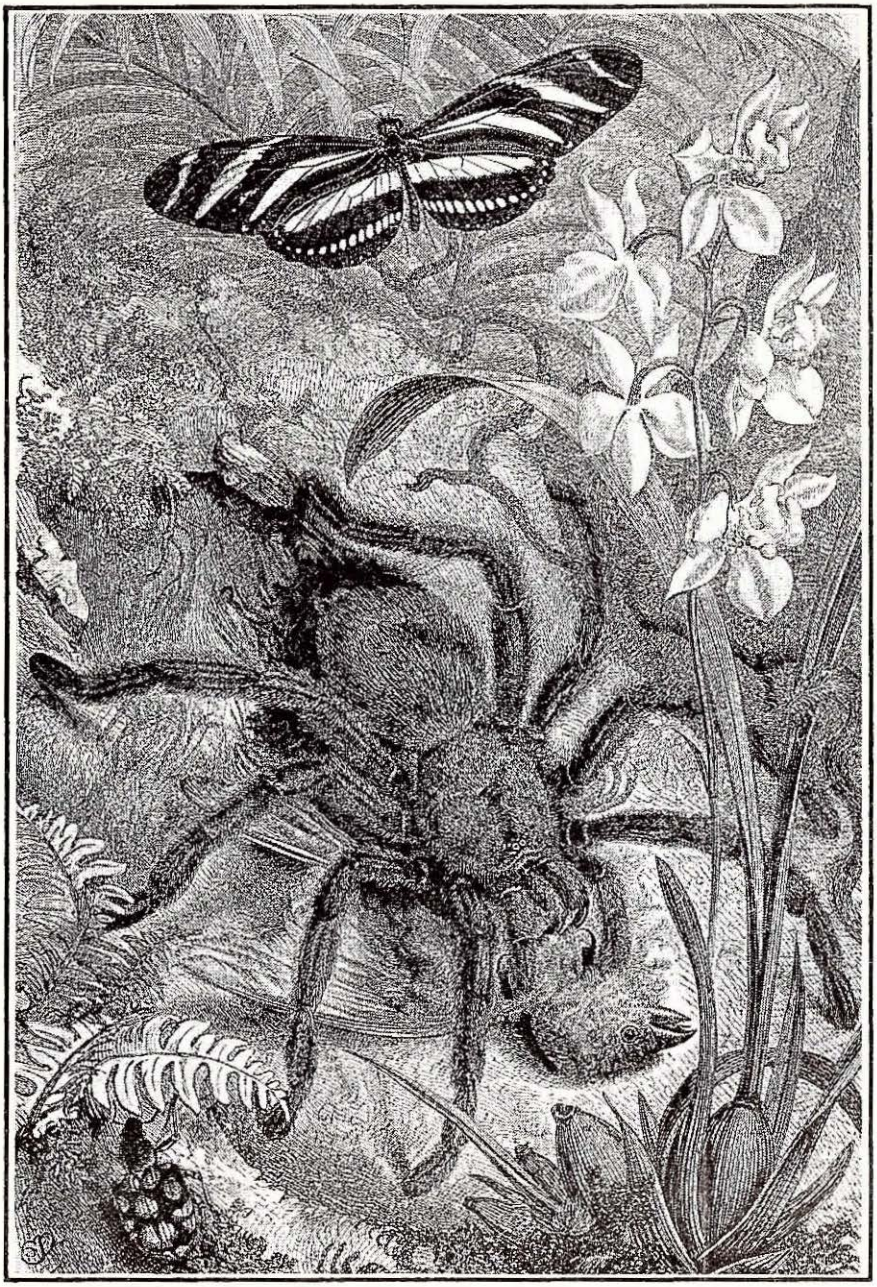
American Arachnology

The Newsletter of the American Arachnological Society



Number 18 *October 1978*

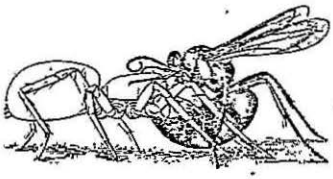
AMERICAN ARACHNOLOGY #18

October, 1978

In this issue of AMERICAN ARACHNOLOGY:

AMERICAN ARACHNOLOGY is the newsletter of the American Arachnological Society and is sent only to society members. For information on membership, write Dr. Norman Platnick, Membership Secretary, American Arachnological Society, Department of Entomology, The American Museum of Natural History, New York, NY 10024, USA. Members of the Society also receive the JOURNAL OF ARACHNOLOGY three times a year.

Correspondence, submissions and requests for back issues of AMERICAN ARACHNOLOGY should be directed to the editor, Dr. William Shear, Biology Department, Hampden-Sydney College, Hampden-Sydney, VA 23943, USA.



A New Editor for AMERICAN ARACHNOLOGY

With this issue, Bill Shear takes over as Editor of AMERICAN ARACHNOLOGY, after nine years of devoted service to the newsletter by Bea Vogel. The newsletter was started by Charlie Dondale in September, 1968, and after two issues, the editor's job came to Bea. The following fifteen numbers saw a steady increase in both quality and numbers of items published. The pressure of many and varied responsibilities led Bea to suggest that a new editor be chosen, and that the job be combined with that of Secretary of the American Arachnological Society. We all owe Bea a considerable debt of gratitude, for as Charlie points out later in this issue, she was not only a major motivating force behind the founding of the Society, but has served ably and well in several of its offices.

Some of you have written asking about material submitted earlier for AA #18, and some of that material will be found in the following pages. However, due to the long unavoidable delay between #17 and #18, much of what had been submitted was out of date. Another part of the material will be published in #19, which we hope will appear in early winter. The new editor thought that the important thing was to get out an issue and let people know that AA is still alive, and kicking with all eight legs!

The new numbers will be printed and mailed here at Hampden-Sydney College, with the very gracious cooperation of Richard McClintock, of the Office of College Affairs. The new cover page is an example of Mr. McClintock's excellent design work. We are also grateful to Mrs. Vicki Wilson and Mrs. Jean Hudson for help with typing and layout.

AMERICAN ARACHNOLOGY cannot exist without things to print. Please send your news, comments, address changes, specimen requests, or whatever, to: William A. Shear, Department of Biology, Hampden-Sydney College, Hampden-Sydney, VA 23943.

MOVING?

Members who pay BAS and CIDA dues through the AAS are reminded that changes of address mustbe SENT TO THOSE ORGANIZATIONS DIRECTLY! The AAS Membership Secretary cannot do this for you.

Spider Club of South Africa formed

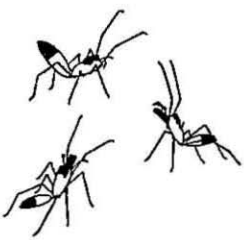
The SPIDER CLUB OF SOUTH AFRICA was formed about two years ago, and has a rapidly growing membership consisting primarily of amateur naturalists. The club organizes local field trips and publishes a quarterly newsletter. One of the ultimate aims of the group is to produce a field guide to South African spiders. AAS members who wish to join the club can pay their dues ($10 per year, starting with 1978) by sending a check, payable in US funds, to Norm Platnick at the American Museum.

Seventh International Congress of Arachnology meets in Exeter

(A report by Norm Platnick) The Seventh International Congress of Arachnology was held at the University of Exeter, England, from 27 July to 4 August 1977; the turnout was moderately large (about 175, including associates). For the first time the congress was truly international, rather than inter-European, with a sprinkling of Americans. Representatives were present from Australia (Main, Davies), Japan (Yaginuma, Nishikawa), India (Mittal, Patel), Israel (Warburg), South Africa (Lamoral), and Argentina (Esteban). The North American contingent was much larger than usual, and included Aitchison, Burgess, Cady, Carico, Carrell, Greenstone, Hadley, Holmberg, Jackson, Levi, Licht, Peck, Platnick, Post, Rapp, Reichert, B. and M. Robinson, Rovner, Smith, Sorkin, Uetz, Whitcomb, and Witt.

Congress lectures were given on orb-weavers (H. W. Levi), the limitation of higher taxonomic categories in spiders (P. T. Lehtinen), the evolution of spider genitalia (O. Kraus), spider associations in pioneer and mature biotopes (E. Duffey), and on the evolution of the nervous and digestive systems of spiders (R. Legendre). About 70 shorter talks were scheduled in two concurrent sessions. Evenings were devoted to film sessions and a meeting of CIDA. The hosts had arranged two field trips to the local countryside. The proceedings of the Congress are soon to be published in the symposium series of the Zoological Society of London.

Gainesville Host to AAS 1978 Meeting



The 1978 International Meeting of the American Arachnological Society was held June 21-23, 1978, at the University of Florida, Gainesville. Hosts for the meeting were Jon Reiskind, Will Whitcomb and John Anderson. They were ably assisted by Dave Richman, G. B. Edwards, H. K. Wallace, Dave Hill and Ken Prestwich.

The fabled central Florida heat and humidity luckily took a brief vacation during the meetings, with temperatures only in the 80's. The dormitories were air-conditioned, and a swimming pool was available for our use. Sessions were held both in the Reitz Union Building and in McCarty Hall. The facilities of the Florida State Museum were also available for two social evenings, the first of which involved a private showing of this excellent educational museum for Society members and their guests.

Following registration, the meetings opened with an afternoon of papers on taxonomy, morphology and physiology, and a half-dozen presentations on behavior. Wednesday evening was devoted a session of arachnological films and a talk by Dana Griffen of the University's Botany Department on "Habitats of Florida." Thursday saw a full day of papers on ecology, and on non-spider arachnids. That evening, Norm Platnick, Herb Levi, Oscar Francke, Pekka Lehtinen and Bill Shear participated in a round table on arachnid phylogeny.

On Friday, something new was added to the Society's traditional fare at the International Meeting with a symposium on Spider Communication, organized by Peter Witt. The academic portion of the meeting closed with addresses from AAS President Charles Dondale (reprinted in this issue of AA) and CIDA President Paolo Tongiorgi. After an excellent chicken barbecue in the breezy courtyard of the Florida State Museum (where a group picture of the 80-90 participants sitting on the sides of mound-builder pyramid was taken), a long and enthusiastic business meeting was presided over by Charlie Dondale. New officers were elected, Oscar Francke reported on progress at the Journal of Arachnology, and the Society's financial status was briefly reviewed.

For those who wished to stay and continue sampling the rich arachnofauna of Florida, field trips were arranged to north Florida/south Georgia, the Ocala National Forest, and the nearby Lake Country.

In 1973, the southeastern members of the Society met at the Welaka Reserve, near Gainesville, where about 25 arachnologists held informal discussions and collected. It is a tribute to our Society and to our University of Florida hosts that only five years later, a meeting four times as large, with formal presentations and a symposium, as well as a truly international flavor, could be held near the same site. Well done, all!

PROPOSED MEETING SITES FOR FUTURE YEARS

1979 Eastern Region: Holland, Michigan
Host: Alan Brady

1979 Western Region: Wichita Falls, Texas
Host: Norman Horner

1980 Eastern Region: Cincinnati, Ohio
Host: George Uetz

1980 Western Region: not settled

1981 International Meetings: Knoxville, Tenn.
Host : Susan Reichert

Researchers Call for Specimens

Bill Rapp is beginning work on a revision of the terrestrial isopod fauna of North America and would welcome specimens from any part of the continent. He will provide determinations.

Andy Penniman is revising the genus Scotinella (Clubionidae; = Phrurolithus). He is interested in seeing any and all collections. Write him at the Department of Zoology, OSU, Columbus, OH 43210.

Bill Shear (Biology Department, Hampden-Sydney College, Hampden-Sydney, VA 23843) would like to examine specimens of laniatorid Opiliones from the eastern and midwestern USA, also from Mexico (cosmetids excluded). Write first describing the size and nature of your collection.

A Tale of Two Journals

All members of the Society are pleased at the progress Oscar Francke is making towards bringing the JOURNAL OF ARACHNOLOGY up to date. As of mid-July, JOA 6(1) was at the printers, 6(2) was being proof-read, and type was being set for 6(3). Prospects are good that volume 7 (for 1979) will actually appear in that year! Oscar also reports that once the journal is current, only an 8-10 month delay between submission and publication can be expected. He also told the national meeting that he will be toughening up editorial standards; this is possible because of the large numbers of manuscripts now being submitted.

The first four issues of REVUE ARACHNOLOGIQUE, constituting Volume 1, have now appeared. They contain 16 articles, mostly in French, but one lengthy one by R. R. Jackson in English, covering a wide variety of topics (internal morphology, histology, systematics, physiology, behavior, and ecology). Subscriptions for Volume 2 cost 70 NF, payable to J. C. Ledoux, Museum Requien, 67 rue Joseph-Vernet, 8400 Avignon, FRANCE. This is not the proposed CIDA international journal, plans for which were shelved at the Exeter Congress. The AAS is attempting to expedite a joint dues collection arrangment similar to those we now have with the BAS and CIDA.

Graduate Studies at AMNH

Graduate students interested in pursuing their doctoral work on arachnid systematics, phylogenetics, and/or biogeography at the American Museum of Natural History can now do so through a joint program in Evolutionary Biology with the City University of New York. Under this program, Museum staff members can serve as major professors. The program is open to holders of the B. S. or M. S. degrees, and financial aid is available on a competetive basis with other CUNY students. Contact Norman Platnick for details.

NOTES FOR COLLECTORS

The following curatorial notes come from Herb Levi. "Printed labels and those made with India ink or pencil have remained legible after 100 years of submersion in alcohol. Typewritten and mimeographed labels have been in use since the 1920's and have survived well after 50 years of submersion. Labels reproduced by xerography do not survive even two or three years in alcohol, in spite of their initially beautiful appearance. Recently I found in our collection xeroxed labels from 1973, from which about 50% of the print had washed off. These labels were nearly illegible after only four years; clearly the xerox process is not acceptable for labels."

"The lifespan of typewritten, mimeographed and India ink labels depends greatly on the quality of the paper used. Index card paper does not hold up well. Some institutions use only parchment. For the past 20 years, the Invertebrate Department of the Museum of Comparative Zoology has used only high quality bond paper for labels; unfortunately we must wait another century to see if this holds up as well as parchment."

We might add from our own experience that several xeroxed labels in our own personal collection have become illegible after a year in alcohol. Agitation speeds up the process, so that after just one trip through the mails, xeroxed labels fail. Sometimes the letters fall off the labels intact, producing alcohol-alphabet soup. But saturating the labels with a fixative (like Krylon) after xeroxing has resulted in the labels staying in good condition for at least three years. But is it worth the chance one takes of losing vital data on important specimens?

Herb also writes that an improved type of polyethylene stopper for vials, imported from Switzerland, is now available in the United States from KEW SCIENTIFIC, INC., 4555-33 Groves Road, Columbus, OH 43227. Each size of stopper fits a range of sizes of vial openings. Herb says they fit tighter and do not discolor alcohol. "Pop-out" and alcohol discoloration have been two problems reported with neoprene stoppers. Ordinary rubber stoppers and natural corks are very poor; both discolor alcohol, degenerate quickly; and produce substances that are harmful to specimens.

Kaston Notes Corrections

B. J. Kaston suggests that readers may wish to enter the following corrections in the Supplement to the Spiders of Connecticut, published in JOA 4:1-72 (1977):

p. 13: couplet 4a, for figure "1968" read "168."

p. 17: lines 37 and 38, for "Misumena" read "Mysmena."

p. 32: In the set of illustrations, the fourth figure from the left in the top row should be numbered 35.

p. 46: In the set of illustrations, the fourth figure from the left in the top row should be numbered 41, and the number 41 should be removed from beneath figure 47.

p. 56: line 38, for "1971" read "1871."

B. J. has also detected the following typographical errors in the third edition of HOW TO KNOW THE SPIDERS:

p. 14: line 4, for "Aransae" read "Araneae."

p. 49: legend for fig. 100, for "Leptonsta" read "Leptoneta."

p. 72: on next line after "Genus Apostichus" change "bs" to "be."

p. 89: for L. deserta distribution, add "California."

p. 90: line 2, for "unicolor" read "deserta."

p. 140: on the line just above fig. 352, for "o" read "to."

p. 232: legend for fig. 594, for "Coriarachns" read "Coriarachne."

p. 240: legend for fig. 611, for "oblongu" read "oblongus."

p. 241: legend for fig. 612, for "Hobrocestum" read "Habrocestum."

p. 249: for couplet number "158" read "15b."

p. 257: third line from bottom, for "(McCook)" read "(Hentz)."

ARACHNOQUIZ!

The following spider quiz originated from your editor's frequent experience with questions of the what-kind-of-spider-is-that variety. The descriptions below, however, contain a great deal more information than one usually gets under such circumstances. Take your answers to the lowest taxonomic level possible (species, in some cases). The names of top scorers will be printed in the next issue of AA; we also solicit similar quizzes on other arachnid groups, and more spider questions.

1. A spider from Baja California, dirty brown, holds legs I and II forward, legs III and IV backward.
2. Less than 1 mm long, found hanging from a lampshade in the house, a ready jumper.
3. Heavy-bodied, bright red, has "eyebrows," on plants outdoors.
4. Medium-sized, shiny black, white T-shaped mark on abdomen.
5. In a greenhouse under a pot in a silk bag, orange and white.
6. Small spider, horizontal orb web with a spiral silk ribbon in center.
7. Large brown spider about an inch long--lots of little bugs jumped off after I killed it.
8. Dingy brown spider in a cobweb, little cloth bags hang in the web. Hundreds of these all over in our house.
9. Turned up by a rototiller in southern Pennsylvania, heavy-bodied, showed snake-like fangs when prodded.
10. We heard a strange buzzing noise. It was being made by a small, yellowish spider sitting on a leaf.

Translation Pool; Slide Library

Susan Reichert, Department of Zoology, University of Tennessee, Knoxville, TN 37916, USA, is coordinating the AAS translation pool, and has graciously volunteered (like any good Tennesseean!) to act as custodian of a proposed slide library. If you are interested in participating in either of these programs, write Sue for information. A xeroxed list of about 35 articles already translated is available from AMERICAN ARACHNOLOGY and will be sent along if you include a stamped, self-addressed envelope with your request. Send your translations direct to Sue, so that your work need not be duplicated by other arachnologists.

COVER ILLUSTRATIONS REQUESTED

Oscar Francke requests cover illustrations for the JOURNAL OF ARACHNOLOGY. He wants to feature a different order on each of the volumes; the following have appeared so far, or will in the near future: Vol. 1, Uropygi; Vol. 2, Araneae; Vol. 3, Ricinulei; Vol. 4, Amblypygi; Vol. 5, Pseudoscorpionida; Vol. 6, Opiliones. Oscar will consider ink line drawings or halftones suitable for reproduction of the remaining orders (Scorpiones, Solifuga, Schizomida, Palpigradi, and Acari). Send your submissions directly to Dr. Oscar F. Francke, Department of Biological Sciences, Texas Tech University, Lubbock, TX 79409, USA.

Abstracts from the 1978 Meeting

FORAGING FLOCKS OF SPIDERS: A STUDY OF AGGREGATE BEHAVIOR IN CYRTOPHORA CITRICOLA FORSKAL (ARANEAE: ARANEIDAE) IN WEST AFRICA

Ann L. Rypstra

The advantages of aggregate behavior evident from this study include protection from predation, habitat exploitation, increased foraging efficiency, and increased spinning efficiency. Middle web layers within the colonies obtained the greatest proportion of these benefits; however, those layers carried an increased cost in the form of territorial defense. A mixed-species association reduced competition by dividing foraging times, or the prey sizes taken.

INTRADEME MORPHOLOGICAL VARIATION IN TWO SPECIES OF CASTIANEIRA FROM CENTRAL FLORIDA

J. Reiskind

Two closely related species of Castianeira, C. floridana and C. crocata, are found sympatrically in central Florida. They differ morphologically (hair patterns, male genitalia, overall size) as well as ecologically (habitat preference and seasonality). C. floridana is a tropical species which shows a marked summer breeding period in this area of cool winters. C. crocata, a temperate species, on the other hand, apparently breeds throughout the year in the relatively benign winters of central Florida. Both species show considerable intrademe variation in abdominal hair patterns. A red-orange spot varies in size from extensive to absent (or greatly reduced). The function of the spot and the genetic basis for the variation is not known, but is being investigated.

PROBLEMS IN THE TAXONOMY OF CERTAIN SPECIES OF THE NEOTROPICAL SPIDER GENUS JOSA (ARANEAE: ANYPHAENIDAE)

J. A. Kochalka

Although many species of Josa (Anyphaenidae) live at very high elevations in Neotropical mountains, the species of the gounellei group live at moderate elevations. J. gounellei from southeastern Brazil is very closely related to J. pallida from northern Colombia, but they appear to be different species. There are only 2 specimens of gounellei and 1 specimen of pallida. J. personata is represented by only 1 ♀ from southern Ecuador and 1 ♂ from northern Colombia. It is not certain that both specimens are the same species.

A MICROANATOMICAL STUDY OF SPIDER FAT BODY IN THE GENUS AGELENOPSIS GIEBEL

Joel M. Harp

This paper represents a preliminary report of a study of spider fat body at the light and electron microscopic level. The study is restricted to fat body cells occuring in the abdomen. These cells are found to be in intimate association with midgut diverticula and Malpighian tubules both of which ramify extensively within the abdomen. The fat body functions in storage of nutrients, storage excretion of metabolic wastes, and protein synthesis. Two types of fat body cells can be distinguished on the basis of cytoplasmic structure and correspond closely to insect fat body cells.

THE ENERGY CONTENT OF SPIDER EGGS

John F. Anderson

The energy content of spider eggs was determined on samples from 12 species representing six familes. These values ranged from 26.32 to 29.00 joules per mg ash-free dry mass with a mean of 27.30 $\pm$ of 0.27. The variation in this measure is less than variation in clutch size and individual egg size on an intra- and interspecific basis. There was no correlation between energy content per unit egg mass and size of the female parent, egg size, or clutch size. Further analysis indicated that no single measure such as clutch size accurately represents the proportional amount of energy invested in reproduction in these animals. High mass-specific energy values were found in those species that overwinter as developmental stages within the egg sac. Rates of energy expenditure of developing eggs and spiderlings within the egg sac were only 7 to 19% of those of emerged spiderlings. The energy conserved by this reduction in rate of metabolism may facilitate survival without feeding during the potentially long periods of aerial dispersal by ballooning, a characteristic activity of most newly emerged spiderlings.

NOTES ON THE BEHAVIOR OF THE TRAPDOOR SPIDER GENUS UMMIDIA (CTENIZIDAE)

Frederick A. Coyle

Burrow construction behavior and prey capture behavior in two populations of the trapdoor spider genus Ummidia are described from the direct observation and photography of six individuals collected from Clemson, South Carolina, and Jackson County, North Carolina. From these observations it can be concluded that the function, heretofore unknown, of the peculiar third tibia with its saddle-shaped depression to to provide a counterforce to forces generated by other legs pressing against the burrow wall, and to thereby allow effective movement and anchoring in a nearly vertical burrow.

COMPARATIVE COURTSHIP BEHAVIOR OF TWO SPECIES OF HABROCESTUM (ARANEAE: SALTICIDAE)

David B. Richman

The courtship displays of two closely related species of Habrocestum from leaf-litter in Florida were compared. The displays were found to be different in several major characteristics. These data indicate that the two species, one of which is undescribed and has apparently been confused with the other, are distinct. This conclusion is supported by morphological and ecological characteristics of the two species.

THE FAMILY THERAPHOSIDAE (ARANEAE) IN COSTA RICA: ECOLOGY AND BIOSYSTEMATICS A PRELIMINARY REPORT

Carlos E. Valerio

The family Theraphosidae, the tarantulas, presents difficulties in systematics due to several characteristics:

- Low population densities in the tropics, which yields sparse collections.
- Male and female with different habits, responsible for many species described on the bases of one sex only.
- Poor dispersal ability (lacking aeronautic behavior) resulting in complex geographic speciation.
- Female without external genitalia, causing the description of some species based on immatures of other species.
- Male with a highly movable bulb, resulting in inaccurate "medial" or "lateral" views when the position of palpus is used as a reference.

The Costa Rican Material suggests that the sub-families Aviculariinae and Theraphosinae are well defined natural groups, but Ischnocoelinae and Grammostolinae form a large complex unit. The traditional separating character (a row of spines dividing the tarsal pad) is not valid, since it is present in all immatures of all species involved. Eighty percent of the species in Costa Rica are undescribed; in my opinion there are only five valid names, while I can recognize 25 species in the collection of the Museo de Zoologia (Univ. de Costa Rica). The three species of strong diggers (Aphonopelma) show a nice geographical separation with no overlap: A. seemani is found in the Pacific lowlands, A. hoffmanni lives in the central valleys (1000 to 1400m) and A. mesomelas inhabits the rain areas of higher elevations.

THE EFFECTS OF FEMALE DISPERSION ON THE SPACING SYSTEM OF MALE BOWL AND DOILY SPIDERS (FRONTINELLA PYRAMITELA: LINYPHIIDAE)

Steven Austad

Recent theory on the effects of spatiotemporal distribution of vital resources on behavioral mechanisms of spacing was examined experimentally using male Frontinella pyramitela as the experimental organism and females of the same species as the vital resource. Variables manipulated were absolute abundance, relative abundance, and dispersion of the resource. Results indicate that the degree of home range overlap was not significantly affected by any manipulation but intensity of aggression rose as the resource became more limited. Size was generally a poor predictor of the winner of aggressive encounters but prior web residence showed a strong inverse correlation with the probability of winning encounters.

VERTICAL STRATIFICATION IN TWO DIURNAL HUNTING SPIDERS

Anthony C. Janetos

The effects of phylogeny and foraging behavior in resource partitioning can be separated by studying two species which forage similarly but are not closely related. This condition is fulfilled by two common diurnal hunting spiders in New Jersey: Phidippus clarus and Oxyopes salticus. Both species were observed during the summer of 1977 in an open field near Princeton, New Jersey. In the early summer, there was very little overlap in the species' height distributions in the vegetation: P. clarus consistently foraged higher in the grass than did O. salticus. At that time there was no significant difference in the mean sizes of the two spiders. In the late summer, P. clarus females had matured and were significantly larger than O. salticus females. Concurrently, the foraging heights of the two species overlapped almost completely. This example reflects the dynamic aspect of resource partitioning. Segregation by size replaces segregation by height late in the season. Although competition for food is a possible cause of this pattern, it has not yet been confirmed.

MICROHABITAT SELECTION AND LOCOMOTOR ACTIVITY IN SCHIZOCOSA OCREATA AS VIEWED AT A WOODLAND SITE

A. B. Cady

Direct observations of the wolf spider Schizocosa ocreata (Walckenaer) at a woodland site during the breeding season indicated that it preferred a moist microhabitat with non-compressed litter over 1 cm thick, the latter often accompanied by a canopy of herbaceous vegetation. Spiders tended to travel greater distances in areas of litter less than 1 cm thick. Spider locomotor activity was highest in drier, less favorable microhabitats. Male spider movement was shown to be finer-grained than the female's with respect to litter type. A sex ratio of 1:1 differed from those previously obtained from pitfall trapping.

PHENOLOGY AND HABITAT SELECTIVITY OF FLORIDA PHIDIPPUS (ARANEAE: SALTICIDAE)

G. B. Edwards

Eleven species of Phidippus are primarily distributed in the following types of habitat in Florida: 1) xeric primary succession - P. cardinalis, P. apacheanus, P. xeros (peninsula), P. purpuratus (panhandle); 2) xeric woods - P. putnami, P. pulcherrimus; 3) pine flatwoods - P. pulcherrimus; 4) mesic primary succession (old field) - P. regius, P. clarus; 5) near ponds and in marshes - P. clarus; 6) near lakes and streams - P. audax, P. otiosus; 7) mesic hammock - P. whitmani. All species occur in the herbaceous and/or shrub zones in their respective habitats, except P. otiosus (in trees) and P. whitmani (on leaf litter). There is some overlap of habitats, with as many as 7 species occurring in ecotonal areas. Those species dominant within one habitat have different breeding seasons, except in the case of P. apacheanus and P. cardinalis, which may be mutillid mimics.

RESOURCE PARTITIONING IN JUMPING SPIDERS: PHIDIPPUS AND METAPHIDIPPUS NESTING IN THE UMBELS OF WILD CARROT, DAUCUS CAROTA CAROTA

Steve Tessler

Immature Phidippus audax, P. princeps and Metaphidippus protervus build retreats in dead umbels of wild carrot in the fall. A linear relationship between body and retreat dimensions allows estimation of unoccupied retreats "to genus" (P or M). 124 Daucus plants were analysed for "generic" differences in umbels as retreat sites evidenced by the retreat record. No preference was found for umbel shape. "P" retreats were found in large umbels high on the plants, with 53% in the open umbel center. "M" retreats were found in medium sized umbels over a wide range of heights, with 45% at the umbel base inside.

EFFECTS OF AN EXPERIMENTAL INCREASE IN PREY ABUNDANCE UPON REPRODUCTIVE RATES OF THE ORB-WEAVERS MECYNOGEA LEMNISCATA (WALCKENAER) AND METEPEIRA LABYRINTHEA (HENTZ)

David H. Wise

Females of two orb-weaving species, Mecynogea lemniscata and Metepeira labyrinthea, were added to open experimental units located in the species' natural habitat. Each unit was a frame supporting dead branches of the type used by both species for anchoring webs. Spiders on half the units were exposed to natural prey densities only, while each spider on the other units was given laboratory-reared flies in order to increase prey availability above natural levels. Both species responded to additional prey by doubling the number of eggs produced per female, indicating that food is a limited resource for these species.

THE INFLUENCE OF AGE OF FEMALE AND OTHER ALLIED FACTORS ON REPRODUCTION IN PARDOSA RAMULOSA

Susan B. Hydorn

Eggsac-bearing females of Pardosa ramulosa were collected over a 2-year period in the Sacramento Valley of California. Most specimens were maintained in the laboratory, usually until death, on a standard mixed prey regime of coddled larvae of Phthorimaea operculella and Drosophila spp. adults. Under these conditions, the spiders produced up to 6 eggsacs and survived for several months. Relative age when captured was estimated for spiders captured subsequent to mid-spring, based on laboratory performance. Maturation phase and parent age at oviposition influenced fecundity but not percent natality in field-constructed eggsacs. Prolonged maintenance under laboratory conditions influenced fecundity and percent natality.

ALKALOIDAL SECRETION OF A MILLIPED: POTENT DETERRENT AND SEDATIVE TO SPIDERS

James E. Carrel

The European milliped, Glomeris marginata, has a defensive secretion that is particularly effective against spiders. Predation tests show that most wolf spiders release their prey immediately upon making oral contact either with the milliped's sticky exudate or with a dilute solution of synthetic quinazolinone alkaloids that are found in the secretion. Spiders that consume a drop of secretion or its equivalent of synthetic alkaloids within minutes become sedated. Intra-abdominal injection of the

alkaloids produces the same prolonged, flaccid paralysis of spiders in a dose dependent fashion. Comparative studies suggest there has been selection among sympatric wolf spiders to cope with this dually effective defense of Glomeris.

EFFECT OF FOREST SPRAYING WITH ACEPHATE INSECTICIDE ON CONSUMPTION OF SPIDERS BY BROOK TROUT (SALVELINUS FONTINALIS)

S. B. Hydorn, D. T. Jennings, and C. F. Rabeni

Stomach analysis of mature brook trout taken from acephate-sprayed and unsprayed streams in a central Maine coniferous forest indicated a broad-spectrum effect of acephate insecticide on the arboreal spider fauna. Fish exposed within 48 hours of capture to acephate spray evinced a striking increase in consumption of spiders as opposed to fish from unsprayed areas. A caged spider study indicated acephate to have a severe effect on spiders. This in general supported the evidence obtained from fish stomach analysis.

APPENDAGE AND BODY DESIGN IN SOME LANIATORID OPILIONIDS

W. A. Shear

Appendage design in the laniatorid opillones involves some features not seen in other arachnid orders. Two types of palpi (there appear to be some intermediates) are seen: in one type, the tibia and tarsus as a unit close against a femur and trochanter armed with spines. The second type features an elongated femur without spines; the tarsus is spiny and closes against the tibia, which may have a strong basal spine. The "spines" are actually macrosetae set on enlarged basal tubercles. Males of species in some families have enormous chelicerae; the fingers may be forcipate or armed with crushing tubercles. Are they used in male-male aggression? The very much enlarged and heavily spined fourth coxae and femora found primarily in the gonyleptids may be an anti-predator device.

PRELIMINARY STUDIES ON PSEUDOSCORPION POPULATIONS IN THE SOIL-GRASS INTERFACE AS OBSERVED IN THE NEBRASKA PRAIRIES

William F. Rapp

Samples taken from the soil-grass interface of typical prairie areas in Nebraska were extracted in a Tullgren funnel. To date, 28 samples have been extracted and 9, or 33%, contained pseudoscorpions. The tall grass prairie region appears to have the largest population. The highest density per square meter was found in the mixed prairie region where 72 specimens of Microbisum confusum Hoff per square meter were collected. This study would indicate that at least two factors limit pseudoscorpion populations in the prairies: 1) moisture, and 2) depth of litter. In native prairies, and in pastures, especially those which are over-grazed, there is almost a total absence of soil and litter arthropods, including Pseudoscorpions.

SOME ASPECTS OF THE BIOLOGY OF HESPEROCHERNES CANADENSIS HOFF IN NORTHEASTERN NORTH DAKOTA (PSEUDOSCORPIONIDA, CHERNETIDAE)

Scott H. Stapp

This study deals with the biology of Hesperochernes canadensis Hoff, a bark-dwelling pseudoscorpion new to North Dakota. The subbasal and basal cheliceral setae used in the definition of the genus Hesperochernes were unreliable for identification in this population. Life history data, including population structure and aspects of reproduction, tree specificity, subcortical distributions and karyo typic peculiarities of the species are discussed.

A STATUS REPORT OF A BIOGEOGRAPHICAL STUDY OF OREGON PSEUDOSCORPIONS (NOT PRESENTED)

Ellen M. Benedict

In 1895 Banks provided records of the first two reported Oregon species, each in different families. By 1970, when Benedict and Malcolm reported 43 Oregon collections of Pseudotyrannochthonius incognitus (Schuster), the other 12 recognized Oregon species (in three families) had been reported from only 20 Oregon collections. Now 50 species from nine familes are reported in biogeographical analyses of data from 2220 Berlese samples collected since 1971 in a stratified, extensive sampling procedure, and from collection data on several hundred specimens from major private and public collections. It appears that when the remaining collected specimens have been determined that the Oregon fauna should exceed 70 species.

REPRODUCTIVE BIOLOGY AND TAXONOMIC STATUS OF IXODES (ACARI: IXODIDAE)

T. Dave Gowan and James H. Oliver, Jr.

Work on the reproductive biology of Ixodes scapularis Say supports a taxonomic position for Ixodes more intermediate between Ixodidae and Argasidae. Female reproductive tracts have many Argasid features, including the prominent common oviduct (uterus) and low fecundity. Males initiate spermatogenesis as nymphs and are aphagic as adults. Anopia, marked sexual dimorphism, splitting of the nymphal integument in moulting, high chromosome numbers, XY sex determination, production of two endospermatophores, and the broadly joined testes are other characters which set Ixodes off from other Ixodid genera.

FUNCTIONAL MORPHOLOGY OF THE GNATHOCOXAL GLAND IN ARANEUS DIADEMATUS (ARANEIDAE) AND THERIDION SISYPHIUM (THERIDIIDAE)

Helga Sittertz-Bhatkar

Comparative histocytological studies on the gnathocoxal gland of a prey-kneading (Araneus diadematus) and a prey-sucking (Theridion sisyphium) spider indicated an elaborate cleansing function of this tiny gland. The secretory cells in A. diadematus are anchored against collapsing with microtubuliferous accessory cells that are lacking in T. sisyphium. The secretory cells of T. sisyphium resemble the vertebrate pancreatic cells and those in A. diadematus resemble the goblet cells. The secretory cycle consists of exocytosis of the cell contents into the lumen, membrane retrieval and cellular reorganization, and replenishment and storage of the secretory granules. Observations on the behavioral repertory showed that the droplets of fluid appearing between the gnathocoxae and chelicerae not only released the remnants of undigested food

material from the oral microstructures but also helped in the formation of a bulbus to be expelled. This function of the so-called "salivary gland" was unknown.

SPIDER PHOBIAS

Ralph B. Little, M. D.

This paper examines certain psychological factors that proceed and enter into the development of spider phobias. The differences between fears, phobias, and panic are described, along with some general characteristics of the role the unconscious mind plays in spider phobias. The uncanny feelings spiders generate, the origin of these feelings, the universality of spider symbolism, spider myths, and the symbolic relationship of the spider to the mother are discussed. A clinical vignette of the development of the onset of a spider phobia and some symptoms are presented, accompanied by speculations about the influential psychogenetic determinants.

PRELIMINARY OBSERVATIONS ON THE POPULATION BIOLOGY OF ATYPOIDES RIVERSI (ANTRODIAETIDAE), A FOSSORIAL MYALOMORPH SPIDER

Leonard S. Vincent

A dense aggregation of Atypoides riversi (517 spiders in a 2 x 3 1/3 m area) was observed from September 1976 to August 1977 in order to estimate the rate of growth and longevity of the spider. Spider size and burrow entrance size were correlated. The change in size of the burrow entrance over time was used as an indicator of growth and size class (age). Most spiders increased one or two size classes. The data suggest that a spider increasing a minimum of two size classes per year can reach maturity in 4-5 years whereas a spider increasing a maximum of one size class per year would take 8 years to mature.

SPIDER PREY OF TWO MUD DAUBER SPECIES IN COMANCHE COUNTY, OKLAHOMA

N. Horner and J. Klein, Jr.

Spider prey of two mud dauber wasps, Sceliphron caementarium (Drury) and Chalybion californicum (Sassure) was determined in Comanche Co. Oklahoma. Of 747 spiders taken by Sceliphron, 93.0% were aranids and thomisids. Chalybion had collected 446 spiders; 99.5% of which were aranids and theridiids.

A DUAL CLADISTIC ANALYSIS OF ANAPIS (ARANEAE, ANAPIDAE)

Norman I. Platnick

Because over half of the 21 known species of Anapis are known from only one sex, investigating their interrelationships proved relatively difficult. To overcome this problem, separate cladistic analyses were performed for each sex, and a technique was developed to combine the information supplied by the two resulting cladograms. Despite the availability of a small sample of characters, the two cladograms are shown to be compatible. Combining their information generates eight specific predictions about the morphology of unknown specimens that can serve as tests of the theory of relationships when those specimens are discovered.

SECONDARY EYES OF SPIDERS AS A SYSTEMATIC CHARACTER

Herbert W. Levi

Eye structure is a character which can be used to separate families.

1. Eyes with primitive tapetum (PT) reflect light through holes in pigment net. In Mesothelae, Orthognatha, haplogyne families, etc.
2. Eyes with canoe-shaped tapetum (CT). Light is reflected from two opposing plates: Araneoidea, Agelenidae, Gnaphosidae, Clubionidae, Anaphaenidae, Amaurobiidae.
3. Eyes with grate-shaped tapetum (GT). Rhabdomes containing tapetum arranged in rows: Lycosidae, Pisauridae, Ctenidae, Oxyopidae.
4. Specialized secondary eyes: Heteropodidae, Philodromidae, Selenopidae, Thomisidae, Salticidae.
5. Intermediates between CT and GT

Araneidae: Metinae all CT: also Zygiella, Nephila, Cyclosa, Metazygia

Araneinae: PME half CT, half GT without tapetum: Araneus, Gasteracantha.

Pachygnatha: PME, grate-shaped; LE: CT

Tetragnatha (also Azilia, Dolichognatha): all GT, no tapetum

President Dondale's Message

First I wish to record my personal thanks, and indeed the appreciation of all of you as members of the American Arachnological Society, to our colleagues here in Gainesville for the excellent conference they have arranged. Dr. Will Whitcomb has assembled a great roster of speakers, and we have been stimulated almost continuously since we arrived. Dr. Jon Reiskin has worked hard to arrange our housing and the field trips. Dr. H. K. Wallace, Dr. John Anderson, Dr. G. B. Edwards, Dr. Dave Richman, Dr. David Hill, and Mr. Ken Prestwich have all put a great deal into the conference, and we are exceedingly grateful to them.

The work is not finished yet. The field trips begin tomorrow, and these require much attention to detail. And then there is the cleaning up. When everybody has left for his or her particular part of the world, somebody will have to attend to the people who paid their fees but didn't show up, and to people who didn't pay their fees but did show up, to housekeeping complaints from Hume Hall (Frisbees and living creatures left in the rooms), to picking up the dropped threads of research, and to finding time for a much needed vacation.

Secondly I want to thank the many speakers who presented papers and shared with us their special knowledge. It is good to hear from our overseas colleagues--they came from different cultures and languages, and we sincerely hope they feel accepted here. Dr. Peter Witt's well organized and well presented symposium on communication was excellent. The student papers deserve special mention.

In the remaining time alloted to me I'd like to sketch briefly a bit of the history of our society and where we seem to be just now, and also give one or two directions in which we might turn our attention during the next few years.

Once when I was a young lad I decided to trace a stream to its source. I'm not sure what I expected to find, but for hours I struggled upstream over cliffs and under bridges while the flow of water grew smaller and smaller. Finally I came to a level swampy place where the water no longer flowed but merely lay about in small puddles. These puddles, I perceived, were the source of the stream.

The American Arachnological Society is a little like that stream. It didn't gush already formed from a spring or a fountain. It wasn't the outlet from a lake. It began de novo from small puddles that didn't seem to be moving anywhere at first. Nor is the stream very long at this point in time--just five years old this August.

One of these so-called puddles was the gathering, in November 1967, of about 25 arachnologists for a symposium under the umbrella of the American Entomological Society in New York. The symposium was organized by none other than Will Whitcomb and was attended by (among others) Dr. Willis Gertsch (who was registrar for the A.E.S. conference), Dr. B. J. Kaston, Dr. John McCrone, Vince Roth, and Larry Pinter. The thing that I remember most about this meeting was the sheer fun at meeting some other arachnologists--people who understood. The idea of an arachnological society may have been born there.

A few months later I received from Larry Pinter some back issues of a Cirripedologists' Newsletter (alias the Wormrunners' Digest) as a stimulus, he said, to the production of a newsletter for American arachnologists. Larry claimed that I had accepted the job of editing the first issue, and that John McCrone had accepted the reproduction and mailing.

The first issue of American Arachnology (or AA, as it came to be known) came out in September 1968, in the form of a questionnaire asking people what kind of newsletter they wanted. There were 32 replies.

By late 1971 we find Bea Vogel writing, "I hope soon to send out a letter to AA subscribers proposing the formation of a Society of American Arachnologists. I think there are enough of us now, and I don't think the S. W. arachnologists should have the whole burden of running a journal." (The Southwestern Arachnologists were, you may remember, a group of eager southwesterners who had organized themselves as early as 1966 for meetings, field trips, and the production of a journal. The journal, which ran through three numbers between 1970 and 1972, was called Notes of the Arachnologists of the Southwest. The memorable thing about this journal, as I recall, was the inclusion in the first number, which was mimeographed, the description of a new species of spider. A fight awaits the person who revises that group.

A year later (i.e., in late 1972), Bea had almost singlehandedly organized a membership list and had put Dave Marqua in California to work on a constitution and by-laws. She had also found an Editor for a prospective journal in the person of Dr. Bob Mitchell. The journal was to succeed the Notes as the official organ of the new society. It is a matter of history that the American Arachnological Society was incorporated on August 16, 1973, with 116 members. The first small but very exciting meetings at Portal, Arizona (hosted by Dr. and Mrs. Willis Gertsch) and at Silver City, New Mexico (hosted by Dr. Martin Muma) are also history. The Journal of Arachnology made its first hesitant appearance with Vol. 1, No. 1 appearing in November 1973. The subsequent delays in publication, followed by an almost providential rescue by Dr. Oscar Francke, are known to most of us.

AA meanwhile had passed into the hands of Bea Vogel in 1969 when I was transferred overseas; Bea continued as Editor until this year when she felt it necessary to resign due to the pressures of employment and her family. The duplication and mailing of the newsletter were handled very capably during those crucial early years by John McCrone, who was succeeded more recently in this capacity by the Secretary of the Society, Nan Lawler.

This brings us, though very sketchily, up to date. What are our main resources at this point in time? In a recent issue of the British Arachnological Society's newsletter, Dr. Paolo Brignoli wrote an article on the problems that oppose collaboration among our European colleagues. He noted particularly the problem of many national boundaries and languages, and the consequent lack of communication there. By contrast, he supposed, North American arachnologists can meet and chatter relatively freely, and we can all read each other's correspondence and publications readily. We know relatively little of our arachnid fauna compared with the Europeans, however, due to the long overdue discovery of our continent.

The key to a viable Society, I believe, is good communication, and the means at our fingertips are a good journal, a good newsletter, and frequent and stimulating meetings. It's true that the Journal of Arachnology hasn't made it yet in Journal Citation Reports, but it is reviewed regularly in the world abstracting journals including Science Citation Index, Zoological Record, and Biological Abstracts. It's also true that our newsletter is a little behind schedule, but I have confidence that it will soon catch up. As for the meetings, I am often amazed at the distances you are willing to travel in order to be together.

Another major resource that we have is the inclusion among our membership of a number of people who are not only great arachnologists but who are truly great contemporary scientists. I refer to such men as Willis Gertsch, Herb Levi, B. J. Kaston, H. K. Wallace, Clayton Hoff, Don Lowrie, Peter Witt, Clarence Goodnight. I could name others. We owe them all a very great debt of gratitude.

These are some of our resources. But as in many activities of our lives, whether it be marriage, or money, or education, or whatever, it's not so much what we've got that counts as what we do with what we have. How can we obtain the most value from the journal and the newsletter? How can we use our case of communication to bring some of the huge arachnological problems before us to a speedy and practical solution? And can we turn our dedication to the profession and to each other into something that will be recognized as good for science and for humanity? These questions are, of course, partly rhetorical, yet I feel that gifts that are not exercised are in danger of being lost.

Let me suggest one or two areas in which resources might be put to work a little more determinedly than heretofore. I believe it is time to move out of the alpha stage of arachnid taxonomy, and bring to completion good generic revisions for all of the families of American arachnids. After that, we desperately need good identification manuals to the species level. This in turn will facilitate research in ecology, behavior, physiology, and genetics. Feedback from these fields can then refine the art of identification. We especially need work on juvenile arachnids, which invariably comprise the greater proportion of ecological collections. And we need a breakthrough in rearing technique, as anyone who has tried to hybridize and backcross these animans knows. Large parts of the American continents remain unknown faunistically. The relationships between the American and Old World forms is still rudimentary.

Another broad area where constant work is needed is that of public education. Are we encouraging amateurs? Are we encouraging students enough? Should we be encouraging in some ways the employment of arachnologists in museums and biology departments and governments? Are there enough good quality courses available? Good publicity will pay off, not only in terms of more jobs for arachnologists but in a greater appreciation of arachnids in nature. These are worthy goals.

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