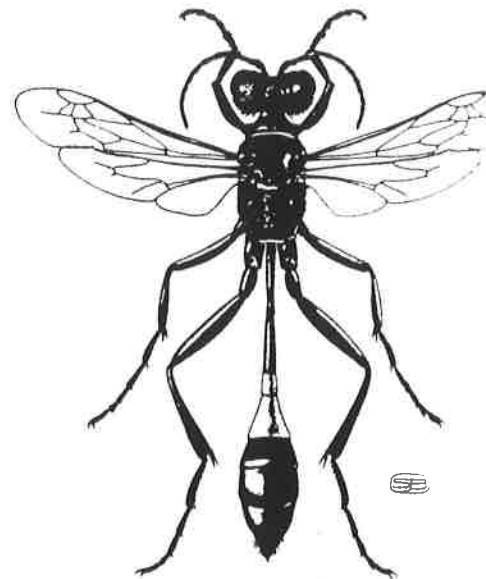


SPHECOS



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A Forum for Aculeate Wasp Researchers

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Editor's Ramblings

Rolling right along, here is issue 12! Two issues of that wonderful rag called Sphecos for the price of one! This number contains a lot of material on collections, collecting techniques, and collecting reports. Recent literature, including another vespine suppliment by Robin Edwards, rounds off this issue.

Again I owe a debt of thanks to Terry Nuhn for typing nearly all of this. Rebecca Friedman and Ludmila Kassianoff helped with some French and Russian translations, respectively.

Research News

John Wenzel (Snow Entomological Museum, Univ. of Kansas, Lawrence, Kansas 66045) writes: "I am broadly interested in problems of chemical communication, mating behavior, sex ratio, population genetics and social behavior. I am currently working on a review of vespid nest architecture and hope that I can contribute something toward resolution of the relationships of the various genera of the tribe Polybiini. After visiting the MCZ, AMNH and the USNM I conclude that there are rather few specimens of nests in the major museums and I am very interested in hearing from anyone who has photos or reliable notes on nests that are anomolous in form, placement, or otherwise depart from expectations. I am especially interested in seeing some nests or fragments of the brood region of any Polybioides or Parapolybia."

Tarlton Rayment Again

RAYMENT'S DRAWINGS - ACT 3

by

Roger A. Morse

(Office of Apiculture, Dept. of Entomology,
Cornell University, Ithaca, N.Y. 14853)

Pursuant to George Eikwort's note in Sphecos No. 10:25, 1985, Tarlton Rayment's original drawings are safe and well protected on the Balcony in the Mann Library at Cornell. The card catalog number, SF 526/R26, is correct but

the library card does not indicate "Balcony" and therefore misleads one into thinking the drawings are in the stacks. I've had that omission on the card corrected. The Balcony is the place we keep all the books on honey bees that were printed prior to 1900; from time to time I add other items that are rare or in bad repair etc. Admission to the Balcony is restricted; inquiries should be made of the librarian on duty.

How did Rayment's drawings find their way into the E.F. Phillips collection of beekeeping literature at Cornell? Phillips was Professor of Apiculture here from 1924 to 1948; he died in 1951. Phillips and Rayment were good friends; Rayment also wrote on honey bees. They exchanged letters often but I don't think they ever met. Somewhere I have an autographed picture of Rayment that he gave Phillips. In one of his letters Rayment wrote that at the time no one in Australia understood or was interested in his work on bees. This caused Phillips, who collected every written thing on bees that he could get his hands on, to encourage Rayment to send his drawings to us.

Rayment's drawings are bound in a volume 7 by 39 by 48 cm. which is, in turn, in a heavy wooden case. They are well-protected but available for study.

TARLTON RAYMENT REVISITED

by

A. C. Harris

(Otago Museum, Great King Street, Dunedin, New Zealand)

Tarlton Rayment was the subject of a biography in Sphecos 9:16-19, and was mentioned in Sphecos 10:25. He was not cited in Pamela Gilbert's (1977) A compendium of the biographical literature on deceased entomologists, British Museum (Natural History), 455p. Consequently I thought I'd draw readers' attention to the following, excellent biography, written by a close friend of his. Young, Lynette. 1967. The memory lingers on: biography of Tarlton Rayment F.R.Z.S., Melbourne, The Hawthorne Press, 123 p., Hard cover. Before chancing on this biography, I was intrigued by the interesting, well-illustrated papers with their distinctive titles, and was very curious about their author - e.g., SHE STANDS ON THE WATERS, THE TRAIL OF THE RUNNING POSTMAN, SOME HAVE EYES-OTHERS HAVE NONE (describes Megachile oculiformis, sp. nov.), TRAGEDY ON THE WALLS (about Chrysididae), HISTORIC POLE 346 (title of paper was derived from a telegraph pole stamped with that number, in which Pachyprosopis lynettae sp. nov. (named after his biographer) had made a nest), FIRST STEPS FROM THE CAVE (about Australian bees), and CLOSER THAN A BROTHER (on strepsipteran parasitoids). The foregoing papers appeared in the Proceedings of the Royal Zoological Society of New South Wales. Lynette Young's biography has a complete bibliography and a good photograph of Rayment (frontispiece) besides a pencil sketch (by herself) of him painting.

Pet Peeve Department

BEHAVIOR vs. BEHAVIORS

Robin Edwards (Rentokil Ltd., East Grinstead, W. Sussex RH19 2JY, England) says, "I dislike the appearance these days of the word 'behaviors or behaviours'. I believe that in correct English usage, behaviour is a collective term and therefore a work that is already plural cannot be pluralised. Let us see what some authorities say about it. Most ordinary dictionaries do not give the biological meaning for 'behaviour', but the Collins 1979 English Dictionary says, "The aggregate of all the responses made by an organism in any situation." A Dictionary of Scientific Terms by C. M. Beadnell published in 1938 says, "Acts of an organism ...". In their textbook Insect Behavior (1978), Bob and Janice Matthews say on page 3, "Behavior can

be simply defined as what animals do. More precisely, it is the ways in which an organism adjusts to and interacts with its environment." They add, on page 5, "... concern behavior in the individual insect - how it moves, orients, disperses, and feeds ...". All of these show that 'behaviour' is a single word for numerous behaviour patterns, not behaviours." [Webster agrees with Robin, however, an organism will behave differently to different stimuli and it would seem logical to call these behaviors - edit.]

"NATURAL" CLASSIFICATIONS

Roy Snelling (Dept. of Entomology, Natural History Museum of Los Angeles Co., 900 Exposition Blvd., Los Angeles CA 90007) sounds off on "Natural" classifications: "Some systematists are sufficiently (and unjustifiably) arrogant as to claim their classificatory schemes to be "natural." That is bovine dung [you mean male ungulate feces?]. All classifications are based on assumptions and each decision is an assumption based on a particular theoretical concept about evolution and/or how organisms "should" be related to one another. Classifications are "best guess" hypotheses, nothing more. Whether based on intuition or a sophisticated computer-generated system is irrelevant, even though the latter may seem more convincing, especially to the unwary and ignorant. No classification is any better than its underlying theory. To herald a particular scheme as "natural" is another, more perverse, manifestation of the well-known "mihi-itch."

So far we have two species of Mihiitis: M. proliferator and M. arrogans. No doubt others remain to be described and named.

PROSOMA ANYONE?

Many hymenopterists these days, especially bee workers [look out Menke], use the terms mesosoma and metasoma for the definitive thorax and abdomen, respectively. But they don't call the head the prosoma - this is all a bit absurd, or at least inconsistent. While it is true that the "thorax" includes the first abdominal segment, for purposes of taxonomy it is still the definitive thorax. Why bother with mesosoma and metasoma if you aren't going to go all the way and call the head the prosoma? Prosoma, anyone? - A. S. Menke.

Color Patterns In Wasps

Peter van Ooijen (Westerkade 21, 3511 HB Utecht, the Netherlands) would like to share the following observation on palearctic Pompilidae and asks for the opinions of others: "In the western palearctic fauna one can draw a line through the south of France; south of this line, especially on the Iberian Peninsula, all wasps are black. North of this line, as well as in Italy, Yugoslavia, and Greece, the same wasps are red. I regard the forms as subspecies, though not every European hymenopterist will agree. In northern Turkey I always collect red wasps, in the south they are always black. As far as I know the north african forms are black. The morphological differences are greater than just color, but just color seems enough for identification. I do not doubt the species to be conspecific. Who can tell me more about this phenomenon in other Aculeata?" [Peter - if there are morphological as well as color differences then the wasps may be different species - edit.]

West Virginia Hymenoptera

M. C. Thomas (Dept. of Agriculture, State of West Virginia, Charleston, W. Va. 25305) writes: "We have a large number of unidentified Hymenoptera among

our undetermined material, most of which was collected in Malaise traps. We are seeking specialists help in getting this material identified." Contact Dr. Thomas if you are interested in seeing any of their material.

Collections

AMERICAN ENTOMOLOGICAL INSTITUTE

The American Entomological Institute completed a move from Ann Arbor, Michigan, to Gainesville, Florida in December, 1985. The new address is 3005 SW 56th. Avenue, Gainesville, Florida 32608. There are two brand new buildings totaling 6,000 square feet of space located on 8.6 acres. The buildings include thirteen offices plus storage space for 1.5 million insects and a large library. The research collection and library have been built up by Henry and Marjorie Townes over the years and other significant collections have been added (those of Roy D. Shenefelt and V. K. Gupta for example). The research emphasis at the Institute is parasitic Hymenoptera, but the collection contains many aculeates. Congratulations on your successful move Henry!

At the height of the move from Ann Arbor Henry became seriously ill. After some anxious months Henry is now reported to be making excellent progress toward complete recovery. We all wish you well Henry - keep fighting!

A. S. Menke

C. N. C. COLLECTION OF HYMENOPTERA FOR ANATOMICAL STUDIES (SPECIAL COLLECTION OF ETHANOL-PRESERVED MATERIAL)

by

Gary Gibson

(Hymenoptera Unit, Biosystematics Research Centre,
Agriculture Canada - Research branch, K. W. Neatby Building,
Ottawa, Ontario, Canada K1A 0C6)

Comprehensive studies of the external structure of Hymenoptera are possible because of the existance of taxonomic collections throughout the world. However, those who want to study internal structure, such as muscle or soft organs, continually face the problem of finding specimens that are suitably preserved for dissection. Studies typically are incomplete because representatives of some families, often phylogenetically important ones, are unavailable, and familial-level generalizations have to be made based on the study of one or a very few taxa. In an effort to rectify these problems the Hymenoptera Unit of Biosystematics Research Centre is establishing a separate collection of ethanol-preserved specimens to be used for anatomical studies by hymenopterists. Because use of the collection means its ultimate destruction, we do not envision it as an initial source of material, but as a source to augment the scope and thoroughness of a study once this is well under way and techniques have been perfected.

We would like to solicit help from the readers of SPHECOS to help build this collection through donation of freshly collected and preserved specimens. If each taxonomist donated a series representing the major higher taxon they work on, the "anatomical collection" would soon be a major resource for fundamental research on phylogenetics or comparative morphology of Hymenoptera. Also remember the first impulse of taxonomists - to dry-mount the entire series of any "more uncommon" taxon that they collect. We hope that the next time readers of SPHECOS either rear or collect some hymenopteran of phylogenetic or morphological interest that they remember the purpose of our fledgling collection and donate part of the series.

Material can be preserved in 70-75% ethanol, or in such fixatives as Bouin's or Kahle's, but method of fixation should accompany specimens along with the normal collecting data. Care should be taken to properly preserve the specimens by replacing the fixative a number of times, and shipping in vials that are completely filled with fixative, in order to avoid breakage. Material should be sent to, or further information about the collection obtained from : Gary Gibson, at the above address.

MONTANA STATE UNIVERSITY COLLECTION

by

Michael A. Ivie

(Dept. of Entomology, Montana State University, Bozeman, MT 59717-0002)

The Montana State University Department of Entomology maintains a research insect collection of some 250,000 specimens on the Bozeman campus. For the past 20 years, the collection has been under utilized by the systematic community, due in part to the lack of a systematist/curator. The recent addition of a systematist to the faculty is hoped to reverse this situation, and persons assembling material for taxonomic, faunal, or phylogenetic work are invited to request material.

The collection is strongest in Montana material, and material from surrounding areas, especially the Yellowstone area and southern Alberta. Other areas are briefly represented, including Botswana and Tanzania.

The Hymenoptera are housed in 4 California Academy cabinets, of which 8 drawers are exclusively Sphecidae s.l. Of special interest may be the material used by Murray in his revision of Podalonia, which was apparently only partially published. The complete thesis is on file in the department library.

Other holdings in the Hymenoptera can be summarized as follows: Symphyta, 5 drawers (Smith det.); Ichneumonidea, 16 drawers (dets. by Cush. and Gahan); Chalcidoidea, 5 drawers (det. like most chalcid collections); Bethyloidea, 3 drawers (many Bohart dets.); Ants, 4 drawers; 1200 Vespidae, det. by Carpenter and Bohart (assuming Jim returns them); Apoidea, 20 drawers (misc. determinors); and smaller numbers of other groups. A small type collection holds paratypes of 24 Hymenoptera species and cotypes of 3.

An aggressive collection growth plan is being implemented, allowing incorporation of an extensive backlog, as well as new collecting efforts. Dr. Kevin O'Neill, a sphecid ethologist, is now associated with our department, and we expect large acquisitions of sphecids in conjunction with his work. Malaise and pan trap work is planned for this summer.

Persons traveling in the vicinity of Bozeman are invited to visit the collection, located in Bozeman, approx. 90 miles north of Yellowstone National Park, on Interstate 90.

Requests to the MTEC will also access the M. A. Ivie collection, a small. specialized collection of interest mainly for its West Indian holdings.

Please address all inquiries to Michael A. Ivie at the above address. Phone (406) 994-4610.

CHARLES C. PORTER COLLECTION

by

Charles C. Porter

(Dept. of Biological Sciences, Fordham University, Bronx, N.Y. 10458)

"My personal collection is now housed at the Florida Department of Agriculture in Gainesville. The collection remains my property, but material will be loaned from it under the same terms which apply to the regular Florida

collection. There are approximately 100,000 specimens in various groups of Hymenoptera, with emphasis on Ichneumonidae, Eumenidae, Vespidae, Sphecidae and Apoidea. It contains a rather ancient base of NE US species (New Jersey, Maryland), large series from Argentina, Chile, Peru, Bolivia, and Ecuador, a fair representation of Mexican Hymenoptera, and a great deal from south Texas. With my increasingly close association with the fine group of taxonomic entomologists at Gainesville and the space available at the DPI's truly stupendous museum, I anticipate rapid expansion and much improved curation. Representation of the Florida fauna naturally is increasing and I'm beginning to process new lots from Greece, the Sangre de Cristo Mts. of New Mexico, and from southern Arizona (SWRS)."

"Many parts of my collection need a great amount of work before they can be loaned easily, but specialists visiting Gainesville will find it comparatively easy to sort out material of interest to them. Inquiries can be directed to Dr. Howard V. Weems, Jr. or to Dr. Lionel A. Stange (Florida Dept. of Agriculture, Division of Plant Industry, Entomology Bureau, Doyle Conner Building, 1911 SW 34th Street. P.O. Box 1269, Gainesville, Florida 32602, USA). Aside from the ichneumonid subfamilies Ephialtinae, Labiinae, and the tribe Mesostenini of the Gelinae, anything may be loaned without my direct permission, although the DPI will furnish me a copy of all loan invoices."

"I apologize to those individuals who have asked me to lend material in the past and whose requests mostly have been unfulfilled. Perhaps they will understand that the demands of research, teaching, and "alpha curation" (Fumigating, keeping up to date with thousands of printed locality labels, rough sorting to subfamily, tribe or genus, and more careful sorting of groups of special interest to me..etc.) have made it difficult for me to satisfy the needs of others. I believe this new arrangement will prove far more attractive for all concerned."

Collecting Techniques & Aids

The following two articles on the use of Chlorocresol are reprinted here for your information. Chlorocresol is an excellent antifungal agent. Insects pinned in the tropics quickly mold if not dried thoroughly and promptly. In my own experience, the addition of chlorocresol to each box of pinned insects will greatly lessen the chances for mold formation, especially if the chemical is uniformly scattered over the bottom of the container. - A. S. Menke

THE CHLOROCRESOL METHOD FOR FIELD COLLECTING

by

Norman B. Tindale

(reprinted from "Journal of the Lepidopterists' Society",
Vol.15, 21 March 1962.)

For some years entomologists at the South Australian Museum, in Adelaide, Australia, have been using a novel method to preserve insect specimens, including butterflies, moths, grasshoppers, as well as run-of-the-mill insect collections such as are gathered in the course of trapping with the aid of mercury vapor lamps. Because of the many specimens to be handled, new and rapid methods of preservation were necessary. At first the rather odorous chemical tri-chlor-phenol, which is a substance of a dirty sugar-like appearance, was used. This was very useful in inhibiting development of moulds in containers with freshly killed specimens. Using refrigeration it was possible after sealing up the cans to keep them for several weeks without apparent deterioration, then take and set them up without necessity of relaxing in moist air.

When adopted by private collectors the odor of the preservation was not such as to encourage good home relations when the domestic refrigerator was used by the entomologist.

A casual shortage of tri-chlor-phenol later led Mr. R. H. Fisher to experiment by using granular crystals of Chlorocresol (name registered in the British Pharmacopeia). This almost inodorous chemical was an instant success, revolutionised collecting techniques, and has enabled the development of a quite novel method of preserving specimens in the field.

As currently developed, the system is as follows: - One takes a small flat container which can be sealed and places about a teaspoonful of Chlorocresol in the bottom. This is held in place with a thin layer of cotton covered by face tissue or other soft paper. Most collectors of butterflies will find that rectangular sandwich boxes of clear plastic, about five inches square and one and a half inches high, are ideal. These are on sale in drug stores in most cities. The freshly killed specimens are laid on the tissue just so they do not touch each other. A pencilled label is dropped in, a layer is added, and so on in alternate succession of layers until the container is full. If the boxes have been prepared a day or so ahead of time the tissues will be sufficiently saturated with the vapours of the Chlorocresol that the container can be sealed immediately, using from one to three layers of Scotch Tape as sealer. In very hot humid weather it may be advisable to delay sealing the containers until night time when the atmospheric humidity is less. Under desert conditions the container should be sealed immediately so as to avoid undue loss of moisture. Assistants engaged in spreading specimens from the Great Western Desert of Australia noted the the cans which contained one or more large grasshoppers in addition to other insects arrived in particularly well relaxed condition indicating that the degree of moisture originally sealed in is important. The boxes should be kept out of the sun and away from heat to avoid possible overvolatilisation of the Chlorocresol and its subsequent recrystallisation. When home base is reached the containers may be kept in a refrigerator, so long as sealing is adequate, to ensure no loss of humidity.

The present writer used the method, for example, while collecting Lepidoptera in the United States during the Summer of 1959. A year later, after carrying them to Australia he is still able to open the sealed containers, and to take out what appear to be practically fresh material ready for mounting, it being only necessary to place them at once in a damp atmosphere to ensure that they do not dry out while awaiting their turn for spreading upon drying boards.

Little discernable deterioration takes place in the specimens over long periods of time. It has become standard practice at the South Australian Museum to mail containers back to the institution where they are kept chilled until they can be processed. For such field work the square flat cans with hinged lids, used for packing pipe tobacco, are ideal, because they are unbreakable. Our cans are all prepared in advance of the expedition. Using the Chlorocresol method fresh material may be held for several months or even almost indefinitely. A very sensitive test of the usefulness of this method is shown by the fact that it is usually possible to hold geometrid moths of delicate fugitive green and blue colors for many weeks without damage.

A virtue of the transparent plastic containers is that labels can be placed inside the boxes so as to be visible from outside the container. No breaking of seals is necessary until the specimens are to be processed. Good brands of plastic container are sufficiently strong to travel through the mails with minimum likelihood of damage and the fact that the specimens remain relaxed also helps to prevent damage. Care must be taken that the containers are so filled that no movement can take place.

During the past year it has been possible to send newly taken material from Australia to the United States for processing and also to have material taken in the island of Timor, carried for several days by jeep in the field, flown to Australia, and processed at the South Australian Museum more than a month later, as fresh as though it had just been captured.

During a recent visit to the United States difficulty was encountered in finding suitable supplies of Chlorocresol. In Australia several chemical companies stock it. The most suitable grade is a white granular substance like sugar. A pound should be sufficient to keep the average collector supplied for several years. Much of the chemical agent can be reclaimed from old containers, as there is little loss by evaporation.

FIELD COLLECTING WITH CHLOROCRESOL

by

Timothy P Gatschet

(reprinted from "TIEG" magazine, Volume 12, No. 1.)

There is nothing quite as frustrating as returning from a successful trip and finding that the supple, beautiful specimens collected a day or so previously have become moldy or dried. No matter how rare or valued, the moldy specimen is simply lost. The dried specimen can be used, but time in a relaxing chamber and careful technique is required to pin the specimen for study or display. Many of these problems can be avoided by proper field storage.

Various methods have been used in an attempt to preserve the freshly-killed specimen's pliability and freshness for later pinning. Some of the techniques work but many have complications that can ruin specimens. Alcohol or weak dilutions of formalin can cause loss of color, shrinking of the insect or stiffening or hardening of insect muscles. Ethyl acetate may extract oil or grease from the bodies of insects necessitating a washing process to remove the grease. It also evaporates easily and can result in dried specimens, as well as color loss in some groups of insects.¹ Paradichlorobenzene (PDB or mothballs or moth flakes) can dry the specimens and sublimate and recrystallize on the bodies of the insects. Naphthalene (moth crystals) does not recrystallize as does the PDB but can also result in dried specimens.

For many years collectors had little to rely on for field storage except these methods. Some proposed adding several drops of phenol to moistened tissue on which were placed the freshly-killed specimens. The moisture was to keep the specimens soft while the phenol was to kill germs and prevent mold from growing. This works fairly well except that phenol (carbolic acid) is rather caustic and can damage some of the more delicate specimens.

In 1961, Tindale² described a method of field storage using a chemical called chlorocresol. For some years, entomologists at the South Australian Museum in Adelaide, Australia had been using this chemical to store insect specimens from the time they were killed until they were mounted. Specimens included not only the usual insect types, but also delicate butterflies and moths. Often considerable time lapses occurred between killing and pinning of the specimens. All of those stored in this manner were always fresh, supple and had lost no significant degree of color.

Although not very well known to many collectors, chlorocresol has revolutionized collecting and field storage techniques. It essentially does away with dried specimens and effectively prevents mold and bacterial growths, even in warm temperatures. Having a slight but very unoffensive odor, chlorocresol is easy to use, economical and reusable. It does not cause color fading, does not easily recrystallize, causes no shifting of grease or oils in the specimens, and when used properly, is not caustic or irritating to the

collector or the collected.

The Merck Index³ describes chlorocresol as being prepared by the chlorination of m-cresol. Meta-cresol crystallizes from ligroin, a naphtha compound produced from the distillation of petroleum. Chlorocresol is C_7H_7ClO and has a molecular weight of 142.58. It is odorless when pure but usually has a slight odor of phenol. The melting point is 55.5-66°C (122-152°F). It volatilizes with steam, is slightly soluble in water and freely soluble in alcohol, benzene, chloroform, ether and acetone.

It closely resembles phenol in structure but is three times more active than phenol and much less toxic to animal tissues than phenol. Chlorocresol is used as a topical antiseptic, disinfectant, fumigant and fungicide. Studies have shown it to be an effective agent by inhibiting germination of bacterial and fungal spores^{4,5}.

The technique for this method of field storage is described by Tindale². A small, flat container is usually used. Tupperware^R or other similar airtight containers may be used. One teaspoonful of the chlorocresol granules is placed on the bottom of the container. This is held in place by cotton or tissue paper. Blotter paper or cardboard is then placed in the bottom, cut to fit tightly, to hold the chlorocresol to the bottom of the container. The freshly-killed specimens are then placed on top of this between layers of tissue. Specimens should not touch each other. Labels may then be included. Once full, some extra tissue is added to act as a cushion and the container is then sealed. Several layers of clear or masking tape can be used to seal the container. Once sealed, the only precaution is to keep it from intense heat. Technically, chlorocresol can recrystallize but this happens only if over-volatilization has occurred. One can imagine that if temperatures inside the container have gotten that high the specimens themselves aren't going to be in very good condition anyway. Preferably, the container should be placed in a cool place out of the sun. If a refrigerator is available, the specimens will be in even more perfect condition.

Little discernible deterioration of the specimens takes place, even over long periods of storage. If the container has been kept properly sealed, the specimens will be kept soft and pliable for weeks or months. I have kept insects of various types in such containers for as long as six months, after which time they were pinned out with little difficulty. No signs could be noted of damage from fungal or bacterial growths. A sensitive test of the usefulness of this method is shown by the fact that it is possible to hold geometrid moths of delicate fugitive green and blue colors for several weeks without damage or significant color loss.

I suggest some useful pointers concerning the use of chlorocresol:

1. Be sure to use airtight containers so vapors of the chlorocresol and needed insect moisture aren't lost.
2. A light sprinkle of water added to the tissue underlying the specimens increases the humidity and keeps the specimens more supple.
3. Make up the storage containers the day before specimens are to be placed in them. This allows the tissues to become saturated with vapors.
4. The remaining chlorocresol in old storage boxes can be reclaimed and used again. Little is lost by sublimation.
5. When pinning specimens stored in chlorocresol, remove one specimen at a time. The specimens dry out rather quickly once removed from the storage container.
6. If dried specimens need relaxing, a small amount of chlorocresol may be added to the relaxing chamber, instead of the recommended phenol or formalin, with excellent results. I have used one such relaxing chamber containing one teaspoon of chlorocresol for over three years with perfect results and no mold growth.

Supplies of chlorocresol can be obtained from D.H.A. Laboratories, Pty. Ltd., Sydney, N.S.W., Australia. Various British pharmacy houses also have it. The supplier in the United States is BioQuip Products Company, P.O. Box 61, Santa Monica, CA 90406. I have used about 200 grams in the past eight years of collecting. A little goes a long way.

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BULLDOZERS AND OTHER ESSENTIAL ITEMS FOR TROPICAL COLLECTING by

Justin Schmidt

(Entomology, Univ. of Arizona, Tuscon, Ariz.)

Planning equipment needs for a collecting trip in the moist tropics (or elsewhere) can be fun, but can also be the later cause of frustrating lost opportunities. I thought anybody planning such a trip might find some of my equipment and its uses to be interesting. An abbreviated list of some of the items I consider useful includes:

- business cards
- lots of vials
- strong string
- alcohol
- headlamps (ideally one per person)
- portable 12 volt fluorescent lamp that has a cord to plug into a cigarette lighter
- a black light bulb (in addition to the standard white bulb) for above
- 3 6-volt lantern batteries (alkaline preferred)
- collapsible insect nets with extension handles
- several mouth aspirators
- 4 or 6 short wires with alligator clips on the ends
- a white T-shirt (may have a pattern on it -- Hey, anybody for a Sphecos shirt?) [Ashmead Club and Aculeate Wasp Research Team T-shirts can be had if enough people want them. See Sphecos 9, pp.43 & 48 for their respective T-shirt logos. Cost would depend on number of orders received. - A. S. Menke]
- a Swiss army knife with scissors
- a bulldozer
- [chlorocresol]

and in my case:

- a microscope
- an ice chest (can be bought at destination)
- fine dissecting forceps
- capillary tubes
- silica gel desiccant
- 250 ul polyethylene centrifuge tubes

One might be surprised that I list a business card. But both locals and officials are usually highly impressed with a business card. Cards that say Professor of Gonzobiology, mellitobiology, Sphecobiology, etc. and have a colorful logo are excellent; but an ordinary business card will do fine.

Lots of vials because you never have enough. I prefer all specimens in alcohol because pinned specimens break and/or rot [try chlorocresol - edit.]. If you collect bees and other furry creatures, you have a problem. Try ethyl acetate instead of alcohol.

Strong string is useful for tents, black light stringing, pack repair, hanging food from varmints, etc.

Alcohol -- surprisingly, in many countries (like Sabah) it is very difficult to find and extremely expensive.

Headlamps are essential. They free your hands and the headbands allow them to be attached to many objects such as their own 6 volt batteries (they can then be used for microscope or reading lamps). I prefer those that connect to 6-volt lantern batteries -- see below. The cordless lamps that run on AA cells are great in principle, but they have weak beams and do not last long.

Portable 12-volt fluorescent lanterns are cheap (15-20 \$ in most discount stores) and useful. But be fussy about the model you buy. Also buy a black light bulb (and possibly a blue-black light bulb for scorpions) to replace the white bulb for collecting. When using UV lights remove the plastic shield as it filters some light. Make sure to order the 20 foot cord that can plug into a cigarette lighter -- they used to cost about \$2.00. Or make one of your own. (Be sure your model will accept such a cord.!)

Six-volt lantern batteries are our universal power sources. They power the head lamps, they fit into the fluorescent lantern for storage, and they power the lantern if no other source of power can be found. They also last longer and drive fluorescent lights better than D-cells. Three are needed: 2 for the lantern and one for a headlamp when the lantern is in use. With these you need no ordinary flashlights or batteries (unless you use a camera and flash, in which case buy a small flashlight that uses your weak AA-cells from the flash).

The items below are serious equipment:

Collapsible nets are absolutely essential. The Japanese pioneered this technology, but the best I have seen are made by Bio Quip. Do not get their ordinary net bags (they are trash and tear almost instantly) but Bio Quip's "special aerial" bags are the toughest and best I've ever seen. If you are worried about governmental officials and inspection hassles, take apart the nets and store dirty clothes in the bag.

Perhaps even more useful are the 1 foot extension handles that attach to the Bio Quip nets. They cost \$3.00 each and are remarkably good (now that the new design is out). I prefer seven, a central tube and six surrounding tubes when stored. The seven pack well, look sort of like tent poles to a customs official, and give you a 76 inch handle (10 inches/tube -- two inches are lost when the tubes fit together. Above 76 inches the net becomes unwieldy. An added bonus is that the non-tapered part of the handle is 25 cm(10 inches) which is a handy unit for measuring.

Mouth aspirators should be made and their use learned. I collected all sorts of ants, small bees and anything small that is caught in a net with a small aspirator that has a 1/4 or 5/16 inch i.d. copper intake tube. "Super slurper" is my 3/8 inch i.d. aspirator that fits into half pint jars. It is great for sucking large bees such as Apis dorsata off flowers as well as collecting rapidly running mutillids, etc. Once in the aspirator, I place them in the ice chest to cool off before removal (that is, if they can fly).

Short wires with alligator clips are useful for attaching head lamps and the fluorescent lamp to various power sources such as car batteries from cars without a cigarette lighter (see later).

White (and only white) T-shirts are handy as a black light back sheet. Dirty white shirts work well (tie with string mentioned above). The T-shirt serves the dual function -- it can be worn during the day and used as a sheet at night (saving the weight of an extra black light sheet). In the morning be sure to shake out the shirt before wearing.

A Swiss army knife may be overrated, but the scissors are great for cutting out insect labels. The corkscrew is also handy. Also, one is essential when traveling in developing nations because you invariably run into somebody who you owe a big favor. When you leave, you can give him or her the knife -- people in these countries often cannot get a good knife.

A bulldozer -- I don't recommend bringing one (the baggage surcharge on the plane is too high) but try to camp near one. They are invaluable. We used ours [Justin included a nice photo of his bulldozer, but unfortunately I can't get photographs reproduced satisfactorily by the USDA duplicating office] as a source of power for our black light, as a table for using the microscope, as a power source for the microscope light, as a shelter from the rain, and as a stand for stringing up the T-shirt for the black light. Figure out how to get to the battery (it is usually 1 x 1 x 2 feet in dimension -- there might be two of that size). Use the wire and alligator clips to attach the fluorescent lamp cord to the battery and also to attach both head lamps (you need two) in series (important or you will blow the bulbs) to the battery. When in series, the headlamps serve as the light for the microscope. The seat of the dozer is comfortable for dissecting or other scope work. Bulldozers are also usually covered, so you can work during the rain at the microscope (or just plain hide from the rain). And finally, the roll bars of the bulldozer form convenient attachments for your string to hang the T-shirt for black lighting. We often would black light, use the scope, and stay dry at once (rainy nights are often great blacklighting).

The rest of the items on the list are mainly for toxinologists who need to keep insects alive until they can dissect them and collect their venom. So I will leave it at that.

If anybody else has some ideas, why not share them with us in Sphecos.

Madagascar

UNSOLICITED ADVICE ON MADAGASCAR

by

John W. Wenzel

(Snow Entomological Museum, Univ. of Kansas, Lawrence, Kansas 66045)

In recent issues of Sphecos and elsewhere one notices increasing mention of trips to Madagascar and I sense the scientific community is starting to push hard at documenting the distinctive biota there. While this is good, I'm sure most investigators have little idea what they are getting into when they blithely lay out their itinerary and research plans. From a ten week trip there in 1985 I offer some information not always available to the uninitiated.

Perhaps the most important thing to remember is that the Malagasy people are proud traditionalists and do not take kindly to western strangers who tell them how things should be. A few bad examples suffice to make research difficult for all those who follow, so if long term goals are to be pursued the visitor must be more patient and selfless. The people outside the cities usually do not speak much French and a European can attract enough attention to stop commerce in the markets. All this means that a local companion is

invaluable for the outsider who intends to travel to remote localities.

The country is very difficult to travel around as there are very few all weather roads and no reliable ground transport between major cities. Rental vehicles are virtually unknown and repairs or spare parts are impossible for the visitor to find. Train service is limited to a line from Fianarantsoa to the coast and one from Antsirabe to the capital city Antananarivo, eastward over the mountains to the coastal city of Toamasina (Tamatave), with a spur up to Lake Alaotra. Air service extends to many cities and towns but is somewhat undependable. I spent over a week waiting to leave the city of Morondava because it was not worth it to fly the plane for only a few passengers, I guess. When the flight did go, it left two hours earlier than scheduled and I was only on it because a hotel clerk had overheard this in a bar and thought to notify me. Any city not served by air or train should be considered inaccessible for those who have only a few weeks to spend and in the rainy season many remote places and most of the West and North are cut off from the capital for weeks at a time.

The nation is regulated by a large bureaucracy which has several bodies designed specifically to conserve the natural heritage and prevent foreigners from plundering the country as has happened in the past. Three of these are the Ministère de l'Enseignement Supérieur, Direction des Eaux et Forêts, and the Ministère de la Recherche Scientifique, for all of which a number of papers must be filed before you can happily collect or export specimens legally. This is not to be overlooked, for the high price of Malagasy Lepidoptera in Paris has sometimes motivated the authorities to demand payment of tax before departure (as much as \$20 per specimen) and they do not accept ignorance as an excuse at the airport. By prior permit, I had no trouble exporting 25 kilos of material, but it could have been a very different story if I had not had all the forms signed and dated. The protectionism extends far enough to require all undeveloped film be held 24 hours by a censor (who merely inquires as to what you have photos of and why) and all "natural products" to be passed by the Ministry of Cultural Heritage, or some such, where they require a list of items to be exported. This sort of paper work is annoying, but I have heard a number of sad tales from people who did not comply and wound up begging officials in the eleventh hour, and all naturalists should encourage conservation efforts even if they are sometimes annoying.

Health problems are also severe. The island is one of the most malaria infested places on the globe, perhaps from its colorful history as a pirate base (Lemurs do not get malaria). Plasmodium falciparum is common in the Northeast where several strains are resistant to both chloroquine and fansidar, while P. vivax and other species are more widespread, but less lethal. Hotel windows are often equipped with no more than wooden shutters and I did see a gravely ill tourist who had contracted malaria at a luxury resort. Schistosoma mansonia and haematobium are known to infest Eastern rice growers and one should take care not to dabble in the ponds. Because so few people ever see a doctor in their lives it is unlikely that the World Health Organization really knows what diseases are where and how serious they are.

Because the country is poor, there is very little of value for sale anywhere and it is usually of low quality. This is not a grave concern for field biologists, except that one must come prepared with batteries, film, prescription drugs, soap, toothpaste, pencils, etc. to last the duration of the visit. Electricity, alcohol, petroleum products and the like should be similarly regarded as unavailable, although this is more out of the spirit of "be prepared" than because they are truly absent.

So much for the bad news. The good news is that Madagascar is still rather little known and probably has not been as thoroughly disturbed as was once thought. The East Coast was surely once wet forest from Tolanaro (Ft. Dauphin) up along the mountains to the northern massive uplift of Mount Tsaratanana. Just west of Tolanaro the country turns very dry and the spiny desert of *Acacia*, euphorbs and the endemic *Didieriaceae* spreads westward to Tulear on the West Coast with significant islands of gallery forest in the riparian regions that have not been cleared. From Tulear the forest turns from seasonal dry forest to successively wetter forest as one moves northward along the coast. The interior of the island is a large and wet plateau near the mountains of the East and this gradually turns to a very broad and empty savana which occupies most of the western interior and is very dry in the South. In the East, most of the forest is now confined to inaccessible slopes of the mountains with a few good patches near the rail line. The plateau is almost completely without its native forest, but the South and West still have a lot of good, even virgin forest away from the cities.

The savana region, claimed by the French to be deforested by various calamities before their arrival, may well have always been good grassland. The southern plains are called the Horombe by the locals, which means "big grassland". Scuttlebut has it that pollinological evidence indicates the savana has been a grassland for much longer than the French suspect. I think it is rather unlikely that this was a vast forest completely cut by humans since their arrival 2000 years ago, particularly given the low rainfall, sparse human population, and lack of riparian succession one sees now. This interpretation is not the traditional one, but it is gaining support among the Anglophones and seems quite reasonable based on my experience with southern Africa savana and deforested places of Central America.

Madagascar is an extremely seasonal place. In the dry season (March to November), the weather comes mostly from the Southeast out of the middle of the temperate Indian Ocean. The East Coast gets some rain all year and on the slopes of the higher mountains (Tsaratanana, Andringitra, Ankaratra) supports cloud forests, some of which I have seen intact although logging interests are now growing introduced pines there. In the wet season the weather comes from the Northeast out of the tropical ocean and brings with it cyclones and daily rains to the North and East. The South and Southwest get little rain, as little as 2 inches annually in some localities west of Faux Cap, and most of this is concentrated in a few heavy rainfalls in December or January.

Because of the dominance of the East winds, the biota seems generally more related to the Indo-Malayan groups than to the African groups. This is especially so in the East, but as one moves to the West coast one finds more African representation. Nearly all the vegetation in the dry regions is reputed to bloom from October to December and then shed seeds during the rain. There is a tremendous burst of insects during the early rainy season and small raptors fly from Africa and Arabia to the West coast to glut themselves on cicadas and the like. However, I will attest to the fact that if you go out there in March, the pickings are already pretty lean and you may have to dig in dry riverbeds to collect drinking water.

The French did fairly well at exploring the East Coast, which is mostly under rice now. However, the West Coast is less accessible and far less known. This region was once united with Kenya and Tanzania and is Jurassic in age, which has sparked a lot of interest by Mobile Oil offshore and Amoco inland. From the air one sees a coastal band of forest stretching from somewhat north of Tulear to the wet forests of the North, interrupted here and there. In about the middle of the West coast there is a drainage basin, that of the Tsi-rihina, somewhat north of Morondava, which still is quite little known and apparently full of endemics, including lots of herps, viverids and

an ibis. I spent three days in a Swiss logging camp 50 km. north of Morondava and was pleased by the good state of the forest which was teeming with lemurs and tenrecs. The Swiss told me about half the tree specimens from their concession are returned from Europe as undescribed, but until the Missouri Botanical Garden gets its collectors back in there we will probably know nothing more than that the region is rich. I am sure a good collector will not be disappointed with this area: there I collected the first Melittid (a new subgenus near Meganomia) recorded from the island.

When you plan a trip, you can only reasonably hope to do about half the work (or less) that one can do in a similar time in, say, Costa Rica. If your plan is not too ambitious, though, you are almost certain to find new and wonderful things and feel that your trip was worthwhile. The first step in planning the trip is to file an application with the International Advisory Group of Scientists (IAGS), which is a group of veteran researchers whose role is to screen projects for the Malagasy authorities. This is a boon to serious researchers as it will introduce the newcomers to the tight brethren of long term workers, from whom all kinds of precious advice and assistance is available. I had a very successful trip with no major setback primarily because I did rely on the advice and support of these various groups. Below I have included the names and addresses of those from whom information and applications are available.

I hope that this short report of Malagasy opportunities and pitfalls is helpful in improving the quality and likelihood of success of future projects. While the first portion of this synopsis may sound rather discouraging, I think there are few serious field biologists who would not trade their comparative comfort for the rare chance to explore a still little known and fascinating region.

MEMBERS OF THE INTERNATIONAL ADVISORY GROUP OF SCIENTISTS (IAGS)

Dr. Roland Albignac (ecology and behavior of Malagasy carnivores), Faculte des Science/Laboratoire de Zoologie et Ecologie Animale/Universite de Besancon/2500 Besancon/France.

Dr. Lee Durrell (vocal behavior of Malagasy birds and mammals), Chairman, Jersey Wildlife Preservation Trust/Les Augres Manor/Trinity/Jersey/Channel Islands/United Kingdom.

Dr. Alison Jolly (behavior and conservation of primates) the Rockefeller University/1230 York Avenue/New York, NY 10021/USA.

Dr. Bernd-Ulrich Meyburg (ecology and conservation of birds of prey) World Working Group on Birds of Prey (ICBP)/Herbertstr. 14/D-1000 Berlin 33/West Germany.

Dr. Jean-Jacques Petter (behavior and ecology of prosimians) Museum National d'Histoire Naturelle/Ecologie General/4 Ave. du Petit Chateau/91800 Brunoy (Essone)/France.

Dr. Peter Raven (plant biology) Director, Missouri Botanical Garden/PO Box 299/St. Louis, Missouri 63166/USA.

Dr. Alison Richard (evolution and behavioral ecology of Malagasy primates) Dept. of Anthropology/2114 Yale Station/Yale University/New haven, Connecticut 06520/USA.

Collecting Reports

HYMENOPTERING IN SABAH AND THE PHILIPPINES

by

Justin Schmidt, Pat Schmidt, and Chris Starr

(Dept. of Entomology, Univ. of Arizona,
and Biology Dept., De La Salle Univ., Manila, Philippines)

This trip from May 3 to June 3, 1985 resulted from the yearning of the authors to investigate Borneo before forest destruction is complete and because very little is known of the Hymenoptera of this biologically fascinating area (the bloody British are the main group investigating the area). Our goals were simple enough -- study and collect any aculeates (especially ants and stenogastrines) available, make an entomological dictionary of insect names in Kadazan, the largest local language in Sabah (with the help of these wonderful people who, perhaps unfortunately, have given up head hunting and most of the rest of their customs), and generally to have a good time.

Malaysia is a wonderful place to do field studies, but a scientific permit is required. This generally is not difficult to obtain, but allow 6 - 9 months for the processing. We left on shorter notice so we had to do a great deal of leg work in Kota Kinabalu, the capital, to get the permits. A point in our favor was the general friendliness, honesty, and competency of Malaysians in general and Sabahans in specific. Sabah has 50 languages among the 1.2 million populace. The country is officially Moslem, but Christian and natural religions are also common. Sabah probably has the highest standard of living of any developing Asian country and: be forewarned -- beer costs \$2.00/bottle and alcohol is 40¢/fl oz (this is because the Islamic religion does not approve of alcohol and alcohol for pickling can only be obtained from pharmacies).

In the Philippines the collecting was good, partly because Chris lives there and knows the area. In the Mt. Makiling area, we collected lots of ants (Oecophylla, Diacamma, Odontomachus, Polyrhachis, Myrmecaria, Rhytoderponera, etc.) as well as Ropalidia, Apis cerana, A. breviligula, Trigona, and a few large Sceliphron and eumenids. The area is a national park with quite old second growth and is really good collecting.

In the southern end of Luzon, the largest Philippine island (which includes Manila), we were the guests of the inhabitants of the town of Salvacion. These wonderful people adopted Chris some time back when in the middle of a (presumably rainy) night he had missed a ferry to the next island. Since then the adoption has been mutual and wasp studies have flourished. The villagers had located several Vespa tropica and V. luctuosa colonies for us which we gladly excavated. The mutually beneficial deal Chris had set up was: they find the nests and in exchange we would remove them and give the villagers the brood for fishing bait. We also collected numerous Xylocopa and were treated to excellent home cooked Philippine food including baked pork tongue. While on the subject of food, we can say that generally Philippine food is poor, but they do have excellent barbecued chicken ileums that cost 6¢ each and are grilled before your eyes over charcoal. For the faint of heart, the pineapple is cheap and outstanding.

In Sabah we (Justin, Pat, Chris, Maite) rented "piece-of-s__t", the cheapest rental car in town (\$220/week), and headed out. Roads are somewhat rough, but overall are very acceptable for most cars. We collected lots of ants, stingless bees, Apis dorsata (but since they are not wasps, we won't say much more about them) and stenogastrines. The last were extremely abundant

under the vegetative overhangs of most roadbanks as well as under bridges and houses. (In fact Chris spent most of his time up to his ears in mud in roadbanks of under bridges).

In Kota Kinabalu itself we stayed at Akbar Gardens, 371 Jalan Likas (tel 31706) which was expensive (\$14/night/room) and noisy, but about 1/3 to 1/2 the price of anywhere else in town. Also, the neighbors next door were from Ohio (no wonder they moved to Sabah) and since he is head of a religious group studying linguistics (Summer Institute of Linguistics) the family provided lots of help about geography and social customs. Another plus was the presence of a stingless bee nest in the wall which made interesting watching. Two blocks away we discovered a large patch of queens wreath (Antigonon), a sonoran desert species, that had attracted vast numbers of scoliids plus numerous other aculeates.

Highlights of the collecting included capture of numerous Provespa at black lights and house lights in several locations, collecting as guests of a logging operator in virgin forest, and studying the aculeates of Mt. Kinabalu. It turns out Provespa are relatively common at lights, but we could find no nests and the locals had never seen one. We captured lots of the tan "flying sausages" including a few males and females. Their stings also really hurt. Our best Provespa collecting occurred near Ranau where we were befriended by George Lo, who invited us into his home in a remote area near a river. His generator kept the lights going and we talked, captured Provespa (and lots of other stuff), and got slowly(?) inebriated until well past midnight.

A word about people -- in general many people speak English and most are very friendly. The British were good colonizers and most people like European people (in fact, often more than Malaysians from the mainland). We quickly learned that they also highly regard scientists (or at least tolerate their crazy ways) and will usually do what they can to help. For example, at one point we got lost and ran into a logging camp. The director was very helpful, fed us, and invited us back to stay another time. In another case we stopped at an oil palm plantation and the Chinese director welcomed our studies of ants and gave us free lodging as well as the run of the place.

In recent years Sabah and Borneo have become famous in the New World for Mt. Kinabalu, a biological island 4101m high on a hugh island whose next highest peak is a little over 2000m. Although the plants, butterflies and moths of Mt. Kinabalu are well studied, we could find no reports on the Hymenoptera. Hence we set out to investigate. The park headquarters is at 1550m and at that height we found almost no ants and few other aculeates in the natural forest. In disturbed areas various Myrmicaria, formicine and myrmicine ants were present and we discovered a nesting aggregation of a sweat bee (that Michener, a famous investigator of derived spheciids that have plumose setae, is going to describe) in an old embankment along a stream. Occasional Vespa sp. and Apis cerana were the main aculeates observed at that level or above (as confirmed by a grueling 8500 foot climb in 8 miles to the top). The area seems to rain constantly and so we got used to being wet (it took three attempts to study the sweat bees -- each day we got rained out after a half hour). The old adage that I will attribute to W. L. Brown (correctly I hope) that ants don't seem to exist in tropical forests above 5000 feet certainly seems to be true for Mt. K. Thus, except for some luck with the bees, the Mt. was pretty much of a bust -- we think mainly because not many aculeates are there.

The last and perhaps most exciting stop in the Sabah trip was the return visit to Marak Parak, the site of the Chinese owned logging camp that we had inadvertently run into. Logging in Sabah is in general very destructive to the environment (almost total), but Charles Jackson, the operator took us on

an extremely hairy four wheel drive ride up through the steepest greasy mud to an area of virgin forest (rumor has it that his talents with such vehicles match those of Dave Roubik). There he dropped us off for a couple of days. When not avoiding rain squalls, during which we sat either in the tent or under the nearby bulldozer, we investigated the forest. Lots of ants, especially raiding Leptogenys, and butterflies were present. The plants and the odd frog were also interesting. But best of all was the black lighting. We set up on the bulldozer (see article on "Bulldozers and Other Essential Items for Tropical Collecting" elsewhere in Sphecos) and caught vast numbers of leps, beetles, alate ants, earwigs, etc. and Provespa.

We had a minor problem getting out of the area after the two days. Charles had gone to Kota Kinabalu and forget to tell anybody to come get us. Chris walked down the road looking for stenogastrines and finally at 7km flagged down a truck. They then got us, filled our tummies with food, and all was well.

APPENDIX: Notes Gonzo (Starr) Wrote to Mention

Reasons to go to Sabah

- its part of Borneo, with a rich and underexplored fauna
- it contains Mt. Kinabalu
- it is the launching area for the two main routes by which organisms have migrated into the Philippines (i.e. by way of Palawan and by way of Sulu and Mindanao), hence is of special biogeographic interest
- practical (it's accessible and legalities aren't bad)

Mt. Kinabalu

- The book Kinabalu, Summit of Borneo, Sabah Soc. Monograph, 1978 gives a good coverage of what is known of the geology, age, and fauna and botany
- the park is well managed
- Corner in his book says he thinks it has "the richest and most remarkable assemblage of plants in the world"
- it has Nepenthes, Rafflesia, tree shrews, and the Kinabalu rat

Practical matters

- Sabah is prosperous and hence relatively expensive to the rest of Asia
- government seems well run and has a low bureaucratic load
- malaria is rampant -- and for gods sake take your medicine and don't be a fool (the British in logging camps are on it for 30 years without side effects)
- its hard to get info in advance. The best bets are people in Britain

REPUBLIC OF CENTRAL-AFRICA

by

Hermann Dollfuss

(Franz Höglgasse 4, A-3100 St. Pölten, Austria)

In July/August last year I made a private trip to the Republic of Central-Africa (Kembe 4.29N, 21.53E) to collect sphecid wasps. While I was there, Kembe was at the height of the rainy season, with maximum vegetation, and this was the most favorable time to catch aculeate Hymenoptera.

I was able to stay in the Catholic Mission station in Kembe and was able to visit the little villages in the surrounding area with the help of Austrian V.S.O. workers employed in the region. Very few white people live there; those who do are mainly missionaries, V.S.O. workers or road construction engineers. Thus it was possible to experience life in an undisturbed part of Africa and to photograph the wildlife and imposing scenery.

While I was there I was able to catch about 1900 aculeate Hymenoptera. Besides Sphecidae (900 specimens) I also caught 330 Vespoidea, 324 Apoidea,

110 Pompilidae, 45 Chrysididae, and 25 Tiphiidae. Should anyone be interested in obtaining samples from this collection, please contact me. The insects have been properly treated and labelled and are ready for packing and being sent out to fulfill orders.

Museum Trip Report

1985 VISIT TO THE ZOOLOGICAL INSTITUTE, LENINGRAD, RUSSIA

by

R. M. Bohart and L. S. Kimsey

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A 2-week trip at the end of September to Russia resulted in 10 actual days taxonomic work at the Zoological Institute in Leningrad. We had made our plans after receiving friendly letters from several of the workers at the Institute. We took with us lists of expected types and material for comparison and exchange. The only travel hitch was the impoundment of our pinned wasps (4 boxes) by Russian customs authorities. This was resolved the next day by a representative of the Institute who brought the boxes to us. The Institute is in the center of Leningrad, in an area of imposing government buildings. The ground floor of the Institute houses an extensive zoological collection open to the public. Of special interest were the mammoths and mastodons, extracted from the Pleistocene ice. Also, Peter the Great's dogs were stuffed and on display. The insect collections were on the second floor in rooms on either side of a long hallway.

On arrival at the Institute we met Dr. Tobias, Chief of Insect Section, and exchanged a few pleasantries. However, our principle contacts were Vladimir Trjapitzin, a renowned chalcidologist; Yuri Pesenko, a hymenopterist (Halictidae) who was a special help in bibliographic problems; and Eduardas Budrys, a promising young predoctoral student from Estonia S.S.R. Mr. Budrys, an expert in Palearctic Sphecidae, Pemphredoninae, spoke passable English. The other two men were less fluent but understandable. During the first couple of days of our visit, we had considerable help from John LaSalle, who was visiting from U.C. Riverside. John speaks some Russian and was a fine interpreter. The Institute is closed on Saturday and Sunday. The first weekend John and his wife went with us on a boat trip into the Gulf of Finland, arriving at the renowned Summer Palace of the Tzars. It is located in a beautiful wooded area and the buildings sport great quantities of gold leaf, especially in the huge fountain in front to the Petrodvorits Palace. This structure has been extensively renovated following its trashing by German troops in World War II. The rooms and artifacts were quite impressive.

The chrysidid collection is mainly the work of Andreas Semenov, who published from the 1890s to the 1940s, and then posthumously in 1967. It is certainly one of the five best collections in the world. There are thousands of chrysidids, perhaps 1000 identified species, and about 300 holotypes or lectotypes. Some of the type series have dozens of specimens. The material is in excellent condition, arranged primarily by M. N. Nikolskaya, who worked with Semenov in his later years. The carefully constructed glass-topped drawers are a model of hardwood cabinetry. We were under the special care of Dr. Trjapitzin, whose cooperation was exceptional. We took copious notes, sketches, labeled lectotypes, formed homotypes, listed all of the identified holdings, and made an exchange of chrysidid and pemphredonine material. Other types in the Hymenoptera collection, besides Semenov, are those of Eversmann, but we did not find any of his chrysidid types.

A few general remarks: Intourist, the Russian travel agency housed us in the Pribaltiskaya, a beautiful modern hotel looking out on the Gulf of

Finland. The cost for single or double rooms was \$67.00 with full breakfast. Other meals in the hotel were in the range of \$4.00 to \$8.00. Transportation to the Institute by taxi was about \$3.00 to \$4.00 for the circa 10 mile trip. We usually took the bus which cost per person \$.03 to \$.04 each way (pay by the honor system!).

The second weekend we took a tour through the world-famous Hermitage Art Museum, across the bridge (there are many rivers in Leningrad) from the Institute. This huge structure includes the Novogrod Winter Palace of Catherine the Great. We were told that a one-minute examination of each item in the Hermitage would take ten years! We practically ran through the many rooms in about 1 1/2 hours.

On the way back to Davis we had a short stopover in Helsinki and visited the Helsinki University Museum. This is undergoing extensive repairs but with the help of the entomologist, Antti Pekkarinen, we examined their chrysidid collection and borrowed a type. The curator is Olof Bistrom.

Everything considered, the trip was a great success and outweighed the tremendous jet lag which followed (11 hour time difference!).

Errata

ERRATA IN DAY, 1979, THE SPECIES OF HYMENOPTERA DESCRIBED BY
LINNAEUS IN THE GENERA SPHEX, CHRYSIS, VESPA, APIS AND MUTILLA
(Biol. J. Linn. Soc. 12:45-84.)

Michael Day (British Museum (Natural History), Cromwell Rd., London SW7 5BD, U.K.) would like to emend certain details of his paper on Linnean wasp types as follows:

- P. 48. Apis acervorum
Loken (1973: 186)
- P. 55 Sphex capensis
Fabricius (1804)
- P. 56 Hemipepsis errabunda
I strongly suspect this will prove to be a junior synonym of Sphex serverus Drury, 1782:58. (This is the type species of Hemipepsis.)
- P. 60 Sphex collaris
Platyderes handschini
- P. 61 Sphex cyanea
Morgan (1985) p. 10 designates a lectotype for this chrysid in the Linnean collection.
- P. 65 "Mutilla indica 1758:583 SURINAM" is correct for the species of Traumatotilla rather than the data given, which are duplicated from the subsequent species, Sphex indica.
- P. 66 Mutilla maura. Drs. Lelej and Petersen have convinced me that the specimens in L's collection are those sent by Schreber and listed by Linnaeus (1767: 967). They cannot therefore be type-material. Lelej and Petersen will resolve the problem of the identity of Dasylabris maura in due course! (n.b. I am not so foolish as to think that designation of a specimen as a primary type actually resolves its identity! It just looks good on paper!) Note my opening paragraph (1979).

SPHECID WASPS OF THE WORLD - A FEW ERRORS

by

Arnold S. Menke

- p. 465, LC, L 17: hindtibia is correct
p. 458, LC, insert as species after L 11 from bottom:
 tomentosus MacLeay, 1827 (Alyson); Australia ?
p. 526, RC, L 43: fuscatus Morice is correct
p. 527, RC, L 3: delete "ssp."; (eremicus is a synonym of strigatus, L 2).

Nomenclature

POLISTES GALLICUS (L.)

Mick Day, in his 1979 paper on types of Linnaeus, clarified the status of many names. Among these was the well known European wasp Polistes gallicus (Linnaeus). He demonstrated that the name has been misidentified for many years, and that it must be applied to the species currently known as foederatus Kohl. Polistes "gallicus" of nearly all European literature must now be known under the name dominulus (Christ). Unfortunately, this name change seems to have been overlooked by some contemporary workers (myself included!), but Gusenleitner (1985, Nachricht. Bayerisch. Ent. 34:105) has adopted gallicus sensu Day. Gusenleitner also synonymized omissus Weyrauch under gallicus. To summarize:

Polistes dominulus (Christ) 1791 (= "gallicus" of authors)

Polistes gallicus (Linnaeus) 1767 (= foederatus Kohl 1898, = omissus Weyrauch 1939)

A. S. Menke

PHILANTHUS RUSPATRIX (L.)

Another significant name change that Mick Day established in his 1979 paper was the identity of Vespa ruspatrix as a senior synonym of the well known Old World sphecid Philanthus triangulum (F.). To quote from Day, "Workers with an interest in the taxonomy of the Sphecidae will doubtless wish to consider the advisability of seeking suppression of this name in view of the frequency of usage in biological texts of its junior synonym, P. triangulum (F.)".

A. S. Menke

Hymenopterists Society News

HYMENOPTERISTS SOCIETY 4TH REPORT

November, 1985

by

Bob Wharton, secretary

Yes, the International Society of Hymenopterists is still alive. A directory has finally been compiled, and estimates of printing costs are now being obtained. The society will sponsor a symposium at the International Congress of Entomology in 1988 (Vancouver, Canada). The symposium topic is still being debated. Any suggestions from the membership? For North American workers, there will be another informal conference at the annual meeting of the Entomological Society of America (ESA). This year's meeting is in

Hollywood, Florida, December 8-12, 1985. Meeting time and place will be listed in the ESA program announcement, which should appear in the near future. Following the meeting, there will be a number of entomologists (even non-hymenopterists) descending on the Gainesville area, to visit the Division of Plant Industry, Florida Collection of Arthropods.

A diverse assortment of newsletters and other irregularly issued information sources pertaining to Hymenoptera is now available. These have done much to foster communication amongst Hymenopterists, and have thus accomplished the major goal of our own society. These "newsletters" include Sphecos (for aculeate wasp workers), edited by Arnold Menke, U. S. Dept. of Agriculture at the U. S. National Museum (USNM) in Washington D.C.; Ichnews recently revived (and expanded to include braconids), edited by Mike Sharkey at the Canadian National Collection (CNC) in Ottawa, Canada, and Paul Marsh, U. S. Dept. of Agriculture at the USNM; Symphytos, for sawfly workers edited by Dave Smith, U. S. Dept. of Agriculture (USNM); Melissa for bee workers, edited by C. D. Michener (University of Kansas) and Ron McGinley (Smithsonian Institution, Washington D. C.); Chalcid Forum (for wasps too small to be of any importance), edited by Eric Grissell, Mike Schauff (both USDA at USNM) and Gary Gibson (CNC); Proctos (for proctologists?), edited by Lubo Masner and Norm Johnson, Agriculture Canada, Ottawa; and Attini, (for those working on Atta ants and their relatives) edited by A. Kermarrec, I. N. R. A. Station de Zoologie et Lutte Biologique, 97170 Petit-Bourg, Guadeloupe F. W. I. There are also 2 organizations, IOBC (biocontrol) and IUSSI (Social Insects) which deal largely with Hymenoptera. Both have journals (Entomophaga and Insectes Sociaux), and both have regional organizations and regional newsletters. Further information can be found in their journals. There are several organizations devoted to honeybees, and there is also an international group working on biology and behavior of parasitoids. Gatherings of the latter group usually take place every 1 1/2-2 years, and have been primarily in North America.

Given the high quality and diversity of the existing news sources, and the inability of our treasury to cover the cost of distributing a newsletter to a membership in excess of 600 people, it is time for our society to reconsider our initial goals. I would appreciate your suggestions.

Norm Johnson (Department of Entomology, 1735 Neil Avenue, The Ohio State University, Columbus, Ohio 43210) is preparing a list of papers published on Hymenoptera during 1984 and 1985. Please send him citations or reprints of all your papers published in these 2 years.

[A normally reliable source has told me that Lubomir Masner and some of his Canadian colleagues are establishing a journal for the Hymenopterists Society. This is indeed great news since it will provide a focal point for the society as well as giving all hymenopterists their own journal. Remember, you heard from Sphecos first!!!! - edit.]

Newsletter News

Ron McGinley and Charles Michener have launched the first issue of Melissa, the bee workers newsletter. The first issue appeared in February, 1986 and is 49 pages long! Accompanying issue 1 is a Melittologist's Directory that is 45 pages long and which gives names, addresses, telephone numbers, research interests, etc. of approximately 350 bee workers worldwide. A very impressive beginning and Ron and Charles deserve a lot of praise for their fine effort.

Issue 3 of Symphytos appeared in March 1986 and is an impressive 38 pages. Keep up the good work Henri and Dave!

Chalcid Forum is moving along at a frantic pace - issue #6 came out in January 1986. Gary Gibson and John Huber of Agriculture Canada are helping Eric Grissell and Mike Schauff produce each number.

Joachim Oehlke (Institute fur Pflanzenschutzforschung, Schicklerstrasse 5, DDR-1300, Eberswalde-Pinow 1, East Germany) sent me a copy of a issue 3 of a newsletter that he and Andreas Taeger produce for German hymenopterists. It is produced in association with the Gesellschaft fur Natur und Umwelt in KB der DDR. Issue 3 contains a variety of information.

Russian Translation

The 1980 book by Alex Rasnitsyn on the [Origin and Evolution of Hymenopterous Insects, Acad. Nauka, Moscow, 190 p.] is in the process of being translated under the auspices of the National Agriculture Library, USDA, Beltsville, Md. When it is available, I will make an announcement in Sphecos.
A. S. Menke

Missing Person

Does anyone have the current address of Mr. Mehandra Giri?

Profiles

ROBIN EDWARDS

I was born in the same town as Michael Owen (Sphecos 9:46), namely Rochester, Kent, England just nine years earlier. After the war, I moved to the flat land below sea level in the extreme south east corner of England known as Romney Marsh - famous for its sheep with their top quality wool.

I think it was my biology teacher at secondary school who somehow got me interested in the animal kingdom. In those days I bred a few moth caterpillars, and marvelled at the butterflies in our garden - it was the first landfall for migrating Red Admirals and Painted Ladies that crossed the English Channel from France.

After school, I did my two-year National Service with the Royal Air Force. Because of my interest in biology, the R.A.F. made me a telephonist! Back home in 1952, I started looking for a job and a local farmer introduced me to Cooper, McDougall & Robertson Ltd., well-known for their sheep dips, flysprays and grain protectants. They had a vacancy for a laboratory assistant in their insect labs. I took the job, and suddenly an entomologist was born.

I did a lot of part time study and eventually made it to London University's Birkbeck College - an evening college - where I obtained my BSc in 1960. I joined Rentokil Ltd. in August of that year and have just celebrated 25 years service with what has become the largest pest control company in the world. I obtained my MSc by thesis in 1968, and this was my first work with social wasps.

By this time I was interested in writing, and in particular the production of books for the Rentokil Library series. I have done a lot of editorial and design work and am now the Editor of the series. My own book, "Social Wasps. Their biology and control" was published in 1980 after nine years of work - I did most of it on my own time (instead of working for a PhD). Last year I helped a colleague complete a book on Rats and Mice and I have now almost finished my second book, this time about termites in buildings.

My work at Rentokil also includes some staff training in insect identification and help with editorial matters relating to 'in house' technical literature. The identification of insects of insects, rodent

droppings, hairs and other strange things sent in by our staff and by the public has been a major part of my work. I looked at a mere 560 in 1961: last year I did 1800, making a grand total for the 25 years of just over 25,000! The exciting thing about this job is that I never know what may turn up in the next matchbox or bottle. For example, I discovered a new species of carpet beetle (Anthrenus sarnicus) in 1962 but am still waiting for the next new one! A few days ago I received a Mediterranean species of centipede (Scutigera, with incredibly long legs), the first since June 1961.

On the wasp front, I now do a little research as and when I feel like it, and much watching for the pleasure of seeing these exciting insects. I still want to see a nest of Vespa mandarinia (at home, preferably) and the establishment of Polistes in the U.K. so that, at last, I will be able to see what is going on inside the nest. As all Sphecos readers will know I like to keep up to date with all the vespine literature and there is every possibility of putting together a second volume of "Social Wasps" when I retire - only six years to go!

CHEN NAI-ZHONG

I was born on 20 October 1964, at Liling county of Hunan. My home town is famous for china. I started receiving preliminary education at six years old, graduated in 1984 from Dept. of Plant Protection of Hunan Agricultural College, and then entered Beijing Agricultural University as a graduate student majoring in the taxonomy of insects. I decided to do my best in investigating our country's fauna of insects.

VLADILEN E. KIPYATKOV

I was born in 1949 in Leningrad, U.S.S.R. I have studied entomology and biology of ants at the Department of Entomology, Faculty of Biology, Leningrad State University in 1966-1971 as an undergraduate and in 1971-74 as a postgraduate student. In 1974 I received my doctoral degree from Leningrad State University. My doctoral thesis was on the role of photoperiodism in the regulation of seasonal development in ants.

At the present I am assistant professor at the Department of Entomology, Leningrad State University. I give lectures on biology and behavior of social insects and on ecological methods in entomology. My scientific interests are: the regulation of seasonal and life cycles, caste determination and development in ants and other Aculeata, the origin and evolution of social behavior in insects, and sociobiology.

MARC and HUBERT TUSSAC

Nous sommes deux frères Hubert et moi, amateurs et spécialisés dans les Aculeata. Nous sommes nés en Tunisie, et rentrés en France à l'indépendance de ce pays en 1957. Déjà à cette époque nous collections du matériel. Nous sommes installés dans le sud de la France, dans la région de Toulouse et nous effectuons nos chasses dans cette zone, en Espagne, et toujours en Afrique du Nord, avec au moins un voyage par an: cette région est très intéressante.

Nos occupations professionnelles ne sont pas trop éloignées de notre passion. Mon frère travaille dans le Service des Forêts au Ministère de l'Agriculture, et moi en tant que "Plant Scientist" pour la Société Lilly d'Indianapolis.

Le matériel récolté est étudié par Hubert en ce qui concerne les Eumenidae, Chrysidae, et Bethyilidae, et par moi pour les Sphecidae, Mutillidae, et Scolidae.

Nous avons pour l'instant que très peu de publications, mais nous travaillons à de nouvelles concernant une nouvelle espèce d'Ammophila de France, de Tachysphex du Maroc, et des Chrysididae.

KARL-HEINZ WICKL

I was born August 3, 1951, in Roth bei Nürnberg and grew up in Nürnberg (northern Bavaria, West Germany). In Erlangen and Munich I studied biology, landscape planning and nature conservation and finished with the diploma in 1979. From age 15 I was very interested in ornithology and worked especially in distribution, feeding ecology and habitat preservation of the Eagle Owl (Bubo bubo) in northern Bavaria. My interests in entomology began very late - when I was age 31. Very inspired by publications of K. Krombein, G. Preuss and P. Westrich I began working on trap-nesting wasps and bees and on the local fauna of wasps in northern Bavaria. A central task in my work as an ecologist (landscape planning, nature conservation) is the consideration of protection of aculeate habitats. My son Alexander, only six years old, is also enthusiastically interested in aculeate wasp research.

Recent Literature

Many significant papers appeared this past year - too many to make special note of, but at least the following should interest many of you: Bohart and Gillasp (1985), Brockmann (1985), Cumming and Leggett (1985), Evans (1985), Gibson (1985), Lelej (1985), Lomholdt (1985), Mason (1986), Naumann and Masner (1985), Wasbauer and Kimsey (1985, Zessin (1985).

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