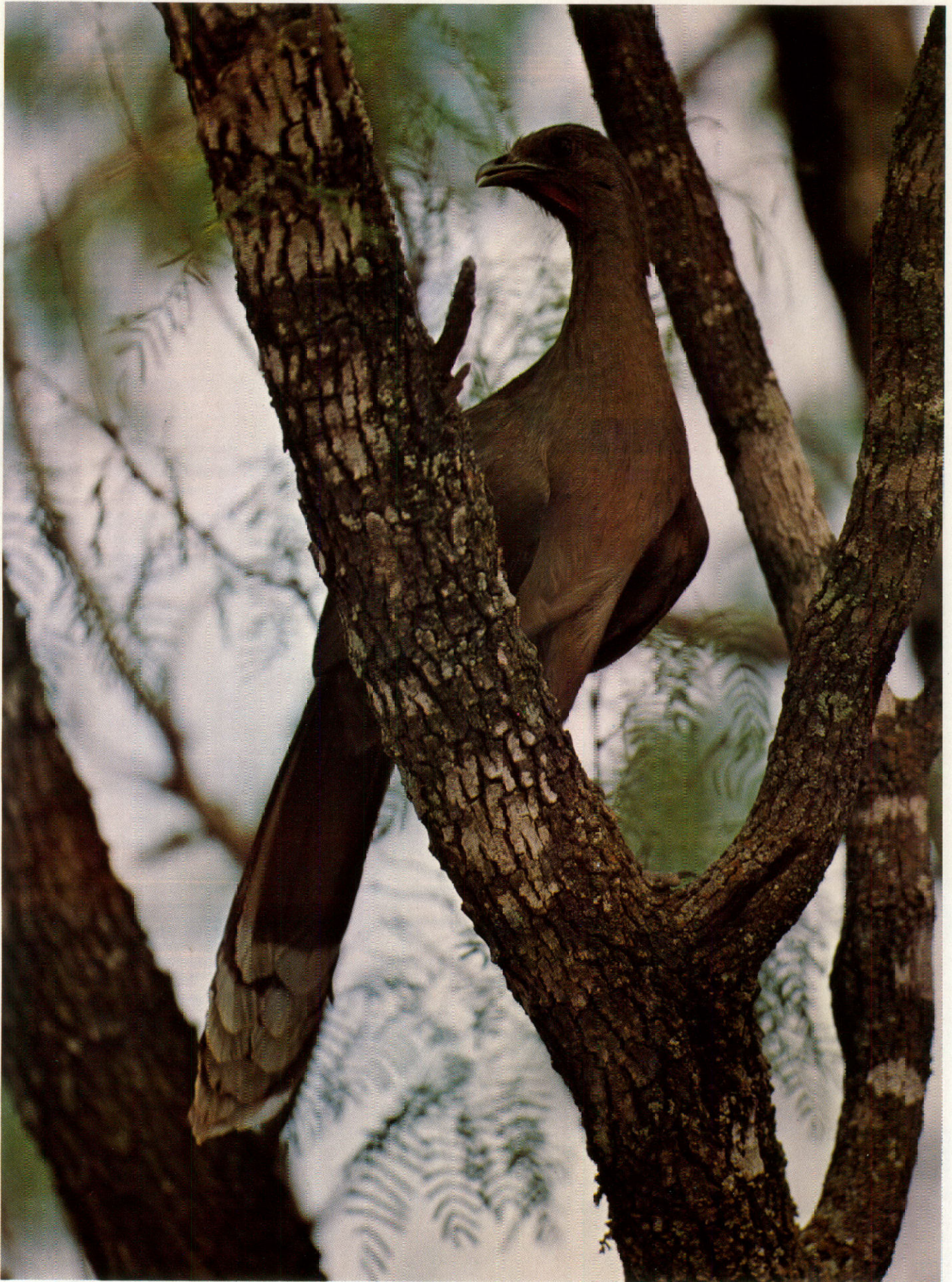
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TEXAS PARKS & WILDLIFE

... first place winner of the 1967 and 1968 international award for magazine excellence given by the American Association for Conservation Information.

Cover: A very shy and retiring personality makes the ornate box turtle one of the better liked Texas reptiles. Photo by Reagan Bradshaw.





Re-establishing the Mexican Pheasant

by Michael D. Hobson
and
James A. Neikirk

Photography by John Suhrstedt

ONE OF THE least publicized game birds in Texas is the chachalaca, or Mexican pheasant. Grayish-green in color, the chachalaca, *Ortalis ventula*, is a long-legged, long-tailed bird, similar in size and form to the roadrunner. Its abdomen is light gray, and the tip of its tail is white. Gliding silently from tree to tree, it is rarely seen as it feeds on seeds and

berries in the thick brush areas of the Rio Grande Valley.

Avoiding open areas, the chachalaca prefers thick underbrush. Nesting sites are usually located in a jungle of brush comprised primarily of granjeno, panolero, brazil, ebony and mesquite. Shallow nests in trees or on the ground are constructed of

Re-establishing the Mexican Pheasant

twigs and small branches. Two or three eggs, similar in size and color to chicken eggs, are laid and incubated for 22 days. The young are precocial; that is, they are able to leave the nest immediately after hatching.

These birds' distinctive calls are usually heard before sunrise and at sunset and during the day in the mating season. The call consists of three syllables — "cha-cha-lac." After one bird calls, others usually join in and add a fourth syllable. Obviously, the bird derives its name from its call.

The chachalaca's original range in the United States covered an area bounded on the south by the Rio Grande from the Gulf of Mexico to Zapata, and extending about 50 miles north of the border. Brush clearing to make more land available for farming has been responsible for a drastic reduction in chachalaca numbers. Its range is now limited to scattered brush tracts along irrigation canals, resacas and the Rio Grande.

The Parks and Wildlife Department has made several attempts to expand the chachalaca's range by trapping and transplanting birds to various areas in South Texas; however, most of these efforts seem to have been unsuccessful. The most successful transplants were made in 1959 and 1960 when 40 birds were released on the Longoria Unit of Las Palomas Wildlife Management Area five miles north of Santa Rosa in Cameron County. Today over 300 birds reside in this area and over 200 have been trapped and removed to other areas for restocking purposes.

In March 1963, 40 chachalacas were taken from the Longoria Wildlife Management Area and released on a ranch in the northwest part of Hidalgo County. Although it was well outside the present range of the chachalaca, the release site contained several brush thickets that appeared to be suitable habitat.

During the summer of 1969, university students working as summer assistants with the Department spent a week investigating the vicinity of the release site to determine if the transplanted birds had remained in the area and had reproduced.

Prior to visiting the release site, the researchers obtained an aerial photograph of the range, which was used to locate some of the denser brush areas in which the chachalacas might be found. They had

arrived at these areas before daylight and spent an hour or two listening for chachalaca calls. Upon hearing a call, the students searched the immediate area for evidence of nesting.

But this technique proved to be ineffective. Although normally the prime time for chachalacas to call is dawn, the birds didn't call at that time. On the first day of the investigation, two hours of watching and listening gave no indication of the birds' presence.

No sound or warning preceded the appearance of the first chachalaca; it simply flew across the path in front of the students. An extensive search of the area turned up three more adult chachalacas; however, no signs of nesting were discovered.

Efforts the following day were more fruitful. The students separated to cover more ground, entering a brush thicket about a half mile from the release site. Since the area was so thick, progress was slow and the students could see and hear many species of wildlife ranging from the common mockingbird to the colorful painted bunting as well as several deer and javelina. Along with these familiar inhabitants of South Texas brush a chachalaca was observed leaving its nest.

The nest was active, that is, it contained three eggs. It was the first positive indication that the chachalacas at this site had reproduced, thus completing a primary step in extending its range. The nest was tagged for identification and its location plotted on the photomap so that it could be checked daily. With this incentive, there were increased efforts to find other active nests.

Inasmuch as "beating the brush" proved more productive than early morning listening, the next day a search of the remaining brush sites began. In a thicket not far from the release area the "peep-peep" of a young chachalaca was heard. Closer examination revealed a nest with two recently hatched eggs. Residue from the yolk sac was still moist. This second nest showed that the chachalacas had actually produced young.

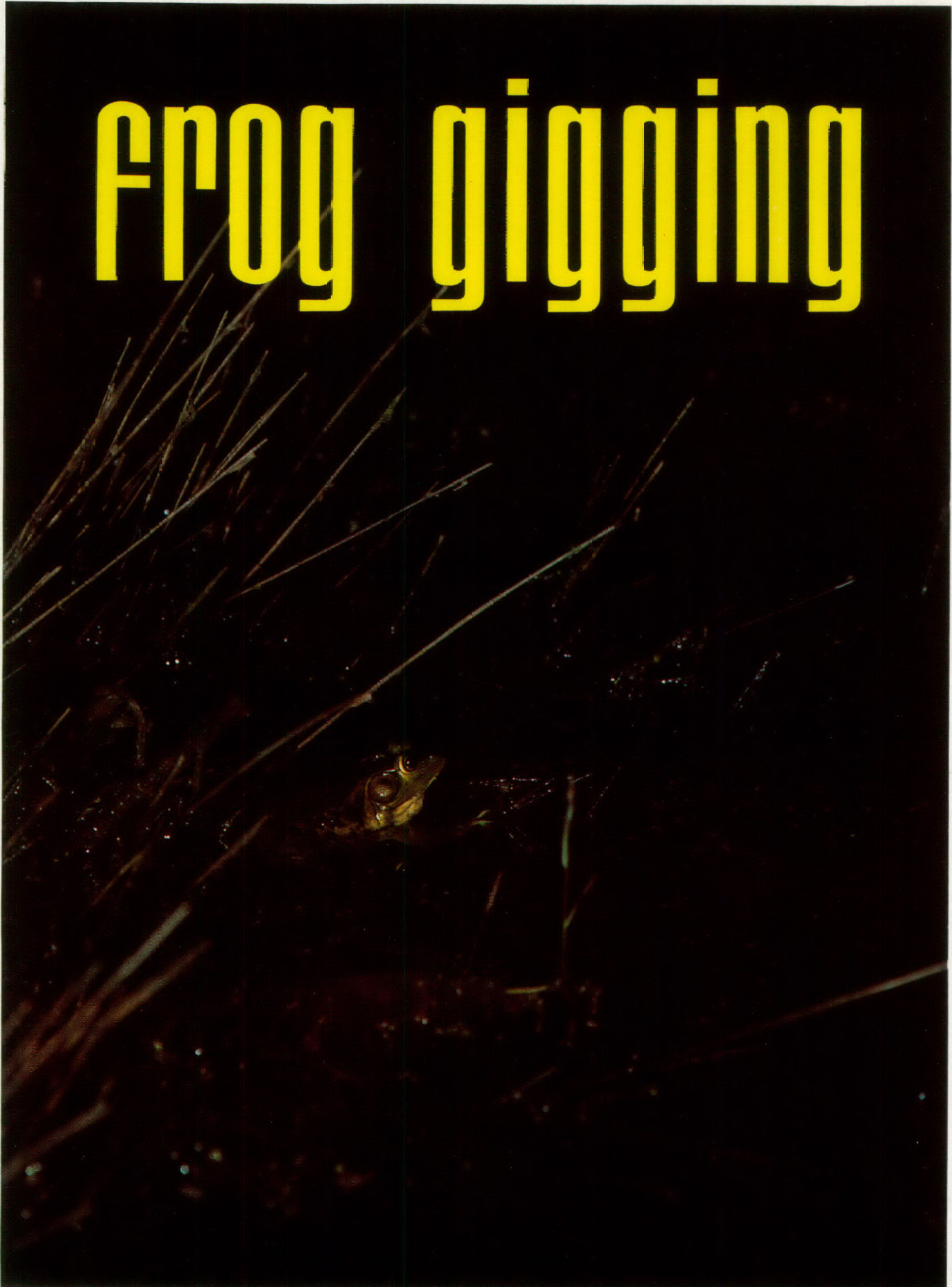
On the last day of the study, the routine check of the first active nest revealed that the eggs had hatched. The area surrounding the nest was searched for signs of the young, but with no success. As the students left the area, chachalacas could be heard calling deeper in the brush. Upon investigation they saw six adult chachalacas noisily scolding a javelina rooting in the damp earth, and although these birds were observed for several hours, there was no sign of any young.

The 1968 transplant is of particular importance because the release site was regarded as marginal range for chachalacas. However, the chachalacas observed seemed to be settled in the area and reproduction is occurring. Although it is still too early to be certain whether the transplant will be a complete success, the results obtained from the study are encouraging. * *



Male chachalacas fight over their territory. The name chachalaca mimics the bird's call. One bird calling alone sounds only three syllables, "cha-cha-lac", but when a whole flock calls, the sound is a very rhythmic "cha-cha-lac-a."

FROG gigging



Reagan Bradshaw



John Suhrstedt

by Don Walden

YOU REMEMBER it from your youth: you slipped quietly around a big pond, shirking a flashlight and carrying a 10-foot pole with two prongs on the end of it like Neptune's fork. You hunched down, approaching stealthily like a big game hunter stalking an elephant.

It was always cool at that time of night. Fish splashed and little cricket frogs sang, and then, there was a sound from across the pond much like the blending of an alligator's burp and a choked-up foghorn.

That's the sound of the bullfrog, and although not the world's largest frogs, they are the ones Texans are after. They sing in the late spring and through the summer, and only at night, which lends the special air to frog hunting.

Bullfrogs are unusual animals. They live in the water as tadpoles for one year and on land the rest of their lives. For protection they can return to the water for short periods, absorbing oxygen from the water. During the winter, frogs aestivate, which means they bury themselves in the mud and remain

there over the winter. In the early spring and summer when the warm rains come and the ground thaws, they come up, looking for mates and planning to live for the summer above ground.

About two years after changing from a tadpole, the frog is over six inches long and sexually mature. During April and May the males sit on the banks of ponds, looking primeval and sadder but wiser, and croaking occasionally. At that time, the croaking is designed to attract females, but later in the summer, they sing, indicating good frog gigging time.

Frog gigging is done with a long pole and either a gigger or grabber. The gigger is a fork-like device that impails the frog, and the grabber has jaws and a trip to close the jaws around the frog. Some people just grab frogs by hand. This is effective, but it is difficult to get close enough to the frog, and there may be a snake just inches away.

In addition to whatever method used for catching, you will need something to hold the catch. A bag — feed sack, burlap bag or "tow sack" — with a



Hunting for frogs with a bow and arrow is a challenge for any archery enthusiast.

drawstring is best because you can tie it on your belt and always have it handy. A fish stringer also works well.

Lights are necessary because the frogs have to be hunted at night. Lots of people swear by a headlight or strong flashlight, thinking that the beam helps to hold down the frog, but others prefer a mantle lantern. It casts a light in all directions, illuminating any snakes and holding frogs down even when the light is not pointed in their direction. If you use a lantern, it will need a reflector on the back to keep the light from blinding you. Don't use a small hand flashlight because the beam is too weak to illuminate everything or to hold a frog from very far away. It is nice to have one along, however, for more general lighting or inspecting sudden

noises without taking the light away from the frog.

Once all this equipment is ready, you have to decide whether to walk or paddle. Big boats are impractical, and some small ponds make boats in general impractical. But if a canoe or flat-bottomed boat is available, it will work on ponds of a couple of acres or more. Boats have a big advantage over walking because frogs sit facing the ponds, and their white throats can be seen better from a boat.

The selection of a body of water is not hard. Rivers are not good because it is not in nature's plan to have frogs lay eggs to be washed away. Cattle tanks are best, and of course you need the owner's permission. It is also wise to check with your local game management officer on any restrictions concerning the taking of frogs at certain times of the year in your county.

Frogs are not hard to catch. Light blinds them and holds them still until their eyes adjust to the light, so the idea is to find them with a light and then hold it on them until you catch them. The best way to distinguish a bullfrog from a green frog is by a hump on the bullfrog's back which gives him a crippled look as if his back had been broken and did not mend properly.

After spotting the frog, keep the light steady to hold him down. For obvious reasons, you can be more successful with one person to hold the light while another gigs, but it is possible to work alone. Since the frog's eyes are on the side of his head, it is not always necessary to hold the light in front of him. Holding the light steady while approaching from his side will work well. If you are in a boat, holding the light on him from the front will work.

Then you gig him. This requires quickness, which can be learned after a few frogs jump just as you touch them. The trick is to be sure that the gig is going toward the frog's middle — not over his head or into the mud behind him — and then jab.

Frog gigging is not a Sunday stroll. It is harder work than you would think and often dangerous. In the first place, snakes like to eat frogs, too. You have to be careful of cottonmouth water moccasins. In the second place, frogs do not sit up like targets. They get behind tufts of grass, sit in little holes gouged out of the bank, under roots of trees, and the really big ones hide in tall grass in the middle of the pond.

Worst of all, frogs spook easily, especially if they have been hunted recently. The slightest noise will sometimes scare them into the water. But frogs tend to sit still longer on dark, still nights without moon or wind. Lightning is particularly worrisome to frogs, so you need to gig on a nice clear night.

Like all sports, if there is noise to frighten the game away, it is often the sportsman's fault. Don't tromp through the weeds, kick rocks into the water, break limbs off trees, holler or run toward a frog you have spotted.

There are several ways to clean a frog. The frog



The grabber is used to capture the frog alive. It holds the frog in place but does not kill it.

Large frog legs can be prepared in gourmet fashion or pan fried like chicken for a delicious meal.



can be killed by cutting the head off or hitting it on the head. Sometimes the frog legs will move suddenly while they are being fried. To keep this from happening, cut part way through the joint where the legs meet the body and twist the leg off. In this way you remove a nerve which causes the legs to jerk. Then remove the skin and cut off the feet, and the legs are ready for cooking.

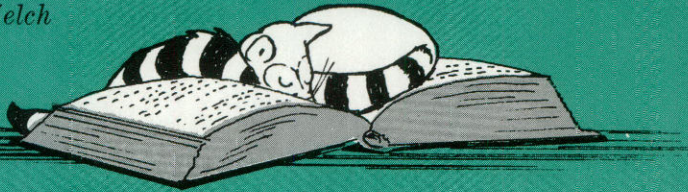
Whatever method is used in obtaining the legs, when cooked right they taste like either chicken, rabbit or fish, no one is sure which. Cooking them right is pretty simple because you can cook them like chicken. Gourmets like to fix them in exotic recipes which can be found in some cook books.

Frogs are not big game. There is not much need for a big outfit and tent, and very few people take a camera along. No one has a frog mounted on his wall, and there is not much to tell about how he charged and nearly killed you.

Eat frogging is good sport in the cool of the night in a pond with a lot of life. When you see eyes looking at you or catch the sight of a white throat, there is as much excitement in getting around to the frog and catching it as there is in any other outdoor sport. **

Outdoor Books

by Rebecca Welch



NATURE THROUGH A KNOTHOLE
by John B. Holdsworth; The Naylor Co., San Antonio, 1969; 251 pages, \$8.95.

Nature Through A Knothole is a series of about 100 full-page black-and-white photographs of some plants and animals of the Southwest, with a page of descriptive text facing each picture. The short comments are sprinkled with warnings of man's destructiveness, and the message is the more poignant when adjacent to a visual display of nature before man's interference. The language is lucid and aimed toward children but conveys the wonder of adult discovery as well. As the jacket remarks, it is intended for "Grade 6 and up."

With the proliferation of color printing, even the best black-and-white photography suffers by initial comparison. However, the photography of this book is artistic and imaginative as well as informative. There is also a wealth of material in the short text, and the book is more valuable upon close examination than one would anticipate.

THE BEST NATURE WRITING OF JOSEPH WOOD KRUTCH; Illustrated by Lydia Rosier; William Morrow & Co., Inc., New York, N. Y., 1969; 384 pages, \$8.50.

It is a pleasure to cover a work such as this since Joseph Wood Krutch writes with such grace and sensitivity in an area in which one would sometimes find these qualities lacking. Krutch is a noted theater critic and philosopher of sorts, and as he says of himself, "I think I know more about plant life than any other drama critic and more about the theatre than any botanist."

The author is concerned with the complex relationships in any ecosystem, but he is not content with the usual catch-all phrase — balance of nature — with which we often sum up these complexities. He puzzles over "intention" in nature between symbiotic organisms; he questions "nature lovers" who disregard individual animal lives by hunting; he explores the nature of man's response toward "beauty"; and he is saddened and worried over man's place in nature. Most importantly,

Krutch avoids simplistic expressions of vague rapture or the boring technical detail with which many naturalists greet natural phenomena. Rather, he delights the reader in writing as an observant and knowledgeable layman with wonder, concern and great delicacy. The special worth of his writings is less in their substantive content than in the fine delineation of his prose.

The volume is divided into five sections, and in "New England and the Desert" there is a refreshing view of the Southwest as seen through Northeastern eyes. Krutch marvels at the plant and animal forms native to desert environment such as the cactus and roadrunner. His enthusiasm is certain to awaken a fresh and similar emotion in the Southwesterner.

Krutch's writings are highly recommended to any reader. That his essays are informative is the least of their virtues.

THREE FRIENDS: BEDICHEK, DOBIE, WEBB by William A. Owens; Doubleday & Co., Inc., Garden City, N. Y., 1969; 335 pages, \$6.95.

In the writings of Walter Prescott Webb, J. Frank Dobie and Roy Bedichek there is a rich depository of Texas lore and humor, Southwestern natural history, and a record of great humanistic concerns. The three men were compatriots for many years during their tenure at the University of Texas and afterwards. William Owens, named the executor of Bedichek's correspondence, brings together the notes and letters between the three. These express the great affection of their strong friendship and the exchange on topics of mutual interest which also fed their public writings.

The three men were involved in the University of Texas administrative battles during the period of the Rainey controversy, and their partisanship cost each in University advancement. Dobie, whose name had become a household word in Texas and beyond, was released from the school. Webb's promotion was retarded for a number of years. But their concern for the basic principles of academic freedom marks a deep con-

viction of the viability of criticism.

When he was quite young, Bedichek's family came to Texas to homestead. His mother and father were both school teachers, and although Bedichek made an attempt at farming, he was quick to admit defeat and turned to city life as teacher, newspaperman and associate of the University of Texas.

Webb, whose father was also a country schoolteacher, maintained an affinity with the land throughout his life. Dobie, raised near the Mexican border, retained a feel for horses and cattle and early in life gained a sense of the cadences of the Mexican language and the stories told by the cowhands.

Dobie, Bedichek and Webb came from rural surroundings — as did most Texans of the time — and they were each able to incorporate a knowledge and love of the country into their writings which record the passing frontier and its people. Although both personal and subjective, the writings of these men are a valuable history of a past era:

Together, they recorded a Texas era that, like them, will not appear again. The frontier, one of the chief shaping influences on their lives, is gone. With them, it was a constant element, not as an obsession but as an energizing force in their personal attitudes and the books they wrote. Naturalist, folklorist, historian — they all saw whatever they were writing through eyes farsighted from a lifetime of looking at unscarred horizons.

Owens, rather than creating an historical record, attempts to convey the multi-faceted relationship between the three men and the increasing depth of their exchanges. He admits to taking a subjective approach. "If objectivity appears at times to have been lost, it was lost because I feel the lasting effects of debts owed, of friendship unstinted." Of such is the stuff of readable biography.

But *Three Friends* is not a biography. It allows the unfamiliar reader only sketchy insights into the thoughts and relationships the three men shared. After reading the book, one must retain the strong sense of three full, busy, shared lives, but the actual content of those lives is largely left to the imagination. This problem must exist to some extent in any collection of letters. Only in rare cases has correspondence been maintained, either with an eye to future publication, or as the total record of a relationship. Letters usually act primarily as a stimulant to remembered qualities and affection, rather than as final statements of the content of the mind. *Three Friends* is undoubtedly a valuable addition to the Dobie, Bedichek or Webb scholar, but the casual reader might wish for a great deal more.

Owens assumes some familiarity on the part of his readers, but perhaps the

impact of the book upon any reader, knowledgeable or not, is the recognition and record of three fine and generous minds working in harmony, great affection, and mutual enrichment.

COATS AND COVERS by Solveig Paulson Russell; Illustrated by Frank O'Leary; Steck-Vaughn Co., Austin, 1970; 48 pages, \$2.95.

One of the earliest general facts children learn about nature is that all creatures adapt to their surroundings to insure survival. It is useful to trace one mode of adaptation throughout the animal kingdom, in this case, animal covering. It is even amazing to the adult reader how much variety in covering exists, and how little we think about the specialized functions the coat plays in any animal's life.

Russell mentions insects, reptiles, birds and mammals as well as humans in *Coats and Covers*. Black-and-white drawings accompany the text and illustrate clearly what the author describes. There is a fair amount of uncommon information, such as the practical reason for the ruff or mane on an animal, as well as some surprising bits such as the one-inch thickness of the elephant's skin, and the horns of the rhino which are not really horns at all but growths of skin.

Coats and Covers is written for children of approximately first to fourth grade level. Like the best nature books being written today, it includes general ecological information. This is an attempt to introduce a creature in its total environment.

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Long Shots, Short Casts

compiled by Neal Cook

Ocean Polluter: The International Oceanographic Foundation reports that the United States contributes from one-third to one-half of all industrial pollutants found in ocean waters around the world. One of the more serious pollutants man is pouring into the oceans is mercury. Between 4,000 and 10,000 tons of mercury each year are used by industry and agriculture; much of this ends up in the ocean. A few years ago the danger of mercury compounds as pollutants affected the Japanese people very graphically. Fifty persons died and many more crippled, blinded or made bald when methyl mercury chloride, a waste product in the manufacture of plastic, was dumped into Japanese waters, concentrated in the systems of fish and shellfish and then ingested by the victims.

Trees Breathe: One acre of growing trees provides four tons of oxygen a year, enough to support 12 people. In Texas, forests provide 46 million tons of oxygen a year, enough to support 138 million people. (Texas' population is presently about 12 million.)

Spanish Moss Setback: The Wildlife Management Institute reports that Spanish moss in several southern states seems to be dying. The reason for the unexpected disappearance has not been pinpointed, and everything from air pollution to chemical sprays and fluorides are suspected and under investigation. Moss mortality appears to be the greatest in Florida; although moss is also declining in Georgia and Mississippi. Ecologists are concerned about the problem because some birds feed on mites and other insects that live in the moss. Squirrels and some birds also use the moss in building nests.

Stringing Fish: When putting fish on a stringer, don't run the line through the gills. Metal or plastic snap stringers with swivels at each snap are best for keeping your catch alive. Be sure to run the stringer through both lips.

Little Bitty Babies: When opossums are born they are so small that 20 can fit easily into a teaspoon. At this time, they move into their mother's pouch and attach to a nipple where they remain for about two months. They then come out about the size of newborn kittens and often cling to the mother's fur for a piggyback ride through the forest.



Brilliant orange air sacs are especially evident when the males are establishing their territorial dominance during the booming period.

PRAIRIE CHICKEN **MOVING DAYS**

by Richard A. McCune

WHEN A RARE BIRD lives in an environment hazardous to itself and others, one solution is to relocate the bird.

Such was the case with a flock of Attwater's prairie chickens, an endangered species now numbering only a few thousand in several small bands along the Texas coastal prairies.

Pilots flying hundreds of takeoffs and landings

at Ellington Air Force Base near Houston were the first to be concerned, because of the possibility of a collision with one of the prairie chickens which made their home in the grassy strips between the paved runways. And, as springtime approached, the strutting males were more active than usual throughout the runway area.

Even though 70 chickens had been removed from



Capturing the birds with another bird — a mechanical one — was an unusual technique used in the Ellington prairie chicken roundup.



All the female prairie chickens follow the male which has established itself as king of the flock during the booming period.

the air base in late 1967 and relocated, there were again nearly that many at the first of 1970 — and a new nesting season approached.

The plan, then, was to get as many chickens as possible out of the heavy runway traffic and onto suitable habitat where they might continue to reproduce.

As they had done before, Texas Parks and Wild-





The chickens were carefully removed from the helicopter net to prevent their escaping.



Tags enabled biologists to observe the chickens in their new habitat.

PRAIRIE CHICKEN MOVING

life Department biologists who had been observing the birds called for assistance from pilot Joe Perroux and his U.S. Bureau of Sports Fisheries and Wildlife helicopter. Prairie chickens could be seen within several hundred yards even as project leader Bill Brownlee and biologist Dennis Brown fitted a strange device for catching the birds to the helicopter on the afternoon Perroux arrived.

The catcher consists of steel rod fashioned into an eight-foot semicircle and fastened to the front of the helicopter's skids. Fish netting covers the frame, and a short, weighted skirt of netting hangs down from the hoop. The pilot pursues individual chickens until they land and then tries to set the netting over them. In a game of aerial tag at speeds of up to 40 miles per hour, there is considerable flushing and landing between catches.

As the men made ready, the unsuspecting birds strutted in full view for one good reason: it was time for the males to settle the issue of territorial rights. In a ritual consisting mostly of fluttering and flapping, the males annually prance around and try to shoo each other away. For in each little band of prairie chickens, only one emerges as king of as many hens as he can attract for his harem.

During this period, brilliant orange air sacs on each side of the rooster's throat are puffed out to gaudy proportions, and blackish neck feathers are erected hornlike over the head. The accompanying vocal noise, called "booming," is eerie. It has been described as being like the sound made by blowing across the opening of a bottle.

Peak periods in the continuing territorial disputes are dawn and dusk. That is when the helicopter and one of the biologists on the team took to the chase during the six-day project. It went on virtually all over the miles-wide air base.

Often, an evening's work would result in the capture of only two or three birds, which the men placed in cardboard boxes used by hatcheries for baby chicks.

As they were taken, each bird was listed as male or female, and a metal band was attached to one leg. Greater prairie chickens (which includes the Attwater's variety) are considerably larger than the familiar Texas bobwhite quail. And while they are smaller than a ring-necked pheasant, they also fly much faster than that Oriental import.

Each remaining Attwater's prairie chicken is a precious symbol of a project being watched by a



Tags enabled biologists to observe the chickens in their new habitat.

DAYS



Before the prairie chickens were released, they were tagged according to their sex.

12-man committee including Department personnel, internationally known conservationists, landowners and other prominent citizens.

The lesser prairie chicken (found in the Texas Panhandle today) and the greater prairie chicken have dwindled on the American plains since the 20th century brought heavy agricultural demands on the grasslands. As their traditional feeding and nesting areas were turned by the plow, the flocks kept moving and diminishing.

Once considered abundant in Kansas, Texas and Oklahoma, the lesser prairie chicken is now hunted under strict regulations and the Attwater's prairie chicken is not hunted at all. Only eight counties in the Texas Panhandle had huntable numbers last fall for a two-day season in October with a bag limit of two per hunter per day. Each bird harvested had to be checked and tagged by Department biologists at check stations.

It is not yet known whether the Attwater's chickens will ever reach large enough numbers to justify hunting. Their range is roughly along the coast from south of Beaumont to north of Corpus Christi. There is still some suitable habitat left in the heavily-farmed region, and private projects

have restored some areas to make them suitable.

So it is with high expectations that the Department, the Attwater's Prairie Chicken Committee and other conservationists view the end result of the Ellington project.

A total of 44 chickens was captured in the 1970 effort, 27 males and 17 females. Seventeen were first flown to Texas A&M University where Dr. C. R. Creger of the Department of Poultry Science is conducting a study of the species.

The remaining birds were transported to the Garcitas Ranch in Victoria County, where bright red plastic strips were attached to help biologists observe their movements. During the 18 hours of aerial operations with the helicopter, two chickens fatally injured themselves. Only a dozen or less, too few to pursue, were left on the air base.

All the captured birds seemed to be in good condition. All but three flew off immediately upon release, and those were just having a little trouble with their wings.

No longer endangered by jets and propellers, the little flock was moved early enough during the booming season so that Department officials were hopeful for a successful nesting.

**



San Jacinto Monument erected in commemoration of Sam Houston's defeat of Santa Anna on April 2, 1836

Lockhart State Park has swimming, golf, picnicking and fishing.



Reagan Bradshaw



Richard Moree

Stephen F. Austin State Historic Park



Burial site at Monument Hill

John Suhrstedt



The Declaration of Texas Independence was signed in Independence Hall at Washington-on-the-Brazos in 1836.

John Suhrstedt



Washington-on-the-Brazos

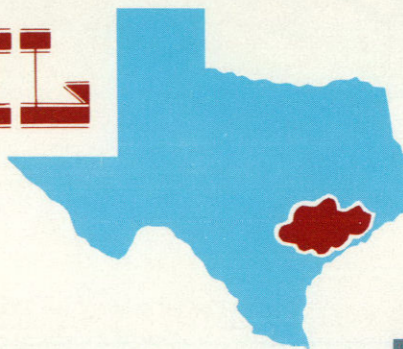
Leroy Williamson



Varner-Hogg Plantation, a study of colonial life in Texas from 1835-1850.

Ronald Perryman

TEXAS INDEPENDENCE TRAIL



by Mabel Lowry
Information Specialist

COLORFUL, dramatic and altogether unique, the history of Texas is preserved and interpreted for visitors along the scenic 585-mile route designated as the Independence Trail.

Most of the 13 State parks along the trail offer accommodations for recreation and outdoor living in addition to the wealth of history. The facilities promote longer and more in-depth visits to the purely historic shrines.

Three of the parks are entirely recreational. Palmetto State Scenic Park is an unusual botanical area which features many plants one would not expect to find in the region, including the sub-tropical palmettos which account for its name. The park's proximity to the San Marcos River makes fishing, picnicking, camping and hiking on the nature trail unforgettable experiences.

Buescher State Recreation Park's delightful lake,

Bill Duncan



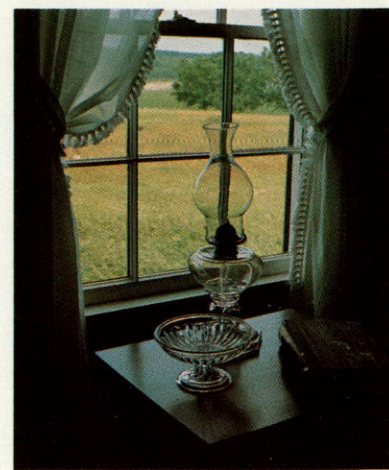
Ronald Perryman



John Suhrstedt



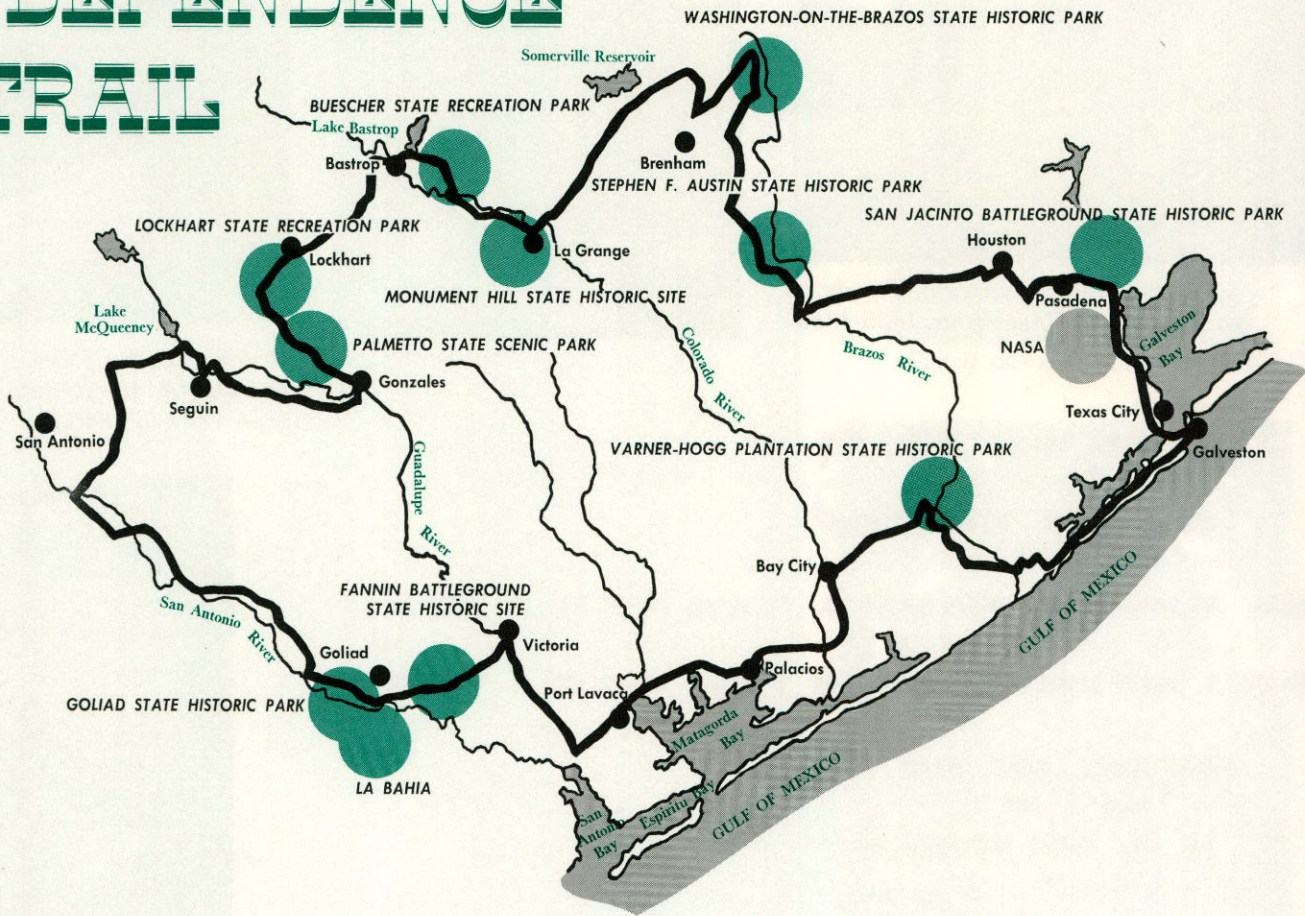
Home of Anson Jones, President of the Republic of Texas from 1844 to 1846.



John Suhrstedt

Bastrop State Park offers recreation for every taste.

TEXAS INDEPENDENCE TRAIL



camp and picnic sites and large recreation hall provide a popular place for family gatherings.

A swimming pool, bathhouse and golf course at Lockhart State Recreation Park add contemporary interest to the area's historic heritage as site of the Battle of Plum Creek in 1840 — a victory against Comanche warriors returning from a successful raid on the Gulf Coast.

A portion of the old township of San Felipe de Austin, seat of government for Anglo-American colonization in the 1830's, is situated within Stephen F. Austin State Historic Park. Several founding fathers of the Republic of Texas resided there, and a replica of Stephen F. Austin's home is the park's principal exhibit. Fishing is good on the Brazos River, and there are ample accommodations for swimming, golfing, hiking and nature study.

Texas history as interpreted throughout the State parks seems as immediate as today's headlines. Through the parks the saga of the revolutionary movement in Texas can be traced both geographically and chronologically.

The tragic story of Colonel James W. Fannin's ill-fated surrender to General Jose Urrea is unfolded at Fannin Battleground State Historic Site. Near Goliad State Park a memorial shaft marks the common grave of Fannin and 342 other prisoners of war slaughtered by order of Santa Anna on March 27, 1836, in the Goliad Massacre.

A replica of Mission Nuestra Senora del Espiritu Santo de Zuniga, a Spanish mission founded in 1722 and moved to the San Antonio River site in 1749, lies in Goliad State Park.

One-half mile south of the park's boundary is the restored Presidio Nuestra Senora de Loreto de la Bahia. Both of these structures, referred to simply as La Bahia (The Bay), illustrate the presidio-mission system which Spain established in Texas in her attempt to colonize the territory and civilize its savage native inhabitants. The presidial settlement of La Bahia became the town of Goliad in 1829, its name an anagram of the Spanish (h) idalgo, or gentleman.

Everybody "remembers the Alamo," but few



Mission in Goliad State Historic Park and, below, the Presidio located nearby.

realize that Texas independence was born and nurtured at Washington-on-the-Brazos or that this little-known spot on the Brazos River is the true heartland of the revolution which threw off the yoke of Mexican domination.

Here the Texas Declaration of Independence was formulated and signed in 1836, and the town became the first capital of the Texas Republic. A nearby plantation was the home of Anson Jones, last president of that republic. These historic events are immortalized at Washington-on-the-Brazos State Historic Park, which features an auditorium and amphitheatre, a restoration of the Anson Jones home and a museum housing authentic artifacts.

Picnic sites and a children's play area help families combine recreation with historic study.

The decisive battle of San Jacinto on April 21, 1836, spelled victory for the insurgents. At the site of San Jacinto Battleground State Historic Park, General Sam Houston and 910 Americans completely routed the numerically superior forces of Santa Anna in a battle which lasted only 18 minutes. A monument to the heroes of San Jacinto towers over the extensive park and is the focal point for visitors. Informational markers and a museum of exhibits relate the history of the battle — its leaders, its significance and its dramatic events, including the wound suffered by Sam Houston and the capture the following day of the Mexican general, Antonio Lopez de Santa Anna. The debacle of the Mexican forces can be credited to Houston's leadership and the aroused patriotism of his volunteers, who sprang forward with cries of "Remember the Alamo!" and "Remember Goliad!"

Additional attractions at the San Jacinto Battle-

ground Park include an elevator ride to the summit of the 570-foot obelisk and a spectacular view of the ship channel and skyline of Houston; the battleship *USS Texas* which is anchored nearby; De Zavala Plaza, honoring Lorenzo de Zavala, an interim vice-president of the Republic; and numerous historical markers.

Originally owned by Martin Varner and settled in 1824, the property incorporated in Varner-Hogg Plantation State Historic Park was purchased in 1901 by Texas' first native-born governor, James S. Hogg, and became his well-loved country retreat.

This graceful nineteenth-century home has been restored and authentically furnished in the style of the period. It contains many valuable paintings and portraits, furniture, objects of art and priceless documents of the Confederacy as well as of Governor Hogg's tenure as Attorney General, 1887 to 1891, and his administration as governor from 1891 to 1895. Guided tours and clearly identified exhibits enable visitors to capture the true picture of colonial life in the early days of Texas.

Of the 10 trails individualized for travelers in the State, the Independence Trail probably caters to more diverse interests and offers the widest variety of scenery.

Facilities for recreational and cultural activities are available all along its route, which includes or skirts the metropolitan areas of Houston and San Antonio as well as the cities of Pasadena, Galveston and Victoria.

Festivals, scenic overlooks, bird sanctuaries, stagecoach inns, the Astrodome, a countryside blanketed with wildflowers and trees, ranging from lordly pines to the scrub mesquite, beaches, lakes and historic landmarks can all be enjoyed by those who drive the Independence Trail. **



Reagan Bradshaw

Masked Mischief- Maker

by Rebecca Welch

KEENLY alert, avidly curious and hyperactive, raccoons are enjoyed as pets and hunted as challenging game. They appear to be in a constant state of motion, exploring their environment, touching and manipulating whatever their hands can reach. Indian myths are rich with stories and legends of raccoons, and even today they play an active part in Southern lore.

There are certain conceptions, both true and false, which humans hold about their fellow creatures. It is generally thought that the most distinctive trait of the raccoon, *Procyon lotor*, is that he washes his food before eating it. This conception is reflected in the second part of his scientific name, *lotor*, meaning "washer." The notion is somewhat misleading, however, in that, while the raccoon submerges not only his food but nearly every foreign object he contacts, he is not necessarily washing it. In fact, the name "raccoon" is derived from the Algonquin Indian word "arakun" which means "he scratches with his hands."

In keeping with the Algonquin

idea, naturalists are inclined to believe that raccoons feel or investigate rather than wash their food. There have been many cases in which, upon being given a piece of meat or other food, raccoons retreat to solitude and handle it thoroughly, using the same motions as washing without ever dunking it in water.

Comparatively, the raccoon is a small animal, adult males weighing 13 pounds on the average, but he is a fierce fighter when confronted and is said to easily dispense with a dog his own size. As most hunters are aware, few small dogs have the courage to attack a raccoon. His fierceness is not a bluff—the raccoon's strength is far out of proportion to his size. It has been said that when a raccoon can secure a good hold on a tree, he is capable of supporting the weight of a 200-pound man hanging onto his tail.

Although courageous and fierce when attacked, the raccoon is, on the other hand, well regarded as a pet because of his generally pleasant temperament and his unusual and winning appearance. Peculiar to the raccoon is the black

"burglar's" mask across his face and the extremely bright, reflective eyes which peer from it. The mask is black, setting it off from the other hair, which is lighter in color. The general color of the animal is grizzled brown, gray or yellow, and the coloration may vary greatly depending upon geographical location. In Texas the raccoon is predominantly gray, his coat suffused with orange and some buff.

Five to seven rings encircle the raccoon's tail, which measures 10 to 12 inches. Although the tail is not useful as a grasping tool, the raccoon often uses it to brace himself when he sits or as a balance when climbing. One of its more unusual functions is to store surplus body fat for the winter.

The raccoon's eyes are bright and equipped with a reflecting mirror built into the rear of the eye, affording the raccoon visibility in partial darkness. He is a nocturnal animal, coming out at dusk, if young, and closer to midnight and feeding until dawn, if older. His keen eyesight is a great aid in nighttime hunting.

Animal material is the main-



M. GOWAN

Masked Mischief- Maker



stay of the raccoon's diet in the spring. In some sectors of the country, young muskrats are consistent victims of raccoon predation. Whereas adult muskrats can easily escape, the young are helpless in their grass houses. Fish and other water creatures are also an important food source during this period. In marsh areas raccoons may change their nocturnal feeding habits to await a low tide and the resulting disclosure of tasty water creatures.

During the warm summer months when food is plentiful, the diet of the raccoon consists primarily of vegetable material. Every kind of berry is avidly consumed — hackberries, strawberries, raspberries, blackberries, blueberries and gooseberries are among the favorites. Most desirable, to the frustration of the farmer, is sweet corn. When the kernels are fullest, raccoons go on virtual corn-eating binges, devastating large patches and destroying more than they can eat in their eagerness.

Fall introduces a number of insects into the raccoon's diet. Crickets and grasshoppers are abundant, and insects, along with nuts, comprise the major fare. He also enjoys fall apples and crayfish, a year-round favorite. Throughout the fall the raccoon eats voraciously, for with the advent of winter, the raccoon's eating slows considerably, and he is forced to rely greatly upon his collected fat stored during the fall.

The den, selected for the winter, may be in a hollow tree, although

raccoons have been known to occupy woodchuck burrows, empty chimneys or houses, the areas under buildings, brush piles, fox dens or squirrel nests high in trees. They are inventive and use whatever appears to afford protection and warmth. Although the raccoon does not build a nest, she may "pat" or arrange material found in or around the den. Hollow trees usually contain a great amount of soft wood and wood particles, which create a comfortable den for the winter and for the birth of the young.

Raccoons do not hibernate in the strict sense, although they undergo periods of great lethargy and sleep throughout the coldest months. During severely inclement weather, they remain in their dens, but when the weather moderates, they venture forth for food, returning as quickly as possible to the den.

During this period the raccoon is much less particular about his diet than at other times. He may rely heavily upon trapped furbearers, and the muskrat population is again under seige. In general, raccoons eat whatever is available and have little difficulty in living through the winter if enough fat has previously been stored.

Every year beginning in late winter, the coat is partially shed. Starting at the head and working back to the tail, the hair comes out in large patches, giving the animal a ragged appearance in contrast to his usually healthy coat. The heavy coat has served the animal well during the winter

because it is dense, durable and warm.

By January or February the males venture out seeking females, and breeding occurs in late winter. The young are born and weaned in the den the female has occupied throughout the winter.

The little blind, furry raccoons weigh approximately two ounces at birth. Four or five is the average number in the litter. The mother takes solicitous care of the young, allowing nobody including the father, near the litter. In general, the baby raccoons remain in the den in which they were born, but if disturbed consistently, the mother may carry them by the scruff of the neck, cat-fashion, to a new location.

By the time the babies are 10 days old, the black mask is clearly discernible, and other markings have begun to resemble those of the adult. In another 10 days the eyes are open, although vision is somewhat unfocused and hazy. When they are 8 to 10 weeks old, the baby raccoons venture out of the nest and try, often with mixed success, to climb. They often become trapped at the top of the tree, squalling for help, since it is easier to go up than come down.

After a brief time, however, baby raccoons gain great facility in climbing. As adults they spend a great deal of their time in trees; they rest, escape, even sunbathe in a crotch or high branches of a comfortable tree. Raccoons are able to run nimbly along the tops of branches or hang onto the flimsiest limb, and they almost never fall from a tree. Even if losing their balance, they can quickly catch themselves and with great agility maneuver themselves into a sure position, even if hanging upside down.

Raccoons are quick to learn, and tests indicate an excellent memory and a great ability to concentrate on any work or new task. They learn quickly to adapt to new circumstances and are capable of storing memories to aid in adaptation.

Raccoons are inventive when

hunted or trapped. There are numerous stories of the tricks played on dogs by raccoons, and a great deal has been written and believed about raccoon "reasoning." There is no proof that raccoons are capable of special planning or reasoning, but it is true that they are quick to adapt to new circumstances and new surroundings. As mentioned before, raccoons are insatiably curious, and their mental facility sometimes leads them

into unfortunate situations, but usually creates new possibilities for survival.

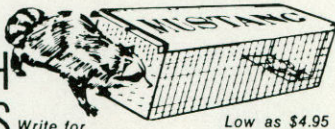
Evidence of the raccoon's adaptability is his presence throughout most of North America and in some parts of Central America. There are 19 subspecies in the United States and 33 throughout the world. The subspecies differ primarily in their geographic location and slightly in color and size. Their numbers remain at a

high level and they appear to prosper even when their environment undergoes changes. Many naturalists consider the raccoon to be the most adaptable wild creature on earth. * *

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Opuntia engelmannii by Reagan Bradshaw



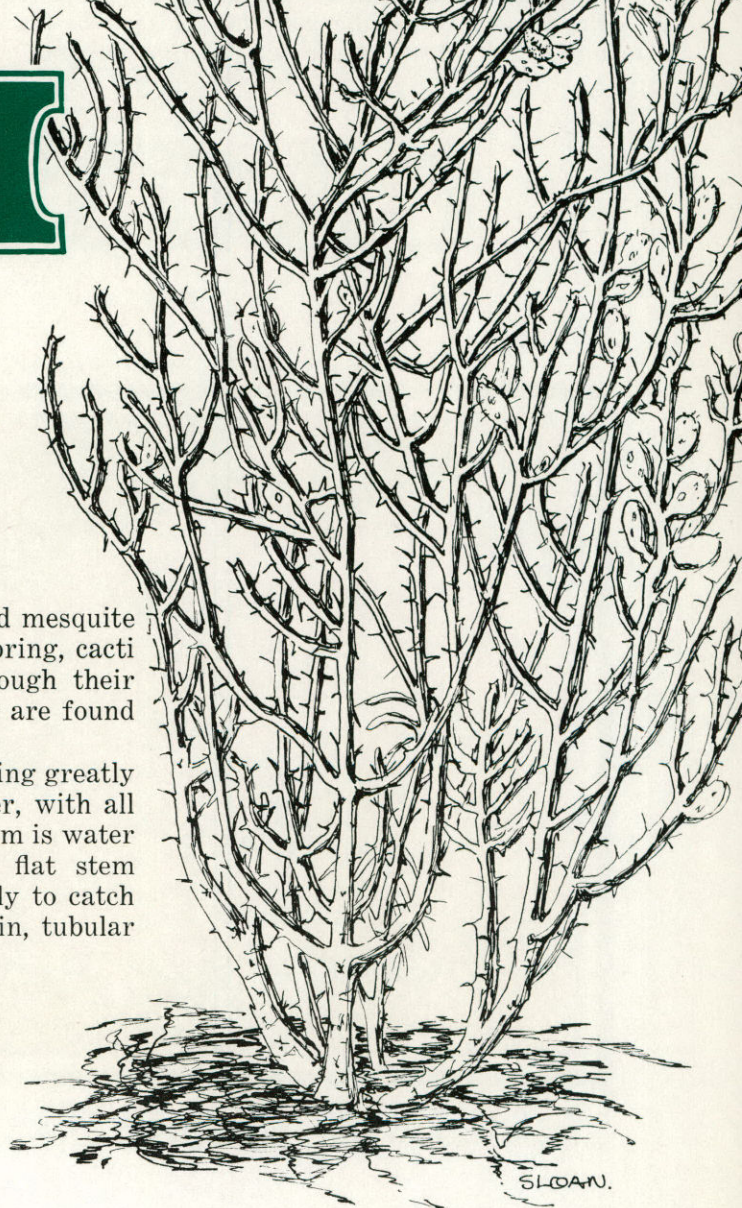


CACTI

by Rebecca Welch

STANDING SENTINEL over austere stretches of rock and mesquite or nesting amid lush vegetation during the Hill Country spring, cacti of some variety are familiar plants to all Texans. Although their greatest development is in the arid or semiarid areas, they are found from the tidewater to the Trans-Pecos.

In the desert there are 1,200 to 1,800 species of cacti varying greatly in shape and size of branches, spines and flowers. However, with all members of the cactus family, Cactaceae, the purpose of form is water retention. Those with accordion-pleated stems or with flat stem segments shaped like bellows can expand quickly and easily to catch water in the brief, occasional spring showers. Even the thin, tubular





Prickly pears are edible, and the stems can be made into jellies or used to feed cattle during droughts.



Like all cactus the "strawberry cactus" is especially adapted for holding water.

CACTI

variety are formed to retrieve maximum moisture from the dry soil in which they often grow.

The flowers, often blooming for only a couple of days or nights, are brilliant splashes against an often gray-brown landscape. Colors range from delicate yellows through saffron, white, pink and flaming magenta.

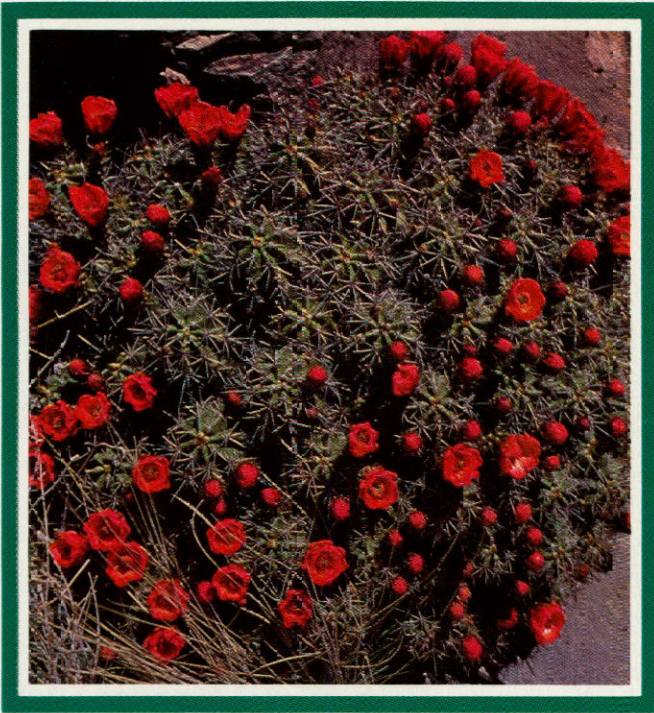
Names of the various species are colorful and



The tiny interwoven spines beneath these flowers gave this plant the name "lace cactus."



The "green-flowered torch cactus" is a popular house plant because it is pretty and easily tended.



The shape of these flowers gave this cactus its name — "claret cup."

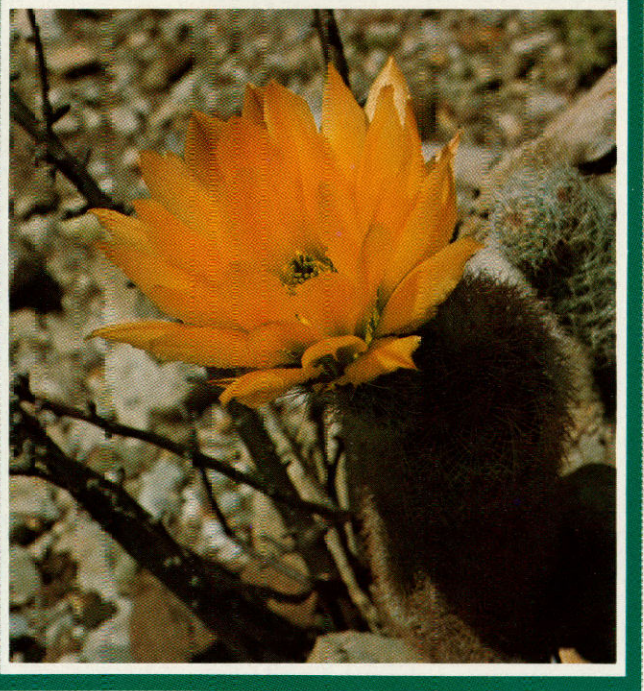
often adopted for visual reasons—deerhorn cactus, candle cactus, walking-stick cactus, dollar-joint and cow-tongue. The Sonora jumping cholla is so named because the joints readily attach themselves to objects touching them, seeming literally to "jump" onto the clothing and skin of people or the fur of animals.

Records made by early Texans mention the

Opuntia imbricata by Richard Moore



The "walking stick cholla" can be carved into odd walking sticks or grown for a fence.



Nearly all members of the genus *Echinocereus* are called "rainbow cactus."

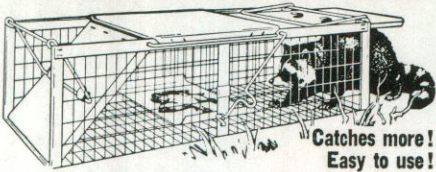
cactus' hazards to travel. According to one report a group of travelers, tramping through a thick covert of mesquite chaparral with prickly pears growing liberally in it, "ran prickles into their legs." Texans are still running prickles into their legs, but appreciation of these hardy and adaptable plants remains undiminished, and the cactus has become a symbol of the Southwest. * *

Reagan Bradshaw



Yuccas are often thought of as cactus, but they are actually members of the lily family.

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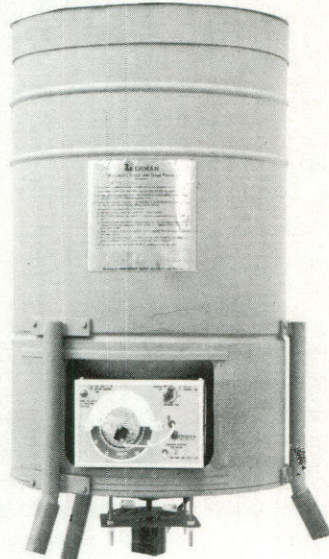
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Junior Sportsmen

by Patti Swain

FOR CENTURIES clouds have been a daydreamer's delight. Viewed from hillside meadows and through classroom windows, clouds have been a source for the most vivid reveries. Clouds can be visualized as being almost anything from men to mountains.

In addition to the visions clouds may inspire in the imaginative mind, they also serve as accurate weather indicators for campers, hunters and other outdoorsmen as well as weathermen. A knowledge of basic cloud types and formation can enable even the amateur forecaster to make correct predictions.

Clouds form when warm, moist air rises and cools. The cooling causes water vapor in the rising

air to condense on dust particles. Temperatures at the condensation level determine whether the water vapor forms ice particles or takes a denser, lower hanging form.

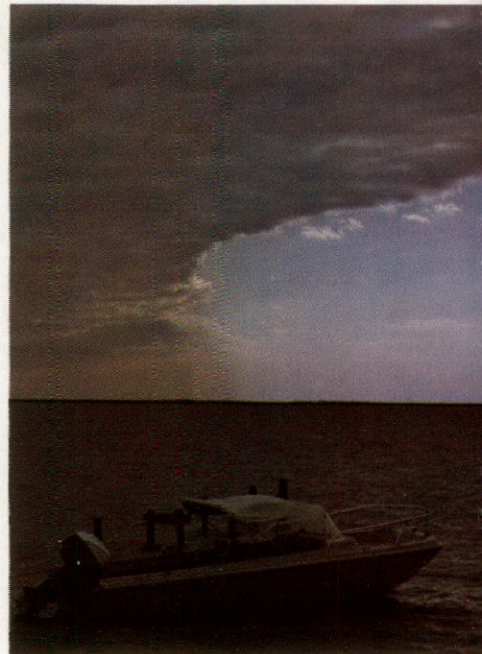
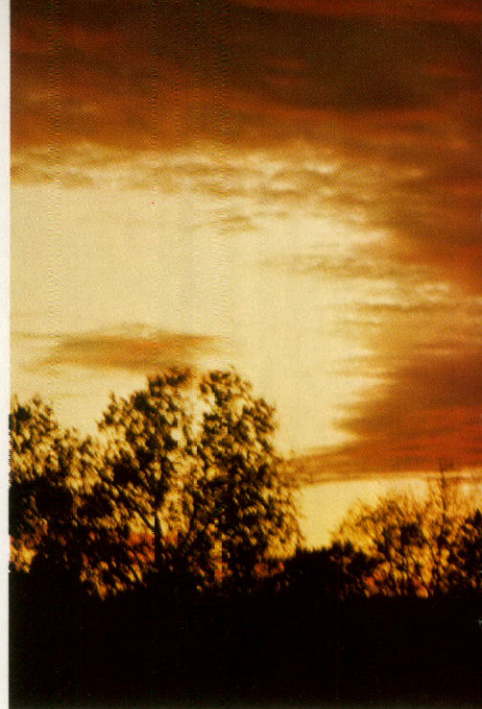
For easy reference in weather forecasting, clouds have been named and separated into categories basically according to form and altitude. The main cloud types are: *cirrus*, *cumulus* and *stratus*.

Cirrus, meaning "curl," clouds are often called "mares' tails" because of their wispy hair-like appearances. Because they are the highest of all clouds, condensation forms ice crystals, which make up the *cirrus* clouds. *Cirrus* clouds usually indicate good weather if moving from the north.

The big, billowy clouds, noticed

by most people because of their white puffy appearance against a blue sky, are *cumulus* clouds. The name originates from the Latin word meaning "heap," which is descriptive of the form which *cumulus* clouds assume. These clouds occur most often in the summer when temperatures are high, and they usually indicate fair weather. The height of the clouds varies according to humidity. Altitude may range from 1,600 to 35,000 feet.

Stratus clouds are thin flat clouds which spread into layers covering the sky. They resemble fog, but usually do not rest on the ground. The base of the cloud is never higher than 6,500 feet. Most prominent in winter, *stratus*



clouds often indicate bad weather.

These are the basic cloud formations. Most often, however, a single type of cloud does not appear alone, but in combination with other types. For example, any dark and ragged clouds from which precipitation is, or has recently been falling, or is threatening to fall, are called nimbus clouds. Usually the nimbus cloud is mentioned as part of a combination of clouds such as cumulonimbus where what was formerly a cumulus cloud has turned into a dark thunderhead nimbus cloud.

In addition to cloud combinations, two other terms further distinguish cloud formations. The prefix *alto* is attached to clouds occurring at middle altitudes (6,500 to 20,000 feet). Clouds at this level may be similar to cirrus clouds, but *alto* also indicates that cloud formations with this prefix usually occur in larger masses.

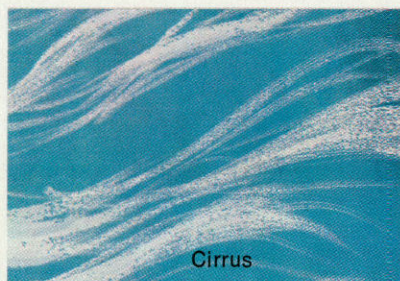
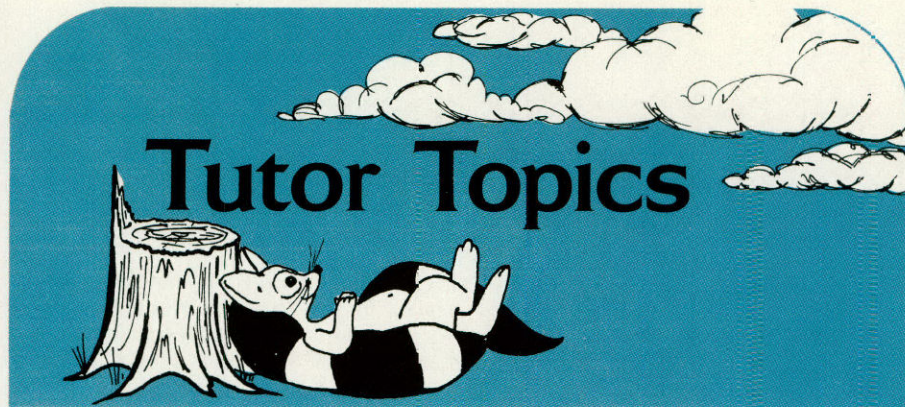
The term *fracto*, meaning broken, is sometimes attached to cloud combinations. Usually *fracto* is used only in reference to clouds at lower elevations.

The degree of cloudiness is gen-

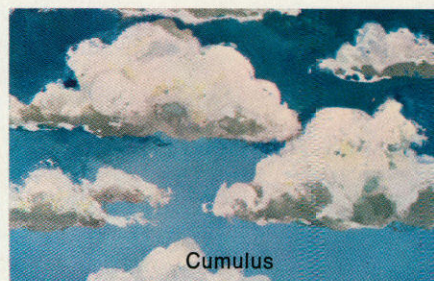


erally measured by the part of the sky covered by clouds. If the clouds cover up to three-tenths of the sky, it is considered clear; from four- to seven-tenths, partly cloudy; and over eight-tenths, cloudy.

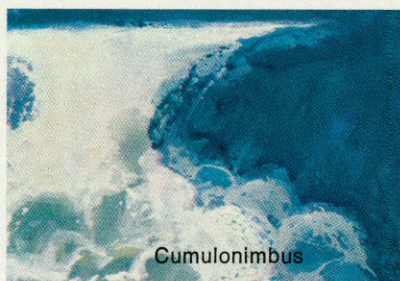
Professional weathermen use the most intricate equipment in predicting weather conditions. For the amateur these tools are not available; however, with general information on wind and cloud conditions, he can forecast weather conditions with considerable accuracy. * *



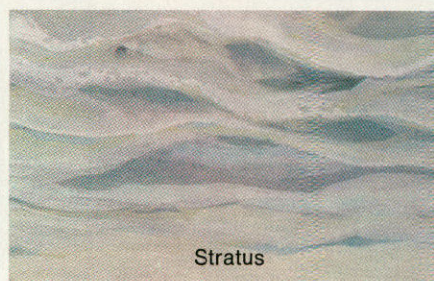
Cirrus



Cumulus



Cumulonimbus



Stratus

Match the definition with the correct word or combination of words:

1. Cirrus
 2. Cumulus
 3. Alto
 4. Fracto
 5. Stratus
 6. Nimbus
- a. a cloud formation which may start out as a few lofty summer clouds but eventually builds into a boiling black thunderhead
 - b. the highest clouds
 - c. a common cloud covering which usually occurs in solid layers rather than in clusters
 - d. a middle elevation formation of cirrus clouds in larger masses than regular cirrus clouds
 - e. puffy white clouds usually visible on a warm sunny summer day
 - f. a broken layer of clouds from which precipitation frequently falls
 - g. name derived from the Latin word meaning "heap"
 - h. mare's tails

(See page 23 for answers)

Letters to the Editor



Sassafras Stock

In your January 1970 issue in the *Outdoor Notebook*, you discussed the sassafras tree. We were particularly interested in your coverage of the tree's value as a wildlife food tree.

We have a farm between Smithville and Bastrop which we are developing. However, we are leaving a large amount of land untouched to help preserve the wildlife in the area. These 80 acres are covered mainly by oak, cedar and yaupon. Whenever possible, we would like to further the food production ability of these woodlands, and your discussion on the sassafras had led us to believe that it would be a welcomed addition.

We would like to have any additional information you might have on the sassafras. Additionally, we will need to know how and where we can obtain a few hundred saplings. We would prefer larger trees, of course, if they are available.

William D. Foster
Houston

Sassafras should be a good species for you to develop as its fruit are taken by deer, quail, turkey and many songbirds.

The only source we know of is transplanting of wild-grown plants. This should be done in winter. Survival will be better with smaller plants and with seedlings instead of sprouts. Since the species is widespread, you may be able to find some nurseryman who can supply wild plants.

We would expect the plants to develop slowly and take several years to make first seed. There may be some existing rootstock on your place as it is sandy and includes such plants as yaupon. It would be much faster to encourage existing plants if they should begin to appear.

Two factors seem important: space and light are required. More well-developed trees are found in open situations.

The young plants will need protection until they reach 10 feet or so, if cattle are grazing in the area.

Rail Hunting

I have just returned from a delightful vacation spent in Texas. The reason for my going was to see the birds and plants in the Rio Grande Valley. I enjoyed more than I can tell you the experiences I had in the Santa Ana Wild-

life Refuge and Bentsen-Rio Grande State Park, and hope to return in a year or so for a longer visit.

In going through some of the brochures from your office, I note the information in "Migratory Game Birds Hunting Digest" that one can hunt rails, gallinules and snipes. I am most surprised at this since some of the rails are on the endangered list and snipes are very rare. Do people eat these birds?

With so much DDT stored in the fatty tissues of fish and birds, I should think that most people would be somewhat apprehensive about eating wildlife at this time.

Bess H. Dickinson
Orange, California

It is correct that people are permitted by both state and federal regulations to hunt rails, gallinule and snipe. Snipe are hunted in 42 states, gallinules are hunted in 40 states, and rails are hunted in 34 states. None of the species that are hunted are endangered. It is true that there are some endangered rails, but these are species that are native to the Hawaiian Islands.

These species are seldom hunted in any of their range as the habitat in which they live is generally too rugged for the average person to go. Also, the need for specialized equipment for the hunting of these species limits the people who are willing to go after them.

It is true that these species have DDT, DDE, and other chlorinated hydrocarbon compounds in their tissues, but they do not accumulate these substances as much as some of the higher level carnivores. These species are also generally skinned before they are eaten and this tends to eliminate the subcutaneous fat deposits in which many of these substances are stored.

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BACK COVERS

Inside: In Texas the yellow-crowned night heron inhabits overgrown waterways and swamps rich in fish. Photo by Reagan Bradshaw

Outside: The *Echinocereus pectinatus*, better known as a rainbow cactus gives rise to this beautiful bloom from June to August. Photo by Reagan Bradshaw.



