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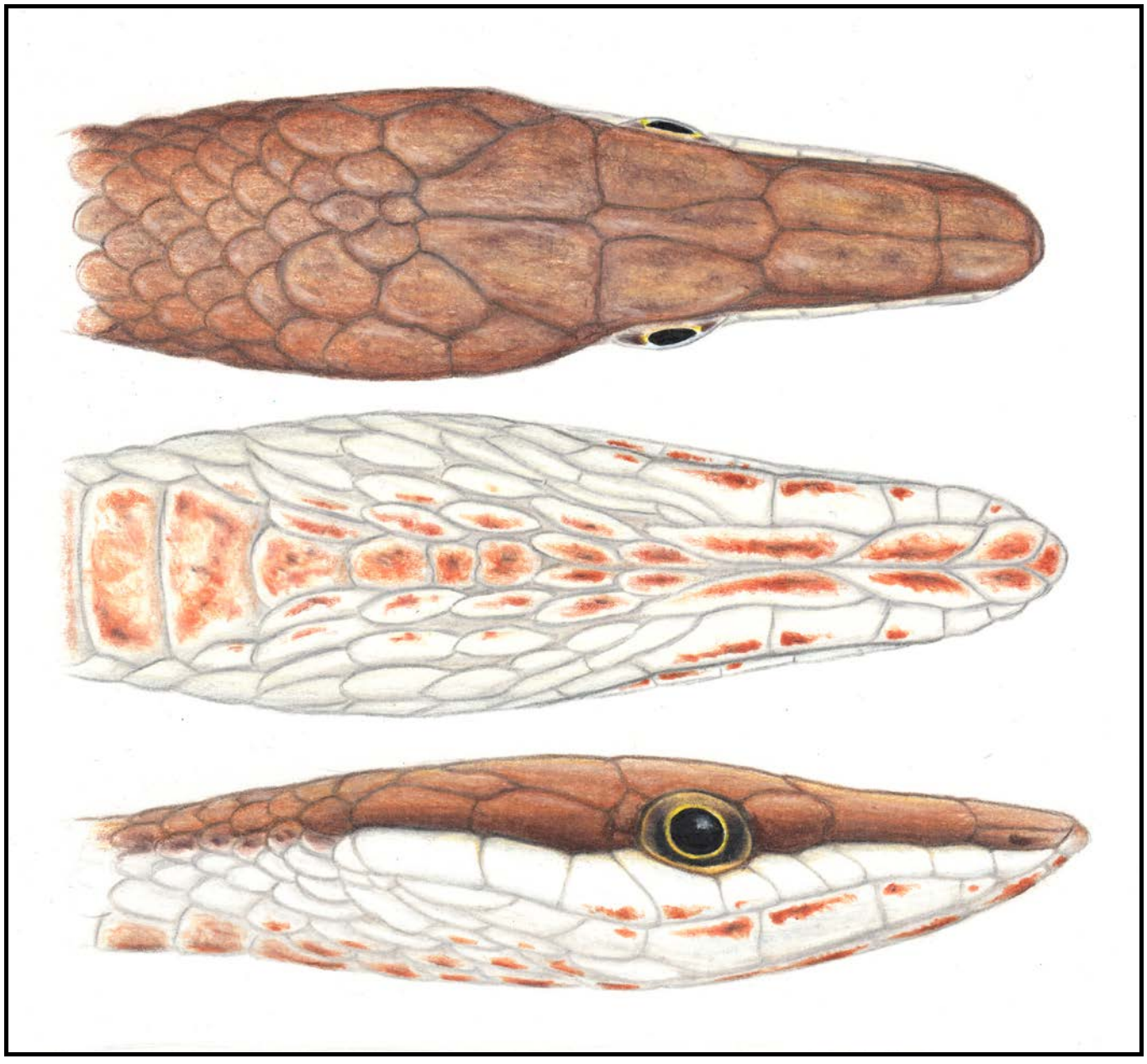

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Cover: A recently described Central American species: Köhler's vine snake, *Oxybelis koehleri* Jadin et al., 2020. Drawing by Justin T. Sipiorski.

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Book Review:
Indigo Snake: All You Need to Know about Indigo Snake Care, Housing and Feeding by Paul Jason
2020. Privately published. Softbound $6.00. Kindle edition $2.99.

Reviewed By:
Holly Carter
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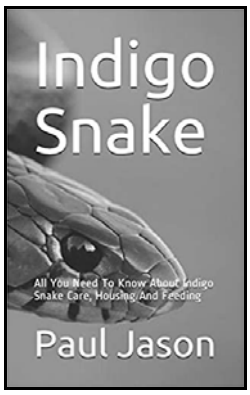

I often go in search of basic information books about reptiles and amphibians for our club, the Hoosier Herpetological Society, to resell. I recently became aware of a small book about care of indigo snakes in captivity that was listed on Amazon.com. I thought this might be a great addition to our collection, so I ordered one book to check it out.

After receiving this book, I was very unhappy with everything about it. It did have a great photo on the cover, but I found out this had been copied from the internet. The book did not give credit for the cover photograph. Nor did it include any form of identification for the author.

The text covers 18 pages. An additional eight pages are blank, and the rest should have been for all the mistakes in it. The content is badly presented, makes no sense, and has no redeeming features. It looks to me like a bad translation from some foreign language into English. For example, instead of "cold weather breeder" we see "iciness breeder." Where the word "female" should describe the snake, we see "woman" or "lady."

And then there is the matter of the word spacing in the book. The following two lines will give you the idea:
After receiv ing this book, I was very unhappy with everything about it.

This book was obviously produced by a company offering "print on demand," as a real publisher would certainly not have touched it. I am aware of information on the internet not always being truthful, but this book is beyond sad.

As if all this is not bad enough, a search within Amazon.com for the author's name reveals similar titles dealing with 34 different reptile species and five amphibians. To say nothing of a large number covering assorted bird and mammal species. I wrote to Amazon to let them know, as they could not have read or even opened these books before listing them, but no action has been taken and I am not optimistic.

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Notes on Reproduction of the Green Treefrog, *Dryophytes cinereus* (Anura: Hylidae), from Oklahoma

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Abstract

I conducted a histological examination of gonads from 43 *Dryophytes cinereus* adults from Oklahoma consisting of 27 males and 16 females. Males contained sperm from all months examined: March to July and September, October. The two smallest mature males (sperm in lumina of seminiferous tubules) measured 43 mm SVL and were from July and October. Females in spawning condition were found in February, April to July. The smallest mature female (spawning condition) measured 41 mm SVL and was from February. I found no evidence (gravid females containing postovulatory follicles from a recent spawning) to indicate *D. cinereus* spawns more than once during the same year in Oklahoma.

Dryophytes cinereus (Schneider, 1799) occurs in the southeastern United States from southern Texas to Florida and Delaware and western Tennessee to parts of Missouri, Arkansas, Illinois, Kentucky, Indiana, and has been introduced into Puerto Rico and Bahamas (Frost, 2020). In Oklahoma it occurs in the southeast corner (Bragg, 1943). *Dryophytes cinereus* breeding in Oklahoma occurs mainly from spring to early summer (Sievert and Sievert, 2011) in a variety of aquatic habitats (Redmer and Brandon, 2005). Eggs are deposited near the surface of water in small packs of jelly, often attached to floating vegetation (Tipton et al., 2012). In southern Illinois, sexual maturity is reached in 1 year (Garton and Brandon, 1975). Wright and Wright (1933) reported *D. cinereus* reproduction (no specific locality) occurred from April 15 to August 15. In the current paper I present data on the *D. cinereus* reproductive cycle from a histological examination of gonadal material from Oklahoma. The biology of *D. cinereus* is summarized in Redmer and Brandon (2003). Utilization of museum collections for obtaining reproductive data

Table 1. Two monthly stages in the spawning cycle of 16 adult female *D. cinereus* from Oklahoma.

Month	*n*	Ready to spawn condition	Not in spawning condition
February	1	1	0
March	1	0	1
April	7	6	1
May	3	2	1
June	3	3	0
July	1	1	0

avoids removing additional animals from the wild.

A sample of 45 *D. cinereus* from Oklahoma collected 1956 to 1999 (Appendix) consisting of 27 adult males (mean SVL = 47.5 mm ± 3.1 SD, range = 43–55 mm), 16 adult females (mean SVL = 47.3 mm ± 4.3 SD, range = 41–55 mm) and two unsexed subadults (SVLs = 38 mm) was examined from the herpetology collection of the Sam Noble Museum of Natural History (OMNH), Norman, Oklahoma USA (Appendix). An unpaired *t*–test was used to test for differences between adult male and female SVLs (Instat, vers. 3.0b, Graphpad Software, San Diego, CA).

A small incision was made in the lower part of the abdomen of the 43 adults and the left testis was removed from males and a piece of the left ovary from females. Gonads were embedded in paraffin, sections were cut at 5 μm and stained with Harris hematoxylin followed by eosin counterstain (Presnell and Schreibman, 1997). Histology slides were deposited at OMNH. No histology was done on the two subadults.

There was no significant difference between mean SVL of adult males versus adult females of *D. cinereus* ($t = 0.15$, df = 41, $P = 0.88$). The testicular morphology of *D. cinereus* is similar to that of other anurans as described in Ogielska and Bartmańska (2009a). Within the seminiferous tubules, spermatogenesis occurs in cysts which are closed until the late spermatid stage is reached; cysts then open and differentiating sperm reach the lumina of the seminiferous tubules (Ogielska and Bartmańska, 2009a). All 26 *D. cinereus* adult males were undergoing sperm formation (= spermiogenesis) in which clusters of sperm filled the seminiferous tubules. A ring of germinal cysts was located on the inner periphery of each seminiferous tubule. By month, numbers of *D. cinereus* males (N = 27) exhibiting spermiogenesis were: March (N = 2), April (N = 2), May (N = 7), June (N = 7), July (N = 7), September (N = 1), October (N = 1). The three smallest mature males in my study (spermiogenesis) measured 43 mm SVL and were from July (N = 2) (OMNH 39820, 41878) and October (N =1) (OMNH 47981). Wright and Wright (1933) reported adult *D. cinereus* males ranged from 37 to 59 mm in body size.

The ovaries of *D. cinereus* are typical of other anurans in consisting of paired organs located on the ventral sides of the kidneys; in adults they are filled with diplotene oocytes in various stages of development (Ogielska and Bartmańska, 2009b). Mature oocytes are filled with yolk droplets; the layer of surrounding follicular cells is thinly stretched. Two stages were present in the spawning cycle (Table 1): (1) "Ready to Spawn Condition" in which mature oocytes predominated; (2) "Not in Spawning Condition" in which previtellogenic or atretic oocytes predominated. The smallest mature female *D. cinereus* (ready to spawn) measured 41 mm SVL (OMNH 41786) and was from February. Wright and Wright (1933) reported adult *D. cinereus* females ranged from 41 to 63 mm in body size. *Dryophytes cinereus* females of adult size, (OMNH 44423, SVL = 41 mm) from March and (OMNH 47183, SVL = 45 mm) from April (Table 1) were not in spawning condition and contained previtellogenic oocytes. It is conceivable these two females may have spawned later in the year. I cannot speculate as to when the two unsexed subadults (SVLs = 38 mm) (OMNH 41884, 47574) would have reached maturity.

Atretic follicles were noted in the ovaries of 3/13 (23%) of the *D. cinereus* females that were in spawning condition (Table 1). Atresia is a widespread process occurring in the ovaries of all vertebrates (Uribe Aranzábal, 2009). It is common in the amphibian ovary (Saidapur, 1978) and is the spontaneous digestion of a diplotene oocyte by its own hypertrophied and phagocytic granulosa cells which invade the follicle and eventually degenerate after accumulating dark pigment (Ogielska and Bartmańska, 2009b). See Saidapur and Nadkarni (1973) and Ogielska et al. (2010) for detailed descriptions of follicular atresia in the frog ovary. Abundant late atresia was noted in one non-spawning adult female from May (OMNH 38175, SVL = 46 mm). Oocytes had been replaced by vacuolated black-pigment-containing cells. It is likely atresia prevented this *D. cinereus* from spawning. Atresia plays an important role in fecundity by influencing numbers of ovulated oocytes (Uribe Aranzábal, 2011). Incidences of follicular atresia increase late in the reproductive period (Saidapur, 1978). Saved energy will be presumably utilized during a subsequent reproduction.

Times of breeding for *D. cinereus* throughout its range are shown in Table 2. My finding of one *D. cinereus* February female from Oklahoma (OMNH 41786) in spawning condition is somewhat early in the year although reproduction in Florida has also been reported to occur in February (Krysko et al., 2019). Because I lacked *D. cinereus* female samples from late summer and autumn, the duration of female reproduction in Oklahoma is not known, although my September and October males (OMNH 41883, 47981) were producing sperm, indicating breeding would have been possible.

There is a report that, in Georgia, *D. cinereus* (as *Hyla cinerea*) produces multiple egg clutches in the same reproductive season (Perrill and Daniel, 1983), however, I found no evidence that this occurs in Oklahoma. Multiple spawnings would have been suggested by the presence of mature follicles (upcoming spawning) and the concurrent presence of post-ovulatory follicles (recent spawning) (*sensu* Redshaw, 1972). Goldberg (2018) used the above criteria and reported multiple clutches were produced by the congener *D. wrightorum* in Arizona.

Acknowledgment

I thank Cameron D. Siler (OMNH) for permission to examine *D. cinereus* and Jessa L. Watters (OMNH) for facilitating the loan.

Table 2. Periods of reproduction for *D. cinereus* from different states.

Locality	Breeding Period	Source
Alabama	April to August	Mount, 1975
Arkansas	Late April to August	Trauth et al., 2004
Florida	March to August	Carr, 1940
Florida	April to August	Gunzburger, 2006
Florida	February to September	Krysko et al., 2019
Georgia	April into July	Wright, 1932
Georgia	mid-April to mid-August	Jensen et al., 2008
Illinois	June and July	Garton and Brandon, 1975
Illinois	late May to August	Phillips et al., 1999
Kentucky	calls mid-May to August	Barbour, 1971
Louisiana	April to September	Dundee and Rossman, 1989
Louisiana	mid-March to late August	Boundy and Carr, 2017
Maryland	calls April to August	Cunningham and Nazdrowicz, 2018
Missouri	June to early July	Johnson, 2000
North Carolina	April to September	Dorcas et al., 2007
Tennessee	spring and summer	Niemiller and Reynolds, eds. 2021
Texas	March to October	Tipton et al., 2012
Carolinas to Virginia	May or June	Beane et al., 2010
Southeast	spring through summer	Dorcas and Gibbons, 2008

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Appendix

Forty-five *D. cinereus* Oklahoma examined by county from from the herpetology collection of the Sam Noble Museum., University of Oklahoma (OMNH), Norman, Oklahoma.

Johnston: OMNH 43582; **Latimer:** OMNH 41875, 41878; **Le Flore:** OMNH: 40007, 40008, 41883–41885, 42950–42952, 42954, 47193; **Marshall:** OMNH 46490, 47574, 48025; **McCurtain:** OMNH 38175, 38176, 39818–39821, 44410, 44421, 44423, 47182, 47183, 47185, 47186, 47188, 48117; **Muskogee:** OMNH 39581, 47981; **Pushmataha:** OMNH 41895–41897, 44429–44431; **Rogers:** OMNH: 41786, 41904–41906; **Wagoner:** OMNH 47853, 47854.

Adventures with Dr. Rosen—Part 2

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As none of you may remember, last month's column centered on my friend Dr. Philip C. Rosen, who passed away on 18 September 2020. While his death impacted many of us greatly, the prevailing attitude here in Tucson has been one of celebrating his presence while he was among us, while feeling genuine gratitude for the privilege of having had him in our midst. Last month's column discussed two field trips that involved Phil and me leading a film crew to some rattlesnake dens, and ended with suggestions that Phil was a rare combination of herpetologist and conservation biologist. Should you not remember any of this, no worries! But I remind you that if you *are* to remember any of it, you might have to read it first. In any case, knowing that at least two of you will read everything that I write, we will proceed with the message of fun with Phil while he was among us, while touching on some of his great accomplishments in conservation.

Another aspect of Phil's final days that was discussed last month was his seeking data entry help in order to get some of his notes from ink and paper into a computerized format. He also needed some help with his life's work—a herpetological history of Avra Valley. I know that to be specifically true, as he asked me to help him with that. My reasons for turning him down were many-fold, the best being this damnable pandemic. The nature of the work would have required some face time. I "catch" things easily, and as a result, might have given Phil more than he wanted from me. Had the opportunity to work closely with Phil during his last days arisen at any other time, I would have jumped on it. But in saying that, I am also acutely aware that I am in the same position as Phil. I have over 30 years of *my own* ink and paper notes that need to be organized if they are ever to count for anything. In this day and age where any one of us can be dead in two weeks, that is a somewhat sobering notion. Moving on:

Avra Valley is the next major valley west of Tucson. Its eastern boundary is the west side of the Tucson Mountains. Its western boundary is a series of loosely connected, low elevation mountain ranges. Of these ranges, Ragged Top is by far the most impressive (Figure 1). As the population of Tucson has grown, it has surged into Avra Valley. Agriculture, urban sprawl, and drought have created major changes in the landscape, as well as in the herpetofauna that inhabit it. One of the more interesting (if not depressing) developments in Avra Valley was the rapid extirpation of one species of fossorial snake that was quickly replaced by another. The Shovel-nosed Snake (*Chionactis annulata*) was once common here, but the last specimen documented was in 1979. The Variable Sandsnakes (*Chilomeniscus stramineus*) began to move in as the Shovel-nosed Snakes declined (Figure 2).

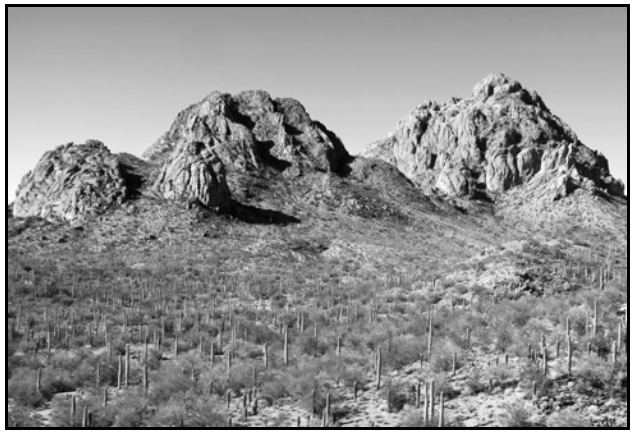

Figure 1. Ragged Top, the crown jewel of the Ironwood Forest National Monument. Image by the Author.

From 1988 to current, the author has been herping Avra Valley extensively. I can personally attest to the complete absence of the Shovel-nosed Snake, and the abundance of the Variable Sandsnake. Nobody would know the how and why of

Figure 2. (Left) Western Shovel-nosed Snake (*Chionactis annulata*). (Right) Variable Sandsnake (*Chilomeniscus stramineus*). The latter is an actual Avra Valley specimen. As briefly and inadequately explained in the text, the Shovel-nosed Snake was once common in Avra Valley, but according to Rosen, was replaced by the Variable Sandsnake. See text and Rosen(2003, 2008). Photo credits: (Left) Jim Rorabaugh; (Right) Fred Wilson.

this more than Phil, yet this aspect of his research here is but one grain of sand on his termite mound of historical knowledge of the place. I am still trying to gain access to a number of his papers, but for now, see Rosen (2003, 2008).

I don't know how much of Phil's life and knowledge was neatly wrapped up before he passed away. (I'm working on getting answers. It is like drilling through hardened tool steel!) What I *do* know is the thoroughness of his attention to detail when in the field. I am not alone in that knowledge. His reputation for the comprehensive documentation of any field outing was legendary among his peers. In last month's column, I described his turn-by-turn documenting of our drive to a rattlesnake den. At the time, I thought he might be doing this so he could later revisit "my" den on his own. Or perhaps "show off" to a fellow documenter? I did not realize at the time that Phil *always* did this sort of thing. His explosive revelations of long-term data, as well as his meticulous reports to various agencies, earned him many grants. Some of these grants were of the six-figure kind. Yes, Dr. Rosen's reputation for careful, big picture documentation of field work everywhere he went led to the funding of many projects.

There were very few times in my "career" as an avocational herpetologist that I was paid to do herp-related field work. It's possible that I could have earned more money than I did with my herping hobby, but this thing called "a *real* job" (a damn good one at that) got in the way. Even with outstanding vacation benefits, my ability to do the real field work—every day for weeks and months at a pop—was limited. But there was the occasional academic windfall in herpetology for me, and the most money that I ever received was through Dr. Rosen. He hired me to provide historical data on the newly created Ironwood Forest National Monument (IFNM). For once, my ink and paper notes were actually going to pay off. (But the message "don't quit your day job, son" was always fiscally clear.) The creation of IFNM in the year 2000 was a parting gift to all from the Clinton administration. Large chunks of this monument line the western edge of Avra Valley. Hence, when a substantial grant was made available to survey IFNM, Phil was the obvious choice to land it. His pre-existing knowledge of the herpetological history of Avra Valley, coupled with his outstanding reputation, made him the best person for the job. He began the IFNM survey work in 2002, and hired me in the fall of that year. At that point in time, I had amassed 14 years of data on the herps of both Avra Valley *and* IFNM, twelve of which were *before* the monument was created. I had also published several articles in various gray-literature publications about Ragged Top. This rugged mountain is one of the crown jewels of IFNM. Phil hired me to produce a spreadsheet that listed all my encounters with Desert Iguanas (*Dipsosaurus dorsalis*), Chuckwallas (*Sauromalus ater*), and Sonoran Desert Tortoises (*Gopherus morafkai*) within Avra Valley and IFNM. These were the three species that he *knew* to be important indicator species of the region. He also always had a personal interest in all of the smaller fossorial snakes in any region. He wanted me to list any Groundsnakes (*Sonora semiannulata*), Shovel-nosed Snakes (*Chionactis annulata*), Black-headed Snakes (*Tantilla hobartsmithi*), and Variable Sandsnakes (*Chilomeniscus stramineus*) found there. I had not found any of the first three species in Avra Valley, making my job easy in this regard. He let me off the hook with the Variable Sandsnakes, of which I had found exactly 50 through the years. He already had scads of historical data on them, from many of the exact locations and time period as my data included. How we did not accidentally bump into each other while flipping nearly every board in Avra Valley will forever remain a mystery to me. In addition to the spreadsheet I was creating, Phil also wanted me to mark locations on topo maps that he provided. (I did not purchase a GPS unit until the year 2001. In this day and age of cell phones, pin drops and Google Earth, it is nearly impossible to even remember the days of paper maps and compasses. For the bulk of my early experiences herping IFNM, GPS units were of such size that they had to be carried in suitcases! And the cost of such units was prohibitive.) When I finished the spreadsheet and topo map-marking for Phil, there was still some money left in the pot for me. Enough money remained in my personal budget to use five billable days in the field. One of these "herp-for-a-paycheck days" was later spent in the company of Dennis Caldwell. That name, and the persona behind it, will be highlighted in a future column on the subject of Dr. Rosen. My day with Caldwell was but one of the five remaining funded days. Dr. Rosen wanted to be with me for the other four. Hot-DIGGITY-damn! I was going to get paid to herp with Phil!

Earlier in this article, I explained that the western boundary of Avra Valley is "a series of loosely connected, low-lying mountain ranges." I did not hang names on these ranges, as they are rather unremarkable and have no bearing on this article. But two of these ranges, Ragged Top and the Sawtooth Mountains, have *everything* to do with my words of today. We start by commenting that it is well that folk other than academic herpetologists named these ranges, or they would be known as "Ragged-topped" and "Saw-toothed" Mountains. Putting smart-assed insinuations aside, both places are distinctive landmarks when viewed at a distance, and downright spectacular to behold when one is herping among them. The author must confess that it is taking every ounce of restraint that he possesses to *not* launch into thousands of words describing his experiences and subsequent devotion to Ragged Top. Suffice it to say that Ragged Top is the place that transformed me from a purposeless field herper into a serious student of the natural history of the herpetofauna in our region. It was here that I first witnessed the phenomenon of individual reptiles demonstrating fidelity to their shelters. The day that Dennis Caldwell (there's that name again) and I found our very first Chuckwalla was 9 March 1991. This was after we spent roughly a year trying to find a local population of them to visit. That day was also the same day that my first-ever repeating reptile was found. But I had to wait until December for that to be made known (Repp, 1996, 1998a,b). My first "repeater" was a tortoise. One day later, 10 March 1991, my very first repeating Chuckwalla was found. It was a young adult male Chuck (as they will be called at will throughout this column) viewed inside a classic boulder crevice (Figure 3). Probably the very last time that I will ever visit that crevice was 22 January 2018, nearly 27 years later. There was a huge adult Chuck within the crack on that day. While I can't say for certain that it was the same Chuck that was first viewed in 1991, neither can I say that it wasn't. As part of my efforts to address the possibility that it even *could be* the same Chuck, I emailed Craig

Figure 3. The author's longest-running repeating Chuckwalla (*Sauromalus ater*) crevice. A "Chuck" has been observed inside with every visit since March of 1991. The author speculates that the same Chuck may have been seen over a 27-year time span here. Image by the author.

Ivanyi, codirector of the Arizona Sonora Desert Museum, with the question of how long captive specimens have been known to live. Craig put the right people on the mission. In jig time, records and quarantine technician Mary Powell-McConnell responded with the answer that our local species, *Sauromalus ater*, has survived in captivity for 29 years. It is certainly worth the words to add that an insular form of Chuck, the San Esteban Chuckwalla (*Sauromalus varius*), has been documented to live 42 years! Armed with this information, it is safe to say that it is possible that the Chuck under discussion *could* be the same one viewed over a 27-year time period. The young adult/huge adult situation with that particular Chuck lends more evidence—however flimsy or speculative—to that possibility. Since this may be the only column where I ever write about Chuckwallas, I am including Figure 4. This is an example of a "huge," and perhaps long-lived adult male Chuckwalla from Ragged Top. I would like nothing more than to be able to go back to visit this particular crevice, with its now-huge repeating Chuckwalla within. But it is a 3-mile round trip over rugged terrain to get there and back. And I am now suddenly very old. This particular Chuck crevice needs a set of younger eyes and legs to monitor, but I have had zero luck with my efforts to recruit a younger version of me to do *any* of this sort of thing.

Getting back to *all* the Ragged Top crevice Chucks, the only thing that I can prove about these or any other wild herps viewed in shelters is the propensity of that particular shelter to consistently produce an occupant. I have two more Chuck cracks that are also in the running for being repeating champs. We go to my notes to see what I had to say about finding one of them:

1993 Fri Jan 15 Location: Rag Top E. and proper . . .
Herps: . . . Also 5 Chuckwallas, 2 on R.T. East. These interest me. 1 (one) is in white rocks, below first outcrop . . .

Rosen and the White Rocks Chuckwalla

Upon receiving my spreadsheet, and studying my comments, Dr. Rosen wanted to see some of my long-term Chuck crevices, as well as anything else that might come our way. When I discovered that he was actually taking GPS readings off my topo

Figure 4. A whopper! They *do* get bigger, but the Chuckwalla in this image is the only large adult from Ragged Top that this author has ever captured and handled. Captive specimens have been documented to live as long as 29 years. Image by Daniel M. Bell.

map marking procedures, I made him aware that said marks might be wildly inaccurate. His solution to this problem was that we hike to these places, and nail them with accurate coordinates. Thus it came to pass that on 16 January of 2003, we headed for the eastern buttes of Ragged Top. During the ride out, Phil had many questions about my search methods. It was not until a few months later that I learned that he had never hunted for Chuckwallas by using a mirror or flashlight to shine rock crevices. He had made several trips to various places where Chucks could be seen basking on the top of boulders, such as Organ Pipe National Park (ORPI), but *never* had he tried crack-hunting for them. Since we have just mentioned it, his work at ORPI eventually became his dissertation. In addition to the mud turtles of Quitobaquito Springs, he also road cruised and worked the flats extensively for lizards and snakes. His list of papers regarding the herps of ORPI is staggering in its number and variety. In what was to become his trademark with later efforts, he used his extensive field notes and highly-honed analytical skills to document cyclical fluctuations of herps in the park. I was blessed to see his 21 November 2000 program for the Tucson Herpetological Society (see Appendix), where he did everything with his numbers that I hope to some day do with mine. This presentation was packed with information from his dissertation (Rosen, 2000).

Getting back to our January 2003 visit to Ragged Top, I appreciated his questions, as they gave me an opportunity to explain exactly how we would be working the slopes east of Ragged Top. Out of hundreds of visits to the place, and hundreds of observations of them, *never* have I seen a Chuck outside of a crevice there. This was despite the fact that my search methods always involve looking for herps on top of boulders as well as inside and beneath them. They obviously must bask and move about, but for whatever reason, they seem to be much more wary than Chucks from other locations. It is my impression that they see us coming from a long way off, and nosedive for cover.

We arrived at my favored parking spot at 0957 hrs. The ambient air temp was 15°C (59°F); the cloud cover was 50% thin, wispy clouds; the humidity 20%; the wind speed was calm. It was shaping up to be the kind of day that I often designate as "Arizona perfect." By 1000 hrs, we began our first crunchy footsteps up the gentle incline of what I call the Front Ridge. We stayed in motion all day long, and did not return to the truck until 1752 hours, nearly eight hours later. For the entire effort,

Phil performed his duties exactly as instructed. He traveled parallel with me, following the same contours, yet always maintaining a comfortable five- to ten-meter distance. This assured that we were always shining different locations, while being able to easily converge when a find was made, or when we arrived at one of my mapped locations for tortoises or Chuckwallas.

In all, I would guess that we traveled perhaps five miles during our eight-hour hike. We moved in somewhat linear fashion along a series of hills that have no name other than the names that I have given them. We generally moved from east-to-west, first assailing the "Front Ridge," to "Holy Ground," to "Turtle Hill." We then crossed the undulating bajada to "Mount Badass," this being my moniker for Ragged Top in the days when I wrote about the place while trying to conceal its actual identity (see Repp, 1996, 1998a). From there, we hoofed back across the bajada, and battled the lengthy and featureless uphill stretch behind the Front Ridge to visit "Repp Hill," ending the journey with the steep, crumbly and slippery slopes of "Burnett Hill." From there, we slipped and slid our way back down to Repp Wash, where we had parked. There would have been a time when this sort of effort would have easily landed us five tortoises, five Chucks, three Western Lyresnakes (*Trimorphodon biscutatus*), three Gila Monsters (*Heloderma suspectum*), and five Western Diamond-backed Rattlesnakes (*Crotalus atrox*). Back in the day—before a relentless and heartless drought wiped out nearly every herp in the region—we used to jokingly say to each other: "Like my old grandpappy always said, 'You can't go wrong at Ragged Top, son!'" But that was then, between the years 1991 and 1996. This was now, where every visit after 1996 yielded only tortoise corpses and the occasional Chuck. On this day with Phil, instead of documenting living herps, we were taking GPS locations for the ghosts of the long-dead ones. Perhaps the day will come when I am depressed enough to describe the things that passed before my eyes during that *horrible* year of 1996 in one of these columns.

Getting back to my hike with Dr. Rosen, while we were initially ascending Front Ridge, I found a western pipistrelle bat (*Pipistrellus hesperus*) in known lyresnake crevice number 2 (a crevice found to contain a lyresnake in 1992). As this species of bat is on the menu for lyresnakes, I have always noted when one is found in a known lyresnake crack. I have even noticed that if I pay a visit to a lyresnake crack soon *after* a bat is observed inside, a lyresnake will often appear. Very close to this crack, we paused to note the handful of fragments left over from the death of my most beloved tortoise of all, number 23. I had first found this tortoise—a four-inch-long juvenile—in January of 1994. In February of the same year, I was working with a grad student who processed and marked it as number 23 for me. I actually had several incidental encounters with #23 between then and 13 December 1996, when I found it fresh dead in its burrow. It had died so recently that the smell of death was still upon it, and maggots were seen moving in and out of it. When Phil and I visited it this day, just over seven years later, tortoise #23 was reduced to but a few bits and pieces of what had once been thicker carapace fragments.

Our one and only living find of the day was at the White Rocks. But the find would *not* have happened without the presence and diligence of Phil. Within an hour of me revealing my crack-hunting style for finding Chucks, the pupil became the master. Prior to this outing, the White Rocks Chuckwalla had *never* let me down. With every visit, anywhere from one to three Chucks had been observed here (Figure 5). But on this day, my heart sank when I looked into the known crack that had been so consistent for almost exactly ten years and found it to be empty! Had it been up to me, that would have been the end of the White Rocks part of the day. We would have just continued on for another seven hours and found *nothing* but a bat in a crack for an all-day effort. But Phil continued to search every crevice in the framework of that rock structure, working his way to the very top. And then it was "Oh my, look!" And I was "Yeah? Yeah?" And he was "Oh yeah!" Sure enough, he had found a *huge* adult Chuckwalla (see Figure 4 again for size reference) in a previously undiscovered crevice in the White Rocks formation. This find was basically a game-saving tackle on Phil's part. This particular Chuck was the *only* living herp of note to show up on this day. The find also kept the streak of the White Rocks alive. While I hope to get back to the White Rocks at least once this winter, until that happens, my most recent visit was 26 November 2019. With that visit, there was one Chuck visible in the usual crevice there, but it was *not* one of the two seen in Figure 5. This one was almost the exact size of the one seen in the righthand image of Figure 5, but it had a complete tail.

Figure 5. (Left) A large adult male Chuckwalla and (Right) a smaller female viewed and photographed in the same "White Rocks" crevice 15 years apart. Photo credits: (Left) Daniel M. Bell, 12 March 1994, (Right) Hans-Werner Herrmann, 24 January 2009.

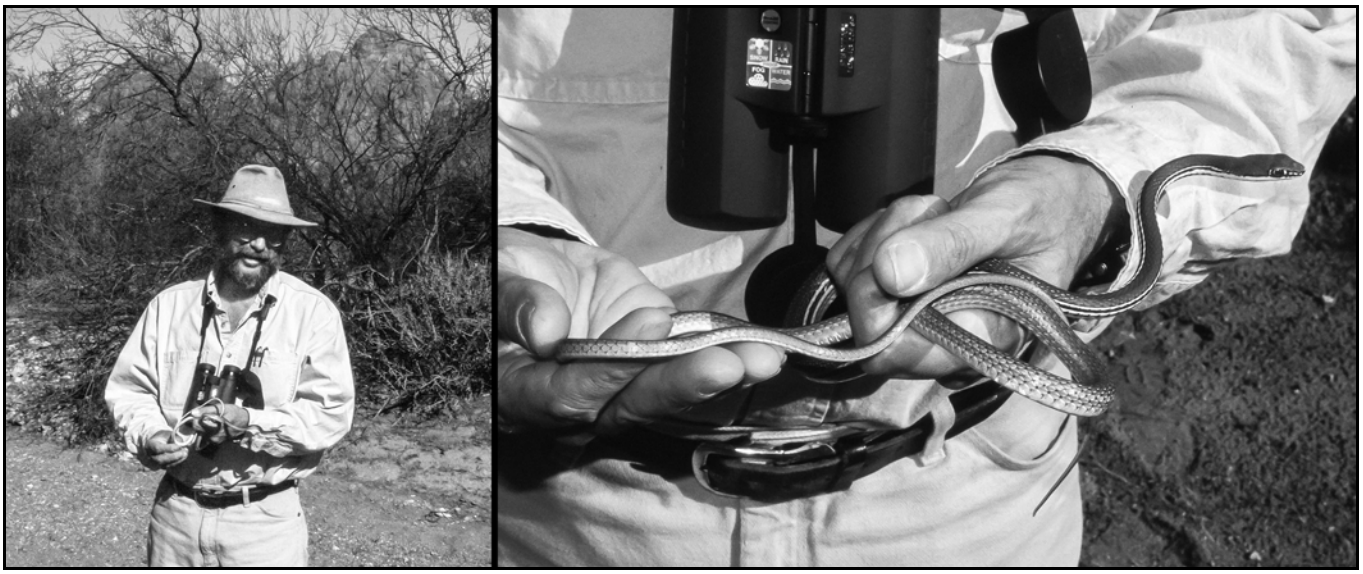

Figure 6. (Left) Dr. Philip C. Rosen with a Sonoran Whipsnake (*Masticophis bilineatus*) found and captured near Ragged Top. (Right) Close-up of the snake in the image to the left. Images by the author, 1 June 2003.

He likes it!

On 1 June 2003, Phil and I had one last survey day left for Ironwood Forest National Monument. There was as yet one portion of the monument to be surveyed, and that was the West Silver Bell Mountains. For whatever reason, despite the fact that we had technically already surveyed Ragged Top, he wanted to go back there again before assailing the West Silver Bell Mountains. The world can be grateful for *many* reasons that Phil and I did not always think alike. Had our roles been reversed, there is no way in hell that I would *ever* be inspired to go back to a place where two accomplished field herpers found only three dead tortoises and a Chuckwalla for eight solid hours of steep and difficult herping effort. Perhaps he merely wanted one last look at the rugged spectacle of Ragged Top itself before calling his survey finished (see Figure 1). In any case, he was the boss. Where I come from, bosses are not questioned, but obeyed. He was driving, and he made the slight detour to visit Ragged Top while we were, in theory, on our way to the West Silver Bells. And I am *so very glad* that he did.

One can visit a place hundreds of times, and think that one has seen it all. But that one surprise find—be it something extraordinary or not—can *really* be exciting. In this case, we speak of the Sonoran Whipsnake (*Masticophis bilineatus*) (MABI) that Phil and I cornered and captured at 0742 hours on this impulse visit that Dr. Rosen made possible. I can't remember all of the details of the find. I don't remember who saw it first. I don't remember which of us was the one to eventually grab it. What I *do* remember is one of us initially seeing it, and losing sight of it. I also remember the focused camaraderie between the two of us as we both surgically scrutinized the vicinity of that first visual. And then we had it on the run, losing it again when it slipped under a dense hackberry thicket. For ten minutes, we circled that hackberry, shining every opening in the helter-skelter snarl of woody stalks that comprise this *miserable* shrub. We eventually spotted a small bit of flank in the deepest recesses of the heart of the plant, and one of us gave it poke that sent it sprawling into the hands of the other. And when a herp of any kind winds up in the hands of Dr. Rosen, one can bet that a thorough processing will follow. We GPSed the location of the find. We documented the ambient air temp as being 30.5°C (89.3°F), with 0% clouds, 20% humidity, and just a puff of a breeze. Working together, we learned that our MABI was 798 mm (31.4 inches) long, with a tail length of 358 mm (14 inches). We also learned that this snake was a male by "cracking it." (Bending the tail at the cloaca and gently squeezing the hemipenes out.) And finally, we photographed it (Figure 6). While MABI can be common at higher elevations among oak trees and along riparian corridors, finding one in the harsh, hot and arid land of Chuckwallas and Desert Iguanas is quite another matter. Finding, capturing and processing this snake with Phil was a high point in my field outings with him. Had I encountered it without him, that same MABI would likely go something like: "MABI, ~1 m long, RTE, 0742 hours" in my notes. And there would be no capture or subsequent photo. Dr. Rosen had a way of nailing something nine ways to Sunday when in the field, and I'm glad that he led the charge to what will surely be the first and last Sonoran Whipsnake that I ever see at Ragged Top.

Epilogue (23 November 2020)

Just yesterday, when the words that fall above were deemed nearly complete, I came upon a resource previously unknown to me that led me directly to the heart of some of the publications of Dr. Philip Clark Rosen. This happened just in the nick of time to keep me from repeating the same mistake made in my first column about him. That mistake was suggesting that Dr. Rosen was primarily an aquatic herpetologist. That was an inane and inaccurate statement.

My big find was an academic website called ResearchGate that lists 87 publications written by Phil, dating from 1981 to early 2020. Sadly, this is not a complete listing, as I am finding more that were *not* included in ResearchGate on an almost daily basis as I delve into Phil's life. I have emailed some requests to those who knew Phil best to see if he left us a current *CV* before passing away. At this point in the day, it is not looking good, but

time will tell. [But wait! There's more!] And time *did* tell! It spoke volumes. It said "Here Roger! Here is Phil's *CV*." Yes, by the end of the day today, my old friend Dennis Caldwell came through by emailing me a copy of a 2013 version of Dr. Rosen's *CV*. I have yet to thoroughly digest it, but for now, I know enough to be a *lot* more careful not to paint Dr. Rosen *or* his studies with too broad of a brush. Yes, there were many times that he kept his hiking boots dry during his illustrious herping career.

Acknowledgments

The author is deeply indebted to Dennis Caldwell and Jim Rorabaugh, who have not only contributed information for this column, but are *about* to contribute even more. The poor bastards have no idea how much they will be *hammered* in the days ahead. I also wish to extend my gratitude to Craig Ivanyi, Howard Byrne, Stephane Poulin and Mary Powell-McConnell of the Arizona Sonora Desert Museum for their assistance with the life expectancy of captive Chuckwallas. Special thanks are also always in order to Mike Dloogatch and Joan Moore for their editorial support and help, as well as photo editor Steve Barten who always provides skillful assistance (but with maximum complaints about my horrible photography).

This here is Roger Repp, signing off from Southern Arizona, where the turtles are strong, the snakes are handsome, and the lizards are above average.

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————. 2008. 2007 survey results for the Tucson Shovel-nosed Snake (*Chionactis occipitalis klauberi*), with evidence for ecological change in south-central Arizona. Final report to town of Marana and Arizona Game and Fish Department.

Appendix:
Additional Selections from the Work of Philip C. Rosen about Avra Valley and the Ironwood Forest National Monument

Rosen, P. C. 2000. Lizard and snake population trends in context of the vertebrate ecosystem at Organ Pipe Cactus National Monument. Presentation to the Tucson Herpetological Society, November 21, 2000.

————. 2003. Avra Valley snakes: Marana survey report for Tucson Shovel-nosed Snake (*Chionactis occipitalis klauberi*). Prepared for the Town of Marana, University of Arizona.

————. 2004. Avra Valley snakes: Marana survey report for the Ground Snake (*Sonora semiannulata*). Final Report to Town of Marana on Ground Snake. 17 pp.

————. 2008. Ecological restoration in Tucson-owned Avra Valley lands in context of conservation of the Western Groundsnake and Tucson Shovel-nosed Snake. Unpublished report to City of Tucson, Office of Conservation and Sustainable Development.

Index to Scientific Names of Amphibians and Reptiles for Volume 55 (2020)

Author–Title Index for Volume 55 (2020)

Bulletin of the Chicago Herpetological Society 55(12):243, 2020

Herpetology 2020

In this column the editorial staff presents short abstracts of herpetological articles we have found of interest. This is not an attempt to summarize all of the research papers being published; it is an attempt to increase the reader's awareness of what herpetologists have been doing and publishing. The editor assumes full responsibility for any errors or misleading statements.

COMPETITION BETWEEN SALAMANDER SPECIES

T. R. Brophy and N. Reichenbach [2020, The Herpetological Bulletin 152:1-6] note that the Peaks of Otter salamander, *Plethodon hubrichti,* is a montane species found at altitudes above 442 m within a 117 km^2 area of the Blue Ridge Mountains in central Virginia, USA. In areas where this species is sympatric with the eastern red-backed salamander *(Plethodon cinereus)* it seemed likely that *P. hubrichti* populations were either depressed or eliminated. The habitability of areas beyond the current range boundaries for *P. hubrichti* is supported by several disjunct populations in areas sympatric with *P. cinereus.* From 2009 to 2012 the authors tested whether *P. hubrichti* was negatively impacted by competition with *P. cinereus* by removing *P. cinereus* from treatment plots at three sympatric field locations. The number of surface-active (SA) *P. hubrichti* increased significantly more on treatment plots than on corresponding reference plots, whereas the number of SA *P. cinereus* decreased significantly more on treatment plots than on reference plots. The removal of every one *P. cinereus* from the treatment plots led to an increase of 0.69 *P. hubrichti.* These results emphasize the importance of conserving mature hardwood forests along the perimeter of the *P. hubrichti* distribution, where it is sympatric with *P. cinereus,* so as to prevent future range contraction of this vulnerable species.

NOT WITHERING ON THE EVOLUTIONARY VINE

R. C. Jadin et al. [2020, Organisms Diversity & Evolution 20(4):723-746] note that the vine snake genus, *Oxybelis*, currently is composed of four taxa despite numerous studies suggesting and describing multiple taxa within the *O. aeneus* complex. The authors utilize a multilocus molecular dataset (i.e., cyt *b*, ND4, 12S, 16S, cmos, PRLR, 3663 bp) to conduct phylogenetic analyses to assess the evolutionary history of *Oxybelis*. The molecular analyses find three major lineages of *Oxybelis* (i.e., *O. aeneus* complex, *O. brevirostris*, *O. fulgidus* complex) with a sister relationship between *O. brevirostris* and the *O. aeneus* complex to the exclusion of the *O. fulgidus* complex. More specifically, *O. aeneus* appears to harbor at least five taxa currently unrecognized while *O. fulgidus* was found to be paraphyletic with respect to *O. wilsoni*, suggesting cryptic diversity and novel taxa in that clade as well. Additionally, the authors use morphological data in concert with the molecular analyses and the literature to support removing *Oxybelis microphthalmus* Barbour and Amaral, 1926; *Oxybelis potosiensis* Taylor, 1941; and *Dryophis vittatus* Girard, 1854 from the synonymy of *O. aeneus*. Finally, they describe two new species, *O. koehleri* and *O. rutherfordi*, from Central America and northern South America, respectively.

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Free to a good home. Back issues of the CHS *Bulletin* from October 2012 to the present. Boxed and ready to be picked up at my home in Oak Park. Rob Streit, 708-383-6830.

Line ads in this publication are run free for CHS members—$2 per line for nonmembers. Any ad may be refused at the discretion of the Editor. Submit ads to mdloogatch@chicagoherp.org.

NEW CHS MEMBERS THIS MONTH

Jessica Daly
Michael Deutsch
Andrew and Brittany Hedman
Luke Larter
Corrie Navis
Hope Nye
Eric Stitt
Holly Zak
Scott Zonis

UPCOMING MEETINGS

Until in-person meetings again become possible the Chicago Herpetological Society will be holding monthly general meetings online via Zoom Webinar. The December Webinar will take place on Wednesday, December 30, at 7:30 P.M. Chicago time, and will feature two half-hour-long presentations. **Dr. Steve Barten**, a veterinarian and outstanding nature photographer, will split his segment between interesting veterinary cases and interesting episodes of field herping. **Cindy Rampacek**, a Milwaukee resident and former CHS board member, will speak about some of the many cases she has worked on involving animal control and rescues.

Viewers will be able to submit questions to be answered by the speaker following each segment.

Please check the CHS website or Facebook page each month for information on the program. Information about attending a Zoom Webinar can be found here:
<https://support.zoom.us/hc/en-us/articles/115004954946-Joining-and-participating-in-a-webinar-attendee->

Board of Directors Meeting

Are you interested in how the decisions are made that determine how the Chicago Herpetological Society runs? And would you like to have input into those decisions? The next board meeting will be held online. If you wish to take part, please email akolb@chicagoherp.org.

ELECTION RESULTS

As a result of the elections held online and by mail, the following officers and members-at-large will serve on the CHS Board of Directors for the year 2021.

President:	John Archer
Vice-president:	Rachel Bladow
Treasurer:	John Archer
Recording Secretary:	Rich Crowley
Media Secretary:	Stephanie Dochterman
Membership Secretary:	Mike Dloogatch
Sergeant-at-arms:	Tom Mikosz
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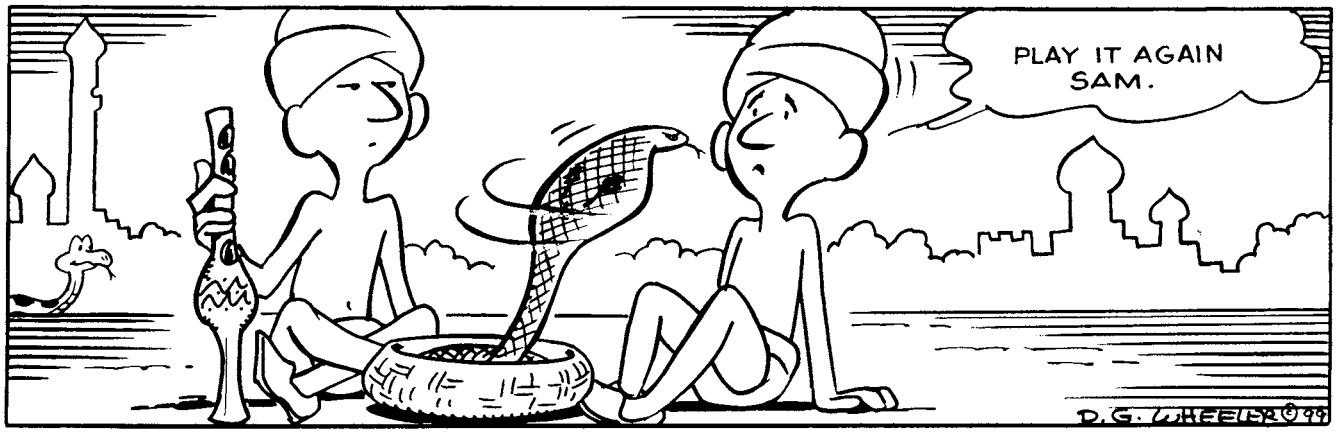
THE ADVENTURES OF SPOT



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