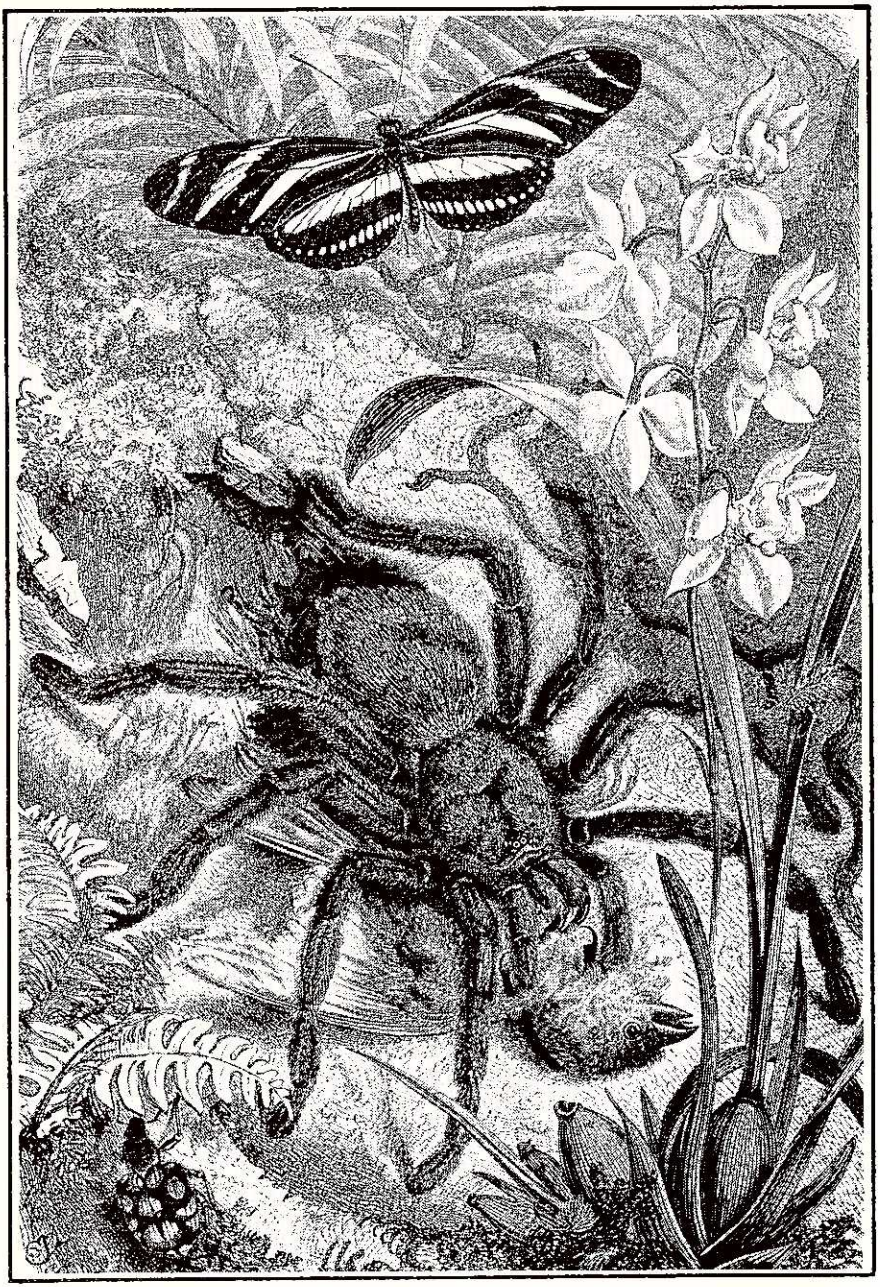
American Arachnology

The Newsletter of the American Arachnological Society



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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.

NOTICE OF A CHANGE OF ADDRESS SHOULD BE SENT ONLY TO THE MEMBERSHIP SECRETARY (SEE ABOVE). To do otherwise merely delays the change; all mailing for the Society is done from a list maintained by the Membership Secretary.

LAST WORD ON 1983 MEETINGS EAST AND WEST

The Western Meeting will be held June 20-22 at Utah State University, Logan Utah, and will be hosted by Eric ZURCHER and Kate DENNE. Two days of papers have been scheduled, as well as the usual social amenities. The meeting promises to be doubly exciting because it will be held in conjunction with the meeting of the Pacific and Rocky Mountain Divisions of AAAS, allowing for interaction with scientists in many other disciplines. Two field trips are contemplated, one to Green Canyon, a research area much used by Utah State graduate students, and the other (an all-day trip) to the Raft River Mountains in northwestern Utah, where participants will revisit collecting sites sutdied fifty years ago by R. V. CHAMBERLIN and Wilton IVIE. If you have not received notice of this meeting and would like to attend, contact Eric ZURCHER at Utah State University, Logan UT.

The Eastern Meeting will be at Ohio University, Athens, Ohio, from June 24th to 27th. Jerry ROVNER will play host. After two days of papers and films, there will be an excursion to the Hocking Hills State Parks. This spectacular (and thoroughly un-Ohio-like) region is marked by deep gorges cut in massive sandstone bluffs by glacial outwash thousands of years ago. An unusual mix of northern and southern flora and fauna occur there. More about this meeting, as well as preregistration forms, can be had from Jerry ROVNER, Zoology Department, Ohio University, Athens OH 45701.

REQUESTS FOR COMMENTS FROM THE ICZN

The International Commission on Zoological Nomenclature is currently considering two cases having implications for arachnid systematics. Case No. 2223 is a request for a ruling to correct homonymy in names of the family-groups based on Myrmecia (Insecta, Hymenoptera) and Myrmecium (Arachnida, Araneae). Case No. 1245 proposes the interpretation of Linyphia tenebricola Wider, 1834 (Arachnida, Araneae) in the sense of Kulczynski, 1887. Comments on these cases should be addressed to R. V. MELVILLE, c/o British Museum (Natural History), London, SW7 5BD.

ACTIVITIES AND NEWS ABOUT PEOPLE

Wayne P. ASPEY, Gail E. STRATTON, and Andrew J. PENNIMAN, Department of Zoology, The Ohio State University, Columbus, presented a workshop on "Spider Behavior and Biology" at the Ohio Historical Society on February 19, 1983, as part of their 1983 series on "Take a Learning Break." The workshop included a slide show on the "Natural History of Spiders" augmented with film loops and sound recordings (courtesy of Dr. Jerome S. ROVNER, Department of Zoology, Ohio University, Athens), a film session of original films, a laboratory devoted to observing spider behavior (prey capture, agonistic behavior, courtship, copulation, and web construction), and a lecture/laboratory on taxonomic characters important for identifying spiders. Approximately 25 participants enrolled in the workshop to learn about spiders. Displays of reprints, journals, and books on spider biology also were available.

Robert RAVEN has written as follows about his post-doctoral fellowship: "I am honoured to accept a Commonwealth Scientific and Industrial Research Organization (C.S.I.R.O.) Post-doctoral award for the years 1983, 1984. I am spending 1983 in the Department of Entomology, American Museum of Natural History, New York, with Norman PLATNICK. I am continuing my research into the cladistic relationships of diplurioid mygalomorph spiders (looking primarily at the generic level and above). The families involved are Dipluridae, Hexathelidae, Mecicobothriidae, Atypidae, Antrodiaetidae, Barychelidae, Paratropididae, Pycnothelidae, Migidae and Ctenizidae - which are all families but the Actinopodidae. I will be looking at the Mesotheleae for out-group comparisons. My interest in some of the more distantly related groups is peripheral (at present) but extant because at least one genus originally placed in one of these families has been transferred into or out of the core group. I look forward to meeting as many arachnologists and entomologists as resources permit. I do expect at least to visit Professor LEVI at Harvard for some time, to visit the Smithsonian Institute and in August to participate at Panama. During 1984, I return to Australia to restore my participation in Australian spiders at the Australian National Insect Collection, Division of Entomology, C.S.I.R.O, Canberra."

RESEARCH REQUESTS--SPECIMENS, LITERATURE, EXPERT HELP

This from John HEISS, University of Arkansas, Department of Entomology, 319 Agriculture Building, Fayetteville, Arkansas 72701. "I am writing an identification manual for the spiders of Arkansas. I would greatly appreciate any records of species collected from Arkansas, or the loan of any unidentified Arkansas material."

"Also, I am still in need of specimens of Calymmaria (Agelenidae), particularly from the Appalachians. They can be found under rocks, bark, in crevices, beneath overhanging rocks, in caves, and are especially common around and behind waterfalls where one is also likely to find Hypochilus. They are sometimes mistaken for linyphiids as they hang inverted from a platform above a basket-shaped web."

Matt GREENSTONE writes: "As a spider ecologist I have long been vaguely aware of the inadequacy of systematic support for arachnology. However, I don't know that anyone of us has done much more than complain about it. My impression of the situation is that older workers on whom we used to rely for identification are no longer able to provide the service, while capable younger people who could help us out are unable to find secure employment as systematists. Those of us who work on a few species or genera may be fortunate enough to find an expert in our particular group. The rest of us bootleg our identifications as best we can, while running th risk of misidentification, or give up in despair as unidentified specimens pile up."

"I am not sure what the solution is, but would like to make an attempt. Toward this end, I am soliciting information to begin to define the dimensions of the problem. Would you please drop me a line and let me know:

1. What is your perception of the availability of taxonomic assistance in North America;

2. How you get your specimens identified now;

3. Whether your research is basic, applied, or mixed;

4. Whether you see needs for research in arachnid systematics beyond specimen identification."

"Please send your replies to:

Matthew H. Greenstone, Research Leader
USDA, ARS, Biological Control of Insects Research Laboratory
P. O. Box A, Research Park
Columbia, MO 65205"

APPLICATIONS OF NEW PHOTOGRAPHIC TECHNOLOGY

Alan CROOKER, Center for Bioengineering, WD-12, University of Washington, Seattle, WA 98195, has submitted the first of a series of articles on special applications of new photographic methods to spider research. The first installment in the series deals with new equipment available:

Arachnologists, entomologists, and others own equipment for close-up and photomacrography of arthropods. Often 35 mm camera equipment is involved because of its portability, ease of use, and the range of accessories available. A typical system might include the camera, lens, bellows or extension tubes, one to three small electronic flash units with associated flash cords and multiple PC converter, and various devices to mount the components such as flash brackets, camera platform, or pistol grip. These systems are usually of high quality and produce fine pictures with relative ease. Currently, however, there are new products on the market which make arthropod photography simpler, faster, and more convenient than ever before.

Cameras. One of the most interesting developments in 35 mm photography is through-the-lens (TTL) flash metering. Sensors/circuits within the camera body measure electronic flash intensity at the film plane during exposure; the camera body automatically terminates flash output when the right amount of light has been reflected from the subject. The result is correct flash exposure with the flash unit mounted on-camera, off-camera, or by bounce or diffuse flash, or throug bellows, extension tubes, and microscopes. Multiple flash exposure is totally automatic. For the arthropod photographer who frequently uses bellows ot extension tubes and electronic flash, the advantage is obvious: no need to make calculations for the exposure compensation required by increased lens-to-film-plane distance and/or the varying glash unit angles and distances employed in multiple flash set-ups. Guide numbers are not even needed. If the camera is used on a dissecting microscope or light microscope, exposure test strips are not the necessity they once were.

TTL flash makes close-up and photomacrography as simple and spontaneous as focusing and pressing the shutter release. Cameras having TTL flash capabilities include: Contax 137, Contax 139 Quartz, Contax RTSII, Nikon F3, Nikon FG, Olympus OM-2 and Pentax LX.

It is necessary to use a dedicated flash unit with TTL flash cameras, i.e., a flash unit made exclusively for use on a particular camera. Other, non-dedicated units will work, but not in the TTL mode. All the camera manufacturers offering TTL flash make small dedicated units of appropriate power for arthropod photography. Some manufacturers also offer ring flashes which will operate in TTL flash mode.

Any aperture of the taking lens can be selected with TTL flash cameras, so the flash range is extended to cover close-up and distant subjects. Because of this freedom of aperture choice, the flash unit can be moved close to the subject to gain maximum depth of field from a small aperture.

Although flash exposure is automatic with TTL flash cameras, there are other exposure-related factors to consider. If one has little experience with close-range flash photography, it is desirable to examine the first few rolls of film closely to determine if flash unit placement has given the desired shadow/modeling effects. If the camera is used on a microscope, it is desirable to check such things as proper alignment of flash unit for even field illumination or instrumentally induced artifacts, such as internal reflection in the microscope. Another consideration invovles subject reflectance and picture composition. Highly reflective subjects, strongly backlit subjects, or small, dark objects against bright background may result in erroneous flash exposure. Fortunately, these conditions are not common in arthropod photography, and if encountered can be compensated for in several ways, the easiest being appropriate adjustment of the film speed dial.

TTL flash is a helpful aid for all arthropod photographers. It is perhaps most useful to those without prior experience. Experienced photographers can calculate exposure or will know the correct f/stop-flash combination from previous experience with their system. However, even the experienced photographer can benefit from TTL flash technology. When working at varying close-up and photomacrographic magnifications with non-TTL flash systems, it is necessary to adjust F/stop, flash placement or both to obtain the desired exposure. When operating at different magnifications with TTL flash, aperture adjustment is not necessary (although aperture can be changed if desired) and changes in flash placement are compensated for by camera/flash automation. This improved speed and ease of operation is helpful in the photography of restless arthropods.

Lenses. One type of lens used for close-up and photomacrography, called a macro lens, has shown a steady evolution in quality and versatility, and a proliferation in the number of focal lengths available. Early macro lenses did not have automatic metering and diaphragm couplings and most were of focal lengths comparable to the normal lens, i.e, 40 to 60 mm. Presently, macro lenses offer automatic operation; focal lengths range from 12.5 to 200 mm. The shorter focal length lenses are used for high magnification and don't focus to infinity. They are used on a bellows rather than the camera since most lack or have only limited focusing ability. Macro lenses of approximately 50 mm and up can be attached to the camera for close-up and photomacrography. Focusing these lenses is accomplished by turning the focus ring; the focus range is usually from infinity to life size, although photography from ½ life size to life-size may require the addition of a short extension tube supplied with the lens and called a "life-size adapter". Magnifications greater than life-size are possible without bellows by using teleconverters or macro-focusing teleconverters. Alternatively, bellows or extension tubes may be used to increase magnification.

At a given magnification, long focal length lenses provide proportionately more working room (distance from the front of the lens to the subject) than their shorter focal length counterparts. The greater working distance is important when dealing with restless arthropods which are not easily approached. For this reason experienced photographers often rely on 150-200 mm lenses for arthropod field photography. As indicated above, macro lenses of this focal length do exist.

Longer focal length macro lenses mounted at the camera without the intervention of extension tubes or bellows can be used for most arthropod field photography. This makes photography faster and more spontaneous. Prior to the development of macro lenses it was necessary to use a conventional, non-macro-focusing lens on a bellows or extension tube to obtain the desired magnification. The ability to focus at infinity is sacrificed with this system because of the lens extension caused by the intervening bellows. One could, however, use a bellows or enlarger lens on a bellows to retain the ability to focus at both infinity and close range. The disadvantage of the latter set-up is that the bellows lens, since it lacks a focusing mount, cannot be used on the camera.

The utility of the macro lens for arthropod photography can be seen by comparing a long focal length macro mounted on the camera with a bellows/lens system. The maximum magnification attainable with a 200 mm lens on a bellows depends on the extension capacibilities of the bellows, but is usually about 0.5X to 0.75X. Most 200 mm macros focus from infinity to 0.5X with no adapters; the unique 200 mm Canon macro focuses from infinity to 1.0X (life size) with no adapter. Therefore, without using adapters or teleconverters, the magnification capability of the macro lens is equal to or greater than the 200 mm bellows/lens system. In addition, speed and convenience are improved.

Macro lenses are very useful for copy work. In contract to a conventional, non-macro-focusing lens, macro lenses are capable of focusing close to the copy for selected area enlargement and are optically corrected for flat-field work. 50 mm is the usual focal length used for copy work since the greater working distance of the longer focal length lenses would require an awkwardly tall copy stand.

Backpacking photographers enjoy macro lenses of various focal lengths because telephoto or normal focal length lens qualities are combined with macro capability.

Flash. Although arthropod photography by daylight is very feasible in some instances and is very easy with cameras that have built in light meters or completely automatic operation, electronic flash is often necessary. The short flash duration is effective in stopping motion and providing the additional light needed for the small apertures required for increased depth of field.

The main development in flash photography is TTL flash (see Camera section). However, automatic electronic flash units (non-TTL) are extremely common and can be used on nearly any camera. These automatic units are made mainly for use at non-close-up distances, but they can work well at magnifications below ½ life-size if used with a long focal length lens. For most close-up and photomacrography, however, electronic flash units must be operated manually. There are several reasons for this: 1. Medium or large apertures (often inappropriate for close-up and photomacrography) are necessary for automatic operation. 2. The flash unit makes no provision for light loss at the film plane due to extension or teleconverters (one can trick the sensor into requiring a greater flash output by placing a gel of appropriate density in fron of the sensor). 3. Minimum flash to subject distance is often 1-2 feet (some units can operate 6 inches or closer). 4. The steep angle the autoflash makes with the subject causes discrepancy in the amount of light reaching the sensor compared to light reaching the lens (macro sensors which read flash exposure at the lens position are available, e.g., Vivitar).

Bellows and extension tubes. Bellows or extension tubes are placed between the camera and lens to increase magnification. Both can be purchased in either manual or automatic models; bellows can be purchased with or without a focusing rail. Several manufacturers offer bellows with swings and shifts of the front standard. The highest evolution of this capability is seen in the Spiratone Bellowsmaster SST. Swings, shifts, tilt, and rise and fall of both front and rear standards are possible. The value of these features is well known to view camera enthusiasts: perspective, focus, and composition control are greatly enhanced. This can be helpful to the arthropod photographer trying to fit subjects into limited depth of field. Use is largely limited to laboratory situations involving less mobile subjects because of the time required to make the necessary adjustments.

Most extension tubes come in a variety of fixed lengths; they must be added together to achieve the desired magnification. However, Olympus offers a unique telescoping extension tube, called the Telescopic Auto Tube, which offers a continuum of extension in one unit.

Flash brackets and camera platforms. Many manufacturers supply various devices to hold or support flash units (such as ball-socket holders, lighting bracke-s, and flash extenders) and cameras (such as pistol grips and gun stocks) in a configuration which is useful in close-up and photomacrography. Specialty manufacturers make equipment specifically for close-up and photomacrography. A list of these specialty manufacturers can be had by writing to Allen CROOKER, Center for Bioengineering, WD-12, University of Washington, Seattle, WA 98195.

Film. The relatively new, extremely fine grain Technical Pan film is recommended for high resolution 35 mm photography.

TWENTY YEARS AFTER: REFLECTIONS ON TEACHING ARACHNOLOGY

By stretching (or contracting) a point somewhat, your editor makes it twenty (really twenty-one) years ago this spring that he was introduced to spiders and myriapods in a course taught by Andrew WEAVER at the College of Wooster. So what more fitting commemoration of this occasion than to teach the same course to undergraduates here at Hampden-Sydney? Some alterations had to be made, of course, Our framework accommodated only a three-credit, not a four-credit course, and Andy's also included insects --we have a separate Entomology course here. But in general the format was the same--lectures on arachnid and myriapod biology, and the laboratory consisting of taxonomy, with a collection required at the end.

It was this requirement that proved the sticking point for all of the half-dozen students. Much to my dismay, they delayed too long, and had to work all day and night just at the end of the course to hand in rather inadequate collections (typically about 20% of the minimum). That is, I was dismayed until I remembered an all-night labelling binge in the basement of Scovel Hall on a warm spring night in 1962!

Collecting trips were great fun then, and I hope that I can communicate some of the excitement Andy got across at a particular find. This year the students seemed particularly impressed with Apheloria virginia, a large, colorful xystodesmid milleped, and with Dolomedes. But who wouldn't be impressed with Dolomedes! And while centipeds (since 1962 having become a specialty of Andy's) were our despair, a new key made out by Andy made centiped enthusiasts of most of my students.

It was fun, as such courses have been over the past two decades when the chance came to teach them, but somehow the hope that a good naturalist will come out of the group has diminished. Still, Fred COYLe and I were in that original class, and Norm PLATNICK was in a course on spiders I taught at Concord College in West Virginia. And there was one guy this year whose identifications were uncannily accurate!

As Thoreau wrote when contemplating science, "How long will it go on, this habit of close observation?" Forever, I hope.