SPHECOS

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A Forum for Aculeate Wasp Researchers

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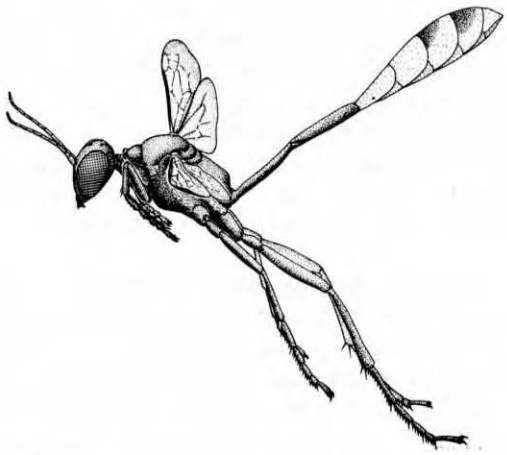


EDITOR'S RUMINATIONS

Sphecos is now in its 5th year. In all honesty I must confess that I assumed that after about two years, it would gradually fade away due to lack of input from the readers, and decreasing interest in producing Sphecos by your editor, etc. However, here we are with a second appearance this year! This issue is not the usual 50 pages, but it is filled with some interesting stuff: some useful information on preparing material for scanning electron photomicroscopy; a technique for preparing larvae for the same thing; two biographies of special note, one on the Australian hymenopterist Tarlton Rayment, and one autobiographical by one of the grand old men of entomology, Eric Tetens Nielsen. Finally Robin Edwards has given us another vespine literature supplement.

I owe an apology to Helmar Kulike! HE is not a woman (as reported by me in Sphecos 8:13-14), but nevertheless his wasp poster is beautiful. I guess I must attribute this mistake to my obviously poor knowledge of the gender of German names - I'm truly sorry Helmar.

Jay Nixon would like alert the readership to the fact that he is not G. E. J. Nixon. Jay has been receiving many requests for the latter's reprints. G. E. J. Nixon is not on the Sphecos mailing list, nor is he in the Directory. Jay is the only Nixon listed in the Directory and we assume that that explains why he has been receiving requests for reprints.

Midway through stuffing Sphecos 8 and the new Directory into mailing envelopes, I discovered that some copies of the Directory were misprinted. If any of you received one of these defective copies (pages out of order) please request a replacement from me.

I would like to thank Terry Nuhn for typing much of this issue into the word processor, and Ludmila Kassianoff for again translating some Russian titles into English.

A final note: please continue to send in material! Lets make Sphecos 10 another 50 pager. I know a lot of you have been making collecting trips, etc. Lets hear about your adventures.

RESEARCH NEWS/HELP NEEDED

David McCorquodale writes: "I have started my Ph.D. in the Department of Zoology, Australian National University, GPO Box 4, Canberra, ACT, 2601, Australia, with a working title of: Factors influencing communal nesting by Cerceris spp. in southeast Australia. I will be looking at the roles of nest parasites and nesting substrate in promoting communal nesting as well as extensive observations of the behaviour of individual females at nests. One technique I hope to use is electrophoresis, using the data to determine relatedness of females in communal nests and nesting aggregations."

Mark F. O'Brien (Museum of Zoology, Univ. of Michigan, Ann Arbor, Mich. 48109) writes: "I am still working on the sphecine wasps of Michigan, and should be finished sometime in December. Other projects that I'm working on are Tachysphex pechumani ethology; comparative ethology of Podalonis robusta & violaceipennis (with F. E. Kurczewski); and several small projects on other sphecids. I am accumulating Alysson and Didineis specimens for a revision of the North American Alyssonini, which I plan on starting next year. I'd welcome specimens of these from anyone (loan, gift, or trade). As the sphecines are still my favored group, I would like to exchange N.A. material for determined Palearctic specimens."

Henry R. Hermann (Dept. of Entomology, Univ. of Georgia, Athens, Georgia 30602) sends the following announcement: "'Defensive Mechanisms in Social Insects,' a book incorporating six chapters on the morphology and behavior of defensive strategies in selected eusocial insect species and edited by H. R. Hermann, The University of Georgia, is scheduled for June [1984] publication by Praeger Scientific in New York."

Dick Bohart (Dept. of Entomology, Univ. of California, Davis, Calif. 95616) sends the following news of work in progress (as of June '84): "The Stictiellini opus is gradually nearing completion. I hope to be practically through with it before July. That month is scheduled to be spent in Honolulu, house-sitting for a friend of my brother. Maybe a little collecting will even get done!"

"You may have heard that our NSF grant has been approved [for a world generic revision of the Chrysididae]. Lynn Kimsey will be funded for 2 years starting in August, 1984. The Chrysididae project is well underway. The family will never be the same! We have been increasing our expertise on exotic forms. The trip to BMNH and Paris last September was quite illuminating. Since then we have borrowed material from North Africa, Thailand, and Russia (Moscow). Best represented areas are the New World, Australia, Ethiopian Region and Europe. We have had partial luck in seeing Radoszkowsky's types but those in Poland may be difficult to get."

"Two strictly current efforts are 'New species of Ipsiura (Neochrysis), with a key to known species (32)', and 'Microbembex of Argentina'. The latter is co-authored with Willink and is about ready to send to a journal. I am working on Ipsiura drawings this morning."

Graham R. Brown (Biological and Chemical Research Institute, New South Wales Dept. of Agric., P.M.B. 10, Rydalmere 2116, N.S.W., Australia) writes: "I have almost completed my revision of Rhagigaster Guerin sensu Turner [Tiphiidae: Thynninae] and have decided to group the 120 species into 5 genera. About 80 of the species are new."

Tony Raw (Laboratorio de Ecologia, Depta. de Biologia Vegetal, Univ. de Brasilia, Brasilia DF, Brasil) is putting together a collection of Brazilian Vespidae. If any readers have specimens to spare of any neotropical Vespidae either as a donation or in exchange he would like to hear from you.

Jeff Cumming (Dept. of Entomology, Univ. of Alberta, Edmonton, Canada T6G 2E3) writes: "This summer I returned with Gary Gibson (a Chalcidologist) from a 9 week trip through western Europe, including a few days with van der Vecht and Giordani Soika. The main purpose of the trip was to work through holdings of Palearctic Symmorphus housed in the major European museums and to study types. On both counts the trip was extremely successful and my world revision of the genus may now actually be nearing completion. While in Europe I also finished a long term survey of variation in the cephalic foveae of eumenines and have now submitted a manuscript on these structures with F. L. Leggett, an histologist in our department. The foveal study, which is in part an outgrowth of a cladistic analysis of Nearctic Eumeninae done with Jim Carpenter (Jour. Nat. Hist. in press), is the first, I hope, in a number of similar studies on vespid structure. Next for example, I would like to begin studying the evolution of acarinaria in Eumeninae (varied throughout the subfamily and even within Parancistrocerus). For now however, I will be concentrating on finishing my revision of Symmorphus, beginning with the completion of a paper with van der Vecht describing a new subgenus."

Albert Finnamore (Provincial Museum of Alberta, 12845 102nd. Ave., Edmonton, Alberta, Canada T5N 0M6) is beginning a world wide revision of the sphecid genera Stigmus and Carinostigmus (Pemphredoninae). He would like to borrow material for his study, especially non North American specimens.

E. R. Budrys (Zoological Institute, Academy of Sciences of the USSR, Leningrad 199164, USSR) is conducting a comparative study of the palearctic genera of the Psenini (Sphecidae). He has a paper in press titled "New and little known species of Mimesa Shuck. from middle Asia and key to species of the USSR".

Raimond Hensen (Rijksmuseum van Natuurlijke Historie, Postbus 9517, 2300 RA Leiden, the Netherlands) is revising the species of the subgenus Prosceliphron (Sphecidae: Sceliphron) under the direction of Jack van der Vecht and C. van Achterberg. He would welcome any material that any of you might have, especially males, which are apparently uncommonly collected. "Prosceliphron can be separated from Sceliphron s.s. by its dull, striate mesopleurae, and by the keeled 6th metasomal sternum in the female. Prosceliphron occurs in the south Palearctic (with extension to Austria), Oriental and Australian Regions."

Peter van Ooijen (Westerkade 21, 3511 HB Utrecht, the Netherlands) says "For some 9 years I have been working on Pompilidae and Sphecidae. At the moment I am an unemployed biologist which leaves me great amounts of time for the study of these creatures. My interest in pompilids is worldwide systematics, but my interest in sphecids is principally on the faunistics of the palearctic species.

Cristina Larsson (Oderljunga Skog, 28400 Perstorp, Sweden), a budding 17 year old wasp enthusiast "from a little village in the south of Sweden" writes that she has been collected insects since she was a "small kid". Cristina has been studying Hymenoptera for about two years now and finds the Eumenidae especially to her liking. She lives about 10 km from Perstorp "in the middle of the forest". [I'm sure that Cristina would enjoy hearing from anyone sharing her interest in eumenids. She is probably the youngest of the more than 400 recipients of Sphecos!].

A. Giordani Soika (Museo Civico di Storia Naturale de Venezia, S. Croce 1730, 30125 Venice, Italy) writes that he is interested in studying Eumenidae from all parts of the world, especially from Africa and the Neotropical Region, and invites anyone having material to send it to him for identificaton.

Massimo Olmi (Institute of Entomology, University of Tuscia, via S. Camillo de Lellis, 01100 Viterbo, Italy) will be in Mozambique from December 6 to July 25, 1985. He will be collecting with malaise traps while there. His long awaited opus on the dryinids is finished [congratulations Massimo!] (see pp. 14 & 47 of this issue)

Arnold Menke has completed a biogeographic analysis of the Sphecidae of the California Channel Islands in a joint paper with Richard Rust and Dug Miller on the bees, mealybugs and sphecid wasps. This paper is part of a volume containing the proceedings of the first symposium on the insects of the California Channel Islands. The Santa Barbara Museum of Natural History is publishing the book which should appear early in 1985. My current project is completing my long ago initiated review of the Neotropical species of Pison (Sphecidae). Anyone having specimens of Pison that they would like included in this revision should send them to me. After Pison is finished, who knows, I might just finish up Ammophila!

Jossif Khalifmen (ul. Pushkina 12, Udelnaja, USSR 140140) says that his book, "The Four-Winged Pirates" (see Sphecos 5:27, 6:36) has been translated into Slovakian: "Okridleni Korzari", 1983, 300 p., published by Mlada leta, Bratislava.

MISSING TYPES

Sandra Gingras (Dept. of Entomology, Smithsonian Institution, NHB stop 105, Washington D. C. 20560) needs some help in finding Friese bee types - she writes: "since I am now a quasi-sphecidologist [she and Karl Krombein have finished their revision of the North and Central American species of Liris], I am asking Arnold to let me use Sphecos to try to find some elusive Osiris (that's a bee!) types. They were named by Friese in 1930 from material in Ducke's collection. According to Michener, they should be at the Museu Paraense Emilio Goeldi, but they are not there. Apparently they are not in the Berlin Museum with Friese's other Osiris types either. I have written to the Universidade Federal do Parana, and to the Museu de Zoologia da Universidade de Sao Paulo, but have not received responses from either. Ten types are involved and they represent about one-fourth of the previously described species. I am in the process of writing descriptions now, and am very anxious to locate these missing Friese types soon. If anyone has been down this route with any Friese types from Ducke's collection before, please send a road map! Thanks!" [bee taxonomists need all the help they can get - can any Sphecos readers offer any help to this befuddled forked hair taxonomist? - editor].

Jim Carpenter (Museum of Comparative Zoology, Harvard University, Cambridge, Mass. 02138) writes: "Two of Bequaert's Mischocyttarus types [Vespidae] are missing from the MCZ, namely flavitarsis navajo and flavitarsis centralis. According to both Bequaert's (1933) description, and Richards' (1978), they should be here, but there is no record in our type book or the loan files. The holotype of flavitarsis idahoensis (also described in 1933) is here, and is dated in the type book about 1942 by Banks. Also the paratypes are here, so where the hell are the types?"

NECROLOGY

Prof. O. W. Richards: Just before Sphecos 9 went to press, notice was received of the passing of this eminent entomologist on Nov. 10 at the age of 82. Prof. Richards would have been 83 on Dec. 31. He had been in ill health for some time and was confined to a rest home. Hopefully one of our British colleagues will send us a proper obituary.

ADDRESS CHANGES

Dr. Jossif A. Khalifmen: Udelnaja, ul. Pushkina 12, USSR 140140
Dr. Till Osten: Staatliches Museum für Naturkunde, Rosenstein 1, D-7000 Stutgart 1, West Germany. [This is a new address for the museum also]
Dr. Tom Piek: Dept. of Pharmacology, Univ. of Amsterdam, Academic Medical Centre, Meibergdreef 15, 1105 AZ Amsterdam, The Netherlands
Katherine M. Noonan: 926 Kains Ave., Albany Calif. 94706.
Sal Nolfo: 1124 Brucemont Dr., Garner, N. Carolina 27529.

MISSING PERSONS

The following people have moved apparently (Sphecos 8 was sent to them but came back undeliverable). Please advise me (Menke) of their new addresses if you know where they are.

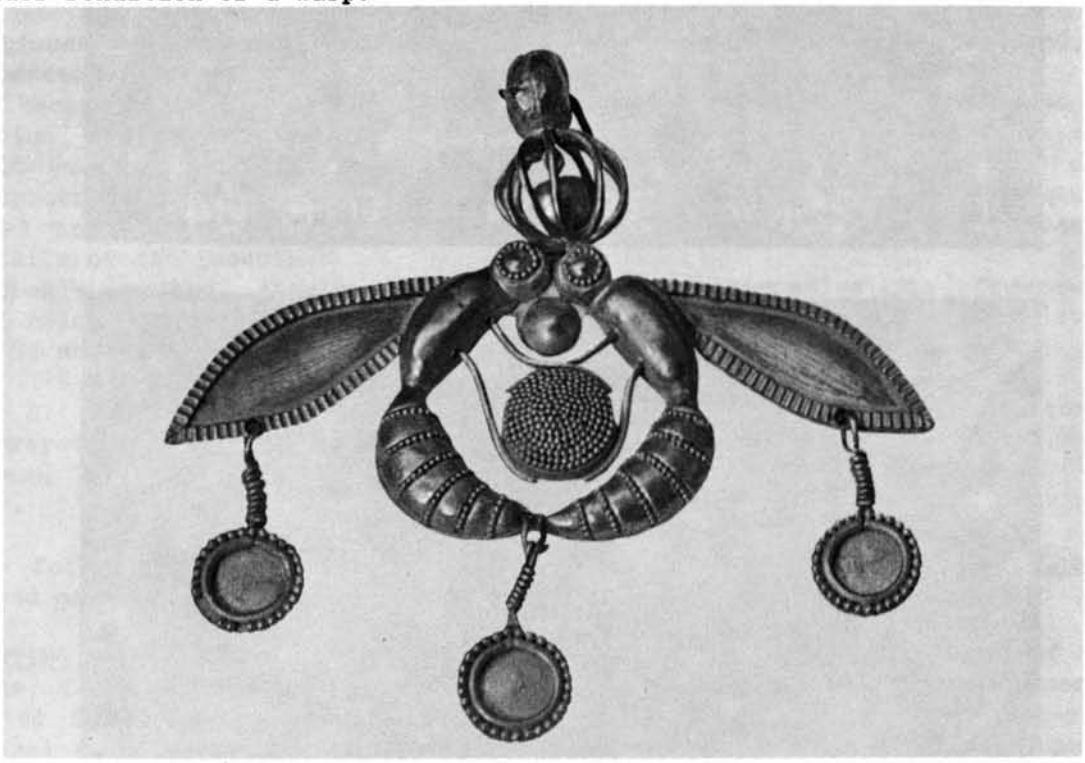
George Gamboa
Monica Raveret
Dale Kirkbride
Joan W. Krispyn
Marcia Litte

RUSSIAN TRANSLATIONS

The Hymenoptera volumes of the Russian series titled: "Key to the Insects of the European USSR" are in the process of being translated into English by the U.S. Department of Agriculture. Volume 3, parts 1 and 2, contain the aculeate Hymenoptera (published in 1978). Completion date and availability of the translations are unknown at this time but I will keep you informed.

OLDEST DEPICTION OF A WASP?

Ed Callan (13 Gellibrand Street, Campbell, Canberra, A.C.T. 2601, Australia) sent me a postcard recently that shows a piece of jewelry from the Minoan palace at Mallia Greece (dated about 2000 BC) which depicts two wasps. They are supposed to be "hornets" according to the postcard, but if so they are pretty stylized. Their slender form suggests Polistes. The pendent is reproduced here for your enjoyment. Does anyone know of an older rendition of a wasp?



TECHNIQUES

THE APPLICATION OF CYMOREK'S METHOD FOR DRY-PREPARATION OF LARVAL HYMENOPTERA

by
Martin Sorg
(Zoologisches Institut der Universität zu Köln,
5 Köln 41, Weyertal 119, West Germany)

This method of drying larvae was first published by Dr. h.c. S. Cymorek (1969). During the last six years I have applied this technique especially to larval stages of Aculeata. The accompanying* SEM photos of the head of a crabronid larva illustrate the quality possible using this method.

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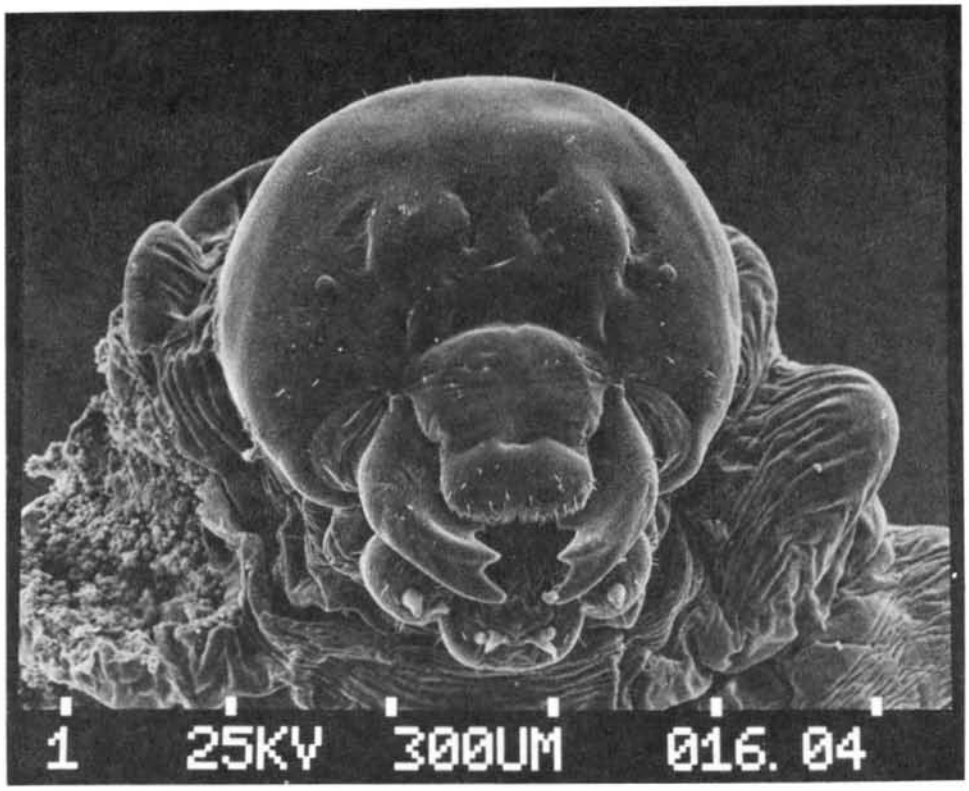
* I have to thank Prof. Dr. U. Jux and W. Mackowiak, Geol. Inst. der Univ. Köln for taking the SEM-pictures.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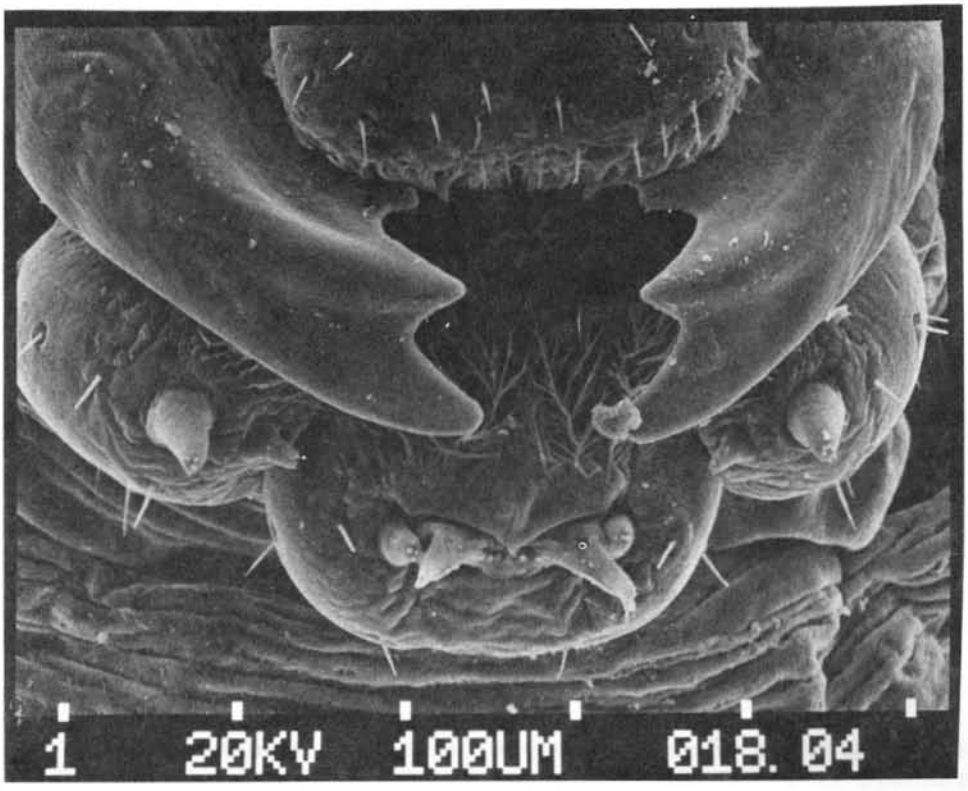

1 20KV 100UM 018.04

Chemicals and material:
Carnoy fluid (absolute ethyl alcohol, chloroform, glacial acetic acid, 6:3:1)
Methylene chloride with 1% glacial acetic acid
Dried silica-gel granules ("blue-gel" should be prefered to prevent discolouration)
Polished cover glasses e.g. flat weighing glasses

The preparation process:
1 The objects (fresh or alcohol stored material) are fixed in Carnoy fluid, small objects for several hours, larger specimens for 24 hours; heating accelerates the hardening process.
2. Within the Carnoy fluid during the beginning of hardening the attitude of the larvae can be corrected.
3. Polished cover glasses are covered with a film of dry silica-gel and a solution of 1% glacial acetic acid in methylene chloride.
4. The fixed objects are inserted between the silica-gel granules in the fluid.
5. According to density and size of the receptacle, and the height of the layer, the methylene chloride evaporates at room temperature in three to ten days (evaporation should last at least three days otherwise the results are not always satisfactory).

The specimens now are ready to be stored dry or mounted as fixed, hardened, dehydrated and degreased preparations.

The background colour of specimens becomes pastel-shaded to chalky white, due to dehydration. Therefore, taxonomically important characteristics such as strongly sclerotic parts, spots, carinas, spikes, hair and stigma, stand out more clearly when the background is no longer opaque. Black and white photographs of good quality can be taken and preparation for SEM-technique is possible and very useful to see especially fine details of the insects.

Cymorek's method should be used as an alternative to freeze-drying and critical-point drying techniques. The results are quite equivalent in most cases, the process is not difficult, and the materials needed are not expensive.

Cymorek, S., 1969. Trockenpräparation von weichhäutigen Kleintieren, insbesonders Arthropoden und Pflanzenteilen mit Dichlormethan-Eisessig-Silikagel. Natur und Museum, 99(3):125-126.

[The following notes on mounting and viewing specimens appeared in Chalcid Forum, No. 3, and are reprinted here.]

MOUNTING SPECIMENS.-- John LaSalle (Dept. of Entomology, Univ. of California, Riverside, Calif. 92521) writes that he uses a method of point mounting specimens which he adopted from various European workers. The specimen is glued to the point in the traditional manner, that is, by the pleuron, and the point is then bent upwards at its middle to about a 45 degree angle. A rectangular card (such as used for card mounting) is pinned directly below the point so that the bases touch. The card functions to protect the point mounted specimen, provides a nice white background during study and can be rotated aside if the ventral surface of the insect has to be seen. [John's mounts of tanaostigmatids prove this to be a superior method; I particularly like the white background when examining specimens--G. A. P. Gibson].

VIEWING SPECIMENS.-- Specimen glare which obscures fine surface sculpture and causes eye strain is produced by high intensity incandescent microscope light sources. Glare and the problems associated with it are considerably reduced by inserting a piece of mylar drawing film between the specimens and light source. Since the film acts like frosted glass to diffuse the light source, best results are obtained by positioning it as close to the specimen as is safe. A piece of plasticene can be used as a base to hold it and this moved as required, or the film can be affixed to cork or wooden viewing blocks by glue or by making a slit along the edge of the block for the film. Lubomir Masner has championed this trick for proctotrupoids (see PROCTOS, Vol. 5, 1982), but it

should be used by anyone using incandescent light sources. [I can attest to the superb improvement in seeing surface sculpture that this technique provides. Details are much more visible and clear - Menke]

[The following appeared in Chalcid Forum, No. 3, and is reprinted here verbatim.]

SPECIMEN PREPARATION AND SCANNING ELECTRON MICROSCOPY

by
Gary Gibson
(Biosystematics Research Institute, Agric. Canada, Carling Ave., Ottawa, Canada)

Specimens: It goes without saying that quality of output is dependent on quality of input. Good results can not be expected from shriveled masses of cuticle. If only such specimens are available then line drawings are far superior to SEM's because structure can be "reconstructed". Quality of SEM's, collections, and study of chalcidoids in general should increase in the future because of the critical point drier [for more info on this, see: Gordh, G. and J. Hall. 1979. A critical point drier used as a method of mounting insects from alcohol. Ent. News. 90:57-59. Eds.]. This relatively recent technique is probably the most important development ever for the study of thin cuticled insects such as many chalcidoids that tend to shrivel during air drying. Critical point drying is not only necessary for delicate specimens, but also makes possible SEM study of internal systems. I have been studying muscle systems of Hymenoptera and making gross dissections in alcohol. Critical point drying the dissections results in the muscles retaining their original shape and sites of attachment which can be studied using the high magnification of SEM. Consecutive concentrations to 100% alcohol is generally sufficient for most specimens prior to critical point drying, but for muscle work or very delicate specimens I prefer increasing concentrations of amyl acetate:alcohol (40%, 60%, 75%, 96%, 100% amyl acetate) which results in even less shrinkage.

Cleaning specimens: Dirty or greasy specimens can be cleansed by soaking in a 1:1 solution of ammonium hydroxide and water. I use the solution to rehydrate previously dried specimens and reconstitute muscles prior to dissection. Excessive hydration results in expansion of thin cuticled specimens such that shrivelled individuals reattain a more natural habitus. This can be preserved to some extent by subsequent critical point drying. Thicker cuticled specimens which do not collapse during air drying can be cleaned as above, but before air drying they should be dehydrated in alcohol and soaked in chloroform. This latter chemical also cleanses specimens of grease, but more importantly is highly volatile so that it evaporates very quickly. Rapid evaporation results in setae sticking out in a natural condition rather than adhering to the cuticle as often happens if dried out of alcohol. Strongly constructed individuals can also be cleaned using these solutions and an ultrasonic cleaner. Once dried and mounted on an SEM stub final cleaning is effected using God's gift to SEM'ers, paper backed double sided sticky tape. This commercially available (we get our's from the '3M' company) tape is produced as an adhesive for mounting specimens on SEM stubs, but is even more important for cleaning specimens. The point of a mounting or minuten pin, inserted into a handle for easy handling is scratched across the surface of the sticky tape to pick up a small amount of adhesive on the point. Minute particles of dirt can then be plucked from the surface with the adhesive. When illustrating structure by SEM I do not like setae in the photograph because they distract from the essential features being illustrated. Setae can be removed with a pin and adhesive by rubbing the pin tip back and forth over the setae. To clean specimens without removing the setae the pin and adhesive should only be rubbed in the direction the setae are lying. This technique is also essential to clean critical point dried dissections for SEM examination of internal structures. By using various size pins with sticky tape adhesive at the tip, fatty material, overlying muscle tissue, tracheoles, etc., can be plucked from the surfaces you wish to examine. If careful, sites of muscle insertion or

state of the target tissue are not affected because no pressure is actually applied to them.

Mounting specimens: Before mounting anything on an SEM stub one needs some sort of holder for the small stub so that it can be easily manipulated. I use the type of polyethylene stopper for shell vials which have an inner column that inserts into the vial. The one I use has a top diameter of 2.7 cm, a column diam. of 2.0 cm and a depth of 1.7 cm. The stopper is flipped upside down so that the 'top' forms the base and a small hole is cut into the 'bottom' of the column for the prong of the SEM stub. I particularly like these stoppers because the top (base of the holder) has a ridged outer surface which affords a good grip and the inner column makes a raised stage which gets the stub away from my clumsy fingers.

Double sided sticky tape applied to the SEM stub allows one to securely attach the specimens to the stub in the position you want to view it. Antennae, wings and leg parts are prone to charging because they typically are poorly grounded and the charging results in streaks across the picture. To avoid this all appendages should be removed prior to mounting the specimen. If appendages are to be scanned they should be mounted and grounded as independent structures from the body itself. Silver conducting paint is used to ground specimens and I prefer a thick paste of this so that I can put a 'glob' of paint on the desk beside my microscope. Using a fine brush (000) and chloroform I dilute the silver paint to the desired consistancy so that it readily adheres to the specimen, but is not so liquid that it is drawn up over the specimen by capillary action. All segments or articulated parts of a specimen should be grounded to the stub by silver paint.

Preferably, specimens should be mounted on the stub itself to ensure proper grounding. If one wants dorsal, pleural and ventral views and is only willing to sacrifice one specimen then it can be point mounted in the traditional manner by the pleuron. The point is bent at a right angle near the specimen so that most of the point is stuck to the stub and the specimen sticks pleural surface upwards into the air. The point should be covered by silver paint and this extended to the pleuron to ground the specimen. By scanning one surface at a time and then rebending the point all three surfaces can be scanned. For heads, I like to detach these from the body and glue the apex of a point to the occipital foramen. I use silver paint rather than glue to do this to ensure proper grounding. The point is then bent at a 45 degree angle near the head and the base stuck to the SEM stub. With a little practice even very small heads can be mounted this way. The advantage is that the head is sticking up off the stub so that various angles can be scanned.

Gold coating specimens: Two types of gold coaters are commonly used, a 'sputter coater' and what is known as either an 'evaporator' or a 'shadow caster.' The sputter coater is the far superior of the two because it ionizes gold from a target and evenly coats all surfaces. The evaporator merely melts and evaporates a strand of gold wire so that only those surfaces in a direct line to the source are coated. If the specimen is convex the under surfaces will remain uncoated (thus the term shadow caster) and charging will result. This problem is reduced if the stubs are rotated in an epicyclic rotator which both rotates and revolves the stubs during evaporation so that all surfaces are exposed to the source.

Scanning specimens: Results obtained will depend on the SEM being used and the experience of the operator. Highly important for good results, however, is the 'gamma control'. I really do not understand how this acutally works, but it is used to reduce the difference between light and dark areas in a picture. Anyone who has used an SEM knows that when a convex surface is scanned the resulting picture is not equally exposed. Rather, the edges are variously light or dark depending on the angle and direction of the surface to the collector. If extreme, these areas print out as completely white or black. One averages the white and dark areas with the gamma control so that the differences are less extreme and detail is seen in all parts of the picture. Use of the gamma decreases the contrast and if used to excess the picture can look 'washed out'. Furthermore, the gamma control works on a logarithmic scale so that

initial revolutions of the control produce greater compensatory results than do subsequent revolutions.

Printing pictures: The final product, good SEM pictures, requires an equal effort at each stage of the procedure. One should not forget the importance of printing since all previous efforts can be negated by poor quality prints, but care in printing can also make mediocre shots into good pictures. Unequally light and dark areas as discussed above can also be compensated for in printing by 'burning in' light regions and 'shading' the dark regions. Using some object between the lens of the enlarger and the photographic paper one varies the time of exposure between different parts of the picture. Although a very simple technique with a little paractice it is very effective. I find that one's hand is generally sufficient to burn in or shade almost any size and shaped region since the hand can be formed into an incredible number of shapes and size is varied by the distance it is held from the lens. In some instances cut outs of stiff paper can be used to shade complex regions. To avoid a noticeable line between the shaded and unshaded regions the hand or cut out should not be kept stationary, but in a very slight and continual vibrating motion.

SCIENTIFIC NOTES

USE OF MUD IN NEST BUILDING BY VESPULA GERMANICA (F.)

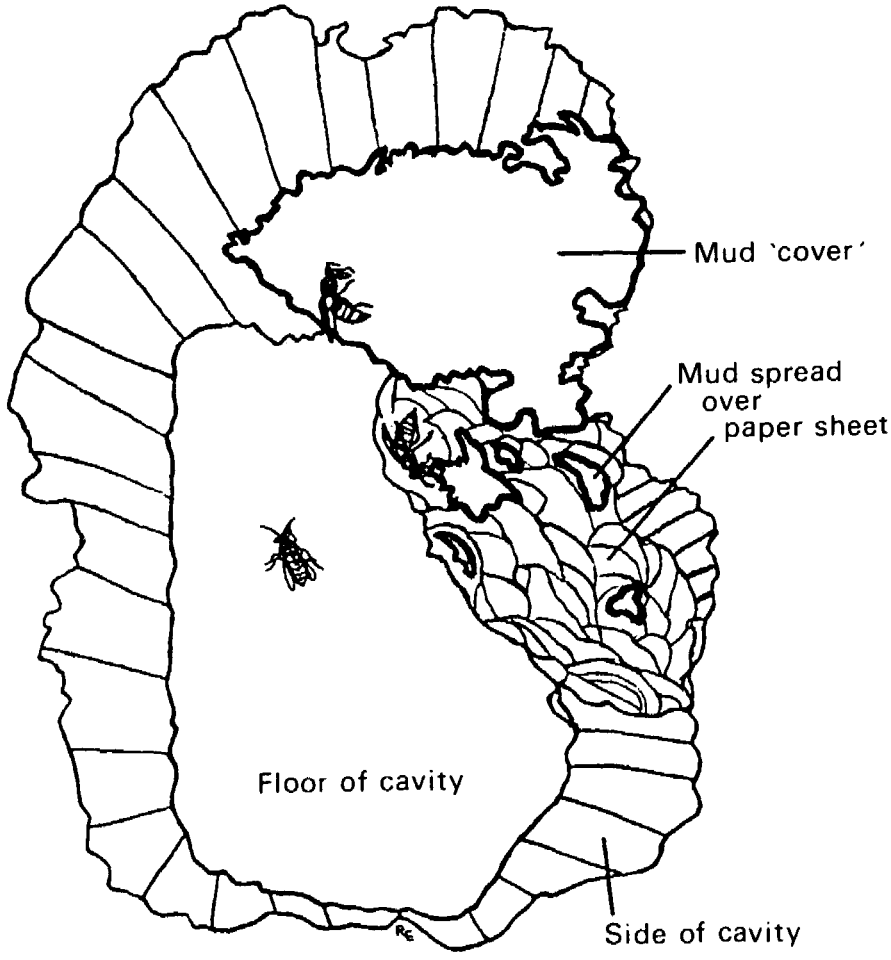
by
Robin Edwards
(Rentokil Ltd., Felcourt, East Grinstead, W. Sussex RH19 2JY, England)

Many social wasps use mud as a nest material, but characteristically, it is not employed by members of the subfamily Vespinae - the hornets, wasps and yellowjackets. Some older writers considered that mud was used by Vespa crabro in Europe, but this is now generally discedited. However, from 10 to 20 August 1983 I watched workers of Vespula germanica (F.) using soil excavated from the bottom of the nest cavity to repair their nest.

The circumstances were not entirely normal, for the nest, situated in a lawn near a sunken wall, had been raided by a badger a few nights before. The nest cavity had been partially opened and some combs and envelope lay on the grass nearby. Only 20 or 30 workers remained and many of these set off on foraging trips in an apparently normal fashion. They quickly built a vertial sheet of normal grey, scalloped paper (with wood pulp) to shield the comb remnants from the light. Then I noticed patches of mud were being laid down over the paper and more surprisingly, a large quantity of mud was plastered onto the soil at the edge of the hole above the paper envelope.

The mud was spread unevenly, the wasps standing still and pressing the mud into place - quite a different behaviour to that used to lay down wood pulp. The mud spread on the paper was very thin, but the 'nest cover' was thick with several layers. All the soil was brought from the bottom of the cavity, as evidenced by the yellow colour of the clay, which contrasted sharply with the dark brown top soil against which it was pressed.

Clearly then an attempt was being made to roof over the cavity with mud, something I believe, never before witnessed in the vespine wasps. Of course, with so few workers, and virtually no brood, the nest soon came to an end as workers died and were not replaced. The illustration, traced from a photograph, gives an indication of the extent of the mud two days before construction ceased. One worker is applying mud to the 'cover', another to the paper. A third worker stands on the floor of the cavity to indicate the scale. Tree roots, leaves, etc. have been omitted, and the sides of the cavity are indicated diagrammatically.



RAMBLING REMARKS ON PHILIPPINE WASP-MIMICS

by
Chris Starr
(Biology Dept., De La Salle University, Manila, Philippines)

Among philippine insects, I have noticed two prominent mimetic complexes. One consists of mostly yellow species with black legs and other black trimmings. It involves a broad variety of taxa, and I have no idea who the models are. Probably something stinky.

The other is evidently based on those Vespa species which have the body mostly black and at least the distal half of the wings orange or rusty. In the Philippines, V. philippinensis, V. tropica anthracina, V. tropica deusta and presumably V. tropica leefmansi fit this description, while V. affinis nigriventris and three forms of V. luctuosa do not (Kojima 1982; pers. obs.). Unlike in the yellow-black complex, the Vespa-based complex consists mostly of wasps. The mimics include species of Polistes, Eumenes (or Delta), Rhynchium, Sceliphron and at least one large pompilid*. The various large Sphex would seem to be prime candidates to join this complex, but as far as I know none is Vespa-colored.

* Though I should note that the pompilid I am thinking of is also colored like Pepsis from Mexico and adjoining areas, which are certainly not Vespa-mimics.

Of five Polistes species recorded from the Philippines, three include Vespa-mimicking forms: the three subspecies of tenebricosus, two of three subspecies of sagittarius, and strigosus mimus. Bequaert (1940) noted the parallel coloration of particular subspecies of Polistes and particular Vespa in the Philippines, though without further comment.

The existence of this mimetic complex and Vespa's role as the model have not been properly demonstrated in any way, but it is at least a respectable and quite obvious hypothesis. I'm quite sure that any of you would have hypothesized the same thing, the impression given (especially by some of the Polistes) is so strong. Unfortunately, tests based of species ranges are hard to devise inside the Philippines; the ranges of the different Vespa are fairly well worked out (so that we can't predict the presence of a model from the presence of a putative mimic) and V. tropica is found all over the Philippines (so that we can't predict the absence of mimics, or their shift to non-mimetic coloration, from the absence of the putative model). Incidently, V. philippinensis is also widespread, so that many areas have two Vespa models. I expect physical analysis can show particuliar shifts of putative mimics toward the model and away from non-mimetic realtives, as has been done with ant-mimicking spiders (Reiskind, 1972, 1977) but I admit that I find this approach less attractive for simply showing the existance of mimicry. And among Vespa-mimicking wasps here I haven't noticed shifts in anything except color, so physical analysis would probably not do more than show that the mimicry is a fact. Vespa-mimicking Eumenes and Sceliphron, for example, don't seem especially stout for their (large) size. Mimetic Polistes are all bigger and stouter than non-mimics, but still well within the range for this genus in east Asia.

If I remain long enough in the Philippines (still very uncertain), one thing I would like to do is for each of two or three localities to enumerate completely the members of the Vespa-based mimetic complex, as a basis for investigating its dynamics.

In my very brief sojourn in Taiwan, I had the impression that something similar was going on with Vespa there. Perhaps T. C. Maa, Jung-tai Chao or Bob Jacobson would care to remark on this.

I don't believe any philippine Ropalidia is mimicked, and this is not very surprising. They are all medium-sized or small wasps and almost all of them are timid. The one un-timid species I have encountered is R. (Icarielia) flavobrunnea, which builds very large colonies, seems by far the most abundant social wasp in its range, and is more easily provoked than any other in the Philippines. It is the only species by which I have ever been mass-stung (several times). R. flavobrunnea is a very small wasp, though, (a single sting is of no consequence) with the nest usually well camouflaged, so it would seem a poor candidate to mimic.

I don't believe any Polistes is abundant anywhere in the Philippines, so that they would also seem to be poor candidates. Nontheless, each of the two species found at Borongan, Eastern Samar (probably the only species in that province) has its mantispid mimic. The two are very different from each other. Again, the relationship is not demonstrated, but it is well known that many tropical mantispids look like social wasps, and in each of these two cases the resemblance is quite striking. At Borongan, I have been initially fooled by each of the mantispids, something which doesn't happen often to this vetern wasp- and mimic- watcher. One of these Polistes-mantispid realtionships is odd in that the wasp is itself a Vespa-mimic. Not the most outstanding of the Vespa-mimics, but I don't believe many of you would have trouble seeing it as such. And there should be no problem with the apparent intransitivity of the relationship, i.e., the idea that the rather slim mantispid can resemble the Polistes, while not especially resembling the Vespa which Polistes resembles.

Why are mantispids mimiking Polistes in Eastern Samar? I have no idea: If they have to mimic wasps, Polistes are the obvious choice, but that's no answer.

Stenogastrines would seem to be poor models, as their colonies are never large and they probably never try to defend them against vertebrates. And there does seem to be very little stenogastrine-mimicry. I have been watching them a fair amount and have noticed only two instances.

Some slender syrphid flies are found in the same habitat as most stenogasterines and appear to mimic Parischnogaster spp. (unlike with Vespa and Polistes, there seems no reason to resemble one Parischnogaster and not another, they are very similar). The

flies hover and dart at vegetation over forest streams in the same manner as stenogastrines. They are about the same size as Parischnogaster, have roughly similar coloration, and the abdomen is elongate and narrowed toward the base. Stenogastrines have a surprisingly painful sting (what for? probably for personal defense, not nest defense, prey-capture or fighting), so it makes biological sense that a medium-sized fly hovering at twigs and vines over streams would benefit by looking like Parischnogaster. Again, I think physical analysis could show whether the fly has diverged from its relatives in the hypothesized direction. In its movements its seems just like a normal syrphid.

The other instance is one of automimicry. In all social wasps, males look and behave like females, in some more than others (Starr 1981: chapter 5). I don't believe there is any male aculeate wasp which will not make stinging motions, usually very convincing, if grasped. As far as I know in all vespines and polistines the parameral spines of the aedeagus are not especially powerful and the stinging movements are a bluff. In some eumenids (Rau 1934, R. R. Snelling pers. comm.) and certainly in Eustenogaster, this is not entirely so. A male Eustenogaster caught in a net will "sting" furiously and repeatedly through the fabric. Like a female, he dosen't even have to be grasped, but will attack your hand if you just lay it against the net. And it quite definately hurts. It's not nearly as painful as what a female can deliver, but I would put it about on level with female Trypoxylon, Sphex, Sceliphron or small eumenids. The first time I was "stung" by Eustenogaster (by far the largest stenogastrines in the Philippines, all solitary) it didn't occur to me that it might be a male, until I saw that he was jabbing two stingers through the fabric.

For some reason, away from the nest the male Eustenogaster seem much more common than females (I have never seen a male at the nest). It would be interesting to calculate the primary sex-ratio from pupae, but even if this is balanced it appears that a diurnal vertebrate predator will encounter more males than females. Under that circumstance, it makes sense that a strong male with a sharp aedeagus would do better to be able to retaliate effectively, rather than relying on his resemblance to females, In fact, it is thinkable that in Eustenogaster the female benefits from this resemblance. She may even be the principle benificiary.

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DELTA RANDALLI (BINGHAM) ESTABLISHED IN JAMAICA (EUMENIDAE)

by

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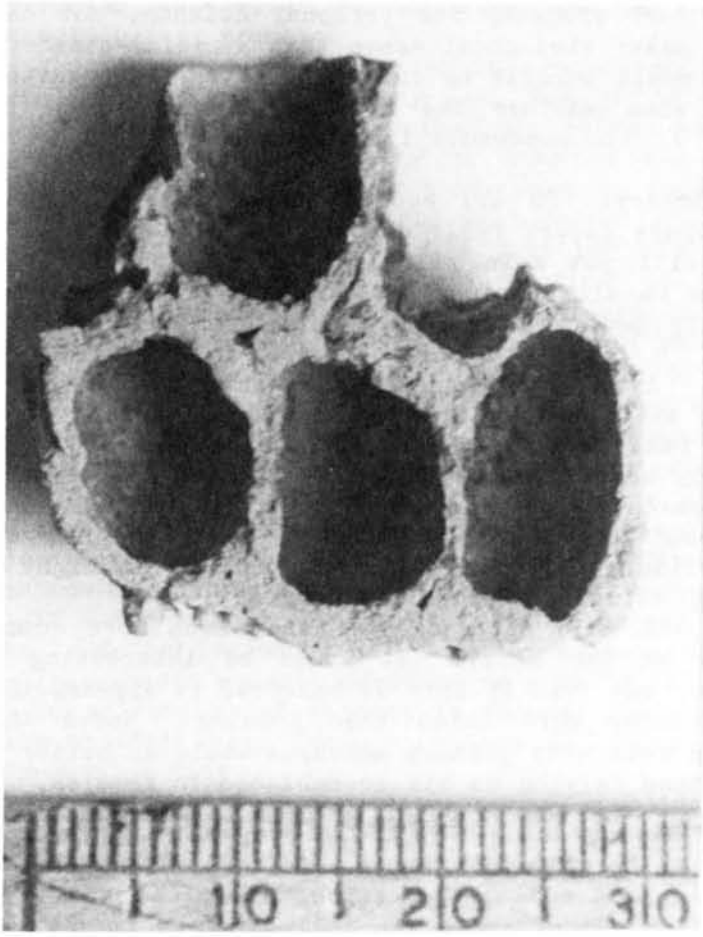
In 1979 we discovered three specimens of Delta randalli, an African wasp, in Jamaica. They were identified by Colin Vardy of the BM. Since then I have seen a few specimens of the wasp joining the roosting groups of Sceliphron assimile (see Freeman and Johnston, 1978, Ann. Ent. Soc. Amer.). A few weeks ago I discovered a nest of 15 vertically arranged cells on the wall of a building. From the remains of mature pupae and an adult within sealed cells I could confirm that the nest was that of randalli. The accompanying photos show the oval shape of the cells (about 15 x 10 mm). The emergence holes seen in the overall view are of Pachodynerus nasidens (Latreille). I

would be interested in learning if anyone has found D. randalli elsewhere in the New World.



DRYINIDAE OF THE WORLD

Massino Olmi's long-awaited opus (see Sphecos 7:4) was published October 9 according to Henry Townes, the publisher (Mem. Amer. Ent. Inst.). It is in 2 volumes totaling 1,913 pages. Cost will be $118.00 per set. Orders can be sent to Townes at the American Ent. Institute, 5950 Warren Road, Ann Arbor, Mich. 48105. (for review see p. 47)

VESPULA GERMANICA IN CHILE AND ARGENTINA

Robin Edwards writes: "Mary Jane's note (Sphecos 8:17) about wasps in Chile is not quite accurate as far as V. germanica is concerned. This wasp first became established in Santiago in 1974, then moved 1300 km south in just 5 years (or perhaps this was a second introduction). The first record for Argentina was in 1978 from Departamento Minas to the north west of Neuquén (a third introduction?). It was not until 1982 that V. germanica was discovered on the Chilean side of the mountain pass at Pino Hachado. The accompanying map (from Giganti, 1983) shows the situation in mid-1983. I have copies of the important papers if anyone has difficulty in obtaining them."

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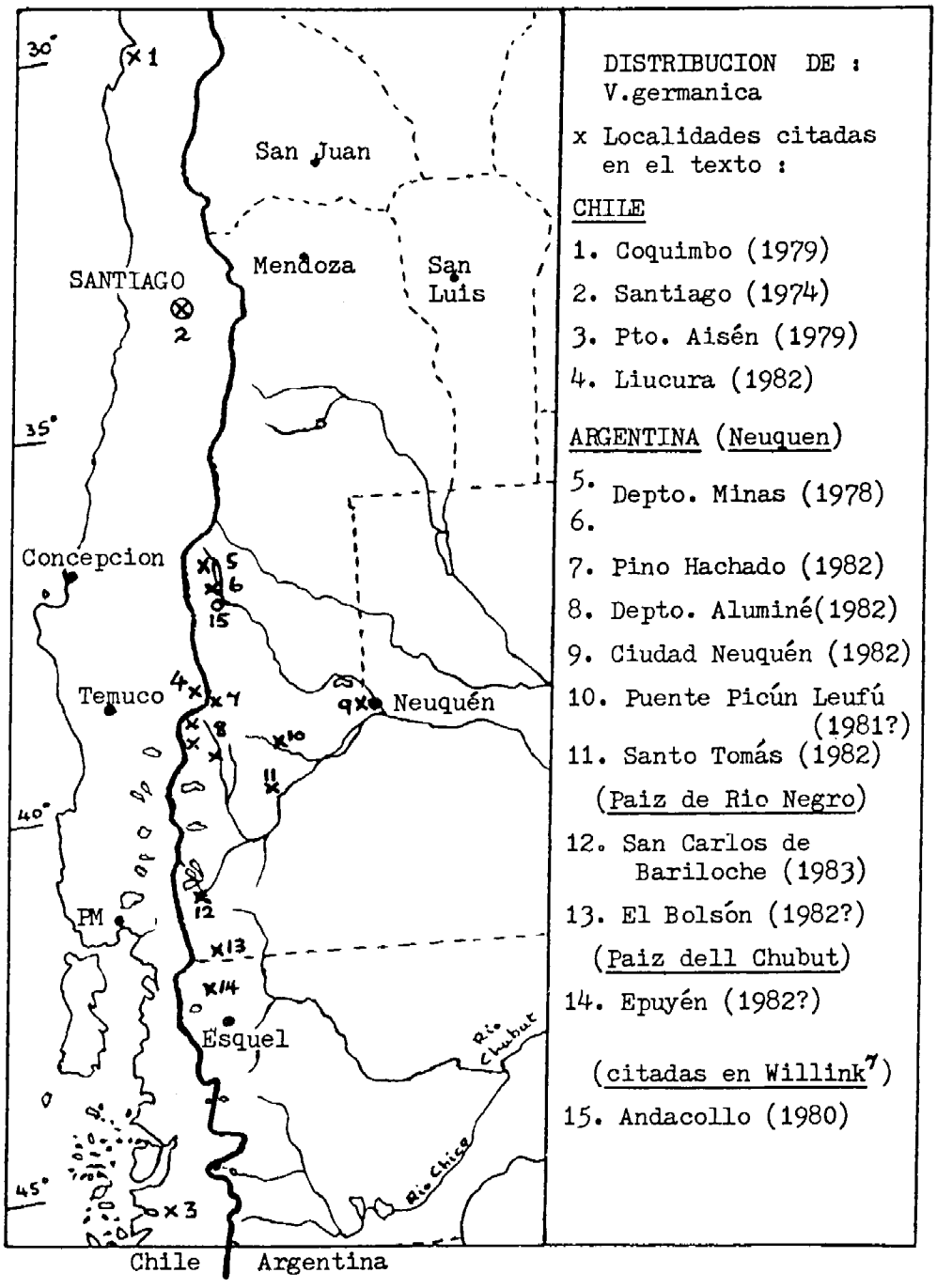

(Map redrawn from poor photocopy by R.Edwards. Nos. 9 - 14 added by author in manuscript. No. 15 added by R.Edwards)

JEAN-HENRI FABRE COMMEMORATION

During the week of 13-19 May 1985 the anniversary of the Jean-Herni Fabre jubilee will be celebrated in a special program. The original jubilee honoring the great entomologist took place at Sérignan-du-Comtat, Vaucluse, France in 1910.

The 75th-anniversary celebration will comprise a colloquium at Avignon, Vaucluse and the opening of an exhibition at Paris. Pierre DEHAYE, member of the Institut de France, will head the Honorary Presiding Committee. Dr. Michel FERON of the National Institute for Agronomic Research will preside at the colloquium, which will include exhibits, scientific film, and a conference on the content and influence of Fabre's work. These presentations will be aimed more at the public than specialists, with particular attention to interesting the young people. They will be dominated by themes arising out of Fabre's work, especially the struggle to understand the organism in its environment. The colloquium will be followed by a dinner at Fabre's home town of Sérignan on 17 May and an excursion to Mt. Ventoux the following day.

The organizers of this anniversary celebration warmly welcome participation by Fabre-enthusiasts from outside France. Questions may be directed to either of the secretaries:

IVES DELANGE, Museum National d'Histoire Naturalle, 57, rue Cuvier, 75231 Paris Cédex 05, France.
PAULE RASSAT, 2 rue du Noble, F 84100 Orange, France.

Comment by Chris Starr

The Fabre celebration seems likely to be a wonderful affair, and any wasp-watcher who might be able to go should definitely make the attempt. An opportunity to hear talks on Fabre, go to Mt. Ventoux, visit his house in Sérignan (now a public museum) and visit with other Fabre-enthusiasts is not a thing to be missed. The event is certainly in good hands. Yves Delange is the author of a new biography of Fabre which, in my view, supercedes all earlier ones, and Paule Rassat is a leader of one of the two Friends of Fabre societies that I am aware of. The organizers' intention to make the commemoration accessible to the general public, especially young folks, is absolutely in the right spirit, as it makes the affair into an extension of Fabre's work. It will be recalled that he was a school teacher until he was harassed out of that profession (and out of Avignon) in 1870 for giving public science lectures to young women.

BIOGRAPHES

TARLTON RAYMENT - NATURALIST AND TAXONOMIST
A BIOGRAPHICAL NOTE

by
Norman Rodd
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It being now within a few weeks of twenty years since Tarlton Rayment's death it is now possible to look back on the man and his achievements with some degree of perspective. Knowing of my past (now somewhat distant) association with Rayment, Arnold Menke has asked me to prepare this biographical note for the benefit of Sphecos readers. Having willingly agreed to do so and having begun to assemble some background material I almost immediately came up against a small puzzle regarding Rayment's life span. In Anthony Musgrave's Bibliography of Australian Entomology 1775-1930 Rayment's year of birth is stated as 1886 which would have made him in either his seventy-eighth of seventy-ninth year when he died on June 6, 1964. On the other hand, a memorial notice in Victorian Naturalist of August, 1964 states that he died in his eighty-second year. I have not yet been able to discover the reason for this discrepancy so it must suffice to say that he lived to a reasonably ripe age despite quite severe health problems which he experienced in this latter years.

For a clear appreciation of Rayment's position in the history of Australian entomology it is necessary to realize that his considerable success as a natural historian and a taxonomist were apparently achieved entirely without the advantages of any fornmal education in the natural sciences and also with only minimal financial rewards for his efforts. At which stage of his life he may have become interested in natural history it has not been possible to determine and in fact practically nothing has been recorded of his youthful days. What we do know is that he originally set out to study art and that his main early interests were in music, drawing and painting. It appears that he soon became disenchanted with the formal aspects of art instruction and at about the same time became acquainted with the writings of J. H. Fabre which were to have a profound influence on his future involvements with the insect world and on his philosophical attitudes as expressed in his own writings.

Unfortunately again for his biographer no substantial information is available regarding a large slice of Rayment's life between the end of his discontinued art studies (presumably in his early twenties) and the next important step towards his involvement with things entomological. It is known that he took up residence in the Gippsland hills in the south-east of Victoria sometime prior to 1912 and that he subsequently proceeded to build up a business as a commercial apiarist. This eventially developed into a quite large and successful enterprise of some hundreds of hives producing both honey and queen bees. For an enquiring mind such as his and under the influence of his already developed interests in the broad field of natural history it was inevitable that he should then become aware of the existence of the many species of native bees in the surrounding countryside. Thus began his studies in this field which steadily expanded and became his consuming interest for the remainder of his active life. He did retain some connection with apiculture at least until 1929 when he contributed a number of articles to Australian Beekeeping under the title of "The Wild Bees of Australia". I know also that he was in demand as a guest speaker to apiarists meetings for a number of years after that.

Prior to 1929 his first papers on native bees appeared in Victorian Naturalist, the journal of the Field Naturalists Club of Victoria of which he was a prominent member for many years and at one time its president. His contributions to Victorian Naturalist spanned the years between 1927 and 1954, a total of 90 papers and notes being recorded over this period. Notable among these was a series of 25 papers entitled New Bees and Wasps.

In his early ventures into taxonomy Rayment had the benefit of encouragement, advice and close friendship of T. D. A. Cockerell who had already written many papers on Australian native bees, commencing as early as 1904 and subsequently culminating in his monumental catalogue and keys to The Bees of Australia published in The Australian Zoologist between 1930 and 1934. In the introductory part of this work Cockerell referred to the paucity of studies on the habits of Australian native bees and in this connection paid a tribute to Rayment as follows: "Some worthwhile work has been done by Mr. Tarlton Rayment at Sandringham, Victoria. With the utmost enthusiasm he has watched and recorded the nesting habits of the species in his neighbourhood, discovering many hitherto unrecorded facts." Rayment for his part, certainly valued his association with Cockerell very highly and spoke of him often as his guide and mentor. In a letter to me dated March, 1948, he wrote: "I regret to say that my loved friend and collaborator and sometime master, Prof. Cockerell, has died at San Diego, Calif., U.S.A. We had a long and beautiful association, such as is enjoyed by few humans. A fair and lovely light has gone out of my life."

My own association with Rayment did not begin until 1944 and in looking back to that time I have been reminded that this actually began through the appearance of an article of his in the then popular Australian geographical magazine Walkabout. The subject of the article was an account of his observations on a colony of Bembex wasps nesting in a river bank in central Queensland. Illustrated as it was by a number of fine pen and wash sketches of the wasps in flight and at their nest sites together with his identification of Trigona bees as the wasps' larval food, this all served to re-awaken my lifelong interest in natural history and to quite rapidly lead me into active collaboration with Tarlton. Our association continued with only minor interruptions for

the following ten years, after which the increasing pressures of earning a living in my own profession largely put an end to my entomological activities and caused them to lie dormant for almost another twenty years. That my interest did not die altogether was undoubtedly due in large part to the lingering effects of stimulation, encouragement and real kindness earlier accorded me by Tarlton. He had the ability in high degree to transmit his own enthusiasms to others by his never failing generous recognition of their efforts. That he had this generosity of spirit in himself I know sometimes made it difficult for him to accept ungenerous criticism of his findings. In 1949, referring to one of his current major research interests he wrote: "Had some disappointments in research of Halictus owing to lack of perception in other people; hard enough to take when Nature defeats one but when ones fellows do it --". Nevertheless, he appears to have rarely been sufficiently affected by critisism to cause him to discontinue his endeavours nor, on the other hand, to be less ready in his praise of others. As an example I well remember him advising me to "look out for a young man named Charles Michener who is doing some excellent work" - or words to that effect! For a worker who continued to expand his interests well beyond his original field and who had a tirelessly enquiring mind for the natural history of his country, it is not surprising that he sometines got slightly out of his depth and made mistakes of interpretation. But then who even among the trained professionals do not fall into similar traps from time to time in their careers. Indeed how dull life would be for our taxonomists if their predecessors had not made mistakes for them to uncover and correct! What is certain is that Rayment's successes and achievements far outweigh his failures. His contributions to the taxonomy and natural history of Australian Hymenoptera were considerable by any standards and, if he has to be judged against others, it must be taken into account that he was essentially a self-motivated amateur with all the limitations that this implied in access to literature and other back-up resources enjoyed by professional workers. True, he did have a connection with the Victorian Museum as an honorary research associate and with the C.S.I.R.O. as a recipient for some years of a small research grant but otherwise he was very much a worker in isolation. Add to this that his financial circumstances were obviously meager and perhaps even precarious at times and his achievements can be better appreciated.

In a brief note such as this it is not appropriate to provide a complete bibliography of Rayment's publications. Mention has already been made of his numerous papers in Victorian Naturalist and in addition to these he made notable contributions to The Australian Zoologist, Proceedings of the Royal Society of New South Wales, and Journal of the Royal Society of Western Australia. Outstanding among his larger works were, in chronological order:

1935. A Cluster of Bees - Sixty essays on the life histories of Australian bees with specific descriptions of over 100 new species. The Endeavour Press, Sydney, 752p.

1944. A Critical revision of Species of the Zonata Group of Anthophora by New Characters - Part 1. Treubia (Japanese Edition.) Vol. "hors série": 1-33.

1945. Ibid - Part 2. Treubia 19:46-73. (An account of the wartime vicissitudes of Part 1 of the above during the Japanese occupation of Java and the subsequent publication of Part 2 by the Dutch in 1947 appeared in Proceedings of the Royal Zoological Society of New South Wales, 1947-1948:37-38. In this account it is also related that Part 3 of the revision was returned to the author for revision in June, 1947 and posted back to Buitzenborg where it eventually found its way to the printer's hands but was never printed due to the outbreak of hostilities between the Dutch and Indonesians. Part 4 on which Rayment was then (1948) engaged was apparently never finished, or, if so, must have remained in manuscript.)

1951. A Critical Revision of Species in the Genus Asarapoda by New Characters. Mem. Nat. Mus. Victoria 17:65-80.

1955. Taxonomy, Morphology and Biology of Sericophorine Wasps with Diagnoses of Two New Genera and Descriptions of Forty New Species and Six Subspecies. Mem. Nat. Mus. Victoria 19:1-95.

Some aspects of this last publication have been criticized particularly with reference of Rayment's keys and for his failure to recognize that his "two new genera" were synonymous with existing genera. Nevertheless most of his species still stand as a monument to this one major venture of his into the taxonomy of a hitherto poorly worked group of sphecids.

Finally this note although compiled primarily for the interest of Sphecos readers, would not be complete without a mention of Tarlton Rayment's achievements quite outside the fields already dealt with. He was in fact a man of many parts including poet, song writer and novelist. In the latter category his best known work was Valley of the Sky first published in 1937 and based on the life and times of one of the pioneer settlers in the Gippsland district. Up to 1951 this had already run to eleven editions and for all I know more may have been added since then.

Of a more technical nature were his publications on commercial bee farming, viz. Money in Bees in Australasia, Profitable Honey Plants in Australasia, Bees in Australasia, The Commercial Bee Farm and Bread of the Bee Hive. Royalties from the sale of these works would have made some contribution to Rayment's income and together with a small government grant mentioned earlier would have given him some security during the years he devoted to his taxonomic and other entomological writings none of which would have been incoming producing.

William Morton Wheeler, another contemporary who had a strong influence on Rayment's life and philosophies, once wrote, "It is difficult to say whether Rayment is an artist or a scientist, for he has an avowed conviction that Taxonomy is an art. This after all is not so very remarkable as it seems because the objective in each case is the pursuit of Truth." This would seem to be as good a note as any on which to end these recollections of Tarlton Rayment as an individual and as a worker in what may be regarded as a transition period of Australian entomology. He was a man very much in tune with nature, quite deeply religious but with a strong aversion of "churchianity" and above all he possesed the ability to communicate with and inspire others. So, perhaps not one of the real giants but one surely above average stature in the history of natural science in this country.

Footnote: After his death his large collection of bees and other groups was acquired by the C.S.I.R.O. and is now lodged in the Australian National Insect Collection in Canberra, A.C.T. It is also of interest to note that a large number of his original drawings had already been acquired by the library of Cornell University as early as 1951. I do not know how this came about and would be grateful if any reader could enlighten me. Are those drawings still at Cornell? [perhaps George Eickwort can clear this up? - ed.]

MY FIRST LOVE
(Memories about the aculeates)

by
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From the time I was born (in 1903) till I was seven years old, I became conditioned to a life in nature in our old, shady garden which stretched out into woods and meadows, and was only a five minutes walk from one of the loveliest Danish lakes, Furesøen.

When I was 13 years old, I got a book in two large volumes by Vilhelm Bergsøe. Thirty years old, his promising career as a zoologist came to an end, caused by failing vision. By his unusual gifts for writing he produced some highly estimated novels, but his old love for insects reappeared in the work I got. In our days it would have been entitled: "A Popular Biology of Insects and Spiders", but he called it: "Fra Mark og Skov" (From fields and woods). Such popular writing was most unusual when it appeared in 1881. I devoured the nearly thousand pages which described the most wonderful ways of the animals, fired by his inspiring language, the unforgettable woodcuts and the portraits of the old masters: Réaumur, De Geer, Latreille, etc.

Just when I had finished reading Bergsøe there came a wave of new books: Three volumes by Fabre were translated into Danish and "Fra Mark og Skov" came into a new edition, brought up to date by C. Wesenberg-Lund, the outstanding master of fresh-water biology. In his youth he had been inspired by Fabre to study wasps and bees; the chapter on these animals was especially inspiring, and I decided to study the aculeates.

Seventeen years old, I happened to see an Ammophila sabulosa paralyze a caterpillar in a peculiar way and wrote a note in Danish on it. It was published in Entomologiske Meddelelser a couple of months after I graduated from high-school.

The question of the state of the prey of fossorial wasps was a storm-center in those days. Most of the older authors considered them dead, Fabre showed that they were paralyzed by a neurotoxin injected by the sting in a manner corresponding to the site of the motoric ganglia of the prey. This amazing adaptation convinced Fabre about the habits being firmly established parts of the animal; what we would call the reflexes are an invariable part of the genotype. But that was decades before genetics and reflexes in behavior were established. In Fabre's florid language and with his tendency to establish ironclad rules, he became open to criticism by younger observers, beginning with Paul Marchal, followed by Ferton, Rabaud and Picard in France, Peckhams in U.S.A., and Adlerz in Sweden. In details this criticism was legitimate, but too often it was forgotten that Fabre was right in the main points, It is also forgotten that they all were inspired by Fabre who has contributed more to the understanding of the behavior of insects than anybody except Réaumur. There were also some hints of envy over Fabre's popularity, and something so unpleasant and rediculous and academic arrogance.

During the years at the University of Copenhagen, the teachers which meant most to me were Wesenberg-Lund by his summer courses in freshwater biology and August Krogh in physiology. A third one was Kaj L. Henriksen, the eminent entomologist at the Zoological Museum, not as a teacher, but by his guidance in many ways. What I learned from these and others were attitudes and methods and way of thinking, without direct influence on my work on Hymenoptera.

In 1927 I realized that the whole discussion about whether the prey is killed or paralyzed is a secondary matter. Phylogenetically, the fossorial wasps are modified ectoparasites and the sting is used only to keep the prey (host) immoble while the egg is attached (Scolia, Homonotus). By extension of the paralyzed state it becomes possible to move the prey to a protected place, the nest. The most important further development is the switch in the succession of the reflexes, so that the nest is prepared before the prey is caught.

With these ideas as base I tried to follow the development of the nesting habits of the solitary aculeates as far as they were known from the literature and from my personal experience in "Sur les habitutes des Hyménoptères aculeates solitaires" I-V, (383 p, Ent. Medd. 1931-1936).

It was written in French because most of the classical literature and most of the observers in those days were French. I was in contact with many of them as well as with people in many other countries. Especially, I remember the kind encouragement I received in letters from Lucien Berland at Museum d'Histoire Naturelle in Paris. Very important to me was also the connection with S. J. Malyshev, who made the most excellent observations on the nesting habits of solitary bees. He worked from a small laboratory (as I did myself) in Borisovka in the Kursk Department. He was later transferred to the Pavlov Institute in Leningrad. It is amazing how the study of the biology of wasps and bees has been the first love of so many biologists: Marchal, Roubaud, Wesenberg-Lund, Malyshev, and of a younger generation: G. P. Baerends. And my humble self.

In 1932, at the Fifth International Congress and the centennial of the French Entomological Society, I met with many of the famous people; both Marchal and Berland agreed with me in my views, and it was with satisfaction I noticed that Bouvier in the principle speech had remarks on the sourness of the critics of Fabre.

* * *

Another problem related to the paralyzation was whether it has an effect on the metabolism. I found that this was not the case. The respiratory metabolism of insects

and spiders depends on the duration of time since the last meal, and in that respect there was no significant difference between paralyzed and normal individuals. In connection with this investigation I found that the poison is a specific neurotoxin which destroys the ganglia, including the supraoesophageal ganglion which never can be hit by the sting. For this paper (1936) I received the degree as Dr. phil. from the University of Copenhagen.

Fabre meant that the purpose of the paralyzation was to keep the prey fresh, and he found it confirmed by Bembex: It kills its flies but it is also carrying fresh prey to the larva as it is growing. It was, however, contested by a large number of observers who found that the flies were paralyzed. There was one exception: Wesenberg-Lund, who as a young student, found during a single day's visit to one of the few Danish Bembex colonies that the flies were not only killed but even mutilated. He wrote a paper in Danish about his findings and later it was translated into German by Handlirsch in his famous monography.

It was harshly criticized also for other presumed errors caused by not taking notes during the observations; the more polite critics presumed that the Danish Bembex had a most unusual behavior.

It was, therefore, with especial interest that I, together with a four year older friend, Axel M. Hemmingsen, in the early days of my interest of the wasps studied a Bembex colony close to the one studied by Wesenberg-Lund; his colony had disappeared. The result was clear: we found that the flies were paralized but otherwise unharmed.

Already as a schoolboy, when I first read about the Bembex controversy, it occurred to me, that the concept that all individuals of a species behave in the same manner is an unproven postulate. When Fabre found the flies dead, I cannot believe that he was unable to distinguish between a dead and a paralyzed fly; and when Wesenberg-Lund found the flies dead and mutilated, it cannot be refused as a displacement of memory, because he had the flies home with him and in his paper thanks a colleague for identifying them.

The other two postulated errors of Wesenberg-Lund were: (1) that Bembex sometimes used a flat pebble to close the entrance to the nest -- it was presumed to be a confusion with Ammophila. I have frequently seen Bembex pull out a pebble from the nest under construction and that might have been what Wesenberg-Lund also saw and which gave him the false impression that it was going to be used to close the entrance; it is probably a case of displaced memory.

(2) According to Wesenberg-Lund, Bembex returning to the nest with a fly deposits it at the entrance, goes down in the nest, turns around and reappears head first and pulls the fly in, walking backwards. All other observers agree that the wasp opens the nest and enters it, keeping the fly venter to the venter. The description of Wesenberg-Lund's was presumed to be a confusion with the habits of Ammophila.

When Hemmingsen and I in 1925 published our report on our observations of Bembex (in consultation with Wesenberg-Lund) we could not offer any explanation of the discrepancy.

During the second World War, after a long pause, I again took up the study of Bembex. Among other things I developed a method to see what happens in the nest chamber and found that when a wasp is returning with a fly, it appears without prey in the chamber, turns around, goes out again and returns with the fly, pulling it while it walks backwards, as described by Wesenberg-Lund. In one case the nest entrance was disturbed so that part of the roof was missing, and in this case it was repeatedly seen that Bembex dropped the fly and after having turned around in the chamber picked it up. I was even able to photograph it.

So the second paper on Bembex became a discussion of the thoughts of the schoolboy 25 years earlier about the insufficiency of the postulate that all animals belonging to the same species always are behaving the same way.

July 7, 1941, I was watching the Bembex'es and recalled that it was exactly 200 years ago that Linné made the first recorded observation on the dear animals. It was in the darkest days of the war and the German occupation, but I found consolation in thinking how the knowledge of this little piece of nature had developed independently of wars and revolutions and the rise and falls of mighty powers. I thought of the words of

Latreille ("Princeps entomologiae"), that the thought of the work of his predecessors filled him with admiration and humility. I felt that I had still more reason to feel humble but I was also grateful because I was permitted to add one little share to this two hundred year long search for recognition of truth.

COLLECTION REPORT

THE HYMENOPTERA COLLECTION AT THE UNIVERSITY OF MICHIGAN MUSEUM OF ZOOLOGY

by
Mark F. O'Brien
(Museum of Zoology, Univ. of Michigan, Ann Arbor, Mich. 48109)

Although our Hymenoptera collection is small when compared to other institutions (UC Davis, Cornell, USNM, MCZ) and the rest of the UMMZ insect collection (ca. 3.5 - 4 million specimens), it is nonetheless too large to be overlooked by various wasp workers. Thought by many to be a static and little-worked collection, the Hymenoptera have undergone a transformation in the past few years. Due to my own interests, and generating the interest of others, the aculeates have greatly expanded, not only in numbers, but in areas of representation and species.

The largest representation in the aculeates are the Formicidae, due largely to the efforts of F. M. Gaige in the earlier third of this century. Gaige collected in many parts of North America, with considerable emphasis on the southwest. He collected large numbers of specimens from Central America, and through exchanges he acquired ants from other parts of the world. Thousands of vials of ants in the Gaige collection have recently been curated by Dr. Paul Kannowski (adjunct UMMZ curator, at the Univ. North Dakota), making the material readily available to other workers.

Other groups worked upon by people formerly having some connection with the UMMZ are the Bombinae (Frison); Apoidea (Lanham); Ichneumonidae (Townes); Pompilidae and Sphecidae (Dreisbach). Although much of R. R. Dreisbach's collection resides at the UMMZ, the bulk of it is housed at Michigan State University in East Lansing. Dreisbach is noted for his (sometimes poor) work on the Pompilidae, his enthusiasm for collecting, and achievements at Dow Chemical Co. As a result of his efforts, the Michigan insect fauna is probably better known than many other states.

Currently, the UMMZ Hymenoptera collection numbers about 130,000 specimens. There are primary types for 82 species, and about 200 paratypes. In many groups the emphasis has been on the Michigan fauna (especially the Dreisbach specimens), but other areas of North America vary in representation. With recent additions, we are getting stronger in Central America, western North America, and the Indo-Australian area. More aculeate specimens have been added since 1981 than the preceeding 20 years, with ample room for further expansion. Major additions have taken place in the Sphecidae, Pompilidae, Vespoidea, and Apoidea, with a corresponding increase in the Parasitica.

We are sorting through a large amount of Malaise trap material from Malaysia, and from the Huron Mountains in the Upper Peninsula of Michigan. We're getting a lot of Pompilidae from the Malaysian catches, and lots of aculeates from the Huron Mountain area. There have been a few surprises from the Huron Mts. - i.e., western N.A. species never before recorded from the Great Lakes area. Further work in the Huron Mts. this summer should be quite productive.

Future plans include a computerized list of the aculeates in our collection, to be made available to other wasp workers on request, and more collecting in the Indo-Australian region. I encourage anyone who would be interested in examining specimens from Malaysia to write for more information; ditto for the Huron Mts. aculeates.

COLLECTING REPORT

SAMAR - THE PHILIPPINES

by
Chris Starr
(Biology Dept., De La Salle University
Manila, Philippines)

The 11 major islands of the Philippines are readily divided into four groups. Luzon in the north and Mindanao in the south are by far the largest and most ecologically diverse. Mindoro is associated with Luzon, though not especially tightly. Palawan in the west is the biological outsider island, with greater affinities to Borneo than to the rest of the Philippines. I've reported elsewhere (Starr et al. 1983) on a month-long collecting trip to Palawan. Lying between these three is the Visayas group of seven islands: Panay, Negros, Bohol, Cebu, Leyte, Samar and Masbate. For a clear short treatment of philippine biogeography, I recommend the first chapter of Alcala (1976).

There are good reasons why Samar should be among the least interesting of the major islands. First, the Visayas are predictably a transition zone between Mindanao and Luzon, with little biotic peculiarity of their own. Leyte, Samar and Masbate are especially right in between the two big islands. Second, Samar has no mountains (greatest elevation about 850 m) or extensive highlands, so that it lacks the basic makings for internal diversity or anything resembling a refuge. On the other hand, as a poor area with no cities, Samar is still reasonably wild, with plenty of near-primary forest. It has also been very little collected. This puts it in clear contrast to Cebu, for example, an island with good topographic character but ecologically quite ruined and where much more collecting has been done. Samar's wildness must be the main reason it has been so little collected. No taxonomist is based there, and much of it is hardly accessible.

An additional factor arises from the political situation. You must be aware that there is a great deal of armed opposition to the philippine government. The muslim Moro National Liberation Front operates in Palawan and much of Mindanao. The communist New People's Army (NPA), is more widespread. It is strong throughout Samar, and an army intelligence colonel once told me this is the most critical area. So, what does this mean for anyone collecting or doing field work? My policy in Samar and elsewhere is not to worry about any area where either side is firmly in control, but to avoid contested areas. I especially want to keep my assistants away from the shooting; they don't get paid enough to take risks.

As it turns out, the collecting and bug-watching are surprisingly good in Samar, which is why I bother to write about it. I've made three trips there. The first was at the end of 1981. Five of us, led by Henry Schoenig of the University of San Carlos, spent a week up the Basey River near the island's west coast. The second was in late 1982, with two assistants to localities in the east, center and north. And in May 1984 I returned alone to Eastern Samar for two weeks.

On the Basey River we were based at the lumber town of Rawis, a dying community dependent on a declining industry. Within walking distance were a great deal of interesting secondary forest and a couple of fair caves. Further up the river is the Sohoton National Park, a vast tract of primary forest with at least two very large caves. It is accessible by pumpboat and canoe with some planning, an absolutely glorious ride when it does not rain. We spent just one day there, and I would consider it well worthwhile to go back for two weeks or so based right in Sohoton. Politics, though, would be a major consideration in this. From what I was told, the area belongs to the government in the daytime and the NPA at night, in which case dusk and dawn could make one very nervous.

I never found out who controls Rawis. The real hazard there is not gunfire or biting insects, but the hordes of noxious street-urchins. Now, let me say that I have

no general objection to urchins and in fact I was once one myself (until marriage forced me to grow up and become a river-rat), but they must be delt with judiciously. Urchins can be of great help if they know where good bugs and habitats are to be found, but they can also be insufferable pests.

When a town is built up suddenly on a single industry, as often happens with lumber, mining and some agribusinesses, we tend to get a community of the uprooted, strikingly deficient in the usual social norms. Especially as the industry loses momentum and the pointlessness of it all becomes obvious, a certain dispair sets in and the human environment can become quite unpleasant. This is especially evident among children, and it took just minutes to become weary of the urchins of Rawis.

This was particularly a problem on the first day, as we wanted to set up the malaise trap close to town and we didn't want its whereabouts known. The urchins followed us tenaciously. I solved the problem by turning as we came to a fork in the trail and proclaiming theatrically to them, "Okay, you wretched little bastards, come with me." And they all did. While the rest of our party went up one branch and set op the trap, I led the urchins on a fast hike far up the other branch and tired them out good. In succeeding days they were blessedly reluctant to follow us out of town.

My own collecting objectives were aculeates, termites and spiders, with focus on vespids and Polyrhachis ants. I'm also constantly on the lookout for army ants (12 species of Aenictus known from the Philippines), but I have only once found them in Samar. We were there in the dry season, and the collecting was not nearly as rich as we had expected. I did very well with Polyrhachis, getting good series, photos and nest descriptions of several species, and okay with the termites, but the wasp catch was quite modest. A very few Ropalidia (Icariola), Polistes and Vespa, two species of stenogastrines, and some apparently ordinary eumenids and sphecids.

One of the stenogastrines, a Parischnogaster, is of special interest. I found four colonies of it, two in a cave at Sohoton and one each in two caves at Rawis. I have never before or since found it nesting anywhere except inside caves in Samar, the rest of my colonies all coming from two caves in Eastern Samar (more on this below). It seems to be physically undistinguished for the genus, primitively eusocial, builds its nest as a crude comb of apparently rotting wood, located always inside the cave proper but not in the really dark part, and based on a stalactite when these are available. As far as I know, this is the first social insect found to nest habitually in caves.

> [The ant Paratrechina troglodytes Weber was described in 1934 from specimens collected in a limestone cave in Cuba. Workers are pale in color and have reduced eyes, adaptations common for subterranean ants. Closely related is P. myops Mann, found under stones in Cuba. I don't know whether troglodytes has been found nesting outside of caves, and it could be difficult to determine from the literature, as troglodytes is so similar to myops that Brown synonymized them, a move which Trager, who just revised Paratrechina, rejects - T. P. Nuhn]

The second and third trips were at the edges of the rainy season. Samar has a type 2 climate, with no pronounced dry season and with maximum rain usually from November to February. At those times of year, one returns from Samar with a fine crop of specimens and field notes, but also thin and worn out. It's not being there which takes such a toll, but the getting there and back. The means and times of travel are often abominable winding roads, with too frequent stops to attempt repairs or to heave out of the mud. These attempts may last into the next day. When it rains, Samar is one son-of-a-bitch of an island to get around in.

For the first part of the 1982 trip, we were based in Borongan, the provincial capital of Eastern Samar. From there we made a one-day excursion to Sulat, another coastal town about 36 km to the north. The area has quite a good array of vespids (s. str.): two Vespa, two Ropalidia (one Icariola and one Icariella), two Polistes, one Eustenogaster, one Liostenogaster and three Parischonogaster. By neotropical standards, this is far from impressive. The 18 species of social wasps found in Santa Rosa National Park, Costa Rica (pers. obs.) are not an extraordinary number of that part of the world, but I am fairly sure that no locality in the Philippines has so many, and I

doubt that very many on Borneo or the mainland do. At Borongan, only two species were at all abundant, the widespread Parischnogaster prob. timidus and the cave-nesting Parischnogaster I mentioned earlier. I searched six caves at Borongan and four at Sulat during my two visits there and found it nesting abundantly in two of the Borongan caves and nowhere else. Of the eumenids I cannot say as much and of the other aculeate wasps even less. Eumenes, Calligaster, Sphex and Sceliphron are to be had, as well as less conspicuous sphecids and some pompilids, but they all appeared to be widespread species and no solitary wasp seemed abundant. I especially wonder why Pison argentatum isn't nesting all over the buildings and under road banks in Eastern Samar.

From Borongan we went to the mining town of Bagacay, in the municipality of Hinabangan in the interior. The mines are largely exhausted, the town is going straight to hell, and the urchins are, in anything, even worse than in Rawis and certainly a powerful argument for government-funded abortion. Rarely have I been driven so close to total mayhem as I was by the horde of caprophagous little baboons which infest the streets of Bagacay.

Nonetheless, our collecting in 1 1/2 days there was not bad. In particular, the richness in Polyrhachis was extraordinary. This is the largest genus of ants in the Philippines, accounting for about 15% of known species, and is decidedly my favorite. They are physically very diverse, apparently also ecologically and in colony structure, and their silk nests are absolutely facinating. The evolution of nest structure in Polyrhachis would make a very worthwhile large study. For no reason which I can see, Samar has always been very good to me in delivering Polyrhachis, and in number of species Bagacay outdid all other localities. In that short time I got as many species there as I did in 2 years at my former hame base in Leyte.

In some other taxa of interest, especially ants, Bagacay was also good, and this puzzles me. It does not at all look like a promising environment, quite a ruined landscape with the forest mostly cut down and replaced with a lot of ugly scrub and charred remains. The secondary forest is not bad, but also nothing special. It was an accident that we were collecting there ar all, because our aim was to use it as a base for penetrating to some really fine forest up a certain side-route. It turned out impractical to get there, though, so that we were stuck with Bagacay. Given the good collecting, I would gladly have stayed longer, but my assistants, not yet accustomed to the same motivations or the primitive life which seems so normal to me, rebelled at spending a third night in that rancid mudhole of a town, and we pulled out.

They went north to Catubig, while I went yet further north, to Manila later to also go to Catubig. I'll mention here in passing that my purpose in going to Manila was to look for someone I had met some months earlier, and that I found the one I sought and we went out on our first date, which let by easy stages to matrimony a year later, So you see that collecting in Samar can be a very complex matter indeed.

Catubig is about 23 km up the Catubig River from near Laoang on Samar's north shore. It goes without saying by now that to get to Laoang is a weary business, above all rough on the middle-aged back. There may be roads going to Catubig at least part of the year, and then again there may not. I got there by way of a long, lovely boat ride. At the end of it the boatman, according to his custom tried to cheat me by saying the fare was 20 pesos, when in fact it was 6. I, according to my custom, paid him off with a brief lecture on honesty and hospitality to foreigners which I thought was well worth 6 pesos. Or else my fee was 20 pesos, depending on how you look at it.

I stayed three days before heading home and got a good haul of wasps, Vespa and Ropalidia among them, but no hint of Polistes. As far as I know, there was nothing extraordinary in what we got (at least among the social wasps there was not), but it was useful to have made probably the first collections in northeastern Samar. Mobility at that time of year was seriously hampered by the slipperiness of the whole landscape. The trip home was such a lengthy and uncertain affair that to go to work the day after arriving seemed like a vacation.

The third trip was for further study of the cave-nesting Parischnogaster. I spent 12 days at Borongan, and one at Sulat and gave most of my attention to this wasp, working in the more accessible of the two caves. I hope to have the results written up by the end of 1984. At the same time, I kept the net handy and was able to collect a credible variety of wasps. Among other things, I also had the pleasure to be stung by

both a female and a male of Eustenogaster micans (for remarks on male "stinging" in this genus, see "Rambling Remarks on Philippine Wasp-Mimics" earlier in this issue of Sphecos). I had previoulsy made the acquantaince of E. luzonensis in this manner, and I was glad to add a species to my list and to see that the micans male is equally aggressive.

Samar is not the most interesting region of the Philippines, but it is one which I have explored apparently better than any previous entomologist, and it offers much more than it seems that it should. I have no special plans to go back there, but some follow-up work on the cave-nesting Parischnogaster (in a year of two, when the Borongan population has recovered) would be worthwhile.

References

Alcala, A. C. 1976. Philippine land vertebrates. Quezon City: New Day, 176 p.
Starr, C. K., E. Schoenig & M. J. P. Canete 1983. USC-VISCA biological expedition to Palawan, May-June 1982: I. Entomological record. Phil. Sci. Cebu 20:129-138.

MORE ERRATA IN THE BIG BLUE BOOK

Woj Pulawski continues his relentless search for mistakes in Sphecid Wasps of the World! I think he is trying to tell Dick Bohart and me something. Here is a summary of Woj's most recent findings:

p. 115, LC, L 44: fukuianus, not fukuiensis
p. 166, LC, L 4 from bottom: transfer clavatus to Psen (p. 172)
p. 167, LC, L 23-27: reconstruct as follows:
ussuriensis van Lith, 1959 (May); se USSR: Ussuri; Japan
orientalis Gussakovskij, 1933 (Mimesa), nec Cameron, 1890
mandibularis Tsuneki, 1959 (Sept.), n. name for orientalis Gussakovskij
tsunekii van Lith, 1965, n. name for mandibularis Tsuneki, nec mandibularis (H. Smith), 1908 [unnecessary under provisions of Art. 59c of the Code because mandibularis Tsuneki is now in genus Psen, while mandibularis Smith is in the genus Mimumesa]
p. 172, RC, L 17: ssp. iwatai (Gussakovskij), 1934 (Eopsenulus); Japan
p. 363, RC, insert before last line: pharaonum Pulawski, 1964; Egypt
p. 405, LC, L 7: 1864, not 1871
p. 409, LC, L 7: 1877, not 1897
p. 431, RC, L 10: nitobei belongs in the genus Ectemnius (Met)
p. 458, RC, L 5 from bottom: barbieri (Beaumont), 1968 (Alysson); Algeria
p. 469, LC, L 20: 1948 is correct, not 1951
p. 469, LC, L 22: 1928 is correct. Transfer cardinalis to synonym of barrei (after L 17)
p. 469, RC, L 4: shukardi is correct original spelling
p. 469, RC, L 8: add Greece
p. 469, RC, L 8 from bottom: 1952 is correct
p. 473, LC, last L: transfer fraterculus to genus Nysson
p. 496, LC, L 32: 1952 is correct
p. 516, LC, L 10: versicolor (Beaumont), 1959 (Gorytes); Israel
p. 526, RC, L 14: transfer delessertii to Stizoides on p. 528, and insert after cyanopterus. Put parens () around Guerin-Meneville
p. 526, LC, L 49-50: transfer basalis to Stizoides on p. 528, RC, and insert after assimilis. Put parens () around Guerin-Meneville.
p. 527, LC, L 4 from bottom: pubescens (Klug), 1835 (Larra); Europe is a good species with arenarum Handlirsch, 1892; Algeria (p. 526, LC, L 43) a subspecies
p. 529, LC, L 6: put parens around (Guerin-Meneville) and add (Stizus) after 1844
p. 546, RC, L 43: houskai is a synonym of arenaria (p. 545)
p. 564, RC, L 6 from bottom: desertorum (F. Morawitz), 1890 (Anthophilus) is correct
p. 581, LC, L 14: delete entry (bidentata belongs in the synonymy of quadrifasciata on p. 586
p. 582, RC, L 7 from bottom: kansuensis Shestakov in Gussakovskij is correct
p. 588, RC, L 23: caspia is correct

p. 588, RC, L 36-39, 53: rufonodis is correct spelling and therefore no homonymy exists with Cresson, 1865. The species citation should read as follows and be transferred to p. 586, RC, and placed after rufonigra:

rufonodis Radoszkowski, 1877; e. Mediterranean area, sw USSR, Iran, Afghanistan
vagans Radoszkowski, 1877
turkestanica Radoszkowski, 1893

The entry for vagans should be eliminated at L 53

p. 589, LC, L 3 from bottom: F. Morawitz is correct

RUMINATIONS FROM THE ASHMEAD ROOM*

KEY TO THE SPECIES OF THE GENUS HYMENOPTERUS**** PRESENT IN THE NATURAL HISTORY BUILDING

by

The Midnight Skulker******

1. Inferior hypostomal setae present, ocular shields present.....2
-- Inferior hypostomal setae absent, ocular shields present or absent.....7
2. Ocular shields rounded******, habitus mournful, elongate species given to cryptic vocalizations.....grissellatus
-- Ocular shields transverse.....3
3. Cranial filaments white, high altitude species.....krombeinus
-- Cranial filaments dark, found at low elevations.....4
4. Predatory forms.....5
-- Parasitic forms.....6
5. Cranial filaments sparser, gray; highly cursorial species often found in association with railroads.....menkei
-- Cranial filaments abundant, blacker; social species; vocalizations drawn out...nuhnen
6. Cranial filaments dark brown, vestiture casual.....schaufferore
-- Cranial filaments paler, less abundant; vestiture more elaborate; very rarely seen species.....marshi
7. Labral fringe present, relatively small-bodied.....8
-- Labral fringe absent.....9
8. Ocular shields present, aggressive species.....carpenteri
-- Ocular shields absent, given to oral punishment.....shawe
9. Setae plumose; smaller bodied nectar thieves.....10
-- Setae not plumose and not nectar thieving; relatively larger bodied; oral fossa frequently smokey; vocalizations rare.....smithii
10. Female; cranial filaments fulvous.....gingras
-- Male; cranial filiments rufous; tibiae frequently exposed in summer.....mcginleyi

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* The Ashmead Room, meeting place of the Ashmead Club**, is named after the infamous William Ashmead***, the first hymenopterist at the National Museum of Natural History. It is located in the Hymenoptera Hall in the above institution. The Ashmead Room contains a coffee machine, table and chairs, as well as 3 desks for visitors: the S. A. Rohwer desk, the A. Girault desk and the T. Pergande desk.

** The membership of the Ashmead Club includes (among others): E. Eric Grissell, Dave Smith, Terry Nuhn, Scott Shaw (emeritus), Paul Marsh, Arnold Menke, James Carpenter (emeritus), Sandy Gingras, Ron McGinley, Karl Krombein, and Mike Schauff. Some members perhaps should be placed in an institution.

*** Perhaps only Peter Cameron enjoys a larger reputation.

**** i.e., Ashmead Club members.

***** i.e., Jim Carpenter.

****** Sorry Jim, this character will not work - more better*******:

Ocular shields thick, rimless ..... grisselliana
Ocular shields thin, rimmed 3

******* Thanks to the Ashmead peer review group for catching this boo boo - edit.

JAMES CARPENTER RECEIVES AWARD FROM SMITHSONIAN

Smithsonian Institution

GHORPHADE MEMORIAL POSTDOC ATTENDANCE AWARD

National Museum of Natural History

AWARDED THIS *4th* DAY OF *June*, 1984 TO *Dr. James Carpenter*. IN RECOGNITION OF HIS CONTINUED GOOD TASTE IN BEING ABSENT FROM HIS POST IN THE ASHMEAD ROOM FOR EXTENDED PERIODS OF TIME.

A.S. Menke, Jefe del Unito

E.E. Grissell, President

M.E. Schauff, Chairman

S.R. Shaw, Co-Chairman

Kuniapanaman Razipaframaslamijamahaimamaniswan, Rep. Punjab Rep.

NUCLEARBOMBUS, NEW SUBGENUS (OR HOW TO ELIMINATE BUMBLEBEE SUBGENERA AND LEARN TO LOVE THE BOMBUS)*

by

Arnold S. Menke and James Carpenter

Fuzzy thinking Bumblebee workers have gesplitert Bombus beyond all reason. There are so many subgenera in Bombus (a veritable plethora) that it is now a case of not being able to see the forest for the trees (or is it setae?). One might call this the fuzz factor (i.e., do plumose hairs indicate featherbrains?). Nuclearbombus (synonym: Atomicbombus) is proposed here as a remedy for this sad situation because it will destroy all subgeneric names, leaving us with nothing but species groups, which, after all, is what these "subgenera" really are.

* A response to a recent paper in the Canadian Entomologist, 1984, 116:1051-1056.

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Distribution data may be summarized, except for new taxa or in the case of comprehensive studies of species, where full data from labels may be given, including the names of collections in which the specimens are deposited.

References should be cited in a separate bibliography at the end of the article according to the following format:

Southgate, B. L., and Brown, R. T. 1975. Descriptions of new species of Xus from South America (Coleoptera: Curculionidae). Journ. Kansas Zool. Soc. 29:273-314.

References to this article in the text should be given as (Southgate and Brown 1975). In catalogs or checklists, the reference should be given as follows:

Xus Southgate and Brown 1975:296.

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Faunistics, taxonomy and biology of north European species
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Systematics of world Pompilidae, faunistics of palearctic Sphecidae
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SPHECIDAE & VESPIDAE
Biology, behavior, ecology of Ammophila, Sphex Polistes and Odynerus of Switzerland, Italy, and France

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British Museum (Natural History)
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ACULEATA
Patterns of evolution in social wasps and bees as related to systematics, biogeography and behavior

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(Compiled by Robin Edwards)

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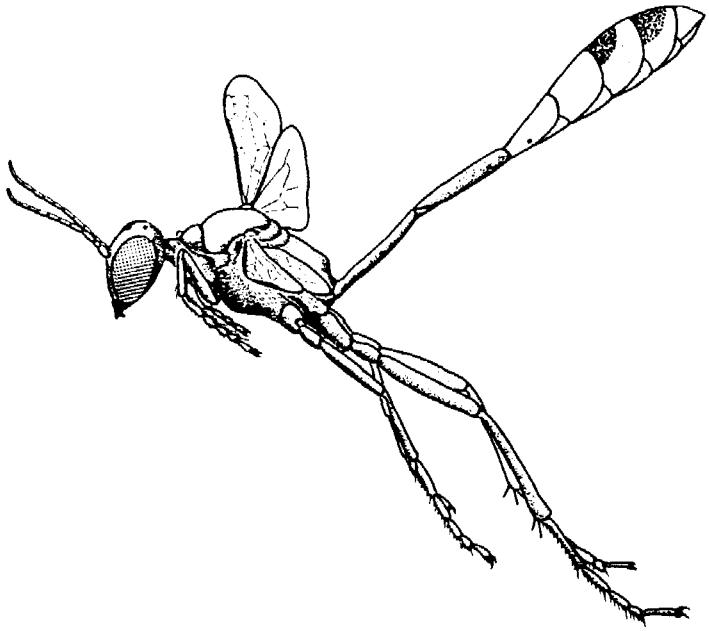
ACULEATE WASP



RESEARCH TEAM

SMITHSONIAN INSTITUTION

ADDENDUM de DUM DUM

Since completion of the manuscript for this issue of Sphecos (Nov. 20) a number of noteworthy items came in the mail. Inclusion of them here will swell the size of Sphecos 9 to near its normal 50 pages.

INTERNATIONAL SOCIETY OF HYMENOPTERISTS
Second Report, Nov. 1984
by
Robert Wharton

In the first report of the Society, it was stated that the next report would appear after the 1984 Entomological Society of America annual meeting. In order to avoid mailing delays in December, however, a short report is being sent out now, with a more detailed report to follow early next year.

Results of the election for 1985 officers are as follows: Lubomir Masner is our president (receiving 95% of votes for that office); Charles Michener is our vice president (receiving 65% of the votes); and James Woolley and Robert Wharton are treasurer and secretary, respectively (receiving 80% of the votes). At our Society meeting in Hamburg this past summer, David Rosen made the sensible suggestion that officers and regional representatives should be elected at 4-year intervals to coincide with International Congresses. If the membership is in agreement, therefore, the next election of officers will be for the period 1986 through 1988 (to bring us into a 4-year cycle).

The Society meeting at the International Congress of Entomology in Hamburg, West Germany, was attended by 31 members. Our meeting was scheduled early in the morning of the last day of the Congress, so we were pleased to see so many in attendance. In addition to discussing the election of officers, we also discussed coordination of Society meetings with future international and European congresses; as well as with other regional meetings. We also discussed the possibility of organizing symposia for International Congresses. Dues were also discussed, and our west palearctic regional representative, Cornelis van Achterberg, volunteered to have all dues for palearctic members sent to him, rather than across the Atlantic to the treasurer in the U.S. His address is: Rijksmueum van Natuurlijke Historie, Raamsteeg 2, Postbus 9517, Leiden, the Netherlands. We also hope to produce a yearly bibliography of works on Hymenoptera. The first such bibliography will be produced at the end of 1985 by Norman Johnson, Department of Entomology, Ohio State University, Columbus, Ohio, U.S.A. 43210. Please send all citations and/or reprints to him. He will list only those received before December 10, 1985.

An informal meeting of the Society will take place on Monday, December 10, 1984 at 7 PM during the Annual Meeting of the Entomological Society of America in San Antonio, Texas. All members are urged to attend.

SIGNIFICANT NEW BOOK

Makoto Matsuura and Seiki Yamane have just published a book titled "Comparative Ethology of the Vespine Wasps". It is in Japanese but concludes fortunately with a 23 page English summary. There are four pages of beautiful color photos of these wasps engaged in various activities. The 13 chapters cover subjects such as life history, nesting behavior, social behavior, foraging behavior, population dynamics, social parasitism, natural enemies, phylogeny and classification, distribution, vespines and man, and identification of the Japanese species. There is a lengthy bibliography and the text is interspersed with photos, drawings, tables and graphs. Price and availability are unknown to me but perhaps one of the authors will send me this information for the next Sphecos.

MORE RECENT LITERATURE

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1984. Convergent evolution in perching and patrolling site preferences of some hilltopping insects of the Sonoran Desert. Southwest. Nat. 29:475-480. (discusses the pompilid Hemipepsis ustulata.)

Eck, Regine

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1984. Bestimmungsschlussel fur die Arten der Gattung Dolichovespula Rohwer, 1916 (Hymenoptera, Vespidae). Ent. Abhandl. Staatl. Mus. Tierk. Dresden 48:35-44. (illustrated key to world species, all castes).

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Gusenleitner, Josef

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Noonan, Gerald R.

1984. Type specimens in the insect collections of the Milwaukee Public Museum. Milwaukee Public Mus. Contrib. Biol. Geol. (58):1-14. (includes holotypes in Bethylidae (Brues), Sphecidae (Rohwer, Viereck), & Dryinidae (Brues).

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Piek, T., J. H. Visser and R. L. Veenendaal

1984. Change in behaviour of the cockroach, Periplaneta americana, after being stung by the sphecid wasp Ampulex compressa. Ent. Exper. Appl. 35:195-203. (includes color photos of the wasp stinging its prey, transporting it, making the nest etc.).

Wahis, Raymond

1984. Sur deux especes nouvelles du genre Minotocyphus Banks (Hym., Pompilidae). Mitt. Schweiz. Ent. Ges. 57:225-230.

1984. Contribution a la connaissance des Ceropales de l'Afrique tropicale (Hymenoptera, Pompilidae, Ceropalinae). Description d'une espece nouvelle du Zaire. Rev. Zool. Afr. 98:560-562.

PROFILES

Peter van Ooijen

Born on May 31, 1957 in Rotterdam, Holland. The first years of my life went past without a deep interest in nature. Not till the age of 16 did I start to discover the world around me. It began with birdwatching, but soon 6-legged flying creatures drew my attention. I was interested in the groups for which cheap and easy literature was available, mainly syrphids and bumble bees. In 1975 I started studies in biology at the Utrecht State University. About the same time friends of mine showed me some Aculeata - it was love at first sight. The Pompilidae appeared to be a group with only a small number of workers. This being a kind of challenge, I decided to focus my attention on them. Now it's 1984, my studies are just finished (specializations in population genetics, systematics entomology and bioinformatics), I am unemployed, and the pompilids and sphecids are the only groups that survived in my collection, with great emphasis on the former. Mr. Henrich Wolf has been a great help and source of inspiration.

Future plans include the finishing of an article on Cryptocheilus notatus, a thing still left from my studies time; a study of the variation of some Priocnemis species, and the species boundaries involved; the development of computer software for systematic applications; and the study of a small collection of Pompilidae from Ecuador as well as one from Madagascar.

As the situation unemployed biologists, especially entomologists, in Holland is not very promising, I guess I will have plenty of time to complete these tasks.

Sphecos surprised me. I believe it will be a great help on the road to understanding spider wasps.

Michael D. Owen

Born: A disturbance among disturbances - September 1940 - spatially and temporally in the middle of the Battle of Britain.

Education: Early education not memorable, secondary education at Sir Joseph Williamson's Mathematical School, Rochester (founded by Sir Jo, an associate of Samuel Pepys, "that the son's of gentlemen might be educated in mathematics and the sciences in order to be prepared for careers in the navy"). An aversion to mathematics and a liking for the outdoors led to an interest in biological sciences and an undergraduate enrollment at the University College of Swansea, University of Wales, with intent to become a marine biologist (1959-1963).

Chronic procrastination (an uncured condition) led to perusal of Raimon Beard's Annual Review of Entomology article on Arthropod Venoms, rather than an assigned reading, and was the genesis of my fascination with stinging insects.

A year at Imperial College (Silwood Park Field Station, 1963-4) convinced me that a career in applied entomology was not for me and I traveled to Australia to work on hymenopteran venoms at Monash University (Melbourne) with Ralph Ghent. I hope it was not the threat of my arrival that led to the tragedy of Ralph's involvement in a fatal car accident. By 1969 I had garnered sufficient information on the venom and venom system of local species of Ropalidia and Polistes for a thesis and moved to the U.S.A. I spent 18 months with Bert Shapiro, at Harvard, hiding my work on amines in vespid and honey bee venoms within a project funded for work on sea anemone toxins.

From Harvard I migrated to Canada and have been in the Zoology Department of the University of Western Ontario since 1970. My work there has been on the chemical composition of venoms, the relationship between venom chemistry and the physiological condition of the insect secreting the venom, the physiology of venom action and the morphology of venom glands and reservoirs. Frustrated by the slow pace at which bees secrete their venom amines I turned to insect nervous systems as tissues in which to study insect amine metabolism.

Sabbatical leaves have allowed me to escape a couple of Canadian winters and to work with Apis adansonii in Kenya (1977), amine measurement techniques in Cambridge (U.K., 1978) and to visit the CSIRO Division of Entomology (Canberra, 1984-5) where my major project is on the possible correlations between diurnal activity and brain amines, but where I am also looking at amines in both the brains and venoms of other Australian insects.

Away from work my interests include Anne R. Bridges (a former student and now a collaborator in life), squash, rugby (as a referee and administrator), SCUBA diving, photography and food. A wit has described life as a joke in bad taste; if this is so I have a lousy taste in humour since it's a joke that I enjoy!

Goran E. Nilsson

I was born in Vasteras, district of Vastmanland, Sweden, in 1959. For as long as I can remember, I have been fascinated by animals and especially insects. For several years, my main interest was beetles, but some years ago I "discovered" the wasps. Almost nobody had been collecting wasps in the district of Vastmanland before, thus my first few years of collecting resulted in about 60 species (mostly Sphecidae, Pompilidae and Eumenidae) new to the district.

In 1978, I started my studies in biology at the University of Uppsala and I received my B.Sc. in 1982. My aim was of course to become a full-time entomologist, but a course in zoophysiology caught my interest. Nowadays, the first "8 hours" of my day are devoted to mammalian neurochemistry at the Department of Zoophysiology at the University of Uppsala. The remaining part of my awake-time is devoted to the other pleasures of life, i.e. mostly insects. My small contributions to the insect literature have hitherto been restricted to two short communications on the aculeate wasps of Vastmanland (Ent. Tidskr. 105:104, and Ibid, in press), and a study of the genetics of the Formica rufa group made at the Department of Genetics, Uppsala (Hereditas 98:161-165).

REVISION OF THE DRYINIDAE

This monsterous, long awaited work by Massimo Olmi finally showed up at the Smithsonian library. Olmi's revision required two fat volumes, and the bulk of the work consists of keys to taxa and descriptions. Introductory material such as biology, hosts, economic importance, morphology, collection techniques, and distribution occupies only 33 of 1913 pages. Volume 2 ends with some 70 pages of lists of nomina dubia and nuda, fossils, parasites, host records and literature. Each volume has its own index, but that of volume 2 includes taxa from both and also contains indexes to hosts, parasites and predators.

Olmi recognizes 844 species in the world (not including nomina dubia) which he divides among 46 genera and 10 subfamilies. Olmi says in the introduction that the object of his work is to revise the known species of the world and to compile their biology. This he has done admirably well. It is disappointing not to find any discussion of past classifications and how Olmi's differs and why. One would like to know something about the criteria and rationale for the scheme adopted in this landmark publication. Under Gonatopodinae there is an interesting discussion of generic characters used by previous workers (such as number of palpal segments - they are not always reliable generic characters). The family classification is still based largely on females, and as Olmi rightly points out, much rearing of material will be required to associate sexes, and until this has been accomplished, not much can be done about this problem.

THE ASHMEAD CLUB

THE MAN

SMITHSONIAN INSTITUTION
Hymenoptera Research Team