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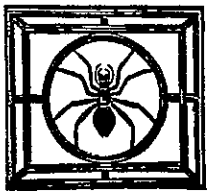

Update on Journal Schedule

Volume 15, No. 1 was distributed in October. Number 2 is expected before the end of the year, and 15 (3) should follow shortly. Volume 16 (1) will come out near its regularly scheduled time of appearance, and by 16 (2), the Journal should be back on the prescribed publication schedule.

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Location of Annual Meeting for 1988 and Call for Papers

The 1988 annual meeting will be at New Mexico State University in Las Cruces, New Mexico on June 28-30. The preregistration form and call for papers are enclosed in this newsletter. **NOTE: This will be the first and only CALL FOR PAPERS.**

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Future Society Meeting Locations

Locations for future meetings were announced by the Executive Committee at the Harvard meeting.

1988 - New Mexico State University at Las Cruces, NM
1989 - Butler University at Indianapolis, IN in late June (Host - Jim Berry)
1990 - California Academy of Sciences in San Francisco, CA
1991 - Ottawa, Canada (Host - Charles Dondale)
1992 - Weber State University at Ogden, Utah (Host - Gary Miller)

Election of Officers

At the 1987 annual meeting at Harvard University the results of the spring election were announced.

President-elect — George Uetz
Treasurer — Gail Stratton
Director — James Cokendolpher

All of the proposed changes in the By-Laws were passed unanimously. The appointment of Jerry Rovner as Associate Editor of the Journal of Arachnology was announced.

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SPIDER COURSE

A new spider course will be offered in the summer of 1988 at the Highlands Biological Station, Highlands, North Carolina.

The course will be taught by Fred Coyle and Bill Shear and will be 10 days in length. While dates are yet to be firmly settled, it will probably take place 18-28 July. The course will emphasize behavior, ecology, and systematics of spiders and will be particularly aimed at advanced undergraduate students and beginning graduate students who may be interested in research topics involving spiders. We aim to provide the background in spider biology needed in order to intelligently select and develop research problems in all aspects of field and laboratory studies with spiders.

We also welcome the interest of nonprofessionals who want to learn more about spider natural history.

Credit of 3 graduate or undergraduate hours will be awarded through Western Carolina University.

If you are interested, contact Dr. Fred Coyle, Department of Biology, Western Carolina University, Cullowhee, NC 28723. You will be posted as plans develop.

In this issue:

AMERICAN ARACHNOLOGY is the newsletter of the American Arachnological Society and is sent only to society members. For information on membership, write: Dr. Norman I. Platnick, Membership Secretary, American Arachnological Society, Department of Entomology, The American Museum of Natural History, Central Park West at 79th Street, New York, NY 10024, USA. Members of the Society also receive the JOURNAL OF ARACHNOLOGY.

Submission of items for AMERICAN ARACHNOLOGY or other correspondence concerning the newsletter should be directed to the editor, Dr. James W. Berry, Department of Biology, Butler University, Indianapolis, Indiana 46208, USA. Deadline for receipt for material for the fall issue of the newsletter is 24 September and for the spring issue, 24 March.

New From the Society

Notecards featuring an engraving by Hans Weiditz depicting an early Renaissance spider and scene can be purchased from the Society. The engraving was used to illustrate the 1582 edition of Pliny's Historia Mundi Naturalis. The cards measuring approximately 6 x 8 inches, with the design printed in deep maroon on an off-white card, are for sale (with envelopes) in packs of 10 at $5.50 per pack. Send checks payable to the American Arachnology Society to Jon Reiskind, Department of Zoology, University of Florida, Gainesville, FL 32611. Allow 6-8 weeks for delivery.

Jon Reiskind is also directing the distribution and printing of Vince Roth's checklist, Linyphiidae of America North of Mexico. The price for the 64 page checklist is $5 prepaid, $6 if billed. The checklist is being handled under the same conditions that currently govern the Guide to Spider Genera. This will entail an expense to the AAS of about $300 which is expected to be recouped in sales. The Guide to Spider Genera has become a major money-maker for the Society, and Vince is much to be thanked.

1987 AAS Meeting T-shirts

white printing on red
50% cotton, 50% polyester
sizes S, M, L, XL

If you want a T-shirt from the meetings, Send $8 by December 1 +$1.50 for shipping (UPS) and indicate the size you want. Checks should be made out to Herb Levi (MCZ, 26 Oxford Street, Cambridge, MA 02138). Shirts will be shipped by December 15.

Official Lists and Indexes of names and Works in Zoology

A revised and updated edition of the Official Lists and Indexes of Names and Works in Zoology has now been published. For the first time all the names and works on which the International Commission on Zoological Nomenclature has ruled since it was set up in 1895 are brought together in a single volume. Entries are arranged in four sections giving in alphabetical order the family-group names, generic names, specific names and titles of works which have been placed on the Official Lists or the Official Indexes. There are about 9,900 entries of which 134 are for works. In addition, there is a full systematic index and a reference to all relevant Opinions and Directions. The volume is 366 pages, size A4, casebound. Copies can be ordered from The International Trust for Zoological Nomenclature, c/o British Museum (Natural History), Cromwell Road, London SW7 5BD, U.K. Price £60 or $110, or The American Association for Zoological Nomenclature, c/o NHB Stop 163, National Museum of Natural History, Washington, D.C. 20560, U.S.A. Price $110 ($100 to members of A.A.Z.N.)

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Tribute to Dr. Herb Levi

On the Boston Harbor cruise following the Harvard meetings, Dr. Levi's students presented him with a plaque which read:

In appreciation
to
Herbert W. Levi
On the occasion of our homecoming
to the Museum of Comparative Zoology
we, your current and former graduate students,
present this plaque with deepest gratitude
for your support and your example as our teacher
and for your dedication to science
and contributions to Arachnology.

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Checklist of Panamanian Spiders

After a first announcement during the IX International Congress of Arachnology 1983 in Panama, we can now present a first draft of a preliminary check list of the spider fauna of Panama. It comprises more than 1300 species and is based on a large series of our own collections and records in more than 150 publications. This list is the result of a joint effort of Bruce Cutler (St. Paul), Stefan Heimer (Dresden) and other arachnologists who sent us records of specimens. Before the final publication we want to give interested arachnologists the opportunity to give comments and additions to our list. For a copy of this paper please write to Wolfgang Nentwig, Department of Zoology, University of Regensburg, D-8400 Regensburg, Federal Republic of Germany.

Wolfgang Nentwig

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11th International Congress - 1989

The 11th International Congress of Arachnology will be held at Turku, Finland on 7 - 12 August 1989. The Zoological Museum of the University of Finland will be the host. In addition to lectures, papers, posters, and films, there will be field trips to the southwest Finnish archipelago and to Lapland. If you are are interested in attending, you should contact The Secretary, 11th International Congress of Arachnology, Zoological Museum, University of Turku, SF - 20500 Turku, Finland immediately.

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Call for Nominations for New Members of the International Commission on Zoological Nomenclature

The Commission invites nominations, by any person or institution, of candidates for membership. Members of the Commission must be scientists, irrespective of nationality, with a distinguished record in any branch of zoology, who are known to have an interest in zoological nomenclature. Nominations, giving dates of birth, nationality and qualifications of the candidate should be sent by 31 March 1988 to: The Executive Secretary, International Commission on Zoological Nomenclature, c/o British Museum (Natural History), Cromwell Road, London SW7 5BD, U.K.

ABSTRACTS OF PAPERS PRESENTED AT THE 1987 ANNUAL MEETING HARVARD UNIVERSITY

Abstracts for the Spider Silk Symposium will be printed in the Spring issue of the newsletter.

A revision of the genus Islandiana.

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In 1965 Ivie published the last taxonomic paper on the genus Islandiana, covering 13 species and describing 8 new species. An examination of specimens from three North American museums has now increased the number of species to 20. Some of the past taxonomic problems in this genus are now clarified by geographic distribution and different ecological preferences.

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Group selection and female-biased sex ratios in social spiders.

AVILES, LETICIA
MUSEUM OF COMPARATIVE ZOOLOGY
HARVARD UNIVERSITY

Highly female-biased sex ratios are a common feature of the 15 species of spiders that can be singled out as quasisocial for exhibiting communal brood care, non-overlapping generations and lack of reproductive castes. This violation of Fisher's principle can be viewed as the result of selection on the colonies as units due to their permanent sociality, isolation and proliferation from a single parental source. Pilot computer runs of a model of polygenic inheritance that simulates this population structure show that differential proliferation of colonies resulting from sex-ratio-correlated growth rate and size differences can effectively counteract the action of fisherian selection within the groups under a range of within and between colony genetic variances.

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Correlation of fat catabolism with molting in spiders.

AYYAGARI, RAO
LINDENWOOD COLLEGE, ST. CHARLES, MISSOURI, 63301

Correlation of fat catabolism with molting in spiders. The question of stored fat as the major source of energy during the considerable period of inactivity immediately after molting was examined in Frontinella pyramitella spiders. Earlier workers showed the presence of large number of fat droplets in spider hemolymph and that the enzyme glycerol-3-phosphate dehydrogenase (GPDH) plays a key role in the degradation of these stored fats. In the present study the levels of GPDH were assayed in spiders before and after molting. Large numbers of spiders were raised in petri dishes and spiders which molted were collected and the legs were detached to collect the hemolymph in capillary tubes. Enzyme assay was performed according to the method of Prestwich and Ing(Comp. Biochem. & Physiol.,72B, 295-302, 1982). Preliminary results show an increase in GPDH levels in spiders which molted, thus suggesting a correlation between molting and higher rate of fat catabolism. (paper not presented)

The spider genus Cybaeota (Araneae:Agelenidae).

BENNETT, ROBERT G.
DEPT. OF ENVIRONMENTAL BIOLOGY
UNIVERSITY OF GUELPH
GUELPH, Ontario N1G 2W1
CANADA

Cybaeota Chamberlin and Ivie, 1933 (a genus of small, poorly known, Nearctic, woodland spiders) is revised to include four species: C. concolor, C. munda, and C. shasta of Chamberlin and Ivie, 1937 and the type species C. calcarata (Emerton, 1911). Cybaeota nana Chamberlin and Ivie, 1937 is synonymized under C. concolor. Cybaeota vancouverana and C. wasatchensis (both of Chamberlin and Ivie, 1937) are synonymized under C. shasta. The relationship of Cybaeota to other Cybaeinae is discussed.

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Biogeography of Pacific Island spiders: a progress report.

BERRY, JIM, BUTLER UNIVERSITY, INDIANAPOLIS, IN
BEATTY, JOE, SOUTHERN ILLINOIS UNIVERSITY,
CARBONDALE, IL

We have collected about 400 species of spiders from the Caroline, Marshall, Samoa, Marquesas, Society, Cook and Fiji Island groups. The fauna, largely derived from the Asian, Indo-Malaysian and New Guinean regions, decreases with increasing distance from the source areas, decreasing island size, and with decreasing rainfall. Some families are rare (e.g., Oxyopidae, Thomisidae and Gnaphosidae), while others are abundant (e.g., Oonopidae, Theridiidae and Salticidae). Many of the 400 species are pan-tropical and are common throughout the islands, while others are apparently restricted to a single island or island group. For example, of the 40 species of salticids collected, over half were taken on only one or two islands, while others were so widespread as to be almost ubiquitous.

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Meteorological aspects of ballooning spiders.

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The aerial dispersal of organisms is purported to be important to the recolonization of disturbed habitats. Many spiders balloon by silken threads on wind currents for long distances, and thus disperse to new habitats. To estimate the distances that spiders are able to aerially disperse, it is necessary to know the meteorological conditions associated with ballooning. For six weeks in the fall and spring, I collected airborne spiders daily from sticky traps extended from a 45 m tower at five heights throughout the forest canopy. Climatological data were collected continuously from the tower during the study. Preliminary results indicate that spider numbers are negatively correlated with wind speed. The highest percentage of spiders collected was at 22m, immediately above the forest canopy. Results will be discussed in terms of the potential of spiders as colonizers of disturbed habitats.

The influence of spatial and temporal variation in prey availability on the behavior of Argiope keyserlingi.

BRADLEY, RICHARD
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Abundance and spatial distribution of aerial arthropods were analyzed for potential prey of A. keyserlingi near Sydney, NSW Australia between 1983 and 1986. These data were compared to census data on the spiders from sixteen 15 m x 15 m field plots.

Food supplementation experiments were conducted on adult female spiders in the field and subsequent movement, survival and fecundity were assessed. Feeding experiments were conducted in the laboratory where growth and fecundity were also measured.

The results of this work indicate that supplemental food does influence the behavior and fecundity of A. keyserlingi. There is evidence that prey distribution is unpredictable in time and space and that neither the activity patterns nor density of the spiders track fluctuations in prey abundance.

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The recognition of species in the Lycosa helluo group (Araneae: Lycosidae).

BRADY, ALLEN R.,
HOPE COLLEGE,
HOLLAND, MICHIGAN

Separation of closely related species in the Lycosidae has been classically dependent upon the comparison of female epigyna and male palpi to determine status. Whereas color patterns and bodily proportions of related species may offer little to distinguish them, characteristics of the male and female genitalia often provide reliable taxonomic differences. Once differences in the female epigyna or the male palpi are discovered, other differences in details of morphology or coloration often appear. Less often, species recognition occurs by noting differences in habitat preference or reproductive behavior between populations that differ little, if at all, in genitalic structure. Examples of this kind provide a difficult challenge for the taxonomist.

Within the Lycosa helluo group there are several species that show almost no consistent differences in genitalic structure. There do seem to be differences in color patterns, but these are not always clear cut either. A comparison of the means of morphological features (such as body size) indicates differences between certain of these species. One problem in the helluo group is that several of these species are widespread geographically yet show little range overlap. [Are they different species or do they simply represent geographic variants?] Another problem arises with specimens collected from the same geographic area at the same time of year which exhibit a wide range of sizes. [Do these specimens represent a highly variable species, or do some represent a cryptic species?] Field investigations involving close attention to specific habitats, and laboratory studies involving observations of courtship and the collection of life history data may provide important clues to the evolutionary status of these species in the helluo group.

Distributional ecology of two Geolycosa species in Florida.

CARREL, JAMES E., HASKINS, MARY F., AND YANG, ZHAOFEN.
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DIVISION OF BIOLOGICAL SCIENCES, 209 TUCKER HALL,
COLUMBIA, MISSOURI 65211

We wished to describe the spatial distribution and microhabitat characteristics of two Geolycosa species that are endemic and sympatric at the Archbold Biological Station in south-central Florida. Preliminary studies in a 30 x 50 m plot in an old firelane showed generally that G. micanopy is present in areas with moderate litter cover on the ground whereas G. xera archboldi, a rare species only known from the Station and its vicinity, is present in barren sand free of litter. In addition, burrow openings, as mapped to 0.1 m, are aggregated across the landscape even when litter abundance is considered. We tested these generalizations by repeating this study in a 30 x 50 m plot located in a scrubby flatwoods undisturbed by human activity for several decades except for two controlled burns, the last having occurred in 1985. We obtained results similar to those in the first study even though spider densities in the scrubby flatwoods plot were five time greater than in the firelane. We conclude that these Geolycosa species are spatially segregated from each other in largely monospecific aggregations. This may occur as the result of each species having well defined habitat preferences.

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Availability of sperm and male Nephila reproduction.

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DEPARTMENT OF PSYCHOLOGY
TULANE UNIVERSITY
NEW ORLEANS, LA 70118

A critical determinant of male reproductive success is the time course of spermatogenesis and availability of sperm. Spermatogenesis in spiders is known to occur in the antipenultimate and penultimate instars. However, less is known about sperm production after maturation when the male is sexually active and potentially depleting his stores.

I assessed sperm availability in male Nephila clavipes by allowing marked individuals to have successive access to two or three sexually receptive females. 13 males were added to the cages of individually-housed females approaching their final molt and mating was observed. Males were removed and females sacrificed to check for sperm. Males were then added to a second female about to molt and the process repeated. Ten males were sacrificed after removal from the second female to check for sperm. Three males were added to a third receptive female and sacrificed after the female's molt. All of the first females' and none of the second or third females' storage sacs contained sperm. None of the males' palps contained sperm. Some males were sacrificed long after the expected longevity of a male held even under captive, relatively protected conditions. Thus, I conclude that male N. clavipes deplete their sperm stores after mating with one female at the time of her final molt.

Such depletion precludes the male from inseminating more than one female. Depletion is discussed in terms of high male mortality when moving between female webs, intense inter-male competition, and a sperm precedence priority pattern noted in this species.

Mate choice by female golden orb-weavers (Nephila clavipes).

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Research on intersexual selection in orb-weaving spiders has been sparse. Females might choose mates prior to copulation when males are competing for position on the female's web, during copulation, or in the form of sperm uptake or utilization. In this paper we examine sexual selection by observing the behavior of virgin female Nephila clavipes prior to and at their final molt, or two weeks postmolt.

Analysis of census data gathered on marked, unrestrained animals indicates that there might not be pre-copulatory selection of mates by females. Small males were as successful as large males in copulating and just prior to their final molt females did not appear to be differentially aggressive toward smaller males.

Observations of captive subjects indicated that females do not appear to monitor gross physical characteristics of the male during copulation. Smaller and larger males mated with about equal frequency and males with four legs (who could theoretically be at a disadvantage during courtship mated with about equal frequency as those with 7 or 8 legs. Examination of sperm storage sacs indicated that all females save two with four-legged males had taken up sperm. Mating had been observed in one of these two cases. Thus, there is no strong evidence in these pilot data indicating that sexual selection operates at this time. However, after sperm transfer, females were more likely to catch and eat four-legged males than those with 7 or 8 legs.

Our pilot data reveal no compelling evidence of female sexual selection in Nephila. In light of the intense intrasexual selection of males, perhaps mate choice by female Nephila is not beneficial. However, a more detailed analysis, particularly of numbers of sperm actually taken up and then utilized, is clearly needed.

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Patterns of variation, taxonomic hypotheses and research opportunities in Euagrus (Araneae, Dipluridae).

COYLE, FREDERICK A.
DEPARTMENT OF BIOLOGY
WESTERN CAROLINA UNIVERSITY, CULLOWHEE, NC 28723

A taxonomic revision of the North and Central American funnel-web mygalomorph genus Euagrus is now complete. The present paper, based upon that revision, describes some of the observed patterns of variation (intraindividual, intrapopulation, and geographic) in Euagrus morphology, examines how these patterns have been used to formulate and test hypotheses about the presence or absence of intrinsic reproductive isolation between populations, and describes research opportunities that now exist as a result of the revision. These opportunities include 1) testing Eberhard's hypothesis that sexual selection by female choice drives the evolution of mating claspers, 2) estimating the rates of evolution of reproductive isolating mechanisms, and 3) examining the effect of natural selection in cave environments.

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A study of disturbance behaviors in Uloborus glomosus as possible predator avoidance strategies.

CUSHING, PAULA E.
VIRGINIA TECH
BLACKSBURG, VA 24061

The horizontal orb-weaving spider, Uloborus glomosus, reacts to disturbance by showing one of several distinct responses: shaking the web; jumping from the web and hanging from a silk dragline; moving to the edge of the web; or showing no response. I conducted surveys to study the disturbance behaviors shown by adult (6th instar females) and juvenile (3rd, 4th, and 5th instar) spiders. I also reared spiders in the lab from hatching through maturity to determine if there was a developmental pattern in the expression of these behaviors.

Survey and developmental data show that: 1) 2nd instar (newly hatched) spiderlings never exhibit the shaking response; 2) adult females with eggsacs in the web tend to show no response (they remain with their eggsacs) 3) adults and juveniles in the field commonly showed the jumping behavior, whereas it was rarely observed in lab-reared spiders. These results suggest that there may be both developmental and environmental factors involved in the manifestation of the disturbance behaviors.

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Aspects of prey capture behavior of jumping spiders.

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Adult Phidippus spp. can distinguish between different types of prey and use different attack strategies depending on, in order of apparent importance, prey motility and prey shape. Slower moving prey (moth larvae) were attacked at a more leisurely pace and at a closer distance than were faster moving prey (house flies). A subsequent experiment using Plexippus paykulli showed that these jumping spiders could distinguish between alate and non-alate ants. The P. paykulli generally would attack alates but avoid non-alates; the spiders could be enticed into attacking non-alates by gluing a false wing to the thorax of the ant. A third experiment with naive Phidippus regius spiderlings showed that: 1) spiderlings would generally attack any appropriate-sized prey offered, 2) spiderlings attacked similar prey differently, depending on whether or not wings were present (apparently an inate behavior), and 3) spiderlings learned to leave dangerous prey alone at least for a few days.

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Evidence for heterochrony as an innovator of macroevolutionary novelty in arachnids.

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Certain facts of developmental anatomy in extant merostomes and arachnids uphold a theory that a change in developmental timing (i.e., heterochrony) has produced the macroevolutionary novelty that is synapomorphic for the clade of arachnids that possesses book lungs (i.e., the clade Pulmonata). This clade

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includes the orders Scorpionida, Uropygida, Schizomida, Amblypygida and Araneida. The theory is here endorsed that this group of arachnid orders forms a natural monophyletic assemblage.

A "thoracic sinus" arterial morphology exists in the adults of all pulmonate arachnids, and this same morphology is traversed as a transient stage in the cardiovascular development of the merostome, Limulus. This coincidence of developmental homology is here interpreted as neoteny, since it is probably that the cardiovascular development of Limulus is representative of that of the extinct eurypterid ancestors of pulmonate arachnids. Neoteny is one of the two kinds of paedomorphosis, and paedomorphosis is here regarded as an example of heterochrony.

Moreover, the adult periganglionic arterial morphology of Limulus exists in a homologous condition in the adults of all the apulmonate orders of arachnids (i.e., those which lack book lungs). It is here propounded that a physiological contingency not yet understood makes the periganglionic arterial morphology unnecessary in the presence of book lungs. An idea is proposed that a single regulatory gene mutation was solely responsible for stopping short the arterial development, thus creating the adult "thoracic sinus" arterial morphology in the immediate ancestors of pulmonate arachnids. Furthermore, it is postulated that this neotenous retardation of arterial development was a preadaptation to the terrestrial requirement of breathing out of water by means of book lungs.

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Cooperative predation and optimal group size in Mallos gregalis.

FRITZ, DEBORAH M. AND UETZ, GEORGE W.
UNIVERSITY OF CINCINNATI,
DEPARTMENT OF BIOLOGICAL SCIENCES
CINCINNATI, OHIO 45221

Feeding experiments were conducted in order to investigate the dynamics of cooperative prey capture and feeding in the social spider, Mallos gregalis. The amount of time required to detect a prey item was found to be negatively correlated with group size and a significant negative correlation was found between the time required to subdue the prey and the number of spiders attacking. In addition, there is a positive correlation between the number of spiders attacking and the size of the group. Hence, one of the advantages conferred upon these spiders by the cooperative nature of their prey capture may be a reduction in the amount of time required to detect & subdue potential prey. Amount of biomass extracted/spider was calculated for both solitary individuals and spiders feeding in groups. These data were used to predict an optimal feeding group size of 4-5 individuals. This prediction is consistent with the sizes of feeding groups observed in this and previous studies.

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A review of the African trap-door spiders of the family Migidae (Araneae; Mygalomorph).

GRISWOLD, CHARLES E.
ENTOMOLOGY DEPARTMENT
AMERICAN MUSEUM OF NATURAL HISTORY
CENTRAL PARK WEST AT 79th ST.
NEW YORK, NY 10024

The African members of the family Migidae, consisting of two genera, are reviewed. Poecilomigas Simon, consisting of 3 species, is an arboreal group restricted to the forests and wooded areas of the eastern part of the continent. It is a member of the subfamily Miginae, and shows affinities to taxa from Australia, New Zealand, and New Caledonia. Moggridgea O. P. Cambridge, a member of the subfamily Paramiginae, includes 31 species. Its sister-group, Micromesomma, as well as the other Paramiginae, occur in Madagascar. Moggridgea is divided into 4 clades, 2 of which are widespread in Africa and certain surrounding islands, and two of which are restricted to, and highly differentiated in, southern Africa. A cladogram for Moggridgea is proposed, and the affinities, geography, and natural history of each genus are discussed. (paper not presented)

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Natural history of a funnel-web building wolf spider.

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Sossipus placidus and its congeners are unusual among wolf spiders (Lycosidae) in North America in that they build funnel-webs for prey capture and other functions much as agelenids do. Furthermore, S. placidus is classified by the State of Florida as an endangered species because until 1986 only approximately twelve specimens had ever been collected. All came from native scrubby habitats at or near the Archbold Biological Station in south-central Florida, a region which is suffering rapid destruction of native habitats as citrus groves and retirement communities are developed. In February 1987 we located nine individual spiders of this species on the property of the Archbold Biological Station. We described the size of each spider's web, the vegetation in the vicinity of each web, and the diameter of each spider's burrow. Subsequently we collected the spiders and made plaster casts of their burrows. Individual spiders were weighed and body measurements were recorded. Two subadult males in March 1987 molted to adulthood, making these specimens among the first sexually mature males ever recorded. We currently are studying the burrowing behavior of spiders under laboratory conditions to verify the architecture of their burrows found in the field.

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Thermoregulation in Metepeira: some initial data.

HIEBER, CRAIG S.
ST. ANSELM COLLEGE
DEPARTMENT OF BIOLOGY
MANCHESTER, NH 03102

Here I present information on the thermoregulatory behavior of Metepeira spinipes and Metepeira incrassata. Data is presented on the thermal climate of M. spinipes, the behavioral tactics used by both species to control thermal load, and the upper critical temperatures for both species as determined in the laboratory. These data are compared to existing data for other orb-weavers and are discussed with regard to habitat and the evolution of coloniality.

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Preliminary investigation of mixed-species groups of spiders in tropical Mexico.

HODGE, MAGGIE
UNIVERSITY OF CINCINNATI
DEPARTMENT OF BIOLOGICAL SCIENCES, M.L. #6
CINCINNATI, OHIO 45221

Although relatively unstudied, mixed-species groups of web-building spiders have often been observed. This

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study examines associations between normally solitary spider species and web colonies of a communal orb weaving spider, Metepeira incrassata F.O. Pickard Cambridge, and examine in detail the relationship between Metepeira and its most frequent associate, Nephila clavipes (L.) (Araneae: Araneidae). During July through September 1986, research was initiated with respect to three specific objectives: (1) to verify, through quantitive means, whether these associations are random or occur with an ecologically significant pattern; (2) to determine the mechanisms of formation and maintenance of the associations through observation and experimental manipulation; (3) to determine the nature of the Metepeira-Nephila association and test hypotheses concerning the costs and benefits to each species of living in a mixed-species group. The pattern of association was found to be significantly different from random association. Of the benefits investigated, it was found that Nephila associated with Metepeira consumed far greater biomass per individual than did solitary individuals. Other relevant observations are discussed.

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New interest in neuroactive spider toxins as research and therapeutic tools.

JACKSON, HUNTER AND T.N. PARKS
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The neuroactive properties of certain spider venoms (e.g., black widow spider venom) have been known for some time. Over the last few years, however, spider venoms have come under increasing scrutiny as a source of other neuroactive compounds. In particular, the paralytic action of many venoms on insects, which use glutamate as a neuromuscular transmitter, has suggested that spider venoms may be a source of excitatory amino acid antagonists. Usherwood and collegues, among others, have demonstrated that several Araneid spider venoms contain toxins that produce specific, postsynaptic blockade of glutamatergic transmission in insects. We have found that these venoms produce similar effects in the vertebrate CNS although apparently by a somewhat different mechanism.

In addition, recent work has revealed number of spider toxins that act on Ca channels. Two of these are contained in venom from the funnel-web spider Agelenopsis aperta. The larger of the two toxins produces long-lasting blockade of vertebrate CNS Ca channels. The smaller produces a readily reversible block ade and is effective on vertebrate neuronal and cardiac Ca channels.

The discovery of these two classes of neuroactive toxins in spider venoms has created considerable interest in spider venoms on the part of workers in diverse areas. Much of this interest stems from potential therapeutic applications of excitatory amino acid antagonists and Ca channel blockers as well as their possible usefulness to the agrichemical industry. It seems likely, then, that the next few years will be a period of unusual activity in the field of spider venom toxinology.

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Species groups, sibling species and parallel origin of social behavior in Stegodyphus (Araneae:Eresidae).

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Studies on the biology of social spiders of the genus Stegodyphus have been hampered by unsolved taxonomic problems. The introduction of too many specific names (38) may in part be explained by an unusual variation in size and colouration not sufficiently recognized by previous authors.

Our study of extensive materials revealed that the genus comprises various species groups. Some of them include solitary as well as gregarious forms. Thus social communities are supposed to have originated independently at least 3 times. Conspicuous differences in behavior in closely allied species are correlated with unusually slight changes in morphological characters. Various cases of sibling species have been ascertained.

Specimens of solitary species are larger in size. In gregarious species individuals show juvenile characters in their prosoma shape. It is assumed that sexual maturity in gregarious Stegodyphus is reached by fener moultings. The biology of hitherto neglected solitary species should be adequately studied in order to achieve a better understanding of the various origins of gregarious behavior.

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Spider web geometry.

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My aim is to gather from spider studies, examples where geometrical ideas elucidate general principles of growth, form, behavior, and reproduction. Thus a mesh or web may be viewed as consisting of points (nodes) and lines as in geometry, graph theory, electric circuits and neural networks - to say nothing of chain molecules, polymers, textiles, strings, ... Less abstract is the view of a spider wrapping its prey as the formation of a Moebius strip. This is homologous to a twisted helix and helps understand facts about DNA. The Moebius transformation which I hope to illustrate led Poincaré to the great discovery of automorphic forms. Species replication is an automorphism!

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Spider communities in some Wisconsin prairies and similar habitats.

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Spider communities were studied in three prairie sites, two hayfields and one pasture in Wisconsin. Specimens were collected by pitfall trapping and quadrat sampling. The vegetational data were recorded in late May and early June. The number of species and individuals per quadrat and the diversity (Shannon-Weaver index) differed significantly between prairies and other sites. Pitfall-trap data confirm this trend only for one of the sampling sites. The area-species curve for the prairie sites does not follow the predictions of the island biogeography model. Correlations of species richness with vegetational data and prey-abundance are discussed.

The significance of visual vs. vibratory stimuli in the nocturnal capture of fireflies by lycosid spiders.

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We decided to examine the untested assertion of Lloyd (1977) that wolf spiders such as Lycosa rabida rely on visual cues when preying on fireflies. Under controlled conditions in the laboratory, individuals of L. rabida and L. punctulata were exposed to both natural and simulated firefly flashing. The latter was provided by LED's, powered by a pulse generator, that produced either a constant or a patterned light stimulus. We also ran tests to determine if responsiveness is greater to moving light sources vs. the stationary ones used in the above experiments.

We found that the visual stimuli elicited orientation or approach in only 25 percent of the individuals of each species. As to constant vs. flashing lights, in only one of the test series did constant lights elicit somewhat better responses than flash patterns. In regard to moving vs. stationary lights, the former did not yield greater response levels than the latter.

To determine the importance of vibratory cues, we offered crawling fireflies to blinded spiders in both the arena and on living plants. Response levels were 85 and 100 percent respectively. Thus, contrary to Lloyd's assertion, our data suggest that some, perhaps most, predation by wolf spiders on fireflies involves vibratory rather than visual stimuli.

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The galathea group of Metaphidippus (Araneae:Salticidae).

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The galathea species group, now placed in Metaphidippus, contains more than 30 species of jumping spiders from North and Central America, including the familiar M. galathea, M. protervus, and M. aeneolus. Species in the group are most easily distinguished from one another by the embolus and face markings in males, and by epigynal topography and abdominal markings in females. The group's monophyly is indicated by two projections on the embolus retrolateral to the opening, a ridge just ventral to the tibial apophysis, and long, thickened rims on the epigynal openings. The generic placement of the group is in doubt: the type of Metaphidippus is a long-jawed Costa Rican species unlike our North American "Metaphidippus", sharing apomorphies instead with the genera Messua and Bagheera. The galathea group's closest relatives are not confidently known, though Eris and Nagaina are contenders on the basis of a common form of courtship.

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Use of setae in egg sac construction in two species of New World Theraphosid

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Certain species of New World tarantula have long been known to possess a field of urticating setae on the posterior region of the abdomen, however their structure and mode of action have only recently been described. The Theraphosids Theraphosa leblondi and an unidentified species from Puerto Misuali, Ecuador have been observed to incorporate abdominal setae into the egg sac. Setae from the lateral portions of the abdomen are used, in contrast to the posterior setae used in defense. The adaptive significance of this behavior is investigated.

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Collar door and trapdoor construction in two Mygalomorph spider families.

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The hypothesis that the collar door is the ancestral entrance construct in the family Antrodiaetidae was tested by comparing the entrance construction of Aliatypus thompsoni and Antrodiaetus unicolor. Descriptions of their entrance construction behaviors and those of a species from each of the ctenizid genera Hebestatis and Ummidia demonstrate a general sequence in construction behavior and show marked similarities in the form and duration of the individual units of these behavioral sequences. Differences in the behaviors include: use of the pedipalps during soil release, placement and repetitions of rim and door molding, placement of silk and the occurrence of door fit testing and bevelling. In the Antrodiaetidae, the great similarity in the construction of their different doors indicates very little genetic change is necessary to evolve one door form from the other and the differences observed do not indicate the direction of the evolution of door form.
(paper not presented)

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Nest Associates of two species of group-living Stegodyphus (Araneae:Eresidae) in southern Africa.

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The colony retreats, or nests, of the group-living eresid spiders, Stegodyphus mimosarum Pavesi and Stegodyphus dumicola Pocock, host a complex community of organisms with many types of trophic interactions. Five main classes of nest associates were found in occupied Stegodyphus nests: (1) parasitoids and predators of Stegodyphus; (2) kleptoparasites which steal or share prey items caught in Stegodyphus trap webs; (3) scavengers which feed on nest debris; (4) spiders, insects, and small mammals which use a portion of the nest as a retreat; and (5) predators and parasitoids of all of the above. Some members of classes (1), (2), and (3) have highly specialized behaviors and possibly are obligate associates of group-living Stegodyphus in southern Africa. Three of these will be discussed in detail: (1) Pseudopompilus funereus Arnold (Hymenoptera: Pompilidae), a parasitoid of S. mimosarum and S. dumicola; (2) Archaeodictyna sp. (Araneae: Dictynidae), a kleptoparasite and nest inquiline; and (3) Loryma sp. (Lepidoptera: Pyralidae), a scavenger of old prey items and an opportunistic predator of Stegodyphus egg sacs.

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Nest-site acceptance by the crab spider Misumena vatia.

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Postreproductive crab spiders Misumena vatia removed from their nests for up to several hours almost always accept them if returned. This response is not highly

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1988 ANNUAL MEETING
New Mexico State University
28-30 June 1988

PREREGISTRATION AND CALL FOR PAPERS ENCLOSED

Please Note - this is the first and only call for papers and registration that will be issued to members.
Hosts: Dr. David B. Richman, Dept. Entomology, Plant Pathology & Weed Sciences; and Dr. Marsha Conley, Dept. Biology, New Mexico State University, Las Cruces, New Mexico 88003. Phone (505) 646-3541 (DR), 646-5666 (MC).

Preliminary Schedule:

27 June, registration 4-8 PM; campus housing available.
Mixer 7-9 PM

28 June, registration 8-10 AM; contributed paper sessions-morning and afternoon.

29 June, contributed paper sessions-morning; symposium "Ecology and Behavior of Jumping Spiders"-afternoon
Banquet 7-9 PM

30 June, contributed paper sessions-morning and afternoon.

1-2 July, Fieldtrips

Transportation: Las Cruces Municipal Airport is serviced by a regional airline (Mesa Air) with connections to major carriers in Albuquerque and Denver. Free transportation to campus housing will be available to guests arriving by Mesa. Las Cruces is also accessible via a reasonably-priced shuttle van (approx. 1 hr. ride) from El Paso International Airport.

Accomodations: Air conditioned housing will be available in NMSU dormitory facilities. A cafeteria and snack bars are available on campus, and there are several cafes and restaurants within walking distance of the campus.

Local: Las Cruces is located in the valley of the Rio Grande, adjacent to the Organ Mts. (elev. >9000 ft) and approximately 50 miles north of of the Mexican border. Historic Old Mesilla, a settlement dating from the 1600's, borders Las Cruces to the west. The area is Chihuahuan Desert and weather in June is hot and dry, with daytime maxima near 100°F and night time minima near 60°F.

Evening Entertainment: Do you have films that you would like to share with AAS? Please let us know and we will schedule an evening slot.

ADVANCE REGISTRATION
Deadline 15 April 1988

Name_____
last first middle initial

Address_____

_____

_____

Daytime phone -_____

REGISTRATION FEES

Regular - $28 $_____

Student - $22 $_____

Banquet (29 June), Mexican food buffet, $6.50 per plate
_____ persons $_____

Total $_____

Please make check payable to AAS Meeting

FIELDTRIP RESERVATIONS - payment at meeting, price includes sack lunch and beverages.

Fieldtrip 1 (1 July) - USDA Jornada Experimental Range and Organ Mts. ($7) number of persons_____

Fieldtrip 2 (2 July) - White Sands National Monument and Lincoln National Forest ($14) number of persons_____

HOUSING

Do you need information on off-campus housing?_____

On-campus Housing reservations (payment on arrival):

_____rooms (2 single beds) @ $5-12 /room/night, double occupcy.
or @ $7-16 /room/night, single occupcy.
(exact rates depend on number of nights)

for June 26 27 28 29 30, July 1 2 3 (circle dates)

CALL FOR PAPERS - Deadline 15 April 1988

Abstracts should be submitted typed on plain paper, including title, author(s), addresses of author(s), and body of abstract, not to exceed 150 words. Please indicate what audiovisual equipment will be required, and whether the abstract is for a contributed paper or invited symposium paper. If paper is to be considered for a student award, please indicate.

Send registration, abstracts, and all prepayment to Dr. Marsha Conley, Department of Biology, Box 3AF, New Mexico State University, Las Cruces, NM 88003.

(continued from preceding page)

specific, for they will also accept, with varying frequency, several other stimuli, including nests of conspecifics and certain other species of spiders. Additionally, they respond positively to artificial nests and to Misumena nest silk, but not to unmanipulated leaves similar to those used to construct nests. The tendency to reclaim nests diminishes with increasing time of absence from the nest. These responses may usually permit the spiders to reoccupy their nests if displaced for short distances, as occasionally happens under natural conditions.

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Web-monitoring tactics and tracheal development in Uloboridae.

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Uloborids that spin reduced webs more actively monitor them than those that construct orb-webs. Hyptiotes use both their first and fourth legs to tense their triangle-webs, whereas Miagrammopes rely principally on their first legs to monitor and jerk their irregular webs. Each of these spiders have tracheae that extend into the prosoma, bifurcate, and enter the legs. To determine if the legs responsible for active web-monitoring tactics have more extensive tracheal supplies, I computed the total cross sectional area of the tracheae entering the legs of mature female orb-web and reduced web uloborids and divided each leg's value by the cross sectional area of the tracheal trunks that enter the prosoma.

These indexes reveal no significant differences between the relative tracheal supplies of the orb-weavers Waitkera waitkerensis, Tangaroa beattyi, and Uloborus glomosus. However, the first, third, and fourth legs of Hyptiotes cavatus and the first legs of both Miagrammopes animotus and Miagrammopes pinopus have greater relative tracheal supplies than those of the three orb weaving species. Relative to leg volume, the first and fourth legs of H. cavatus have the greatest and the first legs of Miagrammopes species the next greatest tracheal supplies. When tracheal lengths are considered, these differences in potential oxygen supplies remain. Because these differences are leg-specific and not species-specific, and because uloborids with the most extensive tracheal supplies are found in moist habitats, the observed differences can not be explained as adaptations to reduce respiratory water loss.

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Population viscosity, colony foundation and altruism: the limits of cooperation in group-founding spiders.

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Kin selection may be broken down into two components: intrafamily (or diluted kin group) and interfamily selection. At emergence an altruism coding allele necessarily declines in frequency within the family (group) after the expression of altruism; only through the differential production of reproductives between families can kin selection act to increase the global frequency of the 'altruistic' allele in the population. This requires that reproductives from different families intermix in competition for the same resources. When groups are formed through population viscosity, i.e., the regular association of conspecifics from the same parental group, such intermixing is limited. When individuals associate exclusively with same-parental-group-mates intermixing, and hence intergroup competition is precluded. Kin selection is then impossible, leading to the extinction of a 'altruistic' alleles. Colony foundation among mandatory group living, cooperative spiders appears highly viscous; in the case of budding or communally emigrating species they are wholely so. Altruism, if it exists, cannot be due to kin selection is such species. Further, if eusociality is the product of kin selection, social spiders should not exhibit the reproductive division of labor characteristic of the Hymenoptera.

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Functional responses and switching behavior of Tetragnatha laboriosa (Araneae:Tetragnathidae) and Clubiona pikei (Araneae:Clubionidae) for the corn aphids Rhopalosiphum maidis and R. padi (Homoptera:Aphididae).

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Laboratory experiments were performed to determine the functional responses and the switching behavior of two dominant spider species of southern Quebec (Canada) corn crops, Tetragnatha laboriosa Hentz and Clubiona pikei Gertsh, for the two aphid species, Rhopalosiphum maidis Fitch and R. padi L.. Each spider species was tested with one, and then with two aphid species at increasing prey density. Switching tests were done by offering the spiders two different ratios of aphid species (1:4 and 4:1). Both spider species showed sigmoid, complex (only C. pikei), dome-shaped and, more rarely, linear functional responses in both the monospecific and bispecific tests. Hence, the capture rates were often density dependent, although inversely density dependent capture rates were obtained at high prey densities. Both spider species consumed disproportionaly more R. maidis than R. padi, whatever the ratio. A greater exploration rate in the experimental spaces by R. maidis could explain the predators' preference. These results suggest that these spiders have the potential for being effective agents of biological control.

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Centruroides vittatus in south central Nebraska.

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In the Little Blue River valley of Thayer County there is an island community of the scorpion Centruroides vittatus (Say). The area in which the scorpions are found is located on the high flood plain of the Little Blue River. Field work up stream and down stream from the limestone areas have failed to yield scorpions. Studies of the ecological niches where scorpions have been found indicate that flat pieces of limestone provide the proper ecological niche for the scorpions. The population appears to not exceed 4 per square meter. In questioning farmers who live in the area, they state that scorpions have been present for years. The area where the scorpions are found has no agricultural value and the limestone is not used. Although the population is small there is good reason to believe that the scorpion population will exist for many years.

Preliminary manipulation of morph frequencies of Enoplognatha ovata (Araneae:Theridiidae) in natural populations.

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The theridiid Enoplognatha ovata displays a conspicuous color polymorphism characterized by three distinct phenotypes: (1) lineata, with a creamy yellow opisthosoma; (2) redimita, in which two dorsolateral red stripes are deposited over the lineata pattern; and (3) ovata characterized by a solid red shield that covers most of the dorsal opisthosoma, also deposited and over the lineata pattern. The three phenotypes are controlled by three color alleles (C^O,C^r,C^l) at an autosomal locus such that ovata(C^O) is dominant to redimita(C^r) which is in turn dominant to lineata(C^l). Frequencies of the color morphs follow a rank order of lineata redimita ovata within all North American populations we have examined. To date there is no direct evidence of selection on the color phenotypes.

We manipulated phenotypic frequencies of E. ovata in six of eleven local, indigenous populations in Maine in order to investigate possible fitness differences between red (redimita or ovata) or non-red (lineata) morphs. Natural frequencies of redimita females with egg sacs were either doubled or increased five-fold in the six manipulated populations, while the remaining five populations were left as undisturbed controls. Censusing adult females with egg sacs the following year revealed that redimita frequency declined markedly in perturbed and control plots. Both sets of plots differed significantly from expected frequencies of lineata and redimita assuming Hardy-Weinberg equilibrium.

Although selection against the redimita morph appears to have been demonstrated, immigration into censused areas by lineata spiders could also have produced the decline in redimita frequency. Our studies suggest that morph frequency changes may be caused by migration or selection operating independently or in concert. We outline additional field experiments, in progress, designed to assess the relative contributions of these two processes and thereby further resolve the selective basis of the color polymorphism in E. ovata.

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The spider fauna of alfalfa in the United States.

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A comparison was made between spider faunas of alfalfa from the literature and from our recent studies in New Mexico. We compared known faunas of alfalfa from New York, Virginia and California with the fauna in the Mesilla Valley near Las Cruces. Linyphiidae, Thomisidae and Tetragnathidae were abundant at all locations, but Lycosidae seemed to be one of the dominant families in the west in number of individuals. This did not extend to the number of species, and only one species of Pardosa was abundant in both California and New Mexico. In both cases the species was a member of the sternalis species group.

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The effects of female size and parasitoids on reproductive output in Lycosa rabida.

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GUARISCO, HANK
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The reproductive biology of the wolf spider Lycosa rabida was studied near Lawrence, Kansas during one field season. Females carried egg sacs or spiderlings during September and October. Clutch size ranged from 40 to 710 and was positively correlated with female body size. Egg sacs were parasitized by the neuropteran Mantispa interrupta and two previously undescribed hymenopterans. The incidence of parasitism varied among study sites, averaging 42% overall. Several egg sacs were infested by more than one species of parasitoid. One record of hyperparasitism also was documented. Parasitoids can significantly reduce the reproductive success of female Lycosa rabida.

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Substrate detection in scorpions: the role of the pectines.

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Scorpions select specific sandy substrates for the purposes of burrowing, prey capture and courtship. The means by which this selection is made is not understood, despite numerous studies of these behaviors. Recent evidence suggests that the pectines, paired sensory appendages unique to scorpions, may be capable of discriminating sand textures. We have studied the role of pectines in sand texture discrimination with a series of experiments in which animals were allowed to choose different sands. The time spent on each of the sands, and the animals' burrowing activities were noted before and after the pectines were covered. Other experiments examined whether scorpions could differentiate between sands treated with various chemicals, or if their preferences were altered by the presence of other scorpions. We report that scorpions are able to distinguish between similar-textured sands, and that the pectines may act as both mechanoreceptors and chemoreceptors to aid in this discrimination. Supported in part by a Cottrell College Science Grant from The Research Corporation.

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General nonresponsiveness of lycosid spiders to mirror-image stimulation.

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Male salticids commonly engage in display toward their mirror image, which indicates good acuity and feature recognition mechanisms. Since courtship is elicited in some male lycosids when a second male traverses the field of view, I decided to test members of this family for mirror-image responses.

I examined Schizocosa ocreata, S. saltatrix, Lycosa rabida, and L. punctulata, and expected the first species of each congeneric pair to be more responsive than the second, the former having more use of ornamented appendages and less use of acoustic signals during display. However, unlike many salticids, none

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of these lycosids showed orientation or agonistic display toward their mirror image. Almost all the males ignored their mirror image, even in tests with female pheromone triggering courtship. Only occasionally did there occur a possible response to the mirror image. Yet, testing with a moving male in a nearby acoustically isolated cage often elicited orientation and, in many cases, approach and display in males of all four species.

Such data suggest that lycosid spiders must be motionless to visually respond to conspecifics, which probably relates to their sit-and-wait mode of prey capture. Unlike salticids, lycosids probably have little or no ability to analyze retinal input consisting of a moving image against a background image that itself is moving due to the spider's own locomotory activity.

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Adhesion and proprioception: the functions of various hair types on the legs of spiders.

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In addition to numerous tactile hairs, ctenids such as Cupiennius salei Keys. (and many other "wandering spiders") have 2 types of specialized cuticular hairs located on opposite ends of the walking legs:

(i) Mechanoreceptive hair sensilla, arranged bilaterally as hair plates near the proximal edges of each coxa, are bent down by the pleural joint membrane when the coxa moves. We describe the fine structure (in cooperation with W. Gnatzy), the electrophysiological response characteristics, and the afferent projection areas of individual hair plate sensilla in the leg ganglia. Our results indicate that these hairs function as proprioceptors and may be involved in the control of posture and locomotion.

(ii) As is well known, scopula hairs on the ventral tarsi are adhesive organs. We recently found that C. salei leaves tiny, "wet" and non-volatile foot-prints when pulled away from clean glass. After the scopulae were treated with organic solvents, the foot-prints did not consistently appear while adhesion was not significantly altered. Other tests with various substrate materials demonstrate that the exact mechanism of tarsal adhesion must be complex: possibly it also involves capillary forces between the tiny cuticular extensions ("endfeet") of the scopula hairs and a thin fluid layer on the substrate, as was first suggested by Homann in 1957.

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The oldest spiders?

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Two spiders have been reported from the Devonian of Europe. Archaeometa? devonica Stormer comes from Alken an der Mosel. Based on Stormer's photographs and drawings, there seems to be little evidence that this poorly preserved fragment came from any arachnid or even an animal.

Palaeocteniza crassipes Hirst is a relatively well-preserved arachnid from the Rhynie Chert of Scotland. Only one specimen is known; intensive restudy of this specimen (using advanced microscopic and restoration techniques) is proceeding. The evidence for its "spiderness" is at best equivocal.

Type specimens of some Carboniferous arachnomorph spiders were recently studied in the British Museum. It is clear that careful preparation and examination will reveal much more information about them. Some reported specimens of Carboniferous mesotheles are (probably) not spiders, but amblypygids.

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Mating behavior and functional aspects of the copulatory organs in Dolomedes tenebrosus (Araneae, Pisauridae).

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For the first time, copulation in Dolomedes tenebrosus HENTZ, 1843, was observed. A single copulation was documented on videotape, while observing the behavior in the laboratory. The specimens were placed on a wire mesh. Phase I of the mating consisted of the male's courtship behavior, waving his front legs and stroking the female's legs. In Phase II, the male climed onto the female's dorsum, their bodies parallel but facing in opposite directions, as if anticipating the copulatory position usually used by lycosids and other hunting spiders. During Phase II, the male approached the female's venter about 34 times. Phase III was the copulation itself. The male crawled across the female's right side and onto her venter; the male's orientation was perpendicular to that of the female. This modification of the usual copulatory position of many other hunting spiders is presumably due to the small size of the male in Dolomedes tenebrosus (in most other Dolomedes-species the males are only slightly smaller than the females). The right palp was inserted. During courtship and copulation the female remained nearly motionless. During Phase I, at the first approach of the male, she pulled her legs closer to her body. During Phase II, when the male tried to pass to her ventral side, the female rocked her opisthosoma to faciliate the process. In Phase IV, the female clasped and began to eat the male. At this point we retrieved the male's body. Subsequent study of the expanded bulb revealed that a heavily sclerotized part of the embolic division fits snugly behind the tibial apophysis and apparently arrested the rotation of the bulb.

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Population genetics of solitary and social Anelosimus (Theridiidae).

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Genetic variation in solitary and cooperative species of Anelosimus was investigated using starch gel protein electrophoresis to detect polymorphic enzymes. Samples of the cooperative species A. eximius were collected by the author and others from Panama, Ecuador. Surinam, Trinidad and Peru. Samples of a second cooperative species, A. domingo, were collected from Surinam. Samples of a solitary species, A. studiosus, were collected from the southeastern United States, and a second, as yet unidentified solitary species was collected from Surinam. All samples were screened for polymorphisms in a set of 37 enzymes. (continued)

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The cooperative species were both highly monomorphic. In both species at most 8% of the loci detected were polymorphic in local populations. The solitary species, on the other hand, were highly polymorphic; for example in A. studiosus 56% of loci examined were polymorphic.

A. eximius, which has a large range covering most of tropical South America, shows evidence of population subdivision at two levels. There are fixed differences between populations west of the Andes (Panama and western Ecuador) and populations east of the Andes (eastern Ecuador, Surinam, Trinidad and Peru). There is also evidence of "private alleles" in local populations.

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Kaira, Mastophora, and Phoroncidia - a prey capture mechanism symmetry group?

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MUSEUM OF COMPARATIVE ZOOLOGY
CURRENT ADDRESS: c/o J. REISKIND/DEPT. ZOOLOGY
UNIV. OF FLORIDA
GAINESVILLE, FLORIDA 32611

Spiders in the araneoid genera Kaira, Mastophora, and Phoroncidia spin simple webs and are highly specialized predators of flies and/or moths. However, prey capture and web form is very different in each genus, and the spiders almost certainly represent independent evolutionary lines. For each genus, I discuss the evidence for attraction of prey by spiders.

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Sexual diethism in non-reproductive behaviors of spiders.

SUTER, ROBERT B., GLENN DOYLE, AND
LAUREN WALBERER
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Many of the behavioral differences between male and female spiders are directly associated with reproduction, and thus their divergent functions are readily understood. The adult lives of male and female spiders are so different, however, that the sexual diethism in many species is profound and pervades non-reproductive facets of behavior. We report here the beginning of an effort to elucidate some of these non-reproductive diethisms in bowl and doily spiders (Frontinella pyramitela: Araneae,Linyphiidae).

1) Female bowl and doily spiders are about 1.3 times the length and 2.0 times the mass of males. That size dimorphism means that the thermoregulatory behavior (primarily solar orientation) of the males will, at any ambient temperature, be less effective than that of the females. This reduced effectiveness is correlated with males being both less accurate in their orientation to the sun and slower to adopt the orientation posture under conditions in which both sexes eventually thermoregulate. 2) The males' relatively minor caloric requirements (cf. the females' yolk production) are apparently responsible for decreased motivation to capture prey, increased rate of satiation, and virtually non-existent increase in mass during adulthood. 3) That asymmetry in caloric requirements may also be responsible for the divergent responses of the two sexes to novel web-borne vibrational stimuli - males flee from such stimuli whereas females approach them.

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Embryo karyotypes of selected spider species.

TUGMAN, CATHY
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Somatic karyotypes of 11 species of spiders were prepared using five day old eggs. Spiders karyotyped included eight species of salticids: Maevia inclemens, Marpissa pikei, Metaphidippus sp., Metaphidippus galathea, Phidippus audax, Phidippus texanus, Platycryptus undatus and Salticus austinensis; one species of Araneidae: Eustala emertoni; one species of Gnaphosidae: Nodocion floridanus; and one species of Theridiidae: Steatoda triangulosa.

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Evidence for risk-sensitive foraging in colonial spiders.

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Colonial orb-weaving spiders (Metepeira spp.) from Mexico were studied to test predictions of risk-sensitive foraging theory: 1. group foraging increases prey capture/individual, and reduces prey variance; 2. spiders should forage in groups (risk-averse) when the average level of prey exceeds individual needs, and be solitary (risk-prone) when prey are scarce.

Laboratory and field studies show that group foraging increases capture efficiency and reduces variability in prey captures per individual. In desert/mesquite grassland habitats, where prey availability is low, M. atascadero forage solitarily in most cases. In tropical forest/agriculture sites, where prey are abundant M. incrassata forage in large colonies of thousands of webs. In intermediate habitats, M. spinipes forages solitarily or in groups, depending on prey availability. Over a range of sites with different levels of prey, M. spinipes shifts from a risk-prone to a risk-averse foraging strategy as prey increases. In localized sites of high prey abundance, M. atascadero shows a similar shift.

The influence of risk-sensitivity in foraging is discussed as an alternative explanation for the evolution of colonial behavior in web-building spiders.

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The effects of vegetation structure and fire on a prairie spider community.

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COLUMBIA, MO 65211

Previous work had suggested that prairie spider community parameters like numbers, biomass, and diversity indices could be partly explained by the age of the prairie in years since burning. Two possible causes of this effect, change in vegetation structure due to fire, and fire itself, were investigated experimentally at Tucker Prairie, Callaway Co., MO in the summer of 1986. Five 10 m x 10 m plots were laid out on new prairie and burned in March 1986. One plot had monocots removed by clipping, one had dicots removed by clipping, one had litter removed by raking, and two plots were designated as controls. These treatments were repeated on five plots on old prairie, last burned in 1983. Vegetation, microclimate, and spiders were sampled in August 1986. ANOVA indicated

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that variation in monocot height and dicot removal significantly affected spider numbers; variation in dicot height and fire affected mass; and dicot removal affected species richness and Simpson's index of diversity. The dominant species (numbers) changed from Wulfila saltabunda (Anyphaenidae) in new prairie to a lycosid species in old prairie. With one exception fire reduced the number of rare species ($1/m^2$) by approximately 5 in each treatment. The exception was litter removal where new prairie had seven more rare species than old prairie.

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Life cycle and population dynamics of the fishing spider Dolomedes triton (Araneae:Pisauridae).

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CANADA

As part of a comprehensive study of the biology of Dolomedes triton we explored life cycle and population dynamics of this species in Central Alberta in 1986. We used maximum carapace width of juvenile spiders as an indication of size ("age"). Adults were marked individually with dots of silk colour. The adult population was monitored every third day from May to September, juveniles were sampled in April, July, August, and October.

The seasonal changes of the "age" structure of the juvenile population suggest that Dolomedes triton reaches adulthood in its third summer. Dolomedes triton probably can hibernate in most juvenile stages, and main overwintering sites are still unknown. In the laboratory (T = 25 C, 18L:6D) spiderlings caught from nursery webs developed to adults after 9 to 12 molts (males: 10 to 12).

A total of 143 adults (64 males, 79 females) were marked on the main study pond. Half of the males were marked prior to May 24 whereas more than half of the females emerged after June 1. Male population size peaked by the end of May and dropped off steeply when female density increased from about 5 to 50 females within a week. Female population size remained constant (N 50) during June and dropped to some 20 females by the beginning of July when the first nursery webs were observed. Mean male life span was about 10 days (maximum: 35 days) that of females 30 days (maximum: 81 days). One week after marking (emergence) females became ovigerous, and after a further week they produced an egg sac which was carried around for three weeks. Overall 54 individual females were observed carrying an egg sac, 7 of which produced a second egg sac. On the study pond 38 nursery webs were observed, two of them containing two egg sacs. Egg sac carrying females and nursery webs showed a highly contagious distribution.

Abstracts for the Spider Silk Symposium will be printed in the Spring issue of the newsletter.

Nomenclature Notice

Opinion 1426 of the International Commission on Zoological Nomenclature (1987, Bulletin of Zoological Nomenclature 44(1):59-60) places the names Argyrodes Simon, 1864 and Robertus O. Pickard-Cambridge, 1897 on the Official List of Generic Names in Zoology. Also argyrodes Walckenaer, 1841 as published in the binomen Linyphia argyrodes (specific name of the type species of Argyrodes Simon, 1864) and neglectus O. Pickard-Cambridge, 1871 as published in the binomen Neriene neglecta (valid name at the time of the ruling for the type species of Robertus O. Pickard-Cambridge, 1879) on the Official List of Specific Names in Zoology. Opinion 1426 also places the names Argyrodes Guenée, 1845 and Ctenium Menge, 1871 on the Official Index of Rejected and Invalid Generic Names in Zoology.

Herbert W. Levi

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AAS Member Profile:

Steve Skinner

Arachnids' best public relations man may very well be Detroit police officer Steve Skinner. When he's not on duty as an investigative analyst, Steve dedicates a large portion of his time to public education about and photography of spiders. Steve is busy plowing the ground in Detroit area elementary schools where kids whose mothers disapprove of frogs in jars and creepy things in shoeboxes are finding out that knowing about spiders and collecting them is something that intelligent adults can do. Even unreconstructed adult spider smashers have their arachnophobia treated when Steve lectures at evening community education classes, at the Detroit Zoological Society, and the Audubon Society.

It all started when Steve was in northern Michigan doing some nature photography. He followed a strand of spider silk to its producer, made some photos, and when the prints came back he set out to identify that spider. That was in 1973. Since then, Steve has become an AAS member, participated in field research, and now has launched a new interest group of AAS members, the GLAS or Great Lakes Arachnological Society. As Steve tells it, interest grew at the 1987 Harvard meetings among midwestern AAS members for some interim opportunities to gather, do a little collecting, and swap general information.

If you are interested in more information about GLAS contact: Steve Skinner
5200 Neff
Detroit, Michigan 48224

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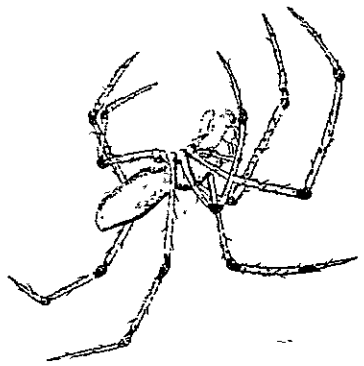

Field Trip Report
1987 Annual Meeting
Brent Opell

The two field trips that followed this year's meeting gave participants an opportunity to visit both coastal and inland habitats. On Friday, 19 June a group of about 45 arachnologists explored the Beaver Brook Reservation, located near Hollis, New Hampshire. This nature preserve is maintained by the Beaver Brook Association and includes mature forest, meadows, stream and a large pond with adjacent marshy habitat. After spending the morning walking the trails, we gathered for a sack lunch, some of Lorna Levi's brownies, and discussions of the morning's discoveries. Some continued their arachnologs, others collected, and a few slumbered in the sun for several hours before returning to Harvard.

On the following morning, a somewhat smaller group made its way, first by bus and then by ferry, to Martha's Vineyard where we were met by our guide, Tom Chase. We stopped first to explore the beach, salty marsh, and grassland of the island's southern shore. Here, even the most intense spider collectors were persuaded to collect a few ticks. Following lunch and a drive to the west end of the island, a short hike through the forest and scrub of Menemsha Hills brought us to a promontory overlooking Gay Head and the Elizabeth Islands. On the return to Oak Bluffs, our last stop at Martha's Vineyard State Forest provided forest and pond habitats and an opportunity for Fred Coyle and Robb Bennett to demonstrate their expertise in excavating Geolycosa from roadside banks.

Do You Have A Tip?

Most of us have developed a technique or method of our own involving the growth, collecting, handling, preserving or otherwise dealing with arachnids that might be of interest to other arachnologists. If you have a tip, send it to American Arachnology and it will be included in a future issue of the newsletter.

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Technique for Preserving Large Spiders

A problem frequently encountered when preserving large spiders is that the abdomen ruptures. This can be prevented if the specimen is refrigerated as soon as it is put into alcohol. The refrigeration prevents enzymatic decomposition and bacterial growth during the time the alcohol is penetrating the tissues. In addition to better tissue preservation, this technique seems to cause better retention of the brown and black colors.

Jim Berry
Butler University

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Address Changes

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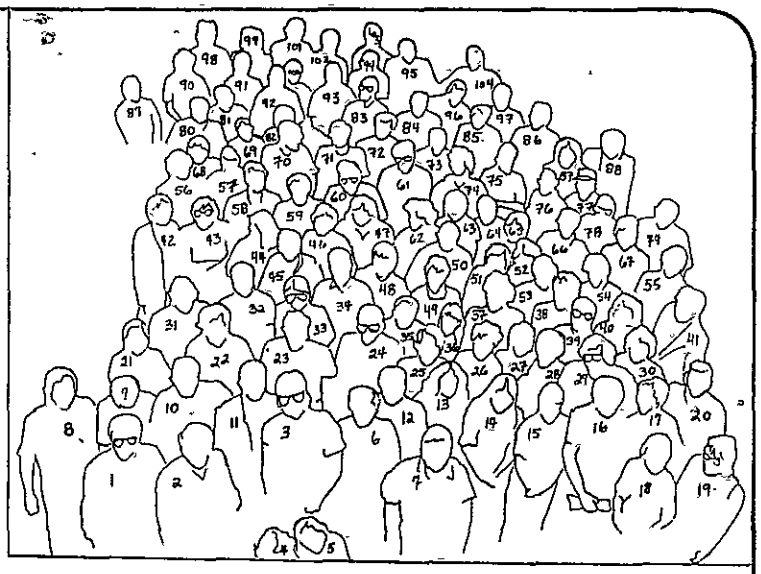

List of 1987 AAS meeting participants in group photo at Harvard University

1. Bruce Firstman
2. Bill Shear
3. Steve Skinner
4. Carrel children
5. Carrel children
6. Louis Sorkin
7. Joo-Pil Kim
8. Jim Carrel
9. Jan Weaver
10. Robert Breene
11. Bea Vogel
12. Takeo Yaginuma
13. Leslie Bishop
14. Deborah Smith
15. Yael Lubin
16. Gregory Pollock
17. Renee Lizotte
18. Kathleen L. Smith
19. Sarah Kariko
20. Jerome Rovner
21. Jackie Palmer
22. Lenny Vincent
23. Charles Griswold
24. Edwin Licht
25. Louis Provencher
26. Kathy Reid
27. Marion Fox
28. G.B. Edwards
29. Mark Stowe
30. Susan Riechert
31. Barbara Robinson
32. Jon Reiskind
33. Elizabeth Straszynski
34. Andy Penniman
35. Sonja Scheffer
36. Maggie Hodge
37. Sam Marshall
38. Wayne Maddison
39. David Richman
40. Mary A. Blackwood
41. Ed Tillinghast
42. Dee Woessner
43. Laura Leibensperger
44. Leticia Aviles
45. John Kochalka
46. Jim Redner
47. Nancy Reagan
48. David Maddison
49. Janet Rapp
50. William Rapp
51. J.P. Jass
52. Linda Rayor
53. Norman V. Horner
54. Cathy Tugman
55. Fred Coyle
56. Jacqueline Kovoor
57. Cassie Aithison
58. Blaine Hebert
59. Charlie Dondale
60. Daniel Jennings
61. Graeme Wilson
62. Antje Lisken
63. Marty Blasczyk
64. M. Kraus
65. J. Peaslee
66. ??
67. Richard Bradley
68. Petra Sierwald
69. Paula Cushing
70. Bob Suter
71. Terry Christenson
72. Jeffrey Cohn
73. Edson Smith
74. Graham Head
75. Gustavo Horminga
76. B. Peck
77. Scott Larcher
78. Jim Carico
79. Mark Townley
80. Brent Opell
81. R. Langer
82. Ernst Seyfarth
83. H.D. Cameron
84. Craig S. Heiber
85. Jim Berry
86. Doug Morse
87. Ron Huff
88. Otto Kraus
89. Steve Austad
90. Bill Eberhard
91. Gary Bernard
92. Allen Brady
93. Edward Silvestri
94. Herb Levi
95. Manfred Zimmermann
96. George Uetz
97. David Wise
98. Steven Roble
99. Patricia Roble
100. Cay Craig
101. Robb Bennett
102. Jon Coddington
103. J.P. Wojcicki
104. Paul Reillo

31 August 1987

THE AMERICAN ARACHNOLOGICAL SOCIETY

Department of Biology Norman V. Horner, Treasurer

Midwestern State University, Wichita Falls, Texas 76308

FINANCIAL STATEMENT

Balance Brought Forward from 9 June 1987			$ 4,581.69
DEPOSITS			
6-01-87	Interest on C.D.	47.66	
6-18-87	Dues (Delayed Deposit)	5.00	
6-29-87	Interest on C.D.	49.20	
7-06-87	Page chgs	100.00	
7-29-87	Interest on C.D.	49.32	
8-04-87	Spidera Genera of N.A.	10.00	
8-06-87	C.D.	10,000.00	
	Back Issues	390.00	
		10,651.18	
	Subtotal		15,232.87
EXPENSES			
6-10-87	Returned Check	12.00	
6-16-87	Rovner (postage and supplies)	40.74	
6-26-87	Returned Check	10.00	
7-06-87	Lynchburg College (Jour. exp.)	10.67	
8-03-87	Brent Opell (Newsletter exp.)	371.05	
8-04-87	Dues to BAS	1,715.00	
8-04-87	Dues to CIDA	1,999.00	
8-04-87	Dues to ASEA	730.00	
8-04-87	Dues to Revue Atach.	100.00	
8-04-87	Parker Square Bank (Int. Cash. Check)	4.00	
8-04-87	Back Issue Refund	10.00	
8-04-87	Parker Square Bank (Int. Cash. Check)	1.00	
8-25-87	Texas Tech Press (Printing Labels)	157.70	
8-29-87	American Arch. Soc. (trans. to Stratton)	7,000.00	
		12,161.16	
Bank Balance			$ 3,071.71
Certificate of Deposit #13290 (6 mo.)			10,000.00
Money transferred to Gail Stratton			7,000.00
Total Assets			20,071.71

Norman Horner, Treasurer

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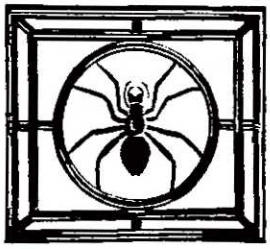

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