

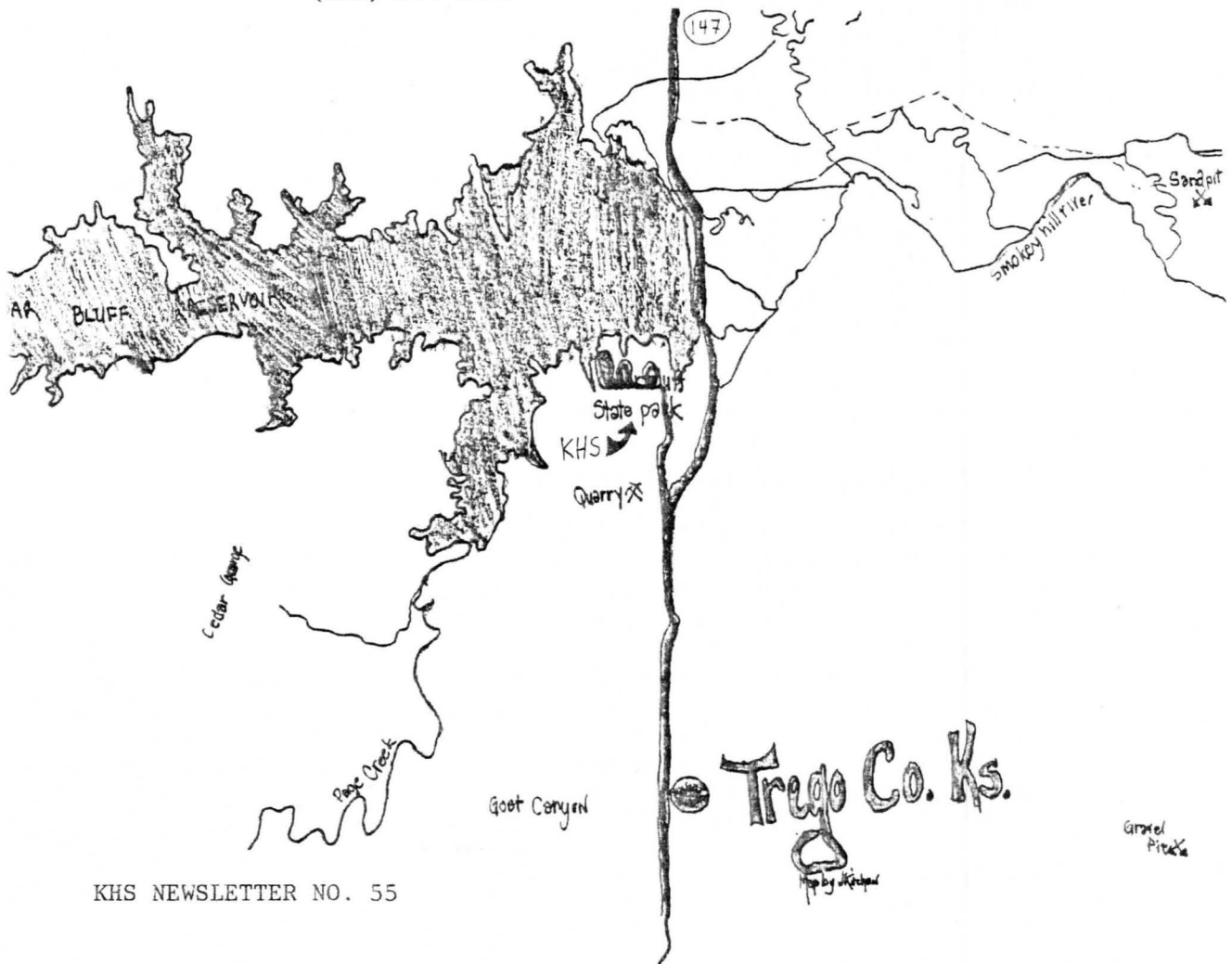
MARCH, 1984

ANNOUNCEMENTS

The One and Only KHS 1984 Field Trip!!!!

The KHS will meet on Friday, 18 May 1984, at Cedar Bluff Reservoir in exciting southern Trego County for a weekend of herping in the High Plains. We will camp on the south side of the dam. Access to this campground is via the first road on the west side of Kansas Highway 147 approximately 2 miles south of the dam. Plan on bringing lots of food in coolers or expect a drive of 20 to 25 miles to the nearest town of your choice for meals. This is the only officially sanctioned KHS Field Trip for 1984, so plan on attending or miss the fun afield with the best. For further information, contact your leader:

Kelly Irwin
Boy Scoutmaster Headquarters
2218 W 2nd
Topeka, Kansas 66606
(913) 354-1195



Turtle Tagging at Tortuguero

For the serious field person, the New York Zoological Society (NYZS) is offering an opportunity to work on the renowned turtle beach of Tortuguero in Costa Rica. The new program is designed to support and augment sea turtle research sponsored by the Caribbean Conservation Corporation (CCC). The NYZS will assemble four teams of hearty people to work during the July-September turtle nesting season in 1984. The team will be escorted by a NYZS staff person and will be supervised by a core staff of CCC personnel.

Green turtle research at Tortuguero, now in its 28th year, is directed by Professor Archie Carr of the University of Florida. The breeding colony using the beach is the largest in the Caribbean. The beach is protected by the 19,000 hectare Tortuguero National Park, and Dr. Carr's research on sea turtles there has led to a world-wide awakening to the biological mysteries and conservation needs of these endangered reptiles.

The NYZS initiative, with your participation, will measurably bolster the field studies at Tortuguero, and will reward you with a rare, if rigorous tropical experience. Good food and housing are assured at the CCC Green Turtle Station. The work, however, is tough, with miles of nighttime beach walking, tagging sea turtles often in heavy wet seasonal rain. You need a strong back and a good will. But if exposure to sea turtles and to fine tropical rainforests and wildlife appeals to you, please join us.

Departures from Miami are tentatively scheduled for 13 July, 27 July, 10 August and 24 August. Each tour will be of 18 days duration and will include 14 days at Tortuguero, plus 4 days in transit.

Optional touring of the great parks of Costa Rica prior to or after your Tortuguero field work can be arranged.

We hope you will sign up and help us help the turtles. Contact:

John Behler, Curator of Herpetology
New York Zoological Society
185th Street and Southern Boulevard
Bronx, New York 10460

New Addition of Inventory of Live Reptiles and Amphibians in Captivity

The 1983 edition of this noted volume contains an inventory of living specimens held in 198 reptile and amphibian collections (75 public and 123 private) from ten countries. Information is current as of 1 January 1983, with 366 genera, 911 species, and 1,191 forms represented. Information on reproduction includes 367 taxa along with a 40-page bibliography on breeding. Published by the author (see address below), the price for the 1983 edition is a mere \$25.00 (\$20.00 paperbound) plus \$1.50 postage (\$2.50 overseas).

This inventory is an ongoing project with corrections, updates, and expansions being planned over the next several years. All institutions, worldwide, holding live reptiles and/or amphibians are asked to submit

inventories and breeding information current up to 1 January of each year. Private collectors are also welcomed to submit information, but emphasis is on those collections which have breeding potential, have had breeding success in the past, or hold species which are rare or difficult to obtain. I hope to compare annual inventory data, as well as producing the inventory and breeding information.

I am now preparing to receive information current as of 1 January 1984. If you keep live reptiles and/or amphibians in captivity, please respond with the information requested below:

1. A complete inventory of all reptiles and amphibians held in your collection current as of 1 January. Sexes should be included and can be listed "male/female/unknown".
2. A list of all species which bred and produced young during 1983, including numbers of young for each species.
3. Any miscellaneous breeding information (use the information presented in the 1983 edition as a guide). Include detailed information for all species which you feel should be listed.
4. A listing of any publications, including books, museum bulletins, journals, magazines, etc. with reference to reproduction in reptiles and amphibians. References pertaining to the care of individual species as well as more general articles relating to temperature, light cycle, hibernation, etc. are of interest.

Deadline for receipt of information is 1 March.
All orders and information should be sent to:

Frank L. Slavens
P.O. Box 30744
Seattle, Washington 98103

Is This Your Last KHS Newsletter?

Perish the thought, but it could be if you have not paid your 1984 dues. Remember the KHS cannot exist without your financial support. Pay up or else.

Annual Chikaskia River Wildlife Study

The annual Chikaskia River Wildlife Study will once again be held in the Drury, Kansas area of Sumner County during the spring of 1984. The event is being planned for the second weekend of May (the 11th through the 13th) and will be held on private land along the river.

The wildlife study is open to everyone interested in learning more about the flora and fauna of the Chikaskia. There is no charge to attend and primitive camping is available for those wishing to spend the night. Everyone attending is asked to bring their own food and camping equipment. It is also important that every child attending have an adult present at all times during the study that can be responsible for

the child's actions and welfare.

Those interested may obtain more information about the location of the 1984 wildlife study by contacting:

Gene Trott
Box 11, Rt. #1
South Haven, Kansas 67140
phone (316) 892-5554

Final arrangements are expected to be finished by mid-March 1984.

Also, a limited number of Chikaskia River Wildlife Study t-shirts are being printed and will be sold on a first-come basis. The shirts will be tan heather with dark brown trim. They will have a map of Kansas on the front with a drawing of a Tiger Salamander in the center. The drawing will be in full color (yellow and black) and CHIKASKIA RIVER WILDLIFE STUDY, SUMNER COUNTY, KANSAS will also be printed on the shirts. The shirts will be of high quality and will be printed by a large, dependable sportswear company.

The shirts may be ordered after 1 February 1984. The price will be just \$5.00 plus \$1.00 per order postage, for all sizes. They will be available in youth S, M, L, and adult S, M, L, XL. Send orders to:

Larry Miller
524 North Osage Street
Caldwell, Kansas 67022

Make checks payable to Larry Miller. Checks will be returned if the shirts ordered have already been sold out.

Plan to attend the 1984 Chikaskia River Wildlife Study. Bring your cameras, camping equipment, etc., and be ready to enjoy a fun and educational weekend.

--Larry Miller
524 North Osage
Caldwell, Kansas 67022

THE CHIKADEE CHECK-OFF: HELPING THE KANSAS NONGAME WILDLIFE

Nongame wildlife is any species of wild animal that is not typically sought through hunting, trapping, or fishing activities. More than 24,000 different mammals, birds, fish, reptiles, amphibians, and invertebrates in Kansas can be enjoyed through observation, photography, study, or merely an appreciation of their ecological significance. In the past, revenues from hunting and fishing license sales provided the financial base necessary for proper conservation of game species. Now a check-off item on your state income tax form allows all Kansans to help nongame wildlife. During the past 3 years, contributions have supported

many projects including:

REINTRODUCTIONS--At least 22 species of wildlife that once were part of the state's fauna no longer occur in Kansas. Wherever habitat is now available, reestablishment is being considered.

EDUCATION--These projects help to inform and educate the public about nongame wildlife, the Fish and Game Commission's activities concerning the resource, and nongame wildlife use opportunities. Educational materials are purchased and available as a free-loan service through the Wildlife Reference Center in Pratt.

INVESTIGATIONS--Several projects are designed to obtain population and distribution information concerning species about which little is known such as eagles, whooping cranes, herons, ferrets and reptiles.

HABITAT IMPROVEMENT--Nongame wildlife populations can be enhanced most effectively by improving the areas in which they live. Projects have included: Eagle perches at Cheney Reservoir; pond and prairie development at Chaplin Nature Center in Arkansas City; nature trails at Warnock Lake, Osage State Fishing Lake, Maxwell Wildlife Refuge and others; and a wildlife observation tower at Cheyenne Bottoms.

What Can You Do?

- Help nongame wildlife by contributing when filing your state income taxes.
- Borrow material from the Wildlife Reference Center for programs in your community.
- Tell your friends about the nongame wildlife program and the Chickadee Check-Off.

--from Kans-A-Gram 7(6): 4 January 1984

KHS BRINGS YOU NEWS OF THE WORLD AND WAY BEYOND...

Loving George is a Cuddly Bundle of Teeth

Thelma Harris and her family don't worry about burglars because their home is guarded by their loving pet George -- a 45-pound crocodile with razor-sharp teeth.

The devoted watchcroc is affectionate and cuddly with his owners, but he would chop the hand off a stranger with one snap of his powerful jaws.

"He's strong and he's brave and he's an ideal pet when it comes to the family," said Mrs. Harris, a Kenora, Canada grandmother who adopted the scaly beast 16 years ago. "We take him for walks on a leash and let

him snuggle up with us on the couch when we're watching TV.

"We've had him since he was a baby and he's perfectly safe with us -- but I'd hate to be the prowler who crossed his path."

The Harrises got George in 1967 when he was only a little over a foot long. Since then the grinning beast has lumbered through their house and yard, keeping an eye on things and enjoying life as a pampered pet.

"Crocodiles make great pets," Mrs. Harris insisted. "They're clean and well-behaved and because they don't have hair we have no problems with allergies.

"George is really very affectionate despite his menacing appearance. He likes to crawl up in our laps and have his chin scratched.

"We love him, but a lot of our friends and neighbors don't. People get nervous when he comes into the room and a few people refuse to visit us because they're afraid of George."

The Harris' housepet has grown to over four feet in length and eats three pounds of raw meat a day. He lives in a specially-built wooden aquarium and has the run of the house.

In the summertime the pampered reptile lounges around in a plastic wading pool and tramps through the woods with his masters. He stays indoors for the cold Canada winters, basking under a heat lamp and munching his favorite junk food -- pretzels and popcorn.

"He's very independent, but we've trained him to do a few things," his proud owners said. "He'll come when we call his name if he feels like it. And he'll roll over on command.

"He can be unpredictable sometimes and because he's very strong he can be a little scary. Sometimes when he's excited he wraps around your leg for support and flips around. It takes two or three people to hold him down."

Snaggle-toothed George is getting so big and sinister looking that the Harrises have taken to locking him away when visitors come to their house for the first time.

"We know that as long as we're there he'll never hurt anyone, but we don't want him to frighten people," Mrs. Harris said. "One time a friend dropped in and George went right over and jumped in her lap, thinking she was my daughter, Shelley.

"The woman nearly had a heart attack on the spot."

--Weekly World News, 29 November 1983

(submitted by Ligia Galarza, Lawrence, Kansas)

Slithering Death

In a six-month reign of terror, 27 little children mysteriously vanished without a trace from their Amazon jungle village. Only an accident of nature revealed they had been killed and eaten -- by a giant anaconda snake!

The ghastly discovery was made when a village hunting party stumbled across the gigantic snake only an hour after it had been killed by a bolt of lightning.

Knowing the anaconda's hide would bring many tourist dollars in the city, the hunting party quickly began the task of skinning the monstrous snake that measured an incredible 29 feet in length and 2 1/2 feet in girth.

The villagers were overjoyed at their good fortune. But happiness turned to stark horror with the first plunge of the skinning knife. Inside the cavernous belly were found the partially digested remains of a little girl -- the latest of the village children to have vanished without a trace.

"The child had been consumed whole," villager Tonati Jutai told the NEWS. "We know now that all of our missing children had met the same fate. They had become food for the devil snake.

"Had fate not led us to that spot where the snake lay dead, we would never have learned what had happened to our little ones. Only the power of the thunder gods could have destroyed such a beast."

The giant anaconda snake waged its reign of death in the fishing village of Lago Tera, which lies on the banks of the Perus River, 300 miles south of the Amazon capital of Manaus.

The anaconda is the world's largest snake. It is a constrictor and kills its prey by snatching it in its mouth and quickly encircling it with its powerful body. It compresses its victim's lungs so it can't breathe, bringing slow and agonizing death by asphyxiation.

"This was a most extraordinary situation," said Michael Jepson, who has spent the past 18 years conducting a religious "river missionary" along the Purus River. "Big snakes rarely seek a human as its meal.

"A child could easily outrun an anaconda on land. In the water, that's another matter. But I have never seen such an attack. Often, a constrictor will curl itself into a knot on a low-hanging tree limb and wait for its prey to pass beneath it. Then it drops like a rock on its prey. A 150-pound snake such as this one could easily stun a child. Then it would be no contest. The snake unlocks its huge jaws and the child becomes its meal. And no trace of the tragedy would be left behind."

"The skin of the snake was charred only for about two feet from its head," Jutai said. "The snake claimed 27 of our children.

"We will keep its skin in the village as a warning."

[photo caption] The anaconda is the world's largest snake. It curls itself around a low-hanging tree limb and waits for prey to pass beneath it. Then it drops like a stone and begins the task of crushing its surprised captive.

[Editor's note: the snake in the photo above the caption is hanging from a tree branch all right, but is not an anaconda...how about a man-eating Emerald Green Tree Boa?]

--Weekly World News, 20 December 1983
(submitted by Thomas Moore, Lawrence, Kansas)

Texas Quarry Yields Dinosaur Discovery

WASHINGTON -- A new type of dinosaur, an early mammal-like creature and the earliest snake discovered on the North American continent are among the finds at a Texas archeological site, the National Geographic Society disclosed Wednesday.

The fossils were discovered in a quarry southeast of Lubbock by a field party from Texas Tech University headed by Dr. Sankar Chatterjee.

Chatterjee speculated that the animals were drowned in a flash flood 200 million years ago, the mud preserving their bones.

The new type of dinosaur was identified from a piece of jaw and teeth. It was a plant-eating creature about four feet tall that ran on its hind legs to escape predators, according to the society report.

It was the earliest form of ornithischian, or "bird-hipped" dinosaur to be found, according to Chatterjee. Named for their pelvic bone structure, the type later developed into large, lumbering creatures with horns and plates for protection.

The one found by Chatterjee's group is of a type never seen before.

Also found was the shrew or mouse-like creature called ictidosaur, which has some features resembling a mammal and others that seem more like those of a reptile. These little animals are related to modern mammals and played a role in evolution, Chatterjee reports.

Chatterjee said he also believes he has found the reptile ancestor of Tyrannosaurus Rex, the giant flesh-eating dinosaur. This ancestor, Postosuchus, was 13 feet long, weighed 600 pounds, and looked like a miniature Tyrannosaurus.

The group found the skeleton of a young Postosuchus and several juveniles, leading to speculation that they hunted in packs.

The group also found the skull of the earliest known snake. The flexible jaw and sharp teeth resemble those of contemporary non-poisonous snakes, and scientists hope the find will help them learn more about the evolution of snakes.

And the skeleton of a land-lizard similar to the modern iguana was also uncovered. This, Chatterjee said, may represent the main stock from which modern lizards developed.

--Lawrence Journal-World, 24 November 1983
(submitted by Irving Street, Lawrence, Kansas)

Fossil Antedates Dinosaurs' King

WASHINGTON -- University paleontologists who dug for fossils in a west Texas rock quarry believe they have unearthed the remains of a 13-foot-long creature that was the ancestor of Tyrannosaurus rex, the fierce, eight-ton giant that symbolizes the age of dinosaurs.

The newly discovered reptile would be one of only a few ancestors ever found of dinosaurs, whose origins are almost as mysterious as their abrupt extinction around 60 million years ago.

Sankar Chatterjee, a Texas Tech University scientist who directed the search in a rocky, dry area about 60 miles southeast of Lubbock, said his group found the complete skeletons of a sub-adult and two

young, as well as remains from eight other juveniles.

In addition, the search has turned up fossils of a new type of dinosaur, the earliest snake ever discovered, a land lizard previously unknown in North America and a reptile that resembled a mammal.

The discoveries were announced here by the National Geographic Society, which supported the research.

The Tyrannosaurus ancestor, which has been named "Postosuchus," looked much like a smaller version of Tyrannosaurus, Chatterjee said. Both creatures apparently walked on their hind legs and had ferocious, meat-eating jaws.

However, Tyrannosaurus reached lengths of up to 47 feet and weighed more than 15,000 pounds. Postosuchus was only about 13 feet long and weighed about 600 pounds, Chatterjee believes.

Tyrannosaurus is believed to have appeared about 165 million years ago and the fossils found by Chatterjee's group are believed to be of creatures that existed around 200 million years ago.

At that time, what is now the arid, rocky west Texas countryside was lush with vegetation, laced and dotted with rivers, lakes and ponds.

"The skeleton of an adult (Postosuchus) looks like a miniature version of Tyrannosaurus," Chatterjee said. "Only the ankle arrangement and a slight variation in the bone structure of the pelvic region reveal that Postosuchus was a (non-dinosaur) reptile."

Another difference between the two creatures appeared in the way Chatterjee found the Postosuchus fossils.

"The discovery of so many together suggests that Postosuchus hunted in a pack and cared for its young before they were old enough to set off on their own," he said. "It also supports the theory that some dinosaurs, which evolved later, traveled in herds."

Possibly because it took so much food to support each individual, Tyrannosaurus is believed to have been a lonely creature, with perhaps no more than a single adult for every 100 square miles.

--Lawrence Journal-World, 26 November 1983

Snake Doesn't Set Well With Customer's Breakfast

LIBERTY, MO. -- A woman has filed a lawsuit against a restaurant where she claimed a 2-foot-long black snake wrapped itself around her leg as she ate breakfast.

Rosie B. Johnson of Kansas City, Kan., said in the suit that she and her husband were seated at a table in a Denny's Restaurant in North Kansas City when a "wild and vicious reptile" crawled up her leg.

Mrs. Johnson is seeking \$25,000 in actual damages and \$50,000 in punitive damages. Her husband is seeking the same amount.

Mrs. Johnson's attorney, Gregory W. Vleisides, contended the restaurant was negligent in not asking its employees to inspect its business and remove the snake.

The suit, filed last week in Clay County Circuit Court, claimed that Mrs. Johnson cannot sleep, has little appetite and is continually nervous as a result of the incident, which allegedly occurred June 24.

"She doesn't like to go to restaurants anymore," said Vleisides.

Mrs. Johnson suffered several scrapes and strains when she knocked over some tables, the attorney said. He added she faced a loss in wages as well as expenses for therapy, tranquilizers and hospital bills.

--Ottawa Herald, 21 December 1983.

RECENT LITERATURE OF INTEREST

You Are What You Eat

Pierce, B.A., J.B. Mitton, L. Jacobson, and F.L. Rose. 1983. Head shape and size in cannibal and noncannibal larvae of the Tiger Salamander from West Texas. *Copeia* 1983(4):1006-1012.

Cannibalism can be found in nature as a response to food shortages, density of population, starvation, etc. Many species resort to cannibalism under special conditions, but others seem to be morphologically adapted for it. Among the Tiger Salamanders, some populations contain larvae with extra large heads, wide mouths, and slit-like eyes. These larvae are cannibalistic.

The authors collected a variety of Tiger Salamander larvae near Lubbock, Texas, home of the free, and made 13 different measurements of them. They found that the cannibalistic larvae do not simply grow faster than other larvae, but start off with larger heads. If the resources of a pond start to dry up and the supply of small, aquatic invertebrates begins to run out, these larger-headed individuals can turn to cannibalism to survive through metamorphosis and breed the next year.

Red-Tail Tale Told

Langhammer, J.K. 1983. A new subspecies of boa constrictor, Boa constrictor melanogaster, from Ecuador (Serpentes: Boidae). *Tropical Fish Hobbyist* 32(4): 70-79. (issue for December, 1983)

All right all you boa experts out there, what's a "red-tailed" boa? This distinction has often been applied to certain boa constrictors making their way into the pet trade in the U.S., and the author of this article believes he has enough evidence to name it as a subspecies from the Amazon region of southern Ecuador. The article includes color photographs of several variations of boa constrictors, a lengthy discussion of their distribution, and a key to the 13 subspecies recognized. Each subspecies is discussed in some detail, including scale counts, color patterns, etc.

To avoid confusion among the numerous forms termed "red-tailed boa" in the pet trade, the author has chosen to name this new subspecies melanogaster in reference to the dark pigment on the ventral surface of the adults, thus, the Red-Tailed Boa Constrictor is now the

Black-Bellied Boa Constrictor.

Home on the Range

Davis, J. and R.G. Ford. 1983. Home range in the Western Fence Lizard, Sceloporous occidentalis occidentalis. Copeia 1983(4):933-940.

These authors studied the Western Fence Lizard in Monterrey County, California, to determine home range sizes and space use patterns. Between 1959 and 1964, they made 4,505 observations of toe-clipped and color-marked individual lizards.

The juvenile lizards, with their smaller body size and selection of smaller, more abundant prey items, had the smallest home ranges. Immature lizards actually had larger home ranges than sexually active adults. This might be related to the fact that immature lizards are growing faster than adults (and so need more food) plus the adults probably had the preferable areas for their home ranges, leaving the less suitable areas to the immature lizards.

Adult males defended their home ranges during the breeding season, but tolerated intrusions by other adult males after the breeding season was over.

"...upon thy belly shalt thou go, and dust shalt thou eat..."

Garland, T. and S.J. Arnold. 1983. Effects of full-stomach on locomotory performance of juvenile garter snakes (Thamnophis elegans). Copeia 1983(4):1092-1096.

You would expect a large meal to slow down a snakes ability to move, but by how much? Garter snakes may eat a meal that is 15-30% of their body weight, but some venomous snakes eat 100-150% of their body weight in a single meal.

The researchers got 10 juvenile Western Terrestrial Garter Snakes and weighed them. They then timed the snake's speed on a 3.64 meter lap around a rectangular track, fed each snake two fish, and timed them again.

For these juvenile snakes, eating a meal that was 22% of their body mass did not slow down their "burst speed" (used to help escape from predators), but did decrease their endurance. How this would affect their ability to escape predators would probably depend on the particular predator involved.

EDWARD DRINKER COPE: ONE OF THE BEST. PART II.

EDITOR'S NOTE: This is the second installment of a series of articles on famous figures in the history of Herpetology. Part I of this series appeared in KHS Newsletter No. 51, pages 12-15.

The Battle of the Bones

Beginning in 1870, the great naturalists Edward Drinker Cope and Charles Othniel Marsh entered into a personal and professional feud that would become a legend and influence paleontology for decades. This feud was the famous Battle of the Bones.

Up until 1870, Marsh and Cope were still on friendly terms. Cope invited his colleague to visit the fossil-yielding marl pits of southern New Jersey. Having assembled a complete skeleton of a marine reptile, Elasmosaurus, he also invited Marsh to visit the Philadelphia Academy of Natural Sciences to see his creation. Unfortunately, Cope had mounted the head of the long-necked creature on what was actually the tail. Marsh couldn't resist the opportunity to belittle Cope for such an oversight. Worse, Cope had published an illustration of the restoration. In shame, he purchased back all the copies of the embarrassing journal...except for two in Marsh's library.

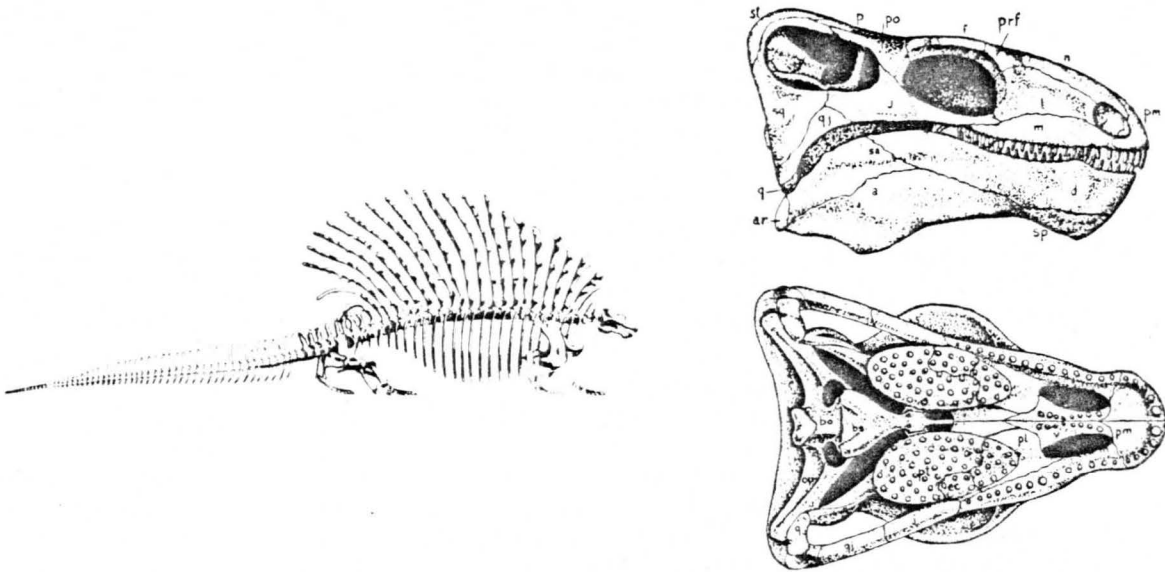
To Marsh, Cope became an unwelcome intruder into the fossil beds of the West, including Kansas. As great as the treasures were, the professor from Yale did not want to share. The depth of this animosity showed itself when Marsh criticized the short notes for publication sent by telegraph to Philadelphia by Cope. Who could, after all, blame a Kansas telegrapher in 1871 if he wired Lefalaphodon instead of Loxolophodon (Shor, 1974)? This criticism of names and dates was to be central to the pair's animosity, for in accord with the rules of zoological nomenclature, the law of priority is supreme. The first person to name a species is immortalized as the author in the annals of science. Since both Cope and Marsh wanted to name as many species as possible, each more than the other, the stage was clearly and simply set for a great battle of wills.

Following years of minor skirmishes and name-calling, the actual battle began in 1877 when Marsh pointed out that the name Cope had used for his beloved carnosaur, Laelaps, had been previously occupied by two other animals, whereupon he himself renamed it Dryptosaurus (Romer, 1956). Cope never accepted this nomenclature and continued to use the name Laelaps until his death. Both men were guilty of hasty descriptions, with one of the most famous being made by Marsh. In 1877 he found the bones of a huge sauropod dinosaur in Wyoming's Como Bluffs, and he named it Apatosaurus. In 1879 he described further bones as Brontosaurus. Because no skull was found with the otherwise complete skeleton, and because Marsh wanted to reconstruct this then greatest of American dinosaurs, he inadvertently used the skull of another species. As a result, both the name and the skull typically associated with this long-necked dinosaur are incorrect! Only recently have "Brontosaurus" skulls been replaced with their proper skulls in museums (West, 1979).

During the next thirteen years, the battle escalated. Marsh, ever eager to keep Cope from examining the "left overs" from his older digs, ordered his workmen to smash or dynamite bones they could not cart away.

At this time, fossil hunters only worked during the warmer parts of the year. Camps were closed and everything crated out before winter. This was still the time of the Wild West.

Both naturalists brought their feud into the scientific press and meetings. Marsh was once present at a meeting where Cope was describing new fossils. Marsh took notes, hurriedly left the meeting, prepared a paper for publication based on Cope's talk, and beat Cope into print (thus getting the credit for the descriptions). Marsh also hid fossils from visitors to Yale to preserve what he considered his private domain.



Edaphosaurus, described by Cope.

Cope was aware of Marsh's wealth, power, and numerous scientific and political connections. Perhaps this urged him to maintain higher scientific standards for himself. Marsh's employees out West, told of the "monster" Cope, were in fact amazed when they met the amiable Quaker during his visits to their sites. Both scientists knew it was important to have the support of the Indian nations if they were to explore for fossils. Marsh befriended the Sioux, taking their complaints back to Washington, D.C., to President Grant and the Congress, resulting in the removal of the regional U.S. Indian Agent, and the subsequent resignation of the Secretary of the Interior (Lanham, 1973). It is not inconceivable that had Marsh returned to Washington but a few weeks sooner, the battle at Little Big Horn might have been avoided.

Cope preferred the one-on-one approach, entertaining Indians with his false teeth, showing sketches of his "monsters", and by his genial nature. Along with friend and veteran fossil collector Charles Sternberg, he arrived in Helena, Montana just a few days after the battle of Little Big Horn. Most of his party, for understandable

reasons, was more inclined to climb back onto the train and go home rather than scour the desolate foothills so near the battle site. Cope reasoned that the Sioux would be in retreat to the southeast before regrouping to head north before the advance of General Terry. Essentially he was correct, and the fossil hunting season went along with little incident. The evening before it was time to move the fossils to the Missouri River and return home, the scout and cook deserted camp, leaving Cope and the rest of the party alone. According to Colbert (1968):

"It seems that on the day of the desertion the scout, on his foray ahead of the party, had spied Sitting Bull's camp, inhabited by thousands of warriors, not far away along the Missouri River. So he and the cook gathered up their blankets and departed, leaving Cope and his two associates the task of getting the horses and wagon down the steep slopes to the river, at a place where they would be out of range of the victorious and truculent Sioux. They managed it, but it was a hair-raising task."

Such was true determination! The results obtained by taking such risks were often enormous. In 1875 alone, Cope netted 84 species, mostly new and most to be named by him. These included four birds, four pterodactyls, 26 mosasaurs, and 48 fishes. Such a haul today would be, at the very least, miraculous. Still, Marsh felt that the West was not big enough for him and Cope. Cope's reports on fossils from areas Marsh felt were his private reserves fell like scientific bombshells on the Yale professor.

Cope was aware that Marsh did little of his own work, apparently using his expert staff of essentially slave labor. For example, Samuell Wendell Williston (who was to become a leading authority on fossil reptiles) attended Kansas State Agricultural College in Manhattan. He was hired by Marsh at Yale, but soon found that only Marsh could study and work on fossils. Williston thus ended up working on a group of living insects! Eventually, dissenters such as Williston would provide Cope with material for denouncing Marsh and his methods.

Marsh got a boost that put him far ahead of Cope when he was elected to the National Academy of Sciences (one dissenting vote...Cope's) and developed other important connections. The colorful John Wesley Powell became director of the U.S. Geological Survey in 1881. He appointed Marsh as vertebrate paleontologist with the Survey in 1892, and thus insured Marsh a steady supply of funds for field work and laboratory research over the next ten years. With Marsh so well connected, Cope was soon cut off from government funding for his own field work and research. Cope sought to publicize his confrontation with Marsh and present a case of the wrongs done to himself and others. In 1890, Cope sought out his longtime friend, reporter William Hosea Ballou, and on 12 January began a remarkable series of newspaper articles, lead by the infamous headline:

SCIENTISTS WAGE BITTER WARFARE

The series attracted public attention to Marsh at a time when the populace was hearing far too much about federal excesses and poor

government. Marsh was finally being called to account for his actions. With the help of Harvard's Alexander Agassiz, numerous congressmen and Cope, pressure was finally brought to bear. Congress examined Marsh's extravagant appropriations, and in the summer of 1892 Marsh's boss, Powell, sent this telegram to Yale:

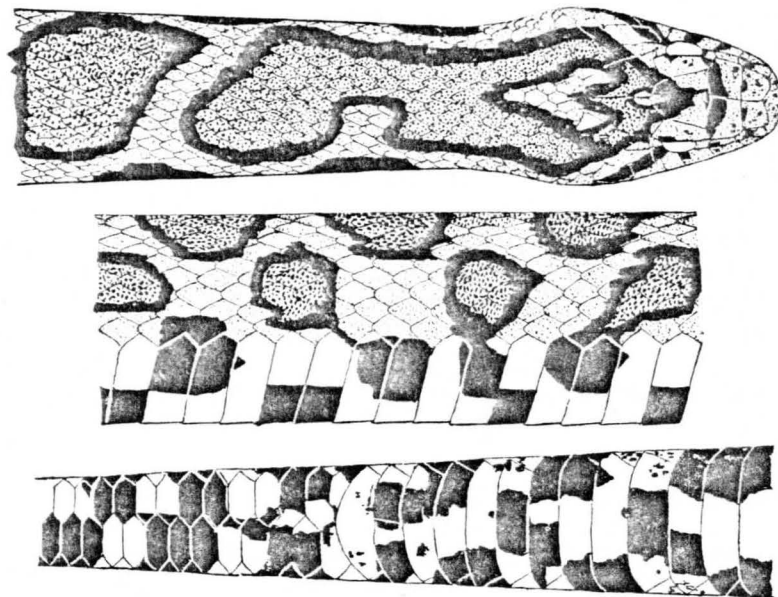
"Appropriation cut off.
Please send your resignation at once."

In essence, the two paleontologist failed to speak to each other from that point on (Lanham, 1973). The Battle of the Bones was over.

Important Contributions

Despite the conflict with Marsh, or perhaps because of it, Cope made numerous important discoveries. Although Marsh described more dinosaurs, Cope's work was far broader in scope. Marsh merely described; Cope hypothesized.

It was Cope who described the fin-backed reptiles Dimetrodon and Edaphosaurus, and first noted affinities between these and the mammal-like reptiles found in Africa. He described scores of fossil reptiles, and as many living fishes, amphibians and reptiles. As a procurer he was a valuable man. Many of his specimens were never unpacked by him after acquisition, for lack of time!



A milk snake (Lampropeltis triangulum) from Cope, 1900.

His influence on younger naturalists is a major contribution still very much with us. Williston knew and respected Cope, and in later years was very much influenced by his work. Another important student

was Henry Fairfield Osborn, who worked for Cope for seventeen years, and was one of Cope's closest friends. Osborn, himself a respected scientist, went on to become president of the American Museum of Natural History in New York, and because of this relationship, many of Cope's fossils and personal papers were deposited there. Through Osborn, Charles R. Knight was introduced to Cope. Cope explained to the young artist how prehistoric beasts must have looked and lived. Though he only knew Cope for a few weeks before the latter's death, Knight's classic illustrations remained the standard for our visualization of dinosaurs until quite recently.

Perhaps the Cope/Marsh feud spurred each man on to do more than he would have had there been no competition. The feud did three things for paleontology and natural history which otherwise may have taken much longer to come about. First, vast collections were made over a short time span. Second, it focused public attention on nature, helping inspire private funding for research and exploration. Third, it produced reams of evidence to support the concept of biological evolution.

Rarely is genius adequately recognized in its own time. Cope was never able to attain a position at either the American Museum of Natural History nor the Smithsonian Institution. His last years were spent in the two houses he owned in Philadelphia (one was little more than a storehouse for his enormous collections). Here, amid stacks of manuscripts, piles of fossils, the pet tortoises and lizards, the master naturalist died on 12 April 1897. Up until the week before his death he was actively writing and publishing, having never been idle during his entire 57 years.

Most of his honors were posthumous. His massive text on living reptiles was published in 1900. In 1913, the American Society of Ichthyologists and Herpetologists named their new journal after him: Copeia. Perhaps the most significant legacy of Cope is that his influence continues to inspire young naturalists to this day. Even at Yale, after Marsh's death, a Cope student took over. What Cope did right is still considered "gospel"; and where he erred, he left evidence, and the spirit, to set the record straight. Even the feud taught scientists the value of harmony. Today, it is an unwritten law among zoologists to maintain a hands-off policy towards another's work until after it has been published.

A man passionately in love with his science, Edward Drinker Cope brought us an ancient world of wonder. Because of Cope, our understanding of natural history is a little bit better than it might have been.

Acknowledgements

I wish to extend my sincere thanks to Professor Dorothy Frosch, Department of Biology, Central State University for providing the opportunity to initiate this project, and the encouragement to complete it.

This paper is dedicated to Dr. Larry Martin, Vertebrate Paleontologist, University of Kansas. His lectures put meat on the bones, and in the spirit of Cope, rekindled a deep interest and appreciation for paleontology, its history and traditions. This can come only from one who likes what he is doing!

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HERPER HELPER: PHOTOGRAPHY, PART III. PROCESSING AND STORING

Part I of this series on photography (KHS Newsletter No. 49:8-10) covered how to select your equipment, and Part II (KHS Newsletter No. 50:23-26) dealt with how to take photographs. The subject of this section will be processing and storage of those many miles of film you have now shot of reptiles and amphibians.

Processing

Black-and-white film is easy to process yourself, and once you have the basic equipment, it is cheaper than commercial processing, too. In addition, you can do all sorts of specialized processing yourself, and you don't have to wait around for days on end to see the marvelous results when some store loses your film. There are lots of good guides to home development around (see your local library or camera store), so I will just describe the process briefly and encourage you to try it yourself if you shoot black and white film.

In absolute darkness, the exposed film is removed from the cassette and wound around a spiral reel made of metal or plastic. The loaded reel goes into a light-tight tank, and the remainder of the process can be completed with lights on. A developing solution is poured into the tank, then the film is rinsed, a stop bath is poured in, the film is rinsed again in water, and an acid fixer is poured in. The various chemicals remain in the tank for specific lengths of time depending on the kind of chemical and the temperature. The tank is agitated every minute while chemicals are acting on the film. After fixing, the film is washed for 20-30 minutes (the total process takes around 45 minutes to one hour to complete), and hung up to dry. Presto, you have negatives.

The process for making a print from the black-and-white negative is very similar, only it is carried out using yellow or red "safe lights" in the darkroom. An enlarger is used to project the negative's image on

special light sensitive photographic paper. The exposed paper is then put through solutions of developer, stop bath, and fixer in trays, and washed and dried. Many areas of a basement, bathroom, or kitchen may be used for a darkroom. All you need is running water, some counter top space, electrical outlets (for the enlarger and safe lights) and some way to make the room light-tight. This can often be accomplished by working after dark along with the creative use of thick blankets over doors and windows.

Basic darkroom kits are available as packaged units containing instructions, tanks, trays, lights, etc. Check at your local photo store, or watch the classified ads and garage sales for used equipment.

Color prints are a lot more complicated to produce than black-and-white and correspondingly more expensive. The chemicals, paper, etc. all cost more than for black-and-white, and developing times and temperatures are a lot more critical. Photography stores do carry kits for producing your own color prints at home, but this is not for the beginner to try to do.

Assuming you send your color film out for developing and printing, where should you send it? The four possibilities with their advantages and drawbacks are as follows:

1. Send it to the manufacturer of the film (Kodak, Fuji, Agfa, etc.). This is the most expensive option, but overall will give you the best, most reliable results. Some types of film can only be processed by their manufacturer.
2. Custom processing lab. Also expensive, but if you find a good one, it can be well worth the expense, especially if you have special requirements for enlargements or cropping of a negative (like you want to make it look like you took the picture of the rattlesnake from just inches away when in reality it was feet, or yards...).
3. Reputable mass processor (these guys sometimes occupy the little drive-up huts that tend to sprout from the parking lots of suburban shopping malls). Much cheaper than the above, but the results can be variable. Many of these places do offer such deals as 24 hour service or only charge you for the photos you keep, which can save the beginner a lot of money. If you have designs on selling some of your photographic work, this is not for you. Stick with options 1 or 2.
4. Discount-store/Drug-store/Grocery-store processors. Some warm body just collects the film at the place you leave it and it all gets dumped in an obscure central lab somewhere for processing. Results are highly variable, ranging from okay to oh, no. Don't waste your money on this option.

Color slides you can either develop yourself or send out. Some kinds of film for slides (like Kodachrome) must be sent to a lab, the chemicals for home development not being readily available. If you process your own color slides, the method is similar to that for black-and-white negatives. The film, when dry, is then cut apart and mounted in cardboard, plastic, or glass holders. If you send your color slides to a commercial processor, you have the same options with attendant evils and blessings as listed above for prints.

Labeling

Ah, yes, the dull and tedious part of home herp photography, often neglected, but very, very important. All those little details so crystal clear in your mind when you took the photograph (like what the beast was) will quickly fade with time, age, and the growth of your photo collection.

What information should you record? At a minimum, note down the common and scientific name of the animal, the place it was from, the date the photograph was taken, and the name of the photographer if other than yourself. You would be wise to have a rubber stamp made that says "Photo by (Your Name)" to quickly and accurately label your work. Some people also like to keep a record of the type of film and camera used, lens and shutter settings, etc. Here is how labeling should be done:

Negatives should be kept in individual protective envelopes, with the pertinent information about them on a list with the number of the negative as the key.

Prints should have the information written on the back with ink (not ballpoint) or pencil (do not press down when you write), or on a stick-on label attached to the print, or if the print is mounted, somewhere on the mounting board. Record the number of the negative with the print, too.

Slides should be labeled with ink or pencil on the mount.

As your collection begins to grow, you may wish to develop a cataloging system to fit your special needs. As an example of how this can work, here is how I have my own set up. I cut strips of negatives into lengths of about 5-8 frames each and put them in protective envelopes. The strips are grouped together in a paper envelope with the appropriate data for each frame written on the envelope along with the number of the frame. Prints are labeled on the back.

Most of my material is color slides. These I number sequentially as I catalog them, writing the number on the upper right hand corner of the slide mount. I also put on each slide the name of the animal photographed or the location (for habitat shots, etc.). The slides are kept in boxes in numerical order. I then keep a file of 3x5 inch cards by subject, which lists the number of the slide and any information I wish to record about the subject or how it was photographed. With this system, I can look under the section entitled Anura and find that I have a photograph of Blanchard's Cricket Frog, Acris crepitans blanchardi from Lawrence, Douglas County, Kansas, slide number 1512. If I wanted to know what frogs I had shots of from a particular place, I could look up Kansas, Douglas County, and find that I have a photograph of Acris crepitans blanchardi slide number 1512.

The advantage of this system is that you can create new categories as you need them without having to change how your photographs are stored or change any numbers, etc. My file right now contains categories for frogs, salamanders, lizards, snakes, turtles, crocodilians, miscellaneous animals, copies of maps and charts, title slides, habitat slides under several state and country headings, etc. I can look up slides of a particular animal by either the species name or

where it was from. It may seem complicated, but since I started this system when I had only about 300 slides, it has been very simple to expand it as the collection has grown to around 1700 slides.

How your collection is cataloged will depend entirely on what you are comfortable with and how you use your collection. Some people prefer to arrange their material strictly by kind of animal or location of the photograph. Think over how you use your photographs, and be creative.

Storage

How and where you keep your photographs is far more crucial than most people realize. Color slides, especially, will fade rapidly if not carefully cared for. Heat, light, and moisture are deadly to photographic materials. Dust isn't too good, either.

Negatives must be guarded carefully to avoid dust and scratches. They should be stored in acid-free envelopes. For 35 mm negatives, these envelopes usually accommodate a strip of 6 or more frames each. Once in these individual wrappers, you can then group them in larger envelopes. Keep negatives away from light, heat, and moisture.

Prints are usually kept in protective envelopes away from light, heat, and moisture.

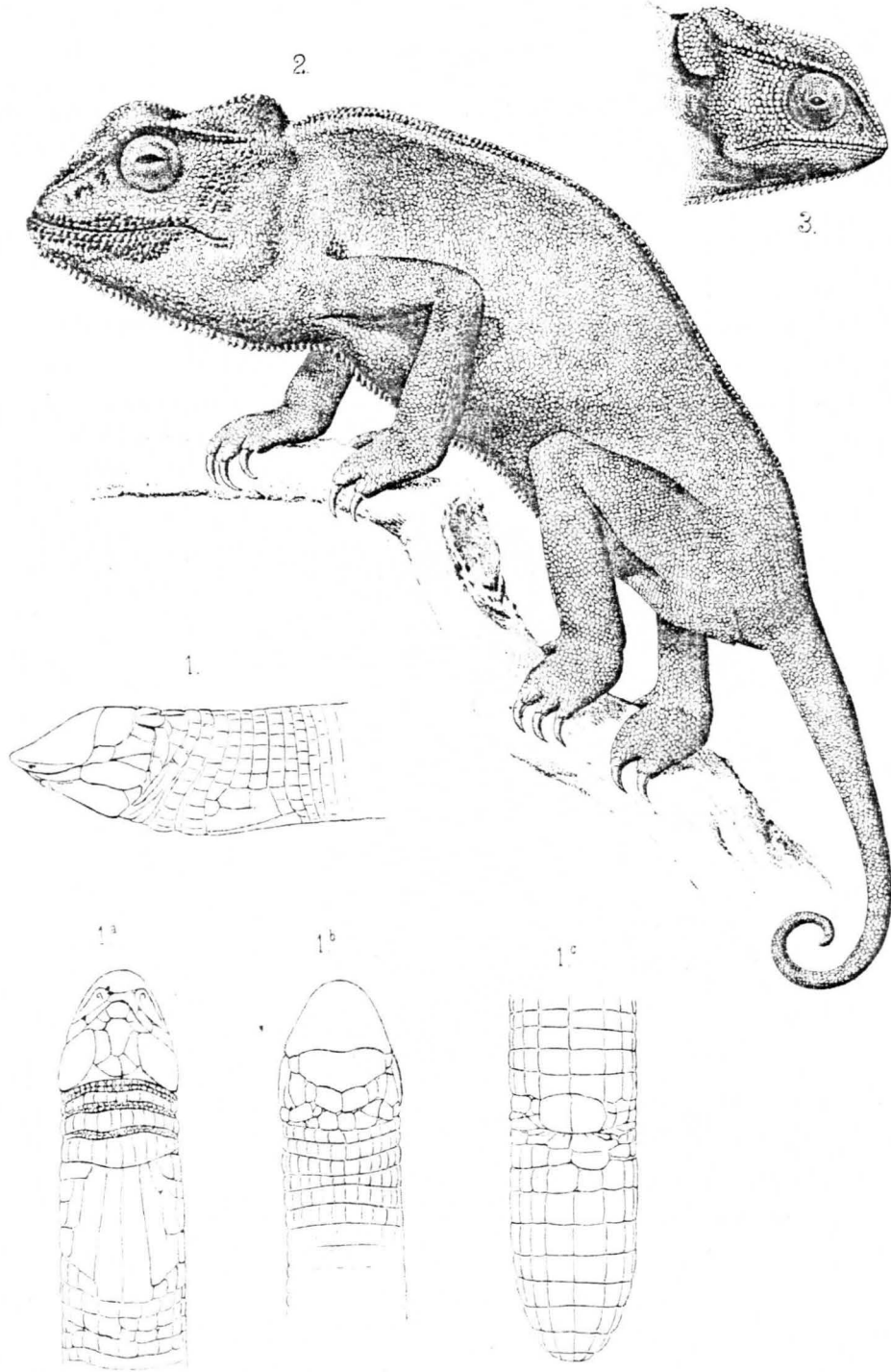
Slides need to be protected from dust and scratches as well as light, heat, and moisture. They may be sorted into cardboard or metal boxes, packed so they do not shift around and scratch one another. Some people like to use the plastic sheets with pockets for 20 slides each that fit standard size notebooks. These have the big advantage that you can hold the sheet up to the light and see immediately what slides are there. They also offer good protection for individual slides. This system does take up a lot of space, however. I keep my slides in metal boxes that hold 300 slides each, two to a slot. This system does not require a lot of space, but you have to pull the slides out of the box to see what they are. The number in the upper right hand corner may be read without taking the slides out of the box.

Whatever system you use for storage, always return your photographs promptly after use to safeguard their permanence.

Photography of reptiles and amphibians is a very rewarding activity. I know a lot of people who used to be avid herp collectors who now catch animals, photograph them, and release them promptly. Photography can be very useful for what should be a high priority of all people interested in reptiles and amphibians -- the education of others about these fine creatures. Once your initial investment in equipment is made, it is not too terribly expensive to pursue, and the best thing about it is, you have something permanent when you've finished. Herp

photography will add a wonderful new dimension to your interest in herpetology.

--John E. Simmons
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A FINAL WORD FROM YOUR EDITOR

Just want to get in one last reminder to pay your 1984 dues if you have not already. The Society cannot function without your loyal support. I also want to thank Martha Gronniger and Jocelyn Kitchen for their assistance with the KHS Newsletter. Thanks again to Bernie Willard for his continued assistance with the mailing labels.

With this issue, we lose one Assistant Editor and gain another. Ray Loraine is off to the wilds of the Savannah River Wildlife Laboratory for the spring, and taking his place on the KHS Newsletter staff is Linda S. Dryden, an accomplished wildlife artist and renowned field biologist. We are pleased to have her on the staff.


SOMETHING WILD!
By Robert F. Clarke, Ph.D.

TIGER SALAMANDER
Ambystoma tigrinum




IN LATE WINTER ADULTS GO TO SMALL PONDS AND CATTLE TANKS, WHERE 40-50 EGGS ARE LAID IN CLUSTERS ATTACHED TO TWIGS AND STEMS UNDER WATER. ADULTS LEAVE THE WATER AFTER THE EGGS ARE LAID. THEY THEN SPEND MOST OF THE TIME UNDERGROUND.

SALAMANDER SPECIES ARE SCARCE IN KANSAS. THE TIGER SALAMANDER IS THE ONLY ONE FOUND OVER THE ENTIRE STATE.




TINY LARVAE EMERGE FROM THE EGGS — AND CAN BE DISTINGUISHED FROM FROG AND TOAD TADPOLES BY THE FACT THAT SALAMANDER LARVAE HAVE EXTERNAL GILLS AND ALL FOUR LEGS.

TRANSFORMATION TO ADULT OCCURS IN ABOUT TWO MONTHS WITH LOSS OF THE GILLS AND TAIL FIN.



OCCASIONALLY A LARVA CAN'T MAKE THE TRANSFORMATION CHANGE AND CONTINUES TO GROW TO A HUGE SIZE — EVEN FEEDING ON OTHER LARVAE. THESE



"AXOLOTL," ALTHOUGH CAPABLE OF BREEDING, REMAIN "PERMANENT LARVAE."

A contribution from the Nongame Wildlife Improvement Program
Kansas Fish & Game Commission