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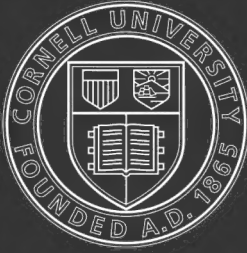
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TEXAS
NATURE OBSERVATIONS
AND
REMINISCENCES

BY
R. MENGER, M. D.



SAN ANTONIO, TEXAS
GUESSAZ & FERLET COMPANY
1913

Biographical Sketch of the Author

Dr. Rudolph Menger, of San Antonio, is a native of Texas, and was born in that city in 1851. He is the son of Simon M. and Augusta Louisa Menger, both parents being natives of Thuringia, Germany, who came to Texas in 1846, landing at old Indianola. Mr. Menger had been well educated in Germany, was a thorough musician, and had there taught school and music. From Indianola he pushed inland to Comal County, and located on a farm near New Braunfels; at the same time he began teaching vocal music. He moved to Bexar County, and located on a farm a few miles from San Antonio, and from his home he rode into San Antonio and gave singing lessons. Then he located with his family at Boerne, Texas. About 1850 or a little earlier, he moved to the city, and probably continued teaching music incidentally for several years. About 1858 he started a soap factory, the first ever conducted in all the southwest. Several of his sons were associated with him in business, as they grew to manhood, and his son, Erick, conducted the business later on. August went to Houston and started in business there for himself, and established a flourishing business which he conducted until his death, in 1893. Two sons, Oscar and August, served in the Confederate army; August served until the close, but Oscar was twice severely wounded, and disabled from his wounds, and was compelled to return home. The father died in 1892 at the ripe old age of eighty-five years; he was a prominent Mason. The mother had died some years prior. Our subject's primary education was secured in San Antonio, at the old German-English school on South Alamo street, and he began life as a clerk in Kalteyer's drug store, and then under the able instructions of the proprietor, he also began the study of pharmacy. He was thus engaged from 1866 to 1869, when he went to Germany, and entered the University at Leipsic, in Saxony, where he began the study of medicine. He spent five years in study there, and graduated in November, 1874. He returned at once to San Antonio, and became assistant surgeon in the United States army until the close of 1875, when he was appointed city physician, and served until 1881; then for several years he devoted his time to his private practice which became quite extended. In 1892, he was again appointed to the office of city physician, where he served in that office to the satisfaction of all. In fact, he greatly improved the appointment of the city hospital, and that institution under his direction was almost perfect in its operation and utility. He also has a large general practice; had been an active member of the West Texas Medical Society, and contributed freely to various medical journals. He was for a long time medical examiner for the New York Life Insurance Company, and many other old line companies. He was married in 1879, to Miss Barbara C. Menger, a native of San Antonio, and daughter of William L. Menger of the same family name, but no kin. Her father was an old and well known pioneer to San Antonio, from Germany. He erected the Menger Hotel, one of the finest hotels in all the United States, and a popular resort to all visitors to the Alamo City. He was a very prominent and active citizen of San Antonio, and started the first brewery in the city, conjointly with Charley Degen, lately deceased.

To the union of our subject and wife eight children have been born: Minnie, (now Mrs. Wm. R. Hoffman), born July 4th, 1880, Edward, August, Louis, Gustave, Rudolph, Theodore and Margaret Menger. The sons all have prominent and responsible positions, and the elders are the proprietors of the elegant "Menger Apartment House" on East Commerce Street.



THE AUTHOR

Preface

This little work of "Private and Personal Observations and Reminiscences" is dedicated to all friends of Nature, and to San Antonians in particular. It is not pretended to be a strictly scientific work, though based on scientific principles, but more a popular and responsible treatise on Nature observations around San Antonio, the most up-to-date and metropolitan city of Texas; with over 100,000 inhabitants, with unexcelled climate, sanitary surroundings, artesian water supply, sewerage system, unmatched public utilities, superb city parks and amusement resorts, up-to-date public buildings, a world-famed military post, and last but not least, unequaled historic reminiscences. It is a treatise on insect and animal life, and some outing and hunting reminiscences in particular; and it is nearly all a reprint of original articles published lately in Texas Field and National Guardsman, of which Colonel O. C. Guessaz and Louis A. Guessaz are the editors, and to whom the writer is indebted for many courtesies. Also is the writer indebted to the San Antonio Daily Express for the loan of engravings from original photos by the writer, and to Mr. Albert Friedrich of San Antonio for the loan of the elegant halftone plates of his unexcelled collection of Texas deer horns, etc.

A work of this kind takes many years of personal and accurate observations and reliable original data, as well as up-to-date and original illustrations of each subject, and, in how far this has been accomplished, is left to the kind judgment of the reader.

For want of space, time and chronological data, it would be futile to attempt writing a detailed description of "Old San Antonio," of which only a few works exist, and among these the newest and best is written by Charles Merritt Barnes, entitled "Combats and Conquests of Immortal Heroes," published by the Guessaz & Ferlet Company of San Antonio, Texas (1910). It is a work of superior merit and profusely illustrated with early day scenes.

THE AUTHOR.

OBSERVATIONS ON TEXAS INSECT AND ANIMAL LIFE IN GENERAL

With Reference to the Objects Seen on the
Miniature Views Herein in Particular

Formerly the quaint and historic old Spanish-Mexican town of San Antonio, now the Metropolis and pride of Southwest Texas, due to its semi-tropical climate and luxuriant vegetation and soil, in its frontier days harbored a large number of dangerous insects, which nowadays are nearly extinct; but the scorpion and centipede, and a few others of its kind, are yet occasionally met with along the river bottoms, under old bark of trees, under large, flat stones, and among accumulated debris after a flood. Though dangerous, they are not as fatal in their venom-inoculation, as for instance, some variety of scorpions and centepedes of tropical Mexico; however, their repugnant appearance is enough for us to let them, as many other poisonous insects, severely alone.

Being a great friend of outdoor life, whenever opportunity allowed it I had lots of practical experience in my younger years to study all kinds of Texas insects and animals during hunting and outing tours; and after, or during such trips also prepared a nice photo collection of various of the Texas fauna of Southwest Texas. A small part of this collection is represented in the miniature photo submitted herewith, on page 6, the original objects being prepared on 4x5 plates, while the entire original framed collection is 26 by 33 inches in size.

It would be going too far, enumerating in detail all the objects of this miniature photo collection; some of them, however, undoubtedly will interest the readers, for

instance, the first upper object representing the headparts with poison fangs of a very young Texas centepede which was, when alive, hardly two inches in length, and which shows how boldly, even at this remote age of its existence, the poison fangs are already developed, as also the feelers and mandibles, and is readily seen on the original and highly magnified photomicrograph of this same insect. In the third lower row, a centepede is depicted, which was about six inches in length, and captured in a stable by a friend, (Edw. Heusinger, Esq., Secretary of the San Antonio Scientific Society.)

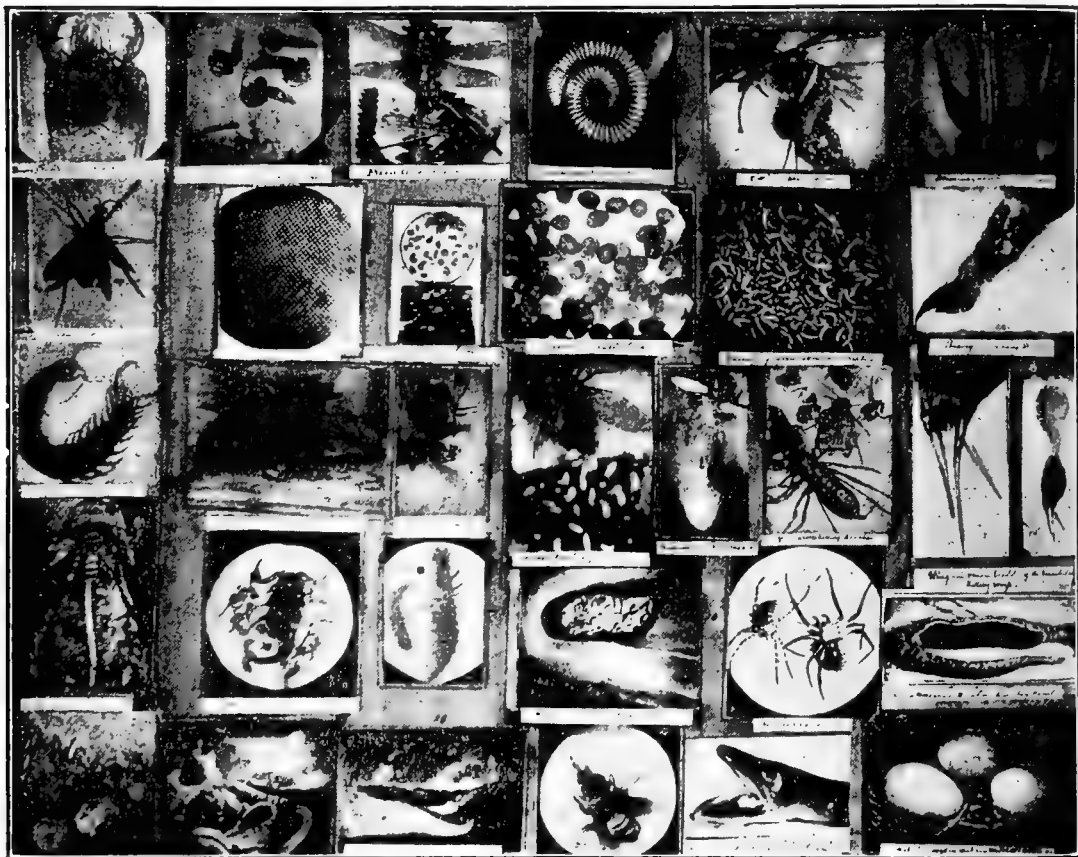
During an outing in the hills of Helotes, north of San Antonio, the writer once came across one of the attractive and globular *Cereus Cacti* in full bloom. It was one large conglomerated bundle of about ten or twelve cactus, one ingrown close to the other, so as to form a perfect rounded mound, the size of a large bucket; and, for reason of its attractive blossoms of golden-yellow color we were induced to dig the entire conglomeration out for transplantation at home. First we tried this with a piece of mesquite wood, and, after coming down to the roots of the cactus, I put my right hand under the loosened plant in order to give it the final lift. As quick as lightning, however, I withdrew my hand, for I received a fearful and excruciating sting in my index finger, from a large female scorpion, which had prepared its breeding nest in a furrow leading toward the

base of that cactus, close to the roots of same.

The sting was so painful that, in spite of some chloroform used, it lasted the entire day. Usually on such trips I carried my emergency box with me, containing a few necessary surgical appliances,

photo, also seen in the miniature collection, (second last row) after having chloroformed all the scorpions.

The following statistics of the tropical scorpion show same to be a more dangerous type than the Texas variety:



MINIATURE PHOTO COLLECTION OF TEXAS INSECTS AND OTHER ANIMALS

and also a hypodermic syringe, carbolic acid, cocaine, iodine, permanganate of potassium, camphor, etc., and some of these appliances would have given instant relief.

Before disposing of the large scorpion and its young brood, which were quite fully developed already, I managed to prepare a

From an authentic official source from a border town of Mexico, the following deaths occurred from the stings of scorpions (mostly children of the poor, and a few peons rambling around barefooted at night): In 1906 fifty-four deaths occurred; in 1907 fifty-one deaths; and in 1908, forty-seven deaths.

Formerly, the report said, many more deaths occurred, as scorpions were then much more numerous, and a bounty has been paid for nearly 100 years for the extermination of scorpions in Mexico. (Official figures from Probate Office in Mexico, at Durango.)

These statistics, as compared to our North American scorpions show that our scorpions are a rather harmless creature as far as death-

Mexican scorpion as compared to our Texas variety. It is of nearly one half size longer and of a light yellowish-brown color, and its tail end venom receptacle harbors a most poisonous fluid which it injects through its needle-sharp and curved tail-end-claw. This specimen was sent to the writer by Dr. Jackson of Durango, Mexico, and it killed a mouse in confinement with same, the experiment



A TEXAS SCORPION WITH YOUNG ONES

cases from same are concerned, and as to Southwest Texas, no deaths from the scorpion bite are recorded in the official mortuary records of San Antonio, as far as twenty or more years back. (Jno. U. Mueller, Secretary of San Antonio Bureau of Deaths, having looked up this record for me.)

The separate photo-view of three scorpions in natural size, shows the great difference in size of the

being conducted by my friend, Dr. A. Lange, veterinary Surgeon of San Antonio. Such experiments, I may add, whilst they appear horrid to some, it should be remembered that mice and rats, being great public nuisances, they are often cruelly dealt with by drowning or strangled to death in traps, or poisoned, and a chicken or a turkey's head is without much feeling, chopped off

with a hatchet, a daily occurrence, and hogs killed with a butcher knife—all offer a slow death and the incarnate fiend in human flesh, the murderer, stabs or shoots a fellow being to death without much warning. The venomous animals, however, in seek of food or as a means of self-defence

found on a prairie in a hilly region, below a large conglomerated globular cactus where the whole brood was dug out and photo reproduced. It is quite a rare specimen and more fully described already in another chapter of these reminiscences on Texas insects and reptiles.



1. NATURAL SIZE OF THE MEXICAN SCORPION. 2. FULL GROWN TEXAS SCORPION. 3. TEXAS SCORPION (WITH CURVED TAIL)

inoculate their victims with a powerful narcotic secretion which, after paralyzing the nerve centers, gradually kills the victim or makes him immune against resistance.

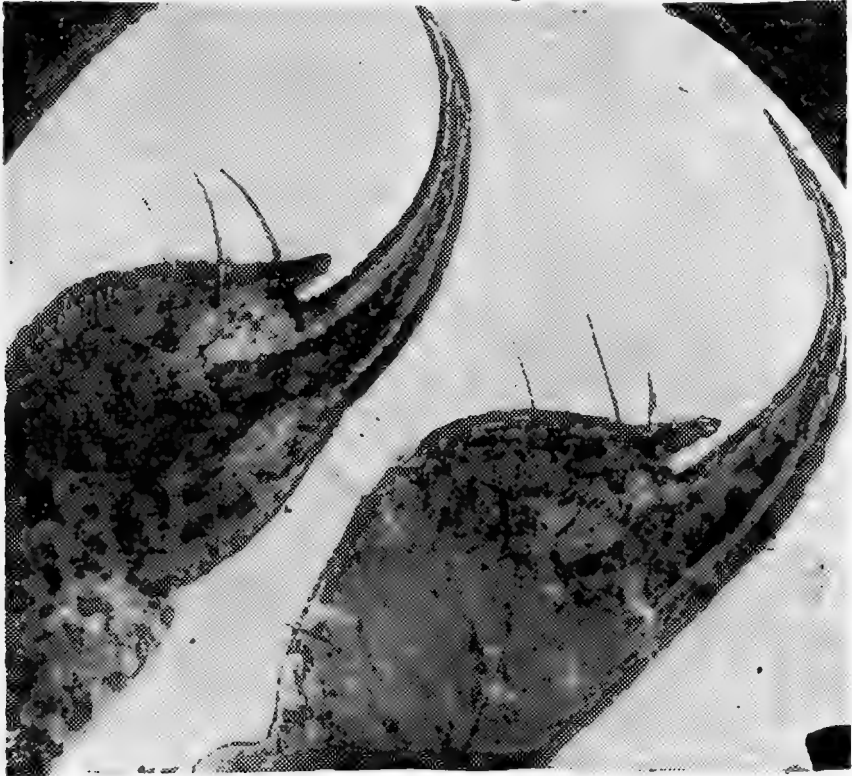
THE TEXAS SCORPION

On page 7 is depicted the female scorpion with nearly full grown young ones, magnified nearly one time its natural size. It was

The second illustration (p. 9) shows endparts of two scorpion's tail considerably magnified and exposing some of the interior anatomy, with the venomducts, and the glandular protuberance at the base-part of each of the claws, all of which is encased in a horny shell, which covers the entire tailjoints and the upper body parts.

A sub-species of scorpion, the so-called vinaigron or "nigger-killer," is nowadays a rare item in the inland sections of Texas, however, they are said to abound quite numerously around the frontier towns. I always had been interested to see one of these long-sheered, black scorpions alive and study their habits, but never had

ducted with the said Del Rio specimen. It was my intention to get a mouse, and put it alive in the bottle with this specimen, for scientific observation, but not being able to get one at the time, I had several cockroaches caught and put them all in the bottle, to give the giant scorpion company and to note what would happen.



TWO VIEWS OF THE SCORPION'S STINGING APPARATUS (Considerably Magnified).

an occasion until about two years ago, when a railroad friend, Mr. Edwin Menger, Engineer on the S. P. R. R., presented me with a large live specimen which was caught around Del Rio, Texas, and brought here in a wide-mouthed bottle. So much has been said and contradicted, "that they are as poisonous as a rattlesnake," and that they sting with their long curved tail, that I was anxious to find this out, if possible. The latter, however, could not be proved by a little experiment I con-

Hardly was this done when the roaches became exceedingly lively and crawled like mad around the bottom part of the bottle, while the vinaigron also became more lively and fully outstretching its sheerlike arms suddenly grabbed one of the roaches and drew same in a curved line toward its mouth-parts, and sucked its lifejuice out. Then it began mutilating its body with its powerful and moveable endsheers, and to feed on the fleshy parts. In a short while, two more of the roaches were thus

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killed by the vinaigron. But in no instance had we observed that it used its long tail to sting and inoculate its victims; it simply grabbed the roaches quickly with its sheers and held them thus to the mouthpiece for further disposal.

Rio specimen, as seen on the miniature picture (third row, second last picture) and a magnified original view of same on this page showing one nearly entire cockroach and the mutilated bodyparts of the others, with one of the roaches in tight embrace of the giant's arms,



THE TEXAS VINAIGRON WITH THE ROACHES IT MUTILATED

My friend, Mr. P. G. Lucas, a prominent druggist of San Antonio, and others witnessed this scene with me as described; and, after the vinaigron had finished its meal, I took the bottle with all the contents to my private office, chloroformed the prisoner, and prepared the photo of this Del

In rambling around the prairie plains a multitude of interesting nature-objects often confront the observant hunter and naturalist, and it would take volumes of print to enumerate in detail the numerous insects and animals of Western Texas, and only

a few more of the miniature objects seen on the photo may be mentioned.

The two large specimens of arachnids (second last row) are quite common in falltime and are quite attractive when met with suspended on their large round

and the huge spider, lodging in the center, had a large devilhorse (mantis) between its jaws, and I succeeded in preparing a nice photo of the unusual sight, but unluckily, the plate spoiled after developing.

In the third row, (3rd and 5th



PHOTOMICROGRAPH OF FANGS OF A YOUNG TEXAS CENTPEDE
(Highly Magnified)

network over branches of a bush or tree, with their brilliant golden-yellow colors, and jet-black feet, with perhaps a grasshopper or some other prairie insect between the mandibles. During a hunting trip last winter, I met a beautiful network of such a spider along the romantic San Antonio river's bank,

views,) are seen the breeding-nest or cocoon of this same spider species. It was found in a hilly region, suspended on a small-leaved acacia bush, with myriads of the young spiders crawling along the suspension network, which concealed the cocoon, like so many acrobats.

It is interesting to note the ana-

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tomical difference between the head of an eel and that of a rattlesnake, (lower row), and the close resemblance of an eel to a nonpoisonous snake. The depicted beast (*Crotalus horridus*) came near making the writer "immune" from writing about it for good. A party of us were hunting quail and wild doves in a friend's pasture where lots of sunflowers ripen in falltime, and millions of doves

signal, only about four or five feet in front of me. Luckily, however, I had not crossed the wire, or else the reptile would have struck me, since it had already coiled into a spiral shape and was rattling fiercely. As quick as I noticed the beast, I put a shell into the gun and shot its neck in two. The snake had unusually large fangs, and I took a close focus view of the head afterwards—



A TEXAS CENTPEDE

congregated on mesquite trees by a nearby tank, for their nocturnal rest. We were close to the wire fence of the pasture, when several doves were seen alighting close to us but inside the wire enclosure. With the gun unloaded, and in the act of crossing between the wires, I was horrified to hear a huge rattlesnake giving its warning

nicely depicted on page 13. Had my leg been entangled in the wire fence, I certainly would have been struck; but as it was the rattler got the worst of it.

As to Texas prairie snakes in general, occasionally one comes across queer freaks of nature, such as have been also described in the Texas Field some years

ago. During an outing with a number of friends last fall along the San Antonio River, below San Antonio, one of our party, whilst getting ready to put his fishing line into the water, was surprised by a rustling among the leaves and shrubbery along the river bottom, and upon closer search, one of



the multi-colored kingsnakes was seen battling with another variety of prairie snake. It had the other snake in its mouth, and had nearly entirely swallowed it. At another outing, near the same fishing place about a mile below the Mission Espada, we came across a very large kingsnake, which had in its mouth and throat a young kingsnake, and we were in doubt whether this latter instance was a case of protection of its offspring, or, as with the other specimen, a case of cannibalism. Both of these snakes were photographed, and one of the views is the second one on the lower row seen in the miniature photo collection. During that same day of our outing, whilst getting a bucket of water from a spring close to a ravine near the river, I met a moccasin about one and a half feet long in my path, and the snake at once showed fight by thrusting its head upward with wide-open mouth. This genuine moccasin of the "cotton-mouth" variety, when first seen was of unusual thickness, and therefore I was the more anxious to kill it, to note what it had swallowed. With a stick and heavy blow, I nearly severed its head from its body, and bringing it on a forked

stick to camp, we all guessed what it might have in its stomach, some guessed it was a frog, others said it was a toad, and a lady naturalist of our party suggested a rat. On opening its abdomen, we immediately saw that our lady naturalist had guessed correctly, for it contained a full-size water-rat. The photo in the second last row, shows the same small moccasin with the rat exposed in its stomach. Near the neck-part of the snake, which was split open from the severe blow, the photo shows the tail of the rat protruding outside.

As to the various types of the Texas tarantula spider, much superstition and ignorance still exists. As a rule, they are quite as harmless as many other poisonous animals, if not annoyed or incidentally touched. A detailed account of our Texas prairie spiders has been published some years ago by the writer in Texas Field, which will be found on the following pages. The small jet black and reddish-striped jumping tarantula, encountered occasionally in gardens and forests, is about the most dangerous type to be encountered, and the writer could cite several serious but not fatal, cases of venom-inoculation from these insects. One large type of tarantula, rarely met with in these days in inhabited places, but occasionally encountered in open prairies, where they sometimes move in large colonies, is seen depicted in the third row of the collection. This same huge tarantula was captured by Private A. F. Denton, U. S. Army, in camp near Fort McIntosh, Texas, and Mr. Denton sent the animal alive to San Antonio, where pictures of same were taken by Wm. Stucke, Dr. A. Lange, Veterinary Surgeon, and myself, and I submit one of the photos on page 15 showing the monster tarantula in front of the rat it killed. (The photo being taken in the sunlight through the glass panel of the box at close range). In

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order to note its venomous character, and the way in which it inoculates its victims, Dr. Lange put a large gutter-rat in a secure glass box with the tarantula, which inoculated the rat several times, and it died in about five

and the venom serves at the same time to preserve the victims, insects, birds, mice, etc., as food supply to them or their offspring. Such is also known to be the case in the tarantula-killing wasp (first view, second row) which, however,



TEXAS FEMALE TARANTULA--(Natural Size).

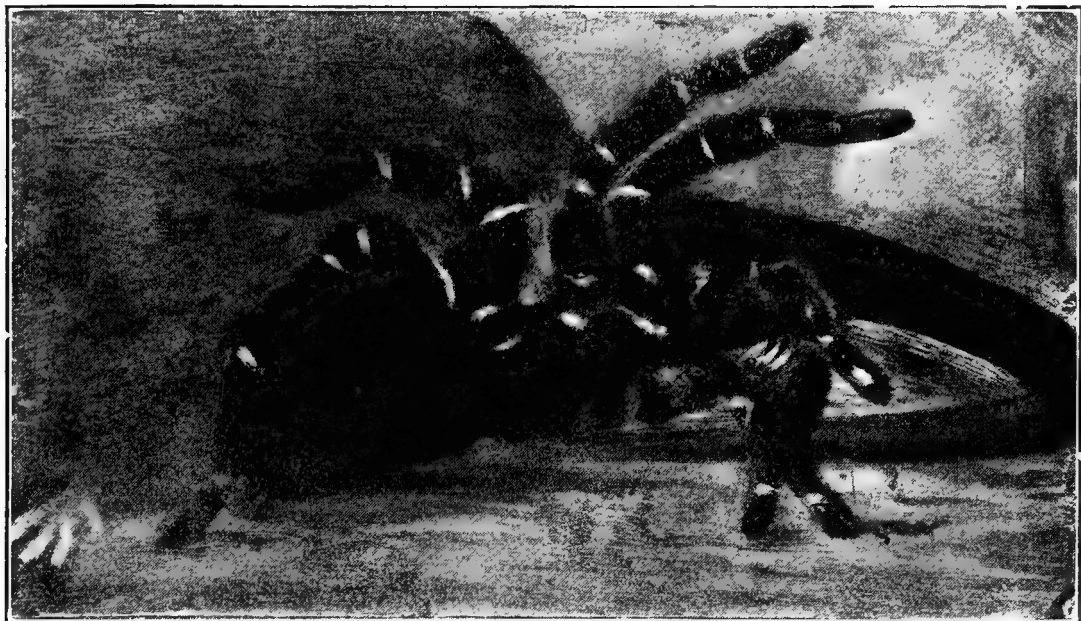
hours. This shows that the venom of this spider is a slow acting poison, gradually paralyzing the motor centers, with paralysis of the extremities and respiratory centers, according to the amount of venom inoculated. Usually these, and other poisonous animals inoculate their victim only once,

is not the regular tarantula-killer, which is of more slender structure, but powerfully built and which inoculates its victims with its sharp daggers, situated at the abdomen, and which communicates with the poison bladder of the wasp's abdomen. (Abdominal parts of this wasp species depicted

in third row, last two photos).

I prepared the accompanying separate photograph of two poison fangs of the same species of tarantula as the one described above, the specimens being also sent by Mr. Denton from Fort McIntosh. The venom of these animals seems to be stored away, so to say, in the mandibles, between the flesh (muscular tissue) in ducts of two separate cavities which communicate with the poison fang. The photos show the right and left mandibles opened artificially, the

both mandibles and the fangs are instantly put in motion in an erect posture, and the fangs are suddenly plunged or hooked in the flesh of the victim, when an infinitesimal quantity of the deadly poison is injected into the tissues and absorbed by the capillary circulation. On examining the original tarantula mandibles sent by Mr. Denton, with a magnifying glass, both of the fangs showed at the upper curvature and close to the apex, a very minute outlet, and the lower photo



TEXAS TARANTULA (WITH RAT IT KILLED.)

upper one in part and the lower one in its entirety up to the apex of the curved poison-claw or fang, showing both specimens magnified about three times their normal size. The mandibles and fang consist externally of a hard, dark brown shell, and both mandibles are covered with black, hairy bristles. When at rest, the curved fangs are retracted toward the base of the mandible but when in the act of inoculating its victims (as noticed by Dr. Lange and myself in the case of the rat)

herein shows the thin wire piece which had been placed through the artificially opened mandible cavity along the opened fang, with its exit near the point of the fang, resembling in this respect the anatomical arrangement of the rattlesnake fang.

Finally, the miniature photos show an interesting group of mosquito-larvae (first row, second view), with stinging apparatus, and nearly fully developed, to escape their watery element, and also depicted in the separate photo-

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micrograph herein, showing, in upper row, some of the larvae mosquito nearly fully developed, with the long, curved sting, etc., and below some remotely developed mosquito larvae are seen. They were originally gathered from a stagnant pool of rain water in a bucket in the rear of a drug store, which contained millions of them in all stages of development. On the third row of the photos, two views of the pestiferous house-



MANDIBLES WITH FANG OF THE TEXAS
TARANTULA

fly with eggs and larval flies are seen; and on first view, last row, the sharp daggers of the blood thirsty horsefly; also the eyeglobe of a fly; a number of tobacco beetles and larvae of such, infesting tobacco. Another view shows the eggs of the Texas cattletick; two views of helgramites, or "water-centepedes;" a large collection of poison fangs of various venomous animals of Texas; three waterhen eggs in nest, and a pair of young wild doves on nest,

as well as other views, all of which, more or less, have been engraved from the original photographs and to be seen in other chapters of this work in special articles on same.



TWO INTERESTING FLEAS OF A MOUSE

Fleas on various types of quadrupeds vary somewhat as to size, shape and color; and the photo herein represents a male and female flea of a mouse. Note the long outstretched hindlegs, and the stinging apparatus, which is nicely represented in the following separate photomicrograph.



THE KNIVES AND DAGGERS OF FLEAS

This photomicrograph shows a flea's stinging apparatus, magnified considerably, with sharp outlines of the slightly curved daggers—which the insect inserts into the tissues and capillary layers of its victims' skin to draw blood; the stinging and blood-sucking act being accomplished through rythmical muscular action of its head and stinging apparatus and

suction tube. Some of the tropical and local sand-fleas have very powerfully developed stinging implements and cause intense irritation with inflammation and ulceration of the parts injured.

The second photograph shows a small part of one of the hairy front feet of the flea, adjoining the long daggers.

New Texas Antkiller

A peculiar and rare insect in our climate had been sent to me some time ago by the Daily Express for identification, which had been previously sent to the Express office by V. S. Kowalk of Pana Maria, Texas, in a small square box, including remnants of earth and sand from an anthole and large numbers of butchered-up ants. When sent to me the ant-destroyer was still alive, and I subjected same and all the ants and earth remnants to a close examination and photoreproduction. It is seen on the photograph herein, about natural size, and readily illustrates how this ant-killer had disposed of its victims—our large and poisonous red earth-ant, and shows the powerful, large claws, or fangs, its front head possesses—unlike any other insect of its size that I am aware of.

As stated, when received, this ant-killer still showed signs of life—as it moved about in a warm room and the first impression it made was the resemblance to some tarantula spider for a young vin-aigron, an animal which has some characteristics of the scorpion and of some spider species alike. On account of its divided body between head and thorax (mesothorax), the position of the eyes and being supplied with haired and clawed legs, both of these animals belong under the class of arachni-

dans or the spider family. As the letter sent along by V. S. Kowalk, of Pana Maria is of much interest and importance in connection with the ant-killing qualities of this insect, it is herewith reproduced in full as follows:

"I am sending you under separate cover one bug that will eat red ants and I want you to find out what kind of a bug it is. I found it in the ants' nest just killing them and eating them about a week ago, and I kept him in that box ever since. I turn him loose once a day in the ants' nest to have his meal."

In viewing the photo herein, it is seen how this animal had cleared up with the anthole and dissected the ants, fragments of which—heads, bodies and single feet—being scattered all over the photo-view. This it accomplished by a regular "saw mechanism" the insect is supplied with at its head mouth parts similar to an ant itself. In examining the insect it was seen that two large projecting and mandible-like organs supply its front head, and that each of these organs had two extra scissors-like movable fangs, which it uses in grabbing and cutting up the ants.

The head is small as compared to these protuding powerful fangs and the head is supplied at its frontal margin with two glittering

black eyes, also seen on photo. Its ten feet and its entire body is supplied with yellowish-red hair, and the joints of the two front feet are of black color, and they serve as feelers rather than legs in locomotion.

The technical name of this arachnid is *Galeodes araneoides*.

“A recent traveler in Palestine relates that when living in tents on the plains of the Jordan, near Jericho, each night as nearly as possible between 9:30 and 10 o'clock, several sulphogids entered the tent room, running and racing with great speed over everything—tables, chairs and beds—just



NEW TEXAS ANT KILLER

It is certainly a rare inhabitant of Texas, but perhaps from favorable (sandy) soil conditions and our sub-tropical climate, it was implanted, or it may be indigenous to that particular district of Bexar County where it was found and observed killing ants. It belongs to the order of Solpugidea, a small but remarkable group of tropical or semi-tropical arachnids. This is what one authority relates of its life habits:

like mad creatures, but apparently with no definite object, perhaps only attracted by the lights burning in the tent. When disturbed in their diurnal hiding places they showed fight and were extremely pugnacious, but their being venomous is doubtful, though the Arabs seemed to dread them quite as much as they dreaded the scorpions, which were also numerous under the large stones lying about.”

The Tobacco and Drug Store Beetle

In beginning to enumerate some of my private reminiscences in nature observations, including observations on Texas insect life, in the "Texas Field and National Guardsman," the peculiar life history of one of the minutest and boldest of injurious insects, the tobacco and the so-called drug-store beetle, may find first place in these sketches; and the following is substantially a reprint from the Guide to Nature; a monthly magazine devoted principally to nature study, and edited by Prof. Edward F. Bigelow, Sound Beach, Conn.

In his editorial columns, Prof. Bigelow introduced the above matter in the following complimentary and highly appreciated words:

"No letters and contributions come to the Guide to Nature, which show more faithful and efficient interest in nature than those from Dr. R. Menger of San Antonio, Texas. Unlike some other correspondents, he does not get provoked if we are obliged to return now and then an account of observations for which we cannot find room.

"Then, too, he says and does something; he does not send mere words about what he would like to do, nor does he send indefinite eulogies of all the glories of nature and of nothing in particular. He gets down to business. He sees things. He ascertains facts. He does not get discouraged. He is just the kind of faithful worker we commend to other workers. See his article, "Peculiar Metamorphosis of the Tobacco Beetle," on page 94 of this number."

To begin with, about three years ago, the Hon. P. G. Lucas, of San Antonio, proprietor of the "Mission Drug Store," handed me several samples of cigars and other tobacco goods which had

been perforated and otherwise accidentally mutilated by a minute insect, one cigar in particular being of much interest as it contained larval vestiges (small curved worms). The latter I gave close attention since I was aware that it was the larval state of the tobacco beetle. The second cigar contained three such larvae lying snugly in furrows they had pre-



Fig. 1
Cigar with Tobacco Larvae Imbeded in
Furrows of Tobacco, slightly magnified

pared by their active jaws. I subjected part of this cigar with the larvae to a close focus photographic reproduction with extra near focusing lens. The result is seen in the illustration herewith submitted, (Fig.1) showing the cigar and the imbedded larvae (in the upper specimen) about

to transform into the pupa state of development.

When under the powerful rays of a bulls-eye reflector in this attempt to photographically reproduce these larvae in situ, they became quite lively and, fearing the result would be spoiled, I dropped some chloroform near the furrows, when they ceased moving at once. The photograph shows the larvae

ova inside the tunneled holes when after a certain length of time the larvae seen on the plug cut tobacco (Fig.II.) and the cigar specimen develop. This process has been witnessed off and on years ago and again lately by the writer when the furrows of these beetles had been exposed in tobacco and some drugs, either of which they feed upon but with preference for the tobacco and usually for the best brand of tobacco goods.

These minute insects are occasionally and numerous found in dried vegetable drugs and household goods. But lately my friend, the druggist, happened to find an old package of orris root powder in which numerous round and oval shaped bodies of granular appearance were present which after mounting and microscopical examination I found to be composed mainly of the cocoons of the minute tobacco beetle and I prepared

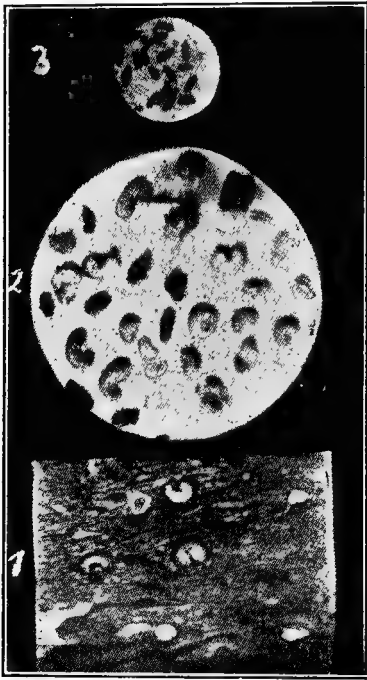


Fig. 2. (1) Plug Tobacco Infested with the Tobacco Larvae. (2) Tobacco and Drug Store Beetles with Larvae. (3) Drug Store Beetles at Normal Size.

in their natural positions as they had not been touched.

Near these larval tobacco beetles are seen some holes and furrows in the cigar which the mature beetles and afterwards these developing larvae had prepared. It seems that during the fall and winter the mature insects perforate the tobacco and also other material such as food stuffs and drugs, producing a round deep hole not larger than the body of the insect, and then deposit the

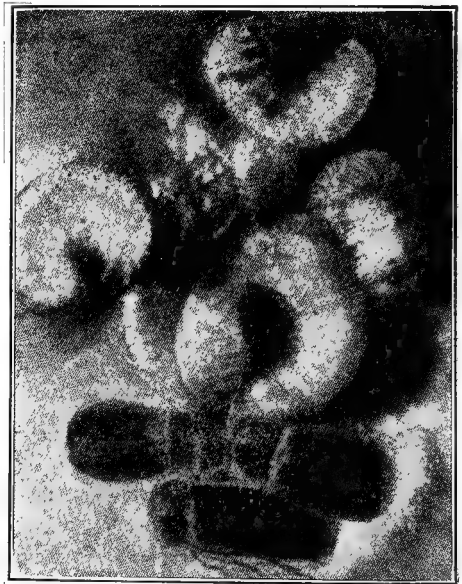


Fig. 3. Two Tobacco Beetles and one Drug Store Beetle (Lower) and Larvae.

a photograph of them magnified slightly (Fig. IV.). Nearly all of these beetle cocoons were in the

breeding cycle, i. e., most of them after opening the minute globular capsule showed a small live and curved larva. In others the maturing larva beetles could be seen, the larval state being in appearance identically the same as photographed in Figs. 2 and 3. On closer inspection of Fig. 4 several of the whitish larvae of this beetle are seen, for instance at the places marked 1, and also two of the mature tobacco beetles, (center right rear). Some of these larvae were quite disfigured in general appearance from the fine orris root powder adhering to their fine

itself that these pests had been conveyed through tobacco goods in the tobacco factories before being put on the market, it being very difficult to detect the minute ova. How these beetles develop in all sorts of tobacco is seen, as a second example, in the so-called plug tobacco, Fig. 2 (1), which I also procured from the druggist. I prepared the view with an objective lens applied to the camera, showing the tobacco larvae about one-half times magnified, also the second figure of the same photograph, showing some of the larvae of the drug store beetle and the tobacco insect and also the appearance and size (about one-half larger of the tobacco and the drug beetle (the latter being more slender).

In further experimenting with this matter, I succeeded in preparing the view, (Fig.3,) using an extra strong lens to the camera at quite near focus, showing six of the tobacco larvae, two full-grown tobacco beetles and one drug store beetle (the lowest one in the photograph) magnified considerably.

The third illustration in Fig. 2 shows the closely allied drug store beetle, named because of its preference of invading drug store goods and infesting precisely in the same manner as the tobacco beetle. This view shows the beetles in very slightly less than normal size. This drug store beetle is more slenderly built than the tobacco beetle, but otherwise is of a similar, reddish brown color and very active in its movements. Both the tobacco and drug store beetle, it seems, undergo about one and the same cycle of development and when the ova are deposited in favorable media of a powdered nature, such as rhubarb, orris root, slippery elm, linseed meal, tobacco or cayenne pepper, the ovum transforming into the larval state is encysted

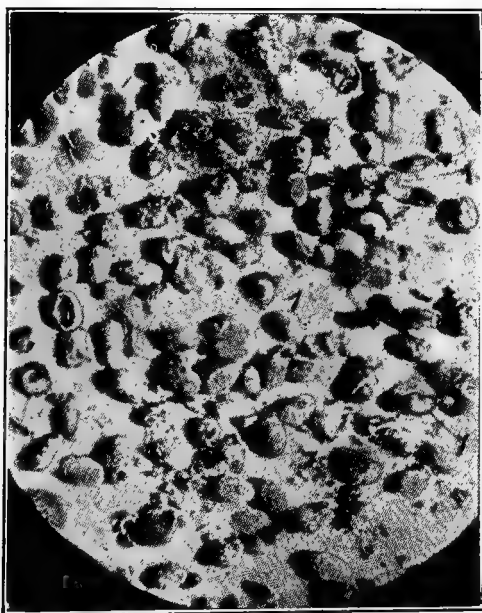


Fig. 4.
Cocoons of the Tobacco Beetle with Larvae
Partly or Entirely Encapsulated.

hairy filaments. In a few artificially opened cocoons the larva is seen quite plainly in the illustration.

It is an interesting fact, also stated by Mr. Lucas, that these tobacco beetles prefer the best brand of tobacco and the more so as they are occasionally found in tobacco which had been sealed airtight in tin or wooden boxes and therefore the probability presents

into the globular forms similar to these seen in Fig. 4 and similar to the genesis of other forms of insect life.

The harm these minute insects are liable to do to tobacco, food stuffs and drugs is often enormous, and they are often a great plague to dealers in tobacco and drugs and, because of their minute size and rapid movements, are difficult to exterminate. Being winged as other beetles, they can fly and migrate to distant places and there perform the same havoc and multiply enormously.

Both these minute beetles above described tally with the observations of Dr. L. O. Howard, (Farmers' Bulletin 120) and Dr. F. H. Chittenden (Bulletin No. 4, Divis. Entom. U. S. Department of Agriculture and in our case the matter is the more interesting, having found and depicted the larvae in situ and the larva of the drug store beetle encapsulated in the peculiar globular cocoons described and illustrated herein. Dr. Chittenden says in regard to the tobacco beetle, "as a tobacco feeder it outranks that species (the drug store beetle) and also appears to favor certain medicinal plants not so often affected by the sitodrepa (drug store beetle.)"

"Of household supplies it has been found infesting cayenne pepper, ginger, rhubarb, rice, figs, yeast cakes and prepared fish food. It has been reported as destructive to silk and plush upholstery and the past year did considerable damage to dried and preserved herbarium specimens in Washington. Of drugs it is partial to ergot and turmeric and tobacco it devours in every form."

The druggists and tobacco dealers throughout the country undoubtedly are familiar with the above minute pests and this matter, I believe, will be appreciated by reading these memoranda on same.

On another occasion I happened to shell out another larval beetle from a cigar in its maturing cycle of development—and a most interesting study it was! Its cubic length was only about one-eighth of an inch, and it was in its shedding stadium. After detecting this specimen, which was partly (its thoracic and head parts, antennae, legs and part of the abdomen) denuded of its previous external integument or hull and of white color. I mounted it in



Photo-Micrograph of Maturing Tobacco Beetle Larvae
Highly Magnified. Original one-eighth inch.

glycerine on a slide glass, and at once prepared the photo-micrograph seen herein, which I believe an unusually interesting and rare specimen to study the genesis of such minute beetles.

The microscope and the photographic reproduction from the original specimen show how the developing offspring of this minute larva (hardly one-eighth of an inch long) sheds its previous integumental environments and gradually, by means of rythmical

contraction and expansion of its flexible body—similar to the shedding process of a snake—frees itself entirely of all its former hulls. The latter are nicely seen on this photograph—about half way stripped of its new anatomy—the lower dark outlines with the characteristic hairy integumental covering (a) and (b) being gradually peeled off and folded up at the base part (ab) of the new beetle's abdomen, when the thus "newborn" little fellow is about "ripe" to escape into the world—after further evolution of its thoracic organs, the wing parts and other of its anatomy. Some outline of the (ringed) abdomen of this maturing tobacco beetle are quite plainly seen through the dark outlines of the old hull (b) and the developing feet (c) and two antennal appendages—the

jointed and curved organs (d) at the head parts (e) with both dark eyes with lens, and the thoracic outlines (f) are quite conspicuous. The entire process resembles somewhat the shedding process of certain hairy caterpillars (larval butterflies) and other forms of insect life, including the vast numbers of all genera of beetles.

When I first detected this specimen it showed life, but its movements were very feeble and hardly perceptible, mainly from exposure, perhaps. It was found snugly imbedded between some of the cigar foldings, in a furrow similar to the larvae found and described and illustrated by the writer in the June issue of *The Guide to Nature*, but it is a much further advanced pupal state than the one seen in the previous specimen of the single cigar specimen.

The Texas "Devilhorse" or Mantis Insect and Its Breeding Nest

It is a noteworthy axiom in insect life that all insects, even those minute species hardly visible to the naked eye, develop from ova or eggs, each ovum undergoing a regular cycle of development, typical to its sex; and the

sects, but it was only of late that I became aware of the manner in which this mantis insect breeds and develops its offspring.

It was in the summer of 1911 that a friend, a farmer from the Olmos settlement, north of San



YOUNG MANTIS AND OVA--(Magnified one-third)

genesis of the devilhorse or mantis insect makes no exception. It is but little generally known how this peculiar insect does develop. The writer is quite familiar with the breeding history of most in-

Antonio, brought a small, square paper box to my office containing the peculiar breeding nest of a devilhorse and its contents—hundreds of small and slender shaped young ones, in various sta-

ges of development, and some of the ova.

A number of these tiny, long legged insects and the ova in various developmental stages, were mounted on a glass slide and photoreproduced. The engraving of same herein shows the small insects plainly, enlarged about one-third time original size.

During outings, later on, several of such peculiar breeding nests of the devilshorse were encountered along the river banks and hilly regions south of San Antonio, on



Fig. 1. Nest cut in two, showing cell apartments.
Fig. 2. Nest intact.

various trees and shrubbery, with preference on the mesquite tree and a small leaved acacia brush, loaded with scarlet red and globular blossoms. A small branch of this latter brush containing one such mantis nest was removed, and the photo of same herein shows the peculiar "caterpillar-like" shape of this nest, showing the inside appearance and some of

the many cell apartments in which the old insect had deposited its eggs. These nests are about one to two inches in length and worm-like shape; and its oval shaped body is ribbed and of exceedingly compact structure—the old insect using some kind of a gum, perhaps mesquite gum, or perhaps it manufactures a gum of its own, to build its nest, and glues it on the branches or the trunk of a tree. The tubular cell apartments of which this breeding nest is composed and which, when finished, is as hard as rock, reminds one of the cell arrangements of the wasp nest and some other insects; and the ova develop on about the same principle as the wasps and bees, etc.

The full grown devilshorse, of which an original picture from nature is appended herein, is nearly too well known generally to go into details herein about it. There exist various types of these mantis insects, and some of them attain enormous proportions and they all are of a repugnant and fearful looking nature—however, they are entirely harmless.

They are remarkable for their slender grotesque form. One species has a pair of legs in front resembling a person's hands when folded in prayer and is often called the praying mantis.

In writing one evening years ago, attracted by the bright electric light, one of these long legged insects suddenly appeared near my writing paper, and a queer aspect it was to see the insect standing erect on its hind legs, and twisting its large bulging and glossy eye globes from one side to the other—watching the movements of my hand in writing. Some timid persons naturally get very excited, in encountering a devilshorse insect, but these insects possess no weapons of inoculation, and they only scare a person by reason of their pe-

cular and characteristic position of the two front legs as seen also on the photo.

These insects have many enemies, especially birds and tree lizards. Some time ago during an outing and camping under a huge

body and off it went into a hollow of the tree to finish its meal.

These tree lizards, by the way, are very useful animals, as they live entirely on insects, and they should not be molested in any way. There are various types of



FULL GROWN MANTIS IN "PRAYING" ATTITUDE

pecan tree a commotion was heard, and looking around the broad tree trunk two black lizards were noticed trying to catch a large devilhorse. With a sudden jump, several feet off, one of the lizards, grabbed the insect's

tree lizards in our forests and prairie plains and an interesting lot they are when seen circling around a tree trunk "playing hiding," like the wild squirrel in its haunts when trying to evade the hunter's gun.

The Cotton Boll-Weevil Pest

In the following memoranda, some of the original private data are enumerated herein anent the tiny pestiferous cotton boll-weevil insect that has caused millions of losses to the Texas cotton crops in late years; and, for better understanding the matter is illustrated with several original photomicrographs which, at this time were prepared by the writer many years ago, and were considered the first illustrations of boll-weevils ever made before by the photomicrographic process, (being used also in Leslie's Weekly).

The insects proper at the time shown in one of the illustrations herein were obtained from Mr. P. G. Lucas, druggist, and at pres-

ent alderman of San Antonio, who procured them from a German farmer and had a large number of live specimens concealed in a wide-mouthed bottle, supplied with buds and bolls of the cotton plant. The insects were not larger than a common fly; six legged, winged, very lively and exceedingly greedy. From what could be observed in Mr. Lucas' collection and on some of our cotton fields near town, the insects lay numerous eggs inside the punctured bolls or buds or rather they crawl inside the cracks of the boll capsule and perhaps breed there. The eggs develop numerous maggots and these are soon transformed into the young boll-wee-

vils which at once crawl or fly around, if disturbed. One of the photo cuts shows several of the mature insects; they are so lively and tenacious to kill that they had to be chloroformed before a photo reproduction could be made of them. The following cut shows



Microscopic appearance of the Boll Weevil's Nostrils, or Boring Apparatus, considerably magnified, showing part of head, eyes, nostrils, antennae, and the curved fangs on end parts.

the microscopic appearance of the nostril or boring apparatus of the boll-weevil. It shows the front part of its head with both eyes (partly destroyed from pressure in mounting), the long and slightly curved proboscis with two delicate feelers (antennae), and its extreme end part is supplied with two curved fangs. The latter undoubtedly serve to lacerate the tissues of the cotton plant, especially the cotton bolls and buds whence they bore further and through the entire capsule or buds.

A sub-species of this insect is occasionally very numerous encountered in other plants, especially in cereals; and perhaps those injuring corn, acorns, beans and peas, etc., belong to the same class. They bore, with a similar proboscis as the one of the boll-

weevil, through the outer hull of the corn, etc., and perhaps hibernate there until favorable conditions produces new crops of these pestiferous insects. Some months ago I noticed in the so-called Mexican beans a great number of these insects; they had not been noticed until cooking the beans, when the shriveled, dark objects were noticed inside the shell in the corner of the beans and they resembled very much the cotton boll-weevil.

The body of the boll-weevil is of dark grey color, broad at the rear and narrow toward the head which is supplied, as stated, with the long, curved proboscis and antennae or feelers. Some writer in the Galveston News related his experience on boll-weevils captured alive and placed in a tightly corked bottle. He brought this bottle to an ice factory and there froze it in the middle of a 200-pound cake of ice. After this the cake of ice was put on exhibition on the street. "After melting,



Seven Cotton Boll Weevils Magnified Slightly

the weevils were exposed to the sunshine and after thirty hours captive in this frozen state it was proven that the weevils showed signs of active life." No wonder the search for an agent, chemicals or otherwise, is baffling the minds of researchers. Fortunately though some ways and means undoubtedly will be found to capture and destroy them.

The Fly Nuisance.

There exist in all communities and outside of these, two main types of pestiferous flies—the common housefly, and the so-called blowfly—or dumpingfly, as they dump myriads of eggs on decaying and offensive material, as well as on meat of all kinds. Both of these fly species are a great public nuisance, for various reasons. Both of them can be kept outside of dwellings by properly screening the houses, stables, etc. The call is to exterminate them—kill as many as possible, as thereby millions of offspring will not exist in the near future, which would perhaps molest you or contaminate your food-articles or transmit disease germs directly.

Just now again sanitarians and our health department are giving considerable thought to the eradication of the fly nuisance, and they urge to screen the houses and premises and keep them clean and in a sanitary condition. Stables especially, and outhouses, slaughter houses, hog pens, and in fact all such places where decaying and offensive material is liable to accumulate, should constantly receive sanitary attention, as flies and other injurious insects breed therein. By keeping such places as clean as possible and occasionally through sprinkling with lime and coal oil, carbolic acid, etc., much good can be done.

With our common houseflies, always more or less flies with sting-weapons commingle, and many such, especially of the stable variety, resemble the common house fly very closely. The cluster-fly also often commingles with the housefly; it is somewhat larger, with smooth colored dark abdomen and studded with yellowish hair. It is, however, not as active as our common fly and is often subjected to a peculiar reddish fungoid growth or parasite, which

often kills the fly and is thus seen adhering to the window panes, walls, etc.

A large variety of other obnoxious fly species are the blowflies, those large and shining flies, with glittering blue or green body. The majority of them belong to the viviparous insects, the eggs being matured inside the fly's abdomen, and deposited in form of minute, wriggling yellowish-white worms. Some such species, however, lay a large number of very minute, oval-shaped and elongated eggs, depositing same on all sorts of fresh or decaying meats and food-stuffs, and with much preference also on venison of all kinds, and they therefore are the most disgusting flies on record.

In slaughter-houses (not screened) hog pens and on dead animals they swarm by the millions and they breed and multiply in an exceedingly short time and in immense numbers. On the prairies and plains dead animals are usually covered with them, black masses of such flies and billions of their larvae, and while feeding on such decaying animal matter they are liable to be swept by the wind currents into inhabited places and here infect occupants of dwellings or the domestic animals. By their immense numbers and multiplication they also do some good in absorbing putrid fluids and tissues, but our common turkey buzzard—that great sanitary scavenger of the prairies and plains—does vastly better service in disposing of a dead animal.

These so-called "dumping flies" or blowflies are also and especially a great nuisance at certain seasons of the year in camp, during outings, fishing time, hunting, etc., and parties attempting a prolonged outing trip in the woods should provide themselves with mosquito netting or wire screens to cover the foodstuffs and game

in particular, as the blowflies will sure be there in a short time and game and fish of all kinds if not properly protected are infected.

In order to show the reader the inside anatomy of a blowfly variety,

The small worms seen on the photo were alive and crawling but were made motionless, for photo reproduction, with a few drops of chloroform.

The view was taken with an extra-near focusing lens, showing



LARGE TYPE OF FEMALE HOUSEFLY DEPOSITING MATURED EGGS.
(Magnified from Nature.)

a photograph of two such flies are appended herein, (page 29) magnified several times. The abdomen of one of these flies had been opened artificially. It was not the common blue bottle blowfly variety, but a sub-species of a larger variety of our common housefly.

both flies magnified several times. This illustration proves that some species of these flies are viviparous during the extreme hot weather. (The photograph was taken last summer, end of July, about the time of writing these notes.) I had previously put one of these

flies in a small and thin glass, and it was observed how the fly deposited the living larvae, which soon crawled around the interior of the glass. As a rule, however, most species of flies deposit premature ova and sooner or later, according to temperature and other environments, these are developed into the larva and pupa states.



TWO COMMON HOUSEFLIES

Slightly Magnified: Lower One with Opened Abdomen, Showing the Matured Eggs or Flyworms (Larval Flies).

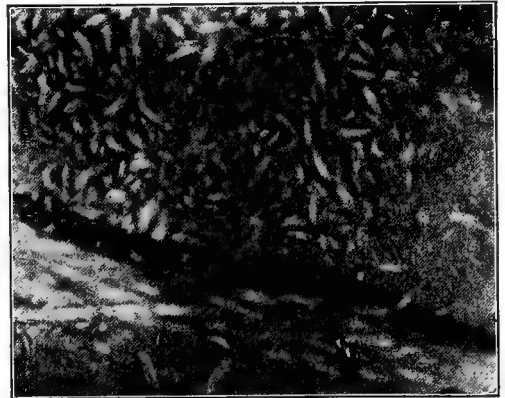
Both of these flies, I may state, when captured on a window pane, were quite large and the abdomen distended, and one deposited living worms shortly after being put into the small glass.

How immensely the flies breed and multiply during the hot season is well known and illustrated herein—each of the small creeping “worms” on the photo representing a future fly. I had prepared the view during an outing and hunting trip to a relative’s farm where the entrails of a small cotton tail rabbit were purposely hung up on a board to attract the blowfly. It was in hot summer time, and hardly had an hour passed when the entire intestines and the board itself swarmed with blowflies and others of the pestiferous insects. Fly eggs and living flyworms were soon present by the millions, and

the photo seen herein was taken on the second day with a close focusing lens and a Bausch & Lomb extension camera, showing the uncountable swarm of living fly worms. Had this same board with the rabbit entrails been properly screened not one of these fly worms would have been present.

Now, this also gives us a good lesson in how to destroy a future fly scourge in its incipient stage—simply by pouring a quart of boiling water on such masses of blowfly worms and eggs of flies. In camp also, this method of putting a piece of entrails, some rotten cheese, or meat, dead fish, etc., to a place outside of camp, but near same, will attract all or most of the flies in the near vicinity and keep them from molesting the campers.

Chief Entomologist Howard, in his admirable works on insect life, states that the period of development of the fly ova were found to be about as follows (in the climate around Washington, D. C.): “Egg from deposition to hatching, one third of a day; hatching of larvae to first molt,



MYRIADS OF LIVE LARVAL FLIES

(Maggots) and Eggs Deposited by Swarm of Flies on Entrails of Rabbit (One-half Natural Size).

one day; first to second molt, one day; second molt to pupation three days; pupation to issuing of the adult, five days; total life round, approximately ten days.

The number of eggs laid by individual fly averages about 120, etc.

In our warm Texas climate flies and other insects usually develop rapidly and in a very

With the greater interest taken by the public in general and the laudable work of the local press and city officials on educating the people on the fly, mosquito and other insects, the time will



PHOTOMICROGRAPH OF MOUTH PARTS OF HOUSEFLY

1. Capillary Absorption Tubules of the Flexible Tongue. 2. Muscular Sheath Containing Tubules Leading to the Stomach. 3. Antennae. 4. Part of the Eyeglobes (Prismatic Eyecapsule.)

short time, and the blowfly variety especially can often be noticed depositing live larvae, also such species as the common house variety as the first one in the photoview herein, which usually seeks a horse manure pile to deposit their offspring in.

undoubtedly arrive soon when the populace will be decidedly less molested and endangered by such pests; the main point is to heed such advice more and exert a little common sense and do something to keep the houses and premises free of injurious insects.

Sprinkle lime or crude carbolic acid or kerosene oil, or boiling hot water with a sprinkling can once every week—but thoroughly—on all manure piles and other filth around the yard, and note the decided absence of the fly pest around your kitchen and dining-room in a short time and during the hot summer months to come. Try it and do it the year around, and thus avoid such insects as depicted herein from nature from daily and constantly annoying you and creeping into your soup, milk cans, foodstuffs, etc. It is to our own interest to do something and to keep it up during the warm season.

As is well known a fly's head-parts consists of the two dark and globular eyeballs and the mouth parts at its interior base—comprising the protruding, long tongue or proboscis; and, in such genera of flies which sting—with extra stinging implements—knives and dagger-like implements which the insects gradually work into the skin tissues and capillary layers until blood oozes, which is then absorbed by special suction tubules. The mouth parts vary considerably in different species of flies; the common housefly, and as seen on the microscopic photo above, being void of special knives and daggers, but supplied with a long tongue or suction tube (1 and 2 on photo.)

This tongue of our common fly species is wonderfully composed of a network of delicate absorption tubules (at 1) which during the act of feeding is supplied by aid of the muscular and very flexible neck part of the tongue's body (at 2) and communicates at the inner base of the flies head and thorax with the stomach.

The eyeball of the common fly consists of numerous prismatic segments (4) which vary but little in various fly species, though some show more or less arranged lense segments.

In the vicious fly species these lense segments seem to be more of a cubic formation; however, they vary slightly in appearance during microscopic and photomicrographic reproduction—according to the angle of light reflex applied to illuminate such otherwise invisible objects.

In the common housefly, as stated, the tongue's suction apparatus consists of numerous hair-fine capillary tubules arranged in spiral-shape at the apex or lobe of the tongue with which the fly sips its food and absorbs it through these delicate capillary loops.

In some of the vicious prairie flies and the cattle fly there exists a combination of such suction apparatus—besides the tongue with which the fluids are aspirated after scarifying their victims with their powerful sting implements.

Some Rare Prairie Flies

Our Texas prairie conceals a large variety of more or less vicious fly species among which the so-called humpback fly and the horse fly will be considered here.

One of the prairie fly pictures shows same in the act of carrying its victim—a black wasp.

Among the numerous and various types of prairie flies, for instance, there exists a peculiar and not generally known type of a most

peculiar fly species which, in one way also, is a useful fly, as it attacks and destroys wasps and other vituperous insects. This fly has somewhat the general appearance of a wasp itself, but it has such peculiar and characteristic anatomical arrangements that I am sure these insects belong to the fly family, for these reasons: First, they have the same number of haired feet, with the characteristic footclaws and footpads, and

secondly they have about the same netwings and eyes—the latter of a greenish color and of the same prismatic and cubic arrangement of the lens segments; and third, the mouth parts have a similar anatomical arrangement as the vituperous horse-fly species. The most prominent characteristic of this fly, however, is the peculiar humpback-like thorax, which protrudes considerably over the balance of its body. In flying, these flies make a humming noise with their wings, and they are exceedingly swift in their flight, flying however only a short distance, and always with a loud buzzing noise, which is suddenly cut short when they alight on the ground or brush.

During a hunting trip in the lovely Leona Valley and also at the lovely Olmos, north of the romantic head of the river, some years ago, the writer first encountered these insects; and one in particular attracted my attention, as it carried a large black wasp in its claws during its flight. I followed it a short distance, when it lit on a sunflower bush, and on closer

prepared a photo view of it, showing also the captured wasp beneath it, though the feet were somewhat relaxed and the mouth daggers of the fly also retracted—placed in normal condition.

As to the harm some of the Texas insects and also reptiles are liable to do, while the great majority of insects and reptiles in Texas are of a harmless nature, some genera are supplied with



THE TONGUE AND DAGGERS OF THE TEXAS HORSEFLY



VICIOUS PRAIRIE FLY WITH ITS VICTIM,
A BLACK WASP.
(Normal Size from Nature)

inspection it was seen that it had perforated the wasp's abdomen with its long proboscic implements. Being supplied with some chloroform, a few drops gradually made the insect loosen its hold and drop to the ground, still having the wasp in its clutches; and, after bringing this specimen home, I

special weapons of defence, as well as with venom apparatus, communicating with separate inoculating (stinging) implements, which they use with more or less deadly effect during combats among themselves or as a means of self-defense or of food supply, by inoculating and killing their victims and, whilst the majority of the dangerous types of insects and reptiles are liable to inflict very painful, and, in rare instances, deadly wounds upon human beings, they rarely attack a person unless they are molested, either purposely or accidentally.

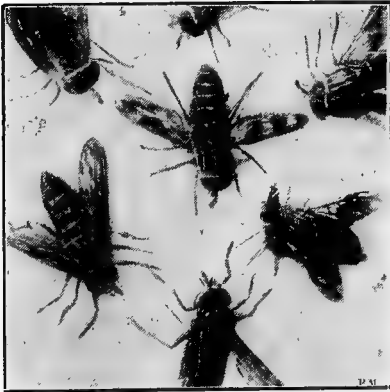
After the above humpback-fly had been captured and photographed with its victim in its clutches, I prepared a photomicrograph of this fly's suction and stinging implements.

The photo herein shows the thick and broad tongue and the long, sharp and dagger-like sting, of which the central dagger is most prominent and with which it had perforated the wasp's abdo-



PHOTOMICROGRAPH OF THE MOUTHPARTS OF THE HUMPBACK PRAIRIE FLY.

men. The stinging apparatus of the horsefly is of nearly the same anatomical structure, but it has even bolder daggers, with which it mercilessly tortures the horses as well as all kinds



TEXAS HORSEFLIES (Slightly Reduced)

of cattle. They scarify the skin and bore down to the blood capillaries until blood oozes in streams from the wound.

Our prairies also harbor among other such vituperous fly species a very large, jet black fly, about

the size of a cockroach. It, however, is not as numerous and otherwise conspicuous as this fly and the common prairie cattle or horsefly, but it occasionally attacks cattle and horses, and it is supplied with a number of fearful looking knives and daggers at its mouth parts, and which the insect plunges into the hide of the cattle, causing the blood to ooze freely from the large scarified wounds.

Having captured one such fly during an outing in Medina County some time ago, I prepared a photo-micrograph of the stinging implements of the fly, showing a number of sharp-edged knives or lancets and dagger-like cutting implements, with a main central suction tube with which this insect aspirates the oozing blood of animals, after scarifying the skin with the other sharp instruments which resemble those of our common prairie horsefly.

The original micro-photo of this fly shows the mouth, stinging and suction implements magnified about fifty times by means of the photo-micrographic apparatus and concentrated lamplight exposure. Some vicious species of wasps and the vituperous bumble-bee and numerous other prairie insects show



STINGING IMPLEMENTS OF A LARGE, VICIOUS PRAIRIE FLY

similar stinging implements, though varying in certain genera.

The stinging implements of most insects, in the inactive state, are concealed in a hollow sheath along the base and interior part of the proboscis, which comprises the flexible suction tube or tongue, in some insects. When in the



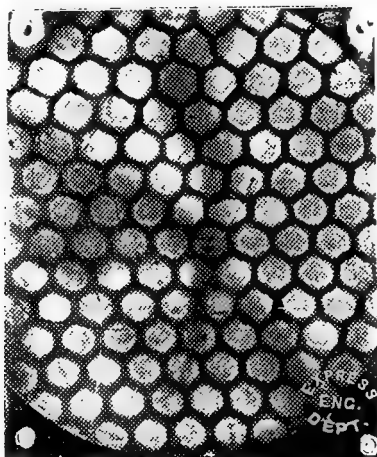
PHOTOMICROGRAPH OF A MOSQUITO'S HEAD AND STINGING IMPLEMENTS

act of stinging the needle-pointed daggers are separated from the hollow sheath and, through muscular action at the base parts and rythmical motions are gradually pierced through the skin up to the capillary layers, when blood is liberated and absorbed through suction.

The original photograph of a mounted mosquito's mouth parts shows one of the daggers inside the central sheath, and two slightly curved daggers outside of same. The knoblike end part of this broad, hollow proboscis is jointed at its lower part, and consists of two hairy pads, which is also set in motion by the mosquito during the suction act,

and serves to accumulate and absorb the blood particles.

It is quite well known that a variety of insects, in particular blood sucking insects, are liable to transmit morbid tissue-products and pathogenic microorganism upon man and animals. This is the case with some species of flies, which can transmit anthrax bacilli, after feeding on some such diseased animal, and produce the malignant pustule; and the horsefly with its powerful developed mouthparts of daggers and lancets, scarifies the thick hide of animals until blood oozes from the wounds, and these scarified places often suppurate later on, and are then infested by other insects, especially the blowfly, which deposits numerous eggs, from which the screw-worms develop; or the small gnat-flies, and mosquitoes, feed on the suppurating surfaces, transmitting pus and blood corpuscles; etc., upon other animals or man,—for instance, ophthalmitis, etc., when coming in contact with the conjunctiva of the eye. Ticks, and especially the common bedbugs are also on record as bacteria transmitters,—notably also the tubercle bacillus from phthical patients; and the cattle tick, it is



quite conclusively proven, produces the so-called Texas cattle fever through inoculation.

Of late years the mosquito pest has lost its hold in those cities following and exercising modern methods of mosquito extermination, and San Antonio has

to outside haunts, as it is simply impossible for such insects to withstand the odor of oil. Inhabitants along oiled streets in particular, corroborate this, and they are relieved of a great annoying insect burden since the city's streets have been subjected to occasional oiling along the curbs, etc., and the terrible dust nuisance is also thereby abated and the streets put in a better traffic condition.



MOSQUITO WIGGLERS
(Upper Row, Nearly Full Grown Mosquitoes).
(Lower Row, Larval Mosquitoes in Remote Stadia of Development.)

done its share in that line. Much of this also is due the oiling of streets by the county and city authorities. In former years it was impossible to have a good nights rest on account of the mosquito pests throughout the warm summer months—up to late in fall; but, since the oiling of stagnating waters and breeding places of the mosquito have been inaugurated and especially also the oiling of streets, the mosquito pest, and in fact, all sorts of annoying insects have been driven



STINGING APPARATUS
(Suction Tube and Dagger) of a Full Grown Mosquito



The Forest Tick

Who has not during an outing, or traveling through a forest, or along the refreshing banks of a romantic rivulet been exposed to the tortures of the small crablike wood-tick? Many a pleasure and recreation seeking party has often been made miserable and disappointed at a beautiful camping place on account of these mean little creatures; but a little precautionary measure usually will prevent this. Our bottom land, and in par-



HEAD AND MOUTH PARTS OF FOREST TICK

ticular certain trees and plants in mountainous regions, and the live oak forests, conceal immense numbers of the pesky parasites, and, in camping at such places, it is always well to be provided with some camphorated oil or carbolated vaseline as a precaution-

ary measure to ward off the intruders—as well as other insects of the pesky tribe.

When once perforated with their powerful mouthdrills, the small reverted hooks of the boring-machines cling to the body tissues like a leech and only the forcible tearing off of the tick's head lessens the excruciating pain these pests inflict.

The original microscopic illustration herein of our common wood-tick exposes the powerful boring, cutting and suction implements of a young tick, considerably magnified.

With these three strong, boring instruments the tick bores, cuts and dilates the scarified tissues until blood oozes, and the entire boring machine is inserted down to the base parts of the head, at the same time the smaller and broader cylindrical suction instrument (seen on the photo) serves as the main suction and absorption apparatus of the tick with which it sucks the blood.

This boring and cutting act into the skin is very painful, and the riveted hooklets hinder the boring apparatus to be retracted and usually is so tightly entangled within the tissues that only by force the tick's body can be removed—usually leaving the entire mouth-parts and the head of the tick inside the skin.

The Texas Cattle Tick and Eggs Under Microscope

It is hardly conceivable to the casual observer how immensely the cattle tick really propagates but a mere glance at the photo-engravings herein, at once explains the matter.

Through courtesy of a farmer friend at the Olmos settlement, Anton Krug, the writer had occasion to peruse a few private observations regarding the interest-

ing development of the pestiferous cattle tick, how it breeds its eggs and how they develop into the mature insect.

Some years ago, Mr. Krug had gathered from his cattle, during the months of December and January, numerous cattle ticks in a small perforated box, and some of these I preserved in a plain small pill box, partly covered with cot-

ton. This was January 18, 1910, and six days later, on examining the ticks two of them had hatched myriads of pinhead size eggs of oval or rounded shape and reddish brown color and of uniform size. These eggs were conglomerated together like a bunch of grapes and hundreds of them were hatched by a single tick in a few hours and the photo-reproduction of this tick seen herein, with a portion of the myriads of tick eggs it had deposited a short time before, gives us an idea how im-

developing, and on February 20, a few of the latter specimens were again mounted on a slide glass, and a microscopic photo plate prepared. This view shows how the eggs progressed developing in the meantime, and how the cellular and other elements of the egg contents developed into a separate oval-shaped body—the future cattle tick—these embryonic bodies, of course, still being under development, until the advancing warmer weather was to eventually develop all of the embryos into



TEXAS CATTLE TICK, MAGNIFIED SEVERAL TIMES AND EGGS IT LAID IN CONFINEMENT.

mensely these ticks breed. The tick, with its eggs on this view, is magnified about five times, showing the tick on its dorsal side, with the surrounding glistening eggs.

Being now more interested to note the further development of such eggs, numbers of them were mounted in an artificial blood preparation (bovine) and glycerine and, though observed during cold weather we had at the time, the eggs slowly progressed

the mature insect.

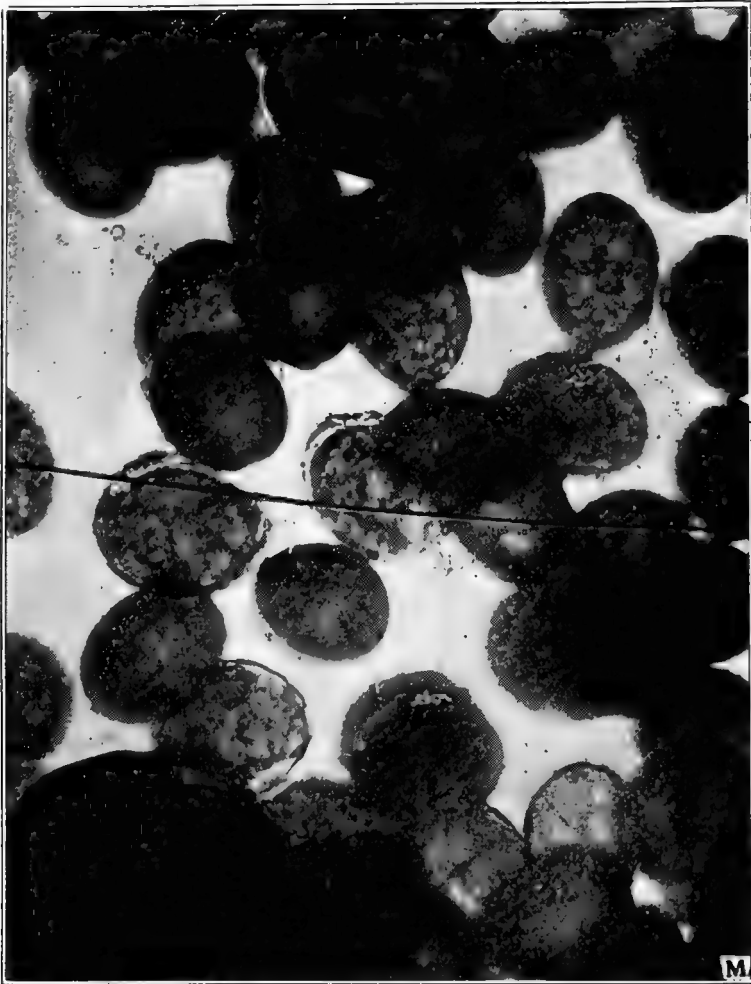
These developing eggs show how the outer egg-shell—its calcareous environments—has separated from the inside delicate egg membranes, inside of which the developing tick embryo is snugly imbedded.

When examined several days after the first crop of eggs is laid, the original fresh egg shell assumes a darker color, nearly black, from accumulated calcareous and other matter, but later

38 TEXAS NATURE OBSERVATIONS AND REMINISCENCES.

on much of this calcareous outer shell is absorbed by the growing embryo. Some of the eggs were disintegrated through artificial means or partly dissolved in the preserving fluids in which the eggs were mounted for microscop-

but in this case they were about three times larger than when first laid by the old tick, when they were more of a yellowish r. d., glittering color. In its further development the inside, oval-shaped body, the developing tick embryo



CATTLE TICK EGGS IN VARIOUS STAGES OF DEVELOPMENT, SOME MATURING
(Very highly magnified)

ic examination, in order to make the outside hulls and the egg cavity more translucent and the forming tick embryo better visible.

The original size of these same tick eggs is not much larger than an ordinary small sized pinhead,

keeps growing and absorbing its eggs elements, assuming the shape and consistency of a miniature rubber ball, with several indentations along its dorsal and abdominal side, and gradually eight legs form, when, after another cycle of

shedding process, the maturing tick shows three pairs of legs on its clumsy body. The suction apparatus of this tick also develops early and serves the insect, after crawling on its host to work its way into the tissues of the animal's skin, when it sucks its body full of blood. It can be imagined how the poor cattle suffer from these minute leeches when thousands of these insects are adhering to the cattle's body and sucking the life juice out of them. The cattle thereby become anaemic and sick, with high fever and diseased inner organs, and often die by the wholesale—all on account of these minute bloodsuckers.

The enormous loss to cattle breeders by these ticks may best be seen by consulting the official reports of the United States Department of Agriculture, and I take the liberty to append herein reports of W. D. Hunter, Shreveport, La., and Dr. J. R. Mohler of the Bureau of Animal Industry of this department. They have made most careful, comprehensive estimates of the losses caused by ticks. The following summary is taken largely from their writings:

1. Loss by death from disease in young animals and those removed from temporarily tick-free localities (as, for instance, all cities,) to places where they become infested. The enormous loss under this heading will be understood when it is recalled that every bovine animal in the tick area must suffer an attack of fever if it becomes infested with ticks. In an instance that came to the attention of the writers, 39 out of 40 calves dropped in a city dead of tick fever when removed to an infested pasture.

2. Loss in weakened condition and stunted growth caused by the fever.

3. Loss by gross tick infestation. At the present time (March 1907) hundreds of cattle in South

Texas are dying from gross infestation resulting from a mild winter. In extreme cases, Mr. Mayer estimates that as many as 200 pounds of blood may be withdrawn from the host during a single season. This makes a gain in weight impossible, even in the best of pastures. Moreover, Prof. H. A. Morgan and other observers believe that gross infestation and the consequent general debility induce acute attack of fever even in animals ordinarily immune.

4. The tick makes hazardous the importation of pure-bred cattle. This prevents the upbuilding of Southern cattle and at the same time largely deprives the Northern breeder of a market that he should have. Moreover, the inability of the Southern breeder to exhibit his stock in the North and of the Northern breeder to exhibit his in the tick area is a handicap, the importance of which will be readily seen.

5. The necessary restrictions in the shipping of Southern cattle also handicap the breeder and affect the price.

6. The maintenance of the quarantine involves considerable annual expense for the protection of the cattle owners north of the line.

7. Minor losses may be grouped as follows: (a) In Texas, especially, the tick induces the attack of the screw worm fly (*Chrysomya macellaria* Fab.); (b) there seems to be, as pointed out by Mr. Mayer, a considerable interference with the fecundity of the infested cows; (c) the railroads are put to the expense of disinfecting cars and maintaining separate pens and the stockmen to the expense of dipping—items which react on the price that Southern cattle bring.

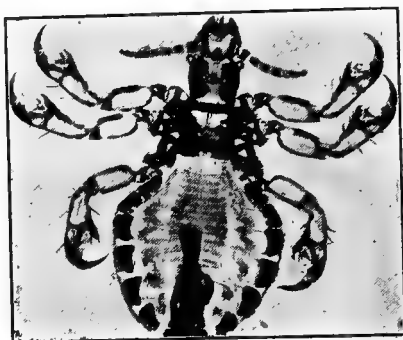
All the losses that have been mentioned total approximately \$100,000,000 each year. At present the loss, as indicated by Dr. Mohler, amounts annually to at least 10

per cent of the value of the cattle. The quality of the animals is lowest and the loss is greatest in the regions where the natural conditions without the tick should produce the finest cattle with the least loss. But the damage may be better expressed by the statement that the tick makes profitable production practically impossible in the South. Any successful system of agriculture must

rest upon a diversification of crops, and this, in turn, depends upon animal husbandry to maintain the fertility of the soil. Therefore, until the tick is eradicated or placed under control a rational system of agriculture in the infected area is out of question, and that achievement would mean almost as much to the North as to the South.

The Hog Louse

Among the hundreds of various types of animal lice the above louse of a hog takes the cake. Note the fearfully large and curved claws of each leg with which it molests the animals and often causes ulcerations and general sickness. The specimen was gathered at a Texas farm, the louse accidentally crawling along a fence-rail. It is considerably magnified and represents a nice specimen of photo reproduction of that parasitic creature.



THE HOG LOUSE

The New Human Parasite of the Sarcoptic Tribe

In April, 1896, when acting as city physician of San Antonio, a peculiar chronic disease in an aged person, (Doctor R——) came to my notice through a friend, Dr. Wm. Fleming of Georgetown, Texas, who was attending the case. Concerning the symptomatology, Dr. Fleming kindly favored me with the following data: "About eight months ago my patient became afflicted with the disease and has been a great sufferer ever since. The disease appears with small papules here and there, from a pale to fiery red, and at times under treatment will seem apparently well, but on application of ointments or lotions reappears in greater or less numbers and larger or smaller lesions. The disease is not attended with itching, but when very red has a slight burn-

ing sensation. The animaculæ, it seems, on maturing, emerge from the skin, in some places seem to discharge germs covering a space more or less dense from a half to two inches in diameter. The various remedies I have used have caused many of all sizes to come to the surface, some bore under the skin again, and although I have picked off thousands, I have never seen one move. One of the annoyances to the patient is their crawling on the skin. Their bite is much like that of a flea or a chinch, and often so rapidly is it done that the mite will bore in before you can pick it off with the point of a knife. The bites and pimples never suppurate nor exude serum.

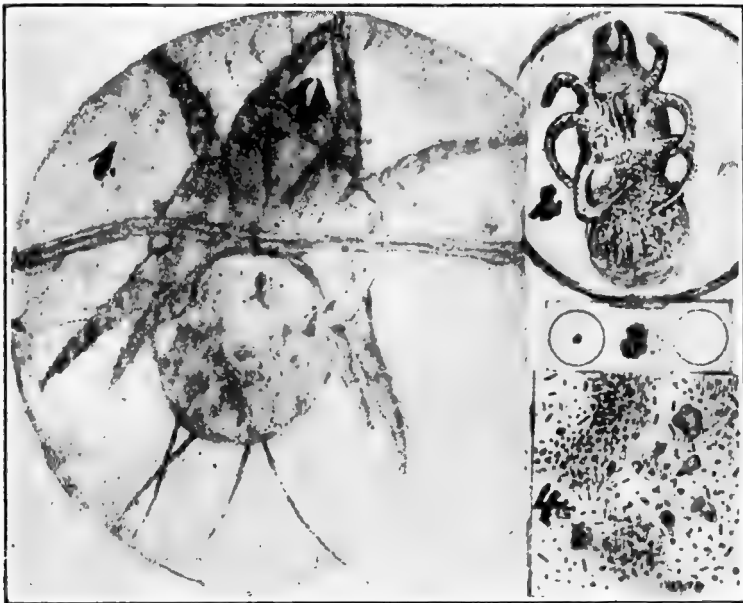
"I have given six months of study and investigation to the dis-

ease and have found nothing in our medical literature which at all resembles it. I have carefully watched him, so that he could not deceive me nor anyone else. Besides, he is too anxious to get well for a malingerer."

The doctor and also his patient have forwarded samples of the material gathered from the sick man's body for me to examine microscopically. After proper mounting (in glycerine and dilute acetic acid also, in Canada balsam) the main ingredients seemed to be in-

cluded a letter to Dr. Fleming, and received the following answer:

"I assure you that every particle of the samples I sent you came from his body. He never has taken a sand bath; he always washes himself in hot water, as it gives him more relief. I have watched him closely for six months and have tried every known remedy without success. The particles of sand-like material or shells, or whatever it is, all come from him, and are not put



1. THE CUTANEOUS PARASITE, Highly Magnified.
 2. LARVAL STATE OF THIS PARASITE.
 3. DOTS IN CIRCLE SHOWING NORMAL SIZE OF THE PARASITE.
 4. GENERAL APPEARANCE OF CUTANEOUS MATERIAL SENT FOR MICROSCOPIC EXAMINATION

organic and of a calcareous nature (giving off carbonic acid on applying acetic or nitric acid) and a major portion showed remnants of cuticular tissue and detritus, a number of oval bodies, which, on pressure under the cover glass, produced a crackling noise. In a number of these slides I noticed several peculiar microscopic mites, and in few instances larvae and casts of these parasites. Being somewhat suspicious, I again ad-

on him by washing or any application. When I use vinegar on him there will come out on his body more sand or shells, and in the morning his body contains more than in the daytime, keeping him awake through the night. I have scraped regular barnacles formed by the insects at night from between his toes and creases of the arms and elbows," etc.

After these statements I gave the matter closer attention, espe-

cially regarding the parasites found, as, from first appearance it appeared to me that the mite was not a species of the common acari, found occasionally in decaying material or detritus, or fruit, vegetables, cheese, flour, etc., but that it was a true sarcoptes—not, however, the common itch parasite of man. In this opinion I was sustained by Dr. A. E. Boeckling, an expert on parasitic mites, and also by Prof. Allen J. Smith, Pathologist of the Galveston University. Both of these gentlemen had taken a great interest in the seemingly trivial matter, which, of course, could only be settled by a close microscopic examination and comparison with other similar mites. Having secured one especially fine specimen among the cuticular scrapings, I mounted it separately from the other remnants and forwarded it to Prof. Virchow, after having it investigated by our Smithsonian experts, etc., but never received a reply from Berlin (perhaps it had not reached its destination).

This mite is of the size of the common itch mite, hardly visible to the naked eye, of yellowish-brown color, supplied with eight legs, jointed, and the pedal extremities are supplied with a sucking disk—characteristic of the sarcoptes or itch-parasite. The eight legs are decidedly thoracic, not marginal, and the specimen preserved was a male one—the sex found being considered by experts as of rare occurrence. In comparing this mite with the common cheese mites and fruit acari, our mite shows the legs, jaws, abdomen and bristles more fully developed, the latter closer to the base of the abdomen and larger and thicker.

As seen on the photo-reproductions, I succeeded in making several microphotos of the parasite, in different stadia, and also of the larvae. The latter is six legged;

the body and legs were semitransparent and dotted throughout. I have not encountered any such larva in microscopic mites before. The Smithsonian experts also declared it to be the larva of the parasite under question.

Prof. Allen Smith in October, 1896, had given me a very interesting report on sarcoptic mites in general, and of our acarus in particular, and I only include here the following points: "I have been looking up all the data I can get hold of in my endeavors to identify the dermal parasite. There seems to me to be no doubt of the parasite being an acarus. The mode of articulation of its legs, the fact of its having five divisions to each limb, its choli-form or pinchers-like jaws in my mind place it surely among the sarcoptides. (Here follows an exhaustive explanation of the five tribes of the sarcoptes family, having used as guide, Meguin: ("Les Parasites articules.") The five tribes are: Sarcoptes detricolles, S. plumicoles, S. cysticoles, S. glicicoles and S. sporae.** The specimen in hand cannot belong to the first tribe. It differs in being provided with a somewhat rugous integument, in having unequal limbs, and, I believe, dissimilar in having a distinct cleft in the abdominal extremity. It is not to be mixed up with the bird-infesting sarcoptes (S. plumicoles) the latter has all its legs well developed and never even tending to be abortive (as in the last pair of R's parasite) and never produce painful or itching sensations (by some poison in its bite.* * *

I would place R's parasite, from its shape, its somewhat striated coat, its undeveloped hind pair of legs, and its power to produce itching, among the true itch-sarcoptides. * * * I believe the R. parasite to correspond with the genus of chorioptes. As to species. I am still uncertain, but believe it

to be *C. ecaudatus*. * * * I see no hairs on the third pair of legs (they are present on this parasite, but were unclear or not visible on the microphoto. R. M.) and only two clearly on the abdominal border. I cannot make out the dorsal plate, etc., since the photograph from which I must take my points only gives the ventral surface. * * * Aside from these, the description suits well, and if these differences are real I believe that at least the genus is correctly fixed, and the species perhaps a new one."

Dr. Boecking called to my attention that, if the above diagnosis of the parasite be applied to a mature specimen, it seems, indeed, to point to a cheiroptes, were it not for the fact stated in regard to the position of the extremities, which are thoracic in our mite and not marginal.

I have compared our parasite with a number of mites of old fruit and cheese, and it differs in being smaller and "bolder" appearing acarus, and the endpads of the legs, on high-power examination, showing a stirrup-shaped discus or sucking-cup. This distinguishes the sarcoptes from similar acari. In microphotography, of course, only such objects and outlines can be copied as come under sharp focus of the lenses of the microscope, especially in making a microphotocopy of such a minute object as our mite under a very high magnifying power. For this reason the outlines of the terminal parts (sucking-cup) of the legs are not so sharply outlined as the rest of the parasite's body.

This case of parasite disease seems to be unique in many particulars regarding etiology and symptomatology. With the exception that it was noticed over nearly the entire body, the symptoms, as stated by Dr. Fleming, would distantly tally with those of the common itch sarcoptes of man;

but, as noticed, had patient the usual itch plague, there certainly would have been found remnants of the itch parasite and its larva, ova, etc., and then, the itch disease is easily amenable to rigid anti-parasitic treatment. The specimens or remnants from scraping of the skin sent to me were, of course, in a dried-up state; they formed a yellowish-brown, granular powder, showing on proper examination, numbers of cuticular or more deeply-seated remnants, capilli (sparingly), calcareous remnants, some granular (apparently hemorrhagic) detritus, shed skins of microscopic mites, and the parasites, either entire, but contracted, or in remnants (partly incrustated). The latter were dead acarinae, and the one specimen, now under question and illustrated, had its legs contracted when first found, but, under coverglass pressure, the legs were gradually spread out.

In conclusion, I beg to call attention to the fact that an article on this subject has been published some time before, but the same was full of typographical errors and the photo-illustrations of the parasite were not as good as desired. It is for these reasons that the matter is hereby again brought before the profession. I may also state that I had sent the article (in pamphlet form) to a large number of experts and medical institutions here and in Europe, and received from none any data concerning a similar parasite. The authorities of the Zoological Institute of Genoa, Italy, have sent me in return, some literature on microscopic mites, with illustrations, but no such mite is mentioned. Whether, in our case, the parasite had been implanted accidentally on the patient from some animal infested with a sarcoptic disease, or from some other unknown source, of course can only be conjectured, but the fact remains that

the entire case, as above described is unique, and the parasites found are some un-catalogued sarcoptes species—in my own humble opinion at least. The cuticular scrapings, as stated, contained a vast variety of superficial cuticular abrasions and deeper-seated products, especially of the follicular system of the derma, and among these were remnants of the parasites, some seemingly incrustated and surrounded by a calcareous encasing.

The sarcoptes species in different animals differ from the one under consideration in many respects, and it is for this reason, and in particular, also, as the parasites, larva and remnants of same etc., were found in scrapings removed from the body of man, that

this is such an interesting study, even were there found no parasitic vestiges.

Referring to the microscopic illustrations herein, the photomicrograph, Fig. 1, shows how immensely this parasite is magnified—compared to the smallest hardly visible dot in Fig. 3, and it shows the bold outlines of the legs, body and headparts plainly. Fig. 2, represents the cast off remnants of the larval state of this mite. Fig. 4, shows the general appearance of the raw cuticular material sent for examination; and the large dot in Fig. 3, shows the average size of the globular bodies expelled, some of which revealed the encased larval parasite.

Some Observations on the Echinococcus Disease (Bladder Tape Worm.)

Of the Texas Jackrabbit in Particular.

The near relationship of the echinococcus parasite of man to the same parasite disease in animal, and the question often asked of the writer whether this disease was the cause of the widespread and common tapeworm pest, induced me to investigate this interesting matter thoroughly in the following paper published some years ago in a medical journal. There is no doubt to me, as to others who have given the matter a close consideration, that there occur cystic tumors in man which are really echinococi in advanced and degenerated state, but were overlooked as such for want of a microscopic examination. My paper, therefore, and the photomicrographs of the echinococcus parasites, which I prepared from microscopic testings, I hope, will be welcomed in throwing a little more light on the matter. Besides the more common and well-known

species of tape-worm—the *taenia mediocanellata*, *taenia solium* and *bothriocephalus latus*—there occurs in this climate a very minute and but little known *taenia*, the embryonic or larval state of the bladder tape-worm, which, in animal, infests with particular preference the prairie rabbit; and to hunters it is well known that among the rabbits it is nearly exclusively the large so-called jack-rabbit which is often infested with peculiar tumor-like protuberances or cysts in different parts of its body, and that, especially during a protracted dry season, a perfect epidemic of the disease exists among the large prairie rabbits, and that the small bush rabbit is nearly exempt from the disease.

In consulting a number of works, medical as well as veterinary, I find no mention of the echinococcus disease among the rabbits. It is a noticeable fact that,

while this parasite in other animals invades nearly all the internal organs, the echinococcus tumors in rabbits, with but a few exceptional instances, have been found with particular preference in the muscular system, especially in the muscles of the lumbar region and the muscles of the thighs and ribs. A common idea prevails among the laity that these tumors

from which they generally start to develop and multiply or migrate to other parts of the body.

During their growth the cyst sacs protude below the skin and they can easily be felt in the shape of roundish, oval or flat, single or conglomerated, and elastic tumors, from the size of a marble up to a child's head, thereby giving the different parts of the rab-



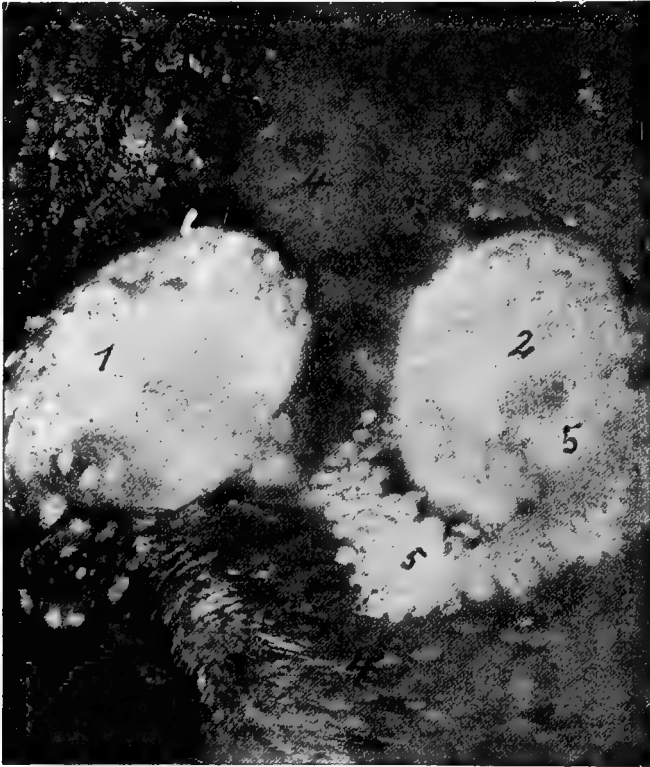
THE AUTHOR (At time of writing of the article some fifteen years ago)

are some sort of "venereal disease," "ulcerations," "grub-worm," etc. I had occasion to examine a great number of cystic diseased rabbits, some of which, in rare instances, showed over one half of the entire body covered with cysts, reaching along and between the muscles of the lumbar and thoracic region down to the abdominal and thoracic cavities,

rabbit's anatomy a very deformed appearance. On dissecting these tumors, in advanced cases, a firm fibro-cystic membrane with the inner or endocyst, similar to the pyogenic membrane of some abscess cavities is noticed which is filled with some albuminous like or gelatinous fluid, and each separate cyst and even surrounding parts of such, contain myriads of small,

whitish, hard kernels not larger than a pinhead. These kernels, if compressed between two slide glasses and examined with a magnifying glass, show an oval or roundish worm-like body with a short and rather broad neck (in its contracted state) and a minute head. If put under microscopic examination, it is at once apparent that these bodies are some species of the larval state of

appearance of these minute taenia bodies plainly. In general these echinococci of rabbit correspond to the echinococcus parasite of man, only that in man, while it is found in nearly all organs, but especially in the liver, it is a parasite that, as stated, nearly exclusively infests the muscular system of the rabbit—similar to the trichina spiralis of man, and some species of cysticerci—only that



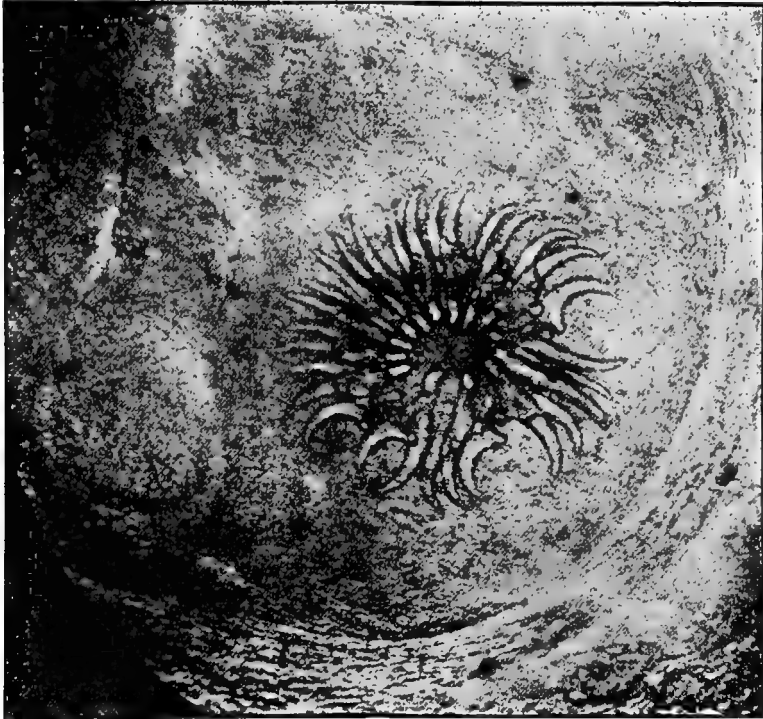
ECHINOCOCCUS DISEASE IN RABBIT.
Section of Lumbar Muscle Infected with the Cysts 1, 2 and 3. At 4 the Disected Muscle is shown; and 5 represents Numerous Echinococci, not Encysted.

the taenia echinococcus—showing the peculiar segmented apartment across the body and neck of the worm, and the head-part shows a number of round sucking-cups generally four or six, and a number of delicate curved hooklets. Some of the micro-photographs herewith submitted and prepared from a rabbit killed only a few days ago, show the histological

the latter in the rabbit, like the echinococcus of man, more often invade the liver, kidneys, diaphragm, lungs, pleura, intestines, the bulbus, pelvic organs (especially the subrectal tissues), lymphatics and subcutaneous cellular tissue, etc. The echinococcus tapeworm in man is described as a very small taenia, with only four or five joints.

The most accepted theory regarding the migration of the echinococcus into the substance of the liver in man is this one: that after the echinococcus embryo is set free in the intestines from the food or drink containing the ova, it starts on its migration into the portal vein, and through that source into the liver. Besides the portal vein and its hepatic branches, some authors claim the gall

tered, and in Pepper's system of medicine on echinococcus of the liver, mention is made of an occasional anomalous development of the multilocular parasite, which from its resemblance to colloid cancer, was supposed to have this character. Peper states: "Its resemblance to colloid cancer is the more striking because of the tendency of the interior of the mass to undergo degeneration, to disinte-



HEADPARTS WITH HOCKLETS IN THE CENTER AND SUCTION CUPS OF THE ECCHINOCOCCUS PARASITE IN RABBIT (Highly Magnified.)

ducts and the lymphatic sinuses as the main source of migration into the liver substance, remnants of the parasite having been found within the lumen of these vessels. The medium of transmission of the so-called echinococcus multilocularis or conglomerated cyst sacs has a somewhat different pathogeny than the other typical form, because well-defined scolices or parts of same are seldom encoun-

grate, and to break up into pus sacs. An echinococcus multilocularis tumor is of almost stony hardness; it has a very dense fibrous structure, intersected by cavities with thick gelatinous cavities," etc. I have myself not encountered just such conditions as the above mentioned in examining echinococcus conglomerations in the rabbit, but I do recollect many years ago having removed

an enormous and nodulated cystic tumor of one of the ovaries, showing precisely the same conditions, but the case undoubtedly was one of cystoma or cystic degeneration of the ovarian follicles; it weighed thirty pounds, the lady living yet, in good health. It is quite well known that in these

cent. of the cattle carry the echinococcus, and that in some other countries, Iceland for instance, according to Kuchenmeister, the echinococcus disease is so widespread among man that the native physicians there in 1872 reported one-eighth of all the diseases occurring there as having been



A SINGLE ECCHINOCOCCUS WITH HOOKLETS IN CENTER OF UPPER BODY.
(Very highly magnified)

slow-growing cystomas, as well as in other more rapid-growing neoplasms, strangulation and degeneration of the tumor substance with formation of pus cavities occur, even in small sized neoplasms.

In order to consider the prevalence and etiology of the echinococcus disease, history shows that in India, where dogs are said to be very numerous, seventy per

cent. caused by the echinococcus parasite.

The propagation of the disease is thus described in Niemeyer's Pathology, in connection therewith: "Animals infested with the taenia echinococcus at times evacuate joints, the eggs or embryos contained therein, by some means get into the drinking water or come in contact with articles of

food which are consumed raw. Having thus entered the alimentary canal, the minute embryos bore themselves (with their six hooklets into the stomach walls or intestinal canal, until they gradually migrate further and eventually enter the liver or other organs. (The hooklets in echinococci of rabbit are very numerous and the sucking cups also, but generally six, while in common taeniae there are only four cups to be seen). Here the small embryo swells up to a large cyst and in this cyst a colony of small unripe taenia or scolices sprout up," etc.

The main cause of the disease in Iceland, according to Kuchenmeister, is attributed to the many dogs kept there; these and the warm drinking water being responsible for the enormous spreading of the disease in man, as the dogs devour the cystic deposits which are carelessly thrown about the yards, and the people are reported to sleep with the dogs in one and the same hut in many instances. In (the case of our jack rabbits, undoubtedly the same process of propagation or auto-infection takes place, and it is a noticeable fact that when our prairies are covered with an abundance of luxuriant green grass, cystic diseased rabbits are rarely met with; as soon though as a prolonged drougthy season prevails, such as the present one, and the rabbits are compelled to eat nearly directly from the ground, they also perhaps devour numbers of the echinococcus eggs or taenia embryos, and the prairie is then found to be covered with diseased rabbits. The wolves, and perhaps sheep also, undoubtedly spread the disease. The wolves kill and eat the remnants of the diseased or killed rabbits and deposit the ova or embryo in their manure.

It is an accepted fact by authorities (Leuckart, Siebold, Vir-

chow, Kuchenmeister, and others.) that the echinococcus is a sort of cystic tapeworm and the embryo state of the taenia echinococcus—the same as the cysticercus cellulosa is related to the taenia solium. Experimental tests with echinococci of man introduced into animals have proven negative so far, but, according to Niemeyer's pathology, it has been proven that animals fed on echinococci of another animal developed the taenia echinococci in the intestines of such animal experimented upon. The immense proliferating properties, each vesicle containing, according to Friedberger (Pathology of the Domestic Animals), as many as thirty scolices, and in one echinococcus alone as many as a thousand; its very minute size and its vitality and tendency to multiply in the rabbit faster than the same species of parasites in man, readily explains the immense and wide-spread infection in the rabbit and canine species. Luckily though, we Texans are not living in Iceland, and our advanced civilized methods of preparing and cooking food, our protected and wholesome hydrant drinking water, and also the abandonment of eating raw meat has cut a great figure and added immensely in the prophylaxis against all sort of parasite disease, and we owe it to our good housewife and hotel cooks in general that such parasite disease as echinococcus in man is rather a very rare occurrence in Texas. Among Texas cattle and sheep this disease also is hardly known, as far as I am informed, and the question naturally arises: Is this parasite in our rabbit of the same species as the one that produces such havoc in some other countries? That, from its description and histological appearance, this embryo-coccus of the jack-rabbit is near related to the echinococcus of man, there hardly can be any doubt. At any rate, though, it

has no relationship with the widespread and common tapeworm pest, the *taenia mediocanellata* and *solium*, it is a parasitic disease sui generis as far as the Texas jackrabbit is concerned. The parasite, therefore, does not produce any tapeworm in man, as some persons are led to believe, and good cooking and frying will destroy the fins or cysts in the meat of any rabbit; but, of course, it is better that such infected rabbit meat should not be used at all.

In order to hear the opinion of other professional gentlemen on



DR. FERDINAND HERFF.

Late Veteran Physician and Surgeon of San Antonio, and Nestor of the Medical Fraternity of Western Texas. (From life size and life like painting.)

the subject, I addressed some years ago, a few lines to Dr. F. Herff, (who by the way, has had an immense amount of practical experience in this line, also), and the venerable old gentleman kindly forwarded me the following reply on the subject: "The *taenia echinococcus* is a very small tapeworm with well-developed head (scolex) and three or four joints (proglottides). It lives in the intestines of the dog, and is not so very easy to find and the roundish appearance of the body, which at first sight looks like a small nem-

atoid worm. Only by examining it in water, by which the intestinal mucus is washed away, and with a common loupe you can disclose its true organization. I stumbled on it during the examination I made on a dog which I had fed with trichinotic sausage, while hunting for intestinal trichinae. Afterwards I found it many times in the intestines of many dogs which were killed by the police during the rabies scare and furnished by Dr. Petterson, then city physician (in 1873). The embryonic state in the rabbit has been known to me long ago, as it is also to many hunters who have shot rabbits, and, in consequence, created a disgust in people to eat them. The embryo lives in the peritoneum and between the muscles in the connective tissues, and is a true echinococcus—that is, a scolex—which multiplies in its cystic surroundings by sprouting or budding and creating new scolices. In that respect it differs from *cysticercus*, which lives in a solitary cyst, and to which family the *taenia solium*, *mediocanellata*, etc., belong, while the *botriocephalus latus* develops free in water at first, but probably enters then a host (cistern, sink or waterpool) and then is developed in the body of man, as *botriocephalus*. These of course, will not cause to man, much less echinococcus which is only produced by the ingestion of the eggs of the mature animal, the *taenia echinococcus* which came from the dog that had eaten infected meat from rabbits, or through wolves or foxes who also harbor the mature parasite. Insofar the eating of infected rabbit meat is only disgusting, but will not produce taenia. The dog however, is the evil-doer, and so the fondling and kissing of lap-dogs or the sleeping in the same room with dogs is to be avoided. * * *

* "I have found the echinococcus

in man twice in the liver (in one case over two quarts and one quart in the other case); between the extensors of the thigh; one in the bulbus of an eye extirpated for panophthalmitis; once it passed from the bowels of a lady who had often suffered from pain in the liver, but did not show any tumor. My son took a great many echinococcus from the bladder of a child; they were large, transparent and elongated. All these specimens I mentioned contained hooklets, and so the diagnosis was correct. I understand that Dr. McLaughlin, in Austin, also removed echinococci from the vaginal-rectal cellular tissue. I am sure if proper inquiries were made it would prove to be so. The specimens of which you send the photograph is a true echinococcus, as the multiplicity of the heads indicate."

Besides above, I have a few other communications on cases of echinococci in man, including one of Dr. R. H. L. Bibb, of Saltillo, Mexico, stating that he had removed a cystic tumor several years ago, situated in the cellular tissue between the "trapezius" and the "latissimus dorsi" muscles, which the microscope showed to be due to this parasite.

The microscopic mountings which I prepared from specimens of diseased rabbits, I may state,

were examined by friends with much interest, especially also in the private bacteriological laboratory of Dr. Julius Braunnagel.

After above had been written, an additional paper on the subject heading this article was contributed to the Texas Medical Journal, and I herewith submit the main part of same:

These investigations will show that after the development of the premature or embryonic parasite of the echinococcus tapeworm from the ingested ova of the mature taenia, up to the migration, encystment, and sprouting of new embryonic colonies inside the cyst membrane in different parts or organs of the human and animal system, that all of these parasites in their most primitive stadia already show quite a well-developed head with characteristic suckers and hooklets and after further development, free themselves from the endocystic membrane, although still adherent to its linings and ultimately, after still further development, some of the more mature of these embryonic parasites isolate themselves later and free themselves entirely from the other more premature crop, and can then be found in a free state either near the base of the endocystic membrane or inside of the cyst fluid.

Something About the Texas Prairie Spider.

In his ramblings about the prairie-plains, river-bottoms and forests, the hunter and lover of nature encounters a large variety of interesting arachnids, from the smallest, hardly visible spinning-variety up to the hand-large black or brown-colored and fearful looking jumping tarantula.

With its immense area of over 274,000 square miles and sunny climate, Texas naturally harbors a large variety of spiders of differ-

ent type and colors; and, although the more dangerous types are not as numerous as encountered in the tropical zones of other countries, we have among the smaller variety of interesting arachnids some very vicious specimens; and among these the small speckled vagabond or jumping tarantula is most conspicuous.

For reason of a lecture before the San Antonio Scientific Society, the writer had the pleasure

52 TEXAS NATURE OBSERVATIONS AND REMINISCENCES.

to submit a lengthy report on Texas prairie spiders and others, conjointly with numerous photo illustrations which are now also reproduced herewith, and the readers undoubtedly will recall most of the different types they may have met on their hunting trips. These photos are all original, and as seen in nature.

As stated, Texas harbors in certain favored localities numerous spiders of more or less vituperous type; but the majority are entirely harmless, and many are useful creatures. During summer and especially during the breeding time some species are exceedingly vicious. At this time they prepare their delicate breeding nests either underground, or in hollows of trees, under logs and rocks and the loose bark of trees, old rotten wood, etc. In gardens they are especially dreaded at this time, on account of occasionally invading the fruit trees, in particular bananas, grape vines and ripe grape bunches etc. Undisturbed by their many enemies—man and birds and wasps, they are entirely harmless and in one way useful. In the Island of Madagascar, it is well known, the natives gather the spider web material of a particular spider species directly from the spider's spinning apparatus. It is of yellowish-gold color and glitters like silk, and the most delicate and costly fabrics are woven from the silk-like spinning material of these useful insects and there exist special spinning factories in which the natives prepare the most gorgeous silk-like domestic products known in the world.

In Texas the most dangerous species known is the small speckled spider belonging to the genus *Letrodactus Mactams* and *Phydippus Trinunctatus*, a small, jet black or brown *Tarantula*, striped with white, orange yellow or vermilion red specks on its upper abdomen.

These spiders have, comparatively, short but powerfully strong fangs and legs, a very large quadrangular head and thorax, and four to six very sharp eye lenses. They jump a far distance to catch their prey—mostly flies and other insects.

The poison of these spiders is contained in a poison receptacle near the headparts, and it communicates in tubules with the small but sharp and curved fangs. The venom is of an oily consistency and even a very minimal quantity produces so severe venom-inoculation symptoms that it is considered more venomous, comparatively, than the venom of a rattlesnake. The curved venom claws can be seen at the end part of the strong mandibles in the form of deep steelblue and glittering projections, and more so if viewed with a magnifying glass.

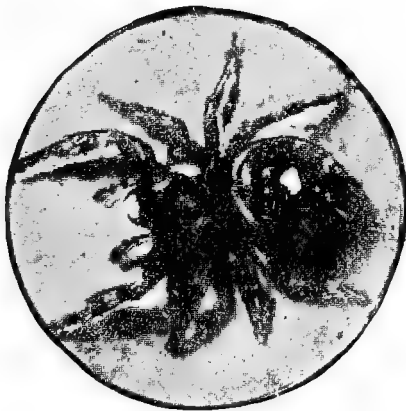
The inoculation symptoms are either of local or of systemic nature, according to the amount of venom and the parts inoculated. Generally a severe sting is felt, with inflammation or blisters afterwards; or the venom is absorbed rapidly into the blood and lymph current, and symptoms of a severe nervous nature, with pain radiating over the abdomen, chest and spine set in—as if a band was tightly constricting the body. In such severe cases vomiting spells occur and the heart centers may be affected—symptoms similarly occurring in snake-bite.

The medical profession occasionally meets with such cases, and I recall a case that happened some years ago which I treated with Dr. Cafferey: A young lady from the Salado settlement was bitten on her leg by one such spider and she suffered excruciating pain and nervous attacks before being relieved under special treatment, and it was over two hours before

she could be safely returned to her home.

In his publications on Texas reptiles and spiders, Dr. H. W. Cruse of Victoria, Texas, relates the following interesting case of spider bite of the small, jumping variety by some hunter:

"In the month of October, 1865, I was hunting in the woods three miles north of Hallettsville, Lavaca County. Thrusting my hand into a blackjack stump, I felt a sharp pain in the back of my hand between the thumb and forefinger, of my right hand. Withdrawing it quickly, I found a spider (*Latrodactus Mactams*) fastened to my hand. I crushed it and proceeded with my investigations. In a few minutes my hand began to tingle, like it had been asleep, and a place around the bite, the size of a half dollar, began to discolor. I started for home about one mile away. In the meantime the tingling had turned to a thou-



WHITE AND RED SPOTTED JUMPING TARANTULA
(Magnified alive three times.)

sand needles being thrust into my hand and arm as high as the elbow and I got sick at the stomach, and when about half way home I laid down and vomited freely. Arriving at home, I had another vomiting spell and felt very faint, and the pain in my arm was going up. There was little swelling in

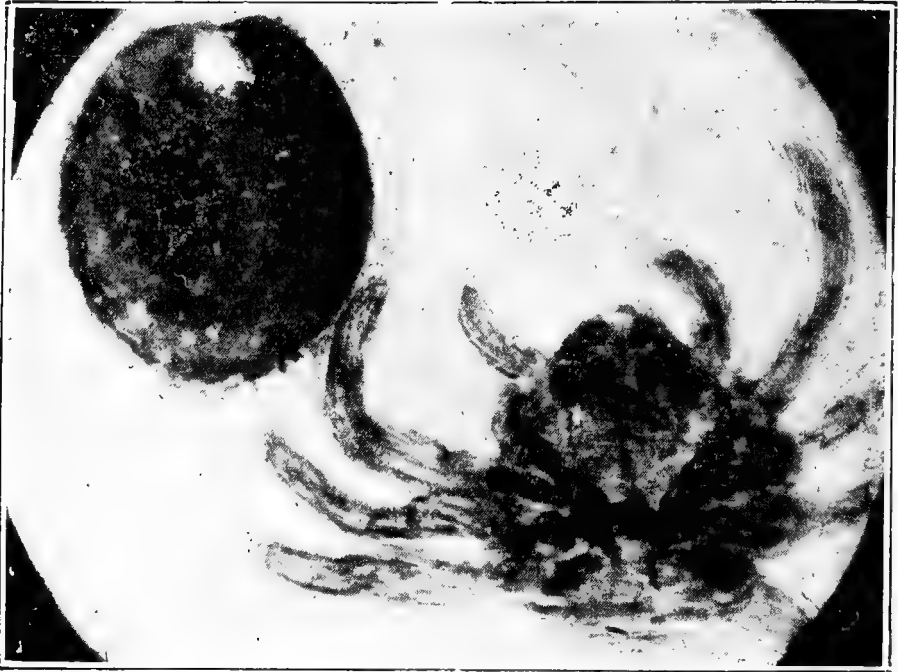
the arm, but the spot around the bite had turned the color of dead flesh, and the nausea was very great. I secured a horse and started for town, three miles to a doctor. Six times in the three miles I stopped to vomit, and when I got to town the intense pricking pain had gone up my arm and around to the shoulder blade. I went straight to the office of Dr. Troup. My eyesight was dim. My brain was muddled; the nausea was intense, and the pain in my hand, arm and shoulder was very severe, and I lost all mental fear of what the result might be. The doctor gave me something which relieved me of all pain and I went to sleep. When I awakened he was examining my shoulder and arm. About where vaccine is generally placed on the arm was another place similar to the one around the bite, and still another on the shoulder blade. They were all about the same size and color, slightly raised and hard. I was in bed two days. About the fifth day a sharp line had separated the healthy flesh from the diseased flesh at three swollen places, and the dead flesh fell out in a lump, leaving a clean, healthy hole that would hold about two half dollars. I lost flesh and it was about a month before I regained my usual health. I do not know what remedies Dr. Troup used."

The breeding nest of these spider species is an interesting study. They do not dig funnel shaped nests underground, like some of the larger tarantula species or prepare web nests in hollows of trees, like some other spiders, but they prepare a neat, flat, or globular, dense nest in some corner—probably under loose wood or bark of old trees or rotten wood, or in secluded places of stables and old-fashioned privy vaults. During an outing in the post-oak valley of the Olmos settlement, north of San Antonio, some time

ago, the writer came across a large broken oak tree trunk, with its bark loosely adherent to the fallen tree. In removing this bark with a stick an interesting scene presented itself. In one corner two large scorpions, with tail erect, were seen, coiled up and ready to strike, and several feet apart two small jumping spiders, with their breeding nest were to be seen. They were both of the deadly speckled type, and the jet black colored variety with its

which the spider dwells and lures for some insect that may be entangled in this upper web (just as seen in the illustration).

A similar rare and rather queer and scientifically interesting breeding nest of a spider is also seen in the photo illustration in these pages, showing a spider's breeding nest in a large silver spoon. The spoon with its interesting contents was handed the writer two years ago by the secretary of the San Antonio Scienti-



PHOTOMICROGRAPH OF A VERY YOUNG CRABLIKE SPIDER AND EGG

three carmine red specks. It was hidden under the cover-lining of its dense webnest—exactly as seen in the original photo in these pages. In the center part of this illustration is seen the rounded or oval-shaped cocoon of these spiders, which contained myriads of eggs, and perhaps developed young spiders. The mother spider of this species covers its breeding nest with delicate, yet dense and strong, upper weblining, under

fic Society, and later I happened to prepare a photo copy of same for a lecture before the Scientific Society of San Antonio, on Texas arachnids. This spoon, as the illustration shows, was nearly entirely covered with a densely woven, network cover, and a funnel-shaped breeding nest inside the hollow part of the spoon. We noticed numerous living spiders crawling over the edge of the spoon and along the web-lining—

not much larger than a pin head. They were of crab form, hairy, and showed well-developed spinning claws and six eye-lenses, on microscopic examination. The illustration shows how the mother spider, after preparing the inside funnel-shaped breeding nest—and which contains innumerable spider eggs—artistically spun its delicate threads from one edge of the spoon over the other margin, thus covering the breeding nest which serves to protect the young developed brute as well as to entangle insects, which later serve as food.

The greatest enemy of spiders

rolled around and around, until, after several attempts, it succeeded in plunging its sharp stinger into the spider's body, and it expired at once. After this it carried its victim to a nearby hole, and disappeared with the tarantula under ground. The illustration in these pages I reproduced for this article from Harper's Illustrated Journal, as it is a fine and lifelike presentation of this peculiar vicious and useful wasp.

It is an interesting study to note the breeding cycles of spiders and some years ago, whilst engaged in some private entomological research and microscopic study of



A PAIR OF SMALL PRAIRIE TARANTULAS WITH BREEDING NEST AND COCCON IN HOLLOW OF A TREE BARK.

is a large, yellowish-brown wasp—a ground wasp. This wasp haunts the tarantula's breeding nest, attacks the spider unaware, inoculating it after a deadly duel and drags it into its underground breeding hole. A friend of mine—a farmer—witnessed such a battle last year in a cotton field. It was a large, black tarantula, crawling along the mesquite grass and cotton furrows, whence all of a sudden one of the "tarantula killers"—a long, brown wasp—came along, attacked the spider—always from the abdominal side, and a fierce battle to the death ensued. Wasp and tarantula

the arachnid family, several microscopic mountings of the ova in different stages of development were prepared. Also, a breeding nest with myriads of young spiders, entangled in the interior web linings of the cocoon is seen elsewhere, representing the broodnest of our large orange and black colored prairie spider—the same species represented in the photo illustration showing three prairie spiders.

It was during a hunting trip, in a severe cold winter month, out in the post oak valley of the Olmos, that I came across this interesting nest. It was suspended on the

branches of a dry mesquite tree, with some of the dry mesquite leaves interwoven to a branch at its base. After removing the entire branch with the oval shaped and silk-like glittering nest, I prepared at home the fine photo seen elsewhere in this issue with extra focusing lenses to camera.



SPIDER BREEDING NEST IN A LARGE SILVER SPOON.

After the outer capsule of the cocoon was opened with scissors and some of the weblinings containing myriads of pinhead large spiders and ova were artificially expelled outside the cocoon, as seen in the photo. The young spiders proved on microscopic examination, to be of the same type of arachnids as the two large prairie spiders described and this specimen illucidates how wonderfully

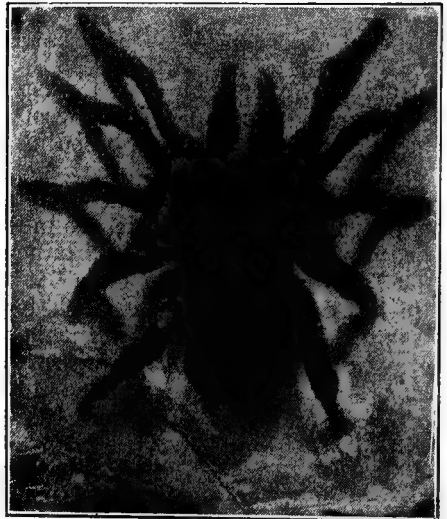
these and other spiders provide for their offspring, as this nest, with its living contents, was prepared by the mother spider to



TARANTULA-KILLING WASP CARRYING OFF A SPIDER.

survive during a bitter cold winter when the nest would have been exposed to severe cold and rainy weather, and afford the young in spring or summer time to escape its protective hull and escape on the prairie plains.

The trapdoor spider species,



TRAPDOOR SPIDER (Slightly Magnified.)

(being a type of ground spiders,) a photo of which is here with submitted, prepare their breeding nests entirely differently than the above species. With their powerful mandibles they dig long underground cylindrical holes, which they outline with a dense silk-like white web lining, and one particular species provides its nest with a tight fitting door, which the spider closes or opens at will, especially during danger time of its enemies—in particular, the

which ensnare birds and lizards in their golden webs:

“Far up in the mountains of Ceylon there is a spider that spins a web like bright yellowish silk, the central net of which is five feet in diameter, while the supporting lines or guys, as they are called, measures sometimes ten or twelve feet. The spider seldom bites or stings, but should anyone try to catch him, bite he will, and, though not venomous, his jaws are as powerful as a bird’s beak.



COCOON OF A LARGE AND BEAUTIFUL PRAIRIE SPIDER WITH MYRIADS OF THE YOUNG BROOD, SUSPENDED BETWEEN DRIED BRANCHES AND LEAVES OF THE MESQUITE TREE

large brown lycosa tarantula. One of the illustrations shows the microscopic appearance of the hinge part of the door, showing numerous silk thread-like spinning threads interwoven with earth remnants—the yellow clay or adobe earth and remnants of sand and other matter.

Regarding spiders of other foreign countries, the following is an interesting report of spiders in Ceylon. They must be monsters,

“The bodies of these spiders are very handsomely decorated, being bright gold or scarlet underneath, while the upper part is covered with the most delicate slate-colored fur.

“So strong are the webs that birds the size of larks are frequently caught therein, and even the small but powerful scaly lizard falls a victim. A writer says that he often sat and watched the yellow monster—measuring when

waiting for its prey, with his legs stretched out, fully six inches—striding across the middle of the net, and noted the rapid manner in which he winds his stout thread around the unfortunate captive.

He usually throws the coils about the head until the wretched

suspended on brush or tree or a wire fence of some pasture, being of golden yellow, with jet black stripes; and the smaller one, of star shape, very numerous encountered on the prairie plains. The photo represents them slightly magnified from nature. All of

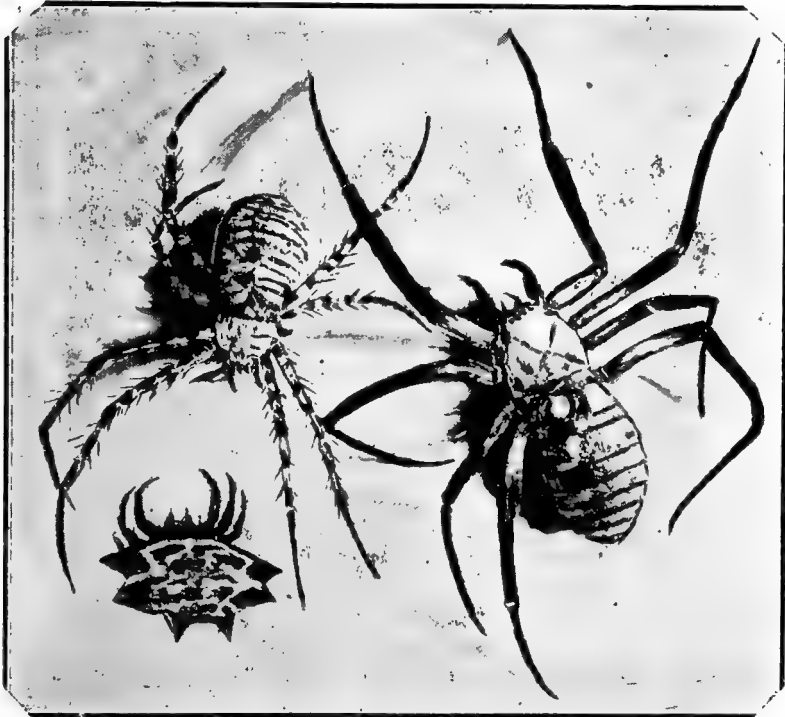


MICROSCOPIC APPEARANCE OF THE DOOR MATERIAL OF THE TRAPDOOR SPIDER OR CALIFORNIA GROUND TARANTULA

victim is first blinded and then choked. In many unfrequented dark nooks of the jungle you come across skeletons of small birds caught in these terrible snares.”

They are very beautifully marked when seen in the prairie

them prepare large spiderwebs which serve as traps to entangle such insects as flies, grasshoppers, beetles and other insects. I met once one such large web with a large Devil's horse entangled in its meshes and the huge spider evidently had just inoculated it as it was perfectly motionless.



INTERESTING TYPES OF TEXAS PRAIRIE SPIDER
The cocoon of the Lower Specimen is Seen Depicted on Page 57

The Haunts of the Small and Vicious Prarie Jumping Tarantula.

For reasons of their vicious character and interesting life habits in building a large snow-white cocoon to live and breed in, I submit to the readers a few more original observations and photographs directly from nature concerning the jumping tarantula. The photos were prepared lately by the writer during an outing near our famous Mitchell's Lake hunting preserve. Much of the

of the little insects in the act of emerging from its oval shaped cocoon, or breeding nest, while the other photo shows another, but of a different type of spider, outside of its nest—both on a large cactus leaf. This breeding nest is of snow-white color and silk like cluster; the main inside being covered and sheltered by an outside web-lining; and both serve these little dangerous creatures as shel-



BLACK JUMPING TARANTULA ESCAPING ITS COCOON OR BREEDING NEST.
Which is Prepared on a Cactus Leaf

land and rocky hilly regions around there is cleared of brush and cactus jungles and converted into cultivated land; much of it though is still in the same wilderness as in the days of the Indians; and it is there among the cholla cactus plants, where quite numbers of the various types of the small and vicious jumping tarantulas or vagabond spider abound, and the photos show one

in inclement weather as well as a breeding haunt, the female depositing immense numbers of small round eggs inside a separate and densely woven globular web-cocoon. They never spin large outside trap nest webs like other spider species do, as they catch their prey, mostly small insects, with a sudden far leap, with their powerful and thick front legs and curved fangs.

There are two prominent types of these vagabond tarantulas, (*Latrodectus Mactams* and *Tri-punctatis*) and abounding around the cactus jungles; one being of light gray and beautifully striped color, while the other

If not molested directly, these as well as all types of prairie spiders very rarely attack a person. They are, however, of a poisonous nature, and very serious and even fatal casualties have been recorded in medical litera-



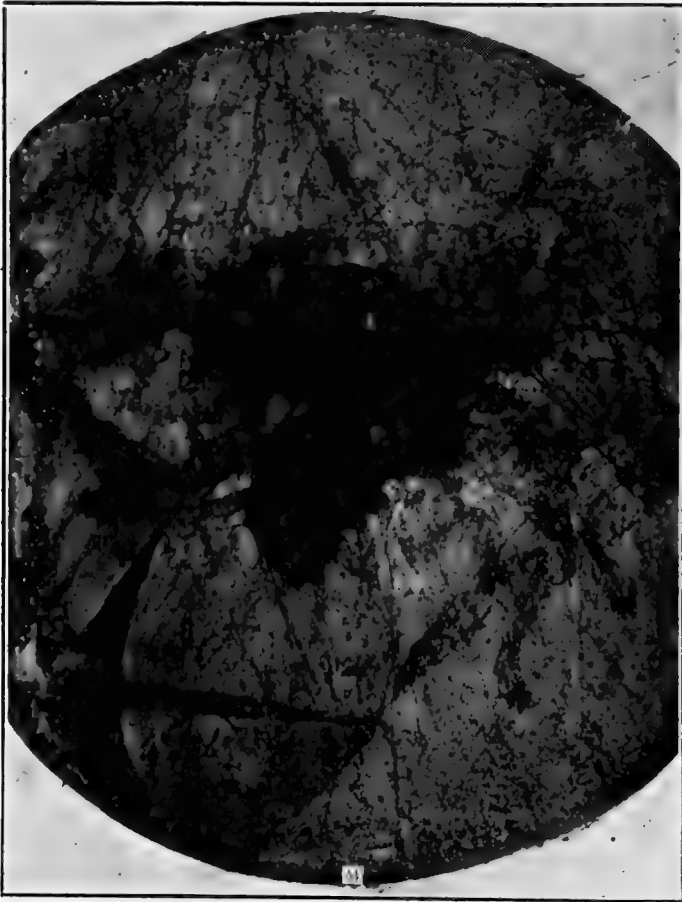
A VICIOUS PRAIRIE TARANTULA JUST ESCAPING ITS COCOON

types are of jet black and dark gray color, with three white or vermillion red spots on the body; all of these types have an enormous head and they crawl at short intervals in a crouching position—similar to a cat after its prey.

ture; the writer recollects having treated some years ago, one party, a lady, who was very ill and came near dying from convulsions which set in shortly after being bitten in the leg. The spider was killed by the lady—crushed to death in the folds of her skirt.

The seriousness of such a spider bite depends on circumstances; often only of minor import; but in deep-seated cases, especially if a bloodvessel is penetrated, the symptoms are more alarming—often with very severe pain and discoloration of the parts affected, gangrenous disintegration of

larged one-third to its normal size—this main oval-shaped cocoon being covered with an extra, and very thin web-lining—resembling a tiny snow-white veil. In both instances, the tarantula had been hidden inside the cocoon, and the photo of the spiders were taken by first focusing the cocoon, and



ENTIRE EXTERNAL HULL OF A VICIOUS JUMPING TARANTULA ENTANGLED IN WEBLINING (Very highly magnified.)

the tissues, with subsequent derangement of the nerve centers, etc.

The photographs in this issue show how ingeniously these spiders prepared their silk-white cocoon on the thorny cactus leaf— one of the photos showing the cocoon and the escaping spider ex-

then slightly tapping the base-part of the cocoon with a slender piece of stick. The instant the spider emerged the plate was exposed, a few seconds. No chloroform or other artificial means were used in this procedure; and the views were taken at close range, with the aid of an extra

close focusing lens. It takes considerable courage of course, to prepare a photograph of these jumping tarantulas from nature; but the apparatus was so arranged beforehand, that the spider could not reach the hand—in case it should have made a leap. Both photos were prepared in the presence of Mr. A Koep Jr., of San Antonio, one of our camping party.

With the above memoranda, it also affords me much pleasure in appending an unusual fine and rare microscopic photograph of the hull or skeleton of a very minute young tarantula entangled in the web-linings of the old cocoon in which, with numbers of others of its former host had been hatched.

After myriads of the globular yellowish-white eggs are deposited by the female spider inside of the snow-white and silken cocoon cavity and hatched out, the developing young broad-headed tarantulas undergo several shedding processes—similar to the metamorphosis of beetles and other insects; and this evolution of the newborn spider is a most wonderful phenomenon—as can be seen on the photograph of the cast-off hull of one of the newborn "little fellows" showing the cast-off skin in toto—photo reproduced by the aid of powerful lenses of the microscope. The cocoon from which this young specimen was photographed contained large numbers of similar cast-off hulls; and the one seen herein I had mounted between two slide glasses after careful removal of some of the inside particles, including the entangled hull and web-lining, from a jumping spider cocoon.

As seen, the spider hull is suspended inside of a network of spider threads—which the young spider itself undoubtedly had spun inside the cocoon previous to its extrication from its old anatomy,

as seen on the photo, the abdominal and broad hull part shows several large cracks; through this cracked shell the new-formed spider extricated its entire anatomy: first all feet with pads and joints; then the head parts; then the thorax, and ultimately its abdomen—a wonderful process, when we consider that this spider hull specimen was not larger than one of the minute young spiders seen on one of the previous photos—about the size of two pinheads!

The young spiders as seen photographically, previous to its process of shedding, seems to entangle themselves in the web-lining—perhaps spun by their own abdominal spinning apparatus, having thus secured a good hold for the tiny but strong feet, they manage to gradually perforate the old exterior abdominal hull—and retract the balance of their anatomy. How else could it be explained? It is known that even at more remote age, this young brood can spin a tiny web—hardly visible to the naked eye, and the separate globular cocoon generally at breeding time, is filled with eggs, deposited by the old female arachnid—with no particular web-lining inside the breeding cocoon. However, most of the types of jumping tarantulas have their eggs deposited and encased in a separate globular cocoon—which is covered by still another larger cocoon membrane—the shelterhouse of the old spider; and when the young brood develops they manage to escape the breeding cocoon and enter the large open cavity of the old host where, among its spider thread meshes, they entangle themselves or spin their own web, and undergo there all the peculiar shedding process.

It is interesting to note how these and other types of spiders act under a few drops of chloroform being dropped, or sprayed

upon them or close to their body. In a moment they become very restless and try to escape, but quickly the nerve centers become affected with gradual paralysis of the limbs, and thus they can be handled without the least risk. In fact, the latter is much overdone;

late their victims generally after leaping upon them—hence their appropriate name: "Jumping Tarantula."

The adjoining photo-illustrations of two oval shaped cocoons on acactus leaf also is of rare interest; representing one of the



BLACK AND GRAY TARANTULA ON COCOON, WITH YOUNG BROOD.

like most other wild animals, they seem to feel the superior human power and always retreat first, and try to seek a safe place before they put up a fight and bite only, after direct contact or severe provocation. The curved fangs of this vicious type is rather small for its size, but the poison glands are large and they incu-

large black leaping tarantula and one of the gray and speckled types on top of one of the cocoons, with a number of its young brood. A rent in one of the cocoons shows some of the ova inside the breeding nest. The two spiders were this time chloroformed, but not dead, before taking the view.

Some Texas Insect Killers

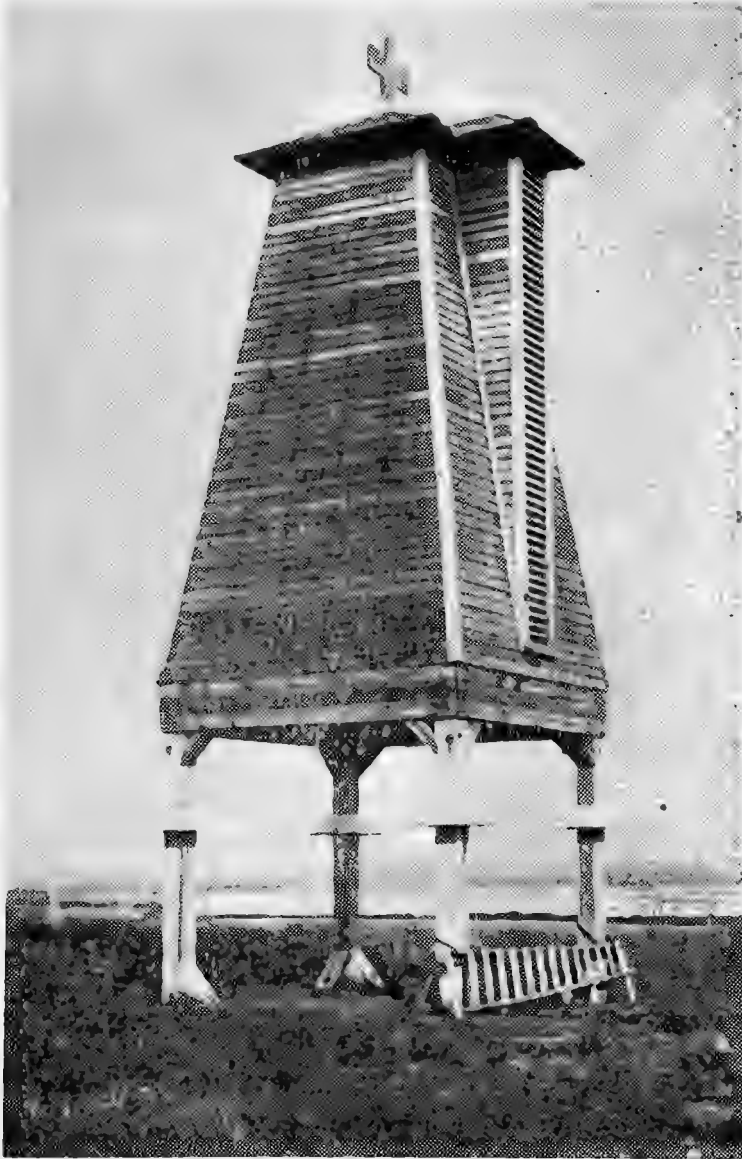
Were a majority of the myriads of insects throughout the continent not daily and hourly killed by their enemies, humanity would indeed be in a terrible dilemma, but nature has wisely provided that insect life be kept in certain limits of development and increase, and a constant war of destruction is occurring, from the

minutest of animalcules up to the higher organized insects.

These enemies of insect life are manifold, but we know that in particular certain bird species and some insect destroy enormous amounts of the dipterous pests, but human genius is still wanting in inventing some radical remedy for the wholesale destruction, for

instance, of such injurious insects as the cotton boll weevils and worms, caterpillars, grasshoppers, flies and mosquitoes. Other insects, lice, ticks, bedbugs, spi-

rigid enforcement of modern sanitary measures; but the fly pest is still awaiting a more radical erasure from its existence. The trouble is, these pests, besides being



BAT ROOST TOWER ERECTED AT MITCHELL'S LAKE BY DR. CHAS. R. A. CAMPBELL
(Cut Loaned by Courtesy of the Sunday Editor of the Daily Light)

ders, scorpions, etc.—are more or less amenable to destruction by our modern methods, and also the mosquito pest can and has been eliminated to a certain degree by

constantly reproduced during their breeding seasons from those surviving, cannot easily be reached beyond the boundary line of inhabited places, and they con-

stantly, more or less, invade the towns voluntarily or by being carried there by the elements. For these reasons it is necessary that for instance, the mosquito and fly insects, be constantly given sanitary attention during the summer and fall time and their breeding places be kept clean and freely sprinkled with coal oil or copperas or carbolic acid, etc.

The writer, as far back as 1878 had read original essays before the West Texas Medical Society and other bodies on the importance of being familiar with the fly and mosquito genera and other insects as factors in transmitting disease upon human beings, and to study their habits, propagation, prophylaxis, and extinction.

Among the large variety of birds which kill and feed on insects, one in particular is a great destroyer of the mosquito family and moths—the so-called bullbat, or goatsucker, or night swallow, of which several genera exist—a bird of dark, speckled, reddish-grey plumage; a large, flat head, and enormous mouth when opened. It is nocturnal in habits, and belongs to one of the very rare birds which lay their eggs on the bare ground, absolutely without any nest, not even scraping the ground or using any protection whatever.

This interesting and useful bird has been more fully described and depicted elsewhere herein.

When night approaches large numbers of our bullbats can be seen at nearly every tank or creek swiftly flying in search of mosquitoes, gnats, moths, etc., and all night long they are kept busy in destroying such insects. When day break appears they seek the lower branches of a tree (mostly mesquite tree) and sit lengthwise on such branch until perhaps disturbed, when they spread their long wings and slowly fly to some other protected spot.

Of other species of night flyers, the common bat takes a high place as one of the most useful animals in destroying insects, including vast numbers of mosquitoes, and gnats. Indeed, on account of the large amount and the only food they consume being insects of all sorts, the bat has been lately given closer consideration as a sanitary scavenger by no one less than our friend and townsman Dr. C. A. R. Campbell, who has arranged and patented a practical device for attracting and harboring bats by the wholesale, for the purpose of ridding the surroundings of a community of mosquitoes and other insects. The device is so arranged that not only the bats find a lodging place and multiply, but the bat manure or guano, from such bats can be also gathered in properly arranged barrels and used as fertilizing material. At the same time, Dr. Campbell suggests an arrangement to protect the small minnow fish in tanks and creeks from feeding on the eggs of the dragon fly—the latter also being an enemy to the culex or mosquito family.

Practical demonstration, only of course with extensive use of Dr. Campbell's suggestions, will show to what extent mosquitoes will be exterminated by such device, but the scheme is based on sound principles and it will be a great boon to humanity indeed if successful.

Since above has been written, I understand that the experiments are being conducted with most satisfactory results, and a large bat-guano gathering establishment and breeding house for bats has been created at the Government Experiment station on the Corpus Christi road, and also at the west side of the hilly region facing Mitchell Lake, one of the most prolific insect breeding and marshy lagoons 10 miles south of San Antonio.

Now, let us see to what extent

the bat is an insect destroyer. In the year 1889 Captain Reichards of D'Hanis, himself an academic zoologist of the old school and close observer of Texas nature objects, had sent to the writer several samples of the bat guano gathered from the large bat caves of Frio County, for a closer microscopic examination, and I prepared for his own satisfaction, about ten photo microscopic views of the guano. These views revealed throughout extensively remnants of predigested insects of various variety, but mostly remnants of gnats, mosquitoes, flies, moths, spiders and beetles.

In most of the microscopic slides examined the multiprisms of insect eyes, mostly of gnats, mosquitoes, flies and beetles, could be seen. There were no vegetable tissues present. The scales of moths and smaller insects were numerous, as also remnants of insect legs and the body shields, claws, parts of antennae, etc., of various insects.

It is thus shown conclusively that that little "obnoxious" looking mammal—the bat—is a very useful insect destroyer.

Finally attention may be called to an insect among insect killers,—the dragon fly, or mosquito hawk. This is another sanitary scavenger in its way, as it feeds on smaller insects such as mosquitoes and gnats, of which the banks of rivulets and tanks and other watering places abound, especially like out at West End Lake or at Mitchell's Lake, south of San Antonio, where there is a large surface of water surrounded with plenty of vegetation. Here millions of the mosquito hawks can be seen in all forms and colors and of all genera. Some are beautifully striped and all are a lively set of insects, and, by reason of their sharp eye sight, hard to catch.

In its larval state the dragon fly has always been an interesting

study to naturalists. The female insect deposits her eggs in masses—up to a hundred eggs. She generally hovers a considerable time over a certain favored water place—often over a small, stagnating and well demarcated pool of water near an outlet of some creek, tank or lake, rapidly dipping the apex of her abdomen into the water, when her eggs gravitate to the bottom of the water. Many observers also have seen them creep along the stem of a water plant into the water and thus lay their eggs on the bottom. When matured the peculiarly shaped larvae, after several shedding processes, creep outside the water and adhere to the stem of a plant or tree, and after further development, the young dragon fly gradually creeps through an opening in the upper aperture of its primary anatomy or hull—first with its head parts, then the front feet and ultimately with its entire body, and always to a curved position of its body. Its wings are now very delicate, but they soon dry entirely, when they swiftly fly in search of their insect food.

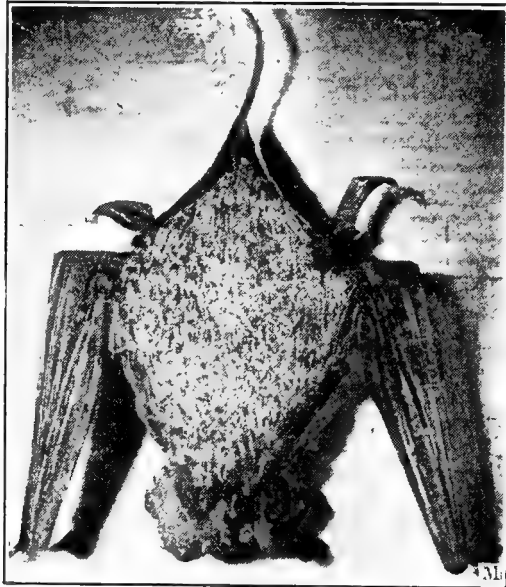
The small minnow fish, fully described elsewhere is also a great enemy to the eggs of the dragon fly, as well as those of the mosquito and other aquatic insects. To Dr. Campbell the writer is indebted for a sample of the dragon fly eggs, of which I prepared several microscopic views, showing the delicate long and oval shaped eggs highly magnified—normally not being larger than the size of a flea.

The wings and the head of a dragon fly with its proportionately enormous eye globes and the mouth parts of this insect are an interesting study, the latter being supplied with strong, serrated mandibles, with which they grab and chew their insect victims, and also the eye capsule is a most interesting object under the microscope.

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Finally I wish to call attention to the two original illustrations, photographs from nature of our greatest of insect destroyers, the bat; one representing our common town bat; and the other, a rare very large species of the cave or mountain bat; the first photo representing a bat found among a wagonload full of bat manure at one of the old Mitchell's lake boat houses, now long ago abandoned. Bats by the millions in former years and even now congregate at the old lagoon, on account of the immense insect life there in the summer and fall, now conspicuously diminished since Dr. Campbell

encountered this specimen many years ago during an outing and hunting trip in the canyons and mountainous regions of San Geronimo some 27 miles north of San Antonio. Perhaps it had been chased up from its haunts by some animal, as we met same at noontime, about 2 o'clock at a time these nocturnal animals usually are hidden in deep dark caves or large rock crevices or in the interior of hollow cliffs, etc. The large bat was flying high up over our heads in an erratic way, and during one of its turns, I managed to bring it down with a well aimed shot, and we were astound-



A COMMON BAT IN HANGING POSITION

erected his high sanitary bathhouse and tower on the west side of the lake. I prepared this bat photo in its natural size, the bat hanging to a board downward, with folded wings.

The most interesting of these two photos however, is the second one, showing the head and mouth parts of the cave bat at very close focus; prepared with extra near focusing lens adjusted to the ca-

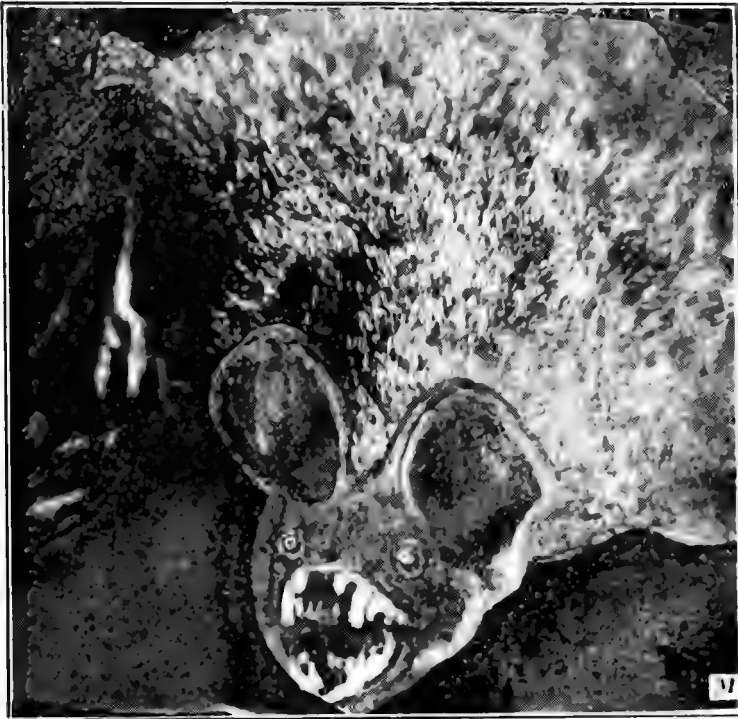
ed with its large size and dark brown fur-like body, resembling the fur of a ferret or a beaver. Taking it to the ranch close by a relative, Mr. E. Henderson, I prepared the view seen herein.

Dr. Marnoch, of the Helotes, a scientist of the old school and authority on Texas reptilia and jungle animals in general, once years ago, told me such large bats often congregated around his pictur-

esque farm, and he met single specimens along the creeks clinging to the branch of some shady tree. Whether these were of the same species as ours, I am unable to say, at any rate, it is a very rare bat to procure nowadays, as the haunts of such bats are generally inaccessible and hard to find. From general appearances it seems to belong in the class of vampires, on account of its extraordinary large size as compared

killers destroy vast numbers of all sort of insects including beetles, besides, vast numbers of mosquitoes, flies etc., and also in absence of such, perhaps they feed on fruit and other substances—unlike our other bat, which feeds almost exclusively on nocturnal insects, gnats, and mosquitoes.

Besides the teeth to grab and chew the insects up, all bats have an exceedingly sharp eyesight,—which enables them to catch their



A LARGE CAVE BAT FROM THE SAN GERONIMO MOUNTAINS

with our common small bat specie. which however, has the same anatomical arrangements of the teeth, and the most interesting part of the large species is its head and the long, slightly curved teeth, which are rounded at the apex and serve to masticate their insect food. The photograph here was taken after the outer mouth parts had been artificially retraced, showing both rows of teeth nicely. No wonder these insect

prey in pitch dark nights, or in dark cavities; and next to the eyes, the ears also are of immense help to these as yet obscure animals; and Dr. Campbell who has had nearly a life long experience with the bat, has made some very interesting observations on the acoustical apparatus of this nocturnal mammal—in the way of the bat distinctly discerning each insect specie by its peculiar flight and wing sounds.

As seen on the photos, the ears are very broad and rounded—thereby affording lots of space for the soundwaves to gather in the center of the main hollow and

gradually funnelshaped ear cavity, from whence the sounds are transmitted to the eardrums and the hearing centers of the brain.

The Texas Minnow as Mosquito Destroyer

It is not generally known that the minutest of our fish species—the “minnow”—feeds on the eggs and larvae (wrigglers) of the mosquito insect, and thereby becomes a factor in the prevention of malaria.

In England, observations have been made by some naturalists and attention called to the fact, that in the Island of Barbados, West India, a very small fish specie exists, which on account of their immense numbers, are

tent. “And it can easily be imagined, on account of the immense numbers of the ‘Million’ fish found in the sweet water rivulets there, that the larval mosquitoes (from whence the malarial infection afterwards takes place, by inoculation) are destroyed by those fish. They show a ravenous appetite, and this is considered especially characteristic in their favor as a destroyer of the larval mosquito.”

To the writer, and many American scientists well acquainted with the habits of our native “minnow” the above is nothing particularly new, as far as our own smallest fish is concerned, but it is a matter well worth while to be looked into closer, and a few original data regarding our Texas minnow fish will undoubtedly interest the readers:

The above “million fish” is described as a very small creature of bluish color, with black dots around its tailbody. This would about tally with a larger species of our minnow encountered occasionally in the Texas rivulets. But the million fish of the waters of Texas is decidedly less numerous than the smaller species—the common minnow of our rivers, creeks and tanks.

In these pages can be seen depicted the exact natural size and appearance of two full grown Texas minnows, with a number of your fish from several days to a week or more old. Also, a photomicrograph is reproduced (from original collection of microscopic specimens) of a number of embry-



FULL GROWN TEXAS MINNOWS; ALSO YOUNG
(Natural Size)

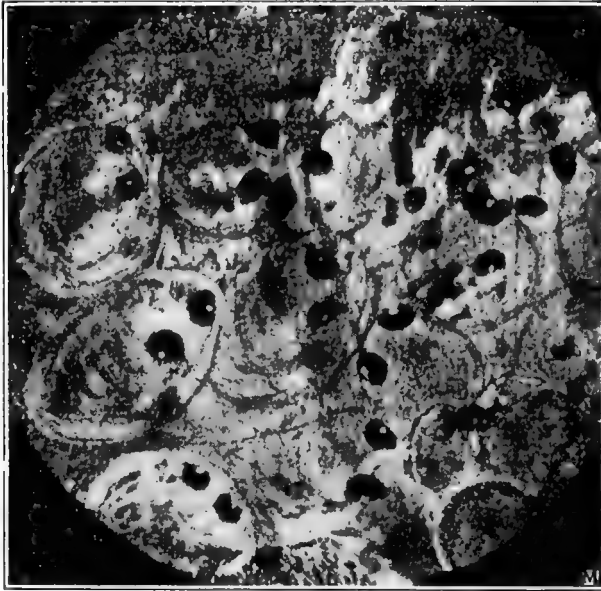
termed “Millions.” “This fish,” the report reads, “ought to be well protected as it is destined to become one of the greatest blessings to humanity—provided its good qualities are based on sound facts.” At any rate, on the Island of Barbados, the inhabitants are fully convinced that it is due entirely to this fish that so few cases of malaria exist there, while the malaria pest exists at other places of that island to an alarming ex-

onic minnows, still encased in the egg membrane.

This is a characteristic phenomenon in the minnow—not generally known—not even to some observant naturalists—that these minutest of fish develop their offspring alive, a characteristic observed only in a few other fish variety, as the majority of fish hatch their eggs out after they have been laid. The minnow, however, contains in its myriads of more or less advanced eggs a living fish germ, in its mem-

This phenomenon of our minnow being a viviparous fish, is also well known to my friend and former city bacteriologist, Dr. Chas. A. R. Campbell, and we have both made experiments in this line of observation at the old Dreiss' laboratory on Alamo Plaza many years ago.

These fish have a very sharp eyesight; and the eyes are, proportionately, very large; and the eye lens, on microscopic examination, is very complete—a hyeline and exceedingly refractive crystal



PHOTOMICROGRAPH OF EMBRYONIC IN EGG MEMBRANE, INSIDE THE MINNOW'S OVIUM. (Considerably Magnified)

braneous egg surrounding, and as seen in the microscopic photo herein. And, that they breed alive young fish, can be easily seen if an old female minnow be put in a glass of water and observed for a few days or weeks—according to the advanced cycle of development—and it will be noticed that gradually a number of young minnows swim around the glass of water. In other fish species this process is not witnessed, as the eggs are first laid and hatched out afterwards.

line and oval-shaped disc. For such reason, it is plausible how these minute fish easily find their prey, consisting of animalcules and vegetable matter; and they also feed on the eggs and larvae of such insects as the mosquito. And to the latter they have easy access at such places where the mosquito deposits its eggs, i. e., at places near the water's edge, where the small fish have access to reach the eggs or larval mosquitoes. In its embryonic state, and as seen on the micrographic-photo herein,

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each developing fish, encased in a delicate egg membrane, shows the large black pigmented eyes even in the remotest developed eggs, with but few or no outlines of the fish embryo.

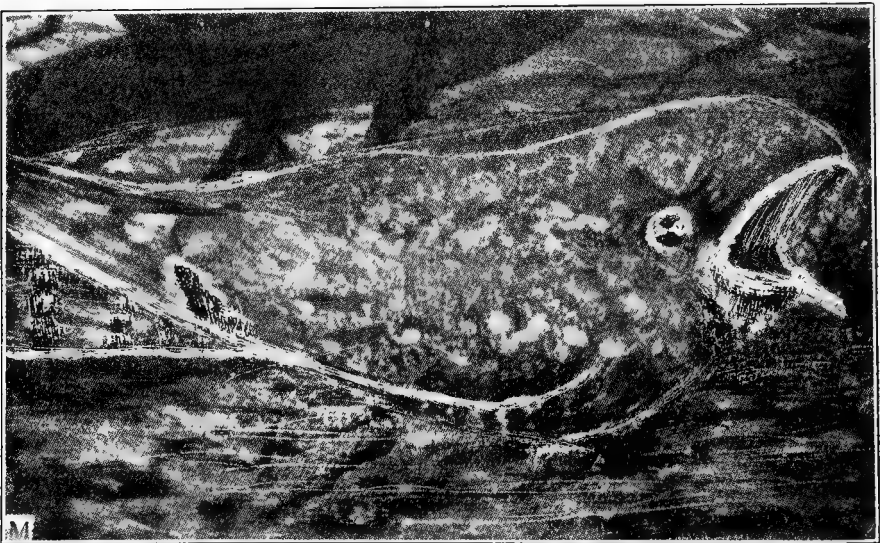
These minnows are always, and exclusively, seen in large droves close to the bank of flowing water, as well as tanks, stagnating creeks, etc., where the mosquito is liable to deposit its eggs. How-

ever, as the mosquitoes prefer small, demarcated water pools along the waters to deposit their eggs, the minnow has no chance to feed on them; but where they have access they are sure to exterminate the entire brood; and where, for instance, shallow creeks are met with in summer containing plenty of minnows, it will be noticed that no wrigglers are to be seen and the surroundings to be free of mosquitoes.

The Bullbat, Goatsucker Bird, Whip-poor-will and Guacharo or Fat Bird

One of our most conspicuous and most useful bird of the prairie and plains is the so called Bullbat,

Around San Antonio, and in fact all over Texas land, this insectivorous nightswallow abounds



BULLBAT RESTING ON A BROAD MESQUITE TREE LIMB

Goatsucker or Nightswallow, to which genera also belong the Whip-poor-will and the Guacharo-bird to be described later herein.

in great numbers. It's nocturnal in its habits, though in its haunts, especially along rivulets, it is also seen toward evening and

early in the mornings traversing the horizon in search of insects. The plumage of the female is of reddish-gray color with dark stripes and dots along its body, wings and tail, whilst the male is of a light bluish-gray color and is especially attractive in its dotted and striped plumage and its characteristic broad and flat head and large mouth. It is one of the very rare birds which lay

region near San Antonio, but not protected by a nest. The queer looking young resembled somewhat a pair of miniature owls and they were quite shy at our approach, and quickly hopped away in the underbrush.

One of the most characteristic features in the life habits of our bullbat is the way it sits in day time on some limb to rest and sleep. When thus asleep or resting



TWO YOUNG, BUT FULL GROWN BULLBATS ON MESQUITE TREE BRANCHES

their eggs on the bare ground without any vestige of a nest or protection of any kind. During a hunting trip I once came across one such breeding bullbat with its young ones—the latter crouching close to each other, near a mesquite brush, in a rocky and hilly

it spreads its long body flatly on the bark of the tree—usually the trunk or fork of a thick mesquite limb; and, as its striped grayish body color corresponds with the color of such tree on which it crouches, the bullbat as a rule is not noticed, even

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only a few feet off, until suddenly and swiftly as if by magic, it spreads its long speckled wings—and off it goes, flying over our heads in an erratic flight. It is a most fascinating sight to behold how these lively birds fly with the swiftness of an arrow over the prairie-plains—always, when hungry, seeking some waterpool or rivulet, where lots of insects congregate. Often scores of them

caught, the peculiar and loud sound of cutting the air current with its wing feathers is heard a great distance off.

The photo herein of two such bullbats was taken by the writer lately during an outing along the romantic river bottom near the ancient mission Espada south of San Antonio, and a separate original view of the landscape—also the haunts of the red bird, mockingbird,



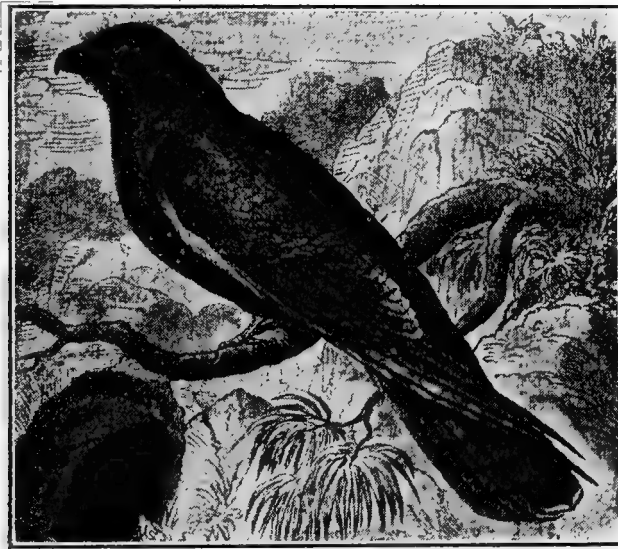
ROMANTIC RIVER BOTTOM SCENERY, NEAR SAN ANTONIO, THE HAUNTS OF THE RED BIRD, MOCKING BIRD, WHIP-POOR-WILL AND OTHER TEXAS FOREST SONGSTERS

can be seen thus engaged, executing all sorts of circular and angular flying manuevers closely over the water's surface, with a loud, screeching noise—aided by the swift movements of their wings (cutting and flying and rotating from one edge of the water—along a tank or creek, to the other; and each time an insect is to be

Whip-poor-will and other songsters, is vividly depicted. It is a favorite fishing place of San Antonians seeking recreation and nature observations along this shady and historic rivulet of the metropolis, and it depicts the peculiar and tropical vegetation on both sides of the river, the left part being densely supplied with willow and

boxelder trees, while the right side shows a huisache tree near which is a fisherman catching crawfish and other bait. The dense thickets of rounded trees along

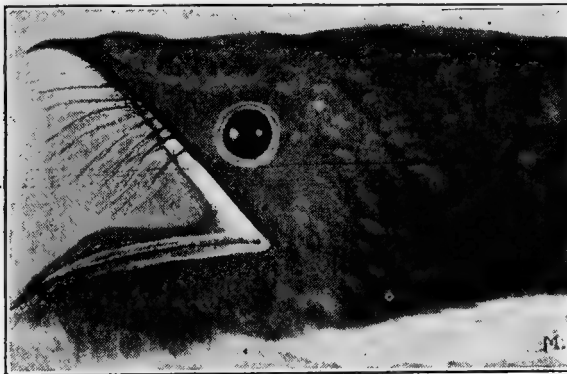
a Whip-poor-will, and it happened this way: While looking for squirrels in the dense vines and evergreen foliage along the river bottom, one of our party



THE GUACHARO, OR FAT BIRD
(Photocopy by the Writer from Humboldt's Illustration)

this river bottom are covered with rankant vines of the mustang grape. There are hundreds of such fine sceneries along the river bottom, and at this place the river-bed was rather low by reason of the

happened to see a strange bird crouching in the shade on a stump of an old elder tree. The bird looked very much like a hawk or some species of owl but the error cleared up after a well aimed shot,



HEAD OF A WHIP-POOR-WILL, OR GOATSUCKER BIRD

severe drouth at the time throughout Texas.

It is here also that during an outing we came accidentally across

for it brought down a large Whip-poor-will bird. After its removal to camp and careful examination of its reddish dark brown body and

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especially its head with the enormous wide mouth parts, a photo was taken of its head and reproduced herein.

The bird was twice as large as a bullbat, which it resembled somewhat in its general striped coloring of the body, wings and tailfeathers, and it measured twenty inches from tip to tip of the outspread wings. Though in close search for a nest for years I never could trace one—neither on the plains or forests, nor at any

ing remnants of some large beetle species.

The photo shows the head parts in about normal size—a side view of same, with partly opened mouth. The eyes are very large and the upper part of the bill is sharply curved—like the bill of a hawk. On both sides of the upper bill numbers of long hair bristles are present—characteristic of the goatsucker species.

It is exceedingly rare that such specimen should be captured, especially in day time, as the



RIVULET AND FOREST, WESTERN MOUNTAIN REGIONS, NEAR THE GALLAGHER RANCH, THE HAUNTS OF THE WHIP-POOR-WILL, ETC.

museum of Texas bird specimens.

It was of course generally regretted the mistake was made of shooting this handsome and useful bird, but it also served to give it a close inspection; and the examination of its gullet and stomach showed that its food consisted exclusively of insects, as the stomach contained the remnants of a large number of various beetles—all in small fragments of the legs, wings, etc., partly predigested—most parts be-

Whip-poor-will is a strictly nocturnal bird—and one that always delights the heart of the night traveler, farmer, or camper with its melodious, inimitable song—resembling somewhat the name given this bird. It abounds quite numerously in the western mountainous regions, in the dense forest woods, where, in the stillness of the night, it delights the traveler with its merry song. Often two or more Whip-poor-wills are heard a far distance away—one re-

peating the echo of the other in quick succession. They are shy, and, aided by the darkness of the night, it is impossible to see this bird in nature at close range and only once in a while, at moonlight, the shadowy outlines of the large bird are seen accidentally when the Whip-poor-will alights from its hiding haunts. The song of this bird is so impressive that, once heard, it is very seldom forgotten by any one, and one can listen a long time to the thrilling sounds while sojourning at a farm house at night.

The Guacharo or Fat Bird belongs to the same class as the bullbat and whip-poorwill, and has rarely been seen in the canyons and mountainous regions of Texas. Years ago, in a cave around Helotes, west of San Antonio, such bird has been seen—perhaps from foreign regions. The life history of this strange cave bird is but little known to us, so a description of same by Humboldt might interest my readers.

In his travels through South America, Alexander von Humboldt refers to the following personal explorations of a guacharo cave in which millions of the so-called "Guacharo" or "fat birds" were encountered: "The cave, which the natives designate as a fat pit, is located several miles off the convent of the San Antonio and Guanaguana, in the valley of Capri; and Humboldt was led there during his marvelous travels by the Alcalde and several Monks. At times they had to wade through water that was not very deep, and at times between a rivulet and rock cliffs, or very slippery or swampy soil. Numerous earth mounds, dispersed logs, over which the mule teams had tedious traveling, made the trip exceedingly tiresome to reach the Guacharo Mountain. A rivulet runs through a shaft of this mountain, and one goes under a high cliff above which the sky is not to be seen. The road

winds itself with the rivulet, and at its last bend one suddenly stands before the colossal opening of the Guacharo cave; and the scene is something enormous for eyes accustomed to the scenic panorama of the Alps, as the highly imposing tropical plant life imparts a most fascinating impression of such earth cave. This plant splendor even extends into the main portal of the large cave. With amazement we noticed how eighteen feet high, brilliant heliconia, propapalens, and treelike aruma plants covered the banks of the rivulet and underground layers. Once entering the enormous cavity of this cave, one has no idea of the enormous noise thousands of the Guacharo birds make in the darkness of the cave.

Humboldt compares this noise with the racket thousands of our crows make in a bunch, especially where the guacharo birds domicile close to each other. The yelling, penetrating screeching and nervethrilling noise of these guacharos from the enormous rock vaults appears as echo from the deepest depths of the cave. The native Indians attached a torch to a long stick and thus showed Humboldt and his companions the myriads of nests in this cave which were located in funnel-shaped holes, and in immense numbers along the interior vaults of this cave. The deeper they advanced into this cave, and the more of the birds were chased up through the light of the Kopal torches, the more the tumult and noise of the birds increased. As soon as the noise ceased at one particular place for a few minutes, a tumultuous screaming and fluttering was heard from other, deeper parts of the cave.

"The Guacharo departs from its haunts at night time, especially during bright moonlight to seek its food, consisting mostly of hard seed, and the Indians say

it never feeds either on beetles nor night butterflies.

Every year, on Jones' day, the Indians pilgrim to this cave, destroy most of the nests with long poles and kill many thousands of the birds, at the same time the old brood flies around with terrible noise over the heads of the Indians as if trying to defend its brood. The young are at once killed and gutted on the spot. The peritoneum is overgrown with thick layers of fat, also down to the lower abdomen. That grain eating bird, says Humboldt, which is not exposed to sunlight and makes but very little use of its muscles becomes so fat, reminds one of the fattening of geese and cattle. During the "fat season" the Indians build huts of palm leaves at the entrance or inside the cave, and extract the fat over fire and place it into earthen jars, and

is marketed under the name of "Guacharo-lard" or oil semi liquid, clear, odorless, and so pure, that it keeps over a year without becoming rancid.

The Guacharo species would have been long ago annihilated, were it not that various circumstances contribute to their existence.

The Indians seldom dare to go into the depths of the cave for reason of a superstition; the birds also seem to inhabit other and inaccessible haunts near inhabited caves and caverns, and undoubtedly the old cave gets inhabited yearly with new colonies and the missionaries declare that the bulk of these birds has not declined. If the gullet and stomach of the young birds be opened various hard and dry seed are found therein, but no remnants of insects.

The cave near Caripe is a fearfully mysterious place to the Indians; they believe in the depths of the cave their departed ancestors live. To go to the Guacharos means as much to them as to

go to their death. For this reason fakirs and medicine men prepare their nightly "hokus-pocus" in the front entrance to the cave in order to dispose of the ghosts.

With difficulty Humboldt's companion, Bonpland, succeeded in killing two of the heretofore unknown birds, which was afterward drawn by Humboldt. (Reproduced herein.)

As the Indians could not be compelled to penetrate deeper into the cave, they returned to Caripe. Their path led them over dangerous cliff precipices and dense forests of tree-like fern plants and palms. On their way, Humboldt says he saw for the first time some of the howl-apes at close range, and the mournful cries of which he had heard at sundown near Caripe. In describing these apes, Humboldt reiterated his heretofore stated remarks, that the more sorrowful these apes appear the more humanlike they appear; and that their hilarity and mobility lessens the more their mental power is developed."

For the past several years I have been longing to find the breeding place of our bull-bat bird or rather its typical two eggs. They are generally to be found in the hilly regions around San Antonio, where this peculiar and beautiful bird seeks its breeding haunts—generally a secluded place with plenty of round rocks and others simulating the markings of the bird and its large oval eggs, which the bird deposits on the bare ground without any nest material whatever to enclose and protect the eggs. With this inherited instinct to deposit its two eggs in places simulating both the color of the bird and its eggs and without a vestige of nest material, this trait of the bullbat bird is quite unique and it is a matter of fact that the eggs, as a rule, are exceedingly hard to find, unless one perchance happens to chase up a breeding

bullbat from its eggs on the ground and notices the exact spot from which the fluttering bird has escaped.

If the latter is overlooked it will be in vain to hunt the eggs, as the breeding bird is usually on the alert, and escapes its breeding place so rapidly and in various directions that the exact location of the eggs cannot be found.

San Antonio's hilly environ-

to find such, one must be familiar with the soil and environments these night ramblers seek for their haunts and breeding places. Also, unless for a specific and legitimate purpose, such as well as all others of the feathery tribe, should not be hunted and molested in any way, as it is against the state laws as well as a crime to disturb breeding birds and animals of all kind purposely.



"BULLBAT" ESCAPING ITS NEST
(Original Photo on This Spot Found on a Flint Rock Hill, Near the Cassin's Lake)

ments, and especially such where a dairy farm or a rivulet is situated close by (the favorite haunts at sundown and night time of the bullbat to gather its food, consisting entirely of insects), harbor large numbers of the breeding night-hawks; but, in order

Our feathery tribe, as is well known, is diminishing rapidly of late years, especially in regions unfavorable to their propagation and lack of general protection.

The press in general has on various occasions in its editorial columns called attention to the wan-

ton disturbance and killing of non-game birds. There is absolutely no sense in it to shoot animals and hound or kill any of our feathery tribe "for the mere fun of it."

I will now describe the regions where two bullbat nests were found, after attending some professional service at the extreme southeastern limits of our city. One early morning, I took a long stroll over a number of hilly regions close by the house, along

surrounded by short brush and flower weeds, and the ground of the open space was covered with numbers of rock fragments and rounded rock, imbedded into the ground, and nearly all the rock were of a bluish gray color with various dark markings, - and among these rocks my search was rewarded by finding two glittering and grayish spotted eggs of beautiful marble color and which were oval shape and larger than our pigeon eggs.

Not having a camera with me,



NEST OF A "BULLBAT" ON THE GROUND (Original Photo in Situ)

the ridge of a hill, in search of a breeding bullbat; but only after walking a great distance along the ridge of a hill covered with small brush and some open spaces of the white limestone ground did I come across a breeding bullbat, which fluttered in a zig-zag flight over the ground into a nearby underbrush. By mere chance I had noticed the exact place the bird had flown off the ground. It was a semi-circular open space,

I made a close survey and marked the open space where the bullbat eggs were found (in order to find it again) and a few days later, in company with a friend, we happened to find the same place again as well as another breeding bullbat with the same type of eggs, located also in an open graveled space. I prepared a near focused view of the latter—normal size and a nice view of the first two eggs found—showing

both eggs exactly as found between the imbedded rock fragments (and as seen in the photo herein) nearly in full natural size. The photo was taken by inverting the old camera straight downward, in order to get all details and the right focus of all objects seen on the picture.

Like the wild dove, the female bullbat usually is supplanted by its mate when disturbed from its breeding place, the male bird always flying gracefully with its beautifully striped and speckled long wings in a circular flight around, or close by the nest, now

seen on the photo, I had endeavored at various times during May and June to find a breeding bullbat; and several times, around the hilly and favorable breeding places adjoining Cassin's lake, and on the open hilly plains eastward of the old and beautiful Meyer's river bottom pecan forest and picnic place (where in former years lots of bullbats sought their breeding haunts on the limestone and graveled prairie plains), I encountered many of the bullbat birds, but never could locate the eggs. It is generally after the female has been



SAN ANTONIANS AT ST. GERONIMO, NEAR GALLAGHER'S RANCH, LOOKING FOR BULLBATS
Scenery Close to High Rock Embankments with Cavelike Excavations and Jungles of Mountain
Grass Along the Rock Precipices and Wild Flowerbeds Below

and then taking a rest in a crouching position on some nearby limb of a shade tree, and shortly afterward again circling over the nesting place, until it gradually, or suddenly, in the fashion of the prairie hawk, alights on the two eggs, where it remains in a crouched position, and resembles more a piece of dark wood than a living bird. Whenever disturbed, the female bird invariably soon returns to its breeding place.

Before finding the specimens

breeding a long time on the eggs that the bird is unable to fly quickly from its breeding place, and it is then generally that it is detected by its fluttering and noisy flight. And also during many an annual outing to a relative's farm north of Helotes, and in the hilly and mountainous regions around San Geronimo, and fifteen miles further west, around the Medina dam, I searched in vain for breeding bullbats during the month of June. The hot months of July and August there-

fore seem to be the main breeding season of the bullbat bird and others of its kind, the "chuckwill's widow" and the whippoorwill bird.

During a few days' stay at the Geronimo farm in June I had occasion to encounter a whippoorwillbird at very close range. It was along a beautiful mountainous precipice, densely overgrown with cedar, sycamore and other

mo soil with its solid rock formation, and a small rivulet gracefully meandering its serpentine course on both sides of the rock formation downward and into the lovely forests, seen on the pictures in the extreme rear parts. And here the whippoorwill was encountered one early morning just after the sun had peeped over the eastern mountain ridges, and cedar brakes, and spread its rays



MOUNTAIN SCENERY NEAR GALLAGHER'S RANCH, SAN GERONIMO, THE HAUNTS OF THE WHIPPOORWILL AND OTHER FOREST SONGSTERS

mountain vegetation, that the large dark brown chocolate colored songster of the mountain plains lit close by on a broad-leaved bush, and it had all the appearance depicted herein, of a whippoorwill.

The extra landscapes herein vividly depict the peculiar Geroni-

downward over the Geronimo valley.

I noticed, however, that animal life in general and especially our prairie songsters, are exceedingly scarce around those lovely hills and mountains as compared to the feathery tribe around and close to our San Antonio. It seems here they have more protec-

quietude of the vales and forests and the settler's heart from sun-down to early morn. The call of the chuck-will's widow is near related to the song of the whip-poorwill, but by careful listening the difference in the voice is easily discovered.

During our stay at San Geronimo and reposing in a hammock under a centuries-old oak tree at the farm, suddenly, toward sun-down, the call of a chuck-will's

widow bird was heard quite close by in a cedar and hackberry thicket, and one of our outing party proclaimed his delight and listened attentively to the short but very melodious tunes of the bird, but he imagined that it was the call of a whippoorwill. After a little while and as the sun disappeared beyond the western hills and forest, two other bird voices were heard, one calling and the other as if answering the same



FOREST SCENERY AND RIVULET INSIDE ENORMOUS ROCK STRATA, NEAR GALLAGHER'S RANCH, AT THE LOGAN-HENDERSON FARM. Pine Deer and Wild Turkey Country in the Olden Days, and the Haunts of the Whip-poor-will and Chuckwills Widow Bird

tion from night marauding wild animals, including hawks and snakes, etc., and more watering and feeding places than in the dry, but exceedingly attractive mountain regions. However, these as well as all other western mountain regions with the dense forests and sparkling springs are the main haunts of the whippoorwill and the chuck-will's widow bird, and they often enliven the

call, and I called my friend's attention to the difference of these two voices—

The two calls being louder and more melodious and it was the song of the whippoorwill. This first mentioned bird is much smaller than the whippoorwill, but belongs to the same class, the so-called "goat-sucker bird," and its plumage resembles somewhat that of the bullbat. In exploring

the canyons and high mountain precipices around Geronimo, I once met a chuck-will's widow bird in a large cave, where it was crouching in a dark corner, but suddenly flew off before we could come near enough to take a view of it. Around the evergreen hills and the rock canyons of Helotes and in fact all over the evergreen mountain forest regions of west Texas, this bird, as well as the whippoorwill, is often heard at night time, especially during a bright moon lighted night.

Before closing these observations, in particular of the bullbat bird, I wish to call your attention to the photograph herein of a bullbat escaping its breeding haunts, taken by surprise with the camera at short distance (original photo slightly enlarged.)

A friend, Mr. Alfred Haubold, was present, and the bird had been found on the southeast hills of Cassin's lake. The ground there is very favorable for these peculiar ground breeders; the entire hilly regions being covered with more or less brushy and shady mesquite trees and others, mostly berry-bearing brush, and are more or less graveled, with here and there bare places of the white limestone, and the ground itself along the hills is covered with imbedded small rock fragments of a mingling of black, red, brown, and bluish color, and the most of it seemingly of volcanic origin. These rocky regions simulate the colorings of the bullbat and its eggs closely, and it is for this reason the bullbat very shrewdly seeks such places for its breeding haunts; and on our last trip there one early morning, in the middle of July, we twice found a pair of young but full grown bullbat birds, which closely resembled a pair of young owls. We came very near capturing one of the pair, but they escaped. On another occasion, in these hills,

which overlook a beautiful small lake and a dairy farm with lots of cattle and a large cultivated piece of land in the north-eastern district, we came across unawares, within four steps of a breeding bullbat, and it only fluttered away after I had reached and pulled a small mesquite branch aside to examine its nest. The old bullbat was crouching on the graveled ground close to the stems of the mesquite brush, and I called my friend's attention to same, when, as I pulled the branch aside it fluttered away and exposed two beautiful and shining eggs of same appearance as the others illustrated herein.

It is here also, east of the beautiful Cassin's lake, that the writer and my companion, Mr. Haubold, encountered the two young bullbats, just hatched and photoillustrated on the spot found, and seen on the engraving which is slightly enlarged. They looked like a pair of very young chicks, but with much broader head and mouth, of yellowish white color; and after the views were taken they ran as fast as a pair of young quail, to some nearby cacti brush where they were left, unmolested.

It is truly wonderful how these otherwise very fleety and unexcelled sailors of the valleys and prairie lands seek just such breeding grounds that simulate their own grayish-brown and dotted body colors; and it is for this particular feature also, in searching for a breeding bullbat, that one must put his eyes right on the spot the bird escapes the ground, else it will be mere guess work and accidental that the eggs are found. When the bird escapes, it will return to its breeding place after a short time, and it is then, if the exact place is known, or marked, that a snapshot can be taken, or even a time exposure (best after focusing the place and making a "pull-the-string" expo-

sure at quite a distance.) When crouching on a tree limb or on its breeding place, only the gray or dark reddish brown and dotted colors are noticed, with perhaps the circular white lines around its neck, but, in its flying or spread out position, as seen on the photo herein, the large white dotted wings and tail feathers of the bullbat are prominently exposed, while the balance of the body often simulates its surroundings as seen on the photo.

quite limb, the bird is often passed by unrecognized, as the bark of the mesquite tree, with its longitudinal and corrugated appearance of its protuberances and interliniations of more or less broad bands of a light bluish-gray or dark brown color, simulates the outlines of its host closely. And all this leads one to reflect: Are these distinct traits in the life history of our Texas bullbat bird merely "instinct" or rather deliberate reasoning?



BULLBATS JUST HATCHED. Photo on the Spot Found
(Slightly Enlarged From the Original Photograph)

And equally remarkable is the fact, that this interesting bullbat, even the young birds, as soon as able to fly, will seek a tree branch, with preference to that of a mesquite tree to rest on, after hours of continuous flying abroad after night insects; and always, as a rule, such branch is selected after repeated and continuous circular tours of inspection, which closely simulates its body markings; and when crouching at rest on a mes-

I was closing this chapter, when, last Sunday, in company with my friend, A. Haubold, we endeavored to find the same place again we had found the Sunday previous—a breeding bullbat on its eggs on the ground below a mesquite bush. We had marked the bush with strips of paper and white rags, in order to more easily find the place again. This, however, was not quite as easy as expected. We had to pass several

dense brush and ravines along the newly fenced hilly region, but ultimately my friend recognized the white objects on the place we had marked. We approached very cautiously to see if the old bullbat was still there, and were disappointed for a while at least. There was no trace of the old bullbat on that spot, but further off one was seen flying close to the ground among the mesquite trees. On closer inspection of the place, where we had seen the eggs seven days previous, I noticed several eggshells lying around, this, of course, led us to search around for the new offspring (my friend suggesting shortly before that some ground squirrel or other rodent or a snake may have disposed of the two eggs.) After quite a little while, my friend all at once exclaimed: "Here they are, Doctor"! and sure enough, the two little baby bullbats were crouching on the ground under a more shady acacia brush close by, and here also I took the view of them seen above.

Both were of about the same size, smaller than a newborn chick, and of a slight yellowish-white color, with a few gray spots and strips along the back part of their fuzzy body. Though small they were a lively lot, and both quickly tried to escape—running as fast as a pair of baby quail under the shady and rocky brush. After focusing the spot of encounter, and after placing some of the eggshells close by the little fellows, a short time view was taken with slightly reverted camera. From general appearance, it seems both of the young birds were only two or three days old.

Gradually the body feathers assume more of a light brown color, and the birds grow very rapidly, so that in a week or two they are less easy to capture and photograph. After making it as comfortable as possible for the little bird kids, we left them under the shady place, which as stated was covered all around with the peculiar dark (India) red fragments of rock scattered around these hilly regions.

The Cliffswallow's Mud Nest

I herein present to my readers a view of the cliff swallow clinging to its oval shaped nest, and also a second rare view of the Texas cliff swallow's mud nests, with one of the nests exposing the eggs. The photo was prepared after considerable difficulty in getting to the nests, for reason of the steep rock precipices on which they were attached—with hundreds of a similar kind. Such nests have been cursorily alluded to in others of my reminiscences of Texas nature-objects; these were reproduced during an outing years ago in West Medina County where they are encountered in large numbers along the high rock preci-

pices and nearly always along and above some rivulet, and always some ten to twenty and more feet above water—if such is present. They plaster their building material—some soft clay in much the same manner as does the mud dauber wasp against rough walls of rocks, and always high enough to protect them from their many enemies; and during breeding time myriads of the small swallows or martins can be seen building their nest amidst a fearful noise they make when being disturbed. Swarms of them continually circle again and again and emit a peculiar screeching noise whilst others take a rest on their large mud

nests, and when breeding they peep with their attractive dark brown heads outside the hole of the oval or rounded nest. Hundreds of them can thus be observed from a distance, whilst thousands whirl and circle around in various directions—screaching

bills and feet particles of soft earth or clay and return to their nests. Myriads of them thus swarm to the water places and gather the soft and doughy mud particles which is plastered by them in an artistic way—one particle near the other until the large nest is

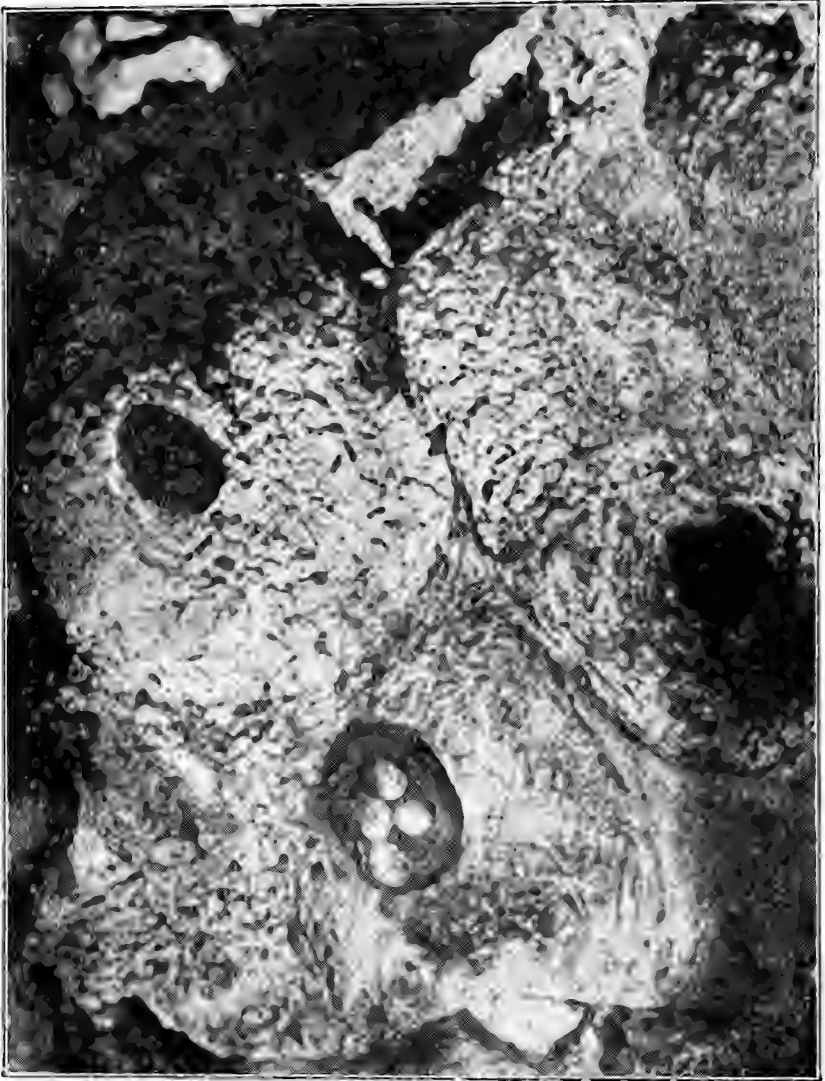


CLIFFSWALLOW CLINGING TO ITS OVAL SHAPED NEST
(Slightly Enlarged)

and chattering, and coming and going from their nests—indeed a very fascinating sight to behold.

In preparing their peculiar nests these swallows often fly a great distance to some suitable waterhole or creek and there gather with their

completed, as seen on the photos, representing the nests in about one-half natural size. Each nest is built separate but close to each other, and the nests are supplied but sparingly with a few helms of straw and some of their own



SWALLOW NESTS BUILT ON THE CLIFF WALLS

feathers on which the female lays four to six small eggs of light reddish brown and speckled color. The photo herein shows how a number of these mud nests were plastered against a steep rock wall in a hanging position, the entrance opening being located at the narrow neck part of the cylindrically formed nest.

These cliff swallows, as all others, being insectivorous, are very useful creatures as they destroy large numbers of various dipterous insects during their flighty rambles along the rivulets—or around barns and houses—if there located; and their

nests and young brood should by all means be protected. Often, in touring places where such and other types of swallows prepare their nests, these are seen wantonly battered up with rocks or broken to pieces by some ignorant vandals who find delight in destroying such as well as other nests—merely to amuse themselves! Had such vandals received stricter lessons from their parents and better nature studies from their teachers our feathery tribe would not, as in late years, be so near extinction!

A Rare Forest Wren and its Nest

The prairie plains, hilly regions, forests, river bottom, pastures and parks around San Antonio harbor great numbers of various wren species, such as our common house-wren, the cactus wren, the rock and canyon wren, the winter or forest wren, the Carolina wren and a number of others, and the purpose of the following notes is not to dwell on these, as their life history is quite well known, but rather I wish to call attention to an interesting and rare wren and its nest encountered lately in a cavity or hole in the ground along the river bank, nine miles below San Antonio, in a sloping embankment and close to a sparkling spring surrounded by forest trees, rampant vines, ferns and other luxuriant forest vegetation.

The nest was accidentally detected by an outing party about a mile off from where we had pitched our camp along some old shady monarchs of the river bottom, and as my friend knew I was at the time that, I was interested in most of our interesting nests of the feathery tribe, we strolled back through the river bottom to near the small spring,

and there it was, a very small wren species, snugly sheltered and peeping out of its nest hole.

We approached very cautiously but the lively little fellow, like a shot, suddenly flew in a straight line to the nearest bush close to the spring where it hopped and flew restlessly from tree to tree, accompanied by its mate, and chirping in an excited manner.

Both these wren birds were very small, hardly three inches in length, and of a reddish-brown cinnamon color with long white stripe along the upper and lower eye ridge.

After its escape from the nest it was shown that the nest cavity contained five eggs, and rather large eggs (for the small size of its host) of oval shape and slightly speckled, reddish-brown spots covering the else snow-white egg-shell.

An endeavor to photograph the subterranean nest and its contents of five eggs was not quite successful as no artificial light was at hand to expose the nest interior better, and as it also was rather late in the evening to make a clear view. This happened on June 10th, 1912, when the nest was found, and

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on June 18th, during another outing, we found four of the eggs hatched and one egg intact. Having at this time, from June 18th to June 28th, made a trip to Medina County to a near relative's farm at the San Geronimo, we again on returning to San Antonio made a trip to the small spring and wren nest and on inspecting this wren nest, we found one of the young and perfectly full-grown wrens sitting snugly inside and peeping outside the nest, and

morning with proper light for a short time exposure), the camera was placed in focus distance when at this moment one of the two young wrens also escaped the nest. However, the third or last wren, before it made its exit, kept quiet enough right in the front entrance of the nest to make a good view of it.

The photo shows plainly how ingeniously the old wrens had prepared their nest inside the earth cavity. It was bare of



A RARE YOUNG WREN ON ITS NEST OUTLET

on approaching too closely (with the camera) it also, like the old wren, shot out of the nest cavity like a bullet and flew quite a distance away. After this one had cleared the front entrance of this nest we noticed two more full-grown baby wrens inside the nest cavity and after some difficulty in placing the camera for a time exposure (it being this time a bright

any shrubbery surrounding it, and situated on a sloping embankment. The upper part of the nest material was slightly overhanging the oval-shaped nest cavity and covered above with some broad and dried-up and shriveled leaves. Part of an oval and undeveloped egg is also seen on this picture close to the bird and entrance of the nest.

Our Texas Mocking Bird and Nest

Of all the myriads of Texas warblers none is as widespread and as popular as our "mocking bird." None can imitate the voice of other birds and of animals better than our Texas warbler; none of them have been popularized oftener by bards and musical composers; none oftener caged and raised to delight the human heart with their inimitable song, and none, perhaps, have been more

him the "Texas Nightingale" or the "Queen of all Songsters" there being but one more singer—the German Nightingale — that can break a lance with our Texas mocking bird.

Not only on the open prairie plains, but nearly equally as often our songster is encountered in the heart of towns and cities, in parks, gardens, fields, meadows and even before our own doors and



THE MOCKING BIRD, QUEEN OF TEXAS SONGSTERS AND OTHERS—A TYPICAL PRAIRIE BIRD—
SCENE NEAR SAN ANTONIO
(From Nature, By the Writer)

neglected authors in general than our mocking bird. Let's give our "Queen of Texas Songsters" therefore a little space and consideration.

Scientifically the mocking bird is called "Mimus polyglottis"—the "multi-tongued songster"—and ornithologists appropriately call

windows, everywhere the mocking bird makes itself "at home" during summer as well as winter, and everywhere they delight the human soul with their delightful song.

At the advance of the cold winter months the majority of mocking birds migrate to more tropical zones; many, however, also

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come to Texas to remain here over winter in the forest thickets or bushes of the prairie, in gardens, hedges and yards of inhabited places. A majority however, remain permanently here in Western Texas, even if the weather conditions are very unfavorable for other bird species to remain here and during ice cold northers they are encountered out in the prairie conjointly with the bush

figs and grapes are grown, and in some places the owners were compelled to resort to exterminate them. As a rule, though, the mocking bird should be all means be protected, as besides their brilliant songs they destroy immense quantities of injurious insects, such as beetles, spiders, grasshoppers, ants, caterpillars and worms, etc.

In San Antonio there is hardly any other bird specie oftener



MOCKING BIRD NEST AND EGGS INSIDE A BERRY BRUSH THICKET
(Photo on the Spot Found by the Writer)

sparrow, field larks, black birds; the red bird, woodpecker, scissortail bird, wren and others. During such cold winter months they often gather in the yard and even fly to the windows in search of food and protection. During summer time our mocking bird is a welcomed guest of our gardens and fields, etc., but sometimes they are also very molesting to such gardens and gardeners where

seen than our mocking bird, due mostly to the many fine gardens and public parks and the protection they receive especially during the breeding time. In former years and even today, some of our Mexican population gathered quite a large number of mocking birds or "chilchontes" as the Mexican calls them, during breeding time for the market, and as a rule, they, take much care in rearing

the young brood. The birds are gathered when quite young and fed in cages prepared of the reed seen along some portions of our river banks, and when full grown they sell them to tourists and others who generally pay a fancy price for a good singer. In the Mexican settlements, across the Alazan Creek, hordes of Mexicans could be seen in former years preparing the attractive bird cages and rearing the young—mostly with cornmeal and egg and Mexican pepper called "chili peppin," also cooked potatoes, and ground maize, etc., and often regular caravans of Mexicans—men, women and children, could be seen marching to the hotels, etc., in search of a buyer. The young as well as the old birds are very fond of raw meat and red Mexican pepper and scraped raw meat with cooked egg and pepper is a very wholesome food for them. When reared from nestlings much care is needed in keeping the cage perfectly clean and always well provided with fresh water. Neglect in this respect has killed many a fine singer and unless the stated precautions are not heeded it is a crime to take young birds from the nest and incarcerate them in a cage.

The female mocking bird lays three to five oval shaped light bluish and chocolate spotted eggs, in most instances though four eggs are seen in the nest during breeding time. Often these eggs are destroyed by wild animals, especially serpents and some peculiar birds of prey, and snakes occasionally devour the eggs with the entire breeding bird. The photo herein of a mocking bird's nest was especially prepared lately by the writer for these pages, and it shows the eggs plainly. These eggs were of a bluish and slightly reddish brown and chocolate dotted color, and the entire nest which

was not disturbed, was located in a thorny bush with yellow berries—a favorite breeding place for our songster.

As a rule the female, assisted by the male companion, prepares its nest in a well secluded thicket of a bush or tree, and in the prairie it prefers very thorny and densely grown bushes with light yellow green leaves and bearing yellow or black berries. Often, however, the nests can be encountered at places without the least protection but generally many feet above ground. Some such nests are so shrewdly built and hidden that absolutely no nest can be seen. Generally though, the male bird is seen and heard flying and wildly screaming around the hidden nest place. Such a hidden nest with four mocking bird eggs is the one seen in this issue and encountered lately in the hilly regions of the beautiful Leona valley, near San Antonio, the protecting branches and leaves which entirely secluded the nest having previously been held back in order to have a full view of the nest and its contents. It is a fine and rare view showing the spotted eggs very plainly.

The fundamental or main breeding nest is generally composed of soft grass fibers which the bird arranges in a circle to form the basis of the nest; then comes a layer of somewhat coarser material and lastly the thorny branch particles seen in the photo but, somewhat blurred on account of close focus. This mode of nest building is typical of all mocking birds wherever they build.

Another photo shows a group of prairie birds and our prairie queen—the mocking bird—in a flying position. In the rear, on a mesquite bush, is seen a wren and nest with eggs, and a woodpecker. This is quite a typical prairie bird scene encountered often near the environments of our old historic San Antonio.

The Wild Dove in Texas and Its Nest

June, July and August are the main nest building and breeding times of the wild dove of Texas, but they breed up to September, and the writer as well as local hunters often have encountered the nest of wild doves either with eggs or young doves in them during the entire month of October. The main breeding time, however, is about over at the end of August.

oak trees and the cedar and other forest trees give them protection to build their nests, and it makes a fascinating impression to wander through some post oak forest during the breeding time of our wild dove and listen to their melodious cooing.

The nest of these doves is about the plainest affair of nest-building of any bird species. (See the



TEXAS DOVE NEST AND EGGS ON CURVED LIMB, INSIDE A BERRY BRUSH

During their breeding time in the remote prairie plains and large pastures throughout Texas, they generally select a tree in the neighborhood of a tank; and in the thickest of hilly regions covered with mesquite, oak or hackberry trees, large numbers of dove-breeding nests can be encountered and always with preference on some mesquite tree, and in forest and mountainous regions, the high

fine photos herein with nests and eggs—especially prepared for these pages. They simply gather a few dry grass or wood particles and deposit them eggs in normal size—especially prepared for this Field issue. They simply gather a few dry grass or wood particles and deposit them on some mesquite tree branch. They generally select a fork or bifurcation of a tree or a slightly

bent and thick branch of a mesquite or oak tree, and often also the nest is built directly on the elongated and flat part of a thick limb just sufficiently supplied with a few dry grass particles or thin tree branches to prevent the eggs from rolling off the nest and to support the dove to breed upon. Such a nest with the dove on a

is often so meager that the dove nest is not seen, and unless the dove flutters away no such nest is suspected.

In some pastures and brush thickets occasionally a dove nest, and as I have myself seen lately, quite a number of them seek the old and deserted nests of some other prairie bird, especially



WILD DOVE ON AN OLD MOCKING BIRD'S NEST
(From Nature by the Writer)

lower mesquite branch is depicted elsewhere. This view was taken in the mesquite thickets of a popular hunting ground near San Antonio, where hundreds and thousands of wild doves breed annually and supply the local hunting fraternity with game during the legal hunting season.

The nest material of these birds

the mocking bird's nest, and lay therein their two snow-white eggs. In one instance I encountered what seemed to be a red bird's nest in which two young doves a few days old, were snugly peering into the world; it was close to the Goliad road, near Alex Uhl's pasture. As a rule however, the wild dove builds

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its own nest of a few dried grass helmets or leaves of the mesquite tree, and the photo of one such nest with two young doves about ready to escape the nest, illustrates this plainly. Shortly after these observations I related these facts to an experienced hunter and close observer of nature objects, and he tells me the same experience

that they breed several times during the summer season, and this explains the immense numbers during the fall and winter time when the young and older birds migrate to all directions over the country and locate in some field or pasture to gather their food.

The young birds, those not able to fly from their breeding nest,



A PAIR OF YOUNG DOVES ON MESQUITE FORK, READY TO ESCAPE THE NEST
(From Nature, by the Writer)

and that he noticed the female dove building its own nest inside some old abandoned bird nest. Such double nests of course give the breeding dove more shelter and protection.

From the large numbers of wild doves throughout the prairie plains during the long term of their breeding time, it is very plausible

often succumb during stormy weather, or being destroyed by wild animals and vandals and snakes, and occasionally, near farms, by the house cat. When very young the wild dove resembles closely the small variety, the so-called Mexican dove or turtle dove, though they are not quite as much speckled.

The small Mexican doves are getting to be very numerous, and they are much tamer than our wild dove, and often seen in large bunches along the side streets or in the many parks and gardens of our beautiful Alamo City. It seems there are different varieties among the turtle dove; the more common ones being of a light bluish lead color and striped with darker plumage and with vermilion red feathers under the wings. They breed like the wild dove, laying two small white eggs which are about the size and shape of a sparrow's egg. In cold weather they gather in large groups—just like the wild dove, especially in hilly and brushy regions, where they find more shelter from the elements.

Of other wild dove species Texas in former years was occasionally visited by the large migratory pigeon, which is much larger than our wild dove, but equally as delicious on the dining table, and the writer recollects a hunting trip some thirty-four years ago with an old friend—the late Adolf Dreiss, when we encountered millions of these migratory birds in the neighborhood of the great Lugunas of Graytown, some twenty-two miles south-east of San Antonio. The oak forest bottoms in that region were literally covered with these wild pigeons and branches of the oak trees, and large numbers of acorns were strewn on the ground—caused by this greedy pigeon. We met some other town friends on this occasion who had a butcher cart nearly filled with these wild pigeons and which they later distributed among friends here in town. In the Leona valley along the large tanks of the old Withers ranch we also encountered during cold winter spells large flocks of this fine game bird, and the surrounding farmers were complaining bitterly about the havoc these greedy pigeons had done in their corn

fields some months previous. Also at this same place, Dr. J. Hines and the writer during an outing many years ago, met large flocks of these pigeons—distributed among the many high mesquite trees—and my friend Hines secured quite a number of them, but these were not the genuine, now declared extinct migratory or passenger pigeons described, but the so-called Mexican white-winged migratory wild pigeon—a large, fine game bird, nevertheless.

They are much wilder than the common dove and about one-half larger.

The late strict gun laws of Texas have considerably contributed to protect the wild dove as well as other game, which, before the game laws, was about nearing extinction.

After the breeding time, and during the entire winter months, the wild doves often gather in large flocks throughout the fields and pastures or along roads and thickets where the sunflower and other wild grain plants, especially the wild Mexican prairie tea plant, and some species of the white thistle abound.

After the doves have scattered over the plains and fields and gathered their food during the day time, they gather in large flocks and fly sometimes for miles and miles to some favorite water tank in a pasture, and here they can be seen often by the hundreds scattered among the mesquite or other trees surrounding a tank, or they fly directly on the rounded surface of the tank, and before sun down large flocks can often be seen scattered along the tank edges, and others drinking water from the tank. And here is where the sportsman often secures the limit of doves allowed by law.

As a rule the Texas hunter proceeds about thus in hunting the wild dove: he seeks a secure hiding place, and awaits the gathering of the game bird as they

fly upon the branches of a nearby tree or set on the bank of the tank. But usually he pops them on the wing.

In large pastures and fields supplied with sunflowers, the wild dove can be encountered anywhere very numerous, and at least so in former years. During certain weather conditions in winter they gather in large flocks and seek shelter in the hilly woods and the brush of forests, returning again in better weather. Early in the

men" is now prohibited, and the average hunter is well satisfied with the limit of game of all kind allowed by law.

And right here, in these "Reminiscences" I am reminded of the pleasure I had—many years ago—with a hunting companion at the old Callaghan ranch, eight miles north of San Antonio, in meeting there our lamented late Mayor Bryan Callaghan. It was during a hot summer day and "sunflower time" in the middle of September



THE BREEDING WILD DOVE, WHEN A LONG TIME ON NEST, CAN BE APPROACHED VERY CLOSELY, BUT IT SHOULD NEVER BE DISTURBED PURPOSELY

mornings, or late in the evening, they are quite tame and often some dry tree near a water hole is seen literally covered with wild doves.

In former years, before the enforcement of the game law, some hunters used to shoot doves "by the barrel full," and nearly at any time of the year and including the breeding time. This "hoggish" hunting of some so-called "sports-

—at a time of the year we local nimrods considered it the right time to hunt the wild dove, before they migrate to foreign pastures outside the State.

The encounter with our sturdy old mayor was a very cordial one. He was accompanied by the late Mermann Kampmann, at the time one of San Antonio's most enterprising citizens, and we had a splendid pleasant time for the time being.

Surrounded by the lovely Leona hills overlooking the present metropolis San Antonio; the calling of Mr. and Mrs. "Bob-White;" the cooing of the wild doves in the near forests; the chirping of the cicada and cricket in the forest before us; an occasional chaparral cock running swiftly up the rocky hills with a grasshopper or a lizzard in its beak; the

And then—the wild doves!—"His Honor" was the crack shot of us all in wing shooting whilst the doves flew high and swiftly over our heads to the near by tanks—and that's a fact.

During breeding time of the wild dove one can approach the old dove on its nest quite closely—in fact in some instances so closely that the dove can nearly be



EGGSUCKER NEST AND EGGS ON BRANCH OF PERSIMMON TREE, NEARLY NORMAL SIZE

sonorous yelping of a "Tama-ran" or bull frog close to the tank's edge; and the grazing of cattle along the brushy hillsides—all this, and an occasional "Prosit, your honor" made us forget the strenuous city life, and made us feel as happy as the birds in the lovely nature surroundings.

touched and the photo view herein was taken at very close range, a four seconds time exposure. In most instances however, especially before the eggs mature, the old breeding dove is still very lively and flutters from its nest when accidentally approached or otherwise disturbed.

100 TEXAS NATURE OBSERVATIONS AND REMINISCENCES.

Just at this time of writing these notes, in June, the prairie plains, pastures and forests, etc., are full of breeding wild doves, and about the end of August the main breeding season is over, and they are met with only sparingly afterward when they are, as a rule, well protected by the wild game hunter of any decency about him—to shoot a dove that had escaped its nest.

Besides the elements, especially storms, and the various enemies, the dove eggs are apparently destroyed by the so-called egg sucker bird—a long slender bird of olive brown color, and I have myself occasionally met a nest of dove eggs where the eggs were perforated and empty. This egg-sucker, with its long curved and sharp pointed bill is very attractive in appearance, and some time ago I endeavored to snapshot one on its nest, but it is a very shy bird and it flew to a nearby mesquite thicket and the wild persimmon trees. The nest had been built on one such persimmon tree, and the view of same herein shows the four large eggs, which were of light bluish-green color, and the nest inside was outlined entirely with dried up mesquite leaves. Some of the persimmons are seen on the photo scattered around the branches and close to the nest. The four eggs were reproduced in normal size, with extra close focusing lens.

In conclusion and in connection with the above matter of our Texas wild dove, I append below interesting and valuable publications anent the wild pigeon, from the pen of Mr. David N. Hoy,—which was published in the June number of the Texas Field and National Guardsman, to wit:

“How the Wild Pigeons Were Destroyed

Many of the sportsmen, now veterans, who resided in the line of immigration of the passenger

pigeons, thirty to forty years ago, will remember the flights and perhaps the resting places of these birds, then so plentiful that their annihilation seemed almost an impossibility. Mr. David N. Hoy, of Milton, Pa., writes us as follows on this subject, with special reference to the manner of trapping pigeons for the market.

“I have frequently read articles about wild pigeons and about the big rewards offered for a nest of the wild passenger pigeons. It has been a long while since the birds have nested in Pennsylvania. As near as I can tell it has been twenty-eight years ago this spring since they have paid us their last respects. I know very well that I went to Potter county, in the northern part of Pennsylvania, to trap some. But as I was farming I could not stay to trap any of them, as this was in the spring and I had to go home and get to work.

“What I want to tell you about the birds is this: Two of my friends stayed there all summer and trapped pigeons on salt beds. Perhaps some of my brother sportsmen do not know how this is done. The trappers would select a swampy place in the woods and clean it off nice and clean, and then take a hoe and make little mud puddles and then the water would collect in them. Then the trappers would scatter a few quarts of salt over this place and the pigeons would come to these places for water and would feed their young some of the mud. Then the trapper would have a net say fourteen feet wide and twenty-eight feet long, would set this net and build a small house made of pine brush, and when a large number of birds had gathered on the net place, then the net would be thrown over them and as many as from three to six hundred birds would be caught at one

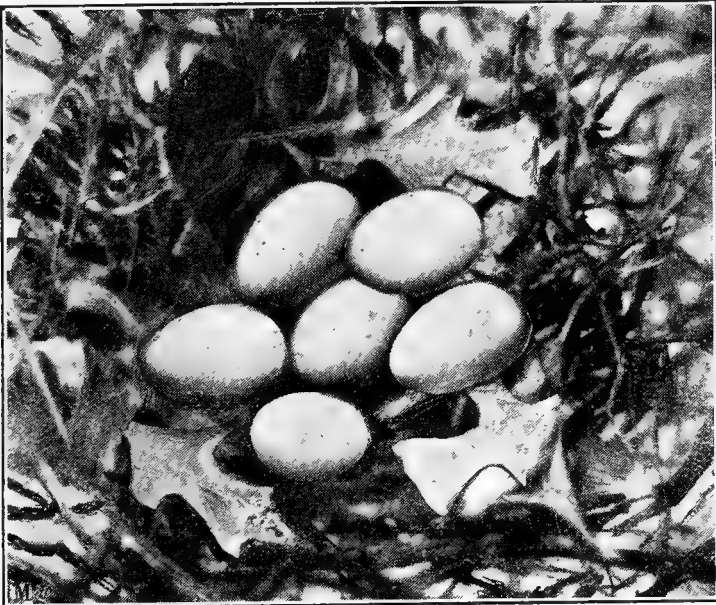
haul. Some trappers had three or four such places, and would go from one to another to make, as we call it, a haul.

"I could tell lots about trapping pigeons if space would permit. This nesting in Potter county was ten miles wide and fifty miles long, and it so happened that I came to the same place in the fall when the pigeons were nesting, and several men told me that there were at least eight hundred men that came at this nesting to trap pigeons. I spoke to one old man who told me he had followed the pigeons for forty years and did nothing else than trap them. Hundreds of barrels of birds were shipped daily. There were so many men there that a large grocery store was built there to supply those men with groceries.

"The two men I became acquainted with told me they had cleared over eight hundred dol-

lars that summer catching pigeons. Now, brother sportsmen, is it any wonder that there are no more pigeons? I sincerely believe that the good lord has sent them in some other country where no man can find them or molest them, although I have read some years ago where it was claimed the birds were crossing the ocean and were caught in a great storm, and that along the shore they lay three feet thick in some places; but I hope what I have read may not be true and that they will return again soon.

I do say that I think they were the nicest and best game we ever had. I would like to tell you how we caught them still in the spring and put a few hundred in a corn crib, and in a few weeks they would get as fat as butter. We always kept about six alive for stool birds. I still have a pair mounted that I used for "mockers" in my nesting place.



ANOTHER EGGSUCKER BIRD NEST

Above photoview shows another typical nest of the Texas Egg-

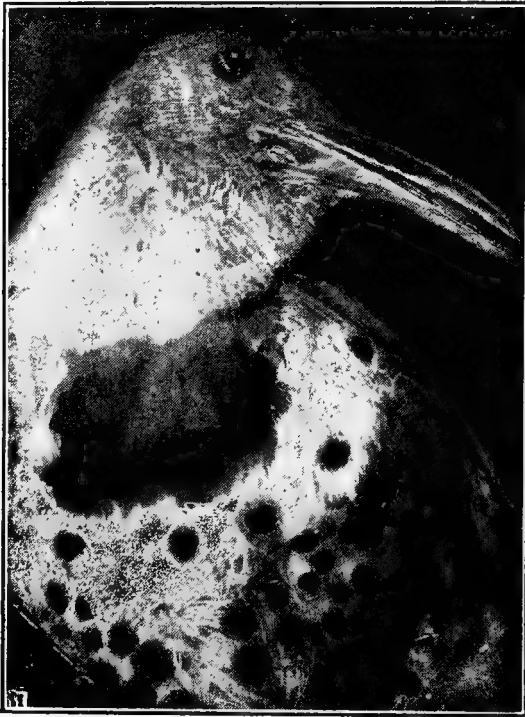
sucker bird with originally six very attractive blueish green col-

ored eggs, found in a post oak thicket, northwest of San Antonio. The nest was constructed of branches and leaves of the post oak, showing the nest about one third less normal size. This shows how the shrewd bird adapts its environments to gather its nest material. In our mesquite brush valleys and hills, this species of cuckoo bird nearly invariably outlines its nest mould with mesquite tree leaves—seen also on another illustration from the woods, elsewhere herein.

As to the claim that the egg-sucker bird seeks and perforates the eggs of other bird nests, this has been proven in some instances by direct observation; but it is ex-

ceedingly rare, comparatively, that such perforated eggs are found in our vast prairie plains and forests—usually such it seems where this breeding bird had temporarily left its nest in search of food, etc., and a doubt always exists in other instances, without direct observation, as to the real cause of such depredation. At any rate, this elegant wild bird deserves protection, as its principal food consists of caterpillars and various larval insects or worms, harmful beetles, etc., and the egg-sucker bird therefore, as well as all other prairie birds during the breeding seasons and outside of same, should not serve as a target to unscrupulous shooters.

Remarkable Specimen of Woodpecker



A RARE SPECIMEN OF LARGE WOODPECKER

Once in a while, during outings or hunting trips along our roman-

tic river bottom forests, during fall and even late in midwinter,

the writer has met a strange forest bird which, from general appearance and its habits, undoubtedly belongs to the large group of our brilliant tree climbers or woodpeckers. One such bird accidentally was wounded during a

est bottom of this Goeth ranch, with its century old and imposing large oak, pecan, hackberry and other forest trees, and the grand river sceneries encountered there miles and miles around, lends that section of our river bottom



THE SAME BIRD CLIMBING AROUND A DRY HACKBERRY TREE STEM

late outing in a romantic river forest valley, near the Judge C. A. Goeth's ranch, some fourteen miles below San Antonio, where the Salado Creek runs into the San Antonio River. The for-

an inspiring impulse seldom excelled in any other of our many famed natural park grounds; and it must have been, in olden days, a veritable hunting and fishing paradise, as well as a prolific

romping region among the dense chaparral on both sides of the river for wild jungle animals—now about extinct.

Large areas of fine land is now converted into fertile fields; and it is near this romantic ranch, that one bright Sunday noon, we came across a number of the strange and beautiful tree birds; and a companion of ours, shooting at a squirrel inside a dense conglomeration of the wild mustang grapevines, accidentally wounded one of these attractive birds, which was afterwards photo-reproduced by the writer and seen on this page. After this, the bird was captured, and it measured ten inches in length, the photograph of this bird on the tree limb shows same about one-third less its natural size; and the second view, showing the head and breastparts in about natural size. It is one of the largest and most beautiful type of woodpeckers that I am aware of, the head feathers and back parts of its body and the wings being of a light chocolate and gray color, dotted with black bands and stripes, and resembling closely the plumage markings of the Mexican blue quail. It has a large and bold bill, slightly curved, but less curved than the bill of the common woodpecker. The inside wing feathers, as well as the tail feathers are of a most beautiful blending Indian-red which reminds one of the coloring of the robin, but the rather long tail feathers are sharp pointed,

each one resembling so many lances or daggers, and when flying, the tail is spread out like a fan, glittering like rubies; and the breast feathers also are very attractive, each of the light gray plumes showing a round or heart shaped and jet black spot, as seen also clearly depicted on the photograph.

This strange bird has been well known to the writer for years, and always met with along and on the high forest trees, where they fly from tree to tree in search of their insect food. I once met a party with a dead specimen and reprimanded him severely for killing such useful forest birds; he claimed they lived on berries, which, of course is not the case, and I had him open the stomach when he was astounded to witness the large amount of predigested insect remnants, even a part of a young centipede that bird had consumed.

By all means, the woodpecker should be protected, as it lives entirely on premature insects or worms and all sorts of insects, which they gather with their long bill from under the loose bark or cracks in trees, etc., and their life history in this respect is too well known as to dwell on same in detail here. They also are fond of ants, and often have I seen them on the ground, near, or on an ant hole, gathering the pesky red ant and perhaps other ground insects and larval beetles. etc.

The Chaparral Cock and Its Nest

To find the breeding nest of a chaparral cock with two eggs and a young "chaparral" only about 15 days old—close to a city where the one reproduced herein was found, is quite a rarity and of much interest in general.

The nest was found near a

pasture southeast of San Antonio in a brush thicket, where also large numbers of the wild dove, the mockingbird, scissor-tail bird, red bird and sparrow, etc., abound.

The nest resembled in all particulars a mockingbird's nest only it was about twice as large, and

its contents, the two white oval shaped eggs, were about three times larger than a dove egg and the young "chaparral," only a day or two old, when first seen, July 2nd, was of a leaden-dark and bluish body color and nearly nude. The nest was not disturbed in taking a view of it later at close range with extra near focusing lens. The inside of the nest was snugly outlined with short-cut particles of straw—perhaps of Johnson grass from a closeby Johnson grass pasture. The nest with this "chap-

very near to securing a snapshot of an old hen on its nest at close range—about 8 feet off; but some limbs and foliage prevented the full view and the chaparral hen suddenly escaped the nest in the moment of lifting the camera. It was a beautiful sight to see the large chaparral hen with its long, greenish, glittering, white and black striped tail erected nearly in a straight line outside of its nest; its large and beautiful black eyes and long beak, sitting there on its breeding nest,



NEST IN BRUSH THICKET OF CHAPARRAL COCK WITH YOUNG COCK ABOUT FIFTEEN DAYS OLD, AND TWO UNDEVELOPED EGGS (at Close Focus and About Normal Size)

arral" about 15 days old, when I took the photo, being near the center of a thick bush with but rather dim light, the photo is not quite as clear as desired. The main body of the nest was securely adjusted with broken branches of the yellow berry-bearing bush between the branches and leaves of the large and broad bush, which was laden with the sweet and eatable yellow berries.

On another occasion after taking the view seen in this book in company with a friend, I came

and how, with a sudden movement and swift jump with out-spread wings, the chaparral hen flew in a long straight line to the ground, where it ran as fast as a horse, and midst loud and characteristic rattling sounds disappeared in the brushy jungles.

As to its habits, I have no literature whatever on this typical bird of the wild prairie plains, and the following are some original observations gleaned from recollections of older times during outings and hunting trips.

Our chaparral cock, Fasan, or "Road runner," or "Paisano" in Mexican, undoubtedly belongs to the genus "Gallinae" or chicken, which they nearly resemble in size and shape of the clawed feet, but they are entirely more slender built and more elegant in appearance with their beautiful and glittering bluish-green body feathers, intermingled with black and

of the Helotes settlement some years ago during an outing, we came across a chaparral cock with a young prairie rat in its mouth, which it had captured in a nearby cactus thicket, and which it proudly held in its beak, and soon disappeared in the dense agarita chaparral close to a cedar forest.

The chaparral cock is not a game bird—and still some persons



AN OLD CHAPARRAL COCK WITH LIZARD IN ITS BEAK (From the Helotes Hills, by the Writer)

white feather stripes over the entire body. Its large head with the intelligent looking dark brown eyes is supplied with a powerful and long bill with which it obtains and kills its prey—mostly insects of all kinds, especially grasshoppers, and also lizards and spiders, young snakes, prairie mice and young rats, etc.

In the hilly regions and vales

shoot them—often for mere amusement.

A reliable old Mexican rancho once told me that he considered the "Paisano" a most useful bird around his hacienda, and that he witnessed with his own eyes several instances where this chaparral cock killed the deadly rattlesnake in about these words: "After some preliminary attacks, during which

the Paisano hops or dances gayly around the snake—the latter rattling fiercely—the chaparral cock, with open wings and erect tail, at an opportune moment with lightning rapidity spreads and flaps its wings and strikes at the snake's head until the powerful and sharp pointed bill pierces the brain. It then picks its eyes out and mutilates the body.

Often unscrupulous hunters and boys shoot this lizard and snake bird merely for fun and afterward the corpse is left on the prairie

vales of Western Texas, especially such abounding with plenty of lizards; on open prairie plains as well as the brush jungles and pastures; in forests and cultivated fields—in all such places the chaparral cock seeks its insect food, and it is an imposing sight to observe this speedy bird attack its prey or perhaps, with a lizard in its beak, running along the roadsides: or when, with tail and head in a straight line it flies with the swiftness of an arrow over the prairie plains. e



CHAPARRAL COCK NEST AND EGGS IN BRUSH THICKET

to be devoured by buzzards or coyotes. Of course in exceptional and provoking circumstances necessity may compel one to make use of nearly any sort of foodstuffs out of the ordinary, to sustain life, but the chaparral cock is by no means a game bird.

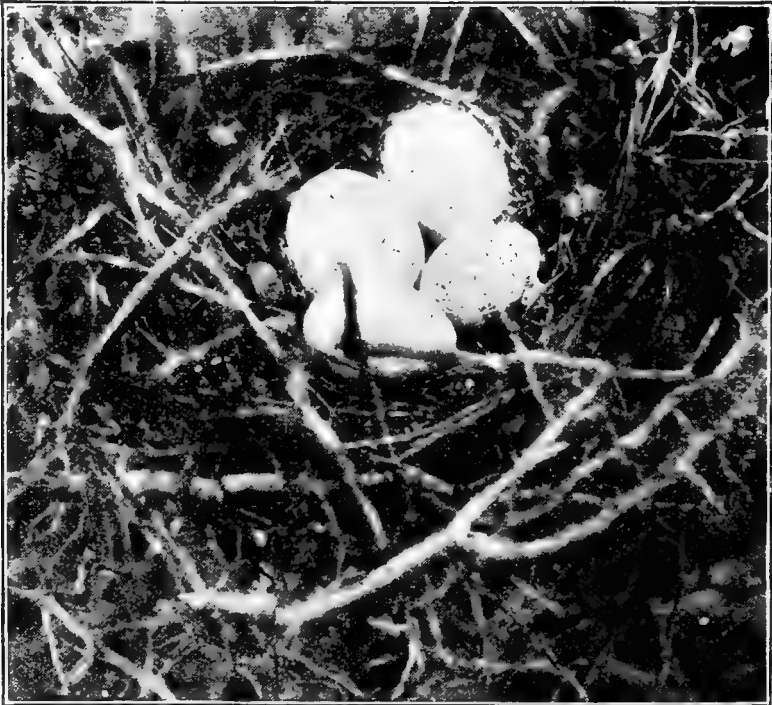
Around the suburbs of San Antonio, especially the hilly regions, our "chaparral" is quite conspicuous today yet—though their number, compared to former years, has considerably diminished. All over the hilly regions and

Once, while returning from a few days outing at the romantic Medina river, some 32 miles northwest of San Antonio, on the Bandera road, and at the hilly regions of Helotes, we happened to witness an unusually interesting scene. On one of the dark green trees close to some agarita bushes, a large snake was noticed about six feet from the ground, inside its thick branches, slowly creeping from branch to branch, higher up, towards a mocking bird's nest. At the same time two mocking

birds were seen madly flying against the snake and pricking its body at each turn, also a chaparral cock was seen close to the brush, attentively viewing the snake and the birds. When we approached closer, the snake, of the whip-snake variety, rapidly glided down the tree and disappeared in the underbrush before my son and I had a chance to give it a lesson for "eggstealing" and the chaparral cock also made its exit.

liberated in the hilly regions around Bandera and Guadalupe county. The result of same however, whether they multiplied or were annihilated by animals of prey, never came to my notice, presumably they met with the fate of extinction.

As already referred to, the chaparral cock prepares its breeding nest, about the size of a chicken nest, in the midst of a well sheltered thick brush, or on the lower branches of a tree—in particular between the bifurcated branches



ANOTHER TYPICAL NEST AND EGGS OF CHAPARRAL COCK

During our coldest winter days the chaparral cock remains with us, conjointly with the mockingbird, the field larks, quail, woodpecker, the cactus weaver wren, the scissor tail bird and other typical Texas birds.

Some years ago I was informed that some enterprising San Antonio sportsmen tried to acclimatize some foreign species of the Silver Fasan, and that large numbers had been

of some hackberry tree, the huisache and persimmon-tree, and occasionally in the midst of the Spanish dagger plant.

The nest usually contains six to eight white eggs and are nearly the size of a chicken egg. The young brood is a very greedy lot and they grow up rapidly and are fed by the old hen with all sorts of insects and worms, small lizards and snakes, mice and young

prairie rats, which they greedily devour, even when only a day or two old—being supplied with a very wide mouth and throat. When seen in their nest in a remote age of development, the bluish color and nearly nude birds resemble a lot of young alligators and when farther developed they are not unlike a mockingbird in appearance and as is seen in the illustration herein. The fine reproduction of a chapparral cock nest with four eggs was encountered some distance from the other nest with two eggs and a young chapparral. In its makeup it resembled the nest of a mockingbird. The eggs were oval shaped and about three-fourths the size of a chicken egg. The view shows the entire nest with contents, which was located in the center part of a dense thorny bush about five feet from the ground. The old chapparral cock just happened to escape the nest when I found same and took a time exposure of it.

As to the protection of the chapparral cock and the feathery tribe in general—occasionally mentioned in magazines, and birds of Texas in particular, the trapping of birds and the so-called "nigger-shooter" and the parlor rifle should be done away with. Gangs of small chaps—white as well as negroes—loaf around the suburbs or near pastures and annoy or kill innocent birds and others even kill songbirds to eat. Up north this seems to be more the case than here in Texas, and it is also, and forcibly stated by one of America's greatest animal friends and practical observers of nature objects—Mr. Wm. T. Hornaday, Director of the N. Y. Zoological Park. May the warnings of Mr. Hornaday serve as a lesson and be heeded by unlawful bird killers. This is what Hornaday says, (By Harriet Quimby in "Leslies' Weekly June, 1911):

"Ten years from now America will be an absolutely birdless land, unless some action is immediately

taken to stop the present destruction of song and gamebirds. I do not like to think that our grandchildren will be obliged to visit a public aviary if they would study bird life, as they are now obliged to visit the zoo if they would see America's representative animal, the buffalo; but I am convinced that this will be necessary unless the people of America arouse themselves to immediate vigorous protest. The subject of bird protection is far more serious than the public at large appreciates. Because some of us see a few robins and larks in our own city suburbs or in the country, we are slow to understand that these cheerful little feathered creatures are being slaughtered for food in many other city suburbs and country places.

"It is only a few years since we in New York succeeded in protecting our immediate vicinity from song-bird-eating foreigners. As an example of what is going on in the country I will tell you of a certain local disturbance that points to a moral. For twenty years the Italians of New York derived great joy from shooting songbirds for food in the woods of upper New York City. I never heard of a city policeman making an arrest for hunting in the city unless dragged into it unwillingly by some special game warden or other private citizen. When the Zoological Park came into existence in 1899, the Zoological Society decided that at least two miles around the park the slaughter of songbirds for food should cease. In the active war that followed, many arrests were made and many fines imposed before the Italians of New York became convinced that it was time to quit the field. One of the last episodes was the arrest of five men having upon their persons the dead remains of forty-three song birds. We preserved the entire bag of dead birds and have them now as an

exhibit. The condition that obtained in New York before 1899 illustrates the condition that obtains in almost every other section of the United States. For instance in Pensacola, Fla., strings of robins may be seen hanging up before the doors of shops like strings of onions, and in many parts of Florida larks are being slaughtered and eaten.

"Occasionally we hear it said that birds are injurious to the crops, but such complaints do not often come from farmers," continued Mr. Hornaday, "the latter well will know that birds are their best friends, and therefore every cherry or strawberry eaten or spoiled for the market is paid for many times over by the birds, who devour the fruit killing insects that infest the country. If the time ever comes when there are no birds left, the farmer will find his profits reduced very materially for the purchase of the insect powder, the use of which must be liberal indeed to do the work that birds are now doing for nothing.

"Perhaps there are sanguine people who feel disposed to call me an alarmist. If so, I am willing that they would do so, for that is precisely what I am trying to be. I am trying to do my part in sounding a general alarm and in sending C. Q. D. messages to about eighty millions of apathetic and easy-going people before it is entirely too late. The time to send in a fire alarm is before your house is entirely consumed, and not after. For forty years we have been smarting under the national disgrace of the wicked slaughter of American bison. If something is not done, and done quickly, we will be smarting under the disgrace of having looked calmly on while our American birds are being slaughtered and gradually annihilated.

"But what can we do?" is a question asked by those who have

not delved deeply into the subject, "Prohibit the sale of game," is the answer. But what can the layman do toward prohibiting the sale of game? The layman can write his protest and forward it to Congressmen and Senators, before whom the bills for the protection of birds in various States will appear, and thereby show these statesmen what the people want. Nearly every law making body in America is quick to act in the preservation of any public asset as soon as it is thoroughly assured that a great many of the people desire it.

"The reasons why the American people should arouse themselves to immediate protest against the sale of game everywhere are because fully ninety per cent of our legitimate stock of feathered game has already been destroyed, and because it is a fixed fact that every wild species of mammal, bird or reptile that is pursued for money-making purposes is wiped out of existence. Even the whales of the sea are no exception. At least fifty per cent of the decrease in our feathered game is due to market gunning and the sale of game. Laws that permit the commercial slaughter of wild birds for the benefit of the few who slaughter for the markets are directly against the interest of the many to whom the game partly belongs. Game killed for sale is not intended to satisfy hunger. The people who eat game in large cities do not know what hunger is, save by heresy. Purchased game is used chiefly in overfeeding, and as a rule it does far more harm than good. The greatest value to be derived from any game bird is from seeing it and photographing it and enjoying its living company in its native haunts. Who will love the forests when they will become destitute of live life?

"All of our feathered game," continued Mr. Hornaday, "with

a few exceptions, is being shot to death very much faster than it breeds. What state is there north of North Carolina and east of Arizona that to-day possesses more than a ragged remnant of quail, grouse, wood ducks and wild turkeys?

For ten years the sportsmen of New England have solemnly been spending good money in restocking with quail their quailless covers. But have any of them ever gone to work to put a five-year close season on the books for the benefit of quail? And yet when Kansas did that, about five years ago, the quail recovered rapidly. The majority of our States have what appear on their face to be excellent game laws, and I believe that, considering all things the majority of them are very well enforced—all but the bag-limit law which for game birds, I think, are not enforceable in not more than one case out of every ten. It is impossible for a game warden to investigate the bag of every sportsman every day in the season.

"The great trouble is there are twenty times too many men and boys who shoot according to

law. If killing goes on as it now is going, we will see all our killable game exterminated according to law, and our grandchildren will see a gameless continent. Of course I except the game and forest preserves in States like Maine and New Brunswick, where the big game hunting laws are right and are thoroughly enforced. How many Americans are there who know how many of our birds have already become extinct in our own time and how many are on the road to extinction in the near future? To enumerate the species that first come to mind, there are already extinct the great auk, passenger pigeon, Labrador duck, flamingo (in the United States), Carolina parakeet, Esquimaukerlew. And threatened with early extinction are the golden plover, whooping crane, trumpeter swan, roseate spoon bill, red-breasted sand piper, American egret, wood duck, willet, sage grouse and prairie grouse. There are many States that have various laws prohibiting the sale of game killed within their own borders, but they permit the sale of game killed in other states."

Prairie Hawk in Cactus Jungles of Mitchell's Lake

During hunting trips one occasionally comes across the carcass of some prairie rodent, or perchance, of some remnant of reptile which has been partly devoured by a prairie hawk or an eagle. Many years ago, on the road leading to the hilly regions of the Olmos settlement, north of San Antonio, hunting for quail and doves, I suddenly came across a number of the large Texas-Mexican eagles, which were gathered around and were devouring a huge bull-snake, which, as well as the rattlesnake, in these days, were quite numerous in certain favored localities of

these old hunting grounds, (now long ago converted into cultivated land, and built up with modern palatial residences, and attractive villas) in the hilly regions of the present north side touring loop. These prairie eagles, some eight or more of them, were busily engaged chopping up the large snake with their bills and fearful claws, and some were dragging large pieces of the entrails away, or fighting for same; and it was quite an unique sight—nowadays hardly ever seen again in the near prairie plains.

On another occasion, while hunt-

112 TEXAS NATURE OBSERVATIONS AND REMINISCENCES.

ing in the hilly and bushy regions of the Martinez settlement, at the farm and pasture of my old friend, the Hon. John Wickland, I saw in the midst of a dense post oak and persimmon thicket, a large prairie hawk, suddenly escaping with its prey, a small cotton tail rabbit. Only the torn up hide and rem-

ready been described and photo-illustrated in the Texas Field and one Sunday recently, I saw a very beautiful hawk escaping from where it had its meal, a very young cottontail rabbit, among some of the cactus jungles and mesquite trees along Mitchell's lake and near one of the small



PRAIRIE HAWK AND REMNANTS OF SMALL COTTON TAIL RABBIT IN FRONT OF SOME CACTUS JUNGLE

nants of bones were left, and the hawk presumably had been feeding on the carcass for a day or two, as only small shreds of meat were left on the bones, and all the entrails were absent.

Lately also, I had occasion to witness such prairie hawks with their prey—one of which had al-

club houses. With a quick shot the escaping hawk was wounded in one of the wing joints, but it managed to fly up to a lower large tree branch where, however, it stayed but a few moments, when it flew, or rather fluttered into some high weeds below and near the tree. It was not further mo-

lested with a shot but, being an extraordinary good specimen, resembling closely some type of eagle, I quickly ran up to the hawk and managed to catch him by the uninjured wing, and replaced him thus to the place in front of the large cactus pile with the remnants of the rabbit, where I prepared the photograph seen here, in presence of W. A. Koepf, Jr., one of our hunting party.

The hawk was of a beautiful dark bluish gray color, with dark and yellowish brown striped feathers along its breast, inside wings and feet—the latter being supplied with a pair of powerful talons; and it was a magnificent sight as the sturdy hawk stood erect and in all its majesty, in front of the thorny cactus pile, when a quick snap-shot secured his picture.

Wounded Prairie Hawk

I herewith reproduce a fine specimen of a Texas prairie hawk encountered in the vicinity of Cassin's lake. While hunting for small game about half a mile east of the lake, in a hilly region abounding with rabbits, etc., suddenly a large hawk flew over our heads, carrying a small bird in its claws. At first it was quite out of shooting range, but after a few circular flights it gradually neared the spot where the writer was standing and, flying clear overhead. With a quick aim the hawk came down in a cactus jungle, wounded in one of its wings and optic, and still holding its victim in its clutches. A hunting companion being present, we managed to carefully bring the hawk to our camp and, having our trusty camera with us, the hawk still exceedingly alive, and with its claws imbedded in the bird's flesh, was placed on a large stump, adjoining a huge pecan tree (after previously placing the camera and focusing the stump and its side branches) and a snap-shot was taken at the moment the hawk flapped its wings. Mr. A. Haubold of San Antonio assisted in taking this view—at quite close range, after which the hawk was given its liberty—or, rather, in trying to place it from the stump

on the ground it made a long leap and hopped toward the nearby and high river bank—close to our camp—where it managed to leap down the embankment, and escaped along some ravines below.

The hawk was an unusually fine specimen and perhaps he is still roaming around the jungles after prey, as the wing was not entirely broken—and we all know how tenacious these hawks are—even after a seemingly mortal wound.

Our prairie plains and forests harbor a large variety of beautiful hawks, and it always affords the hunter a great sight when the hawks circle around or roam about for their prey; and also, and particular, when, in late fall, these hawks gather in large numbers—hundreds of them—to start their migratory flights to other climes. During an outing last fall, one such migratory hawk flight was witnessed—as well as the migration of immense swarms of the bull-bat birds. The latter happened along one of the large open fields south of the Espada Mission, when a most fascinating sight met our eyes! We were homeward bound, toward sundown, when hundreds and thousands of bullbats filled the air and roamed over the fields—circling and gathering closer and closer,

when, after repeated circular flights and screeching noises, they gradually disappeared. Cold wet weather had set in at that time, and a week afterward not one of the bullbats could be seen toward evening at that same place of reunion.

On several occasions out in the

large birds seen migrating in a southwesterly direction—more or less high up, and always circling around, but at each turn flying a good distance off the first circling point, and often in an erratic way in various circular directions—but always a most fascinating flight to behold where hundreds



FINE SPECIMEN OF TEXAS PRAIRIE HAWK WITH ITS VICTIM

plains we witnessed the migration of the prairie-hawk as well as also our "turkey-buzzard," both carrion birds, displaying the same mode of migration, and both being easily distinguishable for reason of the light gray color of the hawk and the jet-black, of the buzzard. In nearly all our observations, the

and thousands of them—either hawks or buzzards wing their flighty tours high up in the horizon—until the eye traces them only as mere floating specks.

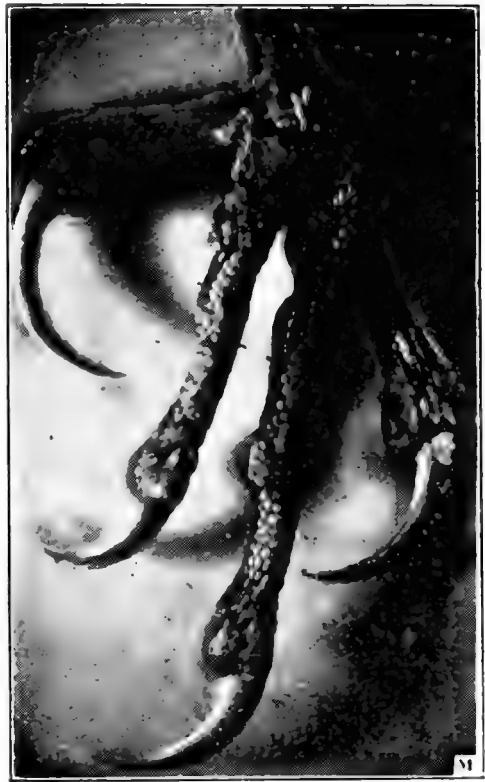
Generally when or where game is scarce, these hawks are also scarce—as they are a hungry lot! Around lakes and pasture tanks,

however, as well as places abounding with game or plenty of small birds—as well as near farmhouses having plenty chicks—the prairie hawk roams about numerously, and woe to the bird, chicken or small rabbit that is not quick enough to dodge the hawk's claws—grab he will! He carries his victim in his claws to some nearby tree, or in a field, perhaps on top

the Medina river near Geronimo. They were the size of a large, fully outstretched hand, with fearfully long and curved claws and indicating the iron grip its owner possessed. The smaller types of Texas prairie hawks are quite conspicuous around farms and prairie plains, and besides small birds, they also are fond of insects, especially grasshoppers. One es-



THE PALM OF A HAWK'S FOOT



OUTSIDE OF SAME FOOT

of a haystack or a fodder-pile, etc., and there ends his meal. Some very large and very fat hawks can be seen along the shores of Mitchell's lake, where hawks of all sorts and types are very numerous, and where they have occasion to feed on stray and wounded ducks and other waterfowl. The largest hawk feet I recollect having ever seen were those of a fish hawk, out on

pecial small type of hawks—the so-called "sparrow-hawk" which resembles somewhat a mocking bird, but is smaller and broader built, with a thick curved hawk bill and claws, and of light bluish and black and snow-white plumage, is often seen roaming around the hunting grounds in search of its prey—small birds and insects, and it is characteristic by its peculiar flight—in a straight line—and

exceedingly swift when after sparrows or other birds; and it always is seen alighting on the highest top of a tree, with preference a mesquite tree. Even in towns these hawks are quite often seen in and around gardens and parks, and the writer remembers an instance where one of these marauders killed some of our best canary birds in a cage. This happened a few years ago, whilst in my private office on East Commerce street (now the "Menger

floor or floating around the last cage, and as soon as the hawk noticed my approach it swiftly flew away with some remnants of the canary bird in its claws.

With these olden days recollections, I am reminded again of the old Toudouse collection of native Texas animals once roaming about the jungles and prairie plains close to San Antonio and nowadays nearly extinct. I had a number of original photo-plates pre-



EAGLE WITH A RATTLESNAKE IN ITS BEAK

Brothers apartments"). Whilst reading, I heard a loud commotion and fluttering noise around the bird cages on the adjoining front gallery, and opening the door leading to the gallery, a perplexing sight presented itself: in one of the cages two canary birds were lying dead in the cage—headless; and on the other cage a sparrow hawk was seen in the act of having grabbed the single canary with its claws and pulling it through the wired cage. Many golden-yellow feathers were scattered on the

pared at the romantic little Toudouse villa at Losoya, south of San Antonio, but they are nearly all lost or loaned away, many years ago. Among these photos one is left, which is reproduced in this Field issue; a large prairie eagle with a captured huge rattle snake, both of which Mr. Toudouse had encountered and shot in the midst of a wilderness of cactus jungles and brush, close to the old Tudrich "Laguna de los Patos" called Mitchell's Lake. Wild animals of nearly all types typical to our

western climate, now nearly extinct entirely, roamed in profusion in those olden days around the sandy hillsides, brush and cactus thickets surrounding Mitchell's laguna and the new "Blue Wing Lake" and I recollect how the old hunter and naturalist, Toudouse, related his encounter with the eagle and rattle snake depicted herein. Similar

to his encounter with a huge lynx, Mr. Toudouse had surprised close to the tule edges of Mitchell Lake in the act of tearing the neck of a large spoonbill duck off its body. The huge snake was still alive and partly coiled around the eagle's body, when the old hunter with a quick shot, ended the eagle's life, in order to add both specimens to his valuable collection of Texas zoological trophies.

A Few More Typical Texas Bird Nests

As is quite well known, May and June usually are the main nest-building and breeding seasons of most of our interesting feathery tribe; and just now, beginning of June, the woods around San Antonio are teaming with breeding birds of all kinds, and some of our tule lakes and swampy regions harbor nests of various waterfowls—though sparingly, and I submit elsewhere the nest with eleven eggs of a waterhen, encountered and photographed at the old Mitchell's Lake hunting preserve, at close range. The entire nest was built of particles of the tulereed seen covering that lake, close to the bank and some underbrush and shrubbery; and the large, perfectly round tule nest, with its contents of eleven oval-shaped and light reddish brown and slightly spotted eggs, and a young baby hen a day or two old in the nest, presented a beautiful scene to behold, as seen herein.

As a rule, our prairie birds have their favorite breeding haunts and typical methods of nest-building, to which they invariably and most ingeniously adhere; and some among the great majority build their nests directly on the ground, or in holes in the ground and trees. Our quail and the bullbat bird and a few others, invariably

build their nests on the ground, in some secluded and hidden place—the bullbat bird, however, not building any nest at all, as it deposits its eggs on the ground without any extra nest enclosure; and still other bird species, similar to the European cuckoo family, generally prefer to appropriate the nest of a different bird specie. Having noticed this also in late years with our wild dove. I had occasion lately to witness this again in various breeding localities of this bird, and I have met quite a number of breeding wild doves with an egg or two on the abandoned but newly outlined nest of some other bird species, especially of the mockingbird; and also a dove breeding on a nest built directly on the ground was found. This was witnessed only recently, and I prepared a nice view of this dove nest on the ground with its two oval and snow-white eggs. It was encountered during an outing, in a mesquite thicket and partly hilly region, where hundreds of other birds, especially the mockingbird, the red cardinal, the cactus wren, the scissor-tail bird, chaparral cock and various weaverbirds and others have their secluded haunts, and it was stumbled upon rather unexpectedly,

or rather in passing some low mesquite brush. Suddenly a wild dove fluttered from its nest over the ground to some nearby brush thicket; and, though only a common dove nest, it was so attractive that I could not help taking a view of it—as here reproduced. The nest, similar to the one of a prairie sparrow, was situated on the ground in the shade of a small bushy mesquite tree and surrounded with small flint rocks

nearly full-grown doves, and it was a beautiful sight for a snapshot, but I had approached somewhat too close, when the old dove flew off the nest, which, of course, was not molested. But on another occasion a breeding dove on a mockingbird nest was encountered which I luckily happened to reproduce satisfactorily, and as seen elsewhere Usually the old dove fills the old abandoned nest of some other bird with a few par-



WILD DOVE NEST ON THE GROUND

and numbers of small prairie snails. The nest itself was a very plain affair, built only with a little dry grass, and protected above by some mesquite leaves and the branches of a small mesquite bush (not seen on the near-focused view of the nest).

Not far from this interesting encounter, I met two breeding doves, both sitting on the forked limb of a mesquite tree on some old abandoned nest, and one was in its nest in the center of two

ticles of dry grass or small branch particles, whilst the large majority of wild doves build their own plain and typical nest, usually of flat shape, on a broad mesquite limb, more frequently between or close to the bifurcated or rounded limb of some tree, as can be seen on the illustration herein of a typical prairie dove nest and eggs.

From the many injurious influences, especially storms and rains, and the apparent decline in numbers of the wild dove, I wonder

if not some natural instinct inherent with most of the feathery tribe, induces them to seek better shelter and safer incubators for their offspring by seeking the abandoned nest of other bird specie?

Often have I encountered a fresh dove nest on brush or small tree of the prairie, built on top of a flat and larger nest than the usual dove nest, but I never encountered such nest containing an egg of some other bird species, as is occasionally the case with other birds. Such an instance I wit-

ter closely, but of smaller size.

As to the eggsucker bird, and its nest, I may add here a few recent observations and a good view of such bird, encountered near San Antonio.

I was once led to believe that this so-called eggsucker bird built its nest nearly exclusively on the branches of a wild persimmon tree. This, however, from the many nests seen of late of this bird species, is an error, as the "eggsucker," which seems to be a misnomer, and from recent observations and those of others, an



A TYPICAL DOVE NEST ON FORK OF MESQUITE TREE BRANCH

nessed lately, when a beautifully built prairie sparrow nest, containing four oval shaped and elongated, alabaster-white eggs of about the size of a small bean, also contained a light speckled and nearly round egg of light reddish gray color of some other bird specie, and about twice the size of the sparrow eggs. It was not the egg of the eggsucker bird, nor of the mockingbird, or red bird, though it resembled the lat-

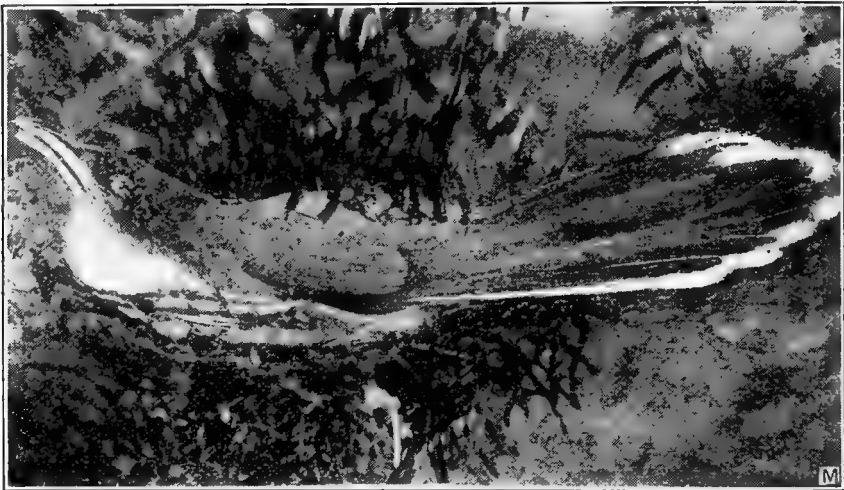
insect destroyer, especially fond of beetles and caterpillars, builds its own nest on various trees and brush; and I have met such nest with its characteristically large and elliptis shaped bluish-green, exceedingly attractive eggs on the branches, or mostly between the trunk of the mesquite tree, on small pecan and box elder trees along the river bottoms and in the agarita bush. This bird, which belongs to the cuckoo family, is

also accredited as seeking other birds' nests to breed in. The latter, however, undoubtedly is an error, as in the last forty and more years I have never encountered a prairie bird nest other than that of the eggsucker bird, harboring an egg or more of this cuckoo bird.

Typical, however, of our eggsucker bird is the fact that, at least as far as my observations go, this bird always fills its nest-bed with large numbers of dried-up mesquite leaves. The nest itself is round and flat, on the order of

and prairie plains in late years, wherever the mesquite tree grows.

The second illustration in this article shows a typical eggsucker with white and black spotted tail which I encountered last May in the hilly regions near Cassin's lake. The nest was located between forked branches of a small mesquite tree and partly covered above with mesquite leaves, and the old bird had escaped at the moment the nest was detected, and the photo reproduced as encountered is seen herein. It contained five oblong and green-



THE YELLOW BILLED CUCKOO OR EGGSUCKER BIRD ON NEST

the dove nest, but much larger, and still rather small in size for the many large green-colored eggs it contains—from four to eight. This nest, however, is more compactly built than that of the ordinary dove, the fundamental or base part consisting of particles of wood and thorny branch particles; then comes a layer of some dry grasses or moss, and on this or directly on the wood particles several layers of dried mesquite leaves are spread out in a circular shape. This I have witnessed invariably in all the nests I had occasion to encounter in the woods

ish glittering eggs, and the entire inside mould of the nest was lined with dried-up mesquite leaves—also seen on the photo. After the view was taken, at close range, another cuckoo bird, perhaps its mate, came flying with a large beetle in its long and sharp curved bill and lit near the nest and place from which we had just retreated. It was the yellow-billed cuckoo bird and a beautiful specimen, of olive brown plumage, with white and black spotted feathers.

The hills and woods around Cassin's lake, as well as the close

by river bottom, is a veritable little bird paradise in springtime and the summer months, where the year round numbers of prairie-birds, the brilliant red cardinal, the Texas nightingale, or mockingbird, the whip-poor-will, the scissor-tail bird, quail, doves, robins, vireos, the field lark, the interesting bullbat bird, brilliant woodpeckers, the restless and beautiful cactus wren, prairie sparrows, and others too numer-

surrounding our camp, as well as the ground nearby, were literally covered with mocking birds and numbers of red birds. It may be similar to the migration of the bullbat birds, witnessed last year near that place on a large open Johnson grass field, that those songsters had congregated there for a final migration to other climes, as bitter cold winter days set in shortly afterwards.

It is also here, in a hilly and



TYPICAL NEST OF THE TEXAS YELLOW-BILLED CUCKOO BIRD (EGGSUCKER)
WITH FIVE EGGS; NEST-BED FILLED WITH MESQUITE LEAVES

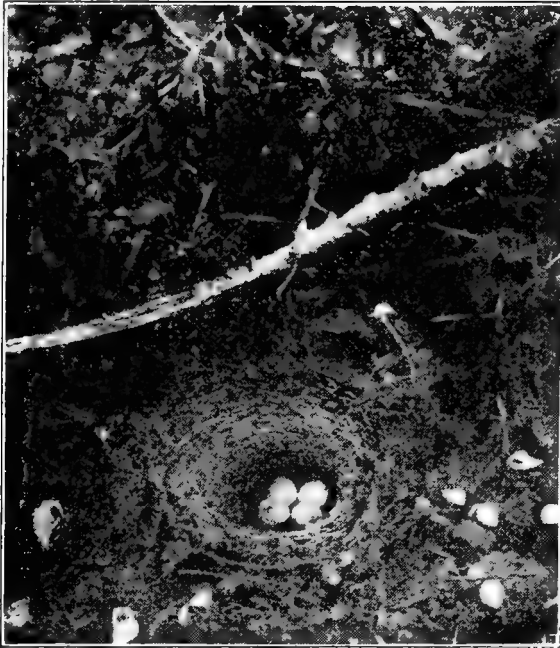
ous to mention are encountered here and enliven the prairie plains in summer time with their melodious songs, whilst the lake harbors numbers of chattering waterfowls in winter time, and is stocked, I am told, with lots of fine fish the year round.

Never before had I witnessed such a large amount of mocking birds and red birds as during an outing during a cold day last fall east of Cassin's lake; the hackberry trees and mesquite brush

considerably rocky and brushy region, that we came across an interesting small nest, last May, with four marble-round, jet-black speckled and snow-white eggs of a small prairie sparrow, snugly hidden directly on the ground under the shade of a small wild acacia brush. The round nest, photo reproduced on the spot and seen herein, was about the size of a child's hand, and it seemed as if the bird had first scratched the ground up before building

the nest, as it was more under than above the ground. It was found accidentally whilst gathering agarita berries by two of our companions. The small, white and black marked eggs were perfectly round in shape, and the nest was surrounded by numbers of the small prairie snail houses and fragments of flint rocks and a small blackberry bush. On another occasion, during hunting trips in hilly regions around San An-

houses seen scattered all over the prairie, especially in hilly and brushy regions around San Antonio, are a favorite bait for anglers, especially to catch perch with, and it is a fascinating sight during some sultry and rain-threatening day, to witness hundreds of such snails, several feet above ground on the bushes, or small trees, and I recollect having seen, years ago, in a pasture during threatened rainy weather, at



A RARE PRAIRIE SPARROW NEST WITH ROUND, SPOTTED EGGS, IN THE GROUND

tonio, such nests with the round eggs were occasionally encountered inside some thick brush and with preference in the small leafed acacia brush bearing golden yellow and red globular blossoms, but its host, some small sparrow species, prefers to build its nest on the ground and is generally found accidentally, when one passes close by, and its host suddenly flies away.

The mollusks of our common, but interesting small prairie snail

the Olmos settlement, such immense numbers of such snails, covering the mesquite brush in such numbers that nearly the whole brush was one mass of snow-white snails, some of them climbing as high as five feet in the branches.

Since writing the notes anent some birds, on the plan of the German cuckoo, laying one egg more in the nest of some other breeding bird, and citing an instance of a beautiful prairie sparrow nest con-

taining four oval shaped, alabaster-white eggs and also one speckled egg, I had occasion lately to find this same nest again and to make a photo of it. As seen on the view herein, the small rounded nest was snugly hidden between branches of a blackberry bush and contained four white and one much larger and slightly spotted egg of some other bird species, but the exact nature of which type of prairie bird it belonged to is still a puzzle to me;

leaves of some berry bush.

Another interesting and very attractive prairie nest I am including in these notes, is the nest of our red bird or cardinal. This beautiful bird, seen all over the prairie plains and in particular in forests and in our parks and gardens, is undoubtedly, next to the mockingbird, one of our finest and most attractive song birds, and its nest also is most beautiful and artistically built. Though preferring shady places in the



A PRAIRIE SPARROW NEST WITH FOUR EGGS AND ONE BASTARD

however, from two fresh nests, both of them containing several eggs of same size and light reddish dotted color and found later, I am quite sure now the bastard egg in the nest was one of some other prairie sparrow species, the nest of this sparrow, of round or oval shape, being exceedingly attractive and usually found hidden between the small branches and

forest, our red bird builds its nest in nearly any locality of the prairie plains wherever there is plenty of green foliage and brush and some rivulet or tank, and the nest is always built of the same type, always of an equal round shape, and lined out with thin grass stems and branch particles or moss. The nest depicted herein was found in one of the attractive

and evergreen berry bushes in a hilly region near San Antonio, snugly hidden between the foliage and branches, which were held aside to expose the entire nest and the four reddish-brown dotted eggs. In our river bottoms the red bird prefers, as stated, some locality with plenty of foliage, but often also it is met with without much protection whatever between the forked branches of a small hackberry or boxelder tree or in the thickets of vines, and in

nest to give it extra strong hold. Such breeding nests, of course, should not be disturbed purposely, as some vandals are wont to do; however, the breeding bird invariably returns to its nest if frightened away, as long as the eggs are not disturbed or broken by a careless hand.

Without wishing to go into further detail, in a general way, concerning our Texas red bird, I append the following observations of the celebrated naturalist and



A TYPICAL RED BIRD NEST AND EGGS IN A YELLOW BERRY BRUSH

open forest and mesquite and oak brush. Whilst with a fishing party south of the river bottom, we met several breeding red birds along the river bank, and one particularly fine nest entirely hidden between the foliage of an elder tree overhanging the river bank and containing its characteristic four small-dotted and comparatively large oval eggs, was exceedingly attractive, several of the rank grapevines being interwoven in the base part of the

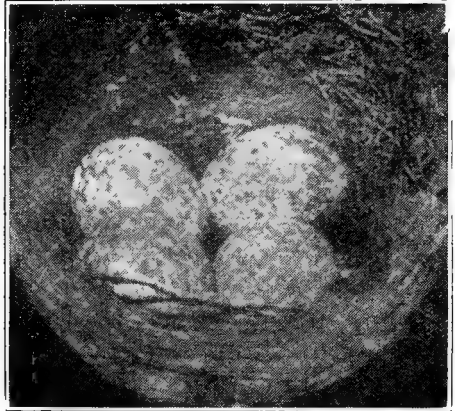
ornithologist, Audubon, in H. Nehrling's work on Birds of North America:

"Wherever the cardinal makes its appearance it is welcomed as a pet by everyone, by reason of its brilliant red and glittering color, and its melodious and rich song, which is loud and clear, and reminds one of the finest tunes of the flageolet; more and more, however, it moderates, until gradually it ceases entirely. During mating time the song of the red

bird is given in all its might, the bird swells its breast, the tail feathers are spread out like a fan, it claps and spreads its wings, and turns its head from right to left, simultaneously, as if it intended to listen to its own wonderful tunes. The melodies are always soon renewed, and it only ceases singing to gather fresh breath. Long 'ere the sun gilds the eastern horizon with its golden hue, the cardinal begins his song, and ceases only when the burning sun sends its scorching rays and compels all life in nature to seek temporary rest. But as soon as nature recovers, the song is renewed with such energy as if the bird had never exerted its breaths before, and its echo enlivens all the neighborhood; it does not rest unless being compelled by the nightshade spreading around him. In such fashion the red bird seeks to dispell the wearisome hours of the breeding female, and at times the latter also, with the modesty of its sex, joins the singing, but with less force.. But few of us deny this noble songster our due admiration. How delightful it is during a sultry day and when the darkening sky covers the forests, and night seemingly approaches, suddenly the brilliant, well-known tunes of our pet bird are heard! I witnessed this pleasure very often and for no price would I like to miss it for ever." (Original translation from the German work of H. Nehring, Custodian Public Museum, Milwaukee, "Die Nord-Amerikanische Vogelwelt").

Song birds in general were more numerous around San Antonio in olden days, and in later years in San Antonio's beautiful public parks and many of them were caged, mostly by Mexicans, who, as stated in the preceding pages, concerning our mocking bird, take good care in rearing the imprisoned youngsters, and nearly every Mexican home

or village had its quota of caged mocking birds, red birds, Mexican canaries, virios and other prairie birds. But of late years our hustling modern business metropolis harbors fewer song birds in its borders, and caged birds also are rarely seen, and it is well it is thus, as imprisoned prairie songsters rarely fare well or can be kept any length of time alive



RED BIRD EGGS AT CLOSE FOCUS

in a cage, for want of proper care such birds need; but, with less disturbance of such birds as still are with us, these will remain in our city gardens and parks the year over, if not molested by "nigger shooters," parlor rifle and the little youngsters in general prowling around in search of birds and birds' nests.

In regard to our town sparrow I may also add it is true these lively little fellows sometimes become a nuisance by their large numbers infesting the galleries or trees fronting residences and public buildings, where they also seek shelter and often prepare their nests, and some of them (the so-called English sparrow) often chases other birds from our enclosures and public parks; as a whole, however, these hungry little town sparrows, and especially those around farms and pastures,

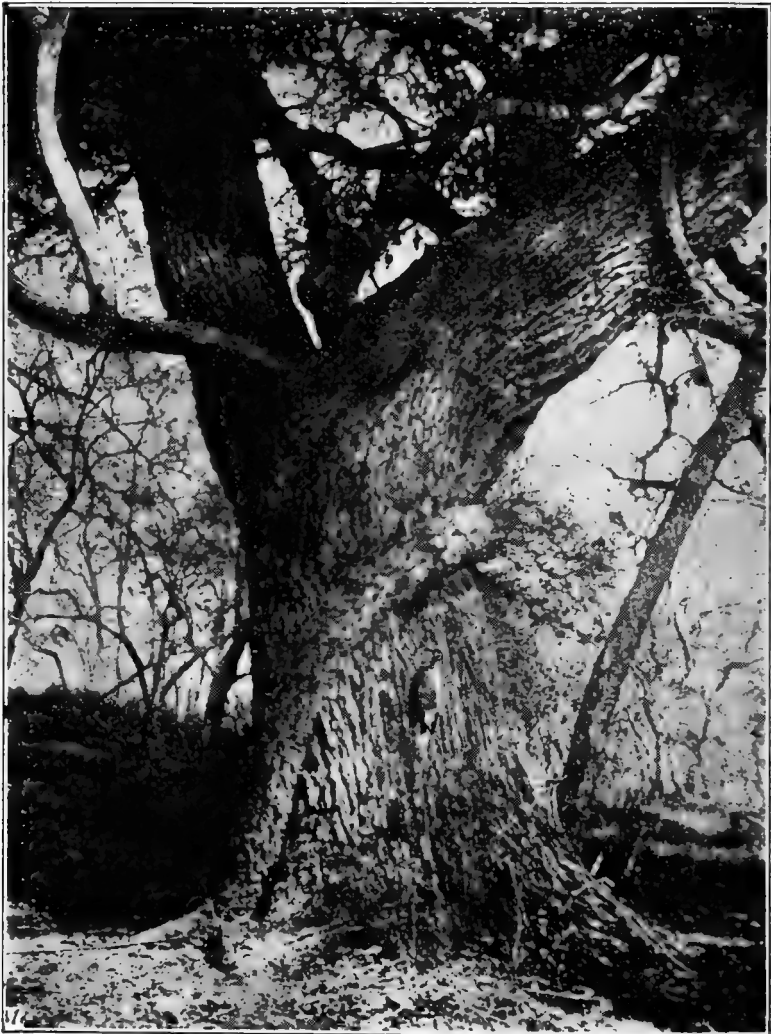
undoubtedly also do much more good than harm, as they are insectivorous as well as destroyers of large quantities of weed seeds. Any observer of the doings of our sparrow well knows how greedily they are after insects and how

they incessantly pick up weed seeds and grain of all kinds on our streets and gardens. Unless, therefore, they become a real public nuisance, the town sparrows should not be molested. What say the Texas Field readers about it?

A Freak of Nature in a Giant Texas Oak Tree.

In plantlife it is well known that all sorts of queer abnormal

growths, deformities and transplantations occur; but that one



HUGE OAK TREE WITH INGROWN HACKBERRY TREE, NEAR RIVER SALADO BEND

of our sturdiest and toughest trees—the Texas Oak should harbor so-to-say in its own body another large treestem of a different tree class—this is undoubtedly a very rare, if not unique freak of nature; and I will endeavor to relate the circumstances which led to the detection of this unusual tree conglomeration.

Salado river bend, we came across a large armadillo and some forest rabbits—the latter hidden, but chased out of some piled up forest wood and dried branches; and, in the neighborhood of these wood piles we entered a densely grown up place of all sorts of forest tree underbrush and rampant vines—looking for the armadillo, when,



CHARMING RIVER SCENERY NEAR THE SALADO RIVER BEND, BELOW SAN ANTONIO

About a week after describing in the Texas Field (February issue 1913) a remarkable forest bird of the woodpecker tribe, myself and companions encountered in the vicinity of the romantic Goeth farm what seemed to be the same wounded bird, described and depicted previously.

It was a fine, bright afternoon, when, enjoying the grand forest and river sceneries close to the

all at once a number of the described large woodpeckers were also seen. Some of them were on the ground, and others high up on the giant pecan trees and one, seemingly wounded, fluttered to a close by oak tree, and I managed in presence of my outing companions, Mr. and Miss Haubold of San Antonio, to prepare a nice view of the bird climbing on the oak stem and seen reproduced in

128 TEXAS NATURE OBSERVATIONS AND REMINISCENCES.

these sketches. The remarkable part of this bird encounter however, was the fact that it was photographed on a huge forest oak tree stem, which in itself was a phenomenon, hardly ever witnessed again in a lifetime, as this enormous and century old oak tree showed another tree—a hackberry tree fully ingrown in the entire

berry tree was even deeper ingrafted around the upper right side trunk of the oak tree as well as inside the bifurcation, where, in its broad central part only about one-third of the hackberry's body could be seen—with its two main branches, seen also on the photo, spreading out and branching off in all directions. In



PICTURESQUE FOREST SCENERY NEAR THE SALADO RIVER BEND, BELOW SAN ANTONIO

length of the oak tree stem, and it resembled a large broad vine, encircling the oak like a huge snake.

The photograph of the grand old oak tree shows part of the main outer root of the hackberry tree, perfectly ingrafted at the base part, and the all around ingrown part of the hack-

spite of its jammed in condition inside both trunks of the oak, the hackberry was in fully normal condition otherwise; and the smaller branches were covered with dried up leaves (being mid-winter); and the smaller branches were all around loaded with the red hackberries.

There are several hundred other

huge oak trees in the neighborhood, and some of them nearly twice as thick near the base parts as the one described, around that romantic river forest bottom; and one among them also showed quite a freak in plantlife. It was a very old and high oak tree, and near its upper crown part one large and broad limb showed at its base part a slight excavation, in which a number of the broadleaved opuntia cactus plants were conspicuously implanted—some forty feet above the ground, and also witnessed by my companions, C. Schulze and A. Haubold; and the same tree also showed a nice growing green prairie flower plant in the upper part of its broad stem. Undoubtedly birds or some animal feeding on the ripe cactus fruit, or may be by the wind current, the seed was transplanted high up on such, as well as other trees, where, under favorable conditions they grow up into mature plants. I recollect twice before having seen during outings several groups of the large cactus in full bloom; once on a huge oak tree, and at another occasion along the river bank, on a large pecan tree; and it was a very fascinating sight

to see the golden yellow blossoms of the cactus some thirty to fifty feet above the base of the trees.

The previously mentioned natural oak forest at the Salado river bend, I understand is now the property of Messrs. Lamm and Schuwirth, and it vividly reminds of the Landa park along the Comal, the San Pedro Springs park of olden days, and numerous other forest parks of Western Texas. A fine main driveway along picturesque forest sceneries leads to the main large open park, and we met several automobiles with families enjoying immensely the gorgeous display of nature's forest sceneries; and some of the original photographs herein present a faint idea of the grandeur of that ancient forest with its century old oak, pecan, and other forest trees. Besides the interesting ingrown hackberry and oak tree described, one of the photos shows a friend and relative admiring the grand forest display of giant trees etc., (a "pull the string" photo of the author, the string passing under my right shoe); and the other photo shows a nice river waterfall scenery close by the previous scenery of the huge bendover oak monarch of that beautiful forest.

A Wild Goose Hunt at Mitchell's Lake

In those days when the tule jungles were man high and covered the three miles long lake from one end to the other, and the old lake was covered with shallow water, so that one could wade with his long boots nearly any part of the interior tule spaces; and when nohouses, or cultivated land, boathouses and modern firearms disturbed the equilibrium of the earstwhile Indian "Lugana de los patos"; in those days the Mitchell lake hunting ground was an im-

mense gathering place for all sorts of wild animals of the jungles, including myriads of wilds ducks, cranes, geese, the wild turkey deer, the wild hog, squirrels, the jack-and king snipe; and, in olden times, occasionally the haunts of the wild migratory pigeon, and of the scarlet red flamingo, and the snow-white pelican, the ibis and the wild swan. The latter, except the wild pigeons, as well as geese, were generally shot with the rifle bullet, or buckshot—and the old

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time frontier huntsman was generally up-to-date in quick aiming and hitting the mark—just like our friend and Texas Field editor—Colonel O. C. Guessaz.

With the on-march of civilization, that great wild game lagoon naturally has changed its environments and game capacity considerably—and still it is today, besides

resting place, and the adjoining cultivated fields at night time serve to seek their food.

Wild geese have often been hunted at Mitchells lake by our local nimrods ; and the writer, with my son Theodore also had the pleasure to pop one down a few days ago (beginning of March 1913) at the old tule lake, and pre-



MITCHELL'S LAKE SCENERY WITH THE WILD GOOSE KILLED LATELY

the Blue Wing and the Cassin's lake, one of the most popular hunting preserves; and millions of wild fowls congregate on this lake annually in winter time; and whilst the migratory pigeon, the wild swan and flamingo, the ibis and the wild boar and peccarie etc., exist in remembrances only of olden days; pelicans, wild geese, and the king snipe and others occasionally seek this lake as their

pared a photo of same, representing also part of the lake and scene of action of one of our hunting companions—a good hunting scene of our old lake.

We had already secured several teal and spoon-bill ducks, when, quietly rowing along the open tule spaces at the south end part of the lake—below the old boathouse and oak tree blind (now both submerged in the deep lakewater) of

our friend, the Hon. Albert Steves, we suddenly came across a single wild goose taking a rest between tule jungles. The writer, being seated in front part of the boat and ready for action, quickly took aim and badly wounded the goose; but it managed to fly, and my son Theodore gave it two loads in

quick succession—when it came down and heavily plunged upon the water after flying quite a distance toward the lower dam of the lake. It was a beautiful, clear morning—and a magnificent sight it was as the large gray bird lay spread out before us on the glittering lake.

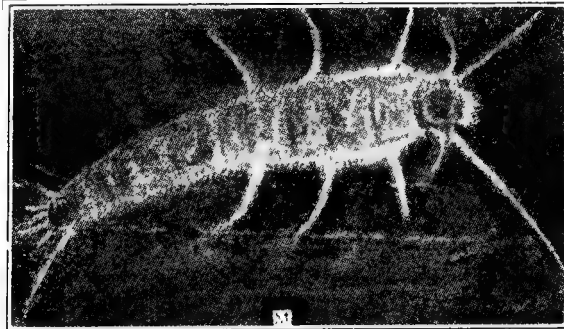
A Fiend of Libraries---The "Silver Fish" Insect

Besides the large army of injurious domestic insects, such as roaches, crickets, ants, lice and mites, fleas, flies and the various minute beetles, none are more destructive to paper goods than the so-called silver fish insect, also called "sugar fish," "silver witch" or "silver louse."

This interesting insect derived its name from its peculiar shape of a small fish, and its shining

and museums, where it often perforates the cover linings and pages of books, or gnaws the labels of its gummy or starchy linings and bores holes and furrows in the paper. In herbaria and drug stores it also is a great molesting pest, as it perforates the packages and feeds on some of the material contained in stored away vegetable goods.

In a local drug store a package



SILVER FISH INSECT, ENLARGED SEVERAL TIMES

scaly body, which is very slippery and therefore difficult to capture without being mutilated. It belongs to the lowest range of insects, and it is wingless, and its flattened body and the short, but strong feet, enables the insect to run rapidly; and on account of its scaly and slippery body, it easily glides and hides in its favored haunts; between the leaves of books and papers of all sorts. It is a great nuisance in libraries

of herbs, containing the deadly lobelia, was shown the writer, and the insects had mutilated the label and package paper. On opening the herb package the silver fish insects were found in numbers, and also such in their larval state. Their larvae represent small slightly curved dark and hairy worms; but they differ widely from allied insects, for instance: the so-called drug store and tobacco beetle larvae, which also do

a great deal of harm to the drug and tobacco trade. The latter, i. e., the mature insects, are among the smallest winged insects known; but the silver fish is not winged, nor does it, as a rule, feed on drug store articles as greedily as those minute beetles; but they nevertheless, like in the mentioned case, occasionally perforate herb packages, especially of old goods, which have not been handled for years. Their preference however, is old newspapers and books and paper goods of all kind, and they also perforate and feed on wallpaper, linen and silken goods, paper boxes, museum and herbarium articles, etc.

Their body being, as stated, very brittle when touched, they are not an easy object to capture without mutilating some parts of their anatomy, especially the two long frontal antennae, and the three rear bristle-shaped appendages.

In looking over some old library books lately, the first few pages contained a large specimen of one of these "silver fish," about one-half inch long (not including the long appendages). The usual size is somewhat smaller, and the original photo herein from nature shows the insect magnified about five times.

The text-books do not give a detailed description of the nature of the interesting scales covering the body of these insects, and I therefore gave the matter a little closer microscopic attention. The scales are beautifully arranged in rows, and differ in size, etc., according to the different regions of the insect's body. Along the mouth parts, numerous long bristles can be seen, as also along the sides of the body, and the small body scales seen microscopically, resemble those of a moth and some butterfly. These scales are very refractive to light, and they give the insect the peculiar silver color and glittering appearance—similar to the glitter of the butterfly's wing-scales.

Similar to so many other species of insects injurious to household goods and paperware, the silverfish is hard to extinguish when it once has a foothold. Cleanliness and airing of infested articles, destruction of those found and their larvae and occasional dusting of infested articles with persian insect powder (pyrithrum) and placing of camphor along the bookshelves, etc., or camphorine (moth balls), is about the best to do to keep these and allied injurious insects in check or destroying them totally.

Texas Forest Butterflies

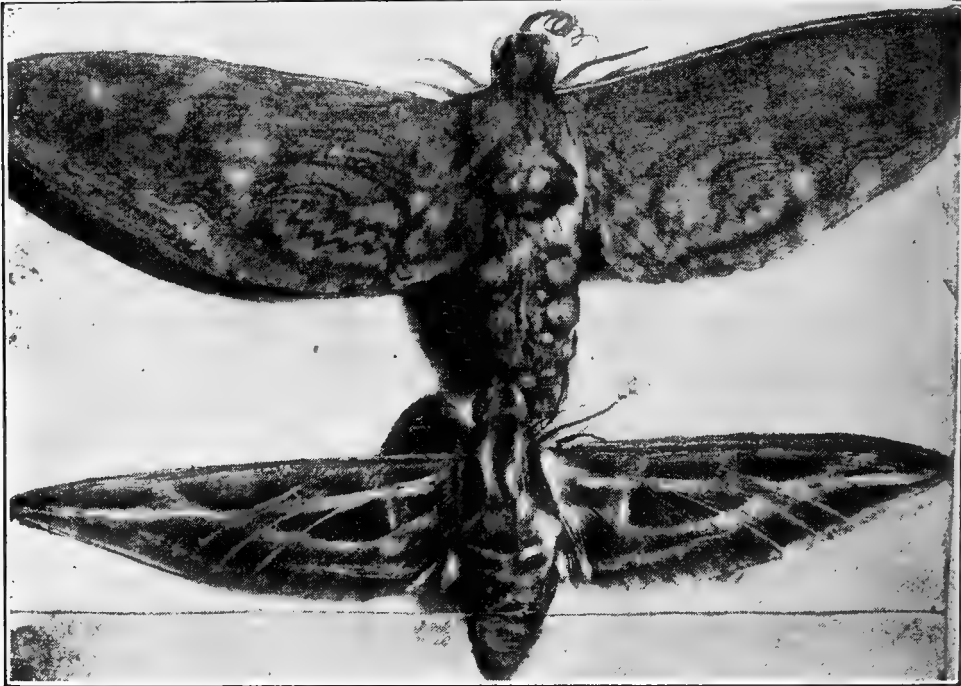
Through the courtesy of the San Antonio Scientific Society I take pleasure in submitting two elegant halftone photograph of our Texas butterflies, captured and photo-reproduced by the writer some years ago, the half-tones with matter having been used for a lecture before that society on reptiles and insects peculiar to our semi-tropical Texas climate, and all the half-tones in this chapter show again the excellent high-

grade work done by the Mills Photo Engraving Company of San Antonio. Both these butterflies were captured in the hilly forest regions of the Gallagher ranch, Bandera road, and the illustration shows them in natural size.

The beautiful swallow-tailed winged specimen (a moth) was of light green, and the other of brilliant golden-yellow colors. At the time of capturing them—late in fall 1904, the woods and prairie



TEXAS FOREST BUTTERFLIES



TEXAS' 1ST BUTTERFLIES

plains swarmed with all sorts of types of butterflies, and never before had I witnessed such immense numbers along a rivulet at the Geronimo Henderson ranch, when hardly a leaf or branch of the forest trees and brush were bare, and the sky was literally covered with large, cloudy and glittering masses of butterflies—having gathered there by the millions preparatory to their migratory flight to other climes.

Only a few other samples of course can be presented herein of the multitudes of various gorgeous butterflies and moths encountered all over the Texas forests, during the summer. The three other original photoviews herein for instance are of much interest, in particular the large broad winged specimen which was of intense

Indian red and dark brown color with white and reddish circular bands across the wings, seemingly as if they were two separate wings. Large bluish colored circles with jet black outlines decorated the apex part of both wings, and each wing showed several fine, grayish circular outlinings along the lower curvature.

This large specimen of an unusually fine and rare butterfly-moth measured six inches in width, and it was captured lately by a friend—Mr. Wm. Grossenbacher, and photoreproduced alive by the writer.

The other two are strictly night-moths— one a rare forest moth, and the other one an Oleander moth, both captured some years ago by the late naturalist, Professor G. Jermy at our San Pedro Springs park.

Texas Snakes and the Treatment of Snake Bite

Snakes of various types and snakebites, and deaths from same have considerably diminished in Texas of late years. The hunter's gun, the "snakehunters," employed by reptile dealers and ranchmen, have about exterminated the snakes.

However, now, in the beginning of spring and summer, due to late rains and washouts in favored regions of the jungles, they may appear quite conspicuous again, as they multiply very rapidly.

As compared to olden times, the few varieties of poisonous snakes around settled and cultivated places are exceedingly less numerous, for reasons stated. As a rule, even the most poisonous snakes in our climate are very useful animals, i. e., in one way only, as they destroy vast numbers of harmful field rodents and pestifer-

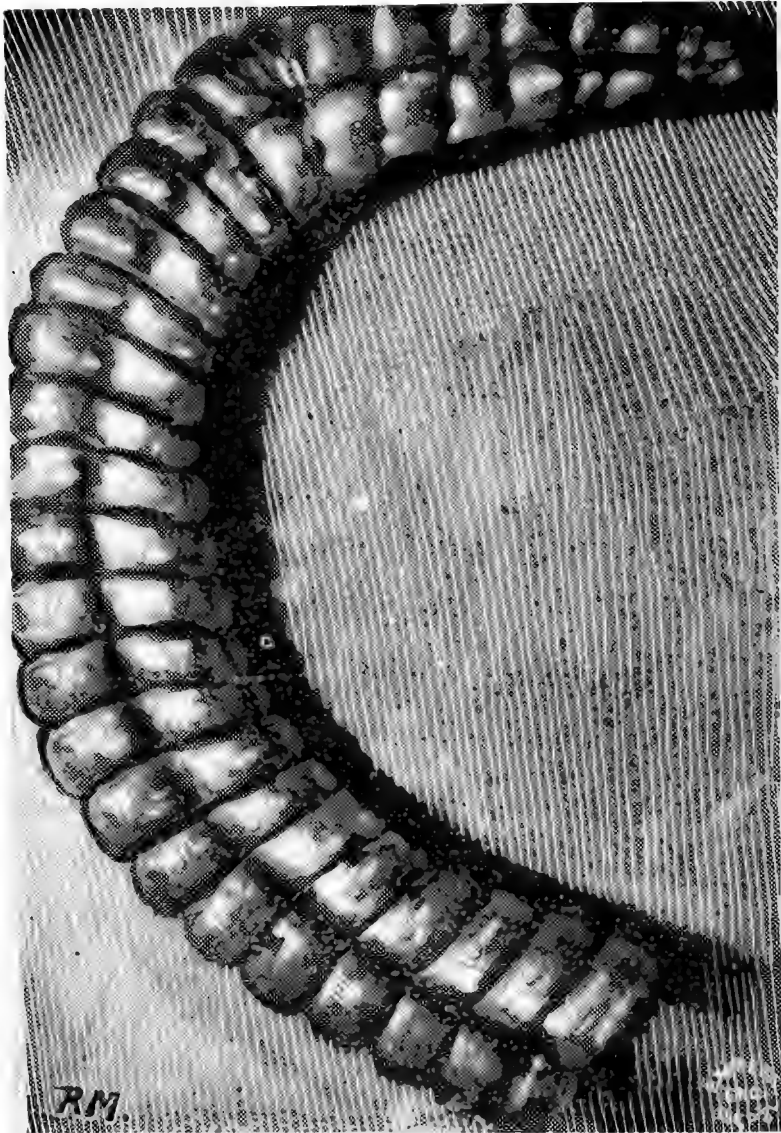
ous insects. Even in winter time, during the warmer days, these snakes, the crotalids in particular, will destroy numbers of prairie rats and ground squirrels; and the writer has occasionally observed this during hunting trips.

During the month of February, at Mitchell's lake, close to a road leading to the main club house, the writer happened to pass some of the many cactus jungles near the old "Laguna de los Patos de Mitchell," and, hearing a commotion and rattling sound in one of the cactus thickets, curiosity led me to investigate the place, and there, in the midst of a large rat's nest and cactus jungles, a huge rattlesnake could be seen inside the main entrance to it. The snake must have noticed my approach, for it suddenly coiled its body, and, head foremost, quickly crept deeper and deeper into the

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rathole. At first I intended shooting it, but at the same moment I noticed a prairie rat between some of the cactus leaves, unable to move, and, believing the snake would

spot. The snake undoubtedly had the rat "hypnotized," but after we came close to it, it gradually gained its former vitality and ran into the same opening into which



TWENTY-SIX RATTLES, THE "WARNING SIGNAL" OF A VERY OLD RATTLER; SLIGHTLY ENLARGED
(Souvenir From a Texas Farm House)

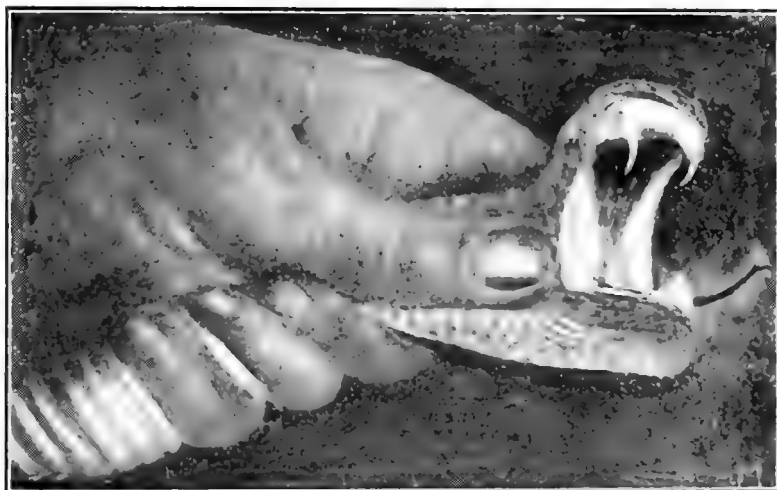
soon appear again, I called my friend, Mr. F. Hensel, nearby, and showed him the rat, which still was unable to move from the

the rattlesnake had retreated. What there happened, can easily be imagined.

Several weeks afterward there

was no notice of any fresh rat trails in that same cactus thicket, the rattler undoubtedly having "cleaned up" all of them. The same fate falls to the numerous ground squirrels and cotton-tail rabbits in these regions, and, it is seen from these accounts—well known to ranchmen and observers of wild animals in the jungles—these reptiles may be classed with the useful category of Texas wild animals. However, considering on the other hand the harm they inflict to farm hands and persons coming in contact with them un-

with his right hand holds its lower body firmly, so that it is unable to twist around the arm and manage to extricate itself and inflict, (as has happened), a deadly plunge of its sharp fangs into the holder's arm. Then, with a pair of forceps, the reptile dealer quickly dislodges each fang, usually two permanent and two reserve fangs; or if the venom is to be gathered, the thumb is pressed against the opposite index finger and against the two poison bladders, when a quantity, often a teaspoonful, of yellowish, glitter-



HOLDING A LIVE RATTLESNAKE BY A REPTILE DEALER FOR EXTRACTING POISON FANGS AND EVACUATING THE VENOM

aware, especially children, many of which have been killed in olden times, and occasionally today yet, the crotalids and mocassins have to "vamos."

The photograph above, which the writer prepared some years ago at a local reptile establishment, shows how the reptile dealer held his snakeship to extract the venom and poison fangs. The rattler's neck and head is first pressed down with an iron rod or any solid stick of wood; then, the left hand grabs the reptile between the upper and lower jaw-bones and neck, as seen in the illustration, and

ing, and egg albumen-like venom is squeezed out of the venom bladders and ejected from each fang, and gathered on a saucer held below the snake's head.

As to treatment, the first and best thing to do in a case of snake bite outside of reach of a physician is to at once apply a bandage or cord, tightly close to and above the fang wound, then cut the fang wound with a clean knife, let it bleed, and, if possible, suck the wound out well. If at hand, immerse wounded parts in very warm salt water, or still better, in a very warm solution of permanganate of potassium (which

any druggist will serve), let it remain in it a good while, and, above all, call your physician at once for further treatment.

The trouble is, even with better antidotes than now used in the great majority of genuine snake-bite, i. e., in those cases in which the poison fangs had really penetrated and injected the venom, the victim, unaware, and unprepared, hardly ever is in the position to be treated quick enough to counteract the venom. The best he can do, and instinctively performs, to mitigate the absorption of the venom, is to at once,

aid, either at work in a field or on a hunting trip, or traveling, picnicking, etc., and what a boon indeed, it would be, had the victim always a positive anti-venom remedy with him—and knew how to apply it! In the majority of fatal cases, medical science teaches that the poison fangs had either penetrated very vascular (capillary) places, or struck a large blood vessel direct. How quick then must the antidote be administered in such a case. In all snakebite cases that come to the attention of a physician, quite a lengthy time generally has elapsed after the



POISON FANGS (MAGNIFIED) OF RATTLE SNAKE (WIRE INSERTED IN POISON CANAL OF ONE OF THE FANGS)

and tightly constrict the fang-wound with a cloth, cord, or bandage cloth above the fang-wound. The trouble is the snake venom is so quickly injected and absorbed as are medicines injected with the hypodermic needle subcutaneously, and therefore, if ever an anti-venom remedy is discovered that will at once neutralize the snake venom, it will depend upon above principles. In the majority of snake poison cases, the victim is injured far off from any medical

poison was instilled, and still a majority of such cases, especially such that had been at once treated with a tight ligature, recover, depending upon the nature of the case and vitality of the victim and other circumstances.

Since hunters are not at all times, during the year, roaming around the fields and pastures any more—complying with the strict game laws—and killing any venomous reptile encountered on such occasions, the dangerous spe-

cies of serpents increase and can inflict much harm. And that they were not on the decrease, a large ranch near the coast had proven some years ago by its published statistics. The jungles of cacti and Spanish dagger plants and underbrush harbored such immense numbers of rattlesnakes that a wholesale war had been inaugurated, and it is reported a large barn or cornhouse at the ranch had been filled up with the remnants of rattles of hundreds of thousands of rattlers killed by employed Mexicans and Negroes, covering many miles of wild territory. The strict game laws, therefore, which in one way are protecting the game and the useful feathery tribe, on the other hand, give the reptile pest a chance to increase incessantly—unless the State offers a remedy for their destruction. In one way also, the local reptile dealers have done a good work in that line, but it seems inadequate. Snakes propagate immensely and with every venomous reptile killed, hundreds of later offsprings from such one snake are avoided.

The above notes had been written by the writer some years ago, and since the country has been nearly cleared of the former reptile pest.

Science it may be said here again is still in the experimental state regarding a remedy that will neutralize snake venom immediately after its application—hypodermically. Snake venom is a toxic agent which is injected by reptile's fangs either—and in most instances—into the cellular tissues superficially, or deep seated, or it lacerates a blood vessel, or a nerve etc. In the first instance the venom (perhaps, and usually only one or two drops) is infiltrated into the subcuticular tissues by the curved and needle-sharp edged fangs, and the venom is then slowly absorbed, and by proper subcutaneous medi-

cation of coagulating remedies it is hindered from absorption into the general system; and such cases nearly always promptly recover, after perhaps, superficial or deep-seated inflammation, swelling and gangrene of the tissues infiltrated. Or, in the more serious and often fatal cases, the venom had been ejected into a blood vessel and immediately absorbed and circulated within the blood current. Where the fang strikes a nerve or the bone, such wounds are at once intensely painful. The toxic agent generally attacks the respiratory centers primarily and the heart centers secondarily, paralyzing each of them—according to the severity of the snake bite. The paralyzing effect in all serious or moderately serious snake bites, therefore, calls for cardiac stimulants, and whilst whisky is the champion remedy with many, competent observers and authorities consider it inferior to strychnia, which, in proportionate doses, is a powerful cardiac and cerebro-spinal stimulant.

Dr. Mueller, of Australia, who has had a wide, practical experience in treating the bites of the most venomous reptiles, including the cobra and others, and who is an authority par excellence on venom inoculation, gives the strychnia treatment preference to all others. He says it has proven its antithesis in snake venom, acting with the unerring certainty of a chemical test if administered in proper and sufficient quantities." For cobra bites and others equally as venomous he gives strychnia up to $\frac{1}{4}$ grain as required.

Of late a chemical agent called "Adrenalin" has been advocated in snakebites by prominent authorities. After constricting and bleeding the area of inoculation, and painting same with Iodine, the adrenalin solution is injected subcutaneously, close to the fang-wound. It serves to contract the near located blood vessels and retard the absorption of the venom,

besides being a powerful heart stimulant. One of the first accounts of adrenalin treatment of snake bite had been published by the writer some years ago in Dr. McDaniel's Texas Medical Journal, Austin, Texas. (combined with hydrochlorate of cocaine, a local anesthetic, the adrenalin treatment would be still more improved upon.)

ago, by a young rattlesnake, at his home, only three miles from this city, near some of the old gravel-pits. He was ordered one evening to get a bucket of water at a close-by watering place, in the rear of a fenced-up sugar cane patch, and night coming on, he must have stepped unaware on the reptile, as he suddenly felt a very painful sting on his foot (being



POISON FANGS OF VARIOUS REPTILES, MOSTLY RATTLESNAKE AND MOCCASIN
(Several Glass Jars Full of Them Had Been Collected by Mr. Wm. Learn at His Reptile Establishment During the Last Twenty Years—Original Photo)

The accompanying photograph of a child's foot bitten by a rattlesnake is presented herewith to my readers merely to show what such foot looks like after severe inflammation, ulceration and in part of which gangrene had set in.

The child in this case, a boy aged about eleven years, was bitten early in the spring, some years

barefooted), and at the same time he perceived a maddened rattler close by. Managing to run to the house for help and nearly fainting on the way, some of the Mexicans hurried to the watering place and there succeeded in tracing the snake close to the sugar cane patch, and killed it. It was not a large snake, they told me, but two fang wounds

were plainly seen on the dorsal part of his foot when he was brought to my home office in a semi-conscious condition and nearly pulseless, with vomiting spells.

In spite of proper treatment (some hours having elapsed before he could be brought to my place), the foot swelled enormously and

which I prepared after the fourth week, shows how the foot appeared at the time; the broad white area representing the cicatrized tissue forming around the ulcerated places. The boy fully recovered with but little stiffness of the ankle.

The gravel-pits and hilly regions around San Antonio, I may add, in olden times, always were favor-



CHILD'S FOOT AFTER RATTLESNAKE BITE

was badly inflamed already when the boy was seen first, but he ultimately recovered after several weeks, with a "close shave" of nearly having lost his leg, which had been inflamed and swollen up to his thigh with threatened gangrene. The illustration herein,

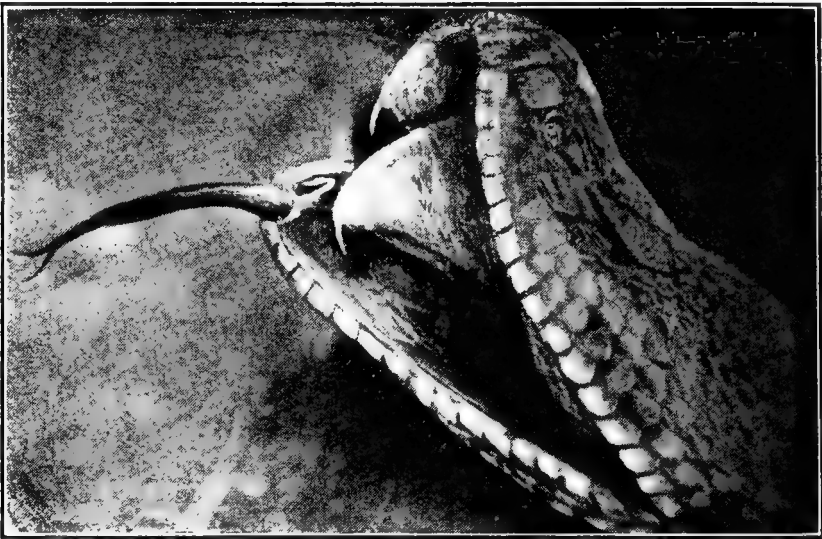
ed haunts of the rattlesnake, but they abounded also in the flat valleys, especially along the Salado and Leona, where they found shelter in the thick underbrush and cactus jungles and where abundant prairie rats, mice and the cotton-tail rabbit, etc., fur-

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nished their food. These hilly regions around the metropolis of Texas today, in late years have been entirely cleared of these beasts, and Government Hill—the lower part of which is still known as “Rattlesnake Hill,” Tobin Hill, Laurel Heights, Prospect Hill, Alamo Heights, Beacon Hill, Dignowity Hill, Knob Hill, and other suburbs are now nearly overcrowded with elegant, up-to-date dwellings and palatial residences, and the surrounding country converted into fertile fields and commercial enterprises; and Texas in general,

—but nowadays rarely—farmers, hunters, fishermen, outing parties and others on trips over the prairies or along river bottoms, in the fields and forests, etc., are likely to be bitten by a more or less dangerous serpent or some spider species, especially the small and speckled vagabond or jumping tarantula (“*Latrodectus Mactams*”) and a few other varieties of poisonous insects.

A regular “hot-bed” of snakes in the rear of San Antonio—10 miles south—is the old Mitchell Lagoon; but likely the dreaded



HEAD OF AN OLD RATTLESNAKE WITH UNUSUAL LARGE POISON FANGS

with its vast territory of over two hundred thousand square miles, has also been cleared of venomous reptiles and poisonous insects of all sorts during late years; due to its miraculous rapid up-building and immense cultivated plains. Vast numbers of these reptiles have been exterminated by hunters, birds and animals of prey, and by professional reptile dealers. But, of course, there still exist large, secluded regions where the dreaded rattler and moccasin remain unmolested, and occasionally

rattlesnake is very rarely encountered as in former years, for reason of the surrounding area being converted all around into cultivated fields. But the lake itself contains in its tall jungles, hundreds and more so-called “moccasins.” These snakes, however, at least the greater majority, are not the genuine and highly poisonous cotton-mouth moccasin; they are an entirely harmless variety of water-snake, but of such fearful proportions and appearance, that they are enough to make the timid and un-

initiated hunter or visitor jump "a mile high," and the writer recollects an instance when a hunting companion at this old Indian lake came to the camp with flushed face and perspiring all over, having been surprised and received such a fright in consequence of having met one of these "horrible moccasins." He brought a dead specimen to camp, but I very soon convinced him that it was a harmless variety of water-snake, by opening the reptile's

All varieties have extra large venom fangs and venom receptacles, and how they appear in a prepared skeleton head, is nicely shown in the photograph below, which I prepared some years ago in the mountainous regions of San Geronimo, near Gallagher's ranch, and at the farm of Edmund Henderson, a near relative and old Texas pioneer and at one time Master Mechanic of the S. P. R. R. Co. This specimen is not only a rare one, but it is most interesting



SKELETON OF ABOVE SNAKE HEAD AFTER IT HAD BEEN PLACED IN AN ANT HOLE

mouth with a stick and showing him the entire absence of the venom bladder and any poison fang.

These snakes only have a large row of grab-teeth in the upper and lower jaws, but the long and curved venom fangs, seen in the genuine moccasin, are absent. Then they are much larger, but just as bold looking, and in color and general appearance they very closely resemble the cotton-mouth moccasin, and therefore one has to be on the lookout.

With the rattlesnake, which is entirely a land-snake, it is different.

otherwise, and mostly for the reason of having been prepared solely by the pesky and poisonous Texas red ant. It came this way:

During an outing, early one morning, whilst I was enjoying a walk, (with gun and dog, of course) admiring the intensely picturesque forests and mountainous formations around Geronimo—the old haunts of the savage Indian and wild beasts of days gone by, I happened to come to the home and store of a Mexican farmer, named Hernandez, an old pioneer Texan and early settler of

the Geronimo regions. In glancing over the yard enclosure I noticed a long table in the yard and on it were stretched out two huge rattlesnakes, or rather the skins of them. Beautiful speckled skins they were, indeed, of the diamond rattlesnake variety. The carcasses of the snakes were near by, and after severing the head parts of one of the reptiles, (see photo reproduced above by the writer) it was put in a closed box and removed to a large anthole at Mr. Henderson's ranch, where it remained about two weeks. After examining the specimen it was then seen that the head had nearly entirely been denuded by the ants, leaving only parts of the upper front head intact, but also partly gnawed up by the ants (as seen in the photo). The balance of the integuments were nearly all gnawed off and exposing the venom fangs with the reserve fangs and the grab fangs of both upper and lower jawbones nicely, as shown in the illustration. Had the specimen been left a few days or weeks longer the bony parts would have been still more denuded; but, as it is, the photo shows how nature has supplied these animals with the diabolically arranged weapons of defense.

One noteworthy and interesting point in connection with the above snake head skeleton, and the ants which prepared it, is the fact that not one of the hundreds of ants in and around the ant-hole were noticed to be the least affected or killed by the snake venom during the carving process. Those red ants, we all know, are themselves very poisonous, the poison being stored away in a separate venom bladder of the ant's abdominal viscera, and communicating with the canal of the sharp sting. In the above instance, the ants had not alone removed most of the integuments covering the bony structure, including the fangs; but, also

both venom bladders (small parts of them being seen in the photo at the upper roof of the snakehead) were tackled by the ants, and no trace of the yellowish and glittering venom could be seen on the original specimen when examined at the ant-hole. Even in man, this highly poisonous venom also has no detrimental effect when accidentally swallowed during suction of an inflicted fang-wound; the snake poison only and often very seriously, and at times fatally affects the human system when it is absorbed in the fang-wound, and especially when it enters a blood-vessel directly, by disintegrating and destroying the blood-cells and tissues, and paralyzing the main nerve centers. Superficial gangrene with deep destruction of tissue around the fang-wound occurs in the majority of cases, and the writer has seen fearful havoc done in exceptionally serious cases, years ago, during his many years' term as City Physician. There can be no doubt that the venom of the crotalus and moccasin is deadly poison, as attested by the numerous fatal cases in former years, and to-day occasionally reported by conscientious physicians throughout the continent, and our early practitioners, especially the venerable Dr. Ferdinand Herff, could have written volumes on their extensive experience with inoculated wounds of venomous reptiles and insects. One of the sadest cases of fatal rattlesnake bite on record perhaps is the following, which occurred outside of Texas, in Beach, North Dakota, and of which the dispatches reported:

Dead in Bed With a Snake.

Beach, N. D., June 23, 1913.—
 "When Mrs. Dave Grant, residing 14 miles southwest of Beach, went to call her two sons, 5 and 7 years old this morning, she found them dead in bed with a rattlesnake lying between them. It is believed

the reptile crawled into the bed-clothes during the day while they were being aired outdoors."

Also a noteworthy fatal case of rattlesnake bite may be recorded here, which occurred years ago at the farm of a Medina County ranchman. The man was plowing in his field and, his plow coming in contact with a rattler, severed its neck. The farmer, thinking the snake dead, kept on plowing. However, upon returning from the opposite end to the place where the plow had run over the reptile, he noticed something like a stick among

on West Commerce Street, and severed its neck by a stroke of the hatchet, and for several hours the head and neck part (nailed down to a board and seen photoreproduced elsewhere in connection with the eel matter) was alive as ever, and, after placing a plug between its jaws, the reptile ejected several yellowish and glittering venom drops from both fangs, resembling egg albumen.

In looking at the photograph again, of the head skeleton herein, it is noticed how widely these



KINGSSNAKE DEVOURING ANOTHER SNAKE, ENCOUNTERED AT RIVER BOTTOM, 12 MILES BELOW SAN ANTONIO

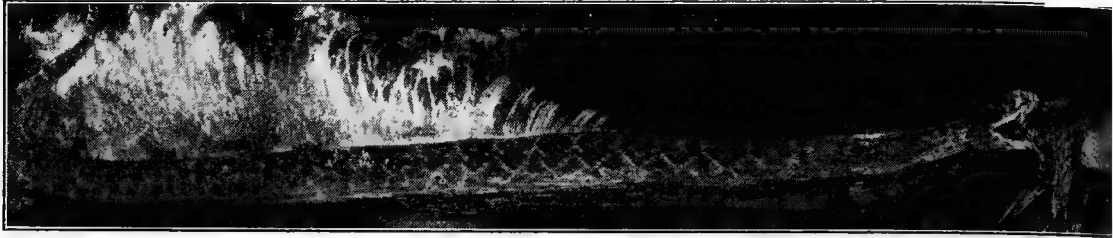
(Described Previously in the Miniature Photo Collection Matter on Texas Reptiles—Page 13)

the weeds, and, in the endeavor of picking it up, he unfortunately seized the severed part with the head on, which was still alive. With a sudden strike the rattler plunged its fangs deeply into the man's hand, and before a few hours had elapsed the man was dead. This shows the immense vitality of these animals, and I recollect, years ago, for experimental purposes, I had procured a cotton-mouth moccasin from the reptile establishment of Mr. Wm. Learn,

beasts can open their mouth in devouring their victims, especially a full-sized cotton-tail rabbit. One such occurrence—and it may be a lifetime before it is witnessed in nature again, was presented to me and my friend Dr. Robert Lee Withers some years ago, whilst hunting in the old Withers pasture west of San Antonio. Dr. Withers was just getting ready to pop a few doves from a mesquite tree close to one of the large tanks, when, lo! what a surprise! Only

a few feet off in an open place between cactus jungles, a monster rattlesnake met the doctor's eyes. It was fully stretched out and rattling fiercely, and in its wide open mouth it had a large full-grown

by the reptile dealer, at Mr. Learn's reptile establishment, the abdomen contained two large prairie rats. Dr. Withers had the unusual fine skin tanned and preserves it until this day as a trophy



A MONSTER RATTLESNAKE IN ACT OF DEVOURING A LARGE COTTON-TAIL RABBIT

cotton-tail rabbit, swallowed up to the rabbit's shoulder. A shot from our guns, at close range, put an end to his majesty of the cactus plains. The snake was very thick and beautifully striped, and on dissecting it the next day

of that day's hunting trip. (This same identical reptile with its victim is seen photo-reproduced herein, the photo being taken by a friend and in presence of Dr. Withers and myself.

Reminiscence of a Rattlesnake Encounter in the Cactus Jungle of Leona Hills

Much has been printed already concerning our native reptiles, especially the water snakes and our land serpents, all of which are rapidly nearing their extinction around inhabited regions, and I therefore will try to be brief in narrating one more interesting encounter with a rattler many years ago at the Leona hills, west of San Antonio, and of which a lifelike reproduction is seen on this page.

We were hunting quail and doves one bright summer day, in 1886, close to one of the large tanks at the old Wither's ranch, when, amongst a thicket of the broadleafed opuntia cactus, a large rattlesnake was noticed sunning itself in an open space and close to the cacti and a piled-up prairie-

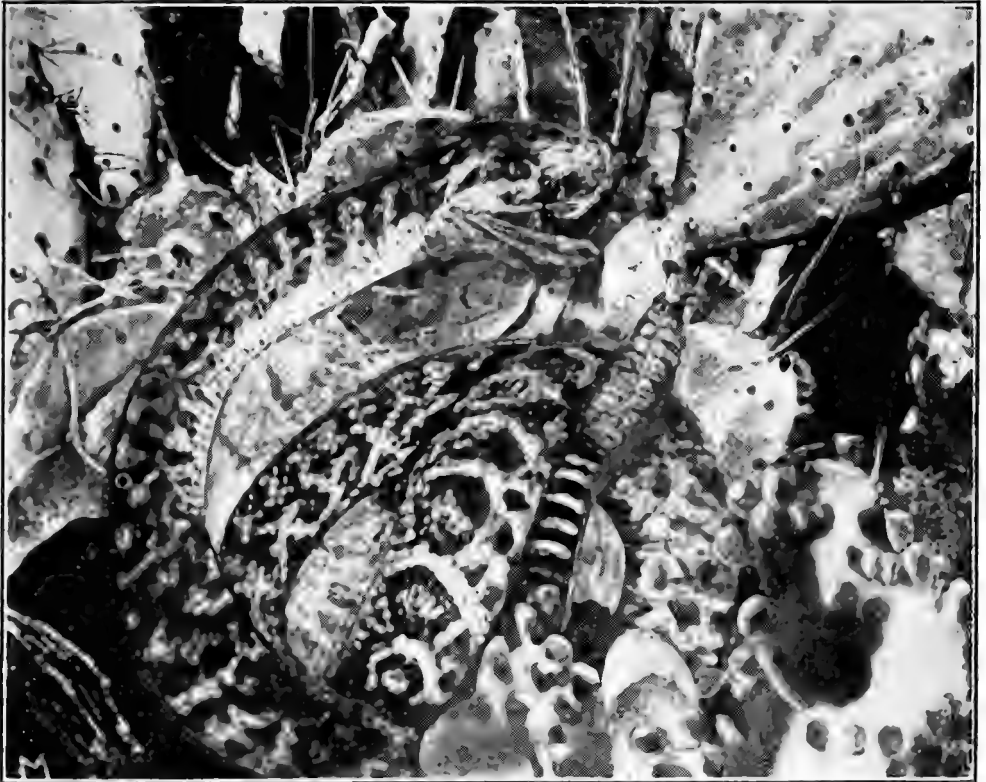
rat nest. It happened after a rainy day, and the snake, in a coiled up position, with erect tail and rattling fiercely, beautifully striped, and belonging to the diamond type of rattlesnake, evidently had shed its old hide a short time previous, as the hardly dried and shriveled skin was found close by, entangled in some underbrush, and partly inside a large rathole. A quick shot made an end of its majesty of the cactus plains, and, having a camera with us, a lifelike view was taken, by the writer, of the snake and its haunts, as seen herein.

I also append herein an extra magnified view of the above snake's eye-ball and part of the scaly head and neck. As seen on the photograph, the eyeball is pro-

ected by two flat, large scales, partly covering the eyeball at its upper curvature; and also the front and rear parts of the eyeball are protected by large flat and whitish scales; whilst the neck parts are covered by a row of dark brown and black and brown pigmented scales of quite even size.

it shows only a thin black line across the eyeball in life time; but when death sets in the pupils dilate considerable—as seen on this photograph.

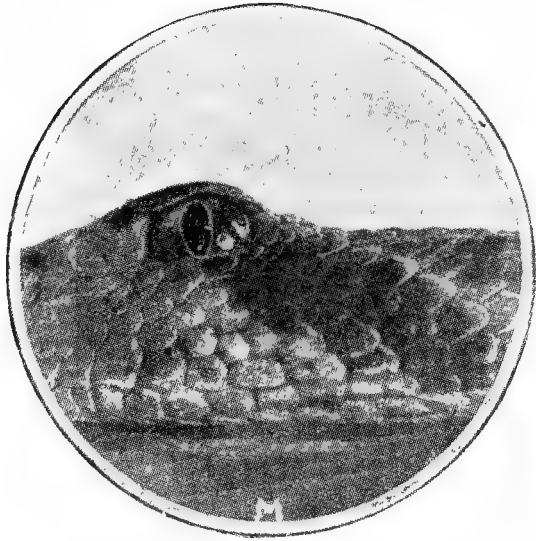
During anger, the pupils—through the iris, glitter like a fiery red ball, and I have often noticed this in olden days during hunting



COILED-UP RATTLER IN CACTUS JUNGLE, AT LEONA HILLS

This interesting view I had prepared by means of a powerful magnifying lens of the camera; and it shows the sharp outlines of highly reflected light on the glassy and highly refractive eyeball, and also a light spot inside the pupil. This pupil is of elliptical shape, and it changes its width according to the light influence, and usually is contracted in bright light, when

trips in the hilly Leona valley where these reptiles abounded numerously amongst the cactus jungles, and where they also undoubtedly were of some good purpose to the pastures and fields, as they exterminated large numbers of rodents, especially prairie rats and ground squirrels and also various insects.



EYE AND HEAD OF RATTLER MAGNIFIED

The Genuine Water Moccasin

With the rapid settlement of its vast domain and the advancements in all lines of industry, Texas, with its immense area of land, its forests and rivulets and semi-tropical climate, has now lost a great deal of its quota of dangerous reptiles and insects of late years; and they are being more and more exterminated as the years pass by, and especially so in the near environments of Texas cities. However, such reptiles as the crocotalids and the moccasin—the genuine type—are still there, but only sparingly, in their secluded haunts along the rivulets and some pasture tanks.

The purpose of these reminiscences, however, is not to write about Texas serpents in general, but to call again attention to the erroneous statements often heard that “some of our Texas rivulets are teeming with ‘moccasins.’” The latter is not quite true as far as the genuine, so-called cotton-mouthed water moccasin is concerned and of which I herewith

present my readers two rare photo-illustrations, taken by the writer directly from nature and shortly after being “captured”—with a full load of lead, of course.

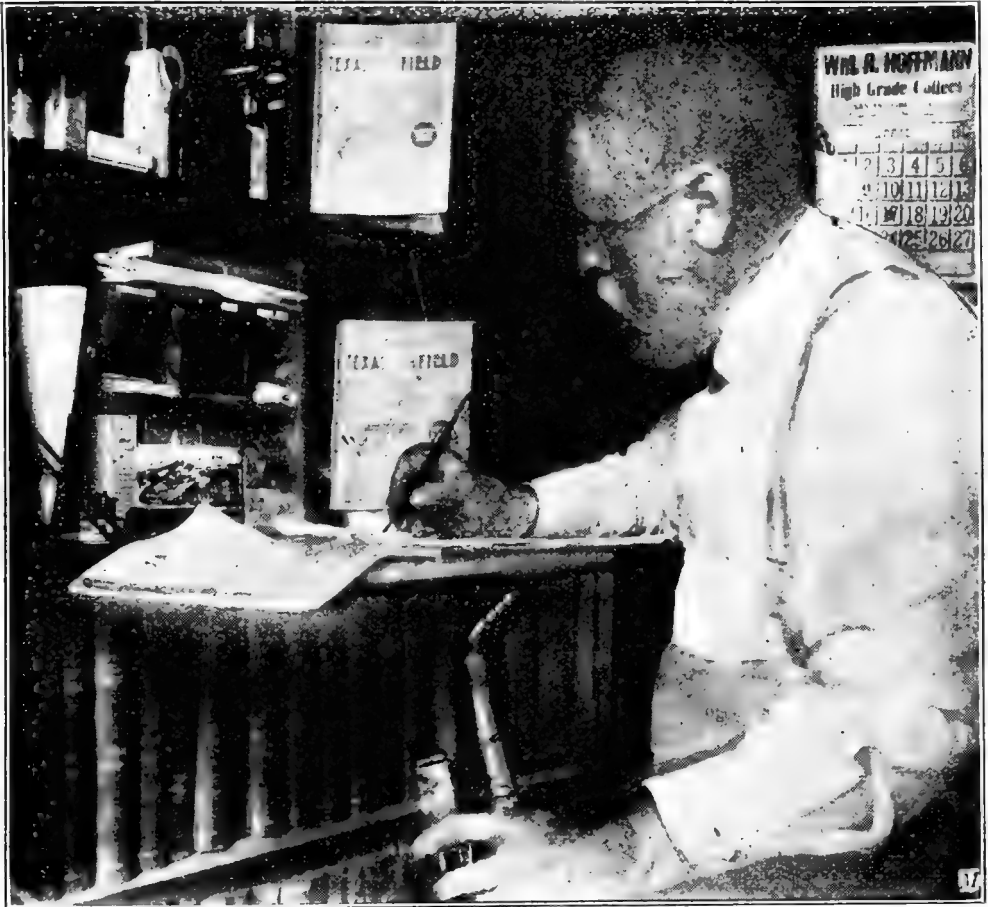
As a rule, nearly all the water-snakes as such encountered close to rivulets, and called “water moccasins” are of a harmless nature as far as venom inoculation is concerned, as they are void of extra poison fangs and the corresponding venom bladders.

The illustration herein of a Texas moccasin snake head and neck parts was prepared from a specimen killed lately along our romantic river bottom during an outing, and it shows the characteristic broad and heartshaped head, the “cotton-white” outlines of the mouth parts, and four needle-like venom fangs. This bold and dangerous reptile was encountered in a shady place and fully stretched out on a thick limb, a few feet above the river and close to a pile of accumulated rubbish from late floods. It was

about three feet long, the usual average size of a fullgrown snake, and it was rather attractive in its jet black scale coverings of its head, back and tail, the latter ending in a short and pointed line. The inside neck part and balance of its body showed interrupted

much larger size than this dangerous type of moccasin.

Now, without wishing to go into details I wish to call your attention to the accompanying photo illustration of a genuine Texas cottonmouth moccasin snake—a dangerous reptile, nowadays becoming



WRITING THE MOCCASIN ARTICLE
(Photo by the Writer)

light bluish or lead colored spots, stripes and bands, and the lower tailpart was of a dark steel-blue color.

Its namesake — the common watersnake of our rivulets, on the other hand, is throughout its length of one unsightly gray or "mud-color," and, as a rule, is of

exceedingly rare in their haunts as compared to olden days when the hunters and outing parties were less numerous, and such reptiles less hunted by reptile dealers for the market, and consequently such snakes were less molested—with a full load in the head.

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As explained, the difference between this venomous moccasin snake and the other types of water snakes (the genuine moccasin being more of a land than water snake), is plainly this: The genuine and dangerous moccasin (as seen also in part of this illustration) is a much smaller and more striped snake, with two large and curved poison fangs along the upper roof parts of the broad-opened mouth, whilst the other variety of water snake is uniformly of a dark, nearly black "mud color," and of much larger size, with absence of the banded, dark

rest, we went nearly a mile distant along the shady forest bottom, until we reached a small island; and there, amidst some huge rocks, underbrush and tule jungles, a mud-colored snake about five feet long was spread out and was lying partly coiled up, but dead from the shot, and the moment I saw it I said to my friend: "Why, man, you call this a genuine moccasin? Not a bit of it." And then we opened the reptile's mouth with a stick and my friend was fully convinced of his error, as the mouth parts showed absolutely no poisonous fangs, and



MOUTHPARTS OF THE GENUINE TEXAS WATER-MOCCASIN
(Exposing Four Venom Fangs)

stripes, and entirely void of poison fangs and venom bladder. Now, the incident I began relating in the beginning of these notes was exactly similar to the one related some time ago, in one of my old-time reminiscences of Mitchel's lake, namely: A friend of the writer, a few days ago, came to our camp nearly breathless, from a long hike, and excitedly related the following story:

"He had just killed an enormous "moccasin with a broad head" and that he was sure it was a "genuine one." Well, leaving our fishing paraphernalia at

only a row of very small grab teeth could be barely discerned.

Now, a few words in regard to the next following illustration: It represents another moccasin specimen, and it is of special and unusual interest, as it shows the reptile's abdomen opened and exposing a water rat the snake had devoured shortly before it was killed by the writer, and photo reproduced.

The snake was a young specimen, full of fight when encountered along a small path leading to a spring along some huge ravines and a fine fishing place. I gave it such a lick with

a stick that its head was nearly torn off, at the same time making a large rent in the snake's lower neck parts and exposing the tip end of a rat's tail. The photo shows this snake with its devoured victim in nearly normal size, and it exposes the outlines of both the snake and the rat nicely, the photo as seen being prepared with near-focusing lens of my own use. The smashed-up head, on examination, had shown two very large poison fangs, partly covered by the whole cover membrane, and a large amount of venom was expelled through the fangs by pressing the poison

depicted in some other pages had been prepared by this method; and some exposed only one-sixth of a second. Live animals, including birds and reptiles in their haunts in the woods can be reproduced in all their natural beauty by this procedure; but it usually takes lots of time and experience and patience to accomplish a good exposure, as we know, wild animals are always suspicious and on the lookout for depredators around their secluded "sanctums;" and therefore, one has to hide the camera, or cover it with green vegetation, etc., and the operator himself must seek a



YOUNG MOCCASIN WITH SWALLOWED WATER-RAT IN STOMACH

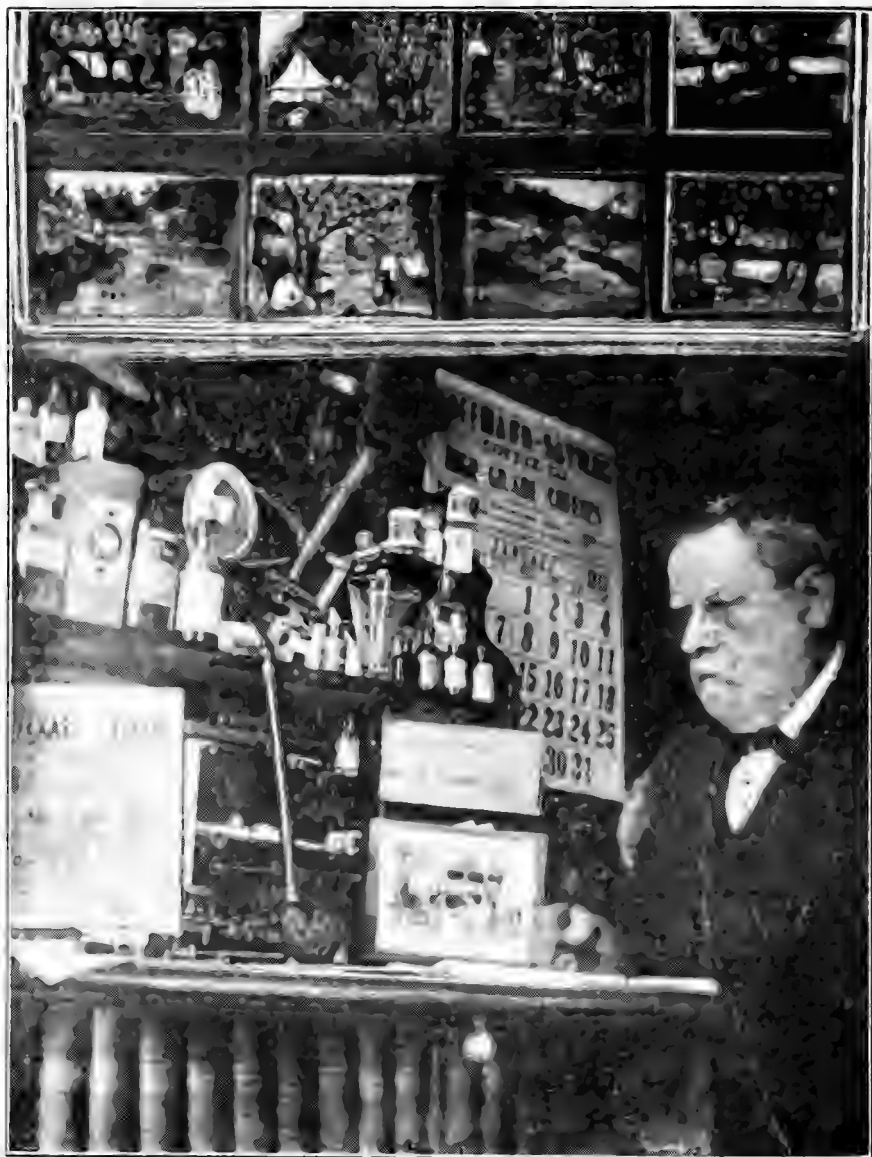
bladders with a stick—under careful handling, of course.

Before closing, may I call attention to the manner some of the views in other pages and both office views herein had been secured; First, a long string is attached to the trigger of the shutter mechanism, and then the camera is placed in focus distance of the objects to be reproduced.

The first pull of the string opens the closed shutter and exposes the plate, and the second pull closes it again. Any length of time exposure or an instantaneous view can thus be taken—depending on light conditions and mobility of the objects to be reproduced. Some of the hunting scenes described and

hidden place from whence he can observe the objects in front of the "loaded" camera—and pull the trigger at the right moment, when the camera victim or victims emerge from their haunts. Birds on their nest or feeding their young offspring or rodents in and outside their subterranean haunts; and all sorts of other animals of the woods can thus be photo-produced—after the secluded camera had been set in focusing distance.

It is an interesting study, and one not familiar to even many observant naturalists, that the crota-lus family, as well as the moccasin snake, swallow their offspring during threatening danger, and



PART VIEW OF OFFICE WHERE ABOVE MATTERS HAD BEEN WRITTEN. PHOTO BY THE WRITER. (Most of the Chapters Had Been Published in Colonel O. C. Guessaz's "Texas Field and National Guardsman," San Antonio, Texas, 1911.)

also, that they are viviparous animals.

When danger seems imminent, the crotalus at once gives a warning signal with its horny tail rattles, when the young, if present, will at once retreat into the opened mouth of the mother snake.

As to the moccasin. Mr. Ernst A. Raba (one of San Antonio's most accomplished professional artists) some years ago related to me that he was eye witness of a large moccasin swallowing its young reptiles. It happened south of San Antonio, along the romantic river-



A HUGE RATTLESNAKE KILLED BY MR. M. HERNANDEZ NEAR GALLAGHER'S RANCH,
BANDERA ROAD

shore, when, near some tule jungles, he saw a moccasin and numerous small snakes, about eight inches long, disappearing suddenly. He

killed the old snake, and on opening it, he noticed several of the small snakes in its mouth and gullet.

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Also, an intimate friend, † Hon. John Wickeland (lately prominent City Alderman of San Antonio, and formerly owner of a large cattle ranch and pastures at the Martinez settlement) some few years ago, during a dispute whether the rattler "swallows" its young in danger time, sent me, by request, the following interesting letter, and his observations are absolutely reliable:

"Answering your request, I will make the following statement: About fifteen years ago, while I was driving some cattle with a German neighbor, Adolph Real, Sr., we were stopping on a hill to cook our dinner. I went to a trash-pile for some kindling wood and noticed a number of young snakes, about eight or ten inches long, disappearing in the trash; and heard a rattlesnake rattle. After starting the fire I set fire to the pile, and both of us watched it. In a short while a big rattlesnake appeared, which I killed. At the same time a second one came out, which Mr. Real killed, and still another came out, which was also killed, making three in all. Each one was about three to three and one-half feet long and extraordinarily thick, which induced me to cut them open with my knife. We found eighteen young ones in the first, eight in the second, and twenty-two in the third, making forty-eight young snakes. Each one tried to escape, but we killed them all. Each one had a little rattle at the end of its tail, and also tried to bite at us.

About thirty-nine years ago, in 1862, shortly after starting in the sheep business, I was herding the flock myself, and one day met a snake apparently asleep, with a number of young ones around her, when all of a sudden they noticed me and disappeared through the old snake's mouth, and after killing her I found them inside."

About the largest rattlesnake I

have seen in nature, was near a ranch, north of the Helotes, in a picturesque and hilly region, at the farm of a Mexican Cavallero. It was later seen dangling—strung up with some fence wire—high up on the cross-bar of a high pasture gate. In this position, and after the Mexican had posted himself for "un retrato con bibora de cascavel"—close behind the huge snake, the photograph seen reproduced herein was prepared (luckily, having a trusted camera with me, at this occasion). In the rear of this view is seen a small adobe house, used at the time as a country store, post-office and telephone station, (26 miles northwest of San Antonio), close to the Banderera road, and in close proximity of a two story dwelling house, which, by the way, was built by the Mexican himself, of hard rock and adobe, in 1865; and it is stand-there to this day, undisturbed, close to a large corn field and pecan grove, and a fine rivulet, surrounded by evergreen forests and most picturesque mountain sceneries of the old Geronimo valley regions and the famous Gallagher cattle ranch districts.

The monstrous reptile, depicted, must have been a very old specimen of olden days, and the Mexican (a well educated and english speaking man) told me such old reptiles were about exterminated nowadays, and those left are usually encountered only in their remote jungle haunts; or in old-fashioned farm fences—where this rare specimen also was killed. Some of this snake's head parts, and parts of its body were somewhat mutilated; but the jaws and other parts were intact, and showed on closer inspection, several enormous large poison fangs, and correspondingly large venom bladders. Later the fine ornamented skin of this snake was tanned and sold by the Mexican to a local reptile establishment.

The Texas Horntoad

The horntoad, or "hornfrog," is exclusively a land reptile and numerously encountered along the hills and suburban driveways around San Antonio. There exist eight to nine genera—a species of scaled lizard, with more or less long horny spikes and other protuberances, artistically arranged over the body, especially the head and back parts of the animal.

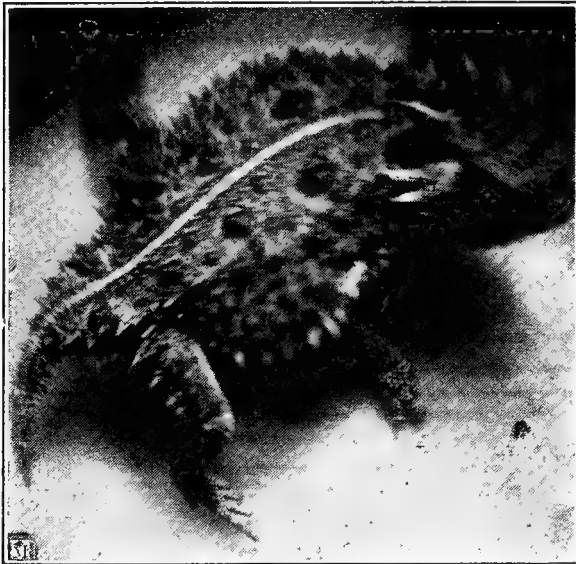
Size of a large hand; flat body; short and strong legs; small eyes; broad and short tongue: short and

of our prairie plains and they are more attractive than the rock and tree lizards, on account of the horned head and symetrically arranged markings of their flat body.

The above specimen was captured at South Heights, along one of the suburban hilly regions of San Antonio and photoreproduced alive by the writer.

The Tree Lizard.

I am including in these sketches an original photograph of two tree



A YOUNG TEXAS HORNTOAD

very small grab teeth. When disturbed they run fast, and stand on their hind legs listening to any noise on approach of a person, and they swim readily in case of necessity; live on insects; should be protected.

They are entirely harmless creatures, and quite much can yet be learned of their life history. They prefer graveled and sandy soil and hilly regions, but are also found numerously on the flat land

lizards—referred to also on page 25 in the article on the devilhorse insect. It was late in fall that I encountered two tree lizards whilst camping under a huge pecan tree, close to a large Johnson grass pasture, along our romantic river bank, south of San Antonio. In the endeavor of photographing one of the tree lizards, a devilhorse insect suddenly flew against the broad trunk of the pecan tree, and with a jump, one of the lizards.

grabbed the insect by the rear part of its body—just as seen on the illustration, depicted from nature.

Similar to the horntoad, these tree lizards are harmless creatures—their inside mouth parts showing only a row of very short and delicate grab teeth, with which they grab and masticate their insect food—mostly moths, butter-

climbers are very numerous around the woods and our public parks, especially Brackenridge Park, and along driveways, where they are most abundant where the hackberry tree grows. Here lots of them are occasionally encountered and can be approached quite closely. However, they usually circle around the trunk, lifting their head upward, and running



TREE LIZARDS AFTER A DEVILHORSE-INSECT, ON TRUNK OF A PECAN TREE TRUNK

flies, beetles, spiders and other insects. They are rarely seen on the ground; but occasionally, when in search of food, they descend from a tree—but hurriedly climb the tree again when disturbed. In summer time, up to late in fall, these interesting tree

or circling higher and higher until out of reach and safe in some hollow of the tree, or under some loose bark.

There exist various genera of these slender, dark and light gray lizards, and whilst most of them are tree animals, there are other

types encountered nearly exclusively in or along old fences and rock piles, or in cactus jungles, where they live on insects. The rock lizard is rather attractive and some of them are of a velvety jet black color. They are shorter than the tree lizard, and of a much wilder disposition—generally seen sunning themselves on a large rock or rock pile—and quick as lightning disappearing when disturbed.

These black ground lizards are not the same type of lizard found in mountainous regions. The latter are more slender, of velvety white and light grayish color and beautifully striped with black cross bands. They are often seen when driving along the country roads, along mountainous hills and cedar forests, and they are very attractive, especially when seen on top

of a large rock. In running, and also when sitting on a rock they curve and wiggle their long tail high up, and when disturbed very rapidly disappear under some other rocks nearby. There are various genera among these rock lizards and the largest types are exceedingly shy, and they usually sun themselves on a rock close to some rock cavity where they can retreat with lightning rapidity in case of necessity.

Our more common prairie and garden lizards are too well known as to dwell in detail here as to their habitat. Their greenish and striped body is even more slender; and they are exceedingly graceful in their movements, and of tamer disposition than all the balance of our lizard tribe; they are very useful creatures as their food consists chiefly of full grown and larval insects of all kinds.

The Gila Monster and Other Obscure Reptiles

I herewith present to my readers a part of another miniature photo copy, (not heretofore published) of a large private and original collection of my own, of Texas animals, some of which were photoreproduced directly as encountered in nature and others from the collection of renowned local taxidermists of bygone days.

However, this time it is the Gila reptile to which particular attention is called. In the March 1912 data appeared by a friend of the issue of the Texas Field and National Guardsman, the following Field anent the Gila Monster, under the caption: "A query for Dr. Menger," in which the contributor had said: "I have been reading with considerable interest Dr. Menger's articles on "nature observations" for the past year or so. I have been looking

forward to each issue with the expectation of sooner or later having the pleasure of reading something anent our most famous of all Texas insects—the centipede, the vinegron and the large black scorpion. Another pest, which can not be classed as an insect, by far, but which causes people to shudder at the very mention of its name, and which I wished to hear discussed by a person versed in science, is the Gila (*eloderma suspectum*). I do not know whether this reptile is found in Texas or not, but I have the impression that some exist in the extreme northwestern part of the State."

I respectfully submit this to this gentleman and the readers of the Texas Field: As far as I am informed, the Gila Monster is not indigenous to our Texas

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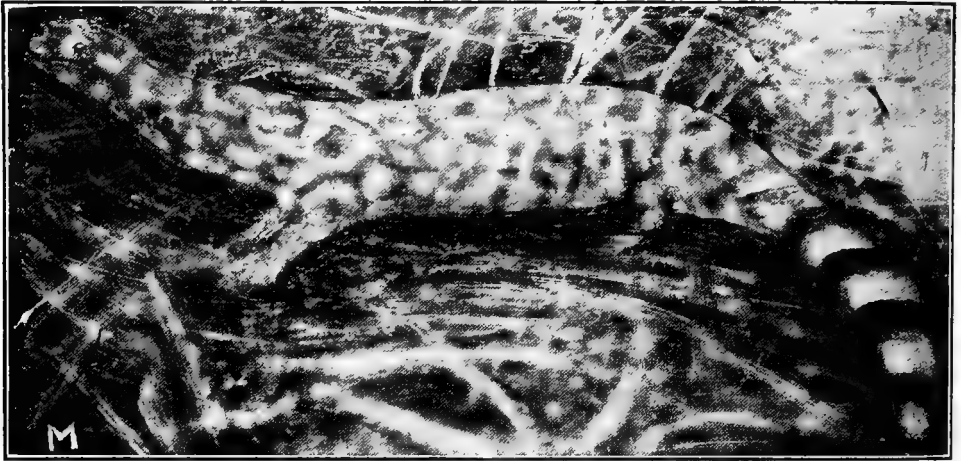
climate; undoubtedly however, a few specimens may have been encountered in the remote western mountainous regions.

Personally, I have but one time met a specimen on the road leading to the Leona, west of San Antonio; however, such occurrence being so rare, and in this instance unique, I was inclined to believe the specimen was a stray one from some reptile or museum collection. It was encountered close to a large ravine which was part-

a peculiar snorting or hissing sound during their movements.

The contributor in that issue of the Field further stated among other very interesting matters:

"I have been told, and I also have read a great deal concerning the Gila Monster, and the tales I have heard and the stories I have read, even in the daily press, would lead one to believe that this creature was the most vicious "monster," the most venomous



GILA REPTILE (Photo From Nature at Wm. Learn's Reptile Establishment)

ly filled with all sort of trash, tin cans, old leather, straw, paper-boxes, wire and other junk usually dumped outside the city.

Besides this one, I only had seen and observed several living specimens in our late Zoological Garden at San Pedro Springs Park and also at the reptile establishment of Mr. Learn of San Antonio.

These long and broad bodied and carmine red, white and black spotted lizard shaped animals are of rather clumsy and lethargic appearance, but they can get very lively and run very fast when disturbed or when on mischief bent, and they usually emit

and the most dreaded of all God's creatures. In fact, the tales I have heard about these creatures are the main cause of this inquiry. It has been told to me that if a horse or steer, or any other animal for that matter, either accidentally or otherwise, stepped on one of these and crushed it, that would be the end of the stepper, as it would die on the spot. Again, the bite of one of these Gila "monsters." (I believe the name is derived from the Gila river in Arizona) is said to cause instant death—you die then and there. Its breath, it is told, will inoculate one with venom enough to kill you on the spot. It is to laugh. No

less a person than Dr. Wm. B. Philips, who has held the chair of geology at the State University at Austin, and who has been connected with Government and State surveying expeditions throughout the entire West and Southwest for a good many years, contradicts all of these wild rumors. He told me that while camped in various parts of Arizona he found them always in and about camp and that they were always harmless absolutely; that they even had them for pets. If I remember right, on several occasions they kept one or two tied right in camp for observation, that the very worst part about them was the foul odor emitted from their throats when they hissed, a habit which they seemed to have. Dr. Philips ventured the opinion, upon being asked, that about the worst that could result from a bite would be ptomaine poisoning."

Now, concerning above data, I again must say, I have no personal experience—i. e. having seen a person bitten or having treated a case of a Gila bite. However, I do know from personal experience that these animals—similar to the rattlesnake, impart a very disquieting and fearful impression, and I must yet see the reptile dealer who does not handle these obnoxious beasts exceedingly cautious and with all precautionary measures, especially with a solid iron rod! This impression was also made upon me when I endeavored years ago and succeeded to photoreproduce a fine specimen of Gila Monster (a view of which appears herein) at Mr. Learn's reptile collection. Mr.—Robinson, then a partner of Mr. Learn, being present. We had the Gila, a very lively specimen (imported only a few days before from the Arizona Mountains), removed from its cage to the rear yard of Mr. Learn's herpetorium, after

previously having focused the spot where the reptile was to be deposited. I quickly took its picture in the right moment. Some years before that I had taken the picture of two other live Gilas at David Menck's Zoologicum at the San Pedro Springs Park. Mr. Menck had fed the Gilas on milk in a saucer. When drinking the milk, these queer animals would lift their long neck upward, similar to a chicken, and in this position the Gila can best be photoreproduced.

As to its deadly vituperacy, the Gila, like so many other dangerous animals, may become quite tame and trusted—as indicated in the above contribution; sex, breeding time, violence, or other disturbing influences, may play a role thereby; but the real *modus operandi* of the Gila virus seems yet obscure. The Gila has two powerful jaws which it snaps together like a turtle does when annoyed and in grabbing an object, and it implants its teeth deeply, when undoubtedly the saliva inoculates the lacerated tissues, which soon become gangrenous, with septicæmia setting in. This is also more or less the case in lacerated bites of some other animals (some rodents, the canine and feline species), the inoculated particles of saliva undoubtedly containing a peculiar and very virulent ptomaine virus, secreted by the salivary glands and inoculated into the lacerated tissues during the biting act.

I beg to append herein a published and graphically depicted case of the Gila bite which has appeared in a medical journal (Author not recollected) and which I also had published years ago in then the "Texas Field and Sportsman" to wit:

Florence, Ariz., June 22, 1893.

Richard M. Farthingay, a tourist from Minneapolis, returned here last evening with the

remains of Arthur James, who had accompanied him on the journey, and who had died the day before from the bite of a Gila Monster.

The story as related by Mr. Farthingay, who seems to be utterly prostrated by the horror of the occurrence, is indeed a terrible one. It appears that following a black-tailed deer the two hunters found themselves near a small water course emptying itself into the Gila, and at last struck camp for the night on the creek. The weather proving rainy they sought shelter in a little cavern formed by a heap of rocks, taking the precaution to close its entrance with coals from their camp fire, for fear of rattlesnakes, but not observing the foe within.

Just at daylight Mr. Farthingay was awakened by something that had slid over his prostrate body to the floor of the cavern. Opening his eyes he saw the reptile-like shape and snake head of one of these venomous creatures. It was traveling rapidly, and before Mr. Farthingay could reach his gun, it had encountered the sleeping form of Mr. James, whose breast it attempted to climb.

Disturbed by the touch of the animal, the unfortunate man, without opening his eyes, threw up one hand to dislodge whatever it was, and catching it by the tail would have thrown it from him, but the deadly teeth of the monster fixed immediately in his naked wrist, and though Mr. Farthingay hastened at once to his friend's relief and endeavored to pull it off, it held on like the grim death it was. Then, though fearing to strike the man instead of the reptile, he seized his gun and fired the contents into the creature's body. The monster let go his grip on Mr. James and made an effort to reach this new antagonist, but a second volley tore its head from its body.

Mr. Farthingay now turned his attention to his friend, and found that he had fainted. On being restored to consciousness Mr. James complained greatly of his wrist, which he said felt as if on fire, and which almost immediately began to swell. Immoderate thirst now set up and fever ensued, so becoming very much alarmed about his companion, Mr. Farthingay proposed setting off at once to town to procure medical attention for the wound, but Mr. James, fearing to die alone, implored his friend not to leave him.

In answer to his prayer the other agreed to await the course of the trouble, and fetching water from the creek bathed the wounded arm, but in less than half an hour the entire member was swollen to nearly three times its natural size, and from some slight discoloration assumed a deep purplish hue, nearly black, in splotches about the larger blood vessels.

Delirium now set in, and while anxious to summon assistance Mr. Farthingay was forced to remain to restrain the now raving, shrieking man, who again and again attempted to throttle his companion when the latter endeavored to keep him from coming out of the cavern to the creek. At last, worried out Mr. Farthingay was flung aside by the frantic sufferer, who broke out of his grasp and ran to the stream howling. The other followed as rapidly as possible, but only arrived in time to see James struggling down the shelving bank, then totter forward and fall.

When he reached him it was too late to find life entirely extinct. James lying with his head in the water and his own teeth fixed in the swollen gangrened arm. After exhausting such restoratives as he had with him Farthingay dragged the body back to the cavern, when he set off to seek assistance.

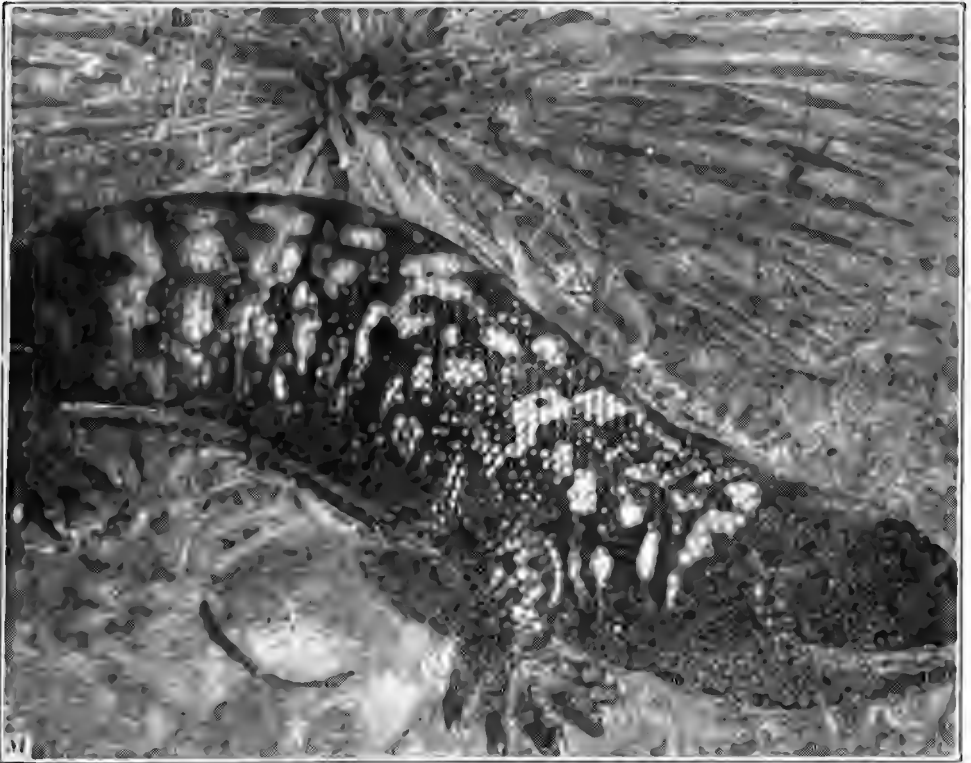
A few miles further on he came across an old Mexican who, living near the river in an adobe hut, was also the fortunate and opulent possessor of a donkey and cart.

With these latter the two men returned at once to the cavern, when James' body was placed on the cart and driven to town. Before leaving the place, however, Farthingay made a thorough search of the cavern, and discov-

ered the river this spring. There is no known antidote for their poison."

Lately, January 16, 1913, I had the pleasure of meeting Mr. W. E. Marsh, who has had a pet Gila reptile for several years and, at request, Mr. Marsh kindly furnished me with the following interesting data concerning this obscure animal:

"The Gila Monster is found on



GILA MONSTER 36 YEARS OLD. (Specimen Owned by Mr. Marsh. Photo by the Writer.)

ering a female monster with six newly born young ones, killed the entire lot. The mother, though shot nearly to pieces, made an assault on the hunter, but his heavy hunting boots prevented her from biting him. The old Mexican who had assisted Farthingay and his friend's rapidly decaying body to town, declared that James was the fourth man who had been killed by these deadly creatures on the

Gila river in Arizona and no other place in the world. In spring and the summer months they feed on bird eggs, and lay up through the fall and winter months in the crevices of the rocks, without food or water. They are very slow and sluggish, but with a hostile disposition; and they seem to have no fear, and will bite at the first opportunity; but after handling they become very gentle. Their

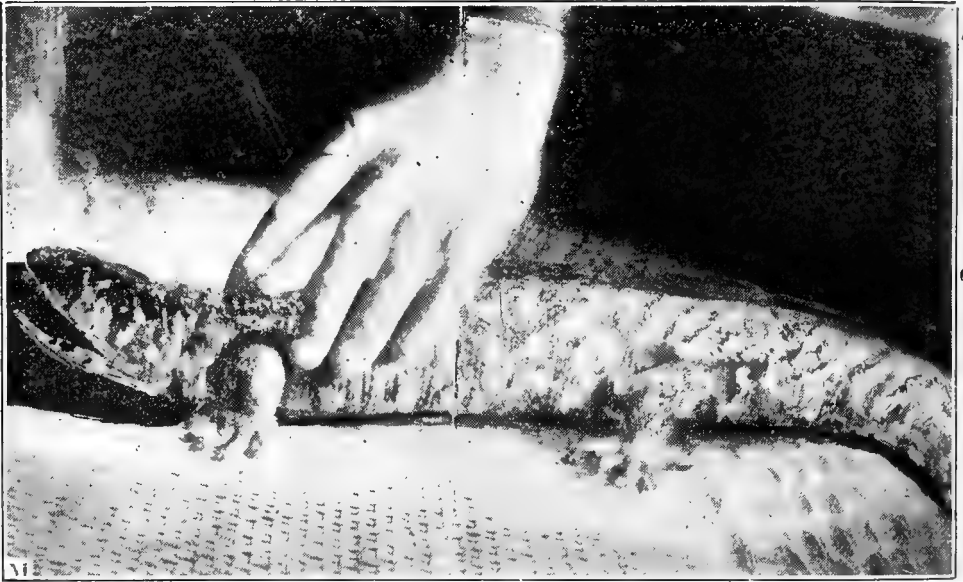
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markings are all beautiful and differ one from another. They have no fangs but long sharp teeth. When approached they blow like a snake, and act very similar. The tail is short and stubby, and the head is broad and flat, resembling that of a rattlesnake. The back is covered with a hard beady skin, and its abdomen is supplied with scales, the same as a snake. They have four short, stubby legs and feet and move about the same as a lizzard; and they possess

gentle treatment and general good care.

The size of this Gila is fifteen inches and its weight is one pound and eleven ounces; and its age is estimated by Mr. Marsh at thirty-six years. It was captured near Tucson, Arizona.

The entire body and feet of this animal, from head to tail end, is beautifully spotted with all sorts of light cinabar or vermillion red bands and figures, and these are all studded with pearl like protur-



GILA MONSTER (Gently Held by Mr. Marsh's Fingers, Mouth Partly Open)

some intelligence and can be trained. They shed in spring and fall the same as a snake, and live to be very old, and no one seems to have a knowledge of their origin. It is claimed by some authorities that they are deadly poisonous, whilst others claim the contrary."

The specimen Mr. Marsh possesses is very old and as gentle as any house pet: an example again of how wild animals of the most vicious nature and deadly disposition can be trained to submit to the willpower of man: including

berances of the skin, and they glitter like diamonds in bright light. It has very short but most powerful looking feet, with a claw shaped nail on each of the five toes, and as seen on the photograph herein, prepared by the writer, in different positions (one photo showing Mr. Marsh's hand gently touching the animal's neck parts). These powerful shaped feet indicate the haunts these dreaded animals live in: in the sandy rock deserts and mountain regions of Arizona, where they seek their haunts in the holes and

crevices of rocks, in caverns, canyons, caves and cliffy regions.

As stated, Mr. Marsh handles his old Gila like any other tamed and trained animal—pets it on its back and neck parts, when, saying: "open your mouth" the Gila opens it widely; takes it in his hands and even, Mr. Marsh told us, he can put his finger in the Gila's mouth without ever having been injured. At the time the photographs were taken of this Gila, in presence of Mr. Marsh and Dr. Robt. Lee Withers, (January 1913,) the animal was at times restless, but it never made an attempt to bite whilst Mr. Marsh put his fingers and hand on the reptile's neck and back (in which position one of the photos was taken at my private office room.)

In all the literary works at my disposal—German as well as English, no mention whatever is made of this animal as to its haunts and habits and life history in general; though the above data throws much light on our subject, it is not complete, and further direct observations are required, especially from specimens observed in their native haunts.

From the narrative of this sad and fatal case cited previously of a hunting party, and similar occurrence, there hardly can be any doubt but that this Gila reptile is a most deadly animal in its wild surroundings, especially when disturbed or provoked, as in the cited case of a female Gila encountered and molested accidentally in a cave.

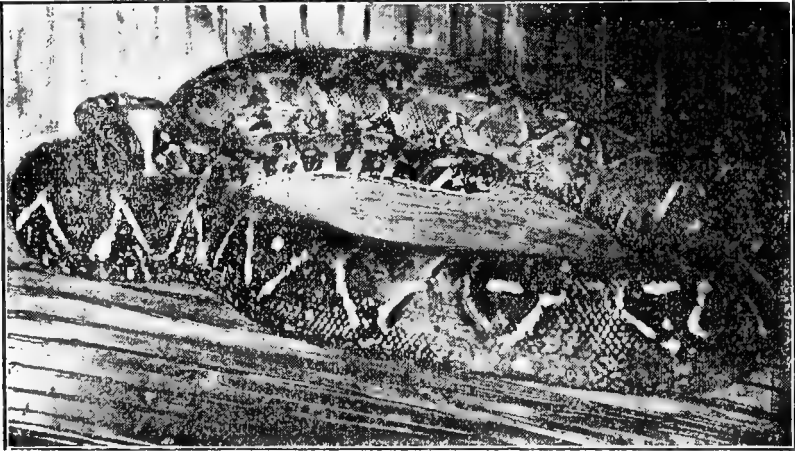
The sharp pointed jaw teeth also indicate that this animal feeds on other substances besides eggs; and the clumsy body and sluggish locomotion of its very short and broad legs and toes indicate that they are no tree climbers and therefore feed on the ground, on eggs of such species of birds, lizards, snakes, etc., depositing their eggs on or under ground.

Lately, in the Daily Express, a very interesting article appeared on the Gila Monster by T. S. McGeeney, and it relates to actual observations. It throws much light on our subject, as to its life habits:

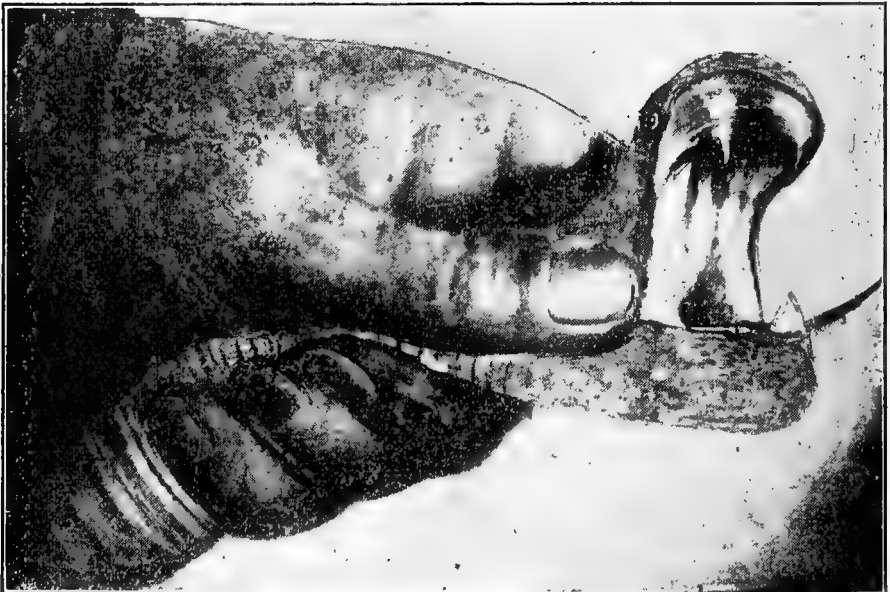
"The Gila is a deadly foe to small animals and birds, and, while it is averred by some well-known authorities that the bite of the Gila Monster is instantly fatal to small animals and birds, and very injurious, though seldom fatal to man, I cannot agree with them and must dispute their allegations, as I personally know of several cases where the bite of the Gila monster proved fatal. Some years ago, while riding over the trail between Deming, and the Florida Mountains, I found the body of a prospector who had died from the bite of a Gila Monster, and upon one of my visits to the Mescalero Indian reservation I saw an Apache Indian who was dying from the bite he had received from this reptile, while out hunting. In both cases the flesh turned black, hence the name the "black death."

"The bite of the Gila Monster is not necessarily fatal if he is pulled away from his victim before he has time to inject his poison, and death only results when the reptile has vomited. It takes about five seconds after the reptile fastens its teeth in its victim before the poison can pass through its grooved teeth into the wound it has made. The teeth serve as a hypodermic needle to convey the poison into the blood.

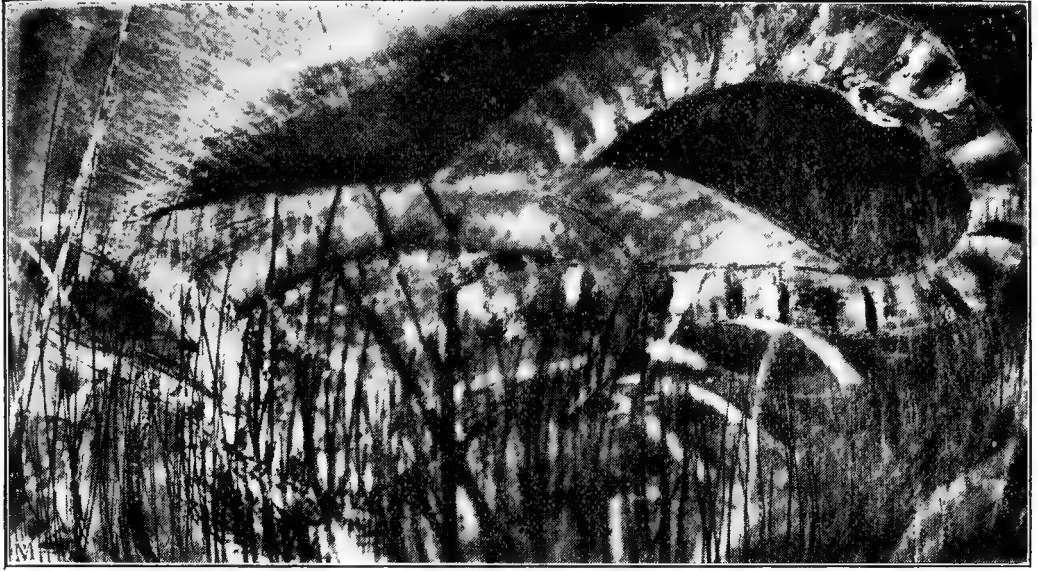
"At certain periods of the year the Gila Monster, when closely pressed, will show fight by standing erect, with mouth wide open, hissing and blowing forth its poisonous breath; at other times it is hard to see, as its color becomes dingy and it conceals itself under rocks and among roots of the cacti and in walking about the hunter is apt to tread upon it.



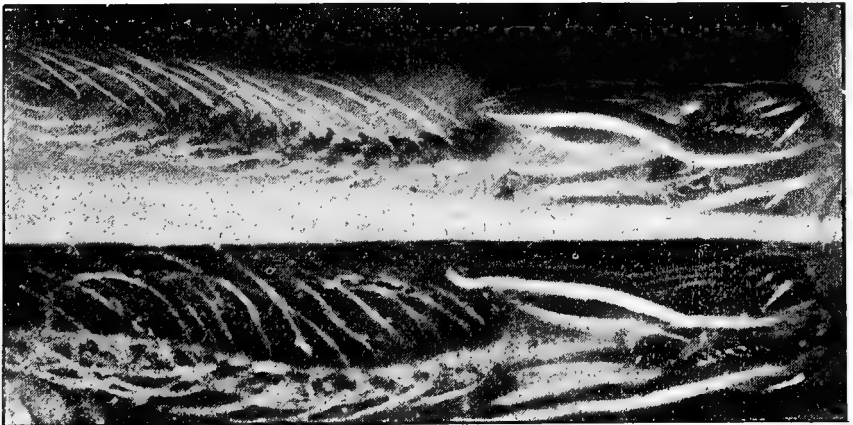
A YOUNG BOA CONSTRICTOR TEN FEET LONG PHOTOGRAPHED BY THE WRITER AT THE FORMER SAN PEDRO SPRINGS ZOOLOGICAL GARDENS OF SAN ANTONIO



ANOTHER VIEW OF HOLDING RATTLESNAKE HEAD FOR EXTRACTION OF FANGS
(These and the Following Two Photo Illustrations Were Delayed in Applying to Previous Matter on Texas Reptiles, etc.)



A LARGE KING SNAKE SWALLOWING ONE OF ITS OFFSPRING—A very rare and perhaps only specimen of its kind on record ever photo-reproduced from nature; encountered by my son and some outing companions in the fall of 1910, and photographed by the writer on the spot where found—along a river embankment, south of San Antonio. The large snake was about three feet long, and the smaller one about eleven inches, both were coiled up and wiggling inside some grass and weeds; the smaller snake being swallowed several inches. After killing them, they showed two fixed fangs and venom bladders, and both were of the usual banded tricolor: vermilion red, citrus yellow and jet black circular stripes. (A similar snake as this one is depicted elsewhere in this book; but the snake had swallowed a different type of snake, of which the writer, after killing the old King snake, in presence of Wm. R. Hoffmann, W. Fritze, and others, pulled about fourteen inches of the swallowed snake's body out of the other snake's gullet.)



SKELETONS OF KING SNAKE SHOWING POISON FANGS
(Original Photo Taken at Wm. Learn's Reptile Establishment)

“From history, and following the Gila Monster back to its origin I find in the beginning that it belonged to the monitor family of lizards who inhabited the Nile country in Egypt. The monitor, it is claimed, attained a length of six feet, and lived in and near the lakes and rivers. How closely the relationship between the Nile mon-

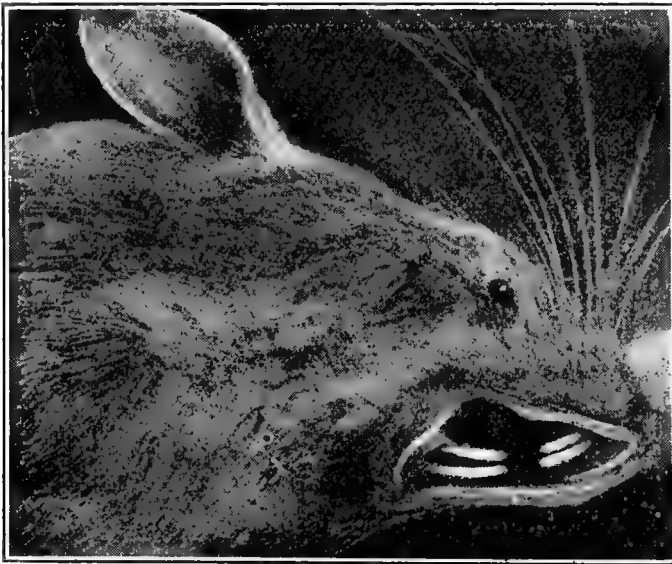
itor and the desert Gila Monster is I am unable to state. However, this much is known, that in the ages long since past the Gila Monster was a water reptile growing in proportion to about the size of a full-grown alligator, and it lived where it is now found. That was centuries ago, when the désert was a part of the ocean.”

The Haunts and Habits of the Texas Prairie and Water Rat

The chissel-like and oblong white teeth of our Texas prairie rat are nicely represented in a separate and original photo of a rat having been caught in one of the cactus jungles, near a ratnest—

above the entrance holes of their hiding-places.

The bite of one such rat is exceedingly painful and it is well known, that a rat's teeth cling to the flesh of a rat terrier or any other



FACE VIEW OF TEXAS PRAIRIE RAT SHOWING THE LONG, CHISSEL-LIKE TEETH

similar to the one seen on the ground squirrel picture. With these sharp teeth the prairie rats easily gnaw and cut thick roots in digging in their burrows, and also all sorts of hard wood, which these rats pile up in high mounds

dog trying to kill one, and how the dog generally howls and twists its head to rid itself of the rat's implanted teeth. This type of rodent is distributed throughout the Texas prairie jungles, and always with preference inside cactus thick-

ets, where they build their peculiar woodnests and breed enormously, but held in check by their enemies—snakes, owls, hawks and other carnivorous animals of prey. Miles and miles of such ratnests can be seen in some of the olden time pastures, with, usually, one nest connecting with the other through rat trails—narrow paths cleared

rat however, is strictly nocturnal, and for this reason none of the hundreds of rat nests met with occasionally in cactus jungles show any rat in day-time, and it is rarely the case some are seen very early, at sunrise, or late in the evening when other night-marauding animals appear around their secluded haunts.



A TYPICAL TEXAS PRAIRIE RAT NEST AND RATS IN CACTUS JUNGLE (Leona Hills)

by the rats through all the obstructing underbrush and the small serpentine prickley pear bearing red fruit.

Comparatively the ground squirrel is a much tamer rodent than the prairie rat and it can often be met with in its haunts early in the morning up to midday, and also toward evening; the prairie

Occasionally these prairie rats migrate in immense numbers over the prairie plains into pastures and gardens, where they do immense harm to the crops. An old German farmer at the Cibola once told me how he witnessed during a bright moonlight night thousands of the rodents migrating and devastating his fruits. This happened years ago.

As compared to the habits of the ground squirrel, the latter is a much tamer animal than our prairie rat. It can often be encountered in its haunts from early dawn up to noon time and also toward evening, when it prowls around in search of grain food, and stands erect on its hind legs, listening for the slightest noise. The prairie rat however, is somewhat larger, and of lighter color, than the so-called water rat, which seeks its haunts along the banks of water sources and which, in olden days, and yet, abounded in large numbers along the San Antonio river banks, the San Pedro creek, and other rivulets. Along the San Pedro creek in particular these rats were a great plague in former years to the near-by inhabitants, doing much havoc domestically, as well as being a great unsanitary nuisance in many ways. These water rats are great swimmers, and they will cross a broad stream, often diving under water when pursued. At the old Mitchell's Lake hunting-grounds some of these water rats were quite numerous distributed along the banks of the lake, and toward fall time and in summer seek the upset boats as their hiding place, and they would prepare their breeding nests in a corner of the boat. At one time we met three such water rats below a boat with a rat nest inside one of the boat partitions, and they quickly escaped on lifting the boat—two jumping into the lake and swimming along vines and roots of trees until a safe distance was reached along the bank, where they entered a hole in an old dried oak tree and the third one tried to escape by climbing up the branches of a nearby persimmon-tree where a pair of dogs caught the rat later, after a desperate fight, and killed it. These rats have a much softer fur, of whitish gray color, and they are somewhat smaller than the town-rat and much neater in appearance.

After the above data in the Texas Field (1911.) I had occasion recently (June 1913,) during an outing in the Leona hills with a friend to prepare a view of a typical Texas prairie rat nest with three rats on same, inside a pile of cactus leaves, bearing fruit. Only parts of the large "nest" is represented in the photo which consisted of piled-up dried cactus leaves, parcels of corn and corn leaf, which the rats had gathered from an adjoining cornfield. The rats are of light gray appearance, with white abdomens and feet. Hundreds of such prairie rat nests exist throughout the wild brushy cactus jungles, along and inside the fenced-up pastures, and around the large cattle tanks of western Texas. The slick rodents build these nests to protect themselves from other animals, reptiles, owls and hawks, and often are such piled-up wood and manure nests seen inside a thick thorny brush, surrounded by dense cactus jungles, and protected all around with the spinous and very thin branched serpentine prickly-pear cacti, which the rats gather in the near or far off surroundings and adjust over the hole entrances in a circular form, and thereby perfectly protecting them and their brood from snakes and other animals. Sometimes also the in and out entrance is surrounded by short brush branches, covered with sharp thorns; or the shrewd rodents prepare their haunts under the broad and piled-up cactus leaf, the trails leading under these cactus piles in various directions, to the main and spacious gathering and breeding place; covered also with the piled-up wood and manure accumulations, and occasionally the entire rat family can be seen inside such rat nests.

For miles and miles the common but beautiful blossoming and fruit bearing prairie cactus can be seen

during May and June, when the pear-shaped fruit ripens in July; and in August, the prairie plains along brushy and hilly cactus regions are literally covered with the attractive red, dark bluish, or jet black fruit, intermingled with other unripe green, light purple, carmine-red and various other colored cactus-pears—a very fascinating sight to behold! The pear-shaped fruit seen on the picture herein, were of light pink color and not matured. The jet black variety of this fruit is edible, and the taste is not unpleasant, whilst the other styles of ripe cacti fruit is less palatable and some are repungnant. The entire ripe fruit is saturated in its fleshy tissues with an intensely red coloring matter, which stains the hands a beautiful flesh color; and the aborigines used such coloring material to paint their faces and warring impliments. Carloads of this fruit could be gathered in a short time along the cactus jungles, and perhaps converted into some staining product for various commercial purposes.

The fruit has often been eaten by persons lost in the wilderness and thus sustained life; and the cactus leaves serve the rats and other animals as food during droughty season, and often large areas of gnawed off cactus-leaves can be seen all along the prairie cactus plains.

These prairie rats, though mostly ground animals, are great tree climbers, and I recollect a little hunting episode at the Leona hills some years ago, when camping out at night with my friend A. Haubold, under a huge oak tree and close to a large pasture filled with cactus jungles inside and along the lane, close to some large water

tanks. It was a fine bright moonlight night, and toward morning just before sunrise, when my friend suddenly grabbed his close by, bb Remington rifle and exclaimed in a whisper: "look at that big rat above us, peeping outside a hole in the upper stem of the oak"—and—"bang" it wriggled and tumbled outside the hole to the ground, near our feet. A short while after this another rat was seen running up that same oak tree stem—as fast as any squirrel ever ran, and it also, after a little while, peeping out of the hole, was killed.

In years gone by one hardly would have dared to enter such jungles of cactus as now exist and as seen surrounding the picture herein. It is a fact, they teemed in those days with the deadly rattlesnake and poisonous prairie spiders; but, with the extermination of late years of the reptile pest and the cultivation of vast aries of formerly impassable brush land, it is comparatively safe to walk all along the densest thickets of such cactus jungles; however, of course, it is always better to be on the safe side and on the lookout of these. Many miles of such old cactus jungles and rat nests have now been cleared around the beautiful Leona valley and hills, and converted into blooming irrigated fields; and the time may not be far off when such cactus jungles with rat nests will exist in memory only of an interesting by-gone age of the prairie plains around San Antonio. Some of our present finest suburban villas and residential districts were once nothing but mesquite and cactus jungles—from East End to the Government and Tobin Hills—up to and beyond Prospect Hill and beyond the vales and hills of the Leona and Medina regions.

The Texas Ground Squirrel; Its Habits and Its Haunts

Up North there exist several of the chipmunk variety, but one of the most interesting species indigenous to our Texas climate is our "ground squirrel." The Northern species are differently built, especially as to the striped body and the ears. Northern so-called "chipmunk" are more erect and more pointed, whilst in our Texas variety, the ears are more flat and narrow, and they barely protrude over the cranium. They also are much more slender, with

1908, of the "Texas Field and Sportsman" anent the advisability of exterminating the ground squirrel and, as the reports dwell on the actual observations of reliable parties, both notes in the Texas Field and Sportsman are reproduced for a better understanding of the subject, as follows:

"Henry Howard, a prominent farmer of Black Creek, near Devine, and a successful hunter, says that he, has kept a record of quail's nests found for the past



TEXAS GROUND SQUIRREL NEAR CACTUS JUNGLE AND PRAIRIE, RAT NEST, MITCHELL'S LAKE

rather a thin and long body, a long oval shaped head, interrupted with white and dark stripes along the back, and the tail is not as bushy as is the chipmunk and by far not as in the common tree-squirrel. As to its habits I may be allowed to append some data as to our ground squirrel being an "egg-eater." Under the heading: "Kill the Ground Squirrel," two contributions appeared in the September issue,

four years and the average of the eggs destroyed during that time, was 90 per cent. Last year he found forty two nests and only one of them was not destroyed before the eggs hatched. His record covering the four years shows forty-four to eighty nests found. He is a close observer of game and reports a bountiful supply of quail this year. He says if the sportsmen would devote more of their time to protecting the quail

from these enemies that destroy them, that in a few years they would not require any protection from the hunters; that they would increase so fast that they would take the country. He says the worst enemy they have is the ground squirrel, which destroys the eggs and eats the young birds."

The second contribution in the Field and Sportsman reads:

"Dr. George R. Dashiell of Devine, one of the volunteer game commissioners for this section, reports that the greatest menace to the propagation of quail in his section this year was the little ground squirrel. Dr. Dashiell has field deputies appointed in his territory, with instructions to make surveys of the ground where quail nest, and the movements of their beves when hatched. One enthusiastic birdologist under the doctor's supervision, made note of a nest full of quail eggs one day, and watched the disappearance of one egg a day until they were all gone except one. The enthusiastic birdologist determined to catch the thief. So he piped the remaining egg and placed therein poison. The next morning he found in the nest a measly little ground squirrel cold in death. A close observation in that country developed the fact that where wolves are not numerous the ground squirrel is plentiful, and depredates upon the nests of Mrs. Bob White."

From these interesting observations it appears the otherwise very neat and attractive ground squirrels are a great menace to bird eggs, and the favored game bird—the quail eggs in particular. But few bird species besides the quail prepare their nests and breed on the ground, and the quail's nest, often harboring twenty or more eggs, is quite a rudimentary arrangement of only a few grass-stems and remnants of leaves, and it is otherwise but little protected, except that quail prepare their nests in well secluded under-

brush and dense grass, generally close to or inside a thicket of underbrush or piled-up tree branches. Two such nests, with nearly twenty eggs, were once seen by the writer at a place where the land had been cleared of brush and where the clever female "Bob White" had prepared her nest near the center of the trash pile, well protected from all sides, and it was detected only when the bird had flown away and exposed some of the white eggs.

From the direct evidence related above there hardly can be a doubt that the ground squirrel feeds on the eggs of quail; however, it seems to the writer the matter needs still further direct observation. Ground squirrels belong to the same class of rodents as the common squirrel family, rats, mice, prairie dogs, the beaver, etc., but their main food undoubtedly consists of grain, plants, roots and fruit. But even the common tree squirrel has been observed to feed on animal foodstuffs; and it is known that animals of other tribes, which otherwise are strictly herbivorous, also feed occasionally and under certain forced circumstances upon animal substances.

The quail, being also a ground bird, has easy access to its nest by these rodents, but it must also be considered that numerous other animals of prey—mammals as well as birds—are liable to destroy and feed on quail eggs; and also the elements, excessive rains, storm and hail is liable to destroy the eggs or the entire young brood, though not so numerous as is the case in wild doves. The latter prepare a very fragile nest on a limb of a tree (mostly mesquite,) and any heavy windstorm can dislodge the breeding bird and roll the eggs to the ground. There is no doubt that it has been proven in heavy rainstorms, that innumerable dove and other bird eggs or the young brood of same have been destroyed by such

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elements. Some of the night marauding animals of prey easily can destroy the brood or the eggs of quail and doves, as also snakes are very fond of such delicacies.

The influences, therefore, liable to deminish game must be considered conjointly with above. But that the ground squirrel is gaining ground all over Texas is evident by its immense rapid increase, according to reliable reports. The writer in younger years was always an admirer of nature's animated beings, and often made outings for recreation whenever occasion presented itself, but never before has there been occasion

neat creatures prepare underground furrows; but not, like the prairie rat, with additional over-ground material, heaped up in broad piles, and with trails or pathways from one nest to the other; but they dig with their sharp claws a hole large enough to enter, (generally with a counter opening several feet off to escape when endangered), and perhaps deeper chambers for their breeding nests along the main furrows; and they are a lively lot when detected in these hiding places. They are exceedingly quick in their motions, and, like the prairie dog, in serene weather will sun themselves outside the hole in numbers; but



A CHIPMUNK *

to witness the ground squirrel in the near vicinity of San Antonio, while nowadays they are very numerous, not alone near our city, but all over the surrounding country. What causes this? I really believe the extermination of other rodents and also of serpents, is the prime cause. Snakes, and in particular the rattlesnake, feed principally on rodents—rats, mice, prairie dogs, etc.—and it can easily be seen that with the destruction and ridding the country of snakes, the rodents are rapidly on the increase. And as they are a nuisance in several respects (grain and egg eaters), it is certainly justifiable to destroy them. These otherwise very

as soon as an enemy is noticed they whirl around and rapidly retreat in their burrows. After a short while, however, one after the other will reappear at the opening hole again, and, if safe, will roam around in search of food.

The ground squirrel is a small animal, not larger than a prairie rat, but much more slender and quicker in its movements, and it sits on its hind legs when listening to some foreign approach, or when they sun themselves, and I have often seen them thus at Mitchell's Lake and in the Leona Valley. They are very attractive when seen at close range, their fur being striped with dark brown

and white bands along the back, and their tails are of the same appearance as of the common tree squirrel. Both jaws are supplied with sharp and long teeth, characteristic of all rodents, with which they gnaw the food, mostly of a vegetable nature and grain of all sorts.

It affords the writer much pleasure to submit a good original photo of our Texas ground squirrel, in nearly normal size. This specimen was met with at Mitchell's Lake hunting ground near one of the many ratnests—piled up with dried wood branches, remnants of cactus leaves and all sort of dried up debris, and close to some cactus jungles abounding there in numbers. Though not as numerous as in former years, the dreaded rattlesnake, the cottontail rabbit, the beautiful speckled cactus wren, the woodpecker, the mockingbird and a host of other warblers make these jungles lively with their presence. At this time of writing, in August (1911) most of the cactus jungles around the old Mitchell's laguna have been cleared to make room for cultivation of the rich soil.

The ground along Mitchell's Lake around the custodian's dwelling and the several camping houses—a mixed sandy soil—and the cactus jungles afford special in-

ducements and protection to these queer earth dwellers—the ground squirrel, as the holes and underground burrows encountered there are very numerous distributed all over this interesting and picturesque Indian section of olden days, and where San Antonio nimrods seek recreation in winter time in boatriiding and hunting the fleetly water fowls.

As can be noticed throughout the prairie where the ground squirrel seeks its haunts, a peculiar instinct more or less inherent to all wild animals, enables these cute little rodents to prepare their burrows in such a manner as to escape quickly during threatening danger. Therefore nearly all the holes of the ground squirrel have counter openings several feet off the main entrance, and a snake or any other reptile in search of its victim, enables the squirrel to escape from the opposite opening.

Along the Mission route leading to Berg's Mill and the lower Mission, as well as most of the other automobile routes outside San Antonio, numbers of ground squirrel holes, and occasionally several of the rodents can be met with. In many instances they are rather tame and will allow the passenger to come quite near; mostly however they are met running with tail erect, swiftly to a sheltered place of their underground burrows.

A Rare Skunk and Its Habits

That a stray cat or a dog or even some dangerous reptile occasionally invades a human dwelling at some farmhouse is nothing new but that such "undesirable citizen of the jungles" as a skunk should invade the kitchen of a Mexican cavallero, is indeed a sight not daily witnessed—even at a farmhouse. But this happened last November at the hunting grounds of the famous

Mitchell's Lake preserve ten miles south of San Antonio, Texas.

Part of this interesting lake, the main boatlanding place, is shown in the photo as it looks today. It is about three miles long and a favorite duck-shooting pond of the Southwestern Texas nimrods; but of late, game is not quite as numerous for reason, it seems, of the rapid cultivation of the vast area of

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the surrounding mesquite valley. At the time of writing hundreds of Mexicans with their queer camping outfits, dispersed among the hilly regions and mesquite jungles west of the lake, can be seen there at work in clearing the brush and trees, and the wild ducks and other fowls, formerly alighting on Mitchell's lake by the thousands and millions now only sparingly congregate there. However, it is presumed, as soon as the cleared places around the old lagoon are

close to the stove of the kitchen, and the other near its haunts in the nearby jungles, surrounded by some dogs. It was a rainy day and therefore the views did not turn out as desired, but the one herein shows his mephitic majesty of the cactus jungles, quite plainly.

The animal proved to be such a rare variety of the skunk family (*Mephitis pestorius*) that it may be a lifetime to encounter a similar species again in nature.



MAIN BOAT LANDING AT MITCHELL'S LAKE, (Original Photo, Winter 1910)

cultivated with green fields, the lake may again be full of game.

During a visit to that lake we happened to come across a Mexican dwelling where pandemonium reigned supreme—all on account of a little skunk which had taken the liberty to make its entrance during a cold night into the cavallero's kitchen. Having my kodak with us, I managed to prepare two photos of the intruder; one showing the interesting animal

The ordinary skunk or "polecat" is entirely differently striped and of much larger size, with only two broad, continuous white stripes along the margin of its back, whilst this one had various interrupted white stripes across its black body, with long bundles of white bushy hair at its tail end part.

The prevailing cold weather at that time caused these, as so many other marauding animals, to seek food and shelter near farmhouses:

Occasionally these animals also enter some dwelling in the hot summertime; and I recollect a narration, years ago, when a skunk, during a bright moonlight night, entered the open window of a farmhouse and commenced to perform all sorts of stunts with the farmers' house-slippers. It came this way: Whilst asleep, the farmer suddenly awoke at midnight, and, believing the house-cat had entered his sanctum, but little attention was at first given the intruder.

some acrobatic stunts with the slipper. It held the slipper between its front feet upward and rolled it around, like a child would do in playing with a ball. After it tired out, it slowly made its exit through an open rear door of the sleeping-room, and disappeared in the yard, where it was killed the next day by the dogs.

I may state, by the way, that this is not an imaginary story, but can be verified by my friend, the farmer himself, who now re-



A RARE SPECIMEN OF SKUNK ENCOUNTERED AT MITCHELL'S LAKE HUNTING GROUND

However, as the animal began crawling on the farmer's bed, and quite close to the sleeper, the farmer now could clearly notice it to be a skunk—the moonlight aiding him in discerning its white and black-striped hair, and he watched its every movement. After prowling a while on the bed, it slowly crawled down to the floor again, and, taking one of the farmer's slippers, it rolled on its back and commenced performing

sides in San Antonio, and is a prominent alderman of the city administration, and, at whose farm the above incident occurred.

In looking up the literature on these queer animals I found a noteworthy account on the habits of the skunk, in general, by Dr. C. H. Merriam—"Mammals of the Adirondack Region, New York, 1884," which reads:

"The skunk preys upon mice, salamanders, frogs, and the eggs

of birds that nest on or within reach of the ground, and if he chances to stumble upon a hen's nest the eggs are liable to suffer, etc.

"Of all of our native mammals, perhaps no one is so universally abused and has so many unpleasant things said about it as the innocent subject of the present biography; and yet no other species is half so valuable to the farmer. Pre-eminently an insect eater, he destroys more beetles, grasshoppers and the like than all our other mammals together, and in addition to these he devours vast numbers of mice.

He does not evince that dread of man that is so manifest in the vast majority of our mammals, and when met during any of his circumnambulations rarely thinks of running away. He is slow in movement and deliberate in action, and does not often hurry himself in whatever he does. His ordinary gait is a measured walk, but when pressed for time, he breaks into a low shuffling gallop. It is hard to intimidate a skunk, but when once really frightened, he manages to get over ground at a very fair pace. * * *

"Skunks, particularly when young, make very pretty pets, being attractive in appearance, gentle in disposition, interesting in manners, and cleanly in habits. They are playful, sometimes mischievous, and manifest considerable affection for those who have care of them. * * *

The writer, I beg to remark, approves the above classical treatise on the skunk in toto, but, at the same time, I am not inclined to blame any farmer catching and killing a skunk in his chicken-coop, or after receiving a syringe-full of the "pestiferous aroma" from his mephitic majesty!

Often in my younger years on a farm, have I met during hunting trips, a skunk leisurely rambling about in search of food, and

we came quite close to the animal the least annoyed as far as its "perfume" is concerned. When dogs attack it, or when shot at or otherwise annoyed, "then she lets loose," and, oh my! such an odor! especially if it happens we should receive "a full load of it."

Hand in hand with the above personal observations of Dr. Merriam, it is in place to again call attention to some of the suggestions the Editor of Texas Field and National Guardsman also has called attention to—the wanton killing of so many other useful animals of the prairie plains, especially the armadillo, one, it seems to me, of the most innocent and useful of all animals in zoologydom! These animals, we all are aware, destroy vast numbers of harmful insects and their larvae, and still the crave to kill them by the wholesale for ornamental purposes has nearly entirely exterminated them in many parts of Texas.

In one of the original photo illustrations herein, of Texas animals, is seen a splendid reproduction of our common and rather attractive polecat or skunk, and it shows the great difference in its striped body as compared to the specimen encountered at Mitchell's Lake and described already.

This group of animals, with a skunk in its center, represents a number of strictly typical Texas animals occasionally encountered in the Mitchell's Lake hunting grounds, or close environment of the jungles, forests and hilly regions around San Antonio and other Southwestern localities. The group was photographed by the writer from a collection of typical Texas animals at our San Pedro Springs Zoological Museum, and represents only a small parts of the collections to be seen there—some ten years ago.

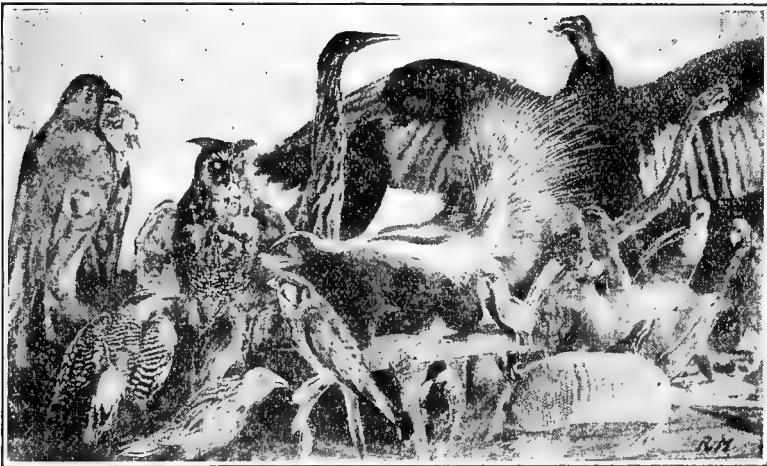
On the left and in the rear of this illustration is seen a number of various types of Texas prairie

hawks, and one of the large, dark brown forest owls, familiar to all hunters, especially such camping at night in or near a forest, or in a rivulet bottom. In olden times, the loud, sonorous calling of these owls often vexed the hunter or traveler as being the loud call of some Indian. Generally two, and often more of these large owls are heard during the stillness of the night, calling and answering each other, and the loud echoes are heard reverberating throughout the forest.

The armadillo is also represented in the rear and to the right of the view. Some quail, a cotton-tail

versy—if so it can be called—arose as to the turkey buzzard being a useful animal or a nuisance, and the writer had contributed his share of observations in the year 1902 in *The Texas Stockman and Farmer of San Antonio*, and though since, the matter has been settled, it seems against the buzzard.

Although not a veterinarian and perhaps only of limited practical experience on this particular subject, allow me to state that the matter seems to me at least rather premature and so far unwarranted to exterminate the buzzard. With this I do not, though, wish to be misunderstood as doubting the



SOME TYPICAL TEXAS BIRDS AND ANIMALS AT THE LATE ZOOLOGICAL MUSEUM, SAN PEDRO SPRINGS PARK (1902)

rabbit, a mocking bird and the sailor of the eternal blue Texas skies—the buzzard is seen in the view with outstretched wings.

Similar to the above described skunk, the buzzard also has its ominous as well as its useful traits—ugly as they do appear at close range but of graceful and rather attractive appearance when reposing on a dry tree, or along a fence with wide, out-stretched wings basking in the sunshine or gracefully sailing high up in the blue Texas skies.

Some years ago quite a contro-

statements of others, especially scientific investigations and experiments, if any such have been conducted on a responsible basis, but I do believe that, as far as I have considered the matter, the same is yet in its infancy and needs further and more exact observations and actual scientific experiments before these heretofore protected scavengers of our prairie plains are doomed to complete extinction, which by the way may be easier done on writing paper than de facto. There is hardly any game law in this or

any other country that ever protected an animal more stringently than the Texas buzzard, and to see them at once slaughtered by the wholesale would indeed be a novelty and a sign of the great strife of modern scientific research in the interest of animal and human health.

From a general point of view and some of my own observations, it would seem that our buzzard should not be exterminated for these reasons: It is not proven, at least not so far as the writer is informed, that such diseases as black leg, hog cholera, charbon, etc., are contracted solely or mostly through the dejecta of buzzards. We professionals know, and the laity as well, that all stock animals are very sensitive and particular in their feed and while feeding. Then, also, it must be proven that the dejecta of buzzards harbor such pathogenic bacteria or micro-organisms as actually produce the above named diseases. Hogs, for instance also, like the buzzards, feed on carcasses, perhaps also on such which were in lifetime affected with communicable diseases. These then could be distributors of diseases also. Fowl also, if affected with some epidemic disease, if devoured after death by hogs, or if left to decay, by polluting some stream, could communicate disease to cattle.

And the fact is, at least seemingly so, and substantiated by observation, that carcasses of animals, whether they came to death naturally, or through disease, if located near a creek, bank, or water used by cattle, the decaying material, after any rain, is likely to be washed into the nearest pool of water, especially if such dead animal is located directly on or very close to any stream or pool of water from which cattle, etc., are compelled to drink. And another thing; it is claimed by some observers and writers that the buzzard carries off decayed flesh and spreads it over a

large surrounding surface. I must say, as far as my own observations at butcher pens and farms is concerned, that I cannot relate one instance where this has been done, at least that buzzards carry the flesh to any great distance. These black vultures generally congregate in large numbers around a carcass and finish then and there their meal without carrying any away. This though, I believe, is done by the so-called Mexican eagle or buzzard, or some species of hawks. Hogs, and especially wolves and wildcats carry parts of a carcass away, and millions of flies feed on decaying animals and are liable to transport and inoculate pathogenic germs.

Nature has most wisely and nearly exclusively endowed the buzzard, these scavengers of the prairie and grand sailors of the eternal ether of the blue skies of Western Texas, with a great purpose viz., the destruction of carcasses by eating the decaying flesh which would otherwise rot in the atmosphere and undergo a process of slow decay. Science, though, will have to prove if such devoured food, after undergoing the process of digestion, contains in the converted dejecta any pathogenic bacteria causing such diseases as mentioned. Or, whether, as also indicated above, there are other and perhaps more potent sources of disease propagators in cattle than the buzzard. The proper authority, of course to decide this matter would be the government. Before, therefore, any such stringent laws could be enacted to exterminate these animals, more exact observations should be made by competent scientific researches.

In conclusion, in reviewing the above rather unpleasant matter to discuss, but nevertheless of vital importance, the remedy would be plainly this: If it be proven definitely that the buzzard is a nuisance—a direct or indirect propagator of epidemic or other dis-

TEXAS NATURE OBSERVATIONS AND REMINISCENCES.

ease in stock cattle, etc., then the buzzard must "vamos." If, though, the buzzard is of but limited cause in producing cattle disease, then, nevertheless, great care should be taken in disposing of dead animals. The best remedy would be by cremation, either at slaughter houses (butcher pens) or when found near a tank or rivulet. Burying underground would be the next best remedy, although in open prairie, wolves, etc., may dig the ground open again and expose the carcass. Of chemicals, quicklime or some strong acid would be the best, although more costly than cremating or burying underground.

Carcasses near any water tanks, troughs, etc., should at once be removed far off and disposed of as suggested. In drouthy time and severe winter weather cattle seek

shelter near trees, perhaps where hundreds of buzzards roost also, and perhaps located near a water pond. If then at such places cattle die, the water could easily be contaminated by the decaying carcass, if the carcass lay in or near the edge of the water. At the same time such water pond has been perhaps before contaminated by the dejecta of the buzzards. Which then, if cattle get sick by being compelled to drink of such water, is the main cause of such sickness? Indeed hard to decide, but it simply shows that owners of cattle wherever located, should inspect the watering places rigidly during drouthy times and remove any carcass found. Also hog pens should be kept well isolated from any watering place to prevent any contamination of the water with its consequences.

The Armadillo in Its haunts

One of the most interesting of wild Texas animals is the armadillo (in German, "Guertelthier,") or banded animal.

Like many other wild animals once roaming numerously in the neighborhood of inhabited places, the armadillo is one of those peculiar and interesting mammals gradually nearing its extinction. Some thirty and less years ago these animals were very numerous near farms, especially in the hilly regions of Western Texas as well as on the prairie plains surrounded by cactus jungles. In Medina County the writer had often met them in those days, and many had been captured by the late naturalist and farmer, L. Toudouze, of Loya, around whose place wild animals of the jungles were exceedingly numerous in those days, roaming around the brushy and sandy soil and the cactus plains, up to the old renowned hunting grounds of Mitchell's Lake, south of San Antonio, where also many other native wild animals abound-

ed in the wild underbrush and cactus jungles. But nowadays most of such animals are extinct, or at least exceedingly rarely met with—the lynx, wild cat, panther, bear, wild turkey, badger, deer, wild hog, etc., for instance.

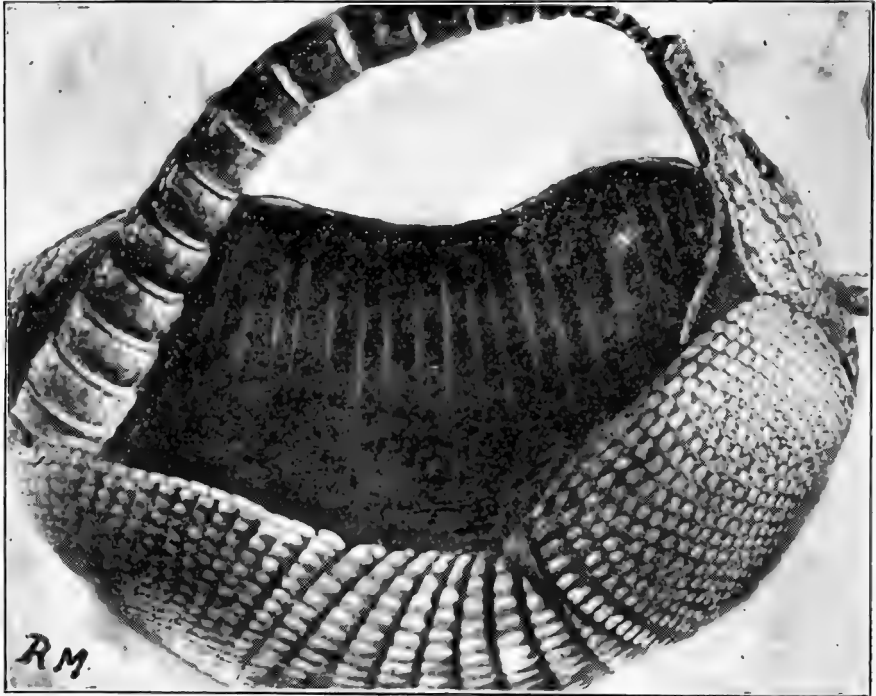
Around the mountainous plains around New Braunfels, Leon Springs, Boerne, Comfort, Kerrville, Fredericksburg, etc., the armadillo still abounds in numbers, but they are rapidly diminishing—to serve as luxury and ornaments in various things. Some of the fashionable stores and curio establishments in Texas cities have large numbers of armadillo baskets on exhibition for the trade, and these baskets are really very attractive and bring a good price. But the onslaught against these animals will undoubtedly exterminate them, as so many other animals of the jungles which for good reasons deserved such a fate more than a helpless armadillo, which, as stated, is usually slaugh-

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tered only for its ornamental utility. This animal per se is a harmless creature, as it has no weapon of defense, its long mouthparts being supplied with flat teeth (molar teeth) and they never, to my knowledge, make an attempt to bite—the snout being very long, and the mouth small. However, it defends itself when possible to do so, with its powerful and long

burrows underground. They have short but exceedingly strong legs, with their powerful claws rapidly dig their underground burrows, or, during danger, to escape the pursuit of hunters, dogs, etc.

The meat of the armadillo is considered eatable, and a delicacy by many, resembling somewhat the meat of bear or of pork. Such at least, I have often heard said by armadillo hunters, especially



AN ARMADILLO BASKET
(Original Photo, From Wm. Appmann's Drug Store Exhibit of Armadillo Baskets)

claws which also serve the animal to dig and bury itself in a very few minutes below the ground.

The external coverings of an armadillo consists of a bony case the frontal broad shield covering and reaching over the front shoulders, and the balance is composed of movable, transverse bony bands and thereby giving the body considerable flexibility and enabling the animal to "roll up" when encountered in its native

Mexicans. These animals generally are nocturnal in their habits and though they feed on insects and roots, they seem to be omnivorous as they eat all sorts of roots and fruits, insects, worms, etc., and some species in various tropical countries devour the semi-putrid flesh of dead cattle, and even it is mentioned in some natural history works, burrowing into human graves. In pre-historic ages, history relates, that

during the tertiary period, parts of Mexico and Texas southward to Patagonia, was inhabited by the "glytodons," an enormous armadillo, as large as a rhinoceros, bony remnants of which have been found abundantly in the bone caves of Brazil.

In some countries the natives roast the armadillo flesh in its shelly surroundings and thus prepared it is considered a great delicacy. Here in Texas, however,

esting letter of inquiry about such traits of the armadillo and also of the ground squirrel.

Some years ago I had published a separate article on this subject stating it would be of general interest to hear from hunters and farmers, of any observances ancient such qualities of the armadillo as well as the ground squirrel, which latter, by the way seems to multiply considerably of late years, and are met with close to



CAPTURED ARMADILLO TRYING TO ESCAPE IN CHAPARRAL—SAN GERONIMO REGIONS

the writer is quite sure the reader would prefer a genuine Mexican tamale for all the roasted armadillo flesh.

Of late date the armadillo, it seems, has come into prominence in connection with the destruction of bird eggs, especially quail eggs, and our friend, Profesoer Peacock, of the Peacock Military Academy, has written the writer an inter-

towns where they can often be seen along the main roads and close to their underground holes.

Some such animals though, are strictly herbivorous, and occasionally, under provoked circumstances or preference become omnivorous, feeding on any substances they can get hold of to sustain life, the same as our prairie rat, snakes, and a number of night-

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marauding animals, as also a few of the featherery tribe, including the chaparral cock, occasionally prey on birds' eggs and other foodstuffs out of the ordinary.

As stated above, the armadillo is mostly an insect and herb feeder, and its native haunt is mostly in secluded rocky regions, in forests and jungle thickets where it lives underground or in caves, and rock cavities, and the writer was witness to several such haunts years ago in the hilly regions of San

five young ones about a week old, which appeared very attractive and resembled so many miniature pigs. When seen by my friend, Mr. A. Haubold, all rapidly retreated into a large and deep underground hole, and a wide trail could be seen along the earth mound the armadillo had prepared in digging the hole, and leading through the dense underbrush among some thickets of mustang grape vines and pecan trees.

It was during a bright moonlight night, some ten years ago,



A CAPTURED ARMADILLO; SAN GERONIMO; CAMP IN REAR

Geronimo in Medina County. There as well as in the rock regions at Helotes, Boerne and other western settlements the armadillo still abounds to-day, but is rapidly diminishing in numbers for reasons stated. During an outing last year (summer of 1910), we came across a large female armadillo on the river bottom, ten miles below San Antonio, with

when several friends and the writer pitched their tent in the midst of an old oak thicket close to a running stream. The camp and the interior of the tent was lighted by a lantern, and whilst the boys were enjoying a game of domino all at once the loud barking of a dog was heard through the cedars of the Geronimo Valley, and about a half hour later we heard the loud

voice of a Mexican, who lived in a Mexican jacal close by our camp, calling "Un armadillo, un armadillo, vengan pronto!" All of us picked up the nearby weapons and hurried to the scene, but before we reached the place where the armadillo had been captured by the dogs the Mexican already was on his way towards us with his trophy, a big and fat armadillo. We had the animal in camp during the night, tied to a strong rope, and we observed with what dexterity the animal makes use of its strong clawed feet. As soon as it had a chance to reach the ground, which was covered with dried leaves of the oak trees, it began to dig a hole with its front feet (one of the boys holding the rope attached to the hind leg) and in a surprisingly short time Mr. armadillo was nearly entirely buried under the leaves and earth.

I here present to my readers, a splendid photograph of this same armadillo, the hunter holding it with a cord tied to its hind leg, and who had a time to keep it from jerking as it was very heavy and lively, and tried its best to escape, which it did two days after the photo was taken by one of my boys. It came about in this way: the Mexican who had captured it with the fine hunting dog, had placed the animal in a large barrel close to the romantic hacienda, at the farm of a near relative of mine, not thinking it had a chance to escape. But on the third night this slick armadillo managed to dig a large hole under the barrel, (which had no board bottom) and away it went during the night, to its old haunts. The view was taken in the rear of an old-time rock fence, and it depicts some of the surrounding country, with part of a forest where our tent was located.

I will now describe the interesting country scene northward along the Bandera Road. The main open road leading to Helotes, eighteen miles northwest of San Antonio,

now has a substantial foundation for traffic, whilst in former years, before the era of good roads building was inaugurated by the Bexar County authorities, this road, as well as all others leading outside the city limits to the mountainous regions, were in a most deplorable condition, and the farmers had considerable difficulty to come to town to dispose of their wagon loads of country products, hay, wood, coal, etc., and it is comparatively easy traveling nowadays to and from the city and country places.

From our nearby West End suburbs, with its attractive modern dwellings and the famous Military Academy and the St. Louis College, and the West End Lake, the Bandera Road is now in good trim and leads the traveler to the Helotes settlement, a thrifty little German farming section, with lovely vales and dense forests of live oak, post oak, cedar, hackberry and various other berry-bearing trees and bushes, and where San Antonians often take an outing or spend a pleasant day at the old "Schuetzen Verein Halle," where the fair sex and sturdy farmers congregate on Saturdays and Sundays and enjoy music and dancing; or they journey to the famous Boegel rooming house and farm; or, during the open hunting season, enjoy hunting and fishing along the picturesque Leona Creek, or ramble along hilly regions, which are just now (May) exceedingly attractive with their ever present and blending prairie flora, and wild berries, etc.

Some of the photos in other pages, were prepared during one of our tours through the Helotes country and further north, depicting some of the picturesque hilly ranges and farms along the Bandera road between Helotes, at the San Geronimo settlements; and other views taken show part of the mountain ranges and cliffs at

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San Geronimo, near the Gallagher cattle ranch and the farm of Mr. Edmund Henderson, a near relative of the writer, the steep precipices containing large excavations, which are overgrown with mountain sage and moss, fern and vines. This wild scenery is very romantic and imposing, and extends for many miles intersected with forest vegetation, sparkling springs, surrounded with forest vegetation, and rivulets, where deer, and in olden times bear and

are met with in more or less profusion. This country is an Eden for botanists, entomologists, and the lover of Nature in general to ramble around and study insect life as well as the rare mountain and forest flora, and there is no end of exceedingly attractive nature objects and landscapes for the camarist.

The vales and mountain ranges and forests interchange as one travels along the Bandera Road up to the famous Hoffman and



SOME OF THE SAN GERONIMO REGIONS—THE HAUNTS OF THE ARMADILLO, ETC.

buffalo and other wild forest animals abounded unmolested and in profusion; and where, among a sea of brilliant wild prairie flowers, rare butterflies and other insects abound, or, in the forest, squirrels, quail, rabbits and other small game are found, as well as along the deep rock precipices, the cliff swallows with myriads of the lively swallows, the melodious "whip-poor-will" and other rare night birds and their nests

the Gallagher Ranches at San Geronimo; and the scenery is grand all along, as shown by some of the views herein of a small portion of that country, and it vividly depicts some of the environments encountered there. Large cultivated fields and picturesque Mexican dwellings are dispersed along this hilly route along the Bandera Road, usually situated among shade trees and shrubbery; and hundreds of goats

and some cattle, owned mostly by the Mexicans, can be seen there.

In these as well as the many similarly situated mountain ranges farther north and around Boerne, Comfort, Waring, Kerrville, etc., the tourist and health-seeker can enjoy to his heart's content the grandeur and kaleidoscopic land sceneries of these regions. And whilst some of them long ago have been supplied with

Our Texas bird family, with the typical Texas nightingale, the mockingbird and whip-poor-will, the red cardinal, scizzor-tail bird and thousands of other bird species, our brilliant wild prairie flowers which Dr. Lindheimer, in New Braunfels half a century ago described and classified so thoroughly; the many peculiar native trees hundreds of years old—mesquite,



THE "BLUE HOLE" OF SAN GERONIMO—A Natural Natatorium, near the old Gallagher Ranch Post Office Station, Bandera Road, northwest of San Antonio; a large, round excavation inside solid rock strata, over ten feet high, with waterfall; an exceedingly romantic scenery, surrounded by forest trees, and once a gathering place for deer, wild turkey and all sorts of forest and mountain animals. It is often used by the weary traveler as a camping and resting place; and outing parties occasionally take a plunge into its asure blue waters, which are said to be nourished by a spring.

comfortable private accomodations for health seekers and outing parties, the time may come when these mountain ranges and picturesque valleys will be converted into strictly modern and as famous health resorts as any on the American continent or those of Europe.

hackberry, cedar, poplar, hickory, persimmon, mustang vines, pecan and walnut, and a large variety of other tree species and fruit-bearing shrubbery—all of these the tourist encounters in his travels through those mountainous portions, or along rivulets, the bottom of forests and on open prairie;

and while many of the remote mountainous regions are still in their primitive state—just about the same as hundreds of years ago, when the Indian, buffalo, panther, bear and other wild animals roamed about and haunted the forests and rocky caverns, it is a noticeable fact that in late years, in consequence of the heavy immigration and the building of railroads, those regions have changed immensely.

After the first German settlers, who had many a desperate encounter in early days with redskins and wild beasts, noticed what immense fertile soil Texas harbors, many of those wild prairie regions were soon converted into blooming fields and gardens, and not better testimony of this high cultured state could be recorded to-day than the thriving, industrious and beautiful towns of Boerne, Comfort, New Braunfels, Fredericksburg, and others.

But the flourishing neighboring towns are not the only ones that justly can be proud of their horticultural achievements. Our own City, at least in its close vicinity, can also boast with no little pride of its flourishing fields and truck gardens.

Where once nothing but a dense wilderness of cacti and underbrush and mesquite existed around our beautiful Alamo City, we now can notice a widespread area of the finest garden products imaginable. All sorts of grain and garden products: corn, maiz, rice, sugar cane, alfalfa, oats, rye, wheat, okra, lettuce, cabbage, spinach, turnips, onions, and also different varieties of fruit trees, melons, pumpkins, cucumbers, potatoes and various other market goods can here be seen in profusion. And not alone during the hot summer months, but even in the midst of the cold winter, these gardens delight the visitor with their diversity of vegetation.

Such is especially also the case

with the truck gardens along the romantic pecan groves south of the San Antonio River up to Medina, and including the United States Observation gardens and the Southwestern Asylum property.

And to our old townsman, F. F. Collins and Mr. Brady the honor is due of being the first who conceived the happy idea of converting a vast cactus and mesquite plain and eyesore into now flourishing and blooming fields and gardens, by aid of modern irrigation facilities. Mr. Collins, indeed, must be a practical gardener to have achieved such a success in such a short time, and his followers also have achieved wonderful results with their irrigated lands. Evidently, there exists an immense subterranean water strata or basin in the surroundings of San Antonio which furnishes such enormous volumes of water daily not alone to San Antonio with its approximate population of over 100,000 inhabitants, but also to supply those and other irrigated fields in the western districts of San Antonio; and these fields also consume immense volumes of the purest water imaginable.

If one visits those fields, along the Leona Road, passing near the Union Slaughter House, it is noticed that the first and so far largest irrigated farm extends beyond or south of the slaughter houses, from the old Pleasanton Road westward, up to the nice villas of Mr. Collins; and near these other ingenious investors also have established irrigated farms, which extend nearly up to the Leona hills, or about six miles in length, and some of the bare lands have just now been successfully supplied with artesian wells.

The entire valley this side and above Leona Creek will some of these days—and in no long distance—be converted into one im-

mense large truck garden to supply our ever increasing market with all the fine garden and field products needed. The black and

light sandy soil is very fertile, is comparatively level, and supplied with inexhaustible subterraneous water.

Near Extinction of Texas Bob Cat

The Wild Cat or "Bob-Cat," "Catamount" is one of those wild jungle animals that has, so far, survived the longest of all the Texas wild cat family of our prairie plains; but they are gradually becoming extinct as the years roll

and cactus jungles, close to the farms and rivulets.

In those olden times, lots of them could be met with during hunting trips, especially in the thickets around Mitchell's Lake and hilly regions close to the city



FACE VIEW OF TEXAS WILD CAT

on, especially near inhabited regions.

In olden days, our Bobcat roamed around the chaparral and hilly regions near San Antonio promiscuously and numerously in the remote plains, forests

but the rapid onmarch of civilization, with aid of modern fire arms and traps, has cleared the jungles and farming districts of most of them. The writer, when a mere boy, had often met a wild-cat close to town and in particu-

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lar, around the old Alazan Creek, in the dense chaparral and along the ravines of the Leona, and also in various other favored jungle districts around our present metropolis.

Being night marauders, these wildcats had done a great deal of harm to poultry and birds; and

ing trip in the jungles, the wildcat, similar to most other wild beasts, hardly ever shows fight direct, unless there may be some interfering hunting dog; when Mr. and Mrs. Bobcat surely will fight. When thus disturbed, or wounded in their lairs, or hemmed in by dogs, the wildcat then be-



PET WILD CAT OWNED BY MR. ED. BEERE

the increased attention of late years to the preservation of game, has caused their extinction around all inhabited places; but the cunning wildcat is still there in various remote districts, and it may be quite a long time before the last of its race is entirely extinguished.

When met with during a hunt-

comes a most ferocious beast—every hair on its body, like a mad boar, bristles with rage, and, like an enraged tiger, it will spring at its foes and claw or bite desperately.

Occasionally in the woods, jungles, caverns and ravines, or a hollow tree, where these animals

breed, the entire cat family are met with, and if the young cubs are removed and properly taken care of, they will, when still very young grow up quite as tame as our domestic cat family, and generally remain so up to ripe old age. However, now and then their inherited wild nature exerts itself, especially if some chicken or some other housepets should venture too close. My friend, Mr. Edward Beere of San Antonio some time ago purchased a very young female bobcat from a farmer, which he reared to its present nearly full grown size, (the photograph herein, which I prepared lately for these sketches, is quite an interesting wildcat study, as it represented one of the same cat, but in different positions). Mr. Beere had built a neat little frame house for his pet, and the first view taken showed the bobtail cat standing on top of the cathouse roof; and a second view presented the cat in a crouching position on a platform and gnawing a large

soupbone. These different positions of the cat are seen on the photo. A large bucket or tub is seen on the photo (in the front rear of the cathouse), and in this tub the cat regularly, every morning, takes a bath, and it is quite a treat to watch the cunning striped cat performing all sorts of antics inside and outside of its bath tub.

Mr. Beere, who is the proprietor of the "Tavern Refreshment Garden" on River Avenue, tells me this wild cat never has caused any trouble in raising it: on one or two occasions however, some of his yard fowls came just a little too close to his earstwhile marauding majesty of the jungles and he chopped off some vital part of the intruders anatomy, once a fine turkey. This happened some time ago, but since this, the wildcat has grown up into the now magnificent and entirely tame specimen, and it is a great pet with many of the visitors to the fine garden grounds of Mr. Beere, opposite the famous old buffalo and elk enclosure on River Avenue.

The Texas Coyote Pest

Prairiewolves—the large "Lobo," as well as the smaller "coyote," in former years roamed promiscuously about the hills and prairie plains near San Antonio, and in fact all over Texas, in large numbers; and whilst their numbers has decreased considerably in the immediate neighborhood, they still abound in smaller groups close to our metropolis and a stray specimen is occasionally met with in a mile or two beyond the city limits now adays.

The large lobo when hungry, will attack and kill a large sheep and goat or a young full grown calf; and in olden days around ranches, where such wolves at-

tacked a bunch of longhorn cattle the latter would immediately gather and form a phalanx in a circular line, with the calves in the center, and defend themselves with their powerful long horns—according to the statements of an old Texas ranchman, who, in those frontier days was always prepared at night time to be called out with his ready gun to help the bellowing herd and ward off the blood-thirsty coyotes. In the midst of a pitch dark night, this ranchman one night suddenly grasped his shotgun and in spite of the dark night he went through all the chaparral and cactus thickets to aid the loudly bellowing cattle which were defending themselves fierce-

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ly against a large pack of prairie-wolves.

These largelobos and the coyote, the old Texan further stated, became so numerous all over Bexar county that a bitter and relentless war was waged throughout Texas to exterminate the wolf pest, and the large lobo wolf was nearly annihilated after many years of continued warfare. And still, later, and even today the lobo wolf is

fowls also were not molested. Venison of all kind, which now was safe against the annihilation of the bloodthirsty lobo and coyote wolves, propagated so rapidly that West Texas was proclaimed as a great hunting paradise; and never before, nor afterward, was venison so abundantly to be had. The wolves were killed either with poison or the trap. The farmers bought strychnine



REAR VIEW OF TEXAS PRAIRIE WOLF

doing its deadly marauding night-work, especially around sheep and cattle ranches. It was also reported by some other reliable authority that in all the coyote history of West Texas never before fewer wolves existed than in the year 1888. At that time a bunch of lambs could be left in all the safety against the wolves, and the

by the pound and this poison generally was carried in a buckskin satchel and properly prepared and distributed.

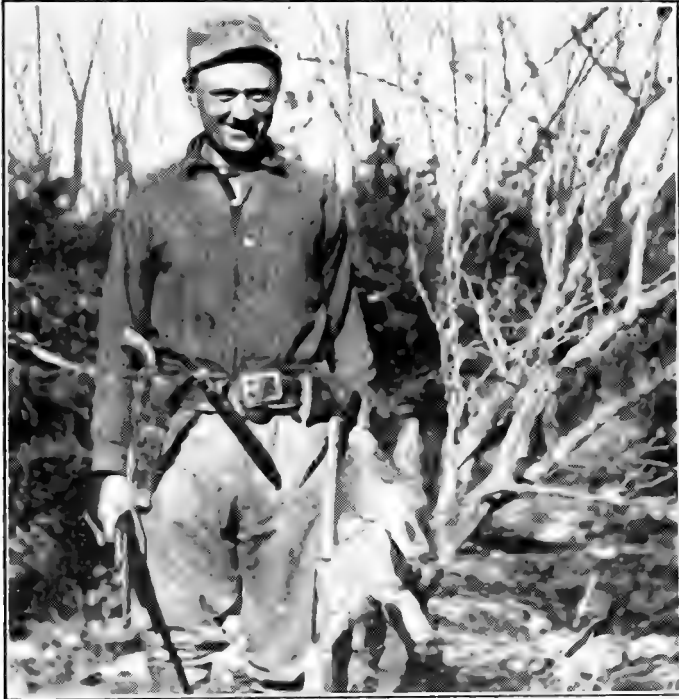
Other wild animals in Texas have decreased so much in the last thirty years that stringent state laws had to be inaugurated in order to protect the little game that is left; and it is a fact that

the coyotes had multiplied during this time so immensely that they not alone became dangerous to sheep and cattle, but were to man.

The lobo wolf is nearly twice as large and decidedly more powerful than the coyote, and resembles somewhat a large shepherd dog. In my younger years, when San Antonio resembled more a small and peaceful Mexican village than our present hustling metropolis in those days lobo

brought one such black wolf to San Antonio on his woodwaon.

The wolf was in a half starved condition, and one of its front legs was fractured, from a steel trap. Its body was nearly jet black and it had a very long shaped head, especially the ears were very long and sharp pointed, and the exceedingly shy animal was about the meanest looking and most repugniant animal one cared to look at long in life. As to



SAN ANTONIO DEER HUNTER WITH COYOTE—JUST KILLED; A TYPICAL HUNTING SCENE IN THE MOUNTAINOUS REGION OF SOUTHWEST TEXAS

wolves were very numerous in the near prairies plains and chaparral, especially also in the hilly regions of the Leona, where we often, in company with elder brothers, had met during an early morning, or at dawn, large packs of lobo wolves, and among these some were of very dark brown and even black color. The latter are now adays nearly all exterminated, but about two years ago, a farmer had

the coyote wolf, the young brood is rather attractive, and they are very playful in their haunts. This I had occasion to witness once some years ago during a hunting trip in company with Dr. R. L. Withers and only three miles west of Military Plaza. Accidentally we came across two small animals playing outside a large and broad hole, on open prairie, close to a pasture, and my friend Withers

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mistook the wolves for two cottontail rabbits—and quickly lifting his gun to his shoulder popped one of the animals down. Great however was our surprise when, instead of a rabbit, two young coyote wolves rolled around that hole! It was quite late in the evening, and the small coyotes were far off and quite well protected by surrounding weeds, and for this reason the animals could not be well discerned, both of us being in doubt, but I advised to pop one down, and when we reached the hole it was noticed that it led to a deep cavern inside the earth,

was getting too late to make such attempt again, and on our way home, we met the two old coyotes near the place the young ones were encountered, but out of gun range.

The nice prairie scene depicted in these pages of a Texas coyote behind some mesquite trees, was kodaked by my friend, Mr. Louis Guessaz, and it is an actual scene "on the spot" when the night marauder was captured with a steel trap. It seems coyotes were becoming very obnoxious around Mr. Guessaz's farm yard, and one bright moonlight night he treated



LARGE COYOTE CAUGHT IN A STEEL TRAP

the old wolf angrily trotting up and down that subterranean cavity. The little wolves looked very neat—like a pair of young brown puppies, of the German "Daxhund" type. They also had long pointed ears, and a long shaped face and snout, with long and pointed ears and a long shaped face and snout with its long and sharp edged teeth. We carried the trophies to the owner of the pasture and great was his joy, but sorry at the same time, that we had not annihilated the whole marauding outfit in that cavity, which we also regretted; but it

them with an extra fine meal, in form of a baited steel trap, and the victim seen depicted on the engraving must have made a mistake, as next morning the coyote was found madly struggling inside the clutches of the trap; and in this position the photoview was taken.

In the "Texas Field and National Guardsman" (February issue, 1913,) appeared an unusual interesting and instructive article on destroying the coyote in Oregon, and I take the liberty to append the entire report herein, as follows:

Destroying the Coyote in Oregon

“Despite the fact that for years every known contrivance has been employed to bring about the destruction of the coyote in Oregon he is still the worst pest that state has to deal with. To his cunning the sheepman and farmers are paying an annual tribute of no less than \$1,000,000. Each of half a dozen neighboring states is paying a tribute. In some cases individual sheep owners are paying as high as \$35,000 a year tribute.

If it were not for the fact that the coyote is the shrewdest and most careful beast that infests the Oregon prairies, he would now be in the class with the American buffalo. But his cleverness has kept him up through a terrible struggle, until today he is almost as serious a pest as he was 10 years ago, before the fight for his destruction was begun. The sheepmen and farmers have struggled against him in every possible way, the state has spent a quarter of a million dollars in bounties; the Federal Government has spent thousands of dollars in devising ways of bringing about his destruction and yet he survives and holds first place in the list of pests.

Until the last year he confined his murderous life to the plains of Eastern and Central Oregon, where he preyed on sheep and barnyard fowl, but now he is spreading out his career over the cascades into the Willamette Valley, where he will be an infinitely more serious pest than he is in Eastern Oregon, at present. The coyote is much like a dog in appearance, but he is much more active. He has a wonderful instinct, which seems to keep him out of the traps, snares, pitfalls and other contrivances set by man. He is always on his guard

and never can be taken without a hard fight. He is a coward when he has a chance to run, but he is a demon when he is cornered and has to put up a fight for his life.

In Eastern Oregon sheep are run in bands of 1500 to 2500 and it is here that the coyote gets in his work of destruction. These bands of sheep are generally herded by one or more men and from one to half a dozen dogs. Frequently a band of from 20 to 100 sheep will get separated from the main herd and wander back out of sight of the herder. If this band of sheep is not brought back to the main herd before night there is absolutely no chance of their surviving until morning. One coyote has been known to kill as many as 75 sheep in one night. He cuts their throats for the lust of killing. He seems to have a mania for murder and so kills the sheep by the dozens merely for the pleasure of the thing. A sheep that is not killed by the coyote outright will die if the animal bites him. This probably is more because of fright than poison, although the poison theory is held by some.

A coyote will have a range of from 25 to 30 miles which he will cover once every twenty-four hours. When a band of sheep comes into his range he gets near by and waits for an opportunity to pick one of the animals and murder it. Sometimes coyotes stay in bands and follow herds of sheep. In such cases they are always on the lookout for a chance to grab one of the flock. Another trick is for the coyote to hide behind clumps of sage brush and wait until a herd of sheep grazes up to him, when he jumps out, kills one or two of the sheep and makes his escape.

The farmer suffers not only from loss of sheep, but also from barnyard fowls, calves, pigs and even colts. Many farmers have lost bands of calves by allowing them to stay out over night. A litter of young pigs is one of the favorite dishes of the coyote. He will creep into a pig pen in the night and kill as many as a dozen pigs in a few minutes. He catches poultry by lying in wait in the brush near a farm house. He has been known to lie crouched up in a clump of brush for hours at a time waiting for a chicken to forage near enough for him to grab it without endangering his own life by getting within gun range of the farmer. The coyote is fond of eggs and is a very sly nest robber.

Sheepmen suffer their greatest loss of sheep in the lambing time, when it is necessary to let the ewes stop on the range while the young lambs are being born, and are getting strong enough to graze with the rest of the herd. It is necessary for the sheep owners to build pens in which to keep ewes and lambs. This more than doubles the expense of lambing and even at that the coyote sometimes get through the fences

and slaughter the entire herd of ewes and lambs. The only safe means is that employed by the most of the large sheep owners is of employing men to surround the lambing pens and keep the coyotes away. Where four men could easily take care of the lambing of a big band of sheep the coyote makes it necessary to employ more.

Dan Smythe, of Smythe Bros., sheep owners of Pendleton, said recently that he estimated the coyote pest to cost his firm \$25,000 a year. This amount includes the value of the sheep which are slaughtered by the pest and the additional cost of protecting the sheep. Mr. Smythe says many

sheepowners pay greater amounts than that each year.

Invades Willamette Valley.

The coyote is rapidly becoming a pest in the Willamette Valley and it is feared that in time to come he will present a very difficult problem for the rural people to solve. Until recently he was not able to cross the Cascade Mountains, because in the stretch of country from Eastern Oregon to the Willamette Valley he could find but little to eat. As the canyons and basins in the mountains have been settled up the food supply for the coyote has been extended, until now it is possible for him to make the entire trip from Eastern Oregon to the Willamette Valley without going hungry. Even in Multnomah County the coyote is now found. At Mount Scott and Gresham, sheepman have lost sheep within the last few months. One farmer recently lost a band of thirty sheep worth \$20 each. This was near Mount Scott.

West of the Cascades the coyote has a big advantage in his favor which, with his cunning, makes him a pest that is almost impossible to destroy. He has the thick underbrush, which affords him a good place to keep out of range of the gunners and dogs. As for traps, he knows how to evade them, and he knows how to avert most of the other contrivances made for his destruction. So with his development in the Willamette Valley he will present a serious problem.

West of the Cascades sheep are not run as they are in Eastern Oregon. Instead of bands of from 500 to 2500, they range in bands of from 25 to 50 and have no herder. This makes them easy prey for the coyote. At present the coyote has cut so much of a figure in the Willamette Valley that it is estimated 50,000 more sheep could be grazed here if he had not

come. These 50,000 sheep would be worth \$500,000.

There are some people who claim that the coyote does good by killing jackrabbits and pestiferous squirrels, but the majority of farmers agree that this good is no comparison with the harm done to the sheep and poultry of the small farmer. Only when other food is scarce will a coyote pick on a jackrabbit, because when the coyote undertakes to round up a rabbit he has at least one hour's good chase before him. A rabbit will sometimes outrun a coyote, and very seldom can he be caught in less than an hour. Sometimes it takes several hours. This sort of subsistence is too vigorous to suit the coyote, and he will select easier prey if there is any chance.

The rabbit is said to have ceased to be a pest everywhere, excepting in the desert districts of Umatilla, Klamath and Crook Counties, and along Willow Creek and other small creeks of Morrow County, and possibly a few others places. In these places the rabbit does damage to alfalfa and grain and garden truck. It is said a coyote can do more damage to a small farmer in 15 minutes than a rabbit can do in an hour.

In recent years sheepmen caused a general uprising against the coyote, and have devised various means of destroying him. Most of these campaigns have been partially successful. None have brought about the destruction of coyotes desired. The most common means of exterminating coyotes is by means of poison, traps, dogs and hunting.

Poison Menace to Dogs

Poison has been a failure because of the fact that as many valuable sheep dogs are killed as coyotes. Usually when a piece of poisoned meat is put out, the best dog on the farm or in the sheep camp goes and gets it, instead of a

coyote. Some sheepmen have been successful in killing hundreds of coyotes, by scientific poisoning processes, but success is rare. In these cases, poison has been placed on spoiled meat, eggs, or prunes. It is said that the poison system has resulted in the death of as many dogs as coyotes.

The coyote is too wise for traps. He has a very keen scent, and is extremely sly and wise. It is said that he has the gray fox beaten for cunning. An example of the failure of traps is recited by Mr. Smythe of Pendleton. He says a man in his neighborhood once dragged the carcass of a horse into the brush and carefully placed traps closely together all around the carcass. The traps were all carefully covered, so that there was no sign of any disorder in the morning the man found that the coyotes had torn the horse's carcass to pieces and cleaned off all the flesh without getting into a single trap. There must have been a large pack of the animals at the scene, and not one disturbed the covering of the traps.

Traps so laid about the body of a sheep that it would seem impossible for a coyote to get near without being caught are averted by the animals, and still the sheep is eaten. It is only occasionally that a coyote will get into a trap. They are caught only when ingenious methods are employed to deaden the scent of the steel jaws of the trap.

It is only in recent years that dogs have been brought into the fight against the coyotes. This method has proven the most successful of all. After much experimenting sheepmen have got the proper kinds of dogs now and they are killing off thousands of coyotes annually. Coyote chasing takes a dog which is swift and savage. The coyote has a system of snapping which puzzles most dogs and unless a dog is trained

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to fight coyotes the coyote generally gets away or has the best of the encounter.

Russian Wolf hounds have been the most successful. These are very speedy and are great fighters. At present the majority of sheepmen and livestock ranches have packs of these dogs trained especially to fight coyotes. Training of an almost technical nature is necessary. In the first place they have to be trained to find the coyotes. Then they must be trained to run them down and lastly to kill them. The sheepman who has a well-trained pack of Russian hounds generally has but little trouble with coyotes. The dogs kill some of the animals and drive the others out of the country to prey on other farmers and sheepmen.

Sturdy Dogs for the Chase

Another good coyote dog is the Russian stag hound. Good dogs are also produced by mixing breeds so as to combine the elements of various classes of dogs for the particular purpose of chasing and killing coyotes. For instance, the greyhound will be crossed with the Russian Wolf or stag hound. This will combine speed and ferocity. A wolfhound may be mixed with bulldog to combine additional ferocity and fighting ability. The fox hound is recognized as a good coyote chaser, but he is not good at killing them.

The main difficulty in fighting with dogs is the hard strain necessary on a chase. The rough ranges and the rush and the heat soon put a pack of dogs out of commission. To avoid tiring out the dogs they are sometimes placed in cages on the backs of wagons and released only when coyote is run down and killed, the dogs are placed back in the cage to rest up for another chase. Sometimes a chase will last an hour or more. The man in charge

of the dogs will watch them through field glasses and as soon as the coyote is caught will hurry to the scene and take the animal's hide.

The Federal Government has hired hunters in the field. They slaughter hundreds of coyotes annually with rifles. Still another means of fighting the pest is to find the whelping grounds and kill the young. There are places in the rough hills which afford good dens for the animals. Here Indians and others make good wages killing young coyotes and selling the pelts for bounty. Coyotes breed rapidly. A female will have from five to 11 whelps each spring. A few coyotes, for that reason, will soon stock up a range on which the coyotes have been exterminated.

The state bounty law, which became effective in 1909, resulted in the slaughter of thousands of coyotes. In less than two years a total of \$137,080 has been paid by the state and county as bounties. Stockmen and sheepmen say that the bounty law has made a very noticeable decrease in the number of coyotes and in the amount of damages. The present law in Oregon is peculiar. The terms are unusually strict the person claiming a bounty being required to turn over to the County Clerk in the county where the coyote is killed the entire pelt, including all the claws. The skin must not be torn or mutilated. The claimant must make affidavit that the animal was killed within the county by the claimant and was not helped or fostered in captivity within six months of the time the bounty is claimed. A bounty of \$1.50 is paid for each pelt.

Neighboring states also have bounty laws but they differ materially from those of Oregon. For that reason there is considerable trouble, sometimes persons killing coyotes in one state, ship-

ping them to another for their bounty, because a higher price is paid. In Idaho the bounty is \$2, in Montana \$2.50 and in Washington \$1. Sheepmen are at present attempting to devise ways and means of making a uniform bounty law in all Western states. The sheepmen are great friends of the

bounty laws. They declare that since the law went into effect the decrease in the number of coyotes has been noticeable. They believe the bounty law will ultimately solve the coyote problem in Eastern Oregon at least. In Western Oregon there is an entirely different situation".

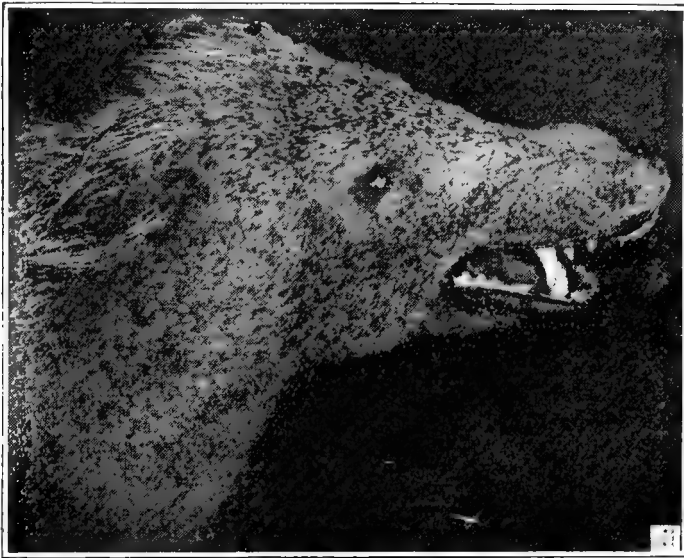
Texas Wild Hogs

In connection with the foregoing reminiscences, a few data may be recalled of the Texas wild hog of olden times—a descendent of the domesticated swine; and also, and in particular, of the Texas javelin hog.

In olden days such pachydermatous mammals as the wild swine

where large areas of land were torn up and undermined with the huge tusks of these wild animals, in search of food.

I recollect in my boyhood days having joined hunting trips, when occasionally groups of wild hogs were encountered and some of them killed by my elderly brothers



TEXAS JAVELIN. (One of L. A. Guessaz' Trophies.)

a "no man's property" roamed about promiscuously in various parts of the Texas prairie jungles and marshy lowlands,—near San Antonio along the pecan and oak forests and river bottoms, as well as in pastures and the thickets of cactus jungles and prairie plains,

and brought to San Antonio, which in those days, was a mere frontier village. As far as I recollect, the hogs were of a grayish-black color and the body covered with woolly hair, interspersed with course and thick bristles along the back. In old specimens

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the huge tusks of the lower jaws gradually curved inward, and, being very sharp and hard as steel they form a formidable weapon in attacking their enemies, or in uprooting the ground in search of food.

With the advancement of civilization, the wild hog gradually was exterminated. But there are still with us—in the remote jungles of various favored jungle districts another class of wild hog: the dreaded Peccary or javelin hog and about which Mr. L. A. Guessaz, at my request kindly furnished me with the following data, of his personal encounters and experiences while hunting the javelin:

“The Texas javelin (which is Spanish and pronounced haveleen) more properly called the Texas peccary, is a native of entire western Texas and Mexico, and differ considerably from the wild swine and the famous fighting wild boar of Europe. They are smaller in size, averaging from about 13 inches to 16 inches in height, while the wild boar will stand as much as three feet at the shoulder, and in general appearance are like small dark colored pigs, well covered with bristles and have a deep fringe of hair at the throat. There are two kinds of peccaries as distinctly identified by naturalists in general—the white lipped peccary and the colored peccary, the former, however, being found only in South America but I will confine these remarks to the latter, which is the true Texas javelin, deriving the title of “colored peccary” from the fact that it bears a white band all the way around the neck, at a point immediately in front of the shoulder. Its entire neck and on down along its entire back is covered with long bristles and it is these that when the javelin is brought at bay, that make him look to be a very formidable foe, for he causes these to stand straight all around

his neck, and those on the top of his back, if anything, lean forward, thereby in appearance increasing his height and circumference some 6 to 8 inches. I have very often met a band of these while still hunting for deer in the mesquite and cactus wilderness of the western counties of Texas, and have generally encountered them along the dry creek beds, or in low places, where the “rooting was good.” The manner in which one is apprised of their presence varies, there were times when I was strolling along in thick brush and cactus unmindful of any thing but deer, when suddenly there would appear within ten feet of me a great dark object, emitting terrible grunts, and snapping of teeth, while beyond in the brush I could hear a rushing, crackling and stampeding noise, which in the course of only a few seconds would evolve itself into a whole bunch of ruffled-up javelins standing stiff-legged and staring at me, all the while imitating the first one, which was the leader of the bunch, usually an old boar, and every blessed one of them discharging the contents of their musk gland which is situated on the back at a point where the hind quarters connect with the backbone. On one occasion I shot this leader which ran off some fifty yards mortally wounded, but instantly another stepped right up to the same position and was in turn shot through to also run a short distance to drop dead, when a third one took the same stand. This time this one was shot through the shoulders and he dropped dead in his tracks, otherwise I firmly believe that another would have taken the same stand had he run like the other two.

A friend who resides in Brewster County, tells me that at one time he and several of his cowboys encountered a large herd of them

in a small canyon and ran them into a shallow cave, the entire bunch disappearing except one that stood at the cave entrance as sentinel. The sentinel was shot down when promptly another took his place. He also was shot down but was replaced by another, and so on, ad infinitum until the whole herd was exterminated.

As to their actually attacking man I know of but one instance when this occurred. A man of the name of Jim Thorne, who was a cow man while engaged in his duties of "riding fence," perceived a bunch of peccaries feeding not distant from the line of fence, among which was a litter of pigs. The desire to have one of these little pigs got the better of his good judgment and off he went. His mount easily overtook the herd and then he dismounted. In the course of the chase he was led to a point about 150 yards from his pony and about 100 yards from the line of fence. He didn't realize this until he got hold of one of the pigs which gave forth a few lusty squeals. But, when he saw the entire herd, with the offended mother in the lead, charging in his direction, his powers of deduction once more became normal and in the next instant he found himself leading a herd of Texas javelins in a race for the fence, for be it noted right here, that there wasn't a shrub in the neighborhood big enough to hold anything heavier than a lizard. At length he found himself perched on one of the fence posts, and later, as the position became tedious and as the herd insisted on "milling" around this particular post for a continued length of time he changed his position to laying lengthwise on the top wire of the fence and remained there for more than an hour, the herd having tarried there for that length of time.

In addition to the above, I take the liberty to append another in-

teresting and graphically written article on a Texas javelin hunt, which appeared in the Texas Field (September, 1913, issue) relating to some Texas hunters hunting javelins near the Nueces River, about forty miles West of Cotulla—a wild and prolific country for these dangerous little wild hogs as well as coyotes and rattlesnakes. The hunters were on a deer hunt in the winter of 1910, on the Nueces River, and how one of the four hunters got lost is graphically narrated by the writer of that article:

"Up to this time, nothing had been heard of John, and when ~~as~~ time went on we did not hear from him, we were beginning to wonder what had happened, when from far off to the north-east we heard two shots in rapid succession, followed by a third, our distress signal. Instantly we knew something out of the ordinary had happened. John knew every inch of the land along the river, and we were certain that he was not lost and trying to summons help to find his way to camp, even though it was two hours past darkness. We held a hasty council and agreed to take a couple of lanterns, saddle the horses and go in the direction of the signal. My brother agreed to remain in camp, while Wess and I went on the hunt for our comrade in distress.

After seeing to our guns, and taking an extra supply of cartridges along, we mounted, and riding north for a few yards, we entered an abandoned trail leading in the general direction of the shots, each of us carrying a lantern on opposite sides of our horses, so that if we passed on either side of him he would see one of the lights and call us to him. We had traveled for perhaps a mile, when we heard the distress signal again off a little to the right of our course, and

putting spurs to our horses, we galloped as fast as darkness and the nature of the ground would safely permit. We had not proceeded far when we again heard the signal, followed by a faint, hoarse cry. What could it mean? John was perfectly able to care for himself under ordinary circumstances, and we were at a loss to account for this evidence of his distress. Wasting no time, however, we traveled for about a half mile before we came upon the unfortunate hunter.

Entering a small clearing just as the moon peeped over the trees to the east, we heard a voice from the other side of the clearing shout a warning in no uncertain tones: "Look out, boys!" cried John's familiar voice, and notwithstanding the situation, we were not able to suppress an exclamation of delight to find him still able to speak "What's the trouble here?" I yelled. "Javelines!" he yelled back. It was still too dark for us to make out the situation clearly, as the moon, from its low position, only filled the clearing with long ghost-like shadows; and after ascertaining that John was in no immediate danger, we decided to wait for the moon to get in a more advantageous position before attempting a rescue.

During our wait, we found out as much of the circumstances of our friend's predicament as possible. It seems as if he was crossing the clearing approaching the thick brush along the swail of the opposite side, when he noticed the form of a huge javeline standing behind some brush, a short distance from the edge, and taking a hasty aim he fired—and was rewarded by a series of squeals from the only slightly wounded javelin, quickly followed by grunts and gnashing of teeth from up and down the ravine. Having previous experi-

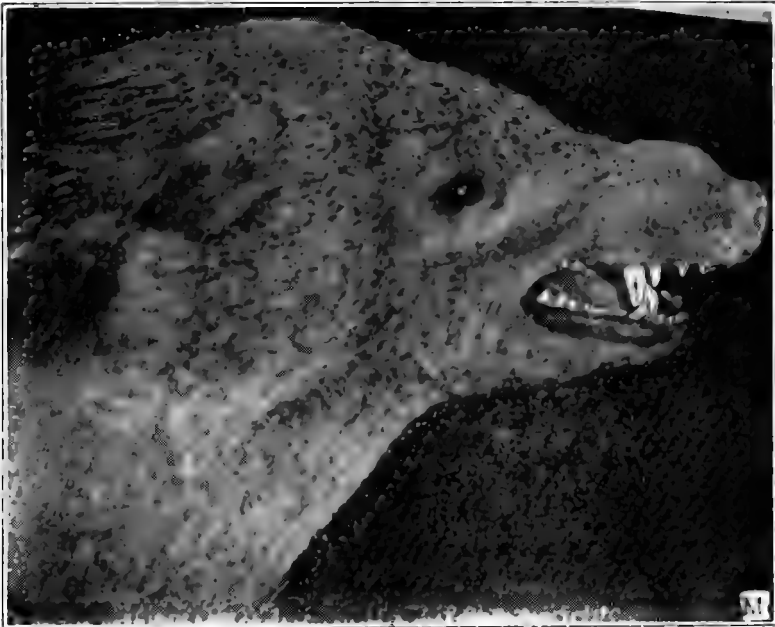
ence with wounded javelines, he did not waste unnecessary time, but immediately made a run for the nearest tree—and that was the reason of his distress—for the tree was only a small mesquite, and not high enough, to take him entirely out of harm's way. The rest of the adventure he told us later, for as the moon was now shining brightly in the clearing, we decided to work a little strategic game on the peccaries, in order to get John down from his uncomfortable perch. The javelines were still standing around under the tree, looking with fierce little beady eyes up at the hunter who had been the cause of the wounding of one of their number, and the subsequent death of several others. Occasionally one of the javelines would leave the rest and go to the brush where the wounded javelin was still emitting occasional squeals—seemingly with the devilish intention of goading his comrades on to the destruction of the man who had wounded him; and he was certainly being rewarded well, for every time he would squeal, the rest of the bunch would renew their attack with new energy, and for a while it looked rather difficult for anything in the way of a rescue, and John had fired all except one of his cartridges, and had succeeded in killing several of them: but when his ammunition gave out the javelines seemed to realize the fact, and stood directly under the tree in which he was confined.

We decided that the only way we could get John down was to coax the javelines away from the tree, and then one of us would ride up and let him get on the horse behind us, and it was finally decided that I should be the one to go to the tree after him. I can't say that I enjoyed the job much, for I knew as well as anybody, the penalty of being

caught among javelins, even on horseback; but something had to be done, and the sooner the better.

In accordance with our plan, Wess rode around on the far side of the clearing, and approached cautiously toward the tree from almost opposite from where I was, and when within about 15 yards of the nearest peccary, he put the spurs to his horse and galloped almost directly into their midst, and then he suddenly wheeled his horse to the right, firing three shots from his automatic pistol as he did so, and succeeded in

result that I came very near going on toward the tree when the horse suddenly stopped, and try as I would, I could not get the beast any nearer to the dead animal than about 20 feet. I knew it was not safe for John to attempt to get the horse that far away; so hastily uncoiling my lariat, I had just succeeded in running a noose in it when the first of the returning peccaries arrived on the scene; but I made a cast at the dead body as my horse started to leave, and, by a lucky chance, the noose tightened around the



ANOTHER VIEW OF A JAVELIN HOG

wounding one of the beasts, and the rest of them immediately gave hot pursuit. Knowing that they would not follow his horse far, I did not lose any time watching, but immediately galloped up under the tree to assist John down when the unexpected happened. One of the javelins which had been shot was lying directly under the tree, and my horse discovered it before I did, with the

body, and, giving the rope a half-hitch around the saddle horn, I settled down in the saddle for the impact when the slack was all taken up, and I didn't have long to wait, for the horse, thoroughly frightened, was leaving the clearing in record breaking style, and I think the dead javelin must have been jerked about half-way across the clearing the first jump. The javelins luckily did

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not pursue me far, and I dismounted and took the rope from the ill-smelling little beast, and returned to where Wess was waiting for me. We worked the same plan over again; with the result this time that I got my horse under the tree, and John jumping quickly down, without even waiting to pick up his gun, which he had thrown down upon our arrival, vaulted upon my horse with me, and then the fun began! (?). The horse I was riding had not been broken to carry double and no sooner had he struck, than with a snort and an arching of the back the infernal beast tried with a vim to unseat us both. Things were certainly getting bad, when the same thing that got us in the trouble got us out, namely, the javelins. One of the little savage devils coming back from the pursuit of Wess' horse, saw the horse there, and apparently did not wait for an invitation to join in the fun, but came right in with a right good will. The first intimation I had of his presence was to hear him snap his teeth directly behind the madly pitching horse—and the next thing I knew he had slashed the horse's right hind leg with his razor-like teeth. Well, if the situation had not been so serious, it would have been funny no doubt to have seen how quickly the horse's objection to our presence on his back changed to the javeline's on his hind leg! With a blood-curdling scream of brute terror that was

half human, the horse did not wait for the second attack, but immediately started on a wild run back in the direction we had come from. This piece of blind luck was lucky, indeed, for us, for the horse was absolutely unmanageable, and it was not until we neared the camp, and John risking broken bones and pear thorns, jumped down as we were nearing the camp, and I then succeeded in quieting the bleeding horse enough to get him headed more slowly toward our camp.

It was now well past midnight, but we would not let John retire until he had recounted his adventure at length to us. It seems as if the leader of the javelines was a evry large boar, and this particular javelin was making things interesting for John by making leaps straight up in the air to try to slash him with his teeth, and it was not until he had fired four shots at him did he succeed in killing him on account of the uncertain shooting in the semi-darkness. One thing John was puzzled over, was where this leader of the band was when he first shot the one in the brush, as he did not appear upon the scene for over an hour after he had been treed. Usually, the leader of the band is the first one upon the job; but we decided he was wandering about with some of the others in search of some food. We agreed that there must have been at least 35 of the peccaries in that bunch and a visit to the spot the next day showed seven of them dead.



Some Outing and Other Reminiscences of Bygone Days

In traveling along the fine macadam touring route leading to the famous Terrell Wells Health Resort, and passing further south, along picturesque farms, country sceneries and hilly regions, one comes to a

they involuntarily remind us of Indian villages in the days of Custer, only that, instead of being made of buffalo skins, the roofs are covered with modern tin sheets; and these small huts are seen scattered all around



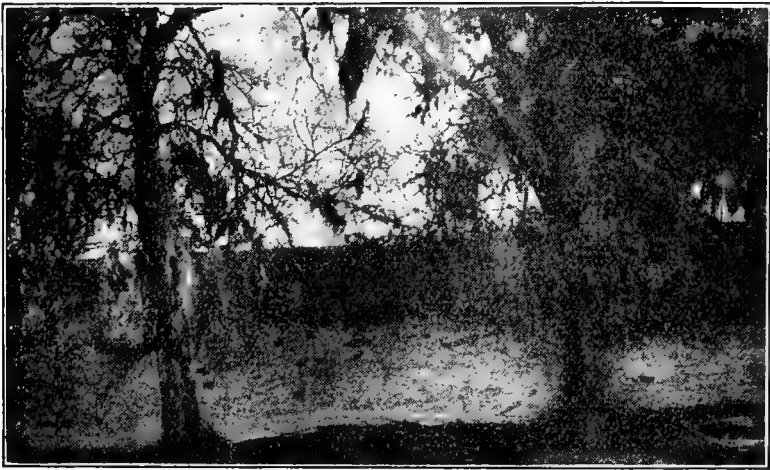
TIN ROOF HUT OF MEXICAN LABORERS IN JUNGLE AROUND MITCHELL'S LAKE

quite recently wire-fenced enclosure of a swampy Tule lake, which is just now, in April, 1910, surrounded by numbers of queer and picturesque Mexican huts, which the Mexican laborers had built for the purpose of dwelling there during the clearing of the jungles and converting the land into fertile fields, and their appearance is so unique that

the brush. They are very practically arranged, and are easily removable from one region of the cleared brush and mesquite trees to other points of the wild pastures there. This fenced-up swamp extends on both sides of the road, with a fine new water tank on the western side of the road, and is a separate walled-up portion of the Southwestern outlet

of the interesting Mitchell's Lake, or "Laguna de los Patos," in Mexican, on which numbers of the lively and always chattering water hens, and in winter millions of black birds congregate. Also in the adjoining fields we find them, and occasionally swarms of teal and other ducks can be seen swimming around on the water places, and seeking their food; or at noon time, bunches of water hens gather on the water spaces between the jungles and along the top of the embankments; or they roost on

hunter to pop down some of the overflying ducks (in most cases as lost game, as the dense tule was mostly impregnable to enter with a boat). Of late years, however, seemingly caused by a severe winter frost, nearly all of the tule has been annihilated, and the greater part of the lake is now barren of tule, with but a few places for a blind. The accompanying photo view (which the writer prepared years ago from the platform of one of these blinds) shows how the lake at that time was cov-



AN OLD-TIME SCENERY OF MITCHELL'S LAKE (BY THE WRITER) WITH WATERHEN ON THE LAKE)

the lower branches of the brush and small trees, close to the water's edge.

Traveling still further south, and up a hill, a sign is met: "Mitchell's Lake Hunting Club," and here a driveway leads to the residence of the custodian of the Mitchell Lake hunting grounds, Mr. Ed. Keilman, and to the main club house, facing the large lake with its tule jungles.

In former years this lake was covered all around and inside with man-high swampreed or tule, and duck hunting was immensely enjoyed, as the high reeds afforded shelter to the

ered with these tule jungles, with hunters in boat inside the border of the dense tule on an open space where the ducks prefer to congregate. Further westward the view shows part of the opposite farm land, which is studded with huge oak and hackberry trees along the edges of the lake. It is here that years ago, a hunting and outing party and myself encountered a beautiful water hen nest, close to the boarder brush and tule, and having my camera at hand, the enclosed photograph of same was taken at noontide. The nest was first found by my

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son-in-law, Wm. R. Hoffmann, and we had a time of it to keep the lively young water hen (only a few days old) on the nest in order to take this view. The little fellow was later tenderly taken care of by one of the ladies present. The nest had thirteen eggs of white and light brownish-red and slightly speckled color and they were snugly enclosed in the nice rotund nest which the old water hen had prepared entirely of particles of tule. Another photo-

environments and the myriads of wasps' nests and bats which fed there on the millions of big mosquitoes). These wasps' nests decorated every inch of the inner roof; and a noteworthy coincidence it is that the wasps very rarely attacked the hunters. The wasps' nests were of the "muddauber" variety, which the pesky insects prepare by gathering soft particles of mud—often miles away—to build the peculiar mud mounds with the many-funneled chambers, in



WATERHEN TULE NEST WITH EGGS AND YOUNG HEN, AT MITCHELL'S LAKE HUNTING PRESERVE

graph herein shows a number of the lively old water hens on an open space of Mitchell's Lake, and I prepared the view a week after the nest photo from an elevation at the open window of one of the old boat houses at the southeast end of the lake (now removed long since). These old boat houses were, in themselves, at the time of their existence, a very interesting phenomenon (on account of the picturesque lake

which the female wasp deposits one egg. After the egg is deposited the wasp plasters all these "incubating chambers" hermetically with soft clay until during the pupa state and further metamorphosis of the young developing wasp, the latter, at maturity, carves a hole through the top of the covered canal, and escapes into the world, and at once begins to help the balance of the nest builders to prepare additional

chambers, and after to lay her eggs therein, and thus perpetuate their kind, like all other beings of similar nature.

One of the most pesky and, at times, annoying insects of a different species, is the fearful hornet wasp and the yellow jacket wasp. These wasps in olden times, and even now, are very numerous around Mitchell's Lake; but, like the "mud-dauber" wasp, they wouldn't molest anyone, if left alone. Nests of the hornet wasp as large as the circumference of a bucket could occasionally be encountered, mostly in old oak trees, where they have most shelter, and large black swarms of them, like myriads of bees, could be seen working incessantly on their nests.

The breeding and developmental cycle of these wasps is very interesting and entirely the same as the described species of "mud wasps," only that the material they use in preparing their neat basket-shaped and rotund nests consists entirely of vegetable pulp tissue and fibrous tissue, which the wasps gather from plants along the margin of the lake, and gnaw into little pellets with their powerful mandibles, and transform into the delicate but very firm and paper-like tissue nests, using a coarser material of fibrous tissue for the base parts of the nest, and a white, transparent tissue layer for the upper cell compartments. The photo herein, prepared some years ago at Mitchell's Lake, shows the cubic arrangements of the cell segments, as well as some of the pesky insects at work in preparing and increasing their nest. This view of my photo collections of vituperous Texas insects shows not alone the various cell segments of these in-

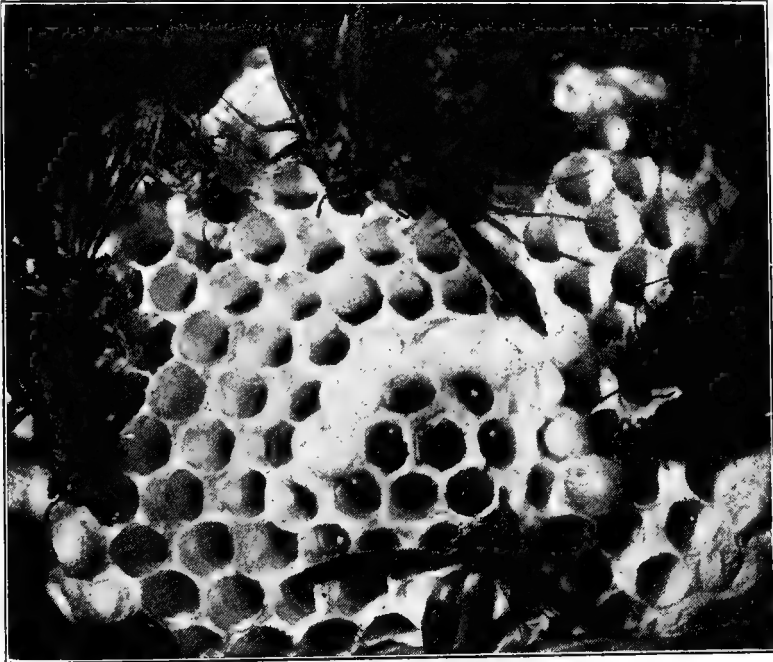
dustrious paper nest builders, but also in some of the upper cells the small white egg; and the other cells around these show the cell opening partly sealed up with a rotund and white membrane, prepared also of vegetable fibrous tissue, whilst still others are only partially covered. Each cell compartment is prepared with marvelous dexterity and mathematical precision, one cell interwoven into the other, and each cell segment is over an inch deep, just large enough and spacious enough to comfortably house its developing host. Verily, this is wonderful! Just think of the time and ingenuity human hands or some machinery would require to prepare such a compact and accurate cell nest of vegetable fibres as this one the photo represents from nature!

During outings and hunting trips one often encounters various types of our Texas prairie wasps, and among these the "tarantula-killing wasp." There exist several varieties, one being a slender and lengthy, yellowish-brown wasp, which hunts up all the crevices and holes on the prairies where it abounds, and noticing a tarantula spider, it will at once enter the spider's haunts and extricate it, generally after a lengthy battle, in which the wasp usually is victorious. It then removes its victim with its powerful mandibles to its underground breeding place, which the wasp digs with its front feet and mandibles, usually in a secluded sandy place, and which I have myself seen done along the hills and fishing places of San Geronimo.

In connection herewith I may mention, by the way, the experience of my friend, Dr. W. L. Bringhurst, of the San Antonio High School, who is a close observer and brilliant

teacher on Texas natural history objects, had mentioned during a discourse on the Texas tarantula some years ago before the local Scientific Society, in which the Doctor told his hearers of his experience in fishing a tarantula out of a deer hole: simply by attaching some insect to the string, and letting this bait slowly down into the hole. The spider will soon grab and hold the insect, and by slowly

crevices and holes and then attacking and removing their victims. But there are two or three particular types—large and powerful wasps—which are supplied with a deadly stinger, and they attack suddenly and plunge their venom dagger in the abdomen of the victim and kill him in a short time. As is quite well known, the venom and venom inoculation apparatus is situated at the proximal



HORNET WASP NEST (MITCHELL'S LAKE)

pulling the string upward the tarantula can be disposed of at leisure. Try it once.

As a rule all wasp species destroy and prey on spiders as a means of a food supply for themselves, and during breeding time for the young wasp brood and the larval wasps. Even the smallest variety of wasps—those often seen flying along stone and wooden walls—seek the haunts of spiders and other insects by crawling into

end part of the wasp's abdomen, and only a short, sharp and slightly curved stinger or inoculation dagger protrudes at the insect's abdomen and is retracted in its inactive condition; but during the stinging act it is repeatedly and in quick succession elongated and penetrates like a dagger into the victim's anatomy. When considered how infinitely small—the thickness of a horse hair—the sting of these and other poisonous insects is,

it can be conceived what an infinitesimal small quantity of venom is injected during the stinging act, and how powerfully venomous this minimal poison secretion acts upon the system. There are instances on record where animals, and even persons, being repeatedly stung by wasps or bees, have succumbed, though this is a very rare occurrence, and I have just read in the daily dispatches of the San Antonio Express how a person was attacked by a swarm of bees and had a very narrow escape from being stung to death; this dispatch reading:

tracting the passage to the lungs, almost closing it entirely, and for several minutes he gasped for breath. A physician was hurriedly summoned, but before he arrived Gouger had revived. His companions say that at one time it looked like his breath was completely shut off for several seconds."

The photomicrograph herein shows the venom bladder and the sharp and curved sting (of horny consistency and sharper than a needle) of a dissected bee's stinging apparatus plainly, and which corresponds in its anatomy precisely with the stinging apparatus of the wasp. When plunged



A BEE'S ABDOMEN, SHOWING ITS POISON BLADDER AND DUCT, AND THE TWO STING IMPLEMENTS

"Cotulla, Tex., April 28.—The cutting of a bee tree on the Nueces two miles above town yesterday came near resulting fatally to Roland A. Gouger, a well known business man of this place.

"A party numbering about ten went to the place with the intention of sawing the tree down and getting the honey. Before the tree was felled the bees swarmed forth and literally covered Gouger, stinging him many times about the head. The poison made him deathly sick and had the effect of con-

into the tissues during the stinging act, the outer sharp and dagger-like stinger sometimes breaks off at the base part joint and remains in the tissues of the skin and causes intense pain, until removed. Both these stinging tools are hollow inside, and the groove serves the venom to quickly filter into the sting wound. Identically the same anatomical arrangement exists in the sting implements of the hornet and tarantula killing wasp, and all other genera of wasps (compare the venom bladder and stinger of hornet on page 6, third row, last objects, of the miniature

photo; also, a tarantula killing variety on same page, second row, first object).

Our great Lone Star State, and especially Western Texas, has a large number of outing and attractive hunting places, and a few of the many nature-sceneries and hunting grounds in the vicinity of San Antonio may find place here, conjointly with some of the other articles herein. Some of these berry and various shrubbery and outing and hunting places are interestingly at variance as to soil formation and plant and animal life.

The valley and hilly regions between San Antonio and the Leona up to the more mountainous and more romantic regions, west of San Antonio are entirely different from the latter as to the soil and plant life, which, from San Antonio up to the hilly regions of Helotes, sixteen miles northwest, varies a great deal from the mountainous regions in its prairie flora and its immense area of mesquite and partly cactus jungles and forests of live-oak, post oak, hackberry and various shrubbery and prairie trees, including, along the rivulets and bottomland, the pecan tree the mustang grape, the walnut tree, etc., whilst from the Helotes settlement up to Gallagher's ranch, Bandera, Waring, Kerrville, Fredricksburg and New Braunfels the vegetation in the hilly regions there, with the imposing and high cedar trees and other forest vegetation and rocky soil and clifflike rock formations and caverns, differs a great deal from our flat land around San Antonio.

Some of the photo views herein show this difference in soil and environment, especially a photograph I had prepared some time ago during a visit to a relative at the San Geronimo regions. The country there, some twenty-seven miles north-west of San Antonio is exceedingly picturesque,

reminding one of European touring places in Switzerland, Baden-Baden and Thuringia. The famous Gallagher cattle ranch at Geronimo also has some very fine nature sceneries along the rivulets and clifflike and high rock formations, with the dense cedar breaks and other mountain vegetation. At some places fish, especially trout and bass and large perch can be pulled out as quick as the line drops in the water, especially along the rock spaces of the creeks. On the farm of Mr. E. Henderson, Sr., San Geronimo, we find the clifflike rock formations, with caves and cavities for wild animals, and on the lower rock wall the cliff-swallows had prepared their funnel-shaped nests of mud. Myriads of these swallows congregate year after year along these huge rock precipices and re-occupy the old mud nests or build new ones, and it is a most fascinating sight to behold how eagerly they work at their nests and feed their young brood.

At the Leona hills, west of San Antonio, the hills are of different appearance. In olden days they abounded with large game, such as deer, an occasional panther and other wild animals of the jungles; also the wild turkey. Of late years only rarely some deer and, of the animals of prey, only an occasional wildcat, some coyotes, a lobo wolf or a squirrel, possum or coon; plenty of quail and wild doves and rabbits; and in winter, some wild ducks on the creeks and banks, the chaparral cock and the ever present, but now nearly exterminated rattlesnake are met with, the latter mostly in the dense cactus jungles, which harbor prairie rats and mice in the peculiarly arranged and interesting ratnests, which are composed of gathered and accumulated, piled up (often in high mounds, like beaver huts) wood particles, manure and remnants of cacti; and they

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communicate throughout the chaparral and cactus jungles with rat trails leading from one rat nest to the other. Often these places are the haunts of the rattlesnake, polecat, possum, huge spiders, etc.

In olden times kingsnipes were encountered very numerous near such creeks and prairie plains described and throughout the level prairie land of the Leona valley; also northwest of San Antonio. One early morning, in company with a friend, the late C. Seabough,

cities at night time and make a fearful racket with their loud screeching voices. When a mere boy, and in company with my older brothers, and a great friend of outdoor life at that time, these curlews abounded in large flocks after heavy rains, and it was a great sight to notice hundreds of them feeding on open prairie near the Leona, or along the stagnating water pools between the mesquite brush, and to note the fearful screaming noise they



A TEXAS CURLEW OR KINGSNIPE; PRAIRIE SCENERY, LEONA VALLEY. (Original View)

at the time reporter of the Express staff, we met hundreds of curlews; also as many, and even more, of the plover snipe in this neighborhood and valley further north of the present Beacon Hill suburbs, which at that time was all barren prairie land. These large snipes are great and reliable weather prophets, and it is known to observant hunters and cowboys and farmers as well, that whenever, in spring or fall, heavy rains are anticipated, these curlews migrate in large flocks over the land and

made after one of their flock had been wounded. Again and again they would come flying in a circle above and around some wounded comrade, with a shrill and loud peeping voice; then was the chance to pop some more of them down—that is, if you happened to be a good shot. In those days none of the modern improved, quick-loading and quick-shooting breech-guns were in existence and often before one had reloaded his gun, these keen-eyed king-snipes made their escape to other pasturing

places. Often had I watched these long billed and graceful snipes, how they fed with their long bills. This had to be done very carefully and unseen, as the least noise of approach would scare them, as well as hundreds of plover a long distance further off; and at various occasions I noticed them pulling a long and wriggling earthworm out of their under-ground holes. With their keen eyes they would walk around the waterpools or some soft ground, at wet places, where earthworm-holes, enclosing the large variety of earthworm existed; and in these they inserted

snails, minnows, young crawfish and frogs abound, though I had no occasion ever to have seen them feed on the latter.

Curlew hunting nowadays is a rare and tedious affair around San Antonio. The quiet old hunting grounds of the good olden days, abounding with game, are now nearly all converted into cultivated land, and Mister Curlew seeks his haunts in the marshy regions along the coast. Then also, during the late many years, our prairies had not the rain supply, as was the case in the olden times. Where now the enterprising and



MISSION "SAN JUAN," NEAR BERG'S MILL, SOUTH OF SAN ANTONIO, FIFTY YEARS AGO;
(FROM NATURE BY H. LUNGKWITZ)

their long and slightly curved bill, to grab the worm and extricate it. These snipes have a curved, knob-like protuberance at the end of their bill, and with this they dig the ground for worms and also larval beetles and insects. The same ingenuity is exercised by others of the snipe family, in particular the jack-snipe, and of which the Mitchel Lake and Blue Wing Lake preserve hunters and others undoubtedly are aware. For these reasons snipe prefer to be in marshy watering places, where worms, insects and larvae.

flourishing Collin's farm is situated, in olden times these grounds up to the Leona hills, were one open prairie, and each year, especially in spring, rains fell in torrential masses and made the roads often impassable for even a hunter on horseback, as experienced by the writer in olden times. Old time teamsters, with six and eight mules attached to their freight wagons, had a time of it to get along the old Castroville road up to the Leona or to Castroville; and often wagons and Mexican carretas with burros were seen

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bogged deeply in the black and tough soil or mud, sometimes for days and weeks. In those days, however, such game as plover, curlews, wild sand-cranes, ducks and geese abounded all over the western prairie plains, and it was a pleasure, though generally combined with great hardship, to go hunting; who in those days, (when game was so plentiful, lead and powder were scarce and one had to load and reload his gun not manufactured cartridges,) would have thought of shooting a single dove or shoot three or six times; nay, like often nowadays, ten to a hundred shots durnig a day's hunt, at wild fowls to bring home two or three thus killed. Hunters in those olden days were well trained to shoot, to get the game; and seldom was game missed or crippled. They were trained like soldiers to handle their gun carefully and for sheer economical necessity—not to shoot "holes in the air" like is practiced nowadays by some of our good friends and "shoot-away-shells" nimrods! Then also a gun was to be handled very carefully on account of the method of loading. When once loaded the caps had to be removed when not in use, or to be more sure of accident, the whole load had to be extricated with a so-called "screw-driver ramrod," when the gun was to be set aside at home. What a difference now in loading a gun and quickly emptying it of its deadly shells—thanks to the genius of our inventive modern gun makers.

But I am tresspassing my original intention—to write about olden time conditions and hunting grounds around San Antonio. I will continue the latter for another chapter and only include herein some old time recollections of San Antonio. In those days no skyscrapers adorned the then quaint old Spanish-Mexican frontier town "San Antonio de

Bexar," as it is often remembered, nor was anything known of asphalted streets or electric lights and street cars, or automobiles, telephones, waterworks, sanitary sewerage systems and other modern commodities. And still the inhabitants were quite contented with what they possessed. The houses in those days were mostly all built of soft rock or "adobe," and several of these houses are to be seen here today: the old Seffel's blacksmith shop, Hartmann's saloon building and others on the corner of Crockett street and Alamo Plaza, and in various other districts of our good old Alamo City.

In social circles, the old Casino on market street, a great entertaining center, especially of the German element was what now is Beethoven Hall, and Turner Hall, the Herman Sons Home, the Chamber of Commerce and many other modern clubhouses; and it was frequented by the military staff on Government Hill. The German-English school on South Alamo street and also St. Mary's College were the main educational institutions of old San Antonio. Among some of the prominent citizens, men who have helped the old town along to bring it up to its modern metropolitan standard, these men among many others too numerous to mention here were, as far as I can recollect: Thielepape (first German Mayor of San Antonio.).

Dr. F. Herff, the oldest veteran physician of Texas, August Nette, Julius Behrens, Wm A. and Simon N. Menger, A. Nette, G. Duerler, Kampmann, Maverick, Towig, Stumberg, Dauenhauer, Frasch, Frost, Schuetze, Wurzbach, Seffel, Russy, Biehl, La Coste, Cosgrove, Bro. Charles, Sullivan, Runge, Dr. Hertzberg, Stein, Deussen, Fries, Boelhauwe, Stumberg, Boettler, Appmann, Judge Devine, Noonan, Paschal, Haubold, Hensel, Calsen, Moeller, Mueller, Braubach, Deu-

sen, Rossy, Dosch, (the crack shot, and with Neumann, the founder of the first Schuetzen-Verein in San Antonio, with headquarters near the Ohnesorge residence in the eastern suburbs of the city, on Powderhouse Hill) Charles Hummel, A. Wagner, F. Rummel, Guenther, Mauermann, J. Tengg, Neumann, C. Degen, Biesen back, Huth, Santleben, Geo. Brackenridge, Wm. Schuwirth, Hass & Oppenheimer, Zork, Moye, Schleicher, Tobin, James Clavin, Kalteyer, Dr. Cupples, Dr. Schloeman, Persch, Staffel, Lungwitz, Beckmann, Baetz, Briam, Lockwood, Col. Withers, Dwyer, French, Grice, Siemering, Hanshke, Riotte, Pentenrieder, Groos, Staake, Callaghan, Gilbeau, Grenet, Charles C. Kleine, John Wickeland, Frazer, Dreiss, Alex. Sartor, Hoerner, Rosenheimer, C. Barnes, Shook, Steves, O. C. Guessaz and many others more or less olden time citizens.

During that time also, Mr. Lungwitz prepared his memorable drawing sketches of old "San Antonio de Bexar." And whilst these drawings, including eight separate sceneries around San Antonio are of great historic interest and true to nature to a fault, nowadays the art of photoreproducing nature objects, even in natural colors, of course is more practical, less tedious, more advanced, and more exact. But the drawings of our late townsman, H. Lungwitz will remain for all times a masterpiece of San Antonio's best artist in that line at the time and a photocopy of one of the drawings representing San Antonio in olden times is seen elsewhere in this book; and I also append herein an original photocopy of one of the locally and historically interesting drawings of Mr. Lungwitz, representing the ancient Missions, "San Juan" near the river and close to the old Berg's Mills bridge, on the South touring loop of San Antonio. It

is a very interesting little picture of olden day sceneries around our Alamo City—some fifty years or more years ago, showing the Mission San Juan and adjoining mission walls quite as intact as they are seen there today, also, some Mexican corrals enclosing the small Mexican huts; some cattle roaming about, or at rest under the shade of a huge pecan tree; and to the rear of the old Mission are seen the high pecan and other forest trees, along the San Antonio river.

I had photoreproduced all eight of the Lungwitz's drawings of unusually interesting sceneries near San Antonio; for some illustrated magazines and this one is included in these reminiscences for reason of having mentioned same, conjointly with the Mission Espada, in other articles on nature observations around San Antonio.

All our suburban places, as well as close-in parts of the city, with the many palatial residences of today, were in those days covered with mesquite brush and other chaparral. Alamo Plaza, now a beautiful park, was then a barren place, with stagnating water pools and high weeds all around and along the sidewalks; and this was also the case more or less with Main and Military Plazas and Franklin Square. Where now the imposing Market-hall stands, on Milam square, this place was covered with rankest high weeds and ravines and surrounded with the quaint old Mexican jakals and some chile stands. And San Pedro creek, now so narrow as to nearly walk over it in most places, was a broad stream, broader in most places than our present riverbed; and it was studded all along from San Pedro Springs park, where the lake was covered at its edges with tulle down to its communication with the San Antonio river, with man-high reeds, or tulle, and with wide open places

at various places where we boys, living close to this creek, caught eels and catfish weighing over thirty pounds and shot ducks close to the Salinas street bridge. There was a fine broad, open bathing pool with crystal clear water, the "Huisache," which was covered all around with tule, north and close to the old Menger Soap Factory, where we boys, including my old friend, the Honorable John H. James (now Justice of the Supreme Court of Appeals), Bob

Marks, Inselmann, Fries, Fred Russy, Santleben and a number of other citizens took an occasional swim in that pool during the summer months. Look how that creek appears today! But then, whilst those good old days have passed, we are now more comfortably supplied with fine artesian water, and with swimming pools in our own houses; advancements of mankind between now and fifty years ago of old "San Antonio de Bexar!"

Some Hunting and Fishing Reminiscences

In its near vicinity, our old historic Alamo City has a number of fine outing, fishing and hunting places, notably the San Antonio River and the Salado River bottoms with its inviting forest trees, such as the pecan and walnut, the willow and the box elder, the live oak and the post oak, the poplar and the huisasche, mustang grape vines, and various berry-bearing shrubbery; the ancient and attractive Spanish missions, which today yet, though partly crumbled, remain as massive and imposing as when they were built hundreds of years ago and delight the tourist; the salado, Leone, Almos, Cibolo and Medina creek valleys, with their attractive forests and mesquite plains, cultivated fields and divers nature sceneries; the lovely "head of the river," with its unexcelled forests and park, sparkling springs, panoramic villas, brilliant flowers and wild plants in general; the Graytown lake, and Blue Wing lake, southwest of San Antonio, a modern and up-to-date outing preserve which is expected to soon become one of the most favored and foremost hunting and fishing places in the entire Southwest, by reason of its romantic location and excellent duck hunting. The lake has been stocked

lately with a good many thousand young fry.

In the good old days, before railroads, automobiles and all other modern conveniences including the modern rapid fire repeating guns, the old hunting grounds about San Antonio were full of all sort of game, including deer, bear, turkey geese and ducks, curlew, plover and all sort of other small game, and a favorite hunting place of the writer were the Leone Hills, Mitchell's Lake and Graytown, some 21 miles southeast of San Antonio. The latter place was at that time but sparingly settled and the duck shooting season was immensely enjoyed at the large tule-grown lake there; also wild turkeys and deer and all sorts of wild animals were numerous there. I recollect a trip I made with the late Adolph Dreiss and Mr. Fritze when I bagged my first wild turkey, a twenty-two pounder (when weighed at home). This happened at a time—some 32 years ago—when also the large migratory pigeons were there in the oak forests by the millions; I remember seeing the ground under these oak trees literally covered with acorns and the hulls of same, together with broken branches. The shooting of this

turkey was quite an episode. My friends Dreiss and Fritze were sitting on the front seat of an ambulance whilst we were driving through the quiet but most imposing forest of oak and pecan trees toward evening one day.

when about thirty yards off in an open space of a brush thicket I perceived about ten wild turkeys including two fine gobblers. As soon as I saw them I told the driver to stop the horses, and "bang," down came one of the biggest gob-



OUR WINTER CAMP UNDER A LARGE OAK TREE WITH A TURKEY AND SOME RABBITS HANGING ON IT

While the two gentlemen had their guns stored underneath their feet, I had my old "reliable" ready for action, in case we should meet some game. Hardly had we entered the shades of the forest

lers in the group. But my friends were not at all pleased that I was in such a hurry to shoot and I received some rather uncomplimentary "Hail Columbia" for the act; but all was soon serene again

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as I promised to give them the next chance,—even if the speedy turkeys were a mile off. Later we camped under a huge oak tree when this turkey, some ducks and rabbits were hung up, a big camp-fire made, some game fried and a cup of hot coffee was enjoyed immensely after our trip and a bitter cold night.

Of late years a combination of gun hunting and camera shooting has become a very fascinating and instructive pastime during inter-

of hired Mexicans, and other causes; but later on, during December, up to March, ducks were much more numerous and a great many of them were bagged.

During this time I prepared several of the so-called "pull-the-string" photographs, which are also seen reproduced herein. These views come in very handy when one wishes to appear on the view himself—for instance, in the view next page which I prepared after some of my neighbors'



OLD HUNTING GROUNDS AT THE LRONA HILLS, WEST OF SAN ANTONIO. (Original Photo)

vals of legal hunting. At Mitchell's Lake in particular a great field presents itself for the amateur photographer and kodakist. A good many of the illustrations seen in these sketches and others have become life-time reminiscences of past hunting trips.

The beginning of last winter's hunting season was not very encouraging at Mitchell's Lake, mostly on account of the clearing of the adjoining pastures by hordes

game had been arranged at the hunting grounds on a dry tree trunk. It was a very cold winter day, but the sun was shining brightly when the "self-view" was taken, the photo showing the string which had been attached to the shutter mechanism of the camera to regulate the exposure.

Whilst this view was taken, two of my friends and hunting companions were seen returning from a successful mornings' shoot-

ing on the lake and they were rowing up to the bank in their small boat which was quite filled with game, and they halted in front of a large tree close to the edge of Mitchell's Lake. Being anxious to prepare a good view and hunting scene of that lake with its jungles of tules in the rear I had some of their game brought to the shore where it was adjusted to the branches of the

As to other hunting and fishing places, Colonel Oscar C. Guessaz, chief editor of Texas Field, etc., in his vast experiences as an old Texas hunter and unexcelled writer on Texas game, publishes the following memoranda. Herewith are a few excerpts from "Where to Hunt and Fish."

FISHING

"At Rockport one can engage the



PREPARING A "SELF-MADE" PHOTOGRAPH AT MITCHELL'S LAKE; WINTER, 1910

tree and the result is the view herewith which is a typical hunting scene along the interesting lake during winter time where millions of the small black birds and swarms of ducks and water fowls congregate and make a deafening noise during the bombardment of the many hunters, or during their intervals of flight from one end of the lake to the other, or down to the coast.

services of several ex-market hunters who are now guides for sportsmen. Sea-worthy boats capable of carrying 10 people, can be had at from \$5.00 to \$17.00 per day. If you want something to drink take it from San Antonio, as Rockport is a dry town.

Tarpon: The best tarpon waters are those of Aransas Pass. Go to Rockport, Texas, and you will be sent across the bay to Tarpon, on

Mustang Island, where you will find a splendid hotel in the Tarpon Inn, kept by Mrs. Carter and her son. There you will find the best tarpon fishing in the world and may have a go at Spanish mackerel and blue fish in season, to say nothing about the everlasting sport on trout and red fish.

Corpus Christi, Port Lavaca, in fact anywhere on the Gulf Coast,

from there in a day the stage will take you 60 miles overland and put you in the very best bass country in the world. This beautiful river whose waters are as clear as crystal, flows through pecan bottoms for many miles and in the bends and rapids of this stream can be found everything that delights the angler's heart. Great beds of water cress adorn the banks of the river



ANOTHER "PULL-THE-STRING" VIEW OF MITCHELL'S LAKE TROPHIES BY THE WRITER; WINTER 1911

the ambitious angler will find his favorite sport in the line of salt water fishing.

For black bass, channel catfish, sun perch, etc., no waters in the world can beat our Western Texas streams. The best of them all, however, is the Johnson Fork of the Llano River, which joins the main stream at Junction City, in Kimble County. Take the train at San Antonio to Kerville and

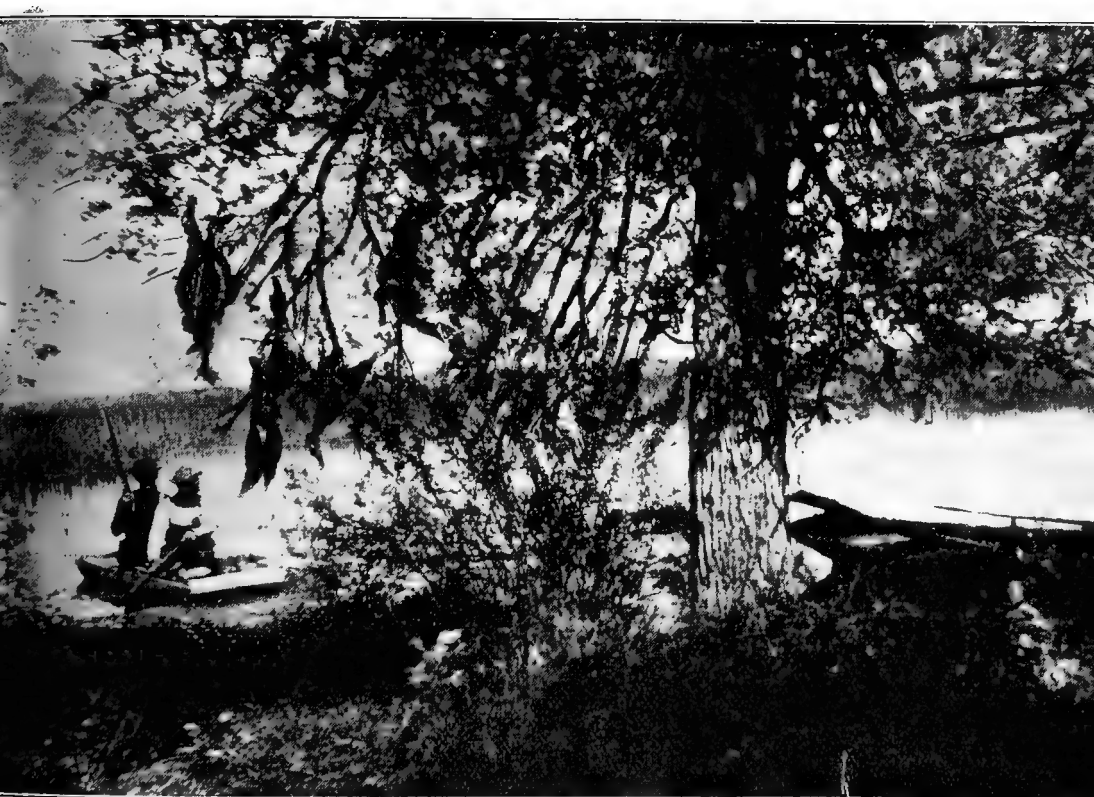
at every bend a luxuriant growth of wild mint will be found a welcome ornament to the country today, to say nothing about the flavor. This stream has everything necessary for the successful brewing of a mint julep save the whiskey, which article of luxury can be easily carried by the astute fisherman.

In the winter season a painstaking hunter can find splendid

sport following the meanderings of the beautiful Guadalupe River, which flows from Kerrville, 72 miles northwest of San Antonio, down to Comfort, where good accommodations can be found. He can follow the river down to Waring, Wellfare and on down to Boerne, taking either the railroad of the San Antonio and Aransas Pass train. Many sportsmen like this kind of hunting as one

lards and teal; a squirrel, turkey and rabbits on the same hunt. To be sure, it is not the same kind of hunting one finds on the coast, but for a good tramp, under the shade of trees and a picturesque stream, the Guadalupe hunt can't be beat.

At Rockport one can hire any kind of a boat he desires, and a cruise to the mouth of the San Antonio River, at which is what is



WINTER SCENERY WITH HUNTERS ON MITCHELL'S LAKE, BY THE WRITER, 1899

often bags a brace of mallards at points where they like to feed; generally the rapids where grow water cress and other water plants, besides the food that may be floating down the stream. Then at the bends of the river which is densely weeded, the hunter often flushes a covey of quail, or may come across a squirrel or turkey. Many times the hunter has bagged mal-

called Hines Bay, will result in splendid bags of canvasbacks and redheads. A letter to Texas Field will elicit full information as to where to go and to whom to apply for boats, or any other information.

BEARS, WOLVES AND MOUNTAIN LION

For this game the hunter must go to Marfa or Alpine, on the Southern Pacific Railway and at those points outfits can be secured fit for

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a strenuous tramp to the Chisos Mountains, 100 miles away. There bear can be found in reasonable quantities, but mountain lions and wolves are in abundance, as well as black-tailed deer, which grow to an enormous size, often weighing 250 pounds.

Del Rio is a very good place from which to organize a bear and panther hunt. This charming city, is 120 miles from San Antonio, on the Southern Pacific Railway.

DEER AND TURKEY

In the Helotes Mountains that lie generally northwest of San Antonio and within 18 miles of that city, good deer shooting can be had from November until January each year.

Pearsall, Cotulla, Asherton and Encinal stations, on the International and Great Northern Railway are good points from which the best deer shooting can be had.

Hondo, Sabinal, Kline and Spoford Junction, on the Southern Pacific, west, are also excellent points for deer, and can be reached from San Antonio in a few hours' run from that city.

QUAIL AND RABBITS

Probably no other region in the world offers the splendid field shooting that is still to be found in Southwest Texas. The limit on quail is 25 birds per day per man, and the sport to be had is second to none in the world. There are so many good places for quail that it is impossible for us to enumerate them all in this short article, but you can make no mistake in coming straight to San Antonio where choice can be made from over 200 good points where the hunter can find good cover, plenty of water and birds enough to enable a good shot to kill his limit in two hours.

BASS FISHING

Just one day's ride from San Antonio by automobile the angler can reach the dream of the fisherman's life; a beautiful, rushing, cold water stream, the South Fork

of the Llano River, running mostly through rock bottom, with borders of wild mint, water cress, elephant ears, ferns of all kinds, picturesque caverns, impolluted by the hand of the vandal, and shaded by trees, hackberries, elms and cottonwoods. There the greatest fish hog in the world can glut himself with all kinds of fish, which, together with the ever-present squirrel offers an inducement that is as charming as it is rare. This glorious spot can also be reached by taking the San Antonio and Aransas Pass train at 4 p. m. each day, arriving at the charming city of Kerrville at 7:00 the same evening, where the fisherman will find good hotels where he can abide the night. The following morning he can take the stage and arrive at the fishing place at 7 p. m., after one of the most charming and picturesque rides imaginable."

As to deer hunting in olden times, whilst good numbers of deer still abound in the old hunting grounds of Western Texas to-day, they, like the other large game, will gradually be exterminated in the inhabited regions. Large herds of them could often be seen in olden days around Leon Springs, Boerne and Comfort and all the other mountainous regions—just like the herds of tame deer seen to-day in our beautiful Brackenridge Park. The lovely vales and hills around Boerne in former years always were a prolific rambling place for the hunter, the old sturdy settlers, mostly German farmers, being dependent upon their prowess in killing game for a living. There were no game laws in those days, nay, not until just a few years ago, maybe six or eight, were there any game laws enacted. Neither were there any "game hogs," which came later, to shoot and kill whatever they came across. When a mere boy, and living with my parents on a farm near Boerne, one of our neighbors—Anton

Bergman—was the champion hunter at Boerne in those days, about fifty-two years ago. Whenever he went for deer or turkey there was something doing, and each time a deer fell to his unerring aim. Then the loud sound of a horn could be heard echoing along the hills and throughout the quaint old settlement of Boerne. He always carried a hunter's horn with him and often three or four bugling sounds in succession were heard which meant three or four deer, and when in distress or in want of more pack mules he would

some good hunting dogs with them, and some of the finest hunting hounds I ever went on a preserve with were owned by Mr. Walton at the old ranch of Mr. Bart de Witt, some twelve miles below San Antonio.

The jungles around San Antonio in olden times—even those suburban places now occupied by palatial homes in the near suburban districts were the haunts of wild animals and reptiles which later on, retreated to more remote and secure places and there killed and annihilated completely later.



A LARGE LYNX DEVOURING SOME WATER-FOWL; KILLED BY MR. L. TOUDOUSE AT MITCHELL'S LAKE, MANY YEARS AGO. (Photo by the Writer, 1892)

keep the bugling up for some time until additional help came to him. Wild turkey also, in those days, were as numerous around Boerne as quail and doves around San Antonio to-day. But the onward march of civilization has gradually exterminated a whole lot of game and spoiled the romance of the good olden days, never to appear again. Mr. Bergman, and others of my acquaintance in those days, especially the late veteran Texas deer hunter, Captain Dosch, had

An occasional deer, coyote or lobo wolf or a wild cat is even now yet but very rarely seen in the jungles around the Leona and other outside brush thickets, but the dense cactus jungles and brushy hills, especially around Losoya and Mitchell's Lake in olden times abounded with all sorts of large and small wild animals, and it is there where some fifty years ago an old Texas naturalist and hunter, the late Leon Toudouse, a taxidermist of national fame, killed

great numbers of wild beasts and prepared their hides and finally exhibited them in his private home museum at Losoya, in the same position encountered in nature. I still have a number of photos of the Toudouse collection of Texas wild animals and one of these is reproduced in this magazine. It is that of a lynx which Mr. Toudouse had killed along the brush thickets and the shore of the old Mitchell's Lake. In those days

prised this lynx whilst devouring its prey. He and his son were hunting for game along the lake when, toward evening, they heard some commotion in a brush thicket and there, in the midst of same, they saw a lynx with the neck part of a spoonbill in its mouth which had been torn off the body. The lynx, alert to a delicate sense, as is the nature of the cat family, upon perceiving the intruder, glared fiercely with its fear-inspiring eyes



A COZY FISHING PLACE ALONG SAN ANTONIO RIVER FOREST BOTTOM, WITH RAMPANT GRAPE AND IVY VINES, TWELVE MILES BELOW CITY. (Original Photo)

lots of wild animals prowled around that lake at night in search of prey along the dense tule jungles and underbrush. Mr. Toudouse killed this lynx toward evening whilst it was in the act of devouring a large waterfowl of the red spoon bill variety—now extinct, according to Hornaday.

I recollect to-day yet how Mr. Toudouse told me the way he sur-

tried to make its escape, but a quick rifle shot put an end to its marauding career.

As to touring, hunting and fishing places around San Antonio in general, we are now entirely safe from wild beasts anywhere, though an occasional "bob cat" or lobo wolf, or a rattlesnake or moccasin may be met with in remote districts; but it is exceedingly sel-

dom that fatalities from the latter occur. The average traveler or hunter being nowadays better informed as to the haunts and habits of such animals and of the emergency appliances in case of accidental injury, and as may be found in previous articles on the scientific treatment of snakebites, etc., in this book issue.

San Antonio's environments and

mous consumption of subterranean and other causes, and also the adjoining Salado Creek, the Leona, Guadalupe and Medina Rivers, besides other streams were swarming with the finny tribe, and big fellows at that. Catfish, bass and eels of enormous size were caught to the heart's content, and the old San Pedro Creek in olden days was full of them. I recollect when



BOAT FISHING ALONG THE BEAUTIFUL FOREST BOTTOMS OF THE SALADO CREEK, EAST OF SAN ANTONIO; ONCE, AND IN SOME PLACES YET, A GREAT FISHING PLACE FOR EEL, CATFISH, TROUT, ETC. (An Old Photoview by the Writer)

the Texas rivulets in general, especially the coast regions, have always been great fishing resorts for outing parties and lovers of the rod and reel. In olden times the San Antonio River and the San Pedro Creek—both now nearly gone dry by reason of the enorm-

living near the creek some forty years ago, how a Mexican had to help me pull out a catfish of about forty pounds which was caught in one of the large open tule places the Salinas Street bridge, called the "Huisatche Hole," a favorite bathing place for boys in those

happy days. At the present time one has to go quite a distance for real good fishing, but the trains and automobiles bring us in a short time to the beautiful forest bottoms of the Guadalupe or to the Medina and other fishing places of renown. Eel fishing in olden times was especially enjoyed by the younger people, and most of our rivulets contained

live at New Braunfels can get all the eels he wishes at any time asked for. An eel is considered delicious eating when properly prepared.

As stated, eel fishing, to be successful, is always done at night time, and usually with the aid of a lantern, as the pathways along the fording places are often difficult to find at night, and the lan-



AN EEL HEAD (ABOVE) AND A MOCCASIN'S HEAD (FOR COMPARISON)

more or less of them, and it affords much sport in pulling an eel out of its watery element. They are generally and nearly exclusively caught at night time and with preference during rainy days, when they are very lively seeking their food. The Guadalupe and Medina rivers are quite full of them and a friend of mine whose parents

tern also serves to help in baiting the hooks and keeping a lookout for water snakes and various night prowling animals along the creek or river banks. An interesting event it is when an eel is caught, as the eel is one of the most powerful of fish species, considering its usual size of only two or three feet, and it takes a very strong

pole and a strong line and hook to land him safely. There is no other fish of its size that has that peculiar jerking power and "pulling away of the line" as an eel, and it takes all the exertion of both hands to pull an eel out of its watery element. Any fisherman of experience will corroborate this.

Eels are often caught at night on a trot line or a common fish line staked to some secure low branch of a tree or along the bank, and occasionally a large string of all sorts of fish, perch, catfish, trout, bass, buffalo and others are caught on such trot lines at one setting during the night, especially during cloudy or rainy weather, when fish in general are more lively in search of food.

The usual size of the Texas eel is about two or three feet, but some exceptionally large specimens, from five to six feet long are occasionally caught in some of the Texas rivers. The specimens seen depicted from nature in this issue were caught by Wm. Hoffman's brother at the latter's home in New Braunfels in the Guadalupe River, where eel and a great variety of other fish abound. Where water cress and other plants are plentiful eels prefer to congregate in search of crawfish, insects and their larvae, and small fish. The large earthworm, however, is the best bait for eel, also liver is good, and the writer caught the last one with some old cheese.

In viewing the interesting photos herein of a large eel's mouth parts (one of which was artificially spread open) a large number of small and sharp teeth are seen along the front and side parts of the lower jaw. These are the grab teeth and serve the animal for capturing and masticating its food, and woe unto any one getting his finger accidentally into the mouth of a live eel!

The head and entire body, its absence of fins and its enormous flexibility and slippery appearance makes the eel resemble closely the

body of a snake. However, the eel is void of scales, and its head parts though resembling a snake's head, have different anatomical arrangements, and it differs in its uniform rounded head and neck, its short and broad tongue, grab teeth and eyes, which are much larger than the optics of a snake, as seen in the engraving.

For comparison I have added a water moccasin's head below the eel's head (also a side view) showing the wide differences in the broad outlines of the head and jaw; bones, the scales and both poison fangs.

This reptile is the genuine cotton-mouth moccasin, a dangerous snake, often confounded with other harmless water snakes, but rarely met with now days. The genuine moccasin is more of a land snake out it lurks close to the water's edge or is met with suspended on a branch overhanging the water. It is a smaller but broader snake than the common black or dark brown water snakes oftener encountered in remote fishing places, the latter snakes being void of poison fangs.

The writer has, in other articles often called attention to the difference between a genuine moccasin and the other variety of river snakes. Around inhabited places the genuine moccasin is very seldom seen; some of the other variety, however, resembles it in some respects and it is therefore of course always advisable to exterminate them, and these, as well as the rattlesnake, have been exterminated extensively in late years with the rapid onward march of civilization along the rivulets of Texas.

A common harmless snake would have shown the close resemblance of an eel's head more readily in our illustration, and this moccasin's head parts were added merely as an interesting contrast for the eel's head parts.

For the reason of this resemb-

lance to a snake eels are abhorrent to some persons; but an eel's flesh if properly cooked, is as fine a dish as any other fish meat. Some people fry or bake the meat after the eel is skinned. The best way to prepare them, however, is by putting the entire eel first in salt or ashes and thereby easily removing the slimy coat entirely. Then the eel is laid in vinegar for many hours, and then thoroughly cooked with the addition of laurel leaves, pepper, salt, cloves and celery. When thus prepared with some lemon juice on top, it is a delicious meal, also when converted into jelly.

Eels were held in great esteem by the Greeks and Romans, and enormous prices were some times paid for them; by the Egyptians, on the other hand, they were held in abhorrence. Their snake-like appearance has had much to do with the prejudice entertained by many people against eels, and to this may be attributed the fact that in Scotland this valuable fish is almost wholly rejected as an article of food. Their value in this respect has, however, been recognized in England from very early times.

Eels are very largely consumed in London, the greater proportion of them, numbering about 10,000,000, being brought alive annually from Holland in walled boats.

The greatest eel breeding establishment in the world is that at Commachio, on the Adriatic, where an immense swamp has been utilized for this purpose. The industry is very ancient, having yielded in the Sixteenth Century an annual revenue of 12,000 pounds to the Roman Pontiffs.

Formerly it was believed by naturalists that the eel was a viviporous animal; later observations, however, shows that the eel lays its eggs similar to other fish species. The spawn is generally deposited at some shallow place near the water's edge in sandy soil where, in time, the small

worm-like eels are hatched out; and in some regions where they abound more than here, they swarm by the millions against the stream and creep over any obstacles encountered in their migratory drives after crawling over obstacles during their migration (according to reliable observation) some twenty-four feet above the water's surface to reach the water ahead.

During winter eels lie huddled together like so many snakes, and similar to such reptiles, in sandy soil or muddy excavations and in a dormant condition until, during spring time, they awaken and are then very voracious for food and thus easier to catch. In their dormant state the natives of some countries know exactly where such eels are located, when the eels are easily captured with special spears—often by the hundreds—and brought to market. In our Texas climate the eel is often caught also during the winter, unless it be a very severe cold one.

One of the most interesting eel species is the so-called electric eel, belonging to an especial family of eels, and encountered in the marshes of Brazil, where they are abhorred and encountered with terror, owing to their peculiar electrical apparatus these eels conceal and discharge along each side of the lower portion of the tail. They are eaten by the Indians of Brazil, who generally kill them by driving a herd of horses into the marshes and thereby exhausting the eel's electric shocks, when also some horses are killed by these eels. Humboldt, in his travels had first described these eels, and I translate the following from Dr. H. Klencke's German works: "Alexander von Humboldt's *Leben und Wirken Reisen und Wissen; ein Biographisches Denkmal.*"

"In the near vicinity of Calabozo, Brazil, electric eels are very numerous, in stagnant waters as well as in the inlets of the Orinoco.

They possess the peculiarity to convey electric shocks when touched and will kill fish as well as they become dangerous to animals and man. Humboldt and Bonplant intended to make experiments in the huts of the natives, but, owing to the exaggerated fear of the latter of the electric shock of these eels, it was impossible for three days to get one single specimen. At last they succeeded in getting one living but very much exhausted

a large cavallada of wild horses and jacks succeeded in forcing this cavallada into the stagnant swamp, Humboldt and his friend could conceive the practicability of the Indians 'fishing with horses.' The stamping and alarm of wild horses and jacks brought the eels out of their mud holes and swampy haunts and irritated them to attack the animals. They swam under and on the surface of the muddy water and forced them-



INDIANS CATCHING EEL WITH WILD HORSES
(Photo Reproduced by Writer from Klencke's Works)

specimen which, however, gave very unsatisfactory results. Humboldt therefore, concluded to take the risk and hunt such eels. In company with his companion, Bouplant, he induced several native Indians to visit a swampy enclosure or tank near the village of Rastro d'Abaxo, which was surrounded with huge trees and fragrant flowers. The Indians at once concluded to catch the eels with horses and only after the leader of

selves under the belly of the horses and jacks. An unusual sight now began. The Indians, all provided with harpoons and long, thin bamboo canes and spears, surrounded the swampy enclosure, and some ascended a nearby tree, the branches of which hung over the water's surface. With wild, loud voices and gesticulations and dancing around, with the use of their long weapons, they hindered the animals from com-

ing ashore. The electric eels were now perfectly aroused and scared from the tremendous noise of the stampeding animals and the yelling and dancing of the Indians, but they defended themselves by discharging their electric batteries and it seemed for a while they would hold the ground. Some of the horses however, succumbed to the severe electric shocks adminis-

two of the horses were drowned, and Humboldt thought that all the horses used for this novel fishing would finally succumb, but gradually the even struggle for existence and supremacy ceased, and the electric eels dispersed.

"The eels, the Indians explained, need a long rest now and abundant nourishment to gain strength again, which had been lost by



FISHING ALONG THE ROMANTIC SAN ANTONIO RIVER BELOW BERG'S MILL

tered to them against their bellies and sank under the water. Others, wild with fear, snorting terribly, stood up and tried to escape, but the Indians managed always to drive them back into the eel pond and it was seldom that a horse escaped the eagle-eye and dexterity of the Indians and made his escapéd. Some of the animals that had escape trembled with fear and pain and threw themselves on the sandy soil.

"During the first five minutes

unloading their electric organs. The Indians also declared that if the animals are driven two days in succession into the swampy eel pond not one would succumb after the second day as they became immune against the shocks."

The near environments of San Antonio up to the Guadalupe and Medina rivers can boast of some romantic fishing and general outing places, such as are herein vividly depicted.

The above scenic view of a fish-

ing party was taken by the writer some years ago, some ten miles south of San Antonio, near a large irrigated field and Cassin's Lake, to the west. There are a number of exceedingly attractive and picturesque river bottom scenes near the above place. From the old renowned Berg's Mill fishing places, with it's historic Mission San Juan to the east of the river down to the ancient and picturesque Mission Espada. For the amateur kodakist there is hardly any better field in Texas. In olden times the old Medina River bottoms were a very prolific field for sportimen, and the writer recollects the many fine



"ALLIGATOR HOLLOW" MAGNIFICENT SCENERY
ALONG THE MEDINA RIVER

ducks, geese, curlew, turkey and squirrels and an occasional deer and wild hog my companions and I had killed some forty-five years ago, and the large strings of fish that were caught in the pellucid Medina River.

The elegant views herein, of a few of the thousands of picturesque fishing places along the Medina—these about 40 miles northwest of San Antonio—were taken by members of an outing party. One scene is of especial interes and depicts some of the huge precipices along the Medina, extending for miles and miles along its banks. It represents what is called the "Alligator Hollow," a very large and cave-like

excavation inside the steep rock walls seen on view above, and beyond is the picnic party gathered on top of the huge rock piles facing the River.

The wild scenery along these rock precipices, with their many caves and mountain vegetation is indescribably picturesque, and one must go see these places to appreciate them fully.

The two other views show some of the outing party in a small boat close to a huge rock along the river, and close to the romantic bank of the Medina with its high cypress trees, walnut, pecan, elder, poplar, mustang grape vines, cedar trees, fern plants and brilliant flowers. It is here, some ten miles north of the gigantic Medina Dam project, that the writer lately had a most enjoyable outing and ate in one day more fine fish than in a long time in San Antonio, when we were the guests of a relative who had pitched his camp for a few weeks outing. He had an up-to-date camping outfit with a fine tent, hammock, cooking outfit, hunting and fishing paraphernalia, besides all other comforts of a modern camp, under a large liveoak tree on a high embankment overlooking the magnificent Medina River scenery all about.

At the above mentioned outing places lovers of nature and sport will be amply repaid for a day or more of recreation, and they will feel like the country people living in their humble but contented ways.

And, as I stood there, the guests of my friend in his camp, I felt like owning a nice little home there myself, and thought of the inspiring poetry of Marvin C. Jenkins, who, at such a moment so marvelously depicts our own feelings in the following verses:

"What would ye give for a home
like mine,
Cozily nestling 'neath the pines?
'Tis humble, I know, but, for all
of that,

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I would not change for your city
flat.

Ah! look in the glass at your poor
worn face,

And come with me to my country
place,

Among the beasts and the birds to
live—

Ah! Slaves of the Dollar, what
would you give?

“What would you give to come
with us,

Away from the noises and city
fuss—

In our log cabin among the
trees—

Among the birds and the hum-
ming bees?

Beautiful Nature! **this** is the
place

Where man meets his Maker,
face to face.

His work you will find here on
every hand,

Come! abide with me in this
wonderful land.

“What would you give to be with
me .

In the brook, with the water up
to my knee,

With rod and reel, as I cast
about?—

Ah! what would you give to see
the trout?

As he plunges and leaps, his
freedom to gain,

Your hot blood goes rushing
through every vein.

Ah! men in your office, who
plot and scheme,

Come fishing with me in the
silvery stream.

“What would you give to see the
fun,

As I go forth with my dog and
gun?—

Returning soon with a full
game-bag,

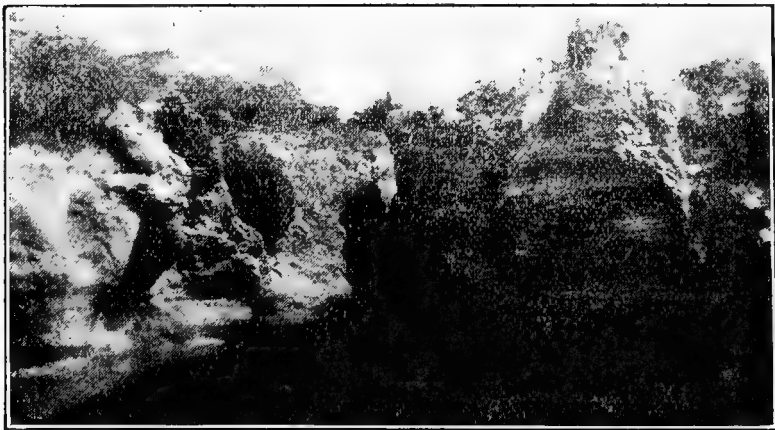
Pleasant change from your
city drag,

Where you forfeit your soul for
the greed of wealth,

And you and your children are
broken in health.

Ah! come with me to the woods
and hills

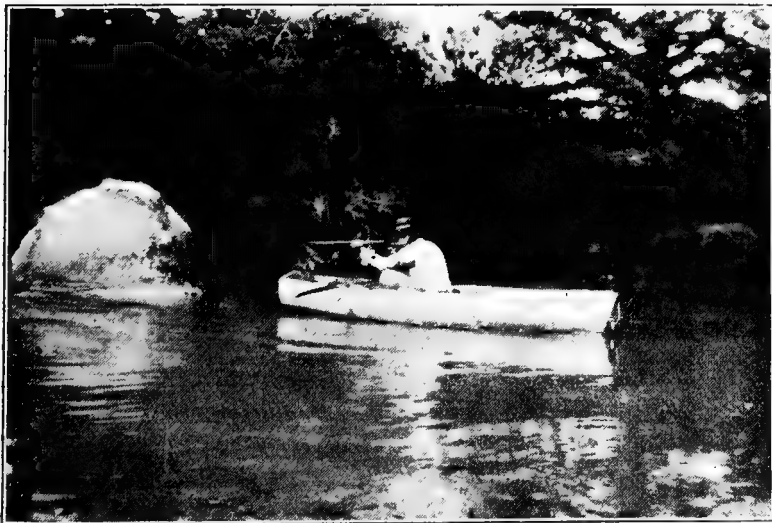
Where we know no pains, or
aches, or ills.”



HIGH ROCK PRECIPICES ALONG THE MEDINA RIVER, NORTHWEST OF SAS ANTONIO

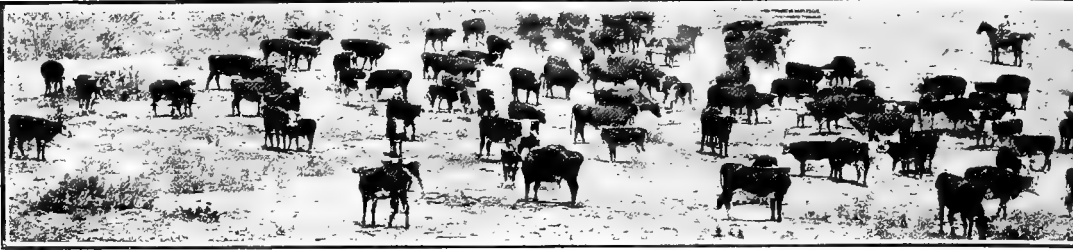


BEAUTIFUL SCENERY ALONG THE MEDINA RIVER, 40 MILES NORTHWEST OF SAN ANTONIO



FISHING ON THE MEDINA RIVER

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FINE CATTLE RANCH SCENERY NEAR SAN ANTONIO. (Courtesy of the Texas Stockman and Farmer)



FARM SCENERY AT SAN GERONIMO, NEAR BANDERA ROAD, NORTHWEST OF SAN ANTONIO. (Original Photo)

During a late trip to the Medina river in July 1911, we came across some of the highest rocky embankments we had seen yet in that wild romantic country, and some of the photographs herein give a clear idea how they look; one especially show-

forests and surrounding mountains, and it is here (photo page 230) I am told, in the neighborhood of Pipe's Creek, entering the Medina River, that last year three ladies drowned accidentally, not being aware of the deep and dangerous places



SAN ANTONIO OUTING PARTY ALONG THE ROMANTIC MEDINA RIVER, "FOURTEEN MILES SOUTHWEST OF SAN ANTONIO."

ing the huge rockwalls about thirty or more feet above the Medina river with large crevices and two of the touring party are seen sitting on top of the high cliffs overlooking the romantic Indian river valley,

they waded in to bathe," and met their death. In olden days these romantic regions were the haunts of an extinct race—the Indians, and hardly a more ideal place, with lots of wild game and fish

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can be imagined for Indians to live at; the immense rock precipices and caves and crevices having offered shelter to the Indians as well as the wild beasts—now also more or less extinct. Near to our camp lives an old experienced trapper who has in late years cleared these regions of all sorts of wild animals as well as dangerous reptiles, and he made some good money by his trade—the prepared skins of the wild cat, panther, fox, opossum, civetcat, armadillo, coon,

ands of them covered the immense and and partly rotund cavern and high precipices of the huge rock walls, and the photograph shows this elegantly, besides the immense rock walls, caverns and caves and and some of the outing party sitting and standing inside the arch of these huge rock caverns and beneath the masses of swallow nests. That was a tumultuous noise; a screeching, whirling around, and intensely fascinating sight to behold as



SAN ANTONIO TOURISTS AT MEDINA RIVER EMBANKMENTS, INSIDE AN IMMENSE CAVE-LIKE ROCKY EXCAVATION—THE UPPER CURVED ROOF STUDED WITH THOUSANDS OF THE CLIFF-SWALLOWS' MUD NESTS; IN OLDEN DAYS THE HAUNTS OF LARGE WILD BEASTS AND THE INDIAN; ABOUT 42 MILES NORTHWEST OF SAN ANTONIO

skunk, lobo wolf and coyote and other jungle animals.

Some of these intensely attractive regions, besides wild animals, owls, hawks, and serpents, are the hosts of the interesting cliffswallow alluded to in a separate chapter of these reminiscences; and never in my life have I come across such masses of swallow nests as seen also on the photo illustration that was taken near our camp. Hundreds and thous-

we approached near and under the nests to prepare some views of them—and the one in this photo view only shows some large masses, but not all of the myriads of nests in the adjoining excavations.

These swallow-made houses were all well preserved—modern civilization with some vandals not having destroyed the nests as yet—as

seen also on the illustration. Just think of the time and labor these industrious martins spend in building these nests—with small parcels of soft clay—each nest close to the other, and in shape and size of a cocoanut shell, and how securely the nests were adjusted on the high dome and walls of the cliffs above the party of visitors seen on the photo.

Some of these wild regions along the Medina river are also famed for the large beehives met there and of the guano caves, tons of guano I was told, being stored away in some of the caves and cavern—perhaps not explored as yet. In these southern regions of the

Medina river near D'Hanis, Texas, some years ago, my old friend, the late Captain Rheichartz, of D'Hanis had sent the writer some samples of bat guano gathered by himself at the large guano caves near Frio City for microscopic examination; and it was amazing to note the immense quantity of anatomical remnants of insects, mostly mosquitoes and flies.

I had a number of fine microphotographs of the prepared slide samples, which I sent to Captain Rheichartz; but whether the rich guano caves were further explored and utilized commercially, I never found out.



NICE CATTLE SCENERY IN JOHNSON-GRASS PASTURE, AT THE CASSIN'S IRRIGATED FIELDS SOUTH OF SAN ANTONIO. (Original Photo)

Some Outing Reminiscences

The prairie plains and forests around San Antonio abound with various wild fruit-bearing trees and shrubbery, which are more or less eatable and delicious, and are a great boon to animal life on the plains during droughty times of the year, and a great variety of such wild fruit serves

wild animals, including especially the feathery tribe, as nourishment during the warm seasons and in droughty time. Cattle especially are very fond of the prairie fruit, for instance the mesquite bean; and of late years some enterprising cattle raisers are advocating the special care of the mesquite tree,



FOREST SCENERY AT OUR BEAUTIFUL SALADO CREEK BOTTOM, EAST OF SAN ANTONIO. (By the Writer, 1889)

mankind as delicious foodstuffs in the kitchen, for instance the strawberry, dewberry, plum, cherry grapes, pecan, agarita berry, etc., whilst others and all of these, the mesquite bean, persimmon, the cactus fruit, hackberry, yellow berry, blackberry etc., serve the

on account of its useful beans—by converting them into a wholesome mealpowder to serve as food for cattle and horses. In droughty years, when hay is scarce and other feedstuffs high in price, such mesquite bean meal, as well as prepared cactus leaves,

furnish good food for cattle as well as other animals.

Our large black and marble-round persimmons are delicious and are also a valuable food for some animals of the prairie, and also to man, as they make a good preserve or jelly. It is well known that the ripe persimmons are a delicious food to birds and many of the wild rodents, and various insects and beetles, and some variety of prairie flies in particular are fond of them; and such animals as coons and opossums and other

turkeys and opossums, squirrels and other rodents with substantial food; and it is well known how cleverly the rodents gather their supply of acorns and pecans during harvest time, and carefully store away for the pending winter or droughty times.

Some of the most delicious of wild fruit or berry is offered to man, as the wild grape and the agarita. Of the former there are two kinds: the large "Mustang," and the small black variety. Our rivulets, and in particular the



WILD GRAPEVINES ON THE SAN ANTONIO RIVER

animals of the plains fatten upon them. Sometimes also squirrels, prairie rats and other rodents, when the pecan and corn crop is short, feed upon persimmons and mesquite beans (as I have occasionally seen on hunting trips.)

The purple-red fruit of the *Opuntia* cactus also furnish food for many of the wild animals, and often sustains life during severe droughty seasons. The oak trees, when the acorns ripen and fall to the ground, also furnish such animals as deer, wildhogs,

San Antonio River, the Guadalupe, the Medina and others, are abundantly supplied with wild Mustang grapes which furnish a most delicious jelly and a fine wine, if properly prepared. These immense and rampant grapevines along the rivulets and in forest-bottoms always has been, and always will be a most attractive Nature scene, especially in summer when the branches and vines are covered with bunches of blueish and glittering grapes, which, when near to the ground can easily be gathered; but

mostly they are in inaccessible places, reaching to the top of the forest-tree, and often hundreds of feet high.

The accompanying photograph I prepared last fall of some of these grapevines, which fairly illustrates the exceeding attractiveness of these rampant vines and the forest scenery close to the romantic San Antonio River, some ten miles below San Antonio—the vines entirely covering the trees and overhanging the river below.

months, our agaritas blossom at an early date in Spring, and fully ripen in May when they are gathered for various household purposes, but in particular for preparing jelly, syrup, wine and pies. The jelly also can be converted into a delicious and refreshing beverage, during the hot summer months, by adding a little lemon juice, and if preferred, a little "spirits" to a tumbler full of water and some sugar.

The agarita bush grows in nearly all soils and locations of



GATHERING AGARITA BERRIES FROM BUSH

Some other and also most delicious wild fruit indigenous to our Texas climate, is our so-called "agarita" or sour berry, vinegar berry, or "*Berberis Vulgaris*," its latin name. It is one of the most conspicuous of our shrubery—bearing fruit of the prairie plains, for reasons of its dagger-pointed (three cornered) leaves, and its multiple and intensely yellow-colored fragrant blossoms; and, whilst the many and various other prairie-berries ripen during the summer

the prairie, but generally it is seen in the hilly and rocky regions around San Antonio, where during blossoming and fruit-ripening time it is easily distinguished from other shrubbery, for reason of the stated sharp-pointed leaves and the red color of its succulent berries.

Ordinarily the gathering of agarita-berries is a rather tedious and often painful procedure, and persons uninformed of the proper way to gather them often tear

or break large numbers of limbs laden with bunches of berries in order to peel them off afterward. This breaking of the branches is very injurious to the future welfare of the bush, and adds to the gradual extermination of this useful bush, and it can wholly

regions north-west of San Antonio. The berry-bearing agarita bushes were at that time so fully laden with the red berries that the branches drooped low to the ground and could be seen for a long distance.

In driving along our roads where



A CONTORTION OF AGARITA AND PERSIMMON BRANCHES

be avoided, simply by placing a large cloth, or an umbrella below the lowest branches near the ground and gently striking the branches or limbs with a stick—as seen in the photograph prepared by the writer last summer, in the hilly

the Agarita plants grow in the near vicinity of the city, often numbers of broken-off and dried agarita branches can be noticed scattered around; and it would have been much better to gather the berries according to the de-

scribed plan, and thereby save the bush for future fruit bearing. In the accompanying photo, the proper mode of gathering agaritas is vividly depicted, showing one of our party holding the berry-laden branch with one hand, whilst the other hand gently thrashes them off by rapid strokes on the branch. (The photo of this agarita bush shows the branches blurred—from a stroke it had received a few seconds before taking the view.) The berries thus handled, drop to the cloth below and the bushes are not mutilated to any extent, and the same thrashed branches will bear fruit again the following year.

At some seasons, especially in drougthy times, these agaritas, as well as other fruit-bearing bushes are invaded by myriads of various insects which feed on the berries, and these insects in return are a great boon to our mockingbird and other warblers of the Texas plains.

The other photograph represents

parts of one of the agarita bushes and also branches of the wild persimmon with ripe fruit. The best way to rid the thrashed berries of all brush debris and insects was invented by one of the gentlemen seen on the first photograph. After the berries had been gathered as described, (and they had a large tin bucket and a box filled to the brim,) one of the boys suggested to try a screened window-frame (which happened to be at the farm, where the berries were gathered) and it worked fine! After elevating one end of the wire screen, several handfuls of the gathered berries were put at the top, and after tapping the screen with the hand, all the berries rolled down into a large kettle below, whilst the debris of leaves and small fragments of branches and numerous insects remained on the surface of the wire screen. In this way the greater part of the large bucket full of berries was soon cleared in a comparative short time of all deleterious material.

Midsummer Outing at the Beautiful Guadalupe River---Insect Plague in Camp

Texas, and admirers of nature in general, are proud of the many romantic rivulets and forest sceneries we possess, traversing the great State of Texas, and the pleasure they afford to outing parties. This pleasure, however, of hiking into the woods, especially during hot summer days, is not at all times a pleasurable one—by no means! Often unforeseen obstacles must be contended with, and one, therefore, has to be prepared for such emergencies during outings in our hot summer days. Above all, one should be provided

with plenty of wholesome drinking water and the necessary food supplies, of course, especially if intended to camp out far off from some farmhouse or a cool spring. For drinking purposes, there is no better contrivance on the market than the so-called "African water cooler bag," holding about two gallons of water. Such water-bag (seen attached to buggy, on one of the original pictures herein) keeps the water just right, cool—the hotter the atmosphere, the cooler the water in the bag—and it is more handy and trans-

portable than any other water supply vehicle which, however, are also necessary in case of far off and prolonged trips. Then, also, one should have a small emergency supply box with him, containing such articles as a pair of forceps or pincers, camphor and carbolic acid salve; pennyroyal oil, turpentine, a roller bandage and absorbent cotton, adhesive plaster roll, permanganate of potassium, strychnia tablets, lactic pills, needle and thread, mos-

Larger insects, such as wasps, bees spiders, scorpions and others, rarely attack a person if not molested directly, but sting, they will and badly, too, if once enraged especially the wasps. There exists several distinct varieties of prairie and forest wasps, and of the latter, the large, reddish-brown, or nearly red, colored hornetwasp, supplied with fearfully large stinging implements, is the most vicious and most painful insect. During a late outing,



BOAT FISHING ON THE GUADALUPE RIVER

quito netting; and, also, soap, towels, underwear, stockings, slippers, etc., all of which may come very handy at times. Select a shady clear place, and remove all rubbish around camp. A good hammock comes very handy, also, as well as a folding tent and a small collapsible table, etc. Before retiring to sleep, use some of the camphor or pennyroyal oil—it will help to ward off the mosquitos and ticks and other insects—more or less always present in forest bottoms close to a rivulet.

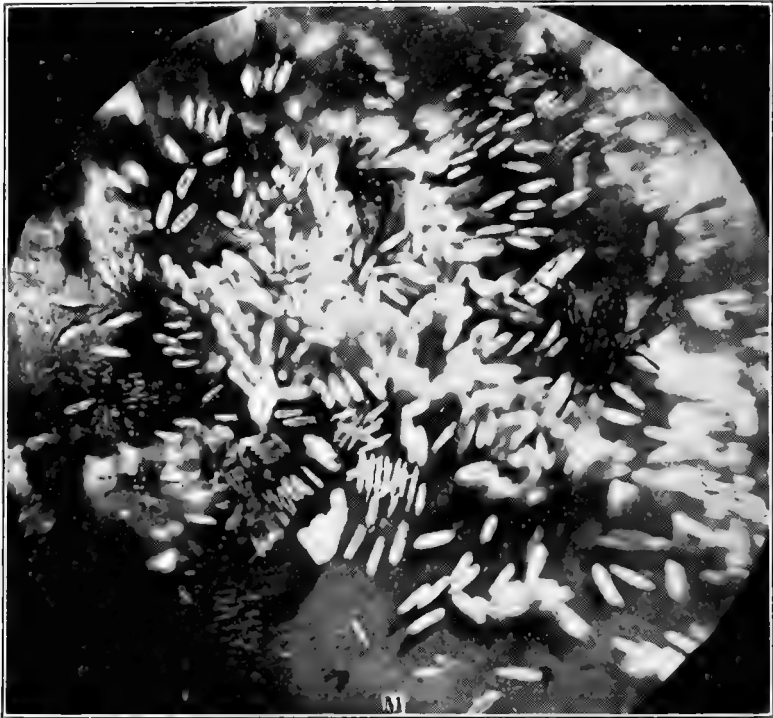
in June, in the beautiful forest bottom of the Guadalupe valley, near Seguin, large swarms of these vituperous hornets were met with, and one of our party coming accidentally in contact with a hornet breeding nest, was desperately attacked and stung, and the wounds were so painful he had to quickly undress and plunge himself into the close-by Guadalupe river to escape the enraged red wasps and alleviate the fearful burning, stinging wounds.

Other mean little insects molest-

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ing the camper during outings is the small, crablike woodticks, the smaller plant insect; mosquitoes, gnats, and the omnipresent flies—this latter, especially in large swarms, when fish are caught and cleaned of their scales and entrals. In hot weather hundreds and thousands of them soon gather around the camp, and unless the fish or meat of any kind be well protected, the latter will surely soon be covered with mil-

time and luck in catching large strings of fish, and, one broiling hot afternoon one of the cleaned fish was overlooked putting it in a screened box, and when we returned later from another tour of inspecting a trotline we were amazed with the amount of eggs the flies had deposited in that fish—by the teaspoonful! Having a near-focusing lens and camera with us, I prepared the photo-micrographic view here'n seen, show-



THE FLY PEST IN CAMP

lions of fly eggs. The flies crawl with preference inside the open fish, and there deposit their clusters of small, oblong eggs between the folds of the gills and inside the entral's cavity.

During an outing end of July, this year (1913) at the lovely Guadalupe river bottom, near Sisterdale, we had a very enjoyable

ing some eggs magnified several diameters. In a day or two more, these same fly eggs would have been converted into living fly larvae, and eventually into a new crop of flies to molest other campers and deposit their eggs. But they were all destroyed with a little boiling water poured upon the eggs and the meat of the con-

taminated fish was used to bait a large trotline during night hours.

Such are some of the disagreeable annoyances in camp life; however, it also gave us a good lesson, not alone how to destroy, with one sweep of a little boiling water, myriads of developing flies, but also, my companion, Alfred Haubold, detected a new means of warding off any flies and other insects from infesting and breeding on fish and

Boerne, and six miles beyond Waring, is about one of the most interesting and highly picturesque outing places of Western Texas. One of the photo-views herein vividly depicts the grandeur of the Guadalupe river close to Seguin and gives an idea how the balance of the scenery along this rivulet looks—like all along its northern and northwestern course into the hilly and mountainous regions. The place we camped lately was an indescribably pictur-



IN CAMP, NEAR GUADALUPE RIVER

other meatstuffs simply by sprinkling the inside fish parts with "Mexine"—a pepper preparation for making Mexican dishes. This absolutely kept the flies off, whilst mere salt and black pepper powder would not have any effect on the flies. Try it once, ye campers!

The Guadalupe river, where we camped and fished, beyond Seguin, and especially at Sisterdale, some twelve miles north of the picturesque railroad town of

esque place, surrounded with huge and century-old cypress and some pecans, oak, elder, cedar and other forest trees; and plenty of such game as squirrels and rabbits, especially, also, swamp-rabbits abounded; whilst at night some of the large night owls kept us awake with their peculiar zonorous calling from one end of the forest to the other.

The camp picture seen herein was taken on the road leading to

the Guadalupe river, near Sisterdale where quite a string of trout and catfish were caught, and suspended later on a long line for this view. It was only a temporary camping place, as the fly and insect pest was bad; but later, we camped close to the river, in full view of the grand Guadalupe scenery resembling those seen on the boat fishing photo view along the river banks, and here we spent a few delightful days close to a farm.

a broad smile of contentment. What also interested us very much were some very old log houses—built by the first settlers around Sisterdale, and also the many ancient and solidly built rock fences traversing the picturesque vales and hilly forest regions all around the old post oak Sisterdale valley. These vales and hilly forest regions in olden days (and, to some extent to-day yet) were full of large, wild game, especially deer, wild turkey and bear, roam-



A TYPICAL LOG HOUSE OF THE FIRST SETTLERS OF THE WESTERN WILDERNESSES
(Reproduced by the Writer from Rudolf Cronau's Historical Work: "America")

What interested us also, and most, during our late outing trips to the Guadalupe river—partly per auto, and the last trip in bug-gies (a little less convenient, but by far more enjoyable to observe the grand nature sceneries) was the highly prosperous condition of the farming districts all along the Boerne and Guadalupe valleys; the fields and crops never before looked any better to us, and the farmers, mostly Germans, all wore

ing around the steep canyons, post oak brush and dense forests, and a book could be written about them when listening to the hunting tales of the old, sturdy German settlers of unsurpassed beautiful Sisterdale.

On the way homeward, we camped near a queer Mexican settlement and limekiln plant near Boerne, and the latter reminded us of the large rock quarry rotunda at Laurel Heights, north

of San Antoino, and the blasting of the huge rock walls at that kiln sounded like cannon shots and the roaring of artillery fire, reechoed along the hilly regions. The queer little Mexican huts presented a very picturesque and lively little Mexican village, surrounded as it is by evergreen hills and fields, and as it was "water melon time," we enjoyed a twenty-pounder "sandilla"—con mucho gusto!

Returning home a large batch of mail was awaiting me, and among the letters, one especially was very interesting, coming from a dear friend and relative, who had, on account of his health, just traveled nearly a thousand miles in New Mexico, and as his letter shows the great contrast of that wild country as compared with our cultivated Texas regions, I append same in these few sketches, to-wit:

Gallup, New Mexico, July 21, 1913.—"Shortly after leaving the mountains last spring, three others and myself rigged up an outfit of a wagon, six burros, tents, cooking utensils, guns, fishing tackle and lots of chuck. Two of the boys also bought saddle horses. Our intention was to make an all-summer trip of it, spending several weeks in the White mountains of New Mexico and White mountains of Arizona, go through the petrified forest, see the prehistoric cliff dwellings and the Grand Canyon of Arizona.

The sport in the White mountains of New Mexico proved to be rather tame, as we did not see any game, with the exception of birds and such like.

We hunted for large game for a week, and as we did not have any success, pushed on to the White mountains of Arizona. Our first town in Arizona was a small Mormon settlement eighty miles from the railroad. At that place

we got information about the best grounds in the mountains for camping. The road up the mountain was a mere cow trail, awful steep and rough. Going up we broke the wagon tongue, and coming down, the rear axle, both accidents occurring within three hundred yards of one another, and about six miles from the town. We had to pitch camp both times and ride into town for repairs. It was a hard trip, but I feel that it was worth it, as I have never seen prettier country. We camped on what is called the upper fork of Black river. The hills are covered with fine grass and wild flowers, and the mountain streams were cold as ice, and were stocked with mountain trout. It was the latter part of June that we camped there, but there was quite a bit of snow on the ground and there was ice in our pails several mornings. At sunset we would start a big bonfire, which we kept going several hours. Those were the hours I enjoyed most of all. A big bonfire, a pipe or two of tobacco and a bunch of good, congenial fellows, makes a very pleasant closing of the day.

After leaving the mountains, we got down in the flat country, where we almost burned up.

We went through the petrified forest, which consisted of pieces of petrified tree trunks and limbs strewn about the ground.

The largest solid piece I saw was about five feet thick and six or seven feet long. They are variegated, and make rather a pretty sight. From there we went through the Navajo Indian reservation, stopped at a government school and also a mission school.

We suffered quite a bit through that part of the country, as most of it is desert and barren of grass. We carried grain, but not hay with us, and several days the stock

did not get any grazing at all.

Flagstaff was our last stop before we reached the Grand Canyon. We camped there several days, and rode out to cliff dwellings, which are ten miles from town.

There is a trail leading into the cliffs which are in large triangular shaped canyons. The dwellings are about halfway up the cliffs. The soft strata of rock were evidently washed out at some prehistoric time, and between the two stratas of hard rock the dwellings were built. The buildings consisted of walling in the sides and front with rocks and mud.

The Grand Canyon was a great sight to witness. We saw it from Grand View Point, which is considered one of the best views of the canyon. At this point, it is several miles wide, and, in places, about a mile deep. The walls of the canyon are very rugged and the formation is of quite a number of different colors. The colors seem to change from time to time during the day, as the sun hits it at different angles, and makes it an ever changing view.

At the bottom is the Colorado river, which looks about as large as the Flores street ditch in San Antonio from the top, but is really quite a large river.

I would like to have stayed there several days and gone to the bottom of it, but we were up against the water proposition. All the water tanks along the road were dry, and our stock did without water for two days. We got plenty for drinking purposes from an outo that we met on the way. Water at the hotel at Grandview, which was the only water within miles, cost 25 cents a head for stock and 25 cents each for our kegs. Coming back to New Mexico, we had to follow the railroad, on account of water, as all tanks, canyons and streams between

there and Winslow, Arizona, were dry. This side of Winslow, there are a number of windmills, but the water is awful full of gyp. Navajos are scattered all along this part of the country, and we passed quite a number of Indian villages. They look about the same as the Mexican settlements. There were a few farms, but most of the Indians in this section make a living raising sheep, cattle and horses, also make blankets and silver jewelry.

The first rain we had to contend with, was about ten days ago, but it has rained every day since. Had quite a rain and hail storm Friday, which made travel almost impossible. About sundown Friday, we reached a homestead, and the fellow at the place insisted we stay with him over night, which we were only too glad to do, for the ground was simply covered with water.

We learned there was a Navajo fete going on about three miles from there, so after supper we went over. Several hundred Indians were there, and as many horses, for each Indian has his pony.

Some twenty-five or thirty campfires were burning, near as many huts, or enclosures, built for the occasion.

While they have a number of different dances, the only one we saw was where a man with the tom-tom would stand in the center while the rest of the Indians would gather around him and chant, their bodies swaying to the time of the chant.

When an Indian got sleepy, he went over to one of the campfires and rolled up in his blanket with his feet towards the fire. He kept his horse saddled and tied, or held the lines in his hands.

We did not get back to the house until midnight, and though I was about played out, was glad I went. The next day we arrived

at Gallup. Here our party broke up. The summer rains have set in and it makes traveling too disagreeable.

I have been on the lookout for a Gila monster ever since I got in this part of the country, but have not seen any, nor have I been able to get one in any of the towns. Have seen thousands of small lizards of different kinds, but besides lizards and horned toads, have not seen any reptiles, with the exception of one rattlesnake, in New Mexico and one in Arizona. If I can find a Gila, I will surely send it to you.

I saw quite a few deer and antelope in the mountains west of Flagstaff. Stopped one day at a tanking outfit for dinner, and was given a piece of mutton, which surely did taste like venison. When I passed the camp going up to the canyon, I saw five black-tail deer not more than a thousand yards from the camp. I was too close to camp to risk a shot, but told the bunch I saw them and suppose they located them after I left. Sincerely,

MAX.

Nature Scenes Around Beautiful San Antonio

Nature has wonderfully endowed our old Alamo City and its immediate and remote environments with hundreds of thousands of attractive nature-sceneries; and equally as many of these sceneries have been more or less elegantly photo-reproduced by professionals, as well as amateur specialists.

In the following pages the writer takes the liberty to add a few more original reminiscences and typical nature-sceneries—conjointly with others already published herein.

But it would be folly to attempt renumerating in detail even a small percentage of all the important and interesting sceneries of nature surrounding our beautiful San Antonio, as there is no end to such.

To begin with—here is for instance an interesting olden time amateur view of the writer's representing scenery of a "charco" or "aroyo" (small stagnant rivulet or pool of rain water) nine miles west of San Antonio, surrounded by a liveoak and mesquite forest in the rear, a gathering place for cattle of the pasture in which the

scenery is located, and a place where in olden days lots of deer, wild turkey, wild animals of the jungles and endless numbers of small game, including the large-billed kingsnipe or curlew, abounded and found shelter in summer and winter, and plenty of feed in the surrounding oak bottoms and pasture plains. The surroundings of this same scenery is, or was, covered with miles of dense jungles of the opuntia cactus and prickly pear plants, and several large tanks were scattered for miles along the oak and mesquite and underbrush, and they afforded fine hunting in winter time for ducks and deer seeking these secluded water places; and it was also (for reason of the shelter these large pastures and olden-time hunting grounds afforded) the haunts of numerous types of small wild animals, and a prolific shelter place—among the cactus jungles with the peculiar prairie rat nests—for the dreaded rattlesnake, the opossum, skunks and the smaller types of prairie-rodents.

Most of these large pastures, or a major part of them, are now

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adays cleared of jungles and converted into cultivated fields, with prosperous farms, and game of all kinds has consequently diminished considerably in these days of our rapidly advanced era of modern civilization.

Another interesting and olden-times nature-scenery around San Antonio is represented in the

east of the city, in a hilly region—now traversed by street cars and studded with palatial modern residences—the view being taken after some torrential rains and in the neighborhood of a hilly region, close to the old gravel pit in the eastern suburbs of the city. The goats and sheep—hundreds of them—were owned by Mexi-



AN OLD TIME PRAIRIE SCENERY AND HUNTING GROUND AT THE ROMANTIC WITHERS, LEONA PASTURE

original picture herein of another large pool of stagnating water, surrounded by oak and mesquite trees, and a large number of goats and sheep scattered around the underbrush thickets of this tank. It was an unusually fascinating, and in older days, a typical scenery around old San Antonio; and this view was taken a few miles

cans, and it always was a most fascinating sight to behold how they rambled over the bushy hills and underbrush in large flocks and, as seen in this instance, around both sides of a large stagnating waterpool. These same places are now more or less cleared of trees and shrubbery and laid out in building lots, or

occupied by attractive residences and dairies, etc.

Among others of thousands of attractive nature-sceneries around the Alamo City none—except perhaps the old Missions, the Government Post and our beautiful City Parks of late years—have been admired more and have been subjected to photo-reproduction than the San Pedro Springs Park and Zoological Garden, and the old Brackenridge Park, with its

company with an old friend and formerly County Physician—Dr. Robert Lee Winters of San Antonio; and another view of the park shows some of the deer scattered among the forest of hackberry trees and shrubbery—a midwinter scenery, reminding one of the large herds of deer seen in olden times out on the plains and hilly regions northwest of San Antonio.

In olden days San Antonio's



AN OLD-TIME GOAT AND SHEEP SCENERY, AROUND A WATER-POOL, SURROUNDED WITH HUISACHE, OAKS, HACKBERRY AND MESQUITE TREES; NEAR SAN ANTONIO

century-old forest trees, elegant driveways, river-sceneries, flower beds, and collection of wild animals, including the buffalo, elk, deer and a large number of exceedingly attractive fowls of various types and colors.

The photo herein gives a faint idea of the beauty and attractiveness of this park, with its moss-covered trees and shrubbery, taken many years ago in

most popular park—the San Pedro Springs Park, with its imposing shade trees—its oak, hackberry, poplar, willow, walnut, pecan, cottonwood, huisache and other forest trees appeared more attractive than now in its wild and natural beauty; but most of the old-time forest trees—some over a century old, are there today yet. There are attractive walks, also the ancient and beau-

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tiful springs and the fine broad lake. In olden days the latter was studded along its borders with high tule, which also could be seen all along the serpentine course of the then broad San Pedro Creek down to and traversing the heart of the city in its western districts.

In these olden times—"in the days of old man Duerler" (one of

tent in the shade of nature's grand dome of forest trees and close to sparkling springs and the interesting lake. This lake is vividly depicted in one of the original photos here, with some of the old forest trees herein along its southeastern border, and two of the swan houses on the lake.

Of much interest also is an olden time original photograph



OLD TIME SCENERY IN BRACKENRIDGE PARK

the first settlers and custodian of the San Pedro Springs Park) this natural pride of San Antonians, as here it was (in lieu of the other romantic parks and outing places of San Antonio which came later) that school and private picnics, and all other gatherings, including all the city festivities, were held and enjoyed to heart's con-

herein depicting some of the century-old mustang grapevines and arch—a very attractive nature-scenery and old-time landmark of the San Pedro Springs forest. This old shady vine-arch, situated at the time in the center part of the natural San Pedro Park, was a favorite playground for children in summer, but some years back this old and greatly admired

grapevine arch made room for the modern improvements seen today at this popular outing resort; and one more of the many, once exceedingly attractive landmarks of our old San Pedro Park, including the old Duerler homestead, with its adjoining large music and dance hall, surrounded by a dense forest of giant oak trees and evergreen shrubbery, and the old and much-admired museum, with its collection of typical Texas animals, and including a costly and

Another landmark of the thousands of San Antonio's interesting nature-assets, full of beautiful scenes and romance, is our old San Antonio River and its tributary creeks. But here also it would be folly to attempt reviewing all of our river's beauty-spots—several of which having already been mentioned and photo-illustrated in this book, and only, therefore, two additional illustrations from nature may be added—both great outing and



DEER AND FOREST SCENERY AT BRACKENRIDGE PARK, NEAR OLD CLUB HOUSE BUILDING

rare mineral collection of curios; and the once famed Zoological Garden, with its more or less typical Texas and Mexican collection of wild animals—all this is now gone into oblivion with the enormous advancements of modern times and a busy business world—but the sturdy old oak trees, the ancient springs and the old park and lake are there today and will be there for centuries to come—it is hoped.

fishing places along the romantic pecan groves and river bottoms south of San Antonio. Both of the river scenes depicted herein show the river bottom place where the prairie hawk, mentioned in another article, was captured, and it fairly illustrates what these attractive fishing places, and others, look like—with the imposing forest vegetation and trees and the river tule along its edge, etc. In olden days all of these river-bot-

tom places were full of forest game and any amount of fine fish, including the eel, could be caught in a short time—whilst today, with the large amount of fishing and hunting parties frequenting the river bottoms, such game as ducks, squirrels, coons, 'possum, swamp rabbits, cotton tails, quail and doves, and other small game is exceedingly rare in most of the old romping places along

tive recreation places San Antonio's environments can afford.

—o—
At this season of the year, in springtime—beginning of April, our Texas prairies and plains are "all in glory"—or, rather, "all is one 'flora!'" From the cities' limits to all over the country, and in particular also around San Antonio, along the vales and hilly regions and



FOREST SCENERY AND LAKE AT SAN PEDRO SPRINGS PARK

our romantic river-bottoms — at least in the near vicinity of our present metropolis; however, these outing places, especially around the old Berg's Mill and southeast of the Missions San Juan and Espada, as well as the Cassin Lake and the new Blue Wing Lake preserves, will always remain some of the most attrac-

pastures and bottom-land, prairie flowers are seen in unusual profusion and brilliant colors this year—due to the heavy rains of late and the country's early spring. In drouthy years these same regions are but sparingly supplied with wild flowers; however, a great variety of them are always more

or less present, and it is interesting to note how our different prairie soil influences these plants in their growth and various types. In some regions only one certain type of wild flowers grows, for instance the brilliant "blue-bonnet" flower, and the purple verbena; the wild colchicum or white prairie lily; the so-called "daisies," the

Antonio to Fort Clark in April, 1875 (when I had the honor to be a commissioned acting assistant surgeon, U. S. A.)

This trip had also been made in the month of April, and rains had been falling in the previous months and during the winter, in torrential showers, filling up the creeks and rivers to the brim. And it was



MUSTANG GRAPEVINE ARCH IN CENTER PART OF SAN PEDRO SPRINGS

red and yellow buttercups; the multicolored thimble flower and many others, which, as a rule, are isolated from other wild flowers and in numbers covering many acres in various places of the prairie and often endless miles of ground, and which I recollect having witnessed during cavalry escort of Uncle Sam's troops from San

at that time, also, when the kingsnipe or curlew and game of all kinds abounded profusely—and jackrabbits! I never before nor later had seen as many of these long-eared rabbits in my life; and the teamsters following our escort put their long whips into use, as also some of the soldiers along the route from Spofford Junc-

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tion to Del Rio made use of their sixshooters. Uncle Sam's soldiers, it is known the world over, are crack shots with the pistol, and on arriving at the Nueces River, whilst taking a swim in that romantic country around Del Rio, some of the soldiers made targets of the

Such were some of the good olden time "reminiscences" of 1875.

I append in these sketches a few original photo views from my private collection of Texas prairie sceneries.

To those taking the least interest in nature's great works, will find a multitude of interest-



IN MIDST A WILDERNESS OF TEXAS PRAIRIE FLOWERS NEAR SAN ANTONIO

many moccasins abounding there—the genuine, broad-headed and deadly water-moccasin, many of which the soldiers destroyed by shooting with their six-shooters whilst they swam along the water's edge or basking in the sun on some rocks or ever-hanging tree branches.

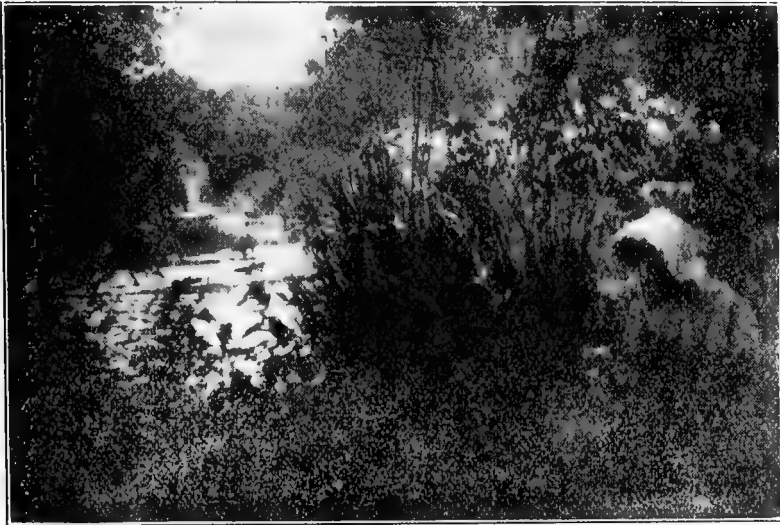
ing nature-sceneries and nature-products around San Antonio's near vicinity. Besides prairie flowers, it is the peculiar and interesting pachydermatoid cactus plant, which, though rather a very common and ugly plant to many, these plants, during bloom and berry-bearing time,

are of great interest and attraction.

Some of these prairie cacti and the various near-related dagger plants prefer an especial soil and environments to thrive in. The large leafed and brilliantly blooming and most common opuntia cactus, with its yellowish, star-shaped blossoms and intense red color of the oval-shaped berries, and others, the brilliant cereus cactus, and a host of others, all thrive on "any old" soil, though the latter, including the sharp

In a write-up in our Sunday's Express, some years ago, on these typical prairie plants, the following was mentioned by the writer: "If one passes on down Alamo Plaza along the finest ornamental city park of all Texas, a group of Texas and Mexican cactus plants can be seen near the center of that elegant park, close to the bandstand, and surrounded by evergreen tropical plants and palatial modern buildings.

"Few persons, however, may be aware that those peculiar



GATHERING WILD FLOWERS ALONG THE CHARMING SAN ANTONIO RIVER

dagger-ornamented melon cactus, thrive best in hilly and rocky regions all over South-west Texas, and where they delight the eye with their attractive colors.

As a rule these cactus plants bloom but a few days, when the stamina is converted into the globular fruit of deep red and very attractive color. Some of these cactus berries, when entirely ripe, are edible, especially to song-birds, also to the rodents and other animals of the cactus jungles.

and interesting pachydermatoid plants once decorated the wild jungles of prairie plains and had been transplanted to a place where they now are admired by thousands of tourists the year over and people congregating daily along Alamo Plaza Park. And, whilst tropical Mexico is the ideal land of cacti, our fine Texas climate also furnishes a large variety of these interesting plants.

"I wish to call attention to the broadfaced prickly pear cactus (*Opuntia Engelmannii*), that un-

dergoes a peculiar cycle of development, which is not generally known or observed, namely, the sprouting of young leaves directly from the pear-shaped fruit. Out in the jungles of the prairie this process can be witnessed as late as December and January, when one or more sprouts of new leaves can be seen on a large number of fruit-bearing cacti.

of the Express, and quite a number of such, as also of other bird's nests, were encountered in the neighboring jungles, all being empty and deserted, of course, but all were protected and the nests generally built between the main bifurcation of the stem and leaves. Several were formed entirely of parcels of the wild broomweed, but the nest cavity was snugly outlined



FOREST SCENERY ALONG THE ROMANTIC SAN ANTONIO RIVER, EAST OF THE ANCIENT MISSION "ESPADÁ," SOUTH OF SAN ANTONIO

"At the time of this writing, in December, I encountered an interesting group of such sprouting opuntia cacti. The main plant was over nine feet high. Besides this interesting metamorphosis in plant life, the group also had hidden between several thorny cactus leaves, one of the funnel-shaped nests seen in a previous issue

with soft grass and feathers, and in one, remnants of the soft wool of a rabbit was found.

"The prairie plains and hilly regions around San Antonio and of Bexar County harbor a great variety of exceedingly attractive cacti which, especially during the blooming season, attract attention by their brilliant colored flowers. Close to the

narrated opuntia jungles, stated above, I noticed one of the dreaded round prairie cactus, typical to the Texas soil, and which the cowboy and cattlemen in general abhor for reason of its enormous and sharp-pointed thorns, and which the Mexicans term "mata caballo," meaning "kills the horse." When cattle, or a horse, etc., step on these thorny cactus some of the

several inches above ground, in some isolated region near hilly places or on the flat prairie.

"Not all sharp-spiked dagger plants—a certain variety—are the so-called "Spanish dagger," but they are named the Spanish "amole." The roots of this amole plant are often gathered for the purpose of washing flannel goods, etc., and as a substitute for soap, and soap



TARGET PRACTICE IN TEXAS FLOWER LAND

spikes are liable to injure or enter the hoof parts, with the result of serious inflammation or death of the animal from tetanus. The thorns of this cactus, slightly curved at the sharp end part, are as hard as ivory, and the rotund cactus itself is of very compact and tough nature, generally protruding only

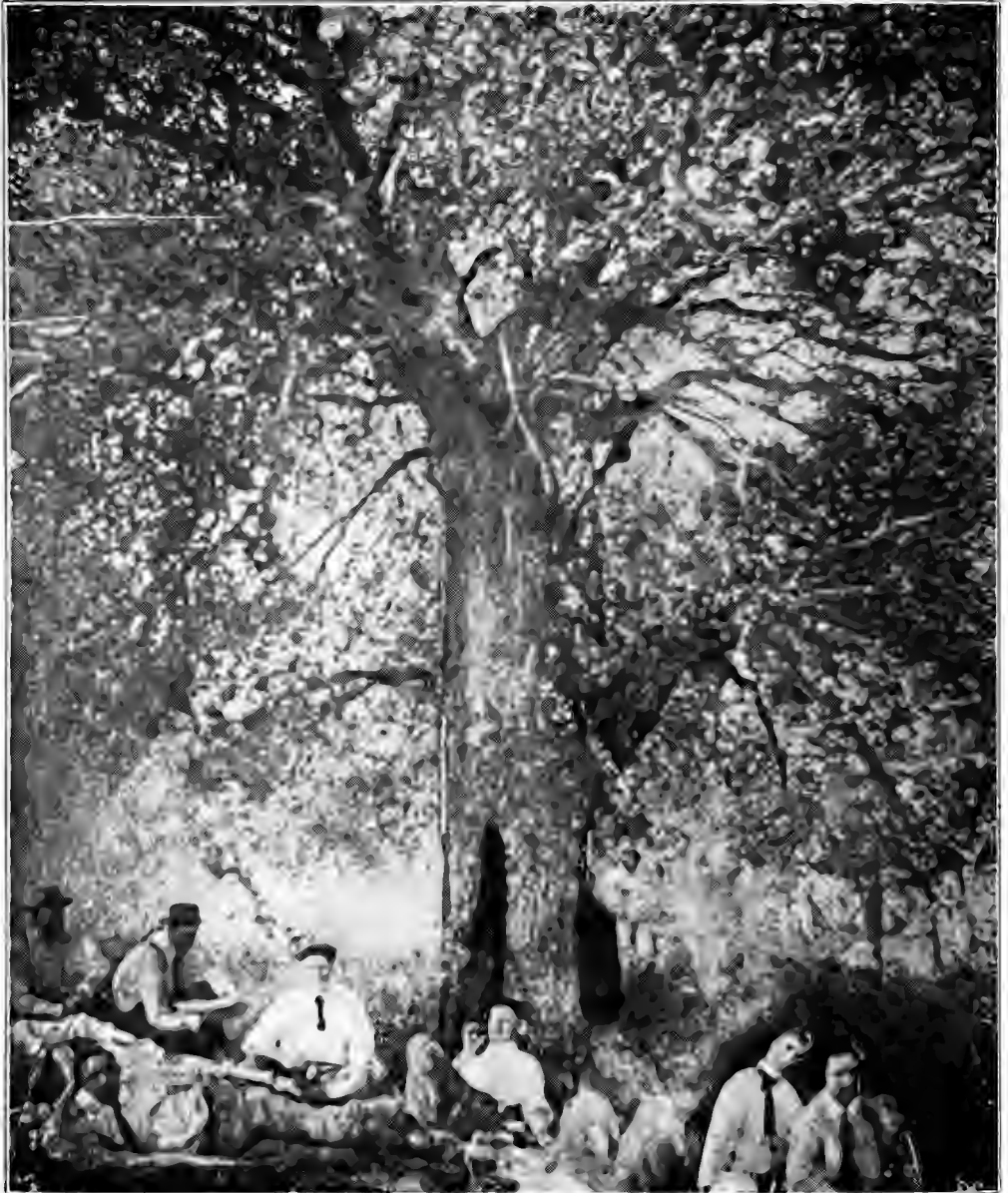
dealers prepare a fine "amole soap" from this jungle plant. In the fall these amole plants are exceedingly attractive for reason of the many alabaster-white and bell-shaped blossoms they bear. The blossoms sprout on a centrally located stem, some four to six feet higher than the dagger leaves, and are,

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therefore, conspicuous over the prairie plains, at great distance.

"Cattle and horses generally avoid places where such cacti

night raids that cattle are liable to be injured, or during the swift rides of the cowboy's horse through the jungles.



SAN ANTONIO OUTING PARTY; AFTERNOON SIESTA IN TEXAS FLOWER-LAND—UNDER A HUGE HACKBERRY TREE; RIVER BOTTOM FOREST SCENERY; SOUTH OF SAN ANTONIO

as the sharp-spiked melon cactus abound, and it is mostly during a stampede or during

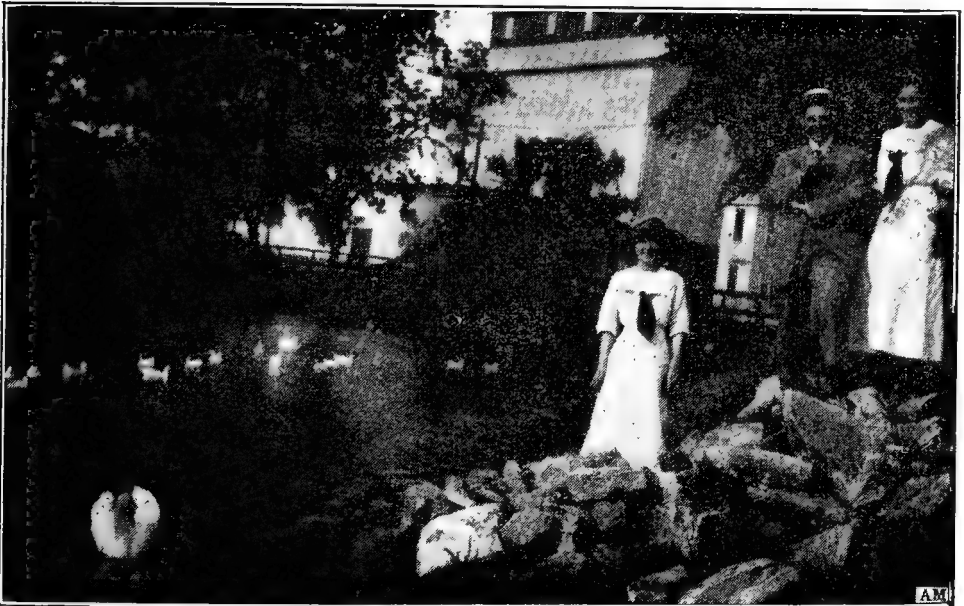
Usually this cactus variety is of an isolated nature in its habits, being generally found

at some open space along a hilly ridge, or between small brushy spaces.

"The large-leaved opuntia cactus is really very attractive during the blooming season with its gold-yellow or pink-colored flowers; and it is here in the thickly-grown cactus jungles where such animals as the prairie rat and mice, the ground squirrel, the polecat and rattlesnake, etc., seek a protecting dwelling place. The prairie rat, in particular, a night-marauding

over the different holes in the ground, leaving enough space for entrance. These holes are not deep, as is the case of the ground squirrel, but communicate under the piles of debris. In severe droughty seasons the prairie rat is dependent on eating the opuntia leaves, and large tracts of such eaten leaves can often be seen in the jungles.

"During late years and with the enormous on-march of modern civilization, vast areas of such cactus jungles have been



SAN ANTONIANS AT THE CHARMING COMAL RIVULET, NEAR THE PRETTIEST PARK IN TEXAS
(Landa's Park at New Braunfels)

rodent, has its nest in these cactus jungles. A nest encountered during an outing at the Leona Hills showed how the rats had accumulated all sorts of wood debris and the remnants of the common serpentine cactus plant, the fruit of which, and also of the large prickly pear serves them sometimes as food. They protect their nests by placing particles of wood, manure and remnants of cacti, etc.,

cleared and converted into flourishing fields or irrigated farms, with happy homes and prosperous conditions all over the Southwest Texas farming districts."

San Antonio has a number of private owners of exceedingly attractive cactus plants, and besides Alamo Plaza Park, the fine landscape garden ground fronting the Southern Pacific depot had some very imposing cactus

collections. Some years ago Mr. Carl Runge had the largest private cactus collection in the city, if not in the State, Mexican as well as Texas collection of cacti. Some of the rare Mexican varieties, when blooming, were of especial beauty, but also many of the blooming Texas cerei cacti were exceedingly attractive and were very much in demand by the public, especially ladies. Some of these cacti would bloom only a couple

the Mission San Juan, have collections of the large variety of serpentine cactus, which are very attractive in bloom time on account of the deep red and nearly blending rich colors. The cactus wren and other weaver birds prefer to build their nests in those high cactus trees, as also the mocking bird and red bird.

—♦—

The hilly regions with the post-oak valleys in olden days abounded



A LONGEARED RABBIT BEING DRAGGED AWAY BY ONE OF THE TOM CATS

of days, whilst others remained in full bloom for weeks, or new sprouts would develop during night into gorgeous flowers and delight the spectator, especially the small rotund or oblong and oval shaped cacti encountered in the hilly regions close to San Antonio and around Helotes, Boerne, Fredericksburg, Kerrville, New Braunfels and other Texas cities. Some of our ornamental and attractive cemeteries, and private owners near

with lots of small and even large game now and then, but of late years the country around the head of the river, up to Wetmore, has been building up so rapidly, and the old hunting grounds converted into cultivated land, that game of all kind is getting mighty scarce around there, with the exception of an occasional squirrel, a few quail, and the cottontail rabbit and the long eared "lepuscommunis."

The farmers in general, and a friend there in particular, do not

object to shooting these long-eared and injurious field marauders and often has the writer been urged to hunt them at a certain large pasture along the picturesque Olmos Valley settlement, where in former years, lots of plover and some curlew, doves, quail and squirrels abounded in large numbers, as well as the dreaded *crotalus horridus*, in the remote brushy hills and the old-time pasture fences.

Lately, during a trip to those regions, at the request of a farmer "to shoot as many of the 'mule-

bed "his long-eared master of the prairie-plains" by the neck, lifted it up, and dragged it away beyond the woodpile. Then the other growling cat tackled the heavy rabbit; and in these positions the enclosed illustrations were quickly taken by the writer.

The rabbits were so heavy, it took all the strength of the 13-year old child of the farmer (seen in rear of one of the photos) to lift it up, and it was a queer sight to behold, how the large and growling, black tomcat, with uplifted right foot and big yellow and



LARGE BLACK TOM CAT WITH UPLIFTED PAW DEFYING ITS GROWLING ANTAGONIST TO TACKLE THE GAME ON THE GROUND

ear rabbits as possibly we could," was duly complied with, and in a very short time, five of them were "rolled over," or "in.s Gaars gebissen," as the German nimrods express it.

Packing the best one to camp, the others were taken to the farmer's house for disposal (in some way) and whilst talking "town topics" to the farmer, we were surprised to see two of the farmer's big tomcats getting away with one of the long-eared prairie-trotters, in front some wood piles; i. e. first one of the two cats grab-

glittering eyes, first tackled the long-eared lepus and afterward the other, panther-like, sneaking and growling cat managed to snatch it away. The first photo-view shows the cat in the act of lifting the rabbit up, which it carried a great distance away for its meal, in company, later, with the farm dogs.

These large tomcats are unusually strong and of attractive appearance, and the farmer told us that besides hundreds of prairie rats and mice, they also cleared the farm of ground squirrels and other night marauding animals.

Some Mitchell's Lake Reminiscences and Hunting Scenes of Small Game Around San Antonio

Mitchell's Lake, Cassin's Lake, and the old Greytown Laguna de los Patos, as well as the more modern Blue Wing Lake, are all more or less known as fine hunting preserves for the fleetly web-feet, as well as snipe, swamp-rabbits and occasionally,

es and a number of huge forest trees submerged in the lake water, with some ducks and water hens gathered around a tree stump, (under some moss-laden old hackberry trees). One of the old forest monarchs, fronting the boat-house, had been felled years ago,



MITCHELL'S LAKE SCENERY NEAR OLD BOAT HOUSE (Now Long Ago Abandoned)
(PHOTO BY THE WRITER, WINTER 1908)

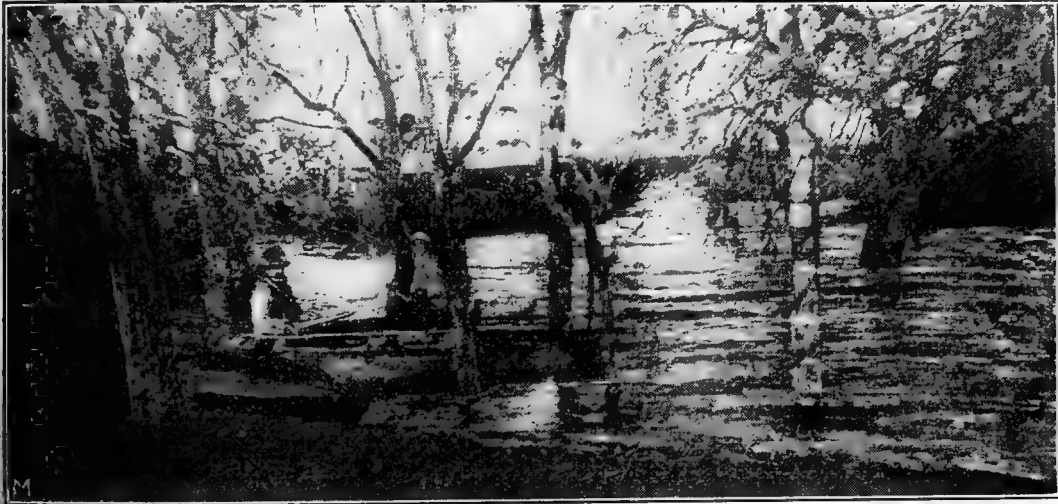
the haunts of wild geese, pelicans and the long billed curlew or king snipe; and what this interesting Mitchell's lagoon looked like years ago, is presented in the three original photographic views herein showing one of the old boat hous-

by lightning, and remnants of same are seen at Mitchell's lake to this day, and it had often been used as a "blind" to pop some of the waterfowl close to this tree remnant. This part of the old lake always presented a beautiful

landscape scene in olden days when it was laden with man-high tule-reed, and millions of wild ducks and chattering water-hens gathered from their northern flights inside the three mile long tule-lake, to afford fine sport for San Antonio hunters and other sportsmen. Close to this same lake scenery the writer, years ago, experienced a rather unpleasant occurrence, not so easily forgotten, as it concerned two of my intimate friends, both business men of San Antonio and lovers of an occasional hunting trip to the lake.

on to at intervals, their boat would have upset, with perhaps loss of life. But they managed to land about two miles off where the wind storm had drifted them and rammed the boat into the shallow water and mud which wet them to the skin from head to foot. It happened, luckily, to stay on the shore and never before nor afterward did I foster such fear for the safety of two friends than on this memorable day at Mitchell's lake.

Before my friends started their perilous hunting tour in the boat,



HUNTERS ON LAKE DURING A FEARFUL STORMY DAY

It was a stormy morning that certain day and a fearful gale blew over the tule jungles, upsetting many of the small boats around the shore and inside some of the open tule spaces; and during such weather conditions it was that my friends had ventured out, during a more calm period, into the tule spaces. But the swift hurricane that followed gave the hunters in their small shallow boat no chance to return to shore, the wind storm drifting them in an opposite direction; and were it not for reason of the high tule-reed to hold

a photograph of which, with both gentlemen therein, is reproduced here). I prepared a camp fire of which also a picture is seen in these pages, showing another hunting companion who is stooping over the fire and warming up for action. This portion of Mitchell's lake is very close to the one seen on the first photo, showing a number of the small boats and numerous water fowls close to the mile-long tule jungles, a fine scenery and familiar to anyone posted on the hunting topography of old Mitchell's lake.

When my two friends, (Lucas and Grosenbacher,) returned to our camp loaded with ducks and a swamp-rabbit there was great rejoicing, especially when the scent of a fine roasted beef-steak and the aroma of hot coffee was wafted on the breeze to their nostrils.

This same camp with hunter "testing" the coffee; some wild ducks on the shadowy ground; a cow feeding in the rear, etc., is also depicted herein, elsewhere,

own self, on the picture. The large tree trunk felled by lightning and depicted in first photo, was close by, as also some fine large ducks in our camp. My two friends also were loaded with a full string of fine ducks, hung over their shoulders; and after placing the camp ducks on the large tree trunk and ourselves in view position, I managed to prepare the hunting scene reproduced in these pages; also another view



"WARMING UP" DURING A BITTER COLD DAY IN CAMP AT MITCHELL'S LAKE
(Old Time Hunting Scenery, by the Writer)

at another occasion, and almost at the same camp scenes, one cold, but very bright day, I happened to meet my old Mitchell's lake hunting companions, Hensel and Callsen, both just arriving at their cosy club-house near the lake shore and loaded with ducks, and I invited them to a little surprise experiment: of being "shot" with the camera, including my

of two other enthusiastic hunters and the writer (seen holding the string which exposed the plate).

After this little intermezzo on Mitchell's lake reminiscences a few more illustrations may be added here regarding small game hunting near San Antonio which explain themselves.

Game in general is rather scarce in the immediate vicinity of San



HUNTING SCENE NEAR SAN ANTONIO, MIDWINTER, 1910



CAMP NEAR LAKE, IN SHADOW OF OAK TREES

Antonio, for reason of modern advanced conditions and the increase of hunting facilities; and one nowadays has to make long trips to get his quota of legal game.

In olden times one hardly would take notice of such game as rabbits, doves, squirrels, quail and plover; curlew were so numerous that a mile or two distant from

this time of writing in winter, 1911 are often hauled into town for the market by the wagonload, and large bunches of them can often be seen at local market stores, or at the market house throughout winter time.

By request of the writer, my friend, Mr. W. Stucke, prepared a nice photo of one such market rab-



WINTER SCENERY AT MITCHELL'S LAKE: HENSEL, CALSEN AND THE MAN WHO "SHOT" THEM ALL WITH A "PULL THE-STRING"

town afforded all the sport one cared to find in that line. However, with modern facilities of traveling, all the game allowed by law can yet be had in far off and game favored districts, and a bunch of quail and doves like the original photo-view herein from nature is often bagged; also of various rabbits, the latter, like at

bit exhibit, seen reproduced elsewhere, for these remarks. As a rule, the small cotton-tail rabbit finds better consumers than the long-eared jack-rabbit. The latter however, if quite young and bodily sound and properly prepared as "Hasenpfeffer" is a fine dish, especially if procured from near a vegetable farm or garden, where

these rabbits prefer to congregate at night time, and fatten up on the juicy plants where they do much harm to plants and therefore are annihilated as much as possible. Squirrels also, in olden days roamed about in the forests and fields in uncountable numbers, especially also in river bottoms during the pecan crop, and in fields doing much damage to both. In

fur of all rabbits is thrown away while if properly converted into fur caps, these rabbit skins can be utilized to much advantage as a market value. The photo herein of one such rabbit fur cap, shows how neatly such cap can be prepared. The writer has worn this same cap for two winters and it is very comfortable on cold winter days and night time, as



MITCHELL'S LAKE SCENERY IN WINTER 1909. (PHOTO BY WRITER)

places near town where they existed very abundantly they are nowadays nearly exterminated, with periodically a few specimens in the close vicinity of our river bottoms and forests.

One item strikes the writer in connection with rabbits consumed by the wholesale throughout the winter months, namely the fur of these rodents. Usually the skin or

well as ornamental and durable. The upper crown part of this cap was prepared from the fur of a swamp-rabbit and the body or balance of the cap from jack-rabbit fur. It was presented to me by a lady relative and friend of one of the oldest expert tannery firms of San Antonio, the H. Haubold tannery.



RABBITS ON THE SAN ANTONIO MARKET—MIDWINTER SCENE 1911



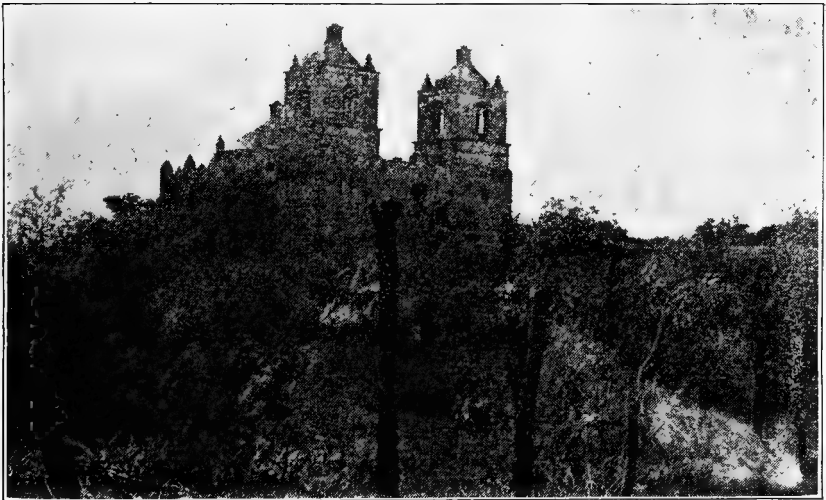
A DAY'S QUAIL AND DOVE HUNT NEAR SAN ANTONIO

Mexican Settlements and Early Days Reminiscences of Old San Antonio

(PHOTO ILLUSTRATED BY THE WRITER)

Besides the San Pedro and Alazan creeks, from their upper sources near the San Pedro Springs Lake and the West End Lake down to the San Antonio river along its serpentine windings, large rows of Mexican dwellings existed in olden times, and many today yet, along these and other rivulets, and in particular also west of the Mission "Concepcion de Aguna," two miles below the present

with raw hides, buffalo skins, and mostly with man-high reeds or tule then and now yet growing along the romantic river bank of the forest bottoms. A few remnants of such huts can be seen today yet around the Missions "San Juan," "San Jose," "Espada" and others, surrounded with the usual "corral," and numbers of dogs and cats, burros, mocking bird cages, and other more or less



MISSION "CONCEPCION" NEAR SAN ANTONIO
(By the Writer, in 1886)

metropolis of San Antonio, the Mexican settlements being named: "Nogalitos"—perhaps from the luxuriant trees, mostly pecan, walnut, boxelder, willow, poplars, huisache and other typical native trees and shrubbery surrounding both sides of the rivulets. There also existed in olden days many ancient Mexican and Indian jacals—mere plastered mudhouses and sheds prepared from mesquite wood and covered

typical Mexican paraphernalia; and they are also seen around the first Mission "Concepcion"—a photo view of which the writer prepared many years ago in a surrounding pasture northeast of this Mission. The surroundings of this old Mission—a masterpiece of ancient architecture, after nearly two hundred years can be seen there today yet in as erect and massive structure as when it was first built by the

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Spaniards in 1720, Of late years its surrounding districts have been considerably cleared of underbrush and jungles, and handsome modern homes and villas and irrigated fields adorn their place—century-old pecan and oak trees, forming a fringe on each side of the fine macadamized streets and boulevards leading to the various Missions, the Fair Grounds, Hot Wells Park, Park, Exposition Park, etc.

Such olden-time Mexican jacals, though crude and primi-

ordinary commodities of life, they are very cleanly as to the premises and they are the most contented lot of people on earth, with what little they possess to sustain life.

These reflections of course concern only the lower class of the Mexican populace and their primitive dwellings, etc. The higher class all have more substantial dwellings, and the well-to-do Mexican fellow citizens are well educated and highly respected and many always have been identified with the municipal and ed-



MEXICAN JACAL AND SHED, SOME FIFTY YEARS OLD, ALONG THE SAN ANTONIO RIVER

tive, were built very substantially as far as weather safety is concerned; and they always, for reason of their quaint and picturesque appearance, have been admired by tourists and sight-seers in general. For want of proper ventilation and other influences, many of the inmates of such huts suffered much in winter time through illness. As a rule, though deprived of many of the

educational affairs of San Antonio. Most of even the very poorest of native Mexicans are nowadays more Americanized and they strive to better their environments, and become better civilians.

How the lower class of these people are housed is well known to most of us—and their primitive huts and tents were not so badly built after all! The Mexicans show much skill and inge-

nity in preparing their dwellings—and as seen in particulars in one of the original illustrations of one of such, rather ancient and now abandoned and delapidated Mexican dwelling. During an outing and hunting trip along the picturesque river bottom south of San Antonio during winter and a

and as it began raining on our arrival, we sought shelter in this old Mexican hut. Some of the lucky nimrods of our party had shot a number of teal ducks along the river bank. They were strung on the nearby hackberry tree limbs, and some on the old posts in front of the hut. These posts,



REMNANTS OF AN ANCIENT MEXICAN JACAL

severe cold and rainy day, we came across this old abandoned Mexican hut—picturesquely located between forest trees and vines, and close to a fine irrigated piece of land. Huge pecan trees loaded with ripening pecans and hackberry trees are located all around,

seen in the picture, served their time for a shed in front of the old hut—the ravages of time and weather conditions, however, destroyed the flat tule roof coverings of the front shed—seen in part on the ground and close to the hut entrance. The interior and general

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make up of this ancient Mexican jacal was quite an interesting study! The interior rooms, bare of any window, was a nine by twenty feet chamber, and undoubtedly used by the entire family. The frame-work of this hut consisted of three very thick poles from the hackberry tree, put deeply in the ground, about five feet apart, with the thickest pole in the center. About two feet of the upper trunk, or bifurcation of these hackberry trees, served to support a long and thick hackberry pole—tightly fastened between the forked trunk of the

hackberry stems along the north and south sides—in order to support the roof coverings which consist of patches of tule. All of the wooden cross-bars were tightly adjusted to the main forked stems by means of wire and rawhide strips, as well as strips of the Texas dagger plant—"amole." The intersecting spaces of the north side wooden structure had been plastered with black and yellowish adobe mud; but all the thus plastered south wall of the hut had crumbled off from the ravages of time, and exposing the in-



AN OLD MEXICAN VILLAGE SCENERY, ALAZAN CREEK.

three central poles which were only ten feet apart. Then, on the north and south sides of this structure a row of other, but more slender hackberry poles had been placed deeply into the ground—all with a fork at the upper end, over which long cross-stems of hackberry were securely placed. These north and south sides supporting side rows of wooden logs were only about four feet above the ground, and the three twenty feet long cross bars had been covered by numbers of other

terior of the hut, with only a few of the supporting side stems left. Some long nails had been driven about a foot apart all along the north and south side supporting hackberry stems—to hang up sundry domestic objects; and a long wire had been strung from one end of the supporting stems to the other—undoubtedly serving to hang up dry meat—the raw meat usually being first well salted and then hung up on a line inside the yard or corral or along a line stretched out over the fence and exposed to the sun.

After such meat is perfectly dried out it keeps well for a long time and is used for the various Mexican dishes—such as: “Carne acada,” Chile con carne—con frioles y tortillas; “Enchiladass” con tortillas, tamales, etc.

Usually a small fenced field—often surrounded by dense cactus jungles and mesquite brush, surround such dwelling, planted with corn, sugar cane, pumpkins, beans, pepper, etc., with perhaps also some cows and goats—the latter “the poor

the lower branches laden thickly with ripening pecans, reaching clear to the ground. The old picturesque hut, seen reproduced herein, at first sight looked as it may crumble down over our heads, but on closer inspection we found it still had a very solid hold—enough to stand for many years hence. The outer entrance was covered with all sorts of junk—an old rocking chair “de la Madama,” water jugs, tinware, old shoes, etc. It is really wonderful—and as described also in one of



AN ANCIENT INDIA-MEXICAN JACAL AT THE LEONA CREEK. (By the Writer in 1886)

man's cow"—especially a great favorite of Mexicans to prepare tamales, or roasted, or barbecued meat, etc.

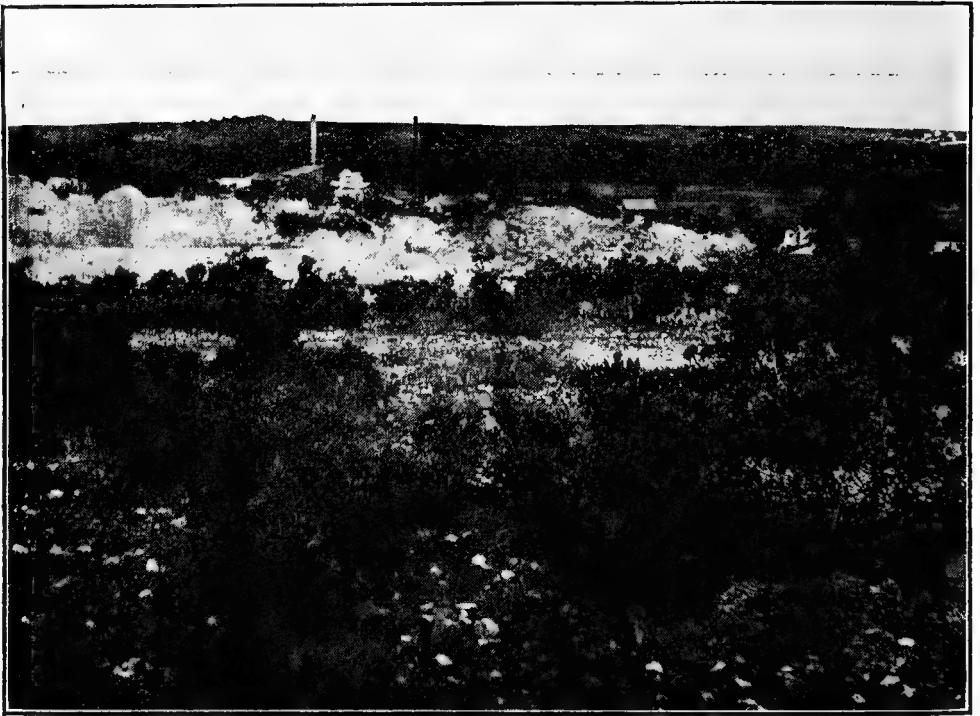
We camped at this place during a cloudy and rainy day, as stated, and it was surrounded by large irrigated vegetable and grain fields, and also by the finest pecan trees met all along the river bottom, some of whose outstanding limbs must have been at least four feet in diameter, and

the other sketches on Mexican life around the Mitchell's lake hunting preserve, how the Mexican laborers adapt their skill in building their huts and Jacals in the jungle wilderness where employed to clear the land of brush and trees—or any other manual work at that. During a late outing near the beautiful Cassin's lake, south of San Antonio, I happened to come across what may be called a temporary Mexican village among the Mes-

quite jungles close to the Cassin's lake hunting preserve. It was in October, during the pecan harvest season, when also Mexicans are employed to watch the owner's pecan groves from depre-dating pecan hunters. The Mexican laborers under question however, were employed, I was told, to enlarge the large dam of the Cassin's lake, which, at present is some eighty feet high, but is to be enlarged with an addi-

tions the writer prepared for these sketches. One of the photos, taken on a Sunday, during cloudy weather, shows some of the children gathered around in front of the tents and chaparral—a gay lot of little folks, and future laborers to till the soil.

An interesting scenery of an olden times Indio-Mexican adobe hut is also depicted on page 273—having been encountered by the writer years ago on the em-



THE OLD ROCKQUARRY REGIONS NEAR LAUREL HEIGHTS, WITH THE EXCAVATED ROTUNDA; CEMENT FACTORY IN REAR

tional ten foot high wall. The employed Mexicans had selected a hilly, well drained area southeast of the lake to put up their queer dwellings, consisting of tin tents, or a frame of mesquite logs, patched with tule, sugar cane, swamp grass, etc., and usually with a high shed cover in front of each, and as seen on the illusra-

bankments of the Leona, west of San Antonio. In olden times such types of Mexican huts existed numerously around the suburban parts of San Antonio, and some are there today yet. As seen on the illustration, these huts usually were built with a large, broad chimney in the rear part (kitchen of the hut)—the roof of the hut house and the ad-

joining shed being covered either with adobe, tule, or sheets of corrugated iron—the latter not much in use in olden days. The group of Mexicans seen on the photo had just returned with a wagon loaded with a large barrel of water, from the Leona creek. A large wood pile is seen in the rear of the hut—one of the main market products, nearly exclusively mesquite wood. Mexicans are expert hands in wood chop-

thresh the pecan trees and gather the fruit. Mexican pecan-candy vendors often make a living from such occupation, and San Antonio is famed for these as well as all other Mexican market products.

For endurance in all sorts of weather, the Mexican laborer hardly can be beaten by any other nationality, especially for rock and dirt work, and San Antonio is famed for its many gravel pits



SOME OF THE GRAVEL PITS AT THE ROCK QUARRY REGION

ping and large loads of wood in former years—and now yet can be seen daily on the market plazas. They also are expert in all sorts of manual labor, and for this reason are often employed for city work, especially street work, ditch cleaning, etc. During the cotton and pecan harvest time also, numbers of them are employed by farmers and large pasture pecan owners; they are good climbers and know how to

in various districts of the old town, but in particular at the old rock quarry place, north and near the Laurel Heights addition. A photo view herein, prepared by the writer from an elevated point west of the large rock excavations shows the surrounding country up to the old Water Works tank, the old Cement factory, some Mexican dwellings, fields, and the ever-green Laurel brush (with its in-

tense blue blossoms and queer red berries in summer time). It is one of the most picturesque—and to the City of San Antonio a most valuable region, as here it is that the city for years has gathered its main building materials: gravel rocks, and cement from the famous Alamo Cement Co. which, of late years has vacated its leased ground there and now has its own headquarters a few miles further northeast, and furnishes the best quality of cement throughout the continent.

A second photoview herein, taken many years ago at the city's old gravel pits, shows some of the piled-up gravel, ready for disposal for city work. The olden-time Mexican plank house, surrounded by a high rock fence, and the cement factory with its high vent pipes are depicted therein. Large numbers of Mexican laborers dwell around these "Head of the River regions," and some of these dwellings, in olden days, were very quaintly and romantically built directly inside the embankments of earth walls—similar to the Indian cliff dwellers homes of the Pueblo Indians.

As to the Alamo Cement Company in the mentioned re-

gions north of San Antonio—one among the thousand and more of up-to-date industrial utilities of the present metropolis of Texas, my friend Chas. Baumberger, president of the local cement company, tells me that his plant is the oldest Portland Cement plant west of the Mississippi river; and also, as to its past and present history: "that it was incorporated in 1880, and that a year later the name was changed to "Alamo Cement Co." with its original incorporators: Geo. H. Kalteyer, B. J. Mauermann, F. V. Wise and E. W. Jones; Mr. Kalteyer being president and B. J. Mauermann secretary. "The company started first with interior heat pot kilns," said Mr. Baumberger, "then changed to continuous shaft kilns and later on put in a rotary kiln.

"In 1890 I bought out the interest of Mr. Mauermann in this company," further stated Mr. Baumberger, "and became secretary and manager. Mr. Kalteyer died in 1897 and I then became president of the company.

The old plant is located on leased ground and the raw material of the company has been exhausted, the machinery is out of date and the plant unfortunately is off the railroad.

A Few Personal Early Day Reminiscences of Old San Antonio

About fifty or sixty years ago, when the photographic art was in its infancy, an old friend and private drawing teacher of the writer—the late H. Lungkwitz had drawn a large landscape scenery of our old San Antonio from the tower of the old Grenet building, located where now the fine Crockett Hotel stands—corner of Nacogdoches and Crockett streets,

and embracing some old adobe rock houses, seen today yet along Crockett street, fronting the Crockett Hotel. The drawing was afterwards lithographed by the Rau lithographing company at Dresden, Germany, and but a few copies are today owned by old San Antonians. One of these copies, presented by Mr. Lungkwitz to the writer's father, is seen

herein in the original photograph of same, showing San Antonio in those olden times true to nature as a mere small but very attractive vilage, with the eternal blue Texas skies hovering over the quaint old "San Antonio de Bexar." Some of the then—and now yet, historic and prominent sceneries around our present metropolis were included separately in the Lungkwitz drawings—such

spanning the then sparkling and most romantic San Antonio river—with its huge and century old cypress, pecan, elm, hackberry and other typical forest trees and typical bath houses along the residential districts of the river banks.

Some twenty-five years later, after Lungkwitz had prepared the historical landscape, San Antonio already had made wonderful advancement in the upbuilding of



SAN ANTONIO FIFTY YEARS AGO
(From an Old Drawing From Nature by H. Lungkwitz)

as the Military and Main Plaza with its quaint Mexican dishes and market products and surrounding adobe houses; the old original Alamo building; San Pedro springs and Park; the four Missions, and the new bridge across Houston street. In those days San Antonio had but about three or four principal bridges over-

the old town; and the City Hall and other prominent buildings and city parks, etc., came in front, and one of the original views herein shows the eastern town districts—the photo being taken from the tower of the City Hall many years ago, showing the rear parts of the ancient San Fernando church on Main Plaza; part of Main Plaza

278 TEXAS NATURE OBSERVATIONS AND REMINISCENCES.

park, and the business districts further east of the city.

Also, some of the old Mexican settlements, the Alazan Creek district and the ancient Mission "Espada," with several separate original photoviews are depicted in these sketches. These olden times Mexican districts with the quaint old jacals and Mexican life surroundings, have always—and yet today, been of much local interest—especially to tourists and sight-

mentioned in various articles herein. It was built by the Spaniards about two hundred years ago, and this sturdy old structure with its three large tower bells has withstood (though several times repaired) the weather elements as readily as all the other ancient Missions around San Antonio. A large high and square solid rock fence had originally encircled this mission, in order to protect the inmates of the many separate an-



EASTERN PART OF SAN ANTONIO AS SEEN FROM THE TOWER OF THE CITY HALL
(From an Old Original Photograph)

seers in general; and our art studios photographers in general throughout the city are teeming with excellent views of Mexican life and curios.

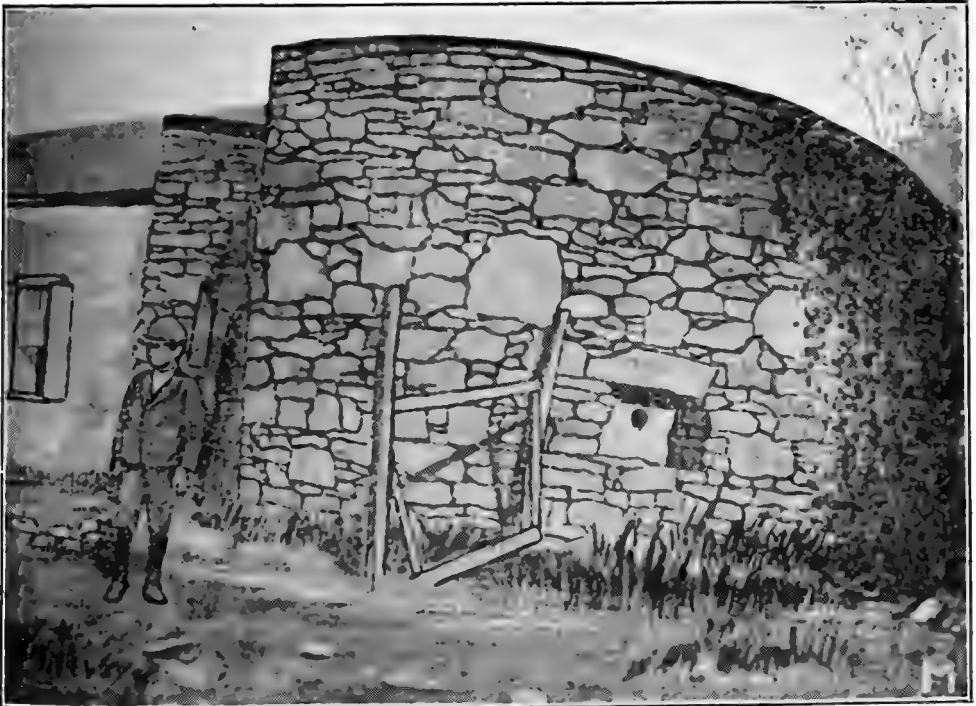
The few photos reproduced herein are all original old time views and they explain themselves without further detail. One of them is of particular interest—the Mission "Espada," ten miles below San Antonio, as it has been

cient rock houses from attacks of wild jungle animals and the savage Indians. Two separate photo views (one outlined somewhat herein) show a rounded tower at the southeast corner of the now delapidated and crumbling rock houses, with a large cannon hole and several smaller holes for rifle use—all drilled through heavy and very thick rock, and leading to the open



ANCIENT SAN ANTONIO SCENERY "MAIN PLAZA," SOME SIXTY YEARS AGO

This interesting and Old Scenery of One of the Lungkwitz's Drawings From Nature, Represents the Ancient San Fernando Cathedral on Main Plaza (True to Nature, With Its Original High Rock Wall Enclosures Surrounding This Old Mission Church.) Also Some of the Old Adobe Houses, With Umbrella China-Trees on North Side of the Plaza, Near an Old Auction House (Now Frost's Bank) and Some Such Trees existed also on the South Side Near the Ancient Court House and Post Office (Now Southern Hotel) and also, the view shows some Mexican Carretas Loaded With Wood and Hay, and the Ancient United States Flag Pole and Some Adobe Houses Are Seen on the Adjoining Military Plaza. In the Center of the Picture is Seen an Ancient Four Team Stage, Some City Officials and Mexican Caballeros (Photo Reproduced by the Writer From an Original Drawing of the Late H. Lungkwitz of San Antonio.)



Outside View of the Century Old Rock Tower, Southeast Corner of the Espada Mission Rockhouses, With Cannon and Rifleholes in Solid Rocks, Used in Olden Times to Detend the Inmates and the Old Misson



ANCIENT HUTS INSIDE CHAPARRAL, ACROSS ALAZAN CREEK, WITH WASHING SUSPENDED OVER THE BRUSH-THICKET



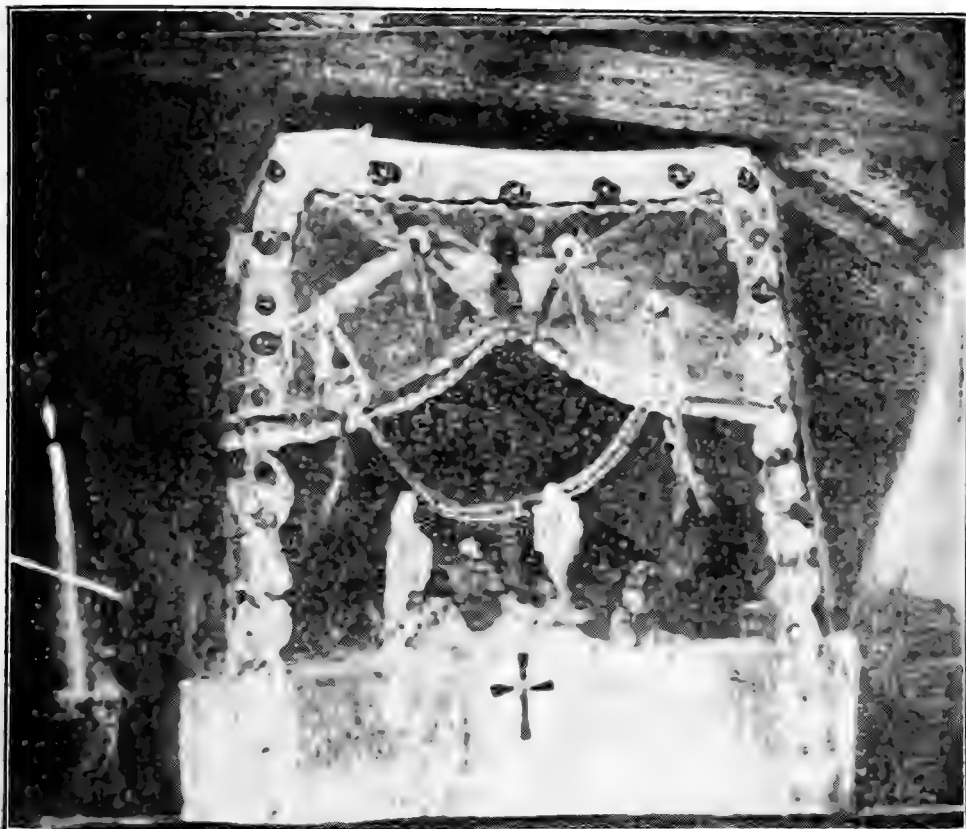
ROAD AND WEST SIDE ENCLOSURES OF THE MISSION 'ESPADÁ'

chamber of the tower, from whence the cannon and rifles were discharged in case of necessity.

One of the illustrations shows the outside appearance of this ancient tower and some of the rock houses, with several Mexican Senoritas in front of their dwelling, ready to go to church at the close by Mission "Espada," a

toms, rarely seen nowadays in the huts of the poor.

In olden days, as stated, and yet, in some districts around San Antonio, Mexicans kept a number of sheep and goats around their corrals, along the hilly regions; and a photoview herein represents one such Mexican goat farm corral with young goats, situated beyond Laurel Heights, and close to



A PROVISIONAL MEXICAN ALTAR AT MEXICAN VILLAGE NEAR SAN ANTONIO

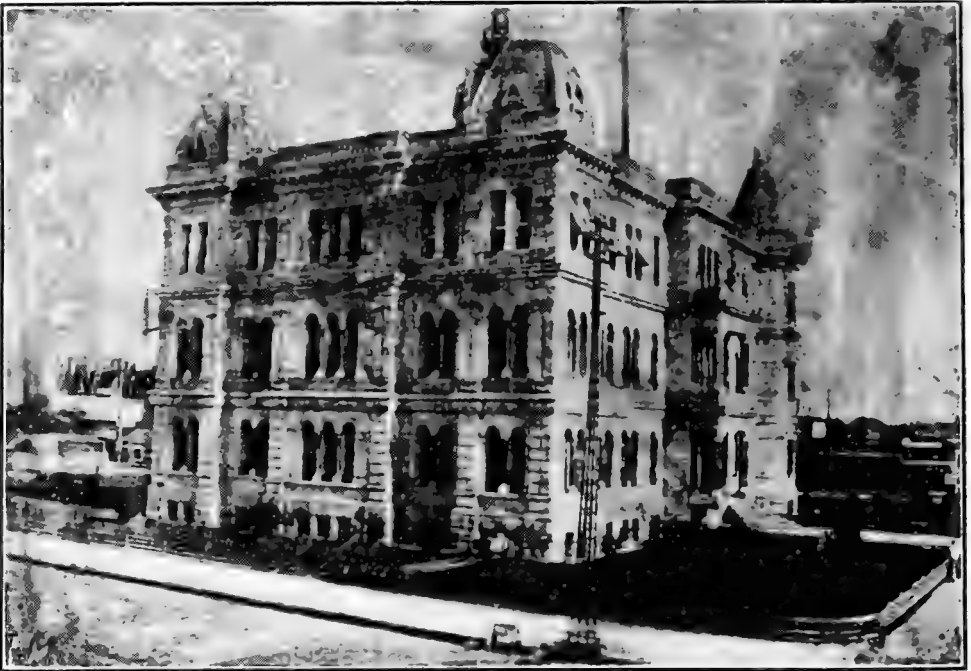
separate photo view of which is hereby presented. Also, I include herein an old original photoview of a Mexican altar, prepared in one of the ancient Mexican jacals during Christmas time. The photo was taken during a then existing small pox epidemic; and the view is a very interesting and typical relic of the Mexican cus-

the old Bexar County Poor House; and another view shows part of a Mexican village with a typical Mexican bread oven, of oval shape made of white or yellow adobe earth, with rocks plastered along its rounded walls. Such ovens are used to bake bread and cakes candy and other Mexican dishes, and they seem to be very useful

and practically arranged for such purposes.

Mexican life and customs around San Antonio always has been of great interest, especially such of olden times; and a few more illustrations, antedating our present hustling cosmopolitan life, may interest the readers, relating especially to Mexican children, and dwellings of the poor. The Alazan Creek settlement of olden

vaccinating the poor, and inspecting the tin can houses and premises; and a typical conglomeration of Mexican huts inside a very dense chaparral with clothing suspended on the brush to dry in the sun; and also a Mexican corral with tent, wagon, burro and children—all this across the ancient trans-San Pedro districts of our present metropolis. These districts, I may state also, are now



SAN ANTONIO CITY HALL, SHORTLY AFTER ITS COMPLETION; (CLINTON G. BROWN, MAYOR, 1913;) NORTHEAST VIEW, BY THE WRITER

days is quite well represented in these several original photoillustrations herein, as well as the various Mexican huts and children; some views showing the children lined up in front of a row of Mexican Carretas for vaccination; and also other Mexican corrals, with my friend and former Assistant City Physician, Dr. FitzSimon,

mostly all supplanted with fine modern dwellings, railroads, and numerous commercial buildings; and the beautiful Prospect Hill district has been cleared of a large number of the olden times but picturesque and interesting Mexican villages and jacals of bygone days around the Western districts of San Antonio.



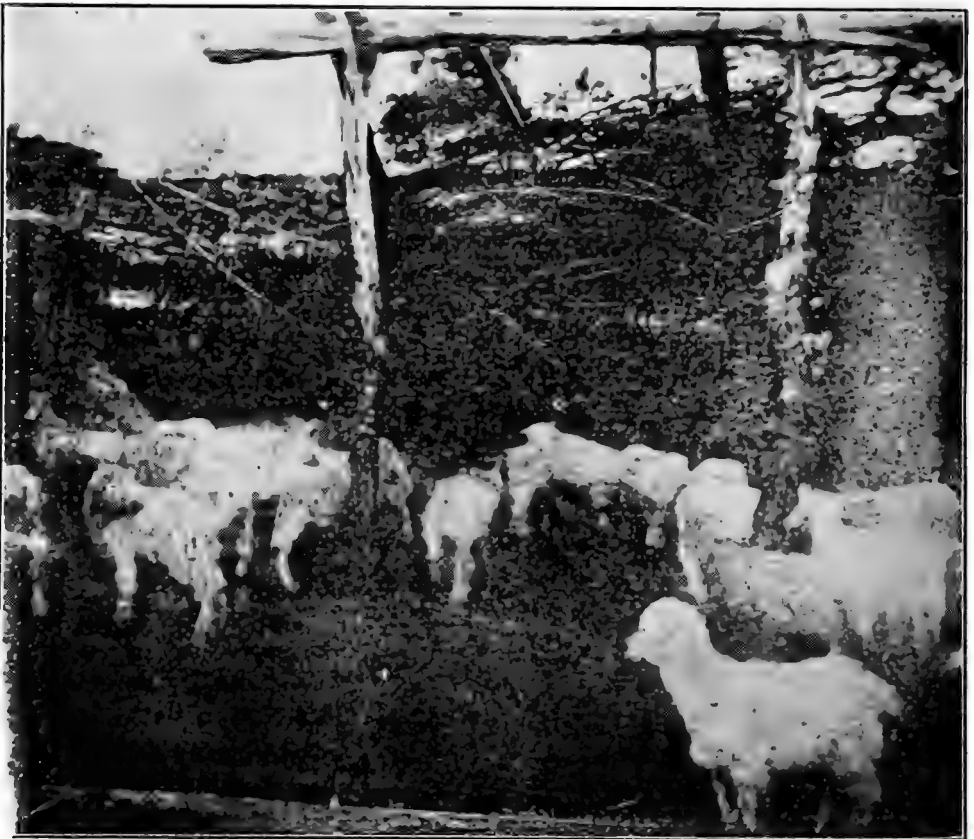
TRANS-SAN PEDRO SCENERY—MEXICAN CHILDREN LINING UP FOR VACCINATION



MEXICAN SENORITAS AT MISSION ESPADA NEAR AND OUTSIDE THE ANCIENT ROCK HOUSES AND BROAD ROCK TOWER



PART OF A MEXICAN VILLAGE WITH A TYPICAL ADOBE OVEN TO BAKE MEXICAN BREAD, ETC. WITH



MEXICAN GOAT FARM WITH YOUNG SHEEP AND GOATS IN THE CORRAL NEAR THE ROCK QUARRY ROAD, LAUREL HEIGHTS. (An Old View by the Writer)



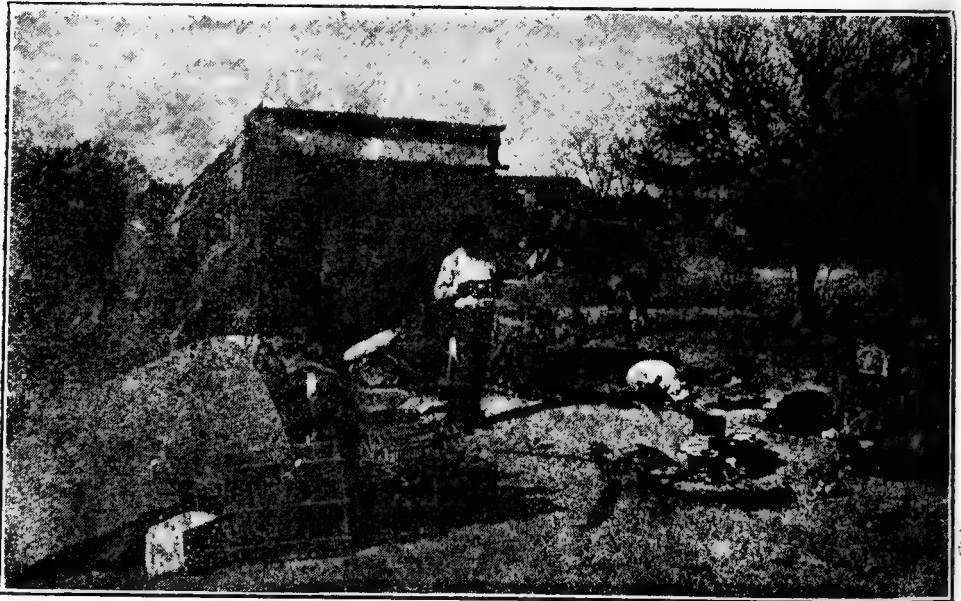
AN OLD-TIME SCENERY OF SAN PEDRO SPRINGS PARK AND LAKE. (Original Photo by the Writer)



MEXICANS HAULING WATER AT SALADO CREEK BOTTOM AND PECAN FOREST, EAST OF SAN ANTONIO.



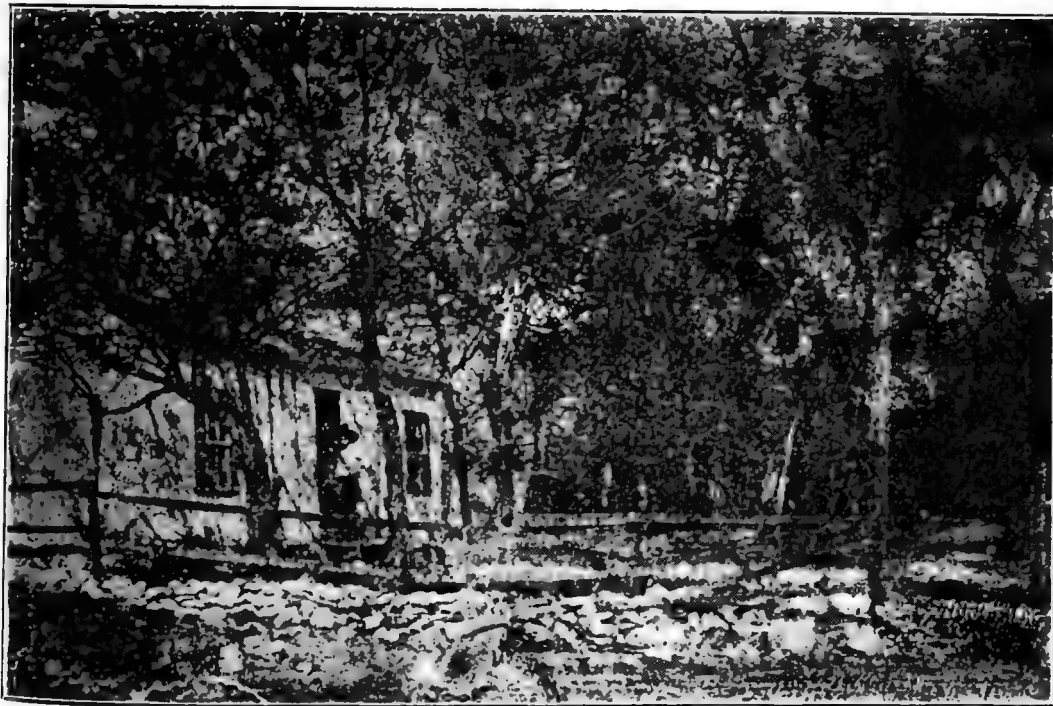
MEXICAN CORRAL NEAR ALAZAN CREEK: VACCINATING CHILDREN



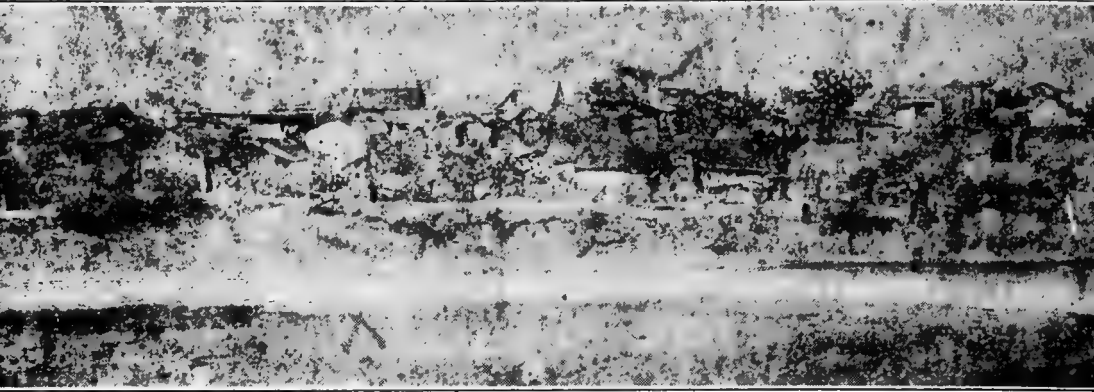
MEXICAN CORRAL, ACROSS ALAZAN CREEK WITH TIN CAN HUT, ETC.; HEALTH OFFICER INSPECTING THE PREMISES



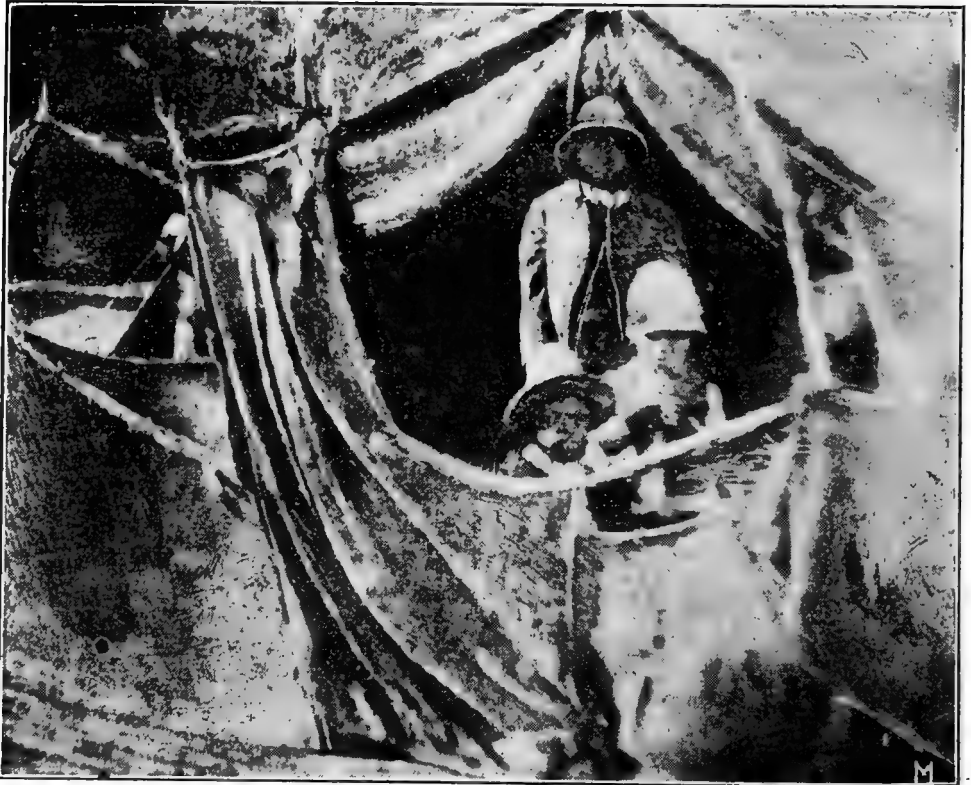
MEXICAN CORRAL WITH TENT, CHILDREN, BURROW, ETC.: ALAZAN CREEK SCENERY



AN OLD MEXICAN ADOBE HOUSE AMONG CHINA UMBRELLA AND PECAN TREES, NORTHWEST OF BRACKENRIDGE VILLA, ROCK QUARRY ROAD



ALAZAN CREEK MEXICAN VILLAGE NEAR THE SAN FERNANDO CEMETERY. (From a Very Old Original Photo)



A MEXICAN TENT DWELLING, ALAZAN CREEK—(BOTH OLD TIME VIEWS BY THE WRITER, 1886)

Perished on the Prairie Plains in Deadly Combat

The original illustration herein of two deer head skeletons is an interesting one, representing the remnants of two large bucks that died in deadly combat with each other. Years after, these locked head skeletons were found ac-

by the writer. The fine, large horns were so intimately clinched together that it was absolutely impossible by several hands, to move either horns a hairbreadth, as if jammed together with a sledge hammer! The head parts



LOCKED HORNS OF TEXAS DEER

identally by a Texas farmer while rounding up some cattle in his large pasture in a remote thicket of chaparral and cactus jungle. Both locked heads were taken to the farm house where the view seen in these sketches was taken

must have laid many years on the prairie as they were found bare of all skin coverings and thoroughly bleached by the sun.

Hunters or farm hands occasionally come across such two locked combatants when the deer

are easily disposed of; in most instances, however, the combatants perish from exhaustion, and seldom one manages to free itself from its exhausted or perhaps dead antagonist.

In the following pages can be seen the interesting photographs (from the Friedrich's collection) of a number of such locked deer

ing the ground the appearance of having been plowed. They finally drop from exhaustion. Usually the coyotes are attracted by the noise they make, and no sooner do the combatants strike the ground from exhaustion than the coyotes begin to feast on their flesh, as the deer can not defend themselves in that condition nor



A GOOD SPECIMEN OF TEXAS DEER

horns, mostly Texas specimens. Mr. Friedrich in his souvenir book explains the fighting capacity of locked deer thus: "These animals will enter into combat so fierce that one can hear them strike their horns in the woods for a mile and when they do get their horns locked, they will try to free themselves, and by so doing, they will tear up the ground for two or three acres with their hoofs, giv-

make their escape."

In connection with the above memoranda, I also annex the original photoview of a Texas deer head found lately (or rather the entire remnants of this deer was found torn up and nearly all flesh devoured by wolves) by a Mexican rancho employed at the farm of Mr. Fred Biehl at the Culebra Creek, near Helotes, and about four miles east of Leon Springs—

the latter once a Texas paradise for deer and deer hunting. This deer when found, must have been dead two or three days, a victim of some hunter's bullet when found on the prairie by the Mexican, near a large ravine. The Mexican told me it must have been a large fellow, and that nearly all flesh had been devoured by coyotes. He removed the head,

mountainous Helotes regions northwest of San Antonio where the described dead deer specimen had been found.

For various reasons, deer in general are becoming scarcer every year it seems in some of the old hunting grounds around the western hills; whilst in other regions of Texas, especially southwest of San Antonio, they are re-



ROMANTIC LANDSCAPE SCENERY AROUND THE HELOTES COUNTRY, NORTHWEST OF SAN ANTONIO, WHERE THE DEER HEADS, ILLUSTRATED ABOVE, WERE FOUND

and the original photo herein shows it must have been a splendid specimen of deer once gracefully roaming with its heard among the evergreen hills and vales of the romantic Helotes country—an original photograph of which is depicted herein and prepared by the writer during a previous outing in these same

ported very numerous and at times become quite a depredatory nuisance, as they harm the crops and fields at night time, and there is no fear of their extinction in the wide and wild ranges over the prairie plains and oak forests, where abundant protection exists among the remote evergreen hills and forests and

densely overgrown chaparral, steep ravines and canyons, from the Helotes range up to Leon Springs, Boerne, Comfort, Bandera, Fredericksburg and all the other north and southwestern districts, as well as other favored regions of our great State of Texas.

Finally, with these sketches, and through courtesy of my friend and esteemed townsman, Mr. Albert Friedrich, I take the liberty to include herein some elegant photographic views of one of the most remarkable collection of deer horn trophies found anywhere—the "Albert's Buckhorn Saloon Collection," pronounced by experts as the greatest collection of horns in the world, and containing, to use the words of the publisher of Mr. Friedrich's superbly illustrated catalogue; "Heads and horns of rare value from the jungles of Africa, from the pampas of South America, from the mountains of Europe and Asia, and from the wild, woolly West of our own lands, etc.

"Another element of it is a collection of rattles of Texas rattlesnakes wrought in various artistic designs, which is the work of Mrs. Albert Friedrich. This work is artistically arranged in the shape of a deer, anchor, eagle, Indian heads, etc., and any one will be well repaid for their time spent in examining this collection. The rattlers of this most deadly of all reptiles used, number over fourteen thousand."

In his separate and artistically arranged catalogue, Mr. Friedrich has this to say personally:

"When visiting my establishment my customers as well as strangers ask many strange and varied questions; but with one accord they never fail to ask how the idea originated in my mind to collect such a vast number of horns.

"To be brief about the matter, I will state that the decorations of a saloon are essential as well as beneficial; so twenty-nine years ago the idea of decorating my place with mounted horns forced itself upon me, and during that period, time, money and energy have been spent, and I am proud to state that I now possess the grandest and largest collection of horns existing, native as well as foreign.

"To commence, I will call the reader's attention to the deer head with forty-two prongs, which is a rare specimen.

"From Africa, one can see the heads of the Bull and Cow Buffalo, the Spring Bok, Lichtenstein Hartebeest, Bosch Bok, Water Buck, Oliby, Clark's Gazelle, Gem's Bok, Koker's Hartebeest, Brindle Gnu, etc.

"From India, Musk deer, Axis, Deer Goat Antelope, and Mountain Deer.

"From Switzerland is exhibited the Chamois and Ibex.

"The State of Colorado is represented by a large number of fine mounted Elk heads.

"Texas has the greatest representation with heads and necks in proper, natural style, of wild Texas Mustangs, fine specimens of Texas longhorn steers, one pair of horns measuring from tip to tip, 8 feet 1 3-8 inches, one pair 7 feet 1-2 inch, and another pair of 7 feet 1 inch, mounted on their original heads, as well as antelopes, deer heads, etc.

"The Canadian and Alaskan Moose have also representation in this collection, as well as the Caribou.

"Magnificent heads of Rocky Mountain Sheep and Wild Goats are included.

"Another interesting feature is a large collection of rattlesnake rattles, numbering over 14,000 in all, which form a fine display under glass. Of these 637 have been

artistically arranged as a life-like picture of an antlered deer. The collection of these rattles has taken a great deal of time, as well as trouble and expense.

"The last thing to which I will call the reader's attention is my seventy-eight pronged Texas deer head, in which I feel the greatest pride. It is mounted on a shield, forming a five-pointed star, on which is spelled the word "T-e-x-a-s;" protruding therefrom is a neck and head of symmetrical proportions. Growing from the head is a number of horns, forming an unique cluster which wraps the beholder in astonishment and admiration.

The Curator of the Smithsonian Institute says: "The antlers are the most remarkable I have ever seen. In the number of points it far exceeds any specimen of which I have knowledge."

It is not within the scope of these sketches to dwell in detail upon this superbly illustrated "Souvenir Booklet of Mr. Friedrich's collection (each photograph being extra and separately itemized). but the readers who are not familiar with this grand collection of native and some foreign horns, and who will take the trouble to visit this, one of the most refined and elegantly decorated establishment of its kind, in Texas, visited even by ladies—hundreds of them monthly to inspect that gorgeous display of deer antlers, etc., will be amazed at the richness and attractiveness of this unique buckhorn collection. However, I wish to dwell a few moments on the interesting and unique rattle design work, exhibited exclusively, I understand, the work of Mrs. A. Friedrich, in which over fourteen thousand rattles have been used—from the largest size rattles down to the smallest specimens procurable. Each line, each curvature, and each dot seen on the various

photo illustrated designs represent one rattle, or the horny tail end part rings of the deadly cro-talus; and I was not surprised to hear Mrs. Friedrich, herself, exclaim: "I tell you it certainly was tedious work." For instance, the deer design, a miniature photograph of which is seen herein, was made up with six hundred and thirty-seven rattles:—a "Rattling fine deer indeed: (this ornamental design, under glass, measures 5 feet 4 inches long, and 4½ feet in height.

The three designs representing an "Indian and Squaw" "Souvenir Books" and "Texas Star", cost the lives of two thousand three hundred and thirty-five rattlesnakes. The supposed feathers, seen on the head of the Indian and squaw, were made of the skin of a huge rattlesnake. And then, the six advertisement designs seen on another page, represent one thousand seven hundred and fifty-one rattlesnake rattles, and the letters of these designs, as well as those of "Souvenir Books" appear more like real printed large letters than the unique designs they are—made of rattlesnake rattles—1751 of them! Indeed, a tedious but elegantly artistic work! Likewise exceedingly attractive are the designs "Albert's Saloon," "Texas," "American Eagle" and "Anchor." The sign "Albert's Saloon" is made of 485 rattles; "Texas" Mr. Friedrich says, was the first design composed of rattles made, a strictly home production, representing 356 rattles; the American Eagle is composed of 574 rattles, a beautiful and tedious design work of Mrs. A. Friedrich, as well also the next work, representing an anchor, which required 121, mostly extremely large rattles, and it is an artistic showing not so easily duplicated.

Mr. Frederick tells me a total of 14,000 rattles had been used for

the above mentioned design work, and he has received another shipment lately from a ranch near the Mexican border, numbering 18,460 rattles, which came in two boxes, and would, Mr. Frederich says, have filled a small flour barrel. The rattles are to be used for further ornamental purposes, on the same lines as the others.

These two orders of rattlesnake rattles from one firm alone, represents a total of thirty-two thousand four hundred and sixty rattlesnakes annihilated throughout Texas in the past ten or more years,—no wonder the reptile pest is nowadays a matter of his-

tory, in the immense territory of Texas!

Just think of it: 32460 rattlesnakes killed—which would figuratively represent about ninety thousand pounds of snake—or three carloads; or, putting each snake at an average of three feet, this would make a string of snakes reaching from San Antonio to the Helotes, or about eighteen miles long! No wonder these and other reptiles, are about “played out,” in Texas, and such few as are left in the jungles are quickly annihilated wherever encountered. That’s a fact!



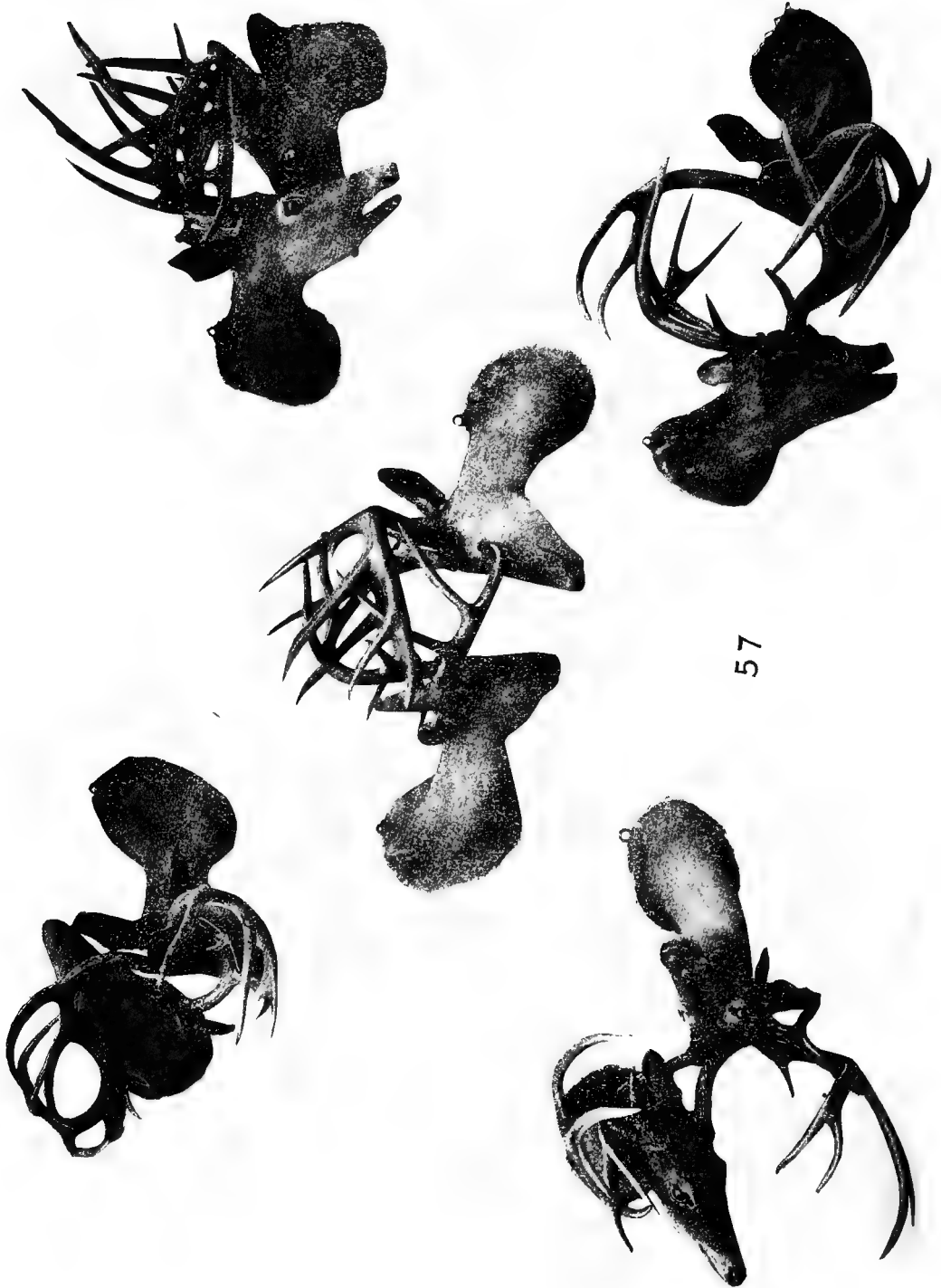
A RARE AND BEAUTIFUL DEER DESIGN (ORIGINAL ON STAINED GLASS, IN NATURAL COLORS, ON A LARGE WINDOW-PANE,) PHOTO REPRODUCED BY THE WRITER WITH TRANSMITTED SUNLIGHT



DEER HUNTERS WITH TROPHY. (Courtesy of Editor Texas Field—Brigadier-General O. C. Guessaz



DEER HUNTER WITH TROPHY—A TYPICAL TEXAS HUNTING SCENE

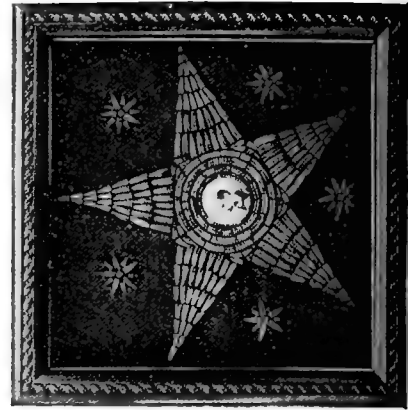


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THE DEATH-LOCK OF TEN DEER



"RATTLING" FINE DEER (4½ X 5½ FEET) Six Hundred and Thirty-Seven of the Deadly Reptiles are Represented in Above Design



These three above designs cost the lives of two thousand three hundred and thirty-five rattlesnakes. The supposed feathers on the head of the squaw are made of the skin of a large rattler.

POST CARD VIEWS
OF THIS SALOON
* SOLD HERE *

MY MOTTO
HONEST GOODS AND
HONEST DEALINGS

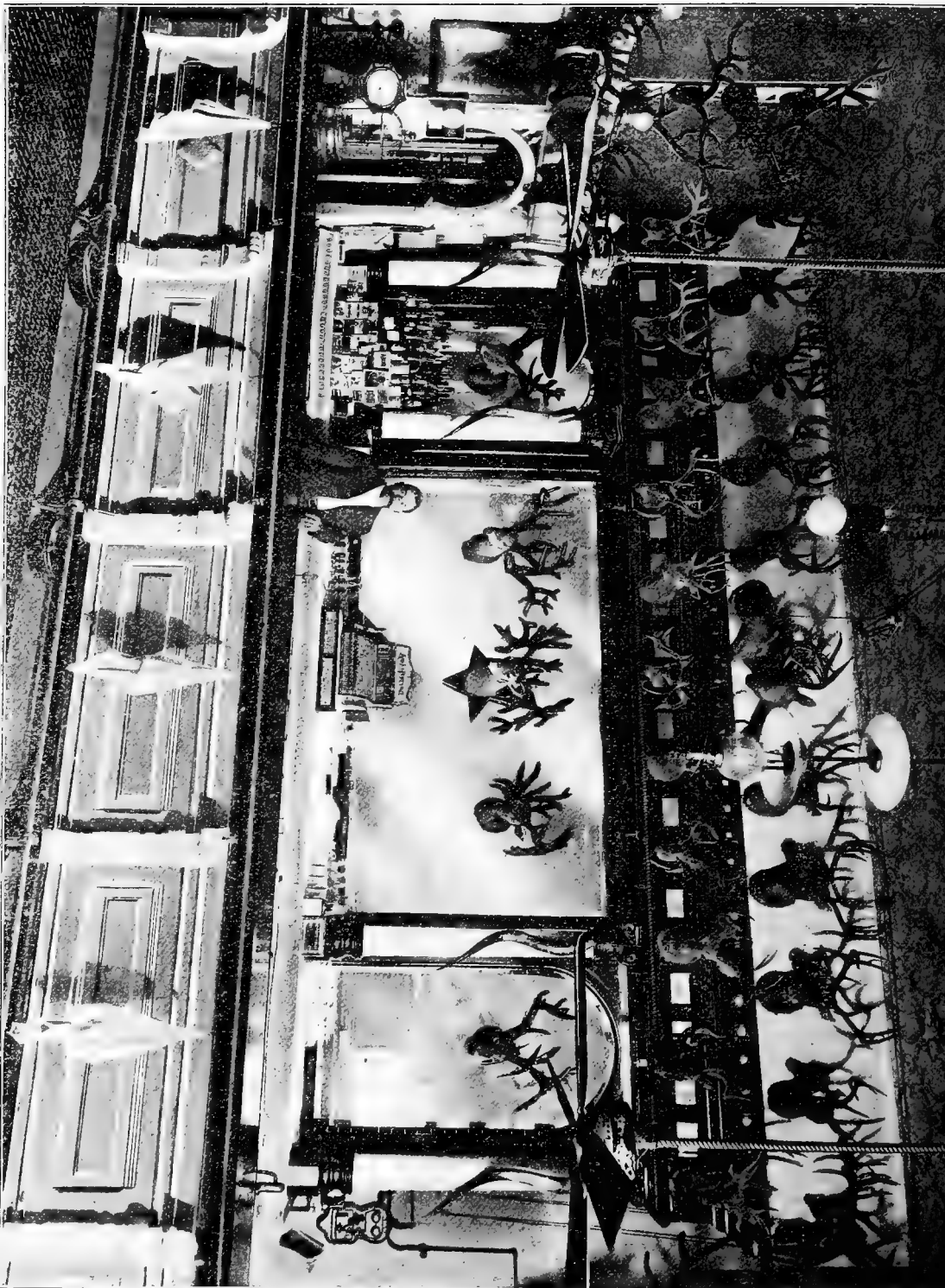
GREATEST COLLECTION
OF HORNS
IN THE WORLD

THOUSANDS
OF LADY VISITORS
HERE ANNUALLY

SPECIAL
ATTENTION
GIVEN TO MAIL ORDERS

THIS
SALOON
WAS EST 1881

The above six designs consist of One Thousand Seven Hundred and Fifty-one rattlesnake rattles

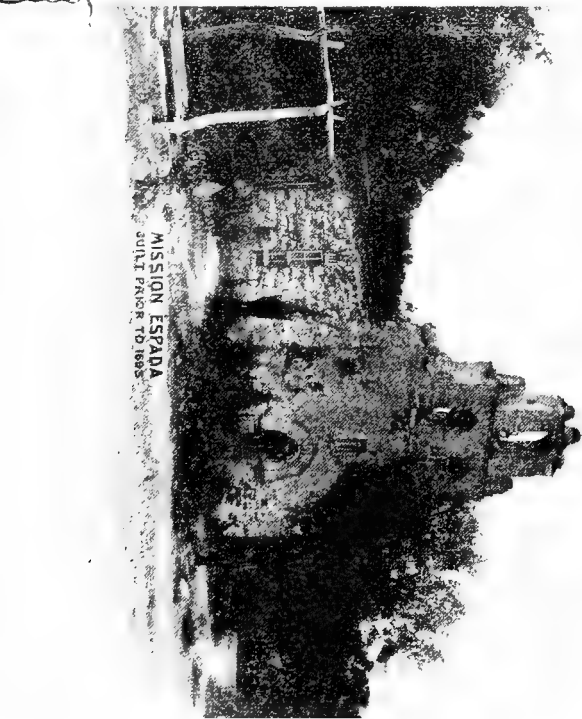
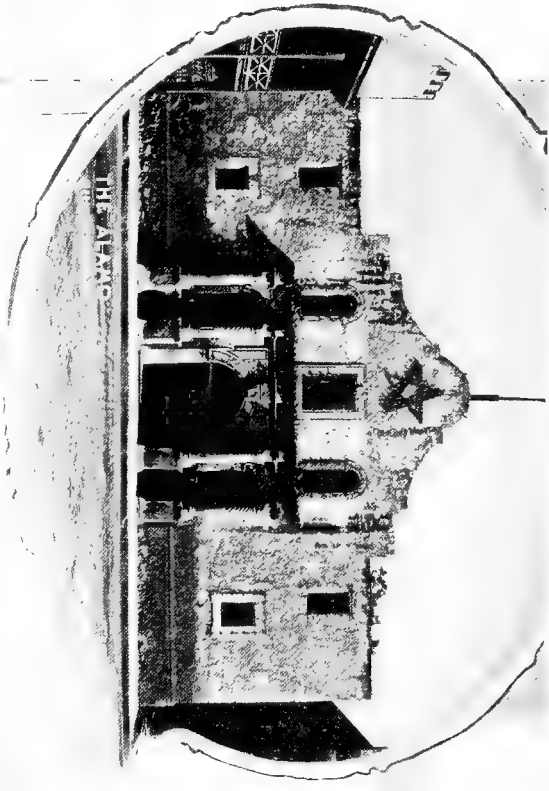


Interior View—East Wall, of the Albert Friedrich Buckhorn Saloon, San Antonio, Texas



55

The World's Champion—78 prongs. (A white-Tail Deer, Killed in McCullough County, Northwest Texas, in 1899)





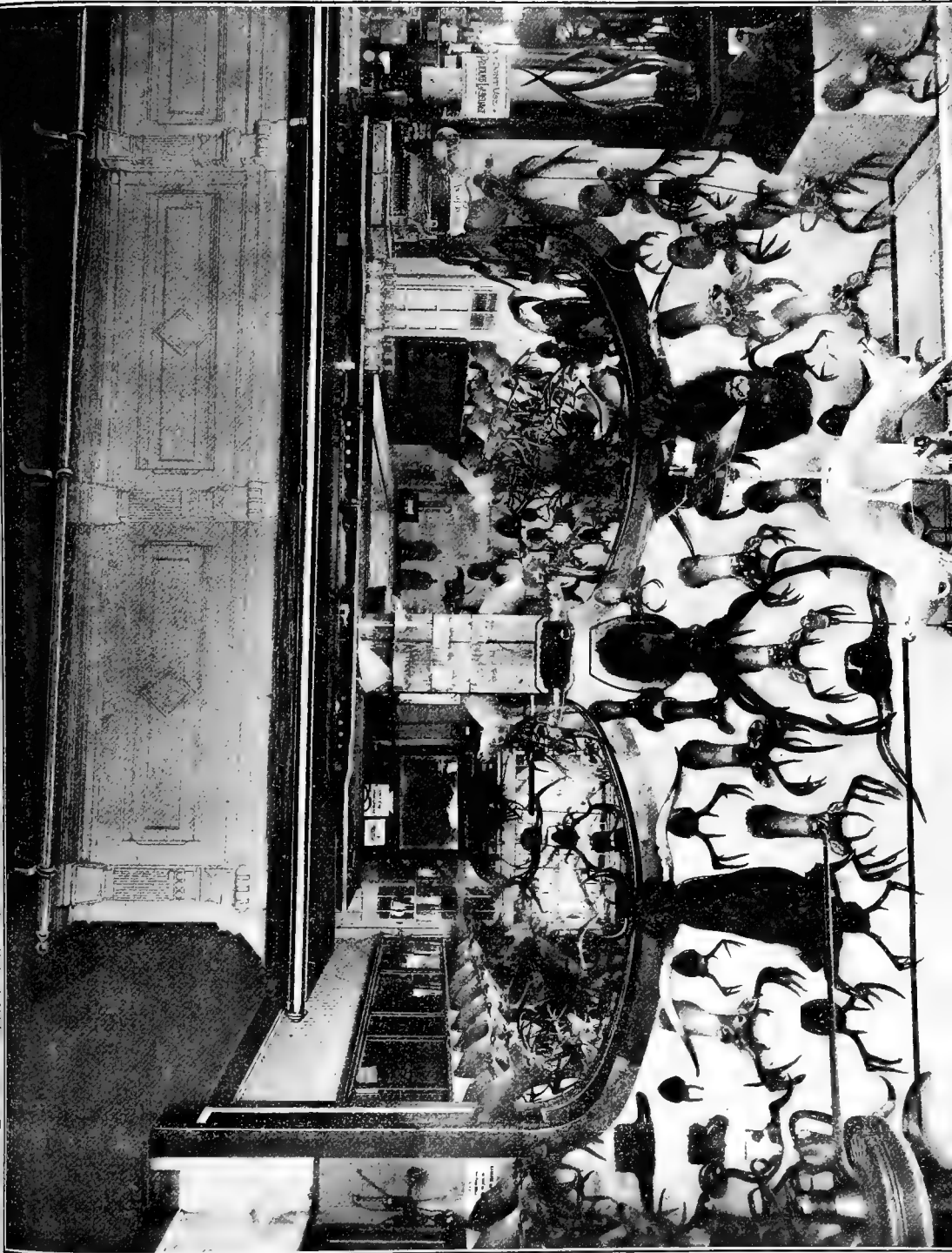
THE HEAD SPRINGS OF THE SAN ANTONIO RIVER, NORTHWEST OF BRACKENRIDGE VILLA, SAN ANTONIO
(Old-Time Photo View by the Writer)



THE SMALL SWISSHOUSE AT THE OLMOS CREEK, HEAD OF THE RIVER REGIONS; A CHARMING AND TYPICAL FOREST SCENERY, NORTH OF SAN ANTONIO. (Photo by the Writer, 1886.)



ONE OF THE ANCIENT SPRINGS AT OUR FAMOUS SAN PEDRO SPRINGS PARK.
(An Old-time Photovj)

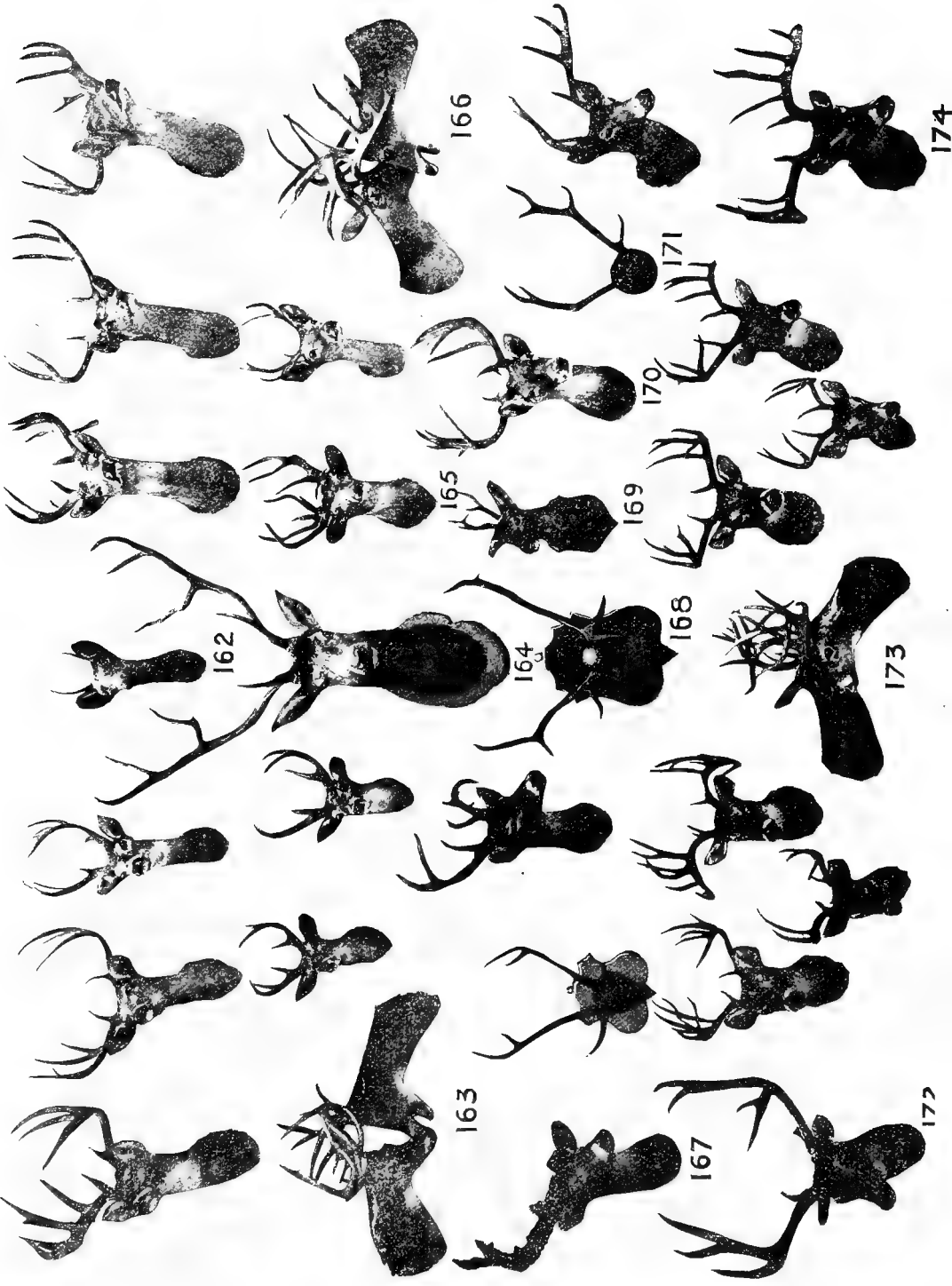




THE ABOVE FRAMED DESIGNS ARE COMPOSED OF ONE THOUSAND FIVE HUNDRED AND THIRTY-SIX RATTLESNAKE RATTLES

FOUR BEAUTIFUL LARGE ELK HEADS, (117, 118, 119, 120.) (ON THE TIPS OF EACH PRONG AN ELECTRIC GLOBE HAS BEEN PLACED LATELY WHICH MAKES
48 LIGHTS AND BEAUTIFUL TO BEHOLD WHEN LIT.)





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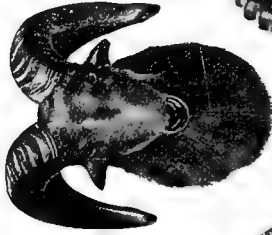
A FEW SAMPLES OF THE SUPERB ALBERT FRIEDRICH BUCKHORN COLLECTION, SAN ANTONIO, TEXAS



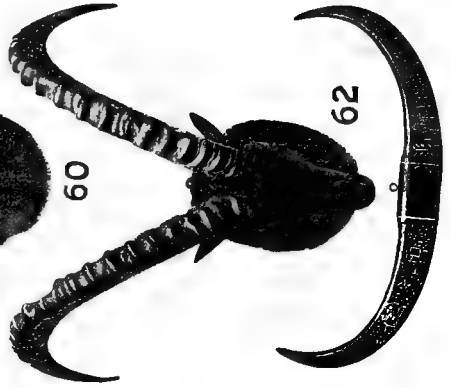
59



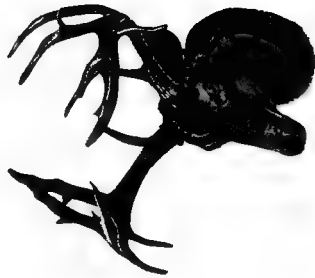
61



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59 MOUNTAIN MOOSE; 60 ROCKY MOUNTAIN WILD SHEEP; 61 MOUNTAIN MOOSE; 62 THE IBEX (CARPON IBEX) THE RINGS ON THE HORNS INDICATE THE ANIMAL'S AGE 63 FILIPINO

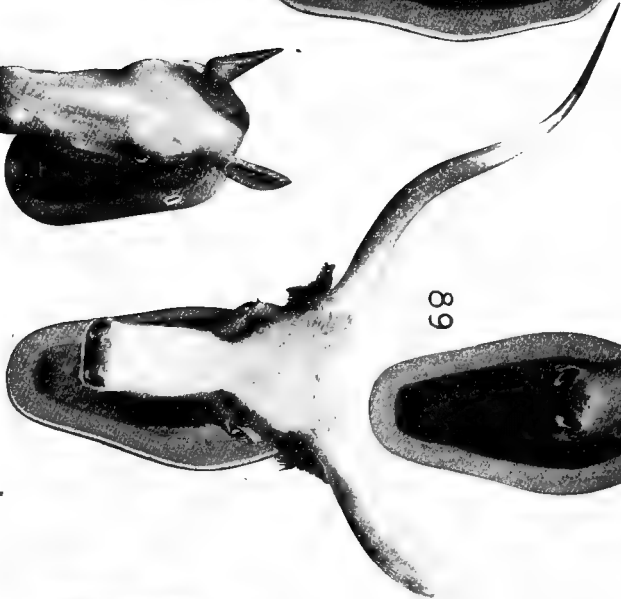
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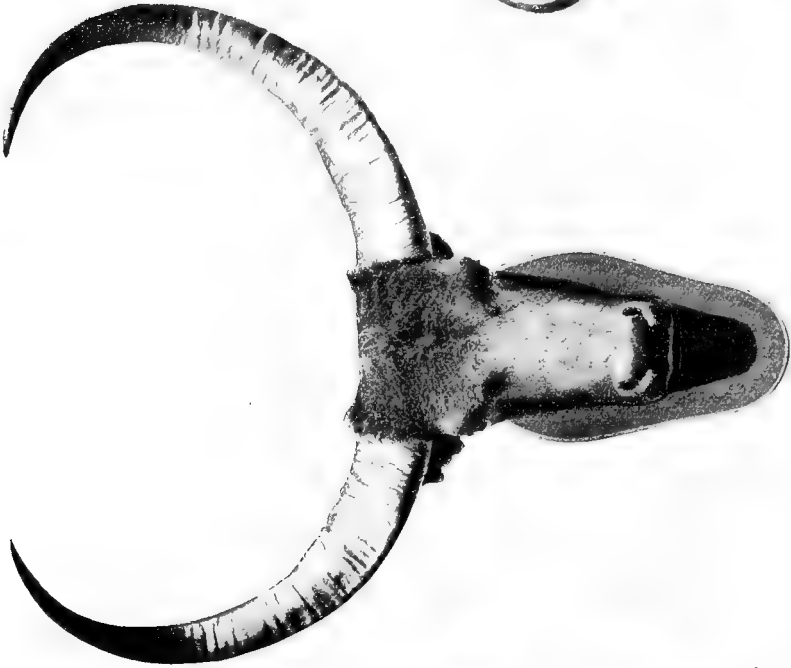
92



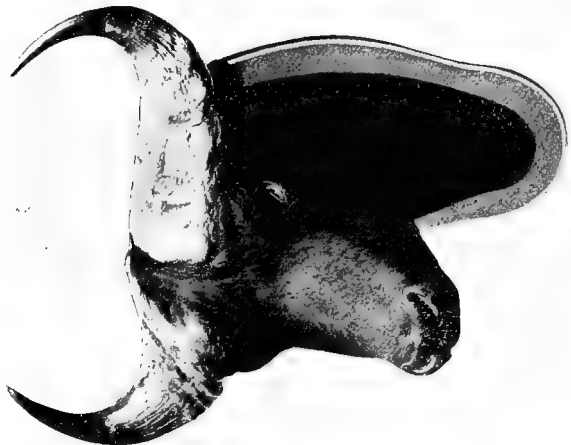
OLD TIME TEXAS LONG-HORN STEERS, ETC.



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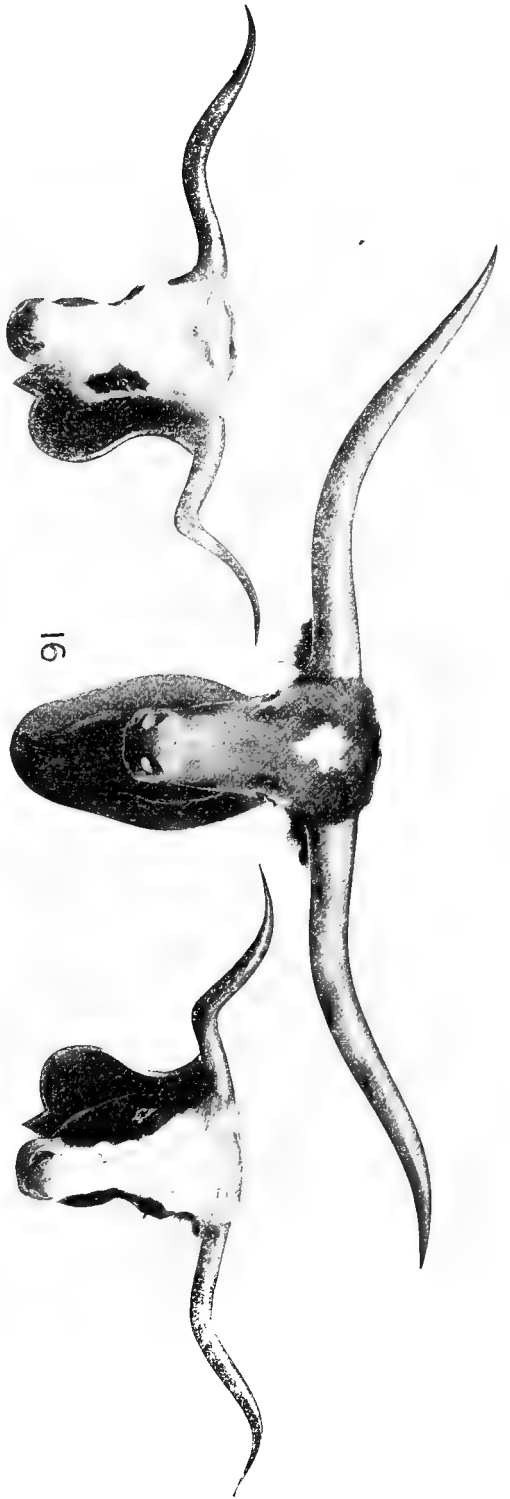


72



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THREE DIFFERENT KINDS OF BUFFALO 71 CAPEBULL; 72 THE CARABOA OR WATER BUFFALO;
73 AMERICA BISON, USUALLY CALLED BUFFALO.



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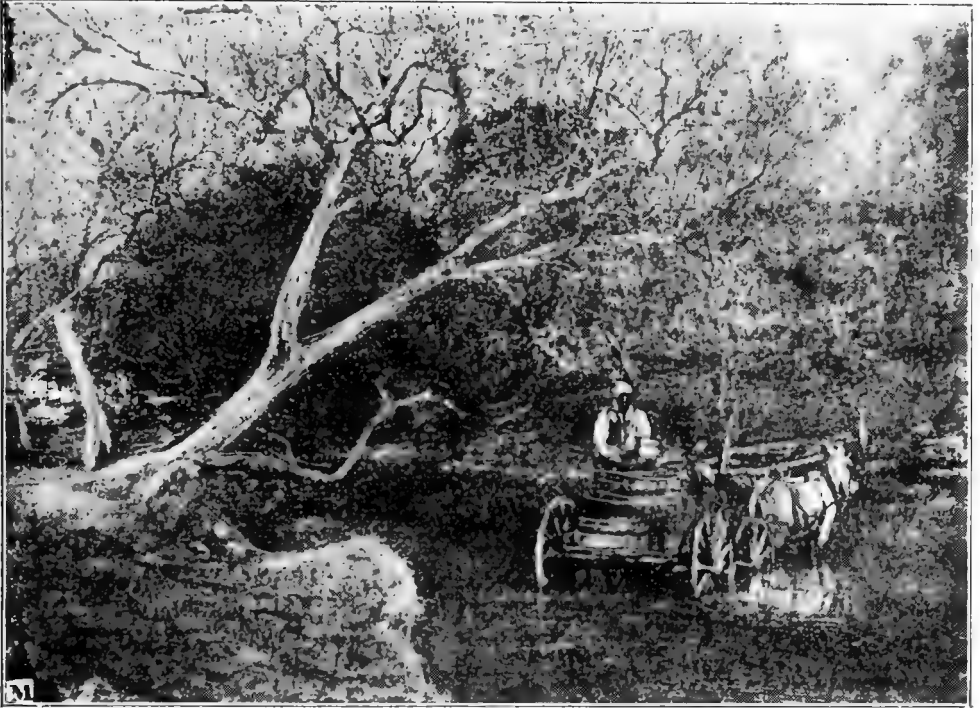


17

OLD-TIME TEXAS LONG-HORNS (MEASURING SEVEN FEET FROM TIP TO TIP)



THE ANCIENT MADARASZ BRACKENRIDGE PARK BRIDGE; ONCE A GREAT BEAUTY SPOT AMONG SAN ANTONIO'S RIVER SCENERIES ALONG BRACKENRIDGE PARK. (AN OLD-TIME PHOTOVIEW BY THE WRITER)



HAULING WATER, SALADO CREEK CROSSING, SOUTHEAST OF SAN ANTONIO.
(AN OLD TIME VIEW BY THE WRITER)



Texas Cactus Wren and Its Nest

It affords me much pleasure to submit to my readers a nice original photo view of our prairie cactus wren on its abandoned nest, encountered lately along the "canvas back" lake, south of San Antonio and nearly opposite the old

In the cactus jungles around the stated lakes, and especially also at the cactus jungles of the Leona hills these merry little wrens abound numerously, and their large funnel-shaped weed nests



YOUNG BUT FULLGROWN-CACTUS WRENS. ONE ON NEST.

Mitchell's lake hunting preserve.

These interesting and exceedingly lively and attractive little weaver-birds enliven the hunting grounds with their merry chattering ways: and they are found very numerously wherever the broad leafed opuntia cactus exist, especially along hilly regions with plenty of dense brush thickets.

are nearly exclusively found built between two or more cactus leaves. They are an exceedingly restless lot and are often seen among the cactus jungles running swiftly along the ground, or, in search of their insect food, inside the cactus spaces. In general appearance they resemble somewhat the beautiful canyon wren, but the

cactus wren, as its name implies, is a typical cactus jungle bird, and its body feathers and its tail in particular, is very beautifully marked with snow-white dots and stripes, and the beautiful spotted tailfeathers are spread out like a fan in their movements from one cactus bush to another, or in flying and running along the ground. Usually these birds built a very large nest between some cactus leaves, and occasionally two or three can be found in the cactus bunch, and I have met some during hunting trips fully two and one-half feet long; and all such nests are usually built of dry limbs of the yellow blooming broom weed. The nest seen on this photo was over a foot long and consisted entirely of broom weeds—with some of its small yellow flowers still quite green; and its inside, funnel-shaped cavity was snugly out-lined with tiny feathers. Once year ago, at the Leona hills I met numbers of such cactus nests, and one in particular was of much interest as its inside mold was out-lined with fine soft feathers and a large quantity of rabbit-fur, and near its entrance a piece of dry skin of a rattlesnake was interwoven in the nest body. W. C. Schulze and some others were present when I called their attention also to this unusual wren's nest.

Such freaks in nature are occasionally met with during hunting trips and I recollect how, only a few weeks ago, I found this nest of some other weaver-bird in which a fieldmouse with five young ones (about one inch long and yet blind) were found. It happened near the Mission "Espada" and I showed the nest to my companions and neighbors, Max Men-ger and A. Haubold. It was a beautiful, oval-shaped nest of

some weaver-bird, inside a dense conglomerated mass of vines; and, though the breeding season of birds was about over, mere curiosity tempted me to investigate this nest, and on closer inspection the long tail of a field mouse was seen protruding inside the nest entrance, and on still closer inspection, the five young blind mice were seen. The nest was situated about five feet above the ground, and nearly in the center of a large broad bush close to an overhanging tree covered with the foliage of mustang grape vines.

* * *

In his works on birds of North America, the great German ornithologist, H. Nehrling, mentions that the ornithologists of Europe, judging only from stuffed specimens and unfamiliar with the life-habits of our cactus wren, originally supposed these birds were a sort of tree-climber or woodpecker, and that even Cassin, in his magnificent work: "Illustrations of the Birds of Texas, California, etc., (1853-1856), illustrated this wren in a climbing, wood-pecker-like posture; but later Dr. Herman reported having first encountered this bird in Southern California, and he was one of the first to report in detail of the doings and life-habits of this wren: that, like others of its kind, it penetrated the cactus-thickets close to the ground; where it also finds its food, consisting of all sorts of insects, which it gathers principally from the ground.

"As a genuine wren, this bird lives close to the ground in various types of the cactus-plant, which it penetrates in inimitable mastership, in spite of their fearful sharp thorns. They build a large, comfortable nest, similar to some other types of wren, in form of a pouch or pocket, resembling somewhat the shape of a flat bot-

318 TEXAS NATURE OBSERVATIONS AND REMINISCENCES.

tle, or rather, it resembles a baby nursing bottle. The nest is built in its flat side between the cactus leaves, etc., about ten or twelve inches in size, and about half as broad. The eggs, numbering four to six, are of white color, but dotted throughout with salmonoid specks." * *

"Sennett found the cactus wren first in Hidalgo, Texas, about one

hundred miles beyond the outlet of the Rio Grande, into the Gulf of Mexico, where the hilly regions are thickly studded with cacti. The nests always were very large, generally built inside the fig cactus leaves, where they were easy to find. It's song is very loud and shrill" and Sennett noticed how they gathered the seed kernels of the globular ground cacti, and,



THE WRITER AND A FRIEND IN MIDST CACTUS JUNGLES INSPECTING A CACTUS WREN NEST.
(A SELF-MADE PHOTO, NOVEMBER, 1913.)

worms and larvae from the ground; the bills of many being covered with earth, etc." * * *

These observations tally with those stated above, and our lively Texas cactus wren has been known to me ever since boyhood some fifty years ago, when then, living on a farm, near Boerne.

The principle home of this wren specie however, is the immense cactus plains and brush thickets of Southwestern Texas. Occasionally, but rarely, these lively cactus birds also build their large nest in some thorny bush or on a mesquite tree; and I here met one of them, years ago, in the thorny agarita bushes, close to Mitchell's lake, and also twice located in a large Spanish dagger plant.

When close to dwellings, they are quite tame, and, if not molested during nestling time the young brood will return annually and enliven the surrounding territory. Several such breeding nests can be found in the cactus thickets

south of San Antonio, close to Mexican dwellings, and some of them directly on the road, inside an artificial cactus fence, leading to the Espada Mission. In front of a Mexican dwelling, several very large cactus wren nests could be seen, nearly as large as a bucket, built between the thorny leaves, and the inside broad-rotund cavity is snugly outlined with soft feathers and wool and parcels of cotton. I once, at the romantic Cassin's lake, met a beautiful wren nest, entirely outlined with the snow-white cotton fibre; and the outside entrance as well as the thorny surroundings were covered with remnants of the white cotton-bolls of an adjoining cotton field.

A second illustration seen herein (a "self-made" photo) shows one of the cactus thickets with wren nests, located close to the "canvas-back lake," nine miles below San Antonio, and near the jungles of cacti the previous view was taken.





TYPICAL SCENERY SAN GERONIMO REGIONS; WATERFALL NORTH OF THE "BLUE-HOLE" NATATORIUM DESCRIBED ELSEWHERE HEREIN NEAR BANDERA ROAD, AND THE OLD GALLAGHER RANCH POST OFFICE; 20 MILES NORTHWEST OF SAN ANTONIO.





PRAIRIE SCENES NEAR SAN ANTONIO

Cactus Wren and Nests. (Delayed engravings for Wren article, page 316.)
The lower picture showing another typical and large wren nest between
cactus leaves suspended over a Spanish dagger plant.



Errata

Page 24—Footnotes to illustration should read: (Fig. 1.) Nest intact.
(Fig. 2.) Nest cut in two, showing, etc.

Page 51—(First column, 19th line), should read: “I am sure the disease is not so rare, and if proper inquiry were made it could be proven to be so.”

Page 58—(First column, last line) should read: “The three Texas spider specimens on next page are very beautifully marked, when seen, etc.

Page 50—(Second column, 37th line) should read: “The rabbit of course will not cause taenia in man,—much less echinoccus, etc.

Page 59—Footnotes to illustration should read: “The cocoon of the larger specimen, (not “lower” specimen, etc.)

On Page 157—The Gila Monster Article, second paragraph should read: “However, this time it is the Gila reptile to which particular attention is called. In the March 1912 issue of the Texas Field and National Guardsman, the following data appeared by a friend of the Field anent the Gila Monster, under the caption: “A query for Dr. Menger,” in which the contributor had said: “I have been reading with considerable interest Dr. Menger’s articles on “Nature observations” for the past year or so. etc.



