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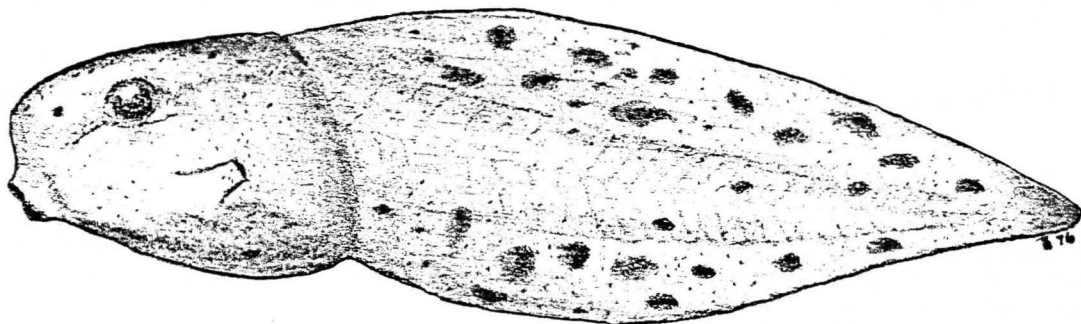
WILSON RESERVOIR SITE OF SEPTEMBER KHS FIELD TRIP

The fall meeting of the Kansas herpetological Society will be a field trip to be held at Wilson Reservoir, in Russell County, on 12 and 13 September. This lake is situated in the beautiful Smoky Hills, which as of late have been unscrupulously pillaged by uncaring and greedy individuals who have taken large numbers of western milk snakes (Lampropeltis triangulum gentilis) for commercial sale. The program chairman felt that it would be wise for KHS members to see this unique habitat before it is further degraded by the selfish actions of these uncaring individuals.

Wilson Reservoir is very scenic and expansive. There are numerous places to go swimming, camping and exploring. This looks like a fine field trip, so bring your sleeping bags and tents and friends.

-----Kelly Irwin, Lawrence, Kansas 66044

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JOINT ANNUAL MEETING OF THE SOCIETY FOR THE STUDY OF AMPHIBIANS AND REPTILES AND HERPETOLOGIST'S LEAGUE

The joint annual meeting of the Society for the Study of Amphibians and Reptiles (SSAR) and the Herpetologist's League (HL) was hosted by Memphis State University from 9-14 August, 1981. The featured symposium of the meeting dealt with the reproductive biology of reptiles. Several abstracts of the many interesting papers will be presented in this article.

The accommodations were exceptional and the campus was very beautiful. We stayed at Richardson Towers, which has spacious rooms and very comfortable furnishings. We arose early, usually to the serenade of a dozen or more college cheerleaders, who jubilantly shattered the somnolent dawn. The opposite wing of the dormitory housed members of cheerleading teams who had also gathered for a convention. After a week of chants, the herpetologists decided to organize a cheer for the cheerleaders. This took place in the lobby on the last evening of the annual meeting.

REPRODUCTIVE SUCCESS AND DARWINIAN FITNESS: AN ANALYSIS OF THE REPRODUCTIVE ECOLOGY OF THE GALAPAGOS LAND IGUANA by Howard L. Snell, Colorado State U.

Reproductive success can provide a tangible measure of Darwinian fitness as long as it accurately estimates the reproductive offspring produced by an organism. However, many estimates of fitness are based solely upon comparisons of egg numbers or offspring production, and assume that the survival of progeny has a constant probability. This is not always the case, however. Individual female land iguanas (*Conolophus subcristatus*) exhibit a high degree of specificity in nest timing and placement, as well as in clutch size, between successive years. An individual female digs a nest within one meter of the site of last year's nest! The time at which a female makes a nest also appears to be an individual behavioral trait. In the laboratory, a female will produce the same number of eggs in a clutch year after year. These eggs will also be the same size! Since there is differential survivorship according to the nest site, there appears to be unequal selective pressures upon different individuals which are not related to chance, but to rigid behavioral traits.

INDIVIDUAL DIFFERENCES IN THE BEHAVIOR OF NESTING COMMON GREEN IGUANAS by Brian C. Bock, University of Tennessee, Knoxville

Observations were made on the behavior of individual common green iguanas (*Iguana iguana*) at a nesting site in Panama over two successive nesting seasons. This species is totally arboreal, except when the female comes down from the trees to nest. As the gravid females arrived at the nesting aggregation they were captured, individually marked and released to finish laying. In iguanas, nesting typically proceeds through four stages: exploration, digging, oviposition and filling. While the iguanas adhered to this overall pattern, considerable behavioral variability was observed within each stage. This variability resulted from the iguanas exhibiting individually consistent but differing behavioral tendencies. The behavioral characteristics of an iguana appear to be stable from one nesting season to the next. The ways in which these behavioral differences might relate to nesting success are discussed. Some individuals compete for partially completed burrows.

ACQUISITION OF THE FERMENTATIVE MICROFLORA BY HATCHLING IGUANA IGUANA
by Katherine Troyer, University of California

The green iguana, Iguana iguana, is unusual among lizards in that it subsists on plant materials, primarily leaves, throughout its lifetime. Iguanas rely on a hindgut fermentation system, analogous to that of mammalian nonruminant herbivores, to provide much of their daily energy requirements. Unlike mammals, neonate iguanas have no direct maternal contact, and thus no automatic means for obtaining the specialized populations of hindgut microbes. This study investigated how neonate iguanas develop their hindgut fermentative system and begin to utilize plant food. The physiological course of development of the digestive tract was examined in captive-reared and wild-caught hatchlings, and the dispersal and spacing patterns of free-living hatchlings were monitored through the early weeks of life. Newly hatched iguanas actively seek and temporarily associate with adult iguanas. By consuming the fresh feces of adults, hatchlings acquire microbial populations which degrade plant material more effectively than the populations they obtain through environmental contamination alone. Iguanas, therefore, appear to transfer their symbiotic fermentative microbes through active social contact between generations.

ECOLOGICAL AND BEHAVIORAL ASPECTS OF TEMPERATURE CONTROLLED SEX-DETERMINATION IN TURTLES by Richard C. Vogt and J.J. Bull, University of Wisconsin.

The sex of many reptiles has been shown to be determined by the incubation temperatures of the eggs. Laboratory studies of 10 genera of turtles show that a developmental temperature of 25 C usually produces all males, 31 C or higher produces all females, and the survival is sufficiently high in some studies to conclude that this is not due to differential death of the sexes. Further laboratory studies corroborated by extensive field studies suggest that nest temperature is the sex determining agent in these species.

Geographical comparisons of populations of a species have shown that although the threshold temperature (the temperature above which you get all one sex and below which you get the other sex) is a narrow zone of 1½ C in all species studied, it has been shown to vary with latitude by as much as 1½ C within a single species. How this may or may not be affecting adult sex ratios in natural populations will be shown from species that do and do not exhibit temperature controlled sex determination.

ASPECTS OF THE ECOLOGY OF SISTRURUS CATENATUS IN NORTHWEST MISSOURI
By Richard Seigel, University of Kansas

The massasauga (Sistrurus catenatus) has undergone a severe population decline over much of its range during the last few decades. In Missouri, the only large population of Sistrurus on protected land is found on the Squaw Creek National Wildlife Refuge, in northwest Missouri. This population has been under intensive study since 1979, and the preliminary results of that study are presented here. Massasaugas at Squaw Creek are primarily inhabitants of a central, moist prairie, but adults may migrate to drier, upland areas in May, returning to the prairie in late August and September. Sistrurus is active from early April to late October, at air temperatures of 15-33 C. Mating takes place in the spring, and possibly in the fall as well. A brood of 5-10 young are born in mid-August. Female reproduction appears to be biennial. The population at Squaw

Creek is in the process of recovering from a severe decline over the last decade. Road kills account for about 25% of Rich's records, indicating that this is a significant mortality factor. At present, the refuge managers burn the prairie in the spring, when the populations are at their peak. It would be better if the burning was done in the fall.

REPRODUCTION IN THE MIDDLE AMERICAN HIGHLAND PITVIPER, BOTHROPS GODMANI
by Jonathan A. Campbell, University of Kansas

Bothrops godmani is a small, terrestrial pit viper found between 1700 meters and 2600 meters in forested mountains of Central America. The reproductive adaptations (cycle, season, size and number of young) were investigated by examination of the reproductive tracts of Guatemalan females. Fecundity is positively correlated with female body length. Bothrops godmani appears to reproduce once every two years. After giving birth from April to August, females undergo a period of 9-13 months before ovarian follicles begin to mature. Starting in the rainy season following parturition, the follicles rapidly begin acquiring yolk and increase approximately 125 times in volume by the end of the rainy season. Ovulation and fertilization coincide with the beginning of the dry season in October to December. Embryonic development ensues until the rainy season at which time the young are born.

HYPOTHERMIC STUNNING OF MARINE TURTLES IN EAST-CENTRAL FLORIDA LAGOONS
IN 1981 by L.M. Ehrhart & R.C. Lee, Univ. of Central Florida

Cold stunning of marine turtles occurred on a large scale in east-central Florida lagoons in January, 1981, for the second time in five years. On 13 January water temperatures as low as 3.5 C were measured at Haulover Canal (which connects Mosquito Lagoon and the northern reach of Indian River), where the first cold-stunned turtle was found. Over the period from 13 to 20 January, 74 loggerheads (Caretta caretta), 88 green turtles (Chelonia mydas) and one Kemp's ridley (Lepidochelys kempfi) were taken to the Merritt Island NWR research laboratory. The green turtles ranged from 25 to 74 cms in carapace length (Mean: 42 cm); loggerheads ranged from 47 to 83 cms., and averaged 64 cm. The ridley and 76 surviving green turtles were held at Sea World, Inc., at Orlando and 70 surviving loggerheads were kept in a freshwater pool that was used for the same purpose in 1977. Different mortality rates were observed between the two species during the captive period and after release. Cold stunning of marine turtles is a phenomenon that reaches heights of expression in east-central Florida apparently not seen elsewhere in the world. Suggestions for a contingency plan for future cold-stunning episodes in this region are given.

EFFECTS OF PETROLEUM ON THE DEVELOPMENT & SURVIVAL OF MARINE TURTLE EMBRYOS
by Thomas H. Fritts & M. Angela McGehee, U.S. Fish & Wildlife Service

Marine turtles nest on beaches where their eggs may be vulnerable to oil spills in adjacent marine waters. Petroleum spilled from the Ixtoc I oil well was deposited on the nesting beach of Lepidochelys kempfi in Tamaulipas, Mexico in 1979. L. kempfi eggs incubated in clean and contaminated sands from the beach in 1980 did not document significant effects related to oil contamination. Caretta caretta eggs incubated in sands treated with varying amounts of crude oil at initiation of incubation demonstrated no effect on survival but did evidence differences in hatchling morphology. C. caretta eggs incubated in

sand to which oil was added only during the last half or last quarter of incubation indicated significantly reduced survival of embryos and significant differences in hatchling morphology. Turtle embryos appear to be most vulnerable to petroleum during the middle and late stages of development. The existing data suggest that a marine oil spill contaminating turtle nesting beaches prior to the nesting season may affect hatching success for only a short period if at all. However, a spill resulting in deposition of oil on eggs already deposited is likely to increase mortality significantly and affect hatchling morphology.

REPRODUCTIVE CYCLES IN TROPICAL REPTILES by H.S. Fitch, University of Kansas

Relatively few lizards, snakes, and turtles reproduce uninterruptedly throughout the year, and these are species that live in almost aseasonal climates of rainforests or montane cloud forests. Some tropical lizards (mainly small, oviparous kinds) and fewer snakes produce clutches in fairly rapid succession throughout the year or most of it. Anoles and sphaerodactyline geckos have evolved furthest in this direction, with a one-egg clutch. Wherever there are dry seasons through part of the year, most reptiles have their reproduction limited to the wetter months. However, those such as river turtles, iguanas and crocodiles, that nest in riparian sandbanks, time their egg-laying to the early dry season. Many tropical reptiles, including the viviparous kinds and many egg-layers such as ridley sea turtles, iguanine lizards and crocodilians, have their reproduction limited to a short annual breeding season, finely attuned to local conditions with respect to such factors as food and shelter for hatchlings.

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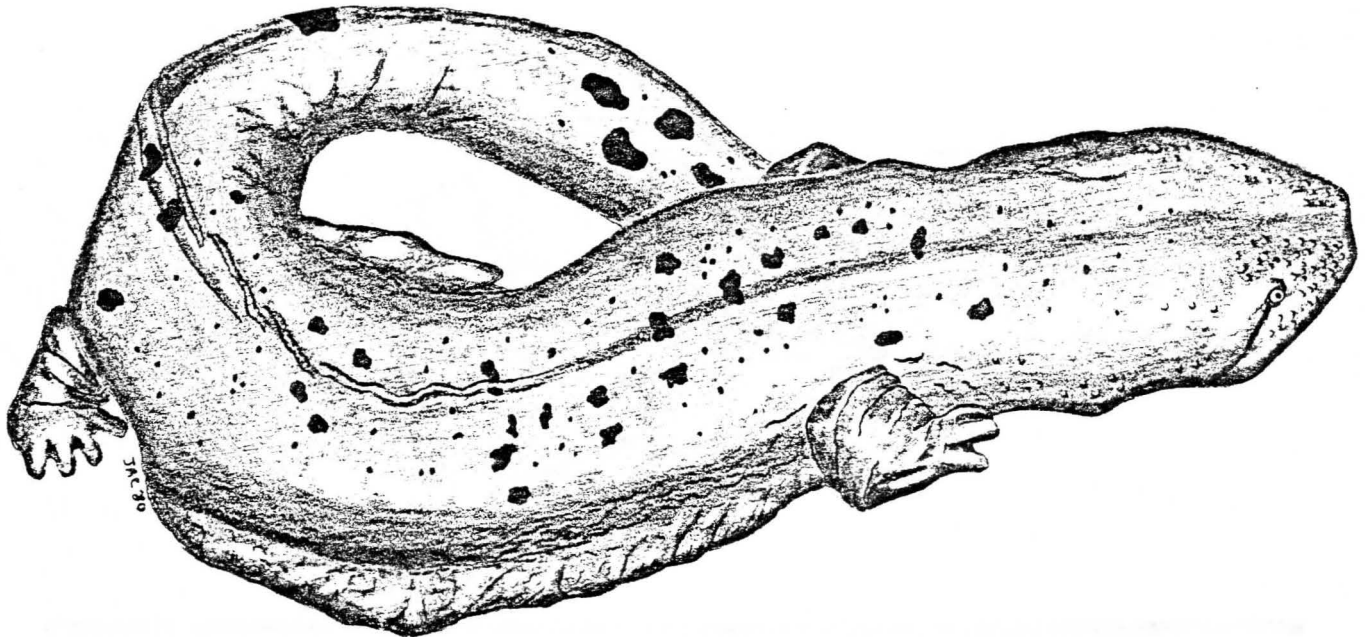
A FIELD TRIP TO SCHERMERHORN PARK

On Saturday, June 18, 1981, destined for Wichita and Galena, Kansas, then to Branson, Missouri, my family and I set out on vacation with permit in hand. On highway 166 in Labette County, I observed many ornate box turtles (Terrapene o. ornata) and snapping turtles (Chelydra serpentina). About half of the turtles were alive, but half had been killed by cars.

We arrived at Galena about 8:00 in 85 F weather. I promptly entered the cave mouth and discovered four dark-sided salamanders (Eurycea longicauda melanopleura) and one sub-adult cave salamander (Eurycea lucifuga) under rocks. After entering the cave itself, I found four cave salamanders and one dark-sided salamander. Besides the herps, I found 3 rounds of 30.06 cartridges, beer cans, an old medicine bottle, and graffiti. I am very upset about this and wish more protection was possible. Although I didn't find any adult grotto salamanders (Typhlotriton spelaeus), I did find some larvae. Outside the cave, I found one black rat snake (Elaphe o. obsoleta) and numerous northern fence lizards (Sceloporus undulatus hyacinthinus). Other things I observed were: one scorpion, a giant swallowtail (Papilio cresphontes) and many large gnat-like insects which could be included in the diet of the many species of salamanders in the cave.

-----Jim Pilch, 808 W. 27th Street, Lawrence, Kansas 66044.

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HERPETOFAUNA IN DANGER: A CANDID LOOK AT THE PROPOSED LAND-BASED M-X SYSTEM

The U.S. Air Force proposes to deploy an advanced, land-based mobile, Inter-Continental Ballistic Missile system, known as the M-X, which calls for 200 mobile missiles in 4600 shelters. According to the Draft Environmental Impact Statement (DEIS), five of eight alternatives, as well as the proposed action, will have "high significant impact" for both the short and long term on populations of the Desert Tortoise (Gopherus agassizi), which is already listed as threatened under the Endangered Species Act.

The M-X project calls for 8500 miles of new road which would be built within an 8500 square mile area, with 160, 000 acres of land which "may be disturbed during construction, which is projected to take eight years. The Air Force claims that once emplaced, the missiles would be moved infrequently and that of the 8500 square miles of area impacted, only 25 square miles would be fenced and excluded from public access. All of the 8500 miles of new road, of which 1400 miles would be paved, will be open to public use.

Increased human presence in formerly restricted areas (in this case, restricted by limited access) has always had a considerable impact on the area's fauna, particularly upon reptiles and amphibians. Populations tend to decrease due to road kills, "sport" killing, habitat tampering and destruction, collecting and poaching. These activities can be attributed to ignorance, fear, misconceptions and delinquent behavior. If new roads are to be oiled, or, if pesticides are used in this disturbed habitat, the impact will tend to be more severe. De-icing the roads during the winter months with either CaCl_2 or NaCl can have a toxic effect if these are applied in uneven concentrations. CaCl_2 enters the soil and NaCl dries into a fine powder and becomes airborne.

The authors of the DEIS mention only one species of herp that would be affected in the Utah/Nevada area, when a more probable number would be thirty. In the Texas/New Mexico area, thirty-seven species will probably be affected, but the DEIS states only that the Desert Tortoise "does not occur in this area," so it will not be impacted. Throughout the document, superficial and incomplete information is given. Utah's official comments on the M-X includes the following statement: "The data is deficient and the maps are too small in scale to identify and evaluate impacts and mitigations." There are few, if any, citations that support authoritative statements which have been made.

Even though the Desert Tortoise is mentioned, impacts on it are insufficiently defined. How many tortoises might be harmed if the proposal is adopted, or what the increased probability of extinction is for this unique species is ignored. Distribution maps for this animal are inaccurate - where they occur, tortoises generally inhabit the entire valley, so the map should show a fingered northern limit pattern. There is inadequate information on winter denning areas. With increasing accessibility to their habitats, this and other species may be faced with conditions that they will be unable to deal with effectively.

The DEIS implies that only after habitat destruction has occurred will "mitigative measures be implimented." This approach would be extremely devastating to the native desert wildlife. Section 2(b) of the Endangered Species Act states: "Ecosystem protection is the means by which endangered species shall be preserved." The DEIS is in direct conflict with this ideal.

Much of the deployment area is sensitive from a vegetative point of view. Whenever native vegetation is disturbed or eliminated, it is quickly replaced by a poisonous plant called Halogeton (Halogeton glomeratus). Aquatic resources are considered to be impacted only within a one to five mile radius from the proposed action, when in fact, it would be more realistic to consider impacts on a valley-wide basis because of the area's arid environment and fragile ecology. Impacts to springs and wells are frequently termed, "temporary." No mention is made of the possibility of extinction because of the reduction or elimination of springs. Toxic material and sediment pollution could be very significant especially during construction, regardless of flow impact. There is a possibility that improvements in certain areas could occur if a permanent, reliable source of water is established (for instance, the Arrow Canyon Range).

Erosion and dust control problems are lightly brushed over. Dust abatement programs have been effective in other environments, but will any steps be taken to minimize dust damage within the proposal site?

Nothing is said about educational programs for construction workers, military personnel, and their dependents to inform them of the fragile ecology and its wildlife. Will firearm and Off-Road Vehicle (ORV) regulations be effective? Workers on isolated projects throughout the west are famous for shooting at animals simply because they moved, or "are there." ORV users are notorious for their contempt of restrictions placed upon them and their activities.

The DEIS is, by definition, a draft - a preliminary statement which, although incomplete and lacking depth in many areas, serves the critical purpose of forming a base to work from in preparing the Final Environmental Impact Statement (FEIS), which should be a very definitive and thorough document. If criticism of the DEIS is taken seriously, the FEIS should be an insightful and informative work.

-----Eldon C. Romney, President, Utah Herpetological Society, P.O. Box 9361,
Salt Lake City, Utah 84109.

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SEA TURTLE ACTIVITY ON REFUGES REPORTED

Fifteen National Wildlife Refuges (NWR) conducted surveillance, management, and protection activities for sea turtles during 1980. The accompanying chart summarizes this work which was primarily related to the loggerhead turtle (Caretta caretta). A much smaller amount of data was collected on the green sea turtle (Chelonia mydas) while only incidental information on the Kemp's ridley sea turtle (Lepidochelys kempii) was reported.

Most of the work reported in the summary chart was conducted by refuge personnel and holders of special research permits. Participating refuges are located in Virginia, North Carolina, South Carolina, Georgia, Florida, and Louisiana.

A National Marine Fisheries Service (NMFS)/Fish and Wildlife Service (FWS) jointly sponsored southeastern aerial survey of marine turtle nesting activity was initiated in 1980. Employees on Pea Island, Cape Romain, Blackbeard Island, Wassaw Island, Hobe Sound, Merritt Island, Ding Darling, Egmont Key, and St. Vincent NRWs participated in ground-truthing surveys during the 1980 aerial surveys.

There was an unusually high incidence of dead sea turtles washing onto beaches in 1980, particularly in Virginia, South Carolina, Georgia, and Florida. These deaths were thought to be closely associated with pound net fishing in Virginia, sturgeon netting in South Carolina, and shrimp trawling later in the summer in South Carolina and Georgia. Over 1,800 sea turtles were recorded as found stranded on the beaches of southeast through a newly instituted Sea Turtle Stranding - Salvage Network cooperatively funded and administered by NMFS, FWS and the Smithsonian Institute's Scientific Event Network. Many refuge employees cooperated in this new venture.

Sea Turtle Monitoring Results on 15 U.S. Fish and Wildlife
Service National Wildlife Refuges - 1980

Refuge	Total Miles	Total Miles	Total Succ.	Hatch-	Tide	Pred.	Hatch-	Nests	Stran-	Tag-	
	Miles	Surveyed	Nests	Nests	lings	Loss	Loss	ery	Screened	ed	ged
Chincoteague	11	9	0	0	0	0	0	NO	0	1	0
Fisherman Isl.	2	1	0	0	0	0	0	NO	0	11	0
Back Bay	4	4	1	1	104	0	0	NO	1	17	0
Pea Island	12	12	12	8	538	2	0	YES	0	21	0
Cape Romain	21	17	1,191	710	67,753	383	95	YES	15	42	0
Wassaw Island	7	5½	50	48	4,338	0	1	YES	5	55	44
Blackbeard Isl.	8	5	124	119	11,106	2	3	YES	57	50	0
Merritt Island	6	6	485	361	28,019	9	113	YES	13	1	145
Hobe Sound	3½	3½	1,127	1,089	88,440	35	20	NO	0	2	0
Key Deer	3	3	0	0	0	0	0	NO	0	1	0
Ding Darling	1	1	4	4	480	0	0	NO	0	0	0
Egmont Key	3	3	5	4	600	1	0	NO	0	1	0
Chassahowitzka	3	3	0	0	0	0	0	NO	0	0	0
St. Vincent	12	7	8	3	92	3	2	NO	6	13	0
Delta Breton	60	60	0	0	0	0	0	NO	0	1	0
Totals: Loggerhead	156½	140	2,967	2,312	198,297	435	234	-	84	216	185
Green			40	38	3,173				13		4

Comparing last year's nesting success with that of 1979, we find that although there were 13% fewer nests sited in 1980, there was a higher number of successful nests (53.1%). This was due to a marked decrease in nest losses due to tides (52.7%) and predators (75.6%).

-----taken from the Endangered Species Technical Bulletin, VI(7):7, July 1981:

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BABY TORTOISE

- You know what it is to be born alone,
Baby tortoise!

The first day to heave your feet little by little from the
shell,
Not yet awake,
And remain lapsed on earth,
Not quite alive.

A tiny, fragile, half-animate bean.

To open your tiny beak-mouth, that looks as if it would
never open
Like some iron door;
To lift the upper hawk-beak from the lower base
And reach your skinny little neck
And take your first bite at some dim bit of herbage,
Alone, small insect,
Tiny bright-eye,
Slow one.

To take your first solitary bite
And move on your slow, solitary hunt.
Your bright, dark little eye,
Your eye of a dark disturbed night,
Under its slow lid, tiny baby tortoise,
So indomitable.

No one ever heard you complain.

You draw your head forward, slowly, from your little
wimple
And set forward, slow-dragging, on your four-pinned toes,
Rowing slowly forward.
Whither away, small bird?
Rather like a baby working its limbs,
Except that you make slow, ageless progress
And a baby makes none.

The touch of sun excites you,
And the long ages, and the lingering chill
Make you pause to yawn,
Opening your impervious mouth,
Suddenly beak-shaped, and very wide, like some suddenly
gaping pincers;
Soft red tongue, and hard thin gums,
Then close the wedge of your little mountain front,
Your face, baby tortoise.

Do you wonder at the world, as slowly you turn your
head in its wimple
And look with laconic, black eyes?
Or is sleep coming over you again,
The non-life?

You are so hard to wake.

Are you able to wonder?
Or is it just your indomitable will and pride of the first life
Looking round
And slowly pitching itself against the inertia
Which had seemed invincible?

The vast inanimate,
And the fine brilliance of your so tiny eye,
Challenger.

Nay, tiny shell-bird,
What a huge vast inanimate it is, that you must row
against,
What an incalculable inertia.

Challenger,
Little Ulysses, fore-runner,
No bigger than my thumb-nail,
Buon viaggio.

All animate creation on your shoulder,
Set forth, little Titan, under your battle-shield.

The ponderous, preponderate,
Inanimate universe;
And you are slowly moving, pioneer, you alone.

How vivid your travelling seems now, in the troubled sun-
shine,
Stoic, Ulyssean atom;
Suddenly hasty, reckless, on high toes.

Voiceless little bird,
Resting your head half out of your wimple
In the slow dignity of your eternal pause.
Alone, with no sense of being alone,
And hence six times more solitary;
Fulfilled of the slow passion of pitching through im-
memorial ages
Your little round house in the midst of chaos.

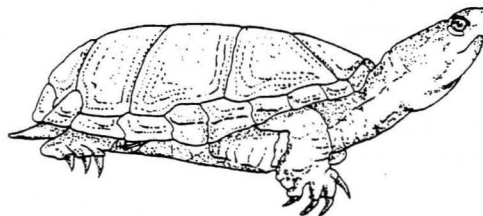
Over the garden earth,
Small bird,
Over the edge of all things.

Traveller,
With your tail tucked a little on one side
Like a gentleman in a long-skirted coat.

All life carried on your shoulder,
Invincible fore-runner.

----- D.H. Lawrence (taken from The Complete Poems of D.H. Lawrence, edited by
Vivian de Sola Pinto & Warren Roberts, Penguin books).

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OTHERS PROTEST SNAKE HUNTS

Regarding organized rattlesnake hunts, Journal writers have on May 8 and again on May 10 used the statement, "One-man protest." May I submit that there are many men and women and many organized groups who protest the organized rattlesnake hunts and who are genuinely concerned about the ecological ramifications of such activities.

Example- on March 12, 1977 the Kansas Herpetological Society held its regular spring meeting in Salina. During that meeting the KHS passed a resolution stating its formal objection to the practice of organized rattlesnake hunts. Before and since that date the KHS newsletter has carried many editorials and articles which reaffirm this position. -----George F. Toland, 908 Highland.

-----taken from the Salina Journal, May 15, 1981.

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THE SNAKESCAM STING

Word went out from Atlanta and spread through the dealers' grapevine: the "exchange" had ready cash, and it was buying. Shortly afterward, a small-time poacher made an anonymous phone call, met his exchange contact, handed over a bag containing twelve Eastern indigo snakes and walked away with \$1,200 in cash. What the seller didn't know was that he had also made his recording debut: the transaction, taped by the U.S. Fish and Wildlife Service, was part of a "snake-scam" operation designed to uncover illegal traffic in protected animals. Last week the service began its sting. It sent agents on a fourteen-state sweep to arrest 25 suspects and seize more than 1,000 illegally traded animals in what Assistant Interior Secretary G. Ray Arnett called, "the largest and most successful fish-and-wildlife law-enforcement investigation ever conducted."

Federal agents say they are astonished by the scope of the traffic. They now estimate that hundreds of thousands of protected animals and birds - from Gila monsters to copperhead snakes to snowy owls - are poached every year. Much of the illegal trapping takes place in the south and southwest, but it is also a cottage industry for poachers in states such as Wisconsin, Kansas, Pennsylvania, and New York. Dealer catalogues routinely list protected animals for sale, principally to collectors who want something more exotic than goldfish on their mantelpieces. The illegal trade is not an organized conspiracy; rather, it is an informal network of small groups whose members know each other but work independently. Even these small-time operators can have devastating effect on endangered animals. "For a number of species," says Arnett, "this illegal market

(in live animals) is a primary threat to their survival in the wild."

The animals, primarily reptiles, are imperiled by their rarity and beauty. The vivid colors and intricate patterns of the Texas gray-banded kingsnake, for instance, make it worth \$200 to aficionados, who can't buy this protected species in law-abiding pet shops. With its white, orange and black rings, the California mountain kingsnake fetches \$150 in the illegal market. The exchange paid \$500 for an Indian python, which might bring four times that price in Japan or Europe. With that markup, poachers are willing to flout the Endangered Species Act, more than a dozen state laws and an international treaty prohibiting trade in rare species. They often ship live snakes through the mails - wrapping the rattlesnakes' rattles in masking tape to quiet them. Poisonous snakes shipped this way could endanger the public.

After four years of sleuthing had hinted at the extent of this trade, the Fish and Wildlife Service decided to try to intercept it. Undercover agents opened the wholesale "Wildlife Exchange" in a commercial park in the Atlanta suburb of Doraville, Ga. They advertised in two national magazines and printed flyers listing prices for such legal animals as turtles and parrots. At the bottom, the exchange added that it was also interested in purchasing "native species," a code word for rare protected animals. Almost immediately, the exchange had more business than it could handle. Most of the illegal deals were struck by phone, with callers saying they could deliver, for instance, 40 Trans-Pecos rat snakes. If the agents were interested, the poachers usually shipped the animals - often marking the boxes as fruit or machine parts - but sometimes they brought the illegal wares to Atlanta in person.

After eighteen months agents had filled their cages with 10,000 illegal animals. In the process, they endured snakebites from the very creatures they were trying to rescue from extinction and watched one 13-foot-long Indian python lay a brood of eggs during its stay. Last week, after the exchange was closed and the arrests were made, Justice Department official Kenneth Berlin said the sting had made "a major dent in the traffic in protected wildlife." The recovered animals will be released or given to zoos.

Snakescam revealed that the illicit trade touches otherwise respectable citizens. The arrested collectors include a college professor, policemen, an attorney and a mortician - all of whom knowingly broke laws that ban trade in rare reptiles and migratory birds. Three endangered species - the San Francisco garter snake, Jamaican boa and Indian python - were sold through the Wildlife Exchange, as were three threatened species, 48 species of reptiles protected by state law and seven species of birds, including the great horned owl and red-tailed hawk, covered by the Migratory Bird Act. Snakescam is a small start in protecting vanishing American species, but with legislation pending to make penalties stricter for illegal animal traffic, the rare breeds may soon have a better chance to survive.

-----taken from Newsweek, July 27, 1981.

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THREE MILK SNAKES STOLEN FROM KU MUSEUM OF NATURAL HISTORY

A game poacher who opted for an inside job during the night made a clean break of it and bagged three snakes under glass at Kansas University. The serpents, which had been on display at KU's Dyche Museum of Natural History, were apparently the object of a thief who, sometime Thursday night or early today, took the three red milk snakes from their glass-enclosed exhibit case.

The snake theft was discovered early this morning when Hank Guarisco came to work at the museum, where he is the animal caretaker. After discovering the three 30-inch milk snakes were missing, Guarisco at first suspected that snakes in an adjoining case (Yellowbelly Racer, Coluber constrictor flaviventris) had slithered next door for an early breakfast. But when he took a closer look, Guarisco discovered that the display case had been tampered with and surmised that the milk snakes had been stolen and called the KU police.

There's a big commercial market for the snakes because of their beauty, according to Guarisco. The milk snakes, which can be found in eastern Kansas and in some western counties, are noted for their attractive red, black and creamy-gray color bands.

KU police, who began their snakenapping investigation this morning, are speculating that someone removed the frame of a display case and used the end of a plunger, found in another corridor of the museum, to suction the glass from the case. KU police Sgt. Floyd Noel called in a KU police detective this morning to remove the glass and take fingerprints from the inside edges. He said there are no suspects in the case as of this morning but he wouldn't rule out KU employees with a key to the building or someone who hid in the building after the museum closed to the public Thursday night. Police said that they have found no evidence that the building was broken into.

According to Joe Collins, zoologist in charge of living exhibits for the museum, whoever took the snakes may have wanted to add them to his or her own collection, sell them or trade for other snakes. He estimated that each snake is worth about \$125 in resale value.

Looking in disbelief at the display case, Collins talked about a recent Newsweek article on snake sales that had identified Kansas as one of four states with "a cottage industry for poachers." A 1973 Kansas Academy of Science reference has also noted that the red milk snake is a variety that is "commercially exploited," he said. Collins said snake collectors have been known to destroy the environment, moving boulders and disrupting wildlife habitats to find the snakes. The milk snake is difficult to find in the wild, he said, because they like to burrow underground.

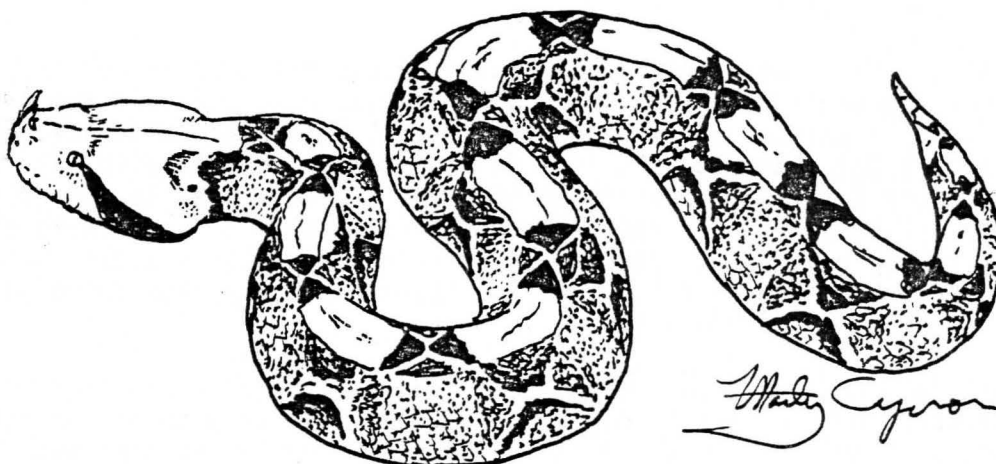
One of the stolen snakes was the museum's property but the other two belonged to Guarisco. One of his snakes had been in the museum for 2½ years, the other for about a year, he said. The museum has about 50 snakes on display.

Collins is concerned now that someone else will try the same trick to take other snakes, although the speckled kingsnake is the only other snake in the museum with some commercial value, he said. The only other similar theft at the museum that Collins could recall today occurred about seven or eight years ago when a snake was stolen from the top of someone's desk. After that incident, museum security was tightened and snakes were only allowed in the display cases and laboratories. But Collins isn't sure what will prevent another theft, except to redesign the cases.

Of the entire incident, Collins would only say, "It's crazy."

-----taken from The Lawrence Daily Journal-World, Friday, July 31, 1981.

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MID-AMERICA POISON CENTER

The Mid-America Poison Center located at the University of Kansas Medical Center, Kansas City, Kansas, provides poison center services to the state of Kansas. These services include information and treatment of snakebite envenomation. The poison center is under the direction of Wayne R. Snodgrass, M.D., Ph.D. The telephone is answered 24 hours a day every day. The telephone number is 913-588-6633.

NEW PUBLICATION: VETERINARY BIOLOGY & MEDICINE OF CAPTIVE AMPHIBIANS & REPTILES

It is my pleasure to inform KHS members of the recent publication of an excellent book entitled, "Veterinary Biology and Medicine of Captive Amphibians and Reptiles," by Leonard C. Marcus, VMD, MD. Dr. Marcus has brought together the current knowledge of the biology, physiology, husbandry and veterinary care of reptiles and amphibians in a very thorough, readable volume, which will undoubtedly become a standard reference of herptile aficionados everywhere.

The first chapter is devoted to a review of the basic biology of reptiles and amphibians. Feeding, locomotion, the circulatory system and the immune response are some of the topics that are discussed within the important herpetilian parameters of temperature and seasonality. For example, drastically different "normal" blood values of temperate reptiles are obtained depending upon which season the samples were taken. The immune response of both reptiles and amphibians is very dependent upon environmental temperatures. Desert iguanas (*Dipsosaurus dorsalis*), for example, have a greater antibody response at 35 C than at 25 C or at 40 C. Different reproductive strategies are presented, including the interesting case of female parthenogenetic populations of whiptail lizards (*Cnemidophorus sp.*). This informative chapter, comprising the first 55 pages of the book, ends with a discussion of sensory physiology. Jacobson's organ, thermosensory pits present in pit vipers, boas and pythons, and other sensory adaptations which occur in a variety of species are explored.

Following the sound foundation of the first chapter, the principles of herpetological husbandry are presented. Again we find that the author has selectively chosen major references that reveal basic principles and interesting examples to support these ideas. Thermoregulation is vital - different temperatures are chosen for the optimization of different biological functions. Techniques of artificial hibernation are given for a variety of species, as well as, diverse food requirements. Some practical hints are given to induce feeding, such as artificial hibernation. Although the author is a veterinarian, he readily admits that supportive therapy is very helpful: "Because very little is known about the dosage and toxicity of drugs in reptiles, the most effective approach to treatment is supportive therapy."

The last one hundred and forty pages of the book deals with specific diseases of the herpetofauna. Very thorough treatment is given to such topics as mouth-rot, pneumonia, redleg, shellrot, salmonellosis, viral encephalitis, amebiasis, coccidiosis, trypanosomiasis, trematodes, nematodes, vitamin deficiencies, and neoplastic diseases. The sections on neoplastic diseases and viral diseases contain the latest information, most of which has been obtained within the last five years.

This is obviously a volume that anyone interested in herpetology should be interested in obtaining. It is amply illustrated with graphs, tables, and photographs which complement the excellent text. Another impressive feature is the current, thorough bibliography which enables the reader to easily discover more information about any topic discussed in the text.

* * * * *

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