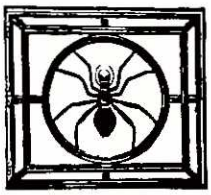
AMERICAN ARACHNOLOGY

THE NEWSLETTER OF THE AMERICAN ARACHNOLOGICAL SOCIETY

No. 38 November 1988



1989 Annual Meeting

Butler University
Indianapolis, Indiana
June 20-24, 1989

Host: Jim Berry, Department of Biological Sciences; Butler University, Indianapolis, Indiana 46208 Telephone (317)-283-9344.

Calendar:

Tues, 20 June - Registration, afternoon & evening
Mixer in evening

Wed., 21 June - Morning & afternoon paper sessions
Social with films and video

Thu., 22 June - Morning paper session
Afternoon local field trip
Casual outdoor "banquet" in evening

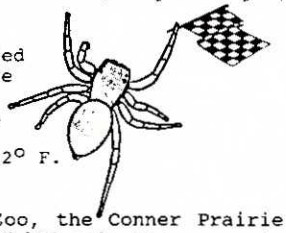
Fri., 23 June - Morning & afternoon paper sessions
Business meeting in afternoon

Sat., 24 June - Field trip

Field Trips: On the free afternoon there will be a short field trip to a close-by 10,000 acre forested park owned by the city. The Saturday field trip will include several habitats controlled by The Nature Conservancy and the State Park system, featuring stands of hardwood (beech-maple and oak-hickory) and relict evergreen forest (hemlock, white pine and Canada yew) with clear streams, sandstone bluffs, and deep gorges.

Transportation: Indianapolis is served by all of the major airlines, and we plan to provide free pick-up at the airport on the afternoon and evening of June 20. The city is within one day by car of most of the eastern United States. Parking on campus is no problem.

Accommodations: Moderate cost campus housing will be available, some air-conditioned and some au naturel. If you must have air-conditioned housing, be sure to register early. Two miles away from campus is a Sheraton Hotel with special Butler rates of $39 per night, including free shuttle service.



Local: Butler University is located in a residential neighborhood five miles northwest of downtown Indianapolis. Normal temperatures in Indianapolis for late June are highs of 83° F. and lows of 62° F. There are lots of activities for families, including the new facilities of the Indianapolis Zoo, the Conner Prairie Historical Farm, an outstanding Children's Museum, and, if you are interested, you can take a lap around the Indianapolis 500 Motor Speedway (on a bus!).

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Proposed Changes in the By-Laws

The following changes in the by-laws have been recommended by the Executive Committee and will be voted on in the next general balloting (Spring, 1989). Proposed changes are underlined.

Section 5: Associate Membership for low income workers or for countries where it is not possible to send money will be gratis aand must be bestowed by <u>two-thirds</u> vote of the Executive Committee.

<u>Section 6: Life memberships shall be 25 times the regular membership fee, paid in one sum or in two annual installments.</u>

<u>Section 7:</u> Records pertaining to Society funds shall be open to any member at any time.

Financial Status of the Society

Gail Stratton, Treasurer

1988 has the dubious distinction of being the first year in which the American Arachnological Society is in a less than ideal financial situation. The major expenditure of the Society is to publish the <u>Journal of Arachnology</u>. The cost of publication of the Journal has tripled in the last 6 years. Our main sources of income are from dues and, since 1986, from page charges. While our income has grown slowly, it has not kept pace with the rise in costs.

In June of this year, the situation was very serious; it looked like we would not be able to pay for part of Volume 16 of the Journal. At the June meeting, the executive board took several steps to start alleviating the situation: dues were raised for the first time in 5 years, page charges were increased, it was decided that the request for dues payment would be sent early, and a new position of business manager was instituted to collect page charges. Many thanks to Bob Suter for agreeing to be our first business manager! Our current assets (on the quarterly report) reflect early dues collection -- it must be remembered that the next two numbers of the Journal (due to be published yet this fall) will probably cost $6000 each. Also, since we allow members to pay for other memberships through our membership secretary, much of what we collected must be paid to B.A.S., C.I.D.A., and Revue Arachnologique. And we still have publication of the Journal in 1989 to pay for!

On a brighter note, members have responded with support. At this time, we have received almost $600.00 in donations, and two individuals have taken life memberships. The executive board is looking into finding more cost efficient means of publication, as well as looking into other means of raising money for the Society. It will be some time before we are out of the woods. If you have ideas about raising money for the Society please contact one of the executive board. And remember, all donations are tax deductible!

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11th International Congress of Arachnology

The 11th International Congress of Arachnology will be held at Turku, Finland on 7-12 August 1989. Those interested in more information should contact: The Secretary, 11th International Congress of Arachnology, Zoological Museum, University of Turku, SF- 20500 Turku, Finland.

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NEWS FLASH !!!

Norm Platnick's new supplement to Brignoli's catalog can now be ordered through the Society. The special order form is enclosed in this newsletter. Orders placed through the Society before the publication date will receive a significant discount. Details are in the enclosed order form.

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THE AMERICAN ARACHNOLOGICAL SOCIETY
Gail E. Stratton, Treasurer
Department of Biology, Albion College, Albion, MI 49224

THIRD QUARTER FINANCIAL STATEMENT
Oct 10, 1988

Balance from June 12, 1988			$8950.31
DEPOSITS			
7/18/88	Membership dues	568.00	
7/18/88	Sale of Social Spider Volume	20.00	
9/30/88	Sale of Social Spider Volume	10.00	
9/30/88	Membership dues	5629.00	
10/12/88	Membership dues	5515.00	
	Interest through Sept. 25	129.77	
		11871.77	
	Subtotal		$20,822.08
EXPENSES			
6/13/88	James Berry, Newsletter	100.00	
7/18/88	Jerry Rovner, Associate Ed.	91.71	
8/05/88	Bruce Cutler, Salticid symposium	23.82	
9/05/88	Texas Tech JA Vol 16 (1)	5587.45	
10/12/88	New York Ent. Soc. Envelopes	91.30	
10/12/88	Am.Mus.Nat.Hist. membership mailing	168.15	
10/12/88	Gail Stratton, expenses as treasurer	21.79	
		6084.22	
	Total Assets		$14737.86

Gail Stratton, Treasurer
Oct. 17, 1988

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Changes in Dues and Page Charges

At the annual meeting of the Society in Las Cruces, it was decided that the greatly increased costs for printing the journal made it necessary to increase both the annual membership dues and the page charges for manuscripts for the journal accepted after July 1, 1988. The charges proposed by the Executive Committee, and accepted at the general business meeting are as follows:

Dues

Students	$20 per year
Members	$30 per year
Institutions	$50 per year

Page Charges

Student	$10 per page
Member, without support	$15 per page
Member, with support	$25 per page
Non-members	$30 per page

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Results of Spring Balloting

At the annual meeting the Elections Committee reported the results of the spring balloting. Those elected were:

Director - - - - Jonathon Coddington
Secretary - - - James W. Berry

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Awards for Student Papers

Maggie Hodge (Univ. of Cincinnati) was presented an award for the outstanding student paper presented at Las Cruces. She received a check for $75 and a complete set of the Journal of Arachnology. The runner-up for outstanding paper was Bret Beall (Field Museum of Natural History). He received a check for $25 and a student membership to the Society.

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Opinion
Bulletin of Zoological Nomenclature

Opinion 1488 - Herilaeus Simon, 1875 (Arachnida, Araneae): Thomisus hirtus Latreille 1819 confirmed as type species.

What are folks up to?

G.B. Edwards (Florida State Collection of Arthropods) reports that the Alabama Museum of Natural History has transferred its holdings of alcohol-preserved cave arthropods and spiders from the Allan Archer collection to the Florida State Collection of Arthropods. The spiders consist almost exclusively of web-building families.

Andy Penniman (Defiance College) is still interested in the Phrurolithinae, which he thinks belongs in Corinnidae.

Cathy Tugmon (Univ. of New Hampshire) has left Texas and is now working with Ed Tillinghast in Durham, New Hampshire. Her research is definitely with spiders and probably in the area of genetics.

Don Lowrie (Santa Fe, NM) has been in Bismarck, ND studying the plants, as well as the ecology, mentioned in Lewis & Clark's journals. He is also working on a study of carapace widths in Pardosa, as well as number of eggs per egg sac.

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ARACHNOLOGICAL RESEARCH IN COSTA RICA

Jerome S. Rovner

Central America offers a rich arachnid fauna, including many taxa that are unfamiliar to workers from the temperate zone. Of the available Central American countries for research, Costa Rica is one of the two safest in which to work, as regards possible political or criminal harassment. (Belize is the other). Although a small country (about the size of West Virginia), Costa Rica offers diverse life zones and, among the Central American countries, has the highest proportion of land devoted to protected national parks. Of particular interest to researchers from the temperate zone are the various rain forest sites, the best known being the preserve at Finca La Selva, near Puerto Viejo de Sarapiqui, in Heredia Province. It is located northeast of San Jose, the city of arrival via international flights, and can be reached by car in about 3 hours.

The research station at La Selva is operated by the Organization for Tropical Studies and overseen by husband and wife co-directors David and Deborah Clark. Facilities for research include a system of well-marked trails, air-conditioned laboratories, confortable lodging, and excellent meals. For a reasonable weekly fee that covers room, board, and laboratory space one can devote most time to data collection on an arachnological topic, as well as take time out to photograph the wealth of non-arachnid fauna and the diverse flora. For current information about La Selva (facilities, costs, obtaining collecting permits, etc.), as well as for approval of planned research, write to Donald E. Stone, Executive Director, Organization for Tropical Studies, P.O. Box DM, Duke Station, Durham NC 27706.

If possible, try to time your visit during a part of the year when the station is least crowded, as will be indicated in the literature from OTS. I was fortunate in being there during November and December, when there were relatively few other researchers.

To minimize costs, take the least expensive flight to Miami and then Lacsa (Costa Rican airline) from Miami to San Jose. For a small fee, you can then be taken to La Selva from the OTS office in one of the OTS vehicles that makes the run several days a week.

Prior to your trip, appropriate reading should include the following books: Janzen, D.H. (ed.). 1983. Costa Rican Natural History. University of Chicago. Press. Forsyth, A. and K. Miyata. 1984. Tropical Nature. Charles Scribner's Sons. New York. Perry, D. 1986. Life Above the Jungle Floor. Simon and Schuster. New York. Leigh, E.G., A.S. Rand, and D.M. Windsor (eds.) 1982. The Ecology of a Tropical Forest. Smithsonian Institution Press, Washington, D.C.

I shall close by mentioning that it was Jonathon Coddington who suggested La Selva to me as one of the best places for research on spiders inhabiting a tropical rain forest. Prior to my trip, Brent Opell and Ernst-August Seyfarth provided useful information as well. These three researchers are among the relatively few arachnologists who have been fortunate enough to visit the OTS station at La Selva, Costa Rica.

COLLECTING IN MEXICO

Marsha Conley
New Mexico State University

Permit requirements for scientific collecting in Mexico have undergone major revision in recent years. New requirements include major restrictions on importation of specimens, and a detailed permitting process which is handled by the Direccion General de Conservacion, Ecologica de Los Recursos Naturales. The permitting process requires letters of agreement to pay expenses for a Mexican technician while working in Mexico, and a letter of endorsement from a Mexican institution or investigator, as well as detailed project descriptions amd arrangements for deposition of 40% of all specimens in Mexican collections. Fees are assessed for the permits at variable rates, depending on the level of specimen exportation that is planned. A more detailed description of permit requirements with additional updated information is available from Thomas H. Fritts, who serves on the Conservation Committee of the Southwestern Association of Naturalists. (Thomas H. Fritts, U.S. Fish and Wildlife Service, National Museum of Natural History, Washington, D.C. 20560. Telephone (202)-357-1930.

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Australian Arachnology
reviewed by Petra Sierwald

Austin, A.D. & N.W. Heather (eds.) 1988. The Australian Entomological Society. Miscellaneous Publications No. 5. Brisbane. 137 pp. (Australian $30.00).

The fascinating phenomenon of the still poorly known Australian spider fauna, as discussed by R.J. Raven in Australian Arachnology, is the high number of spider families endemic there and in New Zealand.

Australian Arachnology contains 11 feature articles and one abstract, based on presentations made at the first Australian symposium on arachnology, held at the 17th Conference of the Australian Entomological Society in May 1986. Four papers are reviews dealing with ecology and systematics of spiders in Australia, with behavioral ecology in scorpions in general and with the the systematics and biology of pseudoscorpions. The remaining eight contributions report on specific research projects in spiders and scorpions.

The paper that caught my attention first was the one by Raven, a census-style article, that reveals how much needs to be done on alpha-taxonomic level in Australian spiders. This fact is shown by the low number of described Australian spider species: Raven gives the figure of 1874 species in 430 genera, which comes to a mean of 4.3 species per genus thus implying a presumably rather high number of monotypic genera [compared to North America with 3412 species in 500 genera, which comes to a mean of 6.8 species per genus (Roth, 1985, Spider Genera of North America)]. Likewise, M.S. Harvey, in his inspiring and concise review on systematics and biology of pseudoscorpions, predicts that "...many Australian [pseudoscorpion] species await description and [that] much work needs to be undertaken before a realistic picture of the Australian fauna can be obtained". Raven, Harvey, and W.F. Humphreys in his review on ecological research, point out that the lack of knowledge in basic taxonomy and life history of Australian arachnids hampers further research. Raven also discusses "logistic" difficulties in obtaining the necessary 19th century literature and last but not least, that most type specimens "... are held in either the U. K. or European collections."

The volume of Australian Arachnology is presented with a handsome cover with color photographs. Some final critical remarks focus more on print and editorial quality rather than contents: The print quality of the text could have been better. There are numerous "fuzzy" characters, and the text is somewhat combersome to read as the right margin justification was achieved by whole character justification. The citation of taxa hardly ever includes the year and the inconsistent use of abbreviated generic names makes it sometimes necessary to re-read earlier paragraphs. The papers presented in Australian Arachnology, though different in style and scope, are of good quality. Arachnologists everywhere will appreciate the publication of this volume, especially because it allows us to become acquainted with arachnological research currently carried out in Australia. Travel distance and costs will inhibit many of us from attending meetings in Australia on a regular basis. Expressed concerns like those by Raven on special "logistic" problems of Australian systematics will make colleagues more aware and supportive.

THE LAS CRUCES FIELD TRIP REPORT
David Richman

It is difficult to evaluate field trips that one helped to plan and carry out. However, I can say that the success of these field trips to a large degree was due to the efforts of my cohost, Dr. Marsha Conley, and her assistants James Brunt and Mike Draney. We were gratified by the number of people who attended the meeting and took part in the two days of field trips. We were also happy that nobody got lost, was bitten by a rattlesnake, fell off a cliff, sank to their armpits in mud or was drowned (all of which were possible). As of this writing I know of no one who contracted bubonic plague- another victory! Actually the only time things got a bit on the dangerous side was when I discovered on the second field trip that the van I was driving had little in the way of brakes- but then we made it back!

Our desert and oak zone trip began on July 1. We stopped first at New Mexico State University College Ranch in the mesquite dunes. Jonathan Coddington showed his beating technique to a Las Cruces Sun-News reporter who had come with us. Maria Rambla, Jon Reiskind and other intrepid arachnologists searched the bushes and sand for quarry. Bruce Cutler, Dan Jennings and I collected Synageles noxiosus on snakeweed with the ant Conomyrma bicolor. Other common spiders found included Pseudicius piraticus, Habronattus sp. Metaphidippus sp., and Metepeira sp.

We then pushed on to our second stop, a bajada also on the College Ranch (a bajada is a slope). There G. B. Edwards collected Phidippus on blooming sotol and Allen Brady caught several Oxyopes tridens. Jonathan Coddington was photographed while collecting a Diguetia (the photo later showed up in the Sunday edition of the Las Cruces Sun-News). Several specimens of gravid females of Peucetia longipalpis were caught on flowering plants. Jonathan Reiskind, Maria-Luisa Jimenez and Susana Guzman climbed up on the boulders of this isolated piece of the Dona Ana Mountains, turning over rocks and examining plants. We were cautioned not to collect on the Long Term Ecological Research (LTER) site, which is represented by a permanent transect from this bajada down to a playa lake. We visited the latter next.

It was cooler at Aguirre Springs. We ate lunch under the Arizona oak and alligator juniper. Scott Larcher collected a number of Diguetia under a rock outcrop. Near springs along the Pine Tree Trail there were Tetragnatha and Pardosa. After a too short period we had to start the return, picking up G. B. Edwards, who was trying to find more Phidippus on the sotol. He had collected a nice specimen of P. basalis. Anyone who has collected on sotol understands the difficulties involved!

The second trip began on the next day at 7 A. M. when we drove a smaller group (unfortunately minus Marsha Conley) to White Sands National Monument. We did not have permission to collect, but it seemed a pity not to stop there for a little while, just to see the habitat. Bruce Cutler was happy that we stopped on the way in to get a look at a western hognosed snake (he watches reptiles). The whole group gathered on the top of a sand dune (all this beach and no ocean!). We were able to see some interesting flowering plants on a stop closer to the edge of the dune field. As for spiders, we did see a western black widow, Latrodectus hesperus, with a captured solpugid over the back door to the visitor's center.

By this time everybody was getting hungry and ready to do some collecting in the high mountains. James Cokendolpher and Robert Holmberg left us at this point to drop James back in Lubbock and to get Robert back to Canada. We drove on to Karr Canyon Springs at nearly 8000' in the Sacramento Mountains. We had our lunch and hunted spiders. Barbara Robinson did some photography, while Jerry Rovner turned rocks. Lynda Goin (my wife) and James Brunt botanized all the while (we are supposed to be looking for spiders dear, unhand that columbine!). Pardosa was common in the rocks around the creek bed. Tetragnatha built webs across the stream bed, which was mostly dry.

Thanks to Bruce Cutler and G. B. Edwards, among others, for supplying information on what they caught. These were especially heavy in salticids (I wonder why), and I apologize for my relative lack of coverage on other groups.

Abstracts of the papers presented at the annual meeting of the Society in Las Cruces, June 27-July 2, 1988

On Mysmenopsis (Mysmenidae), a kleptoparasite of Pholcidae

Renner L. C. Baptista
Museu de Zoologia - USP, Av. Nazare, 481 Ipiranga
Sao Paulo-SP Brasil 04263.

M. archeri is a tiny kleptoparasite of webs of Blechroscelis cyaneotaeniata and Coryssocnemis togata. The guest's web is composed of irregularly disposed, nearly horizontal threads connected to the host's vertical sustaining threads. Some threads are directly attached to the host's sheet. Males and females occur in the same web.

In laboratory, M. archeri apparently didn't capture prey by itself. There was a characteristic response to prey-movements of its host. M. archeri mounted on the prey during prey-wrapping by the host, feeding on the prey together with, and near the fangs of, the host. A new species (sister-group of M. archeri) was found in the same habitat. The phylogenetic implications of this behavior are discussed.

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Phylogenetic systematics of the Arachnida

Bret S. Beall
Department of Geology, Field Museum of Natural History
Chicago, IL 60605-2496.

Previous analyses of relationships within the Arachnida have produced disparate results, perhaps because each considered fewer than 40 characters. Additionally, extinct taxa usually were not included in these analyses. A cladogram based on the phylogenetic analysis of 146 multi-state characters among 21 groups of arachnids (including extinct taxa) and one outgroup (Eurypterida) is presented. The taxa include traditionally recognized orders, families and genera. Developmental and comparative morphological evidence permits arguing for homology. Character state polarity is evaluated using morphological transformation series rooted by outgroup analysis, resulting in several non-traditional interpretations that are also supported by functional arguments. The PAUP algorithm is used to select the most parsimonious distribution of character states. The resulting phylogeny can be used to test process-level hypotheses as explanations of the macroevolutionary pattern within the Arachnida.

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Implications of the discovery of "Repugnatorial Glands" in Cybaeota (Araneae: Agelenidae)

R. G. Bennett
Environmental Biology, University of Guelph
Guelph, Ontario, N1G 2W1, Canada.

A recently described type of spider integumentary gland with distinctive cuticular morphology, the repugnatorial glands, has been used to support a hypothesis of sister group relationship between the Telemidae and the Leptonetidae. This paper reports the presence of strikingly similar glands in the distantly related spider genus Cybaeota (Agelenidae). The placement of these glands in Cybaeota may support the repugnatorial secretion function hypothesis proposed for them in the Telemidae. The phylogenetic implications of the scattered distribution of this character and another, the distinctive series of paired elongate tibial macrosetae, are discussed.

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Notes on the intertidal spider genus Paratheuma (Desidae)

James W. Berry
Department of Biological Sciences, Butler University
Indianapolis, IN 46208.

The recent discovery of five new species of intertidal spiders (descriptions in press) on the Pacific Ocean islands indicates that the genus Paratheuma may be far more abundant in both species and numbers than the literature would indicate. Although distribution is very spotty, in some locations individuals are very abundant. So far only one species has been found on any one island group. Most of the species are found in either storm-produced coral rubble on the shore or in black volcanic rock just below the high tide line. Mating behavior is remarkably similar from species to species, and all species tested so far will attempt to mate with the other species, but only the species from Rangiroa in the Tuamotu Islands crossed with the species from Fiji (and Australia) has produced viable offspring. Electrophoresis has shown that these two species are different. Adult spiders of all species are present throughout the year. It takes about one month for the young to emerge from the cocoon and about three months for the hatchlings to mature. Keeping P. insulana individuals from Florida at low temperatures indicates that the probable reason that this species cannot live outside the tropics is that, although other physiological functions appear to be near normal, the eggs will not hatch at temperatures of 15°C. or below.

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A comparison of neoteny and troglobism in laniatorid harvestmen

Thomas S. Briggs
Department of Entomology
California Academy of Sciences, Golden Gate Park
San Francisco, CA 94118.

Laniatorid harvestmen are well known in cave populations where they can exhibit classical troglobitic modifications. They also can display neotenic modifications, particularly in California, which have interesting parallels to troglobism. These modifications suggest both adaptive (progressive) and regressive evolution. Regressive evolution in laniatorids can be limited to anopthalmy and, possibly, loss of secondary sexual characters since depigmented juvenile stages are characteristic of the suborder. Neoteny can usually be regarded as an adaptation to food scarcity, but in the California examples it may be an adaptation to harsh climatic conditions on the surface and limited interstitial access within the subsurface habitat. These selective factors are similar to those for cavernicoles and seem to lead to a similar loss of eyes. Laniatorid harvestmen have secondary sexual structures that can be lost in neotenic species. These structures are also reduced or absent on some highly troglobitic harvestmen. As with anopthalmy, an explanation for this regression is not as facile as it is for progressive evolution.

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Ant mimicry in jumping spiders (Salticidae)

Bruce Cutler
1966 Eustis Street
Lauderdale, MN 55113.

Ant mimicry in Salticidae is a well known, but ill-defined phenomenon. Approximately 10% of all jumping spider species are antlike. In current practice ant mimicry is established by a morphological resemblance to ants as discerned by a human observer, with a few also recognized as behavioral mimics. Secondary confirming evidence consists of close color and general "gestalt", temporal and ecological correspondence to a particular ant species by a particular spider, and absence of antlike Salticidae in prey caches of salticid hunting spider wasps. An experiment was devised which demonstrated protection from predation by other spiders in an antlike jumping spider. Further work is needed to elucidate the reasons for specific ant mimesis in tropical areas, while in temperate climes ant mimesis does not ordinarily concern specific models. Also not clearly understood is the reason for ant preying Salticidae to be less perfect morphological models, than those antlike species which do not prey upon ants. We also need better studies confirming model - mimic-signal receiver (i.e. predator) relationships.

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Quantitative analyses of Phidippus courtships

G. B. Edwards
Florida State Collection of Arthropods
P.O. Box 1269
Gainsville, FL 32602.

The courtships of males of 13 species of Phidippus were analyzed using a combination of filming and visual observation. The following characters were analyzed: 1) epigamic ornamentation, 2) movements of palpi, 3) movements of legs I, 4) angles held by legs I, 5) timing of movements of legs I. Three main types of visual (Type I) courtships are diagnosed and used to support the placement of species into species groups based on morphology.

Spider survey in the Woods Hole, Massachusetts area

Robert L. Edwards
Box 505
Woods Hole, MA 02543.

The region immediately around Woods Hole has been collected by many authorities over the years, including Emerton. The present survey covers an area of about twenty square miles, centered on the town of Falmouth of which Woods Hole is a part. At the time of this writing, 171 genera (including about 400 species) have turned up.

There is only limited habitat diversity, largely scrub pine and oak, and seashore environments. The entire region is being rapidly and completely developed.

Some of the genera are surprisingly well represented, as for example Grammonota and Philodromus - ten species each. There is at least one thriving colony of Sphodros niger. One of the commonest species turned out to be Trochosa ruricola, almost certainly introduced from Europe. Several other lycosid species previously recorded only from southern areas have turned up as well.

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A comparison of endosternite morphology in a "primitive" true spider, Filistata hibernalis, and an atypid mygalomorph spider, Sphodros sp., with general comments on inferred endosternite functions in spiders

Bruce L. Firstman
Biological Sciences
California State Polytechnic University
Pomona, CA 91768
and
Cole L.B. Benton, Jr.
Dept. of Biology, Jacksonville State University
Jacksonville, AL 36265.

The presence of four pairs of noncontractile, tendinous, ventral suspensors of the endosternite is a synapomorphic character state for all species of mygalomorph spiders that we have examined. These suspensors in spiders apparently are homologous to contractile, dorsoventral suspensor muscles that occur in certain nonspider arachnids. The only family of araneomorph spiders in which similar, noncontractile, ventral suspensors of the endosternite are known to occur is the Filistatidae. It is here hypothesized that this is a plesiomorphic character state in filistatids, homologous to that of mygalomorphs, and that its function is an adaptive accommodation to the requirements of a burrowing behavior.

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The mygalomorph fauna of a relict refugium on the Gulf Coastal Plain

Debbie Rymal Folkerts and George W. Folkerts
Department of Zoology and Wildlife Science
Auburn University, AL 39849-5414.

The western Red Hills of Alabama is the most deeply dissected area on the Coastal Plain of the United States. The area harbors a number of unusual endemics and many disjunct populations of southern Appalachian species. The Mygalomorph fauna of the Red Hills includes Sphodros rufipes (Atypidae), Antrodiaetus unicolor (Antrodiaetidae), Myrmekiaphila fluviatilis (Cyrtaucheniidae), Cyclocosmia truncata and Ummidia audouini (Ctenizidae). These burrowing spiders, most previously unknown from the region, utilize different microhabitats based on soil type, slope and vegetation cover. Sphodros rufipes seems to exhibit a greater degree of morphological variation than previously reported. The Cyclocosmia population is morphologically intermediate between C. truncata and C. torreya.

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What is the function of the prosomal portions of the spider midgut?

Matthew H. Greenstone
USDA-ARS
Biological Control of Insects Research Laboratory
Columbia, MO 65205.

Arthropod predators are usually prepared for serological stomach analysis by homogenizing whole animals. If spiders are prepared this way venom will be included in the homogenate and venom enzymes might attack prey antigens, thereby compromising the assay. This hypothesis was tested with Phidippus audax fed fifth instar larvae of Heliothis zea and subsequently assayed by ELISA with a monoclonal antibody to the arylphorin, (hemolymph storage protein) of H. zea. Abdomen and cephalothorax homogenates were assayed separately and also combined for 0-4 h before assay. Combined cephalothorax and abdomen homogenates have the same activity regardless of time of incubation. More surprisingly, there is no activity in the cephalothorax. This leads me to ask what the function of the prosomal midgut diverticulae is, and more generally, how digestion is organized within the gut. Immunohistochemical studies of arylphorin digestion could shed light on the organization and time-course of digestion.

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The biology and life history of the spider genus Hololena (Agelenidae) in southern California

Blaine Hebert
Department of Biology
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An examination into the biology and life history of southern California Hololena was carried out prior to a revision of the genus. Only a single variable species, H. curta is believed to exist in the areas south of the San Gabriel and San Bernadino mountains with several recognizable subspecies. A second species, H. sula occurs from the Santa Barbara area northwards. Where the two species occur in the same area they are never found together. Several isolated desert populations are closely related to H. sulu suggesting a pleistocene distribution throughout the Mojave area. Hololena occurs in dense riparian habitats, on shaded hillsides and in urban environments. Web site distribution appears to be related to the predation effects of birds and lizards. A single maturation event peaks at or very near October 1 for all species examined, with mating taking place before January. Males die out during the winter months; females persist into the following September, overwintering under bark and in deep retreats. One to eight egg sacs are laid with approximately 50 young per sac. Second instar young are found from March to September. Web site and age determine adult size with large adults being immatures from the previous season. Successful matings were made with a series of males from a single site in Los Angeles county and females from throughout southern California. Males were able to mate with females of H. sulu. Female genitalia were variable and epigynal width was found to be inversely proportionate to carapace size. Male genitalia were less variable but also tended to be somewhat inversely proportionate to carapace size.

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Impact of egg sac parasitoids on foraging costs of colonial spiders

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While foraging in groups is advantageous for some web-building spiders because of increased prey capture efficiency, living in aggregations may increase vulnerability to predators. We compared the impact of predation by egg sac parasitoids on two species of colonial orb-weaving spiders from Mexico which exhibit contrasting levels of social organization. In Metepeira atascadero, which occurs solitarily or in small groups in desert grassland habitat, rates of predation fluctuate widely from year to year. Predation was highest during seasons when spider prey were most abundant, and spiders laid more egg sacs than in average years. There was no difference in the rate of egg sac loss to parasitoids between solitary and grouped spiders in any year, and grouped spiders laid more egg sacs than solitaries only in the high prey season. In M. incrassata, which occurs in groups of thousands in tropical rainforest and agricultural sites, rates of predation vary little between years, but were higher than M. atascadero most years. The proportion of egg sacs parasitized was positively correlated with colony size, although differences in success rates of the most common parasitoids reflect varying degrees of vulnerability associated with colony size. Vulnerability of egg sacs to parasitoids may depend on colony size, timing of egg production, parasitoid attack strategies, and egg sac guarding behavior.

Growth and reproduction in the orb-weaving spider Nephila clavipes (Araneae: Araneidae)

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The orb-weaving spider Nephila clavipes (L.) exhibits inter- and intra-populational variation in many life history parameters. Phenology and female growth and reproduction were studied in two tropical and one temperate population. The variation observed is best understood in context of the differences between the environments experienced by the populations. Under the temperate conditions of low prey availability and strong seasonality, the spiders grew more slowly, matured at a smaller size and produced only one generation per year. In insect-rich tropical environments, the populations usually had two generations per year, the growth rate was higher and the spiders matured at larger sizes. Variation between generations within the tropical sites corresponded to seasonal variation in climate and prey capture rates. Fecundity is correlated with female size at maturity.

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The behavioral ecology of mixed-species groups of web-building spiders

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Although relatively unstudied, mixed-species groups of web-building spiders have often been observed. This study concerns the relationship between Metepeira incrassata (a colonial orb weaver, in Veracruz, Mexico) and its most frequent associate, Nephila clavipes (Araneae: Araneidae). An index of species association calculated from census data showed that mixed-species groups were more frequent than expected owing to random co-occurrence. Several hypotheses regarding the costs and benefits of forming mixed-species groups were examined. It was found that Nephila in mixed-species groups consumed far greater prey biomass and grew at faster rates than did individuals in intraspecific groups or solitaries. This may be due to the fact that by joining Metepeira colonies, Nephila are able to exploit new niches located in areas which are prime insect fly-ways.

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Natural history observations of Salticus austinensis (Araneae: Salticidae) in North-Central Texas

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Field and laboratory observations were conducted on the biology of the salticid Salticus austinensis Gertsch. The observations determined periods of activity, social behavior, distribution and habitat, prey species, population biology and an unusual interspecific relationship between S. austinensis and Platycryptus undatus (DeGeer).

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Food level and development in the pholcid spider Holocnemus pluchei

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Ten sibling groups of pholcid spiders (Holocnemus pluchei) were reared on low, medium, or high food levels. (1) Spiders with less food were more likely to undergo an extra molt than spiders with more food. In the low feeding group 37.5% of the spiders molted six instead of five times post-hatch, as did 24.3% of the medium group and 16.0% of the high group. Females were more likely to have an extra molt than were males. Differences among families were also significant. These differences may be genetically based, though it is interesting to note that electrophoretic variation in California Holocnemus is practically nonexistent. (2) Instar length was significantly shortened with an increase in food supply. (3) Spiders that underwent six molts were larger at maturity than those that underwent only five. Preliminary data indicate that large body size confers an advantage during competitive interactions for food.

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Spiders of the Cape Region area and a comparison with spiders from Sierra de la Laguna, Baja California Sur, Mexico

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The Cape Region is located in the southernmost part of the Baja California Peninsula where there are different types of ecosystems, one of which is La Sierra de la Laguna. This ecosystem is considered as a relict area, since most of its floristic composition is a remain of early epochs. Furthermore its geographic isolation has allowed the development of endemic species.

As a part of the project called "Biosphere Reserve of Sierra de la Laguna", we have collected a total of 148 species from which 45 are new descriptions and 39 are new records for this area. The spiders are distributed in several plant communities at the Cape Region; however, some are characteristic of a particular ecosystem such as some of the species of Novalena, Rualena (Agelenidae), Pardosa, Allocosa (Lycosidae), Xysticus and Misumenops (Thomisidae) that are found in the pine-oak forest, whereas some species of Araneidae, Theridiidae and Salticidae are found in the low deciduous forest and the "desierto sonorense" vegetation.

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Water-resistant sex pheromones in lycosid spiders from a tropical wet forest

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We examined chemical communication in two nocturnally active lycosids, Lycosa sp. (L. helluo group and Lycosa tristani), inhabiting a clearing in a lowland tropical wet forest at La Selva, Costa Rica. Sealing the females' spinnerets revealed that, as in other lycosids, pheromones are deposited on the dragline. However, unlike temperate zone lycosids tested by previous workers, the pheromones of these tropical wet forest species were not inactivated when the draglines were sprayed with water. Even submerging the lines of L. sp. did not reduce male responsiveness when the lines were tested after removal from the water. In both species, spraying the draglines with ethanol did not reduce male responsiveness significantly, while spraying with hexane did so. Apparently, the dragline-bound pheromones of these tropical wet forest lycosids are non-polar compounds that would not be inactivated by nightly dew and probably not be washed away by rain, both conditions typifying this life zone. An additional finding was that penultimate female L. sp. build a molting nest with a sex pheromone bound to the silk, a behavior not reported before in lycosids.

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Computer-assisted restoration of a spider fossil in a translucent matrix

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Paleocteniza crassipes Hirst was described in 1923 as the oldest known spider fossil. It was found in the famous Rhynie chert deposit in Scotland which has been dated as early Siegenian (Devonian; about 400 million years old). The tiny specimen (British Museum [Natural History]) is near the surface of a chip of translucent chert; only one view is possible. The resemblance of the specimen to a spider is general and no clear apomorphies can be seen. To clarify the nature of this fossil, a series of more than 75 photographic optical sections was taken, using Nomarski Interference Contrast microscopy. Each section was carefully examined for evidence that the fossil is indeed of a spider. These sections were then traced on a graphics tablet and compiled into a rotatable, three-dimensional image, using PC-3D software. While many new details have come to light there is still no clear evidence that Paleocteniza crassipes is a spider. Since other supposed Devonian spiders are also of dubious status, we consider that there is no reliable fossil evidence for the existence of spiders before the Late Pennsylvanian.

The pedipalpal brush of Ephebopus sp.: a field of urticating hairs?

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Tarantulas in the genus Ephebopus are known to possess a field of hairs on the prolateral surface of the pedipalpal femur. Captive Ephebopus have a distinctive hair-shedding behavior wherein the pedipalps are brought down across the basal segments of the chelicerae. The ultrastructure of these hairs is similar to that of urticating hairs located on the abdomens of other tarantulas. The urticarial action of these hairs is examined.

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Nearctic Species of the wolf spider genus Rabidosa Roewer (Araneae: Lycosidae)

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This research is part of a continuing study to elucidate the systematics of North American species described in the genus Lycosa. Species groups have been initially separated from Lycosa on the basis of dorsal color patterns correlated with morphological characters of the male palpi and female epigyna. Preliminary studies have indicated that these species groups represent distinct genera. It is predicted that measurements of leg length compared to body length and certain dimensions of the eye rows will help to verify or reject these perceived relationships. It is also apparent that the habitat (e.g. grassland species versus woodland species) and behavioral features (e.g. burrowing versus non-burrowing) may offer valuable clues to evolutionary relationships.

In our investigations it has become clear that the genus Rabidosa, established by Roewer in 1959 with Lycosa rabida Walckenaer as the type species, is distinct from most other huge North American species of Lycosa. This species does closely resemble Lycosa santrita, L. punctulata, and L. carrana in the dorsal color pattern and less closely L. hentzi. However, the close correlation of hentzi to rabida in genitalic structure and the similarities in habits and habitat preference between these two species indicate that hentzi belongs in Rabidosa. Thus, we have defined the genus Rabidosa on the basis of color pattern, genitalic structure, and ecological parameters and included the species rabida, santrita, punctulata, carrana, and hentzi.

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Subsocial organization and behavior in broods of the obligate burrowing wolf spider Geolycosa turricola (Treat)

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Prolonged mutual tolerance is described for spiderlings in broods of the burrowing wolf spider Geolycosa turricola (Treat) (Lycosidae). The length of the tolerant phase is compared to the facultative burrower Lycosa georgicola Walckenaer. Specific behaviors are described from observations of pairs of spiderlings. The frequency of occurrence of these behaviors is studied in a series of bioassay experiments designed to test questions concerning the nature of the mechanism of communication among spiderlings, the length of the tolerance phase, and the ability to recognize siblings from non-siblings. The results indicate that chemical communication is the principal form of communication between spiderlings. Aggressive behavior increased in pairings of spiderlings of increasing disparity of size. Geolycosa turricola spiderlings show little kin recognition ability. The advantage of prolonged tolerance within the burrowing life strategy is discussed.

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Mites parasitic on arachnid hosts

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Five arachnid groups are known to serve as hosts of parasitic mites: spiders, scorpions, solpugids, opilionids and other mites. The mites most commonly encountered are larvae of the Erythraeoidea and Trombidioidea. Spider hosts include members of the Lycosidae, Pisauridae, Clubionidae, Theridiidae, Linyphiidae and Araneae. Most of the parasitic mites reported on spiders belong to the families Erythraeidae (Leptus, Charletonia) and Trombidiidae (Trombidium, Leptotrombidium). Scorpions are parasitized by the Erythraeidae (Leptus), Trombellidae (Audyana), and Pterygosomidae (Pimeliaphilus). The only report of mites parasitizing solpugids is trombidiid larvae on a Oparbella sp. in Africa. Opilionids commonly serve as hosts for mites, usually involving erythraeid larvae (Leptus). Acarine hosts include erythraeid, trombidiid, anystid and oribatid mites; their parasitic mites are typically erythraeid and trombidiid larvae.

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Comparative study of the adenostyle surface ultrastructures of two cyphophthalmids: Sira rubens Latreille, 1806 and Stylocellus silhavyi Rambla 1988 (Arachnida, Opiliones: Sironidae and Stylocellidae)

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All male cyphopthalmids possess in the tarsus of the fourth leg a secondary sexual character consisting of an apophysis called an adenostyle, connected to an underlying complex gland organ with a duct opening on the adenostyle.

The major adenostyle features were observed with the scanning electron microscope. The differences observed between the two adenostyle species, Siro rubens and Stylocellus silhavyi will be shown, and additional adenostyle morphological types of other species will be presented.

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Lycosa ammophila and Lycosa ericeticola: a pair of cryptic/sibling species in northern Florida (Araneae: Lycosidae)

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Two species within the lenta group of the genus Lycosa were examined: Lycosa ammophila, widely distributed across northern Florida, and L. ericeticola (the Rosemary wolf spider) with a highly restricted range of less than 3000 hectares. These two species are closely related, the females being almost indistinguishable ('cryptic'), and having very similar habitat preferences. They are parapatric and it is likely they are sister or "sibling" species. Three populations were sampled: two of L. ammophila (from Levy Co. and Putnam Co.) and one of L. ericeticola (from Putnam Co. within 10 km of the L. ammophila population). Lycosa ammophila is consistently about 10% larger than L. ericeticola, has distinctly different genitalia and SEM studies show some consistent differences in the female genitalia as well. Ongoing electrophoretic studies also clearly distinguish the two species. Preliminary studies show courtship behavior to be very similar but cross species matchings in the laboratory have not resulted in any copulations.

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Courtship in jumping spiders - a summary of research to date

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Courtship in jumping spiders can be either visual or non-visual. Although both types have stereotypic elements, there is a large degree of variation between individuals of a given species. Some of the stereotypic elements can, however, be utilized in taxonomy. Unfortunately, courtships have been described for only about 150 species. The current state of studies on salticid courtship is reviewed and some preliminary conclusions are made on possible synapomorphies in courtship patterns.

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Tests for submersion survival in aerial web-weaving spiders from a tropical wet forest

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Some species of web-weaving spiders dwelling beneath stones and therefore likely to encounter flooding conditions possess adaptations that enhance survival under water, whereas the few aerial web weavers that have been examined are much less resistant to drowning (Rovner 1986). In the present study I tested seven aerial web weavers (females only) from the lowland tropical wet forest at La Selva, Costa Rica to see if they are better adapted for enduring submersion than those species I had tested from a temperate deciduous forest. The seven species included six araneids--Argiope savignyi, Metazygia sp., Micrathena brevipes, M. molesta, M. schreibersi, Nephila clavipes--and one theridiid, Achaearanea taeniata. Based on the intensity and duration of activity during a 1-hr submersion and the percentage of individuals surviving, most of these wet forest species are no better adapted for underwater survival than the temperate deciduous forest species tested previously. Some of the wet forest species did show behaviors that reduce the possibility of submersion or drowning if the spider falls onto the water during flooding conditions.

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Foraging and defensive behavior in a Brazilian colonial spider, Eriophora bistriata (Rengger, 1936) (Araneae: Araneidae)

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Eriophora bistriata ia a pre-social spider , common in Brazilian cerrado vegetation. The spiders have individual orb-webs but cooperate in the capture of large prey. The coloration of the spiders and the aspects of the colonies change during the life cycle. The significance of these changes is discussed.

Periods of activity also change during the life cycle of the spiders. They correspond to peaks of abundance of flying insects which are predictable and show taxonomic and size class patterns. At 3rd and 4th instars the spiders build a special orb-web to capture winged termites. These webs are twice the diameter and three times the mesh size of the normal webs. They are built only some minutes before the termite flight begins.

The adults disperse from colonies by unique silk "parachute"-like ballooning structures. Adult ballooning in large species has not been described before.

There is evidence that the social behavior in Eriophora bistriata may allow a more efficient utilization of resources. On the other hand, group living has the disadvantage of being more conspicuous to predators.

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Numerical phenetic studies of Centruroides griseus (C. L. Koch 1845) (Scorpiones: Buthidae) from the greater Puerto Rican region (West Indies)

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Centruroides griseus (Koch 1845) inhabits coastal communities of almost all islands on the Greater Puerto Rico Region. Two subspecies (C. g. griseus and C. g. borinquensis Armas 1982) have been described: the former from the Virgin Islands, the later from southwestern Puerto Rico. Numerical phenetic analyses of 60 morphometric (57 of them continuous) characters on 690 adult C. griseus will be discussed. The implications of these results are discussed in light of the current classification of this species.

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Signaling, female receptivity, and the evolution of a male secondary sexual characteristic

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The role played by a visually conspicuous male secondary sexual characteristic in courtship communication was investigated in Schizocosa ocreata (Lycosidae). Experiments show that the relative importance of the visual component of courtship in determining female receptivity is much greater in S. ocreata than in S. rovneri, a species lacking the visual character. Behavioral experiments following ablation of the male character showed that the character is important in determining female receptivity within the visual component of courtship, while it is less important when complete courtship is possible. Field studies of sound attenuation in the two habitats of these spiders suggest that the male character of S. ocreata may be necessary for effective courtship communication within the habitat occupied by this species.

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Homological structures in male copulatory organs in Pisauridae

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Since Comstock's (1910) classical work on spider palps his nomenclature has been used extensively. The homology of palpal sclerites and apophytes is only seldom discussed. In the present study, the morphology of pisaurid palps is analyzed to establish the homology of various palpal structures within the family. To date, the homology of subtegulum, tegulum, conductor, median apophysis, and embolus is undisputed among the pisaurid genera studied. Many Pisauridae possess complex, genus-typical embolic divisions [including terminal aphophyses like the fulcrum in Dolomedes]; those parts are difficult to homologize among genera of the family. The American genus Pisaurina and the mainly African Pisaurina genus-group possess large, conspicuous, distally located, tegular apophyses. Their identity is not yet proven, but they do not occur elsewhere in Pisauridae. In course of this work, the systematics of Pisauridae will be revised, using apomorphies found in copulatory organs.

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Signal specificity in wolf spiders (Araneae: Lycosidae): a comparison of closely related species

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The acoustic signals produced by courting males in the Schizocosa ocreata species group were analyzed and compared using digitized sonagraphs. There is strong species specificity in the courtship songs of this group, with the behavior correlating closely with the presence or absence of male secondary sexual characteristics. Several new etho-species (as judged by reproductive isolation) have been recognized in this species-group. Species with conspicuous bristles on the first pair of legs use these legs extensively during courtship (S. ocreata and S. crassipes). In S. ocreata these leg moves are visual signals that are important for successful communication (Scheffer, unpublished thesis). The courtship behavior in the species with dark legs lacking the bristles was typically much less visually conspicuous, and consisted of stridulation (S. stridulans and S. floridana). The one species that lacked both bristles and pigmentation (S. rovneri) displayed a courtship behavior that produced very loud sounds. This species relies on vibrational cues for species recognition. The strong correlation between secondary sexual characteristics and courtship signals suggests that these characters have been selected for by sexual selection.

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A preliminary phylogenetic analysis of scorpion families

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A preliminary cladistic analysis of scorpion families and subfamilies is presented. Thirteen terminal taxa and 56 characters were considered, and trees were constructed using the PAUP and MacClade programs. The monotypic genus Belisarius (currently Euscorpiinae) was not considered. The families Chactidae and Vaejovidae, as currently comprised, are shown to be paraphyletic and polyphyletic respectively. The subfamilies Superstitioninae (currently Chactidae) and Scorpiopsinae (currently Vaejovidae) are the hypothesized sister taxa of the families Iuridae + Vaejovidae and the subfamily Chactinae (Chactidae), respectively. Taxonomic rearrangements and new keys proposed as a result of this study will greatly facilitate the assignment of specimens to family. The following cladogram represents hypothesized phylogenetic relationships between the currently recognized families and subfamilies: ((Chaerilidae, Buthidae), ((Bothriuridae, (Diplocentridae, (Scorpionidae, Ischnuridae))), ((Superstitioninae, (Iuridae, Vaejovidae)), ((Chactinae, Scorpiopsinae), (Megacorminae, Euscorpiinae))))).

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Stochastic processes in decision making: cohabitation duration in bowl and doily spiders (Frontinella pyramitela)

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The visits of male bowl and doily spiders (Frontinella pyramitela) to females' webs are highly variable in duration (0.04 h to >50 h; mean±S.D., 11.9 ± 15.8 h) and much longer, usually, than the time required for courtship and mating. In this study, we attempted to determine what variables were responsible for the large variability in cohabitation durations in F. pyramitela, and why cohabitations were prolonged beyond the time necessary for copulation. We tested female identity, female reproductive status (i.e. virginity), presence or absence of a female, time of day, relative humidity, recent intrusion by a second male, and recent prey capture by the male. Only the first and last of these influenced, though mildly, the duration of cohabitations, and none could account for the large variability in cohabitation durations. Further analysis of the data showed that the departures of males from females' webs were governed by stochastic processes within the spiders, not by responses to environmental variables or to individual histories. These processes are readily modelled by a pair of die-rolling strategies, one apparently resident in the male and the other a product of the interaction of both male and female.

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Congruent biogeographic patterns in harvestmen and salamanders

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The harvestmen of the genus Calicina (Phalangodidae) are endemic to California and they occupy a wide variety of biomes, from dense forest to open grassland. As may be expected of cryptozoic organisms, the species are allopatric or parapatric. Our cladistic analysis, using primarily reproductive characters, clusters the 25 species into four species groups with an unresolved basal trichotomy. The most plesiomorphic clade occupies the high elevation, central Sierra. The second ranges along the middle elevation Sierra and southern Coast Ranges, while the third occurs along the low elevation Sierra and northern Coast Ranges.

The slender salamander genus, Batrachoseps, shares many of the above patterns. The presumed phylogeny also contains three clades whose distributions are very similar to those of Calicina. Furthermore, the plesiomorphic clade also has an easternmost (although disjunct) distribution (Yanev, 1980).

Given these congruent patterns, as well as the similar ecological requirements of these organisms, it is likely that Calicina and Batrachoseps are representatives of the same ancestral biota.

Size distribution, prey capture success, and spatial position in colonial orb-weaving webs

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The size distribution of spiders within colonies of Metepeira incrassata from tropical Mexico is non-random; larger (mature) spiders and females guarding eggsacs are more prevalent in the center, while more small (immature) spiders are found on the periphery. Availability of prey and capture rates are significantly higher on the periphery than in the core. Experimental field studies with spiders of selected size classes show that larger spiders actively and aggressively seek positions in the center of the colony webbing, even though prey availability is less there than on the periphery. Preliminary data suggest that for colonial spiders, there may be a trade-off between foraging and protection from predation. The influence of such trade-offs on individual fitness and the structure of colonies is discussed.

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Salticid color vision - the story so far

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Almost one hundred years of literature on salticid color vision will be reviewed from the experiments of Peckham and Peckham to the present day.

Observers of salticid behavior believe that color vision is used in mate selection, prey discrimination, and all activities involving the anterior median eyes. For those activities not involving the anterior median eyes, the salticid can base discriminations on brightness but not on differences in wavelength. Intracellular recordings from the AM eyes have shown two (Blest et al.), three (Devoe) or four (Yamashita & Tatida) types of spectral cells in the retina, any one of which would provide the basic mechanism for the discrimination of wavelength. The kind of behavioral experiment will be described which would prove that salticids do indeed use this basic mechanism for wavelength discrimination.

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Biological diversity of jumping spiders (Araneae, Salticidae)

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Little is known about spider diversity and species richness patterns in ecosystems or habitats. Over 3,600 Neartic species are known and about 2,000 are reported from Mexico. Spider diversity or richness increases from the poles to the tropics. On Ellesmere Island in the Northwest Territories 13 species are known. Connecticut has about 475 spider species, while Illinois has almost 550, and Texas about 650 known species. The jumping spiders of the family Salticidae make up a consistent 10% of the species in the above areas, as they do for the Caribbean islands of Puerto Rico (175 total species of spiders), St. Vincent (150), and the Virgin Islands (100). In Panama and on Cuba (280) they comprise about 15% and on Hispaniola (225) about 20% of the spider species. Over 200 species of salticids are known from the Caribbean. Species richness patterns will be illustrated for the New World.

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American Arachnology in the newsletter of the American Arachnological Society and is sent only to members of the Society. Submission of items for **American Arachnology** should be sent to the editor, Dr. James W. Berry, Department of Biological Sciences, Butler University, Indianapolis, Indiana 46208, U.S.A. Deadline for receipt of material for the Fall issue is 24 September and for the Spring issue, 24 March.

The Journal of Arachnology is the official publication of the Society. Manuscripts submitted for publication in the **Journal of Arachnology** should be sent to Dr. Jerry Rovner, Associate Editor, Department of Zoological Sciences, Ohio University, Irvine Hall, Athens, Ohio 45701, U.S.A.

Arachnological Publications and Societies of the World

James C. Cokendolpher
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While gathering information for an article to be published in the Young Entomologist's Society journal (Y.E.S. Quarterly), I was impressed with the lack of a general list of arachnological societies from around the world. After discovering several groups not mentioned by C.I.D.A. (see below) publications, and at the encouragement of several colleagues, I now present much of the same information given in my earlier article: Arachnology and Arachnologists: what are they?

The following is a review of the arachnological societies or clubs known to me. Since new groups are forming yearly, I would greatly appreciate knowing of any groups not mentioned. Because costs of society memberships and journal subscription prices change often, this information is not listed below. Such information is available from each group. If you should have difficulty in establishing communication with a foreign group, please write me as I will keep a list of current names and addresses. Dues for several societies can be paid annually with your A.A.S. renewal.

CENTRE INTERNATIONAL DE DOCUMENTATION ARACHNOLOGIQUE (C.I.D.A.)

The Centre international de Documentation Arachnologique (C.I.D.A.) serves the arachnological (excluding Acarina) community of the entire world. The center documents, records, and publishes each year a list, Liste des Travaux arachnologiques, of works which have been published or are in press. In addition, there is a directory of arachnologists, Annuaire des Arachnologistes mondiaux, that is published about every three years. The directory lists names and addresses along with special interests of each individual. A third publication of the C.I.D.A. is the Catalogue des collections Arachnologiques mondiales. The catalogue lists the names and addresses of public and private collections of arachnids. Arachnologia, an annual publication, contains notices and notes about arachnologists, meetings, new publications, and general news about arachnology worldwide. Articles are written in French, English, Spanish, or German. The C.I.D.A. arranges an International Congress of Arachnology held every three years in a different host country. Additional information about the C.I.D.A. can be obtained from: C.I.D.A., 61 rue de Buffon, 75005 PARIS, France.

ARACHNODATA

Although Arachnodata is not a society or publication, it is listed here as a possible source of information. Arachnodata was founded in 1987 as the Swiss Arachnological Biodata Research and Information Center. After only one year, the name was changed to the Arachnological Research and Information Center. It is a privately run, non-profit organization which provides information to the public as well as institutions and authorities on arachnids (excluding Acarina). Plans are underway to maintain a library of literature, photographs, videos, and films; collection of preserved specimens; and a select group of living arachnids for exhibitions and biological/ comparative studies. For further details about this center contact: Mr. Matt E. Braunwalder, Arachnodata, Frauentalweg 97, CH-8045 Zurich, Switzerland.

NORTH AMERICA

THE AMERICAN ARACHNOLOGICAL SOCIETY

Our society was established in 1972 to promote the study of arachnology in the New World. Although its headquarters are in the U.S.A., members are found throughout the world. Because of this world-wide membership, and my hopes that this article will be copied and given to colleagues, I here repeat information which might already be known by our U.S.A. members. Two publications are produced: The Journal of Arachnology is issued three times a year and the newsletter American Arachnology is published semiannually. The newsletter is written in English, whereas the journal is written in English, French, Spanish, and Portuguese. Annual meetings are held. Correspondence regarding membership or the society should be addressed to the Membership Secretary: Dr. Norman I. Platnick, Department of Entomology, The American Museum of Natural History, Central Park West at 79th Street, New York, New York 10024, U.S.A.

GREAT LAKES ARACHNOLOGICAL SOCIETY

GLAS or the Great Lakes Arachnological Society was founded in 1987. The group is composed of individuals from the midwestern U.S.A. Local meetings and collecting trips are planned. For further details about the society contact: Mr. Steve Skinner, 5200 Neff, Detroit, Michigan 48224, U.S.A.

THE ARACHNOLOGIST OF THE SOUTHWEST

This group was started in 1968 with a core of members from California, the group consists of both professionals and amateurs devoted to the study of arachnids of the southwestern U.S.A. and northern Mexico. A newsletter is issued on an irregular schedule and meetings are held occasionally. For additional information about the society write: Mr. Blaine Hebert, Department of Biology, California State University, Northridge, California 91330, U.S.A.

NORTHERN CALIFORNIA SPIDER SOCIETY

This society has a regular monthly newsletter. Meetings are generally held once a month at the University of California at Berkeley. Information about the society and newsletter is available from: Chris Besette, 1505 Albany Terr., Albany, California 94706, U.S.A.

PECKHAM SOCIETY

This society was named for George and Elizabeth Peckham, early American arachnologists who specialized in the study of jumping spiders. The Peckham Society is an informal organization dedicated to research in the biology of jumping spiders. A newsletter, Peckhamia, is issued irregularly and is intended as a means of rapid and accurate communication about the jumping spiders, family Salticidae. Communication about the society should be addressed to either: U.S.A. Correspondent: Dr. David B. Richman, Department of Entomology, Pathology and Weed Science, Box 3BE, New Mexico State University, Las Cruces, New Mexico 88003, U.S.A. or, Foreign Correspondent: Dr. Bruce Cutler, 1966 Eustis Street, Lauderdale, Minnesota 55113, U.S.A.

AMERICAN TARANTULA SOCIETY

This society was started in 1978 and lasted until 1984. The society produced the newsletter Tarantula Times. The newsletter, as well as the society, had difficulty staying active. There were 21 issues of the newsletter published from 1978 to 1984. The purpose of the American Tarantula Society was to provide the opportunity for professionals and laymen to share their knowledge of the tarantula, to encourage the study of the tarantula as it gains popularity as a pet, and to eliminate misunderstanding concerning the tarantula. A later goal of the society was to have the "pet industry" breed their own supply of tarantulas, eliminating the plunder of natural habitats and populations. Although the society is no longer active, the problem of wild tarantula collecting for resale continues.

THE NATIONAL ARACHNID SOCIETY

During 1970 or 1971 The National Arachnid Society was founded in the U.S.A. This society was for school children and teachers. A newsletter was produced up to 1972, but after that it and the society faded away. Curiously the annual dues for the society were six properly preserved specimens with data.

SOUTH AMERICA

ARACNOLOGÍA

Two publications are produced by the División de Zoología Experimental of the Instituto de Investigaciones Biológicas Clemente Estable: Aracnología and Aracnología, suplemento. Scientific papers are published in Spanish, Portuguese, French, and English on all aspects of arachnology. These publications cannot be subscribed to by individuals. They are only sent to institutions. Currently, issues are sent to two libraries in Canada and 28 institutions in the U.S.A. A list of these libraries is available from the author. Correspondence about these publications should be sent to the editor: Dr. Roberto M. Capocasale, Instituto de Investigaciones Biológicas, División Zoología Experimental Av. Italia 3318, Montevideo, Uruguay.

AUSTRALIA

AUSTRALASIAN ARACHNOLOGICAL SOCIETY

This society started in 1979, with the appearance of its first newsletter Australasian Arachnology. Since that time the newsletter has appeared generally four times a year. The aim of the society is to promote the study of arachnids of the Australasian region, with the newsletter serving to increase the communication between amateur and professional arachnologists. Details on membership are available from: Mr. Richard J. Faulder, Agricultural Institute, Yanco NSW, 2703, Australia.

EASTERN ASIA

ARACHNOLOGICAL SOCIETY OF JAPAN

Founded in 1936 as the Arachnological Society of East Asia, this is the oldest arachnological society. The society offically changed its name to the Arachnological Society of Japan on 1 April 1988. Two journals are published by the society. Acta arachnologica is published twice a year with articles in English, German, French, and Japanese with English summaries. Atypus is published twice a year and written in Japanese. Annual meetings are held in Japan and a library is maintained. Correspondence about the society and membership should be sent to: Yoshiaki Nishikawa, Biological laboratory, Ohtemon-Gakuin University, 2-1-15, Nishi-Ai, Ibaraki, Osaka 567, Japan.

In addition to the above society, six smaller regional groups are active for the study of spiders in their respective areas. They are as follows: Tokyo Group (office in Tokyo), Niigata Group (office in Nagaoka), Mie Group (office in Toba), Central Japan Group (office in Nagoya), Western Japan Group (office in Osaka), and Kyushu Group (office in Fukuoka). These groups often hold meetings, field studies, and publish their own journals (in Japanese). Correspondence regarding these groups should be directed to the above name and address or the author of this article.

THE CHINA SOCIETY OF ARACHNOLOGY

An arachnological society of China was founded during 1986. A newsletter will be published irregularly to help inform members about activities and studies of their colleagues, both in China and abroad. It is to be written in Chinese. Meetings of the society will be held every two years. Further details about the society are available from the society President: Prof. Zhu Chuandian, Department of Biology, Norman Bethune University of Medical Sciences, Changchun, Jilin Province, People's Republic of China.

KOREAN ARACHNOLOGY

In 1985, this journal on arachnology (including Acarina) was started by the Arachnological Institute of Korea. This journal entitled Korean Arachnology is published twice a year. Scientific articles are written in English or Korean with English summaries and deal primarily with arachnids of Korea. Additional information about this journal can be obtained from: Arachnological Institute of Korea, 42 Dosun-dong, Songdong-gu, Seoul 133, Korea.

SOVIET UNION

ARACHNOLOGICAL SECTION OF THE ENTOMOLOGICAL SOCIETY of the USSR

Due to the growing number of arachnologists in the U.S.S.R., a separate group (Section of Arachnology) within the All-Union Entomological Society was established. This sections purpose is to unite Soviet specialists in arachnology (excluding acarologists). Meetings of the section are to be held each four years (starting in 1984) and the papers of the First Conference on Spider Study were published in the Proceedings of the Zoological Institute, Leningrad (1986). Correspondence about the group should be directed to either the: Section of Arachnology Secretary: Dr. K. Mikhailov, Department of Invertebrate Zoology, Zoological Museum of the Moscow State University, K-9 Herzen str., 6 U.S.S.R. 103009 Moscow, or, Section of Arachnology President: Dr. V. I. Ovtsharenko, Zoological Institute of the Academy of Sciences of the U.S.S.R., Universitetskasya nab. 1, 199164 Leningrad, U.S.S.R.

EUROPE

THE BRITISH ARACHNOLOGICAL SOCIETY

This society was officially named in 1969, but its roots can be traced back to 1958. The Flatford Mill Spider Group (1958-1965) gave rise to the British Spider Study Group (1964-1968) which in turn became the British Arachnological Society. The society now has two publications which deal with arachnology (excluding acarology): The Newsletter of the British Arachnological Society and the Bulletin of the British Arachnological Society. Both are written in English and are published three a year. This group holds annual meetings, field courses, and maintains a library. Correspondence about membership or the society should be sent to the Membership Secretary: Mr. R. G. Snazell, Institute of Terrestrial Ecology, Furzebrook Research Station, Wareham, Dorset BH20 5AS, England.

THE BRITISH TARANTULA SOCIETY

Originally founded as The British Tarantula Fellowship International in 1984, this group changed their name in 1986 to the British Tarantula Society. This international group aims to further the study, keeping, and breeding of tarantulas and scorpions and to educate the public that spiders are not to be feared but admired and studied. The bi-monthly Journal of the British Tarantula Society was first published in 1986 and contains both technical and non-technical information. This group holds an Annual Show for members, where they have talks and discussions, and members can voice their views and exhibit their tarantulas. For further information concerning the society or membership contact the Secretary: Mrs. Ann Webb, The British Tarantula Society, 36 Phillimore Place, Radlett, Herts., WD7 8NL England.

TARANTULA CLUB NEDERLAND

The Dutch tarantula club is composed primarily by amateur arachnologists interested in captive breeding and care of tarantulas. A newsletter was started in 1987. This is a recently founded group of which I have little other information currently available. Interested individuals should contact the group for additional information by writing: Mr. Rob. J. Dumont, Tarantula Club Nederland, Waddenstraat 217, 2036 LE HAARLEM, The Netherlands.

ARACHNOLOGICAL SECTION OF THE POLISH ZOOLOGICAL SOCIETY

This group is primarily composed of professional arachnologists and students preparing their diploma papers on arachnids. The group was founded in 1978. Their main activities are the organization of annual conferences and the promotion of research on arachnids. They have also initiated regional conferences of arachnologists from neighboring countries. The first such conference was organized with Czechoslovakian arachnologists. Colleagues from the German Democratic Republic also participated in the first conference. Members of this society publish quite a few scientific papers in various learned periodicals, but no society publication is currently produced. For further details about this group write: Prof. dr hab. J. Prószyński, Arachnological Section of the Polish Zoological Society, Zakład Zoologii WSRP, ul. Prusa 12, 08-100 Siedlce, Poland.

ARACHNOLOGICAL SECTION OF THE SLOVAKIAN ENTOMOLGICAL SOCIETY OF SLOVAKIAN ACADEMY OF SCIENCES

This group was founded during 1972-1974 in honor of Prof. František Miller (1902-1983). The core of members are graduates of Charles University (Department of Systematic Zoology) and fellow-workers of Prof. Miller. The group consists of both professionals and amateurs devoted to the equable study of the arachnids of Czechoslovakia. Annual meetings are connected with collecting trips. A regional conference was organized with Polish arachnologists about "Long and short time changes in the spider fauna." Starting in 1984, monthly arachnological discussion groups have been held at the Department of Zoology, Charles University, Prague. Interested individuals should contact the group for additional information by writing: Doc. Dr. Jan Buchar, Katedra Systematické Zoologie, Karlovy University, Viničná 7, 128 44 Praha 2, Czechoslovakia.

ARACHNOLOGISCHER ARBEITSKREIS IM KULTURBUND DER DDR

This section was founded in 1978. It is dedicated to the study of Araneae, Opiliones, and Pseudoscorpiones. The main goal is to prepare collective works on these taxa from the GDR. The group consists of about 20 members and is a part of the "Zentraler Fachausschuß Entomologie im Kulturbund der DDR." The group does not have its own journal but

members can publish (in German) contributions in the entomological periodical Entomologische Nachrichten und Berichte. Meetings with lectures and excursions are held yearly. Interested individuals should contact the group for additional information by writing: Dr. Peter Sacher, DDR-4600 Wittenberg, Zimmermannstraße 12b, German Democratic Republic.

SOCIÉTÉ D'ARACHNOLOGIE

This society was founded in 1980. It is dedicated to the study of Arachnology and promotes meetings and exchanges between professionals and amateurs. The society is open to all arachnologists. Annual meetings are held in Europe, except during years the International Congress of Arachnology (organized by C.I.D.A.) are held. Every third year one of the meetings is held in France. The official language of the meetings is French, but communications in other languages are accepted. For further details about this society write: Laboratoire de Biologie du Comportement, B. P. 239, 54506 VANDOEUVRE les NANCY Cedex, France.

REVUE ARACHNOLOGIQUE

This publication was started in 1977. Since that time seven volumes have been published, each volume being composed generally of four parts which are usually issued separately. Revue Arachnologique contains scientific articles on all aspects of arachnology (excluding Acarina). Papers are written in French, English, Italian, or Spanish. Issues and correspondence about the Revue Arachnologique are somewhat irregular because the Revue is produced by only two people. Mr. Darchen collects the manuscripts and sends them to the reviewers, whereas Mr. Ledoux takes care of the remainder of the journal production. Correspondence about this journal should be directed to: Mr. Jean-Claude Ledoux, 43 rue Paul-Bert, F.30390 ARAMON, France, or, Mr. Roger Darchen, Station Biologique, F.24620 LES EYZIES, France.

ARABEL

The Société arachnologique de Belgique (Belgische Arachnologische Vereniging) was founded in 1986. One bilingual publication (French and Dutch) is issued three times a year: Feuille de Contact / Nieuwsbrief. Annual meetings and excursions are held. For further details about this society write the Secretary: Dr. Léon Baert, Koninklijk Belgisch Inst. v. Natuurwetenschappen, Vautierstraat 29, B-1040 BRUSSEL, Belgium.

AFRICA

SERKET

Serket was started in 1987. This bulletin takes its name from the ancient Egyptian name for scorpion. It is planned to be published at least twice a year. Articles thus far written are in English on arachnids of the Middle East, especially Egypt. Further information about this publication can be obtained from: Mr. Hisham K. El-Hennawy, 41, El-Manteqa El-Rabia Street, Heliopolis, Cairo 11341, Egypt.

THE SPIDER CLUB OF SOUTHERN AFRICA
[DIE SPINNEKOPKLUB VAN SUIDELIKE AFRIKA]

This group is composed of both amateurs and professionals. They have regular field outings; talks are given to the local schools and clubs; and irregular scheduled meetings are held. A library is available to members of the club. Since the society's start in 1976, a quarterly newsletter, The Spider Club News, has been published. Further details about the society can be obtained from the Honorable Chairman: Dr. Martin R. Filmer, P.O. Box 81112, Parkhurst, Johannesburg 2120, Republic of South Africa.

RESEARCH GROUP FOR THE STUDY OF AFRICAN ARACHNIDS (RGSAA)

Professional arachnologists from Africa formed this group in August 1986 to help promote closer cooperation in working on the continent's rich arachnid (non-Acari) fauna. Two issues of the RGSAA Newsletter have thus far been published (November 1986 and November 1987) in English. Although a formal title for the group has not been adopted, it is to be one of the topics at the next Southern Africa Arachnological Conference to be held 11-15 July 1988 at Swakopmund, South West Africa/Namibia. Correspondence about the group should be directed to: Dr. Ansie S. Dippenaar, Plant Protection Research Institute, Private Bag X134, Pretoria 0001, Republic of South Africa.

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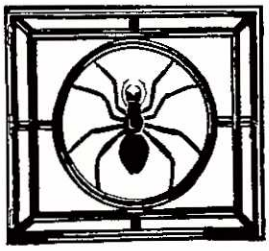

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(a) Paper length will be **20 MINUTES**, with 15 minutes for presentation and 5 minutes for discussion.
(b) Abstracts are due on **MAY 1**.

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(__)air, and would like free airport pickup
(__)air, and will NOT need pickup
(__)car
(__)other

HOUSING: I plan to stay in

(__) University housing, non-airconditioned
(about $13 per day without meals)
(about $27 per day with meals)

(__) University housing, air-conditioned
(cost has not yet been set by the University, but the number of rooms available is limited)
with or without meals

(__) Sheraton-Meridian Hotel (2 miles away)
(new lower rate of $35 per day per room)

(__) other

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(__) Saturday day-long field trip
(about $10 including lunch)

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Jim Berry
Department of Biological Sciences
Butler University
Indianapolis, Indiana 46208 U.S.A.

Telephone: (317)-283-9344 (office)
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