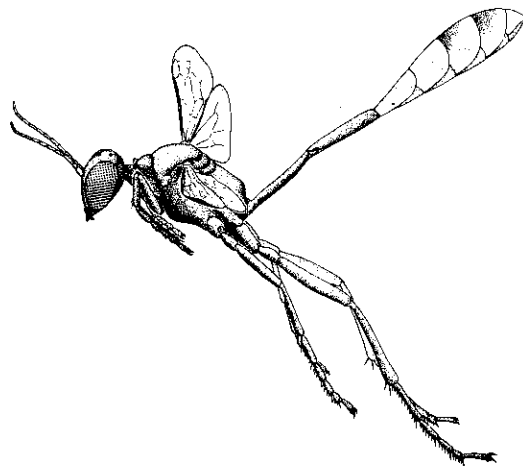


SPHECOS

Number 5 - February 1982

A Newsletter for Aculeate Wasp Researchers

Arnold S. Menke, editor
Systematic Entomology Laboratory, USDA
c/o U. S. National Museum of Natural History
Washington DC 20560



Notes from the Editor

This issue of Sphecos is coming to you later than planned. Your editor has been inundated with administrative matters and time has simply slipped by.

Highlights of this issue involve news about people, some scientific notes, a few obituaries, some trip reports and of course the usual recent literature coverage which includes another of Robin Edwards' special vespoid sections. I want to take this opportunity to thank Helen Proctor for typing most of this newsletter for me. Thanks also go to Ludmila Kassianoff for translating some Russian titles into English, and to Yiau Min Huang for translating some Chinese titles into English.

Judging by the comments received, the readership of Sphecos 4 enjoyed Eric Grissell's "profile" (p. 9) more than anything else in the issue. Congratulations Eric!

Sphecos is gaining considerable recognition via reviews in journals. The most recent and most extensive being published in "Soviet Bibliography" for 1980, issue #6. The nearly 2 page laudatory review by I. Evgen'ev concludes with the statement "Sphecos [is] a highly useful publication for people around the world who study wasp biology and systematics" [Woj Pulawski generously translated the entire review for me into English].

Currently Sphecos is mailed to about 350 waspologists around the world. This figure includes a few libraries such as those at the BMNH, the Academy of Sciences of the USSR, Leningrad, the Albany Museum, Grahamstown, and the Nederlandse Entomologische Vereniging, Amsterdam to list a sample. Probably there are still a lot of scientists, students and amateurs who should be receiving Sphecos. It just takes a letter expressing interest in the newsletter to be put on the mailing list. Copies of issues 1, 3, 4 & 5 are still available.

I want to make a plea for more research and other news from you. Only a handful of the readership keep us informed of their research progress, travel, help needs, etc. Without your input Sphecos will eventually become only a "recent literature" vehicle. Please send me tidbits for Sphecos.

A Directory of wasp workers has been promised in past issues of Sphecos and one is still planned. Lack of time has prevented me from putting it together. It will be compiled from the questionnaires that have been returned to me, and it will be distributed to everyone on the Sphecos mailing list. Hopefully this will occur before the end of 1982.

As indicated in previous issues of Sphecos, failure to return the questionnaire that accompanied issue no. 1 would result in cancellation of names from the newsletter mailing list. The following people have not returned the questionnaire and did not receive Sphecos 4 nor subsequent issues. If any of you know any of these people (listed below) and they wonder why they are not receiving Sphecos you can tell them they will be reinstated when the questionnaire is received.

Alcock, J.	Faulds, W.	Lord, W.	Preuss, G.
Aleksandar, S.	Filho, M. Dias	MacLean, B.	Raw, A.
Au, M. Kei	Geller, R.	Maldes, J.-M.	Riek, E.
Ault, S.	Ghorpade, K.	Masner, L.	Rodrigues, V.
Backhouse, M.	Girling, D.	Mayo, Z.	Ross, N.
Baerends, G.	Gittins, A.	Metcalf, R.	Salbert, P.
Bancroft, M.	Gobbi, N.	Michener, C.	Saunders, H.
Bechtel, R.	Gollands, B.	Mikkola, K.	Serra, F. Verges
Belvardi, V.	Gorton, R.	Mochi, A.	Sobotka, A.
Bezark, L.	Gupta, V. K.	Mudd, A.	de Souza, M. E.
Blum, M.	Hahn, C.	Nambu, T.	Spooner, G.
Bohart, G.	Hamed, M.	Narendran, T.	Starr, J.
Braack, L.	Hardy, A.	Nixon, G. A.	Stubblefield, J.
Carrillo, J.	Hathaway, M.	O'Brien, J.	Sullivan, R.
Casolari, C.	Horning, D.	Pardi, L.	Tintpulver, M.
Castillon, E.	Ishikawa, R.	Patton, J.	Torchio, P.
Chadab, R.	Jeanne, R.	Perez, E.	Toro, H.
Correia, M. de A.	Johnson, L.	Perkins, J.	Truc, C.
Costa, G.	Jonathan, J.	Peters, D.	van Rossem, G.
Davis, H.	Jozan, Z.	Pflumm, W.	Vegter, K.
Diostefano, S.	King, T.	Piccioli, M.	Weissberg, R.
Dirks, T.	Koeniger, N.	Plowright, R.	Whitcomb, W.
Duffield, R.	Lehrer, A.	Poinar, G.	Wonio, M.
Eberhard, W.	Lin, C.	Pratte, M.	Yarrow, I.
			Zimmerman, S.

International Commission on Zoological Nomenclature

The Commission hereby gives six months' notice of the possible use of its plenary powers in the following case, published in Bull. Zool. Nomencl., Volume 37, part 2, on 19th June 1980, and would welcome comments and advice on it from interested zoologists. Correspondence should be addressed to the Secretary, c/o British Museum (Natural History), Cromwell Road, London, SW7 5BD, United Kingdom, if possible within six months of the date of publication of this notice.

1175 Heterelis Costa, 1887 (Insecta, Hymenoptera, Scoliidae): proposed procedure for concluding the case.

Research & Just Plain News

Massimo Olmi will go to Moscow and Leningrad in January 1982 to study dryinids described by Mrs. N. Ponomarenko. Massimo also hopes to travel to North America in the summer of '82 to study dryinids in various museums. He would like to borrow dryinids for study from anyone having them (see Massimo's biography on p. 28 for more on his dryinid research, and p. 25 for his new address).

David McCorquodale (Dept. of Zoology, Univ. of Alberta, Edmonton, Alberta, T6G-2E9) spent the summer of 1981 in southern Alberta studying interactions between several sphecids (Crabro, Philanthus, Cerceris, Bembix) and miltogrammine nest parasites. Emphasis was placed on the return to the nest by provisioning females to see if there were differences depending on the presence or absence of a miltogrammine fly. Some of the evasive measures taken by returning females may be effective in reducing the probability of nest parasitism.

Robin Edwards (Rentokil Ltd., Felcourt, East Grinstead, West Sussex RH19 2JY, England) reports that he has started a project to determine whether social facilitation and group (clumping) occurs at the entrance to vespine nests. This follows the conclusions to the contrary of Pallett and Plowright (Can. Ent. 111: 385-390). In his preliminary work during the 1980 season, Robin has found a major flaw in the recording method of the two Canadians and of the original work by Blackith. A further season or two should enable a positive conclusion to be reached.

Paul Freytag (Dept. of Entomology, Univ. of Kentucky, Lexington, Kentucky 40506) says "my work [on dryinids] is progressing very slowly now, but I am still trying to keep active in the group, working on a paper about the hyperparasites at present. Then will describe some males of Pseudogonatopus."

Lloyd Eighme (Pacific Union College, Angwin, Calif. 94508) writes "I have realized a direct benefit from SPHECOS. Professor Jean LeClercq read my biographical sketch and learned that I am working on Diodontus so he wrote to me suggesting an exchange of information. As a result of correspondence with him I now have his key to Diodontus of Western Europe which adds an interesting dimension to my study. It appears as though one of our North American species may be synonymous with one of the European species.

George R. Ferguson (Department of Entomology, Oregon State University, Corvallis, Oregon 97331) has undertaken a review of North American Cerceris and Eucerceris based on the extensive collection built up by H. A. Scullen. One paper on Eucerceris is in press. In addition he is studying those species of Philanthus belonging to the politus and zebratus groups. He will be glad to see additional material and will identify specimens in the Philanthidae. He is especially interested in material from Mexico and Central America.

Gordon Gordh FRES (Dept. of Entomology, Univ. of California, Riverside, Calif. 92521) is compiling a world catalog of the Bethylinidae. He would appreciate receiving information on obscure literature and taxonomic names that might be missed. Gordon is also working on the biology of Goniozus.

Jean Leclercq (Faculte des Sciences Agronomiques de l'Etat, B5800 Gembloux, Belgium) writes "I have used most of my last 3 months [late 1980 - edit.] in writing a History of Zoology from the Greeks to 1930. It is a course for my students, but perhaps there will be an opportunity to publish it later on. Now, like every year, it is in December and in January that I work the most extensively

on Crabronini, putting aside everything else, as much as I can. The main thing on my program this time, is finishing my new key to the S. American Podagritus (which includes many more species than I had ever imagined). Do not suggest to readers of Sphecos that they send Podagritus to me any more: they would come too late. I hate having additional material when I am just finishing a paper or have it in press. I must also, this winter [1980-81], deal with the Sri Lanka material Dr. Krombein keeps sending.

Perhaps I have succeeded in one of my dreams: to have here a team of several Hymenopterists: They are 9 at the moment: Dr. Ch. GASPAR, Formicidae; Miss C. THIRION, Ichneumonidae; R. WAHIS, Pompilidae; P. RASMONT, Bombini; J.-L. MARCHAL, Tenthredinidae; E. LIONGO, Megachile; Ch. DELMOTTE, Vespinae; A. PAULY, Halictidae, L. MATHOT, Nomada. With me, we are 10. Of course 5 of them are just beginners and more or less advanced students. Also, they will not all continue for their whole life on Hymenoptera, nor will they study more than the Belgian fauna. But the real trouble is that 5 of them are not likely to remain longer than one or two years here, because we suffer now of severe restrictions in matters of staff and grants.

Herman Dollfuss (Dr. Gortgasse 120, A-3240 Mank, Austria) is busy doing a revision of the Austrian Sphecidae.

The Danish Scientific Expedition to Patagonia and Tierra del Fuego 1978-1979 collected about 2210 specimens of Hymenoptera of various families. If anybody is interested in examining any parts of this, please contact Ole C. Lomholdt, Zoological Museum, Universitetsparken 15, Copenhagen, Denmark.

Catarina Dantas de Araujo (Rua Vila Critina no. 1051, Dept. Ciencias Biologicas-Zoologia, Universidade Federal de Sergipe, Aracaju - Sergipe, CEP 491000, Brasil) finished her masters thesis on the bionomics of Mischocyttarus drewseni drewseni Saussure at the Universidade do Parana in Curitiba. She made a comparative study of her data with that of Jeanne (1972) based on studies at Belem, Para. The main differences were a consequence of climatic factors, Curitiba being in the subtropics (mean temperature in summer 19,80 C (highest 27 C), and 11.60 in winter (several days with morning frost, and two short hours of snowfall). Curitiba is 936 m above sea level. Rainfall is about 1.440 mm (highest rainy month: May, 231.1 mm.; driest: June, 17.9 mm - during the 14 months of observation. The principal adaptive behavior is hibernation (June-July-August), and on colder days (April-May, September) older wasps aggregate over the underside of the nest covering younger ones and larvae and pupae, but sometimes abandon the nest to hide in warmer places during night and mornings, returning to the nest after 11 AM on sunny days. Wasps are milder and gentler among themselves than in Belem, and some nests reach 336 cells. Larval and pupal stages take a little longer (Curitiba: egg = 6-15, larvae = 21-31, pupae = 52-64 days; Belem: 11-12, 11-12, 32-41 days, respectively). Nests are usually made on small bushes or banks, very near the ground (0.05 to 0.42 m in Curitiba; 0.30 to 6.00 m in Belem). Beginning and ending of daily activities on good days is 8-17 (in Belem 6-18), small insect collecting between 11-12 AM (in Belem 8-15), fiber collecting between 11-12 AM (in Belem 12-13). In Curitiba wasps live a little longer than in Belem. Catarina plans to repeat her observations in Aracaju, one of the States in the dry Brazilian northeast.

Reece Sailer (Dept. of Entomology, Univ. of Florida, Gainesville, Florida) reports that "The mole cricket parasite Larra bicolor (F.), imported from Puerto Rico, was released during June 1981 at Fort Lauderdale, Tampa, and Gainesville, Florida. Although none of the releases numbered more than 92 females, progeny representing 3 subsequent generations were observed at all three release sites. The numbers observed at any one time ranged from 1-12, with the largest numbers seen at Fort Lauderdale. Stands of the insectary plant Spermacoce verticillata

were established at each release site prior to June and they served as monitoring plots for the presence of progeny. These plots will be closely watched during April and May of 1982 for evidence that the Larra has overwintered successfully.

Karl Krombein (Dept. of Entomology, Smithsonian Institution, Washington DC 20560) reports that the English translations of the 2 Russian books (Rasnitsyn, 1980 and Rohdendorf & Rasnitsyn, 1980 - see Sphecos 4:4) have been completed, but that technical editing will delay their publication until 1983 at the earliest.

Kunio Iwata (Karatodai 2-18-3, Kita, Kobe, Japan) published 6 volumes between 1979 and 1981 that contain 150 chapters or articles on insect life histories and various biological observations, including many on Hymenoptera [see Iwata in Recent Literature]. Illustrations are scattered through each volume. Some of the material presented was published earlier by Iwata, a few articles dating back to the 1940's, but over half of the papers have not appeared in print before. Unfortunately, these volumes are entirely in Japanese. Dr. Iwata sent me a list of the chapter titles translated into English and I can send a xerox copy of this list to anyone that would like to have a better idea of the specific topics included in each volume.

G. R. Brown (Biological and Chemical Research Institute, New South Wales Department of Agriculture, P.M.B. 10, Rydalmere, N.S.W. 2116, Australia) is working on a taxonomic revision of the Australasian Thynninae (Tiphidae).

Hans-Joachim Jacobs (2201 Ranzin, no. 41, East Germany) is working on the sphecid and chrysidid faunas of his country.

William F. Barr (Dept. of Entomology, Univ. of Idaho, Moscow, Idaho) is conducting a faunistic study of the Mutillidae of Idaho in collaboration with William E. Ferguson.

James M. Carpenter (Dept. of Entomology, Cornell University, Ithaca, N. Y.) writes: "I have been investigating the phylogenetic relationships of the subfamilies and tribes of the Vespoidea (sensu stricto; Diploptera), using cladistic methods, for the past few years. The results of this study will appear in Systematic Entomology in 1982 [paper appeared at the very end of 1981, see Recent Literature - editor]. They may be summarized as follows: Euparagia is the sister-group of the rest of the Vespoidea. The Gayellinae and Masarinae are sister-groups, and together are the sister-group of the Eumenidae and Vespidae. Within the Eumenidae, both the Zethinae and Eumeninae (as presently constituted) are not monophyletic groups. Within the Vespidae, the Stenogastrinae is best regarded as the sister-group of the Polistinae and Vespinae. The tribes Paragiini (Masarinae), Discoeliini (Zethinae) and Polybiini (Polistinae) are not monophyletic. I am proposing a new classification of these wasps; phyletically sequencing the natural groups in the single family Vespidae. This arrangement is more natural and informative (in terms of diagnostic efficiency) than that of Richards (1962)". [This is a landmark work in the Vespoidea and hopefully it will promote further studies of this type in related wasp groups - editor].

Help Needed

V. V. Sudheendrakumar (Kerala Forest Research Institute Subcentre, Chandakkunnu, 679342, Nilambur RS. Kerala, South India), needs an English translation of the Japanese paper by D. Yamamoto, "Life of blue Chalybion

inflexum" published in Nihon Konchuki, vol. 1, pp. 7-76. Can any of our Japanese colleagues help?

Marty Obin (Dept. of Zoology, Univ. of Florida, Gainesville, Fla. 31611) is studying Chalybion californicum (Saussure) and would like to hear from anyone with information on its natural history, especially nest marking (abdominal dragging).

"WANTED - Specimens of Mutillidae from the Australian Region (east of Wallace's Line, i. e., Sulawesi and Lombok eastwards) for a major generic revision starting in 1981. Loans of specimens will be greatly appreciated and should be sent to Dr. D. J. Brothers, Department of Entomology, University of Natal, P. O. Box 375, Pietermaritzburg, 3200 South Africa. In case of postal difficulties, they may be sent to me c/o Mr. M. C. Day, Department of Entomology, British Museum (Natural History), Cromwell Road, London, WC7 5BD, England, who has very kindly agreed to forward them to me. Exchanges may also be arranged if preferred.

G. van der Zanden (Jongkindstr. 2, 5645 JV Eindhoven, Netherlands) asks:
1) Can anybody tell me where the collections of Ad. Nadig, sen. and jun. are kept? 2) Where can I find a copy (xerox) of H. Friese's 1908 Beitrag in "Wissenschaftl. Ergebnisse der Expedition Filchner nach China and Tibet 1903-1905"; 10/1/1, 1908: 97-99.

People in the News

WOJ PULAWSKI

Woj is now employed at the Department of Entomology of the California Academy of Sciences, San Francisco, California. He is the first hymenopterist the Academy has had. His responsibilities include both research and curating (as curator he is responsible for Hymenoptera and also those insects which are preserved in alcohol). Woj's fortunes changed when he received a long distance phone call from San Francisco at his Wroclaw office one October morning in 1980. Dave Kavanaugh, Department Chairman, was calling to tell Woj that he was being considered for a vacant position at the Academy. Dave told Woj that he would like to interview him in Poland. Kavanaugh arrived in Poland in November 1980 and after several days of discussion, offered Woj a two year Visiting Curator position at the Academy. A passport was easily and quickly obtained through Wroclaw University, but a United States visa involved a long, agonizing wait. This was a tense time because of the threat of military intervention in Poland and the resultant possibility of Woj's departure from the country being prevented or much delayed. Fortunately nothing happened, the visa was eventually obtained, and both Woj and his wife Veronica left Poland on Feb. 9, 1981. Enroute to San Francisco they stopped at the British Museum in London and the Smithsonian Institution in Washington, D.C., arriving at the latter on Friday, the 13th of February. When Woj met me (Menke) at my office he told me, "I'm home at last". Woj now (October 1981) has permanent status as a Curator at the Academy.

QABIR ARGAMAN (formerly CAROL NAGY GROSZMAN)

The former Carol Nagy of Romania, a recent immigrant to Israel [see Sphecos 3:35, 4:2], has finally found employment. He is now working as a taxonomist for the Israel Ministry of Agriculture (Address: Plant Protection Department, P. O. Box 15030, Yaffo 61150, Israel). Israel immigration regulations required Carol to adopt a Hebrew name - thus he is now Qabir Argaman.

DON HORNING

"Working as Chief Biologist for the NSW State Pollution Control Commission leaves me almost no time for Australian entomology. My most efficient contribution at the present moment would be to collect specimens for people."

"Zoe and I spent 6 weeks in Java and Bali in December-January. I didn't collect very much - little time and virtually no equipment but I did find a few sphecids. We will be returning to Indonesia every two years or so, so there will be opportunities to get some collections from Central Java and Central-southern Bali in the future."

CHRIS STARR

"In 1980, after the International Congress of Entomology in Japan, I had occasion to visit the Philippines, including the Visayas State College of Agriculture, on the island of Leyte. A lovely place, with the seashore and coastal mountains in ready walking distance, wonderful social wasps (I had the pleasure of being stung by Ropalidia and by 1 of 3 species of stenogastrines I found, and a populace one could really love. When I got back to Georgia I wrote them a letter suggesting that "what you really need is a hymenopterist-behaviorist to teach Insect Systematics, Animal Behavior, and to take a turn at General Entomology." They wrote back and said "We think you have a good point there."

The upshot of all this is that I've graduated from the University of Georgia (thesis: "Defensive tactics in Social Wasps") and am now in the Philippines, occupying the job which was created for me, frantically trying to write up and submit my backlog of papers, and prepare my courses. I hope to collect and observe extensively in the Philippines and slightly into Taiwan and Indonesia. Between the brand new wasps and the various rebel groups - my contract specifies that I am entitled to evacuation if the area is overrun by insurgents - an interesting time is definitely foreseen."

Dr. FRANK KOCH

Dr. Koch has been appointed to the Hymenoptera position at the Humboldt Museum in Berlin succeeding the late Eberhard Konigsmann. Requests for loans and other matters should be addressed to Dr. Koch.

A New Newsletter in Hymenoptera

Joachim Oehlke, Institut fur Pflanzenschutzforschung Kleinmachnow, 1300 Eberswalde-Finow, East Germany, has initiated a newsletter for those interested in the Hymenoptera of Germany. The first issue, December 1980, includes a list of specialists with their addresses and interests, and also important new literature.

New Journals

Entomofauna is a new periodical that publishes manuscripts from the whole field of entomology. Publication commenced in 1980 with approximately 500 pages. The editor, Maxmilian Schwarz, will publish manuscripts on a non-profit basis. Authors will be responsible for page-charges. Manuscripts must comply with the "Rules for Authors", a copy of which can be obtained from any member of the editorial staff.

Entomofauna can be obtained in two ways:

1) By exchange for other periodicals: Libraries, museums or scientific institutes publishing a periodical can obtain Entomofauna by exchange. Please send your periodical starting at the beginning of a year with the comment "exchange wanted commencing 1 January 19.." and write the exact address to which Entomofauna is to be mailed. All inquiries concerning exchange should be directed to: Thomas Witt, Tengstr. 33, D-8000 Munich 40, West Germany.

2) By subscription or single orders: The amount of the annual subscription is DM 40.-All inquiries concerning subscriptions and single orders should be directed to: Wolfgang Schacht, Scherrerstr. 8, D-8081 Schongeising, West Germany.

Owner, editor and publisher responsible for the contents: Maximilian Schwarz, legal adviser for science to the government of Upper Austria, Eibenweg 6, A-4052 Ansfelden, Austria.

Editorial staff (all West Germany):

Erich Diller, Denkenhofstrasse 6a, D-8000 Munich 60

Max Kuhbandner, Marsstrasse 8, D-8011 Aschheim

Wolfgang Schacht, Scherrerstrasse 8, D-8081 Schongeising

Thomas Witt, Tengstrasse 33, D-8000 Munich 40.

The International Journal of Entomology is a new serial publication being produced by the Entomology Division of the University of Calicut, Kerala, India 673 635. The first issue was to appear in mid 1981. Dr. U. V. K. Mohamed is the editor, and he is soliciting papers in all fields of entomology.

Important Hymenoptera Collection Transferred

The Hymenoptera Collection housed in the National Museums of Zimbabwe (formerly Rhodesia) at Bulawayo was transferred to the South African Museum, Cape Town, South Africa, according to a letter received March 16, 1981 from D. L. Hancock of the NMZ. The transaction included all type material. The late George Arnold built up this important African collection, and many of his wasp types are contained in it. The entomologist in charge of Hymenoptera at the South African Museum is Dr. V. B. Whitehead.

Scientific Notes

INTER-SPECIFIC FACULTATIVE TEMPORARY PARASITISM IN DOLICHOVESPULA

by

Robin Edwards

(Rentokil Ltd., Felcourt, East Grinstead, W. Sussex, England)

On 19th May 1980 I discovered a queen Dolichovespula sylvestris (Scop.) constructing a nest in a hazel bush. One envelope was complete, the second about half finished: the nest was probably four days old. The queen was very active and later, on 6th June, the first worker emerged from its cell (exactly to the day given by Michael Archer's computer programme for an "average" nest of this species).

During the next few days, I watched the D. sylvestris workers foraging, and everything seemed normal. I did not look closely at the workers again until 1st July when I discovered that they all had dark faces and abdomens. They were not D. sylvestris, but D. norvegica (F.)! The nest continued to flourish and by the end of July the new generation of male and female D. norvegica was starting to emerge. The nest finally collapsed on 16th August.

I can therefore only assume that the original queen had been usurped by a D. norwegica queen, the first time this has been recorded for any species of Dolichovespula apart from the obligate parasites. It is, of course, just possible that the sylvestris queen died and the norwegica queen took over the orphan nest, but this seems very unlikely.

We know that usurpation is very common in ground-nesting species like V. vulgaris and maculifrons, where a shortage of nest sites may lead to fighting amongst queens. But in aerial nesters, there can surely be no lack of sites and this is presumably why usurpation does not usually occur. There is, however, one other possibility: that inter- and intra-specific usurpation does occur regularly amongst Dolichovespula queens, but that the change over normally goes unnoticed. It is easy to find the corpses of unsuccessful queens in the entrance tunnel to a nest in the soil, but it is almost impossible to find remains scattered amongst vegetation under a tree or bush. Maybe we should mark and watch more Dolichovespula queens, as did Bob and Janice Matthews in their study of V. squamosa (Nat. Hist. 88: 56-75, 1979). An interesting project for any vespinologist.

TRAVELING HORNETS

by
Robin Edwards

Jacob Ishay, it seems, has started sending me Christmas presents from Israel. I assume it must be Ishay, for who else would have beautiful live queens of Vespa orientalis to give away? The strange thing is that he has packed them in crates of grapefruits and oranges and sent them via two British supermarkets!

On second thought, perhaps it's all fortuitous and the queens made their own way into the crates. I have now received two (Dec 1979 and Jan 1981), in perfect condition and given the right environment, probably quite capable of initiating nests. Similarly, in Belgium recently (see Delmotte and Leclercq, 1980, A propos d'un Frelon Oriental intercepté vivant a Gembloux. Bull. Ann. Soc. Roy. Belg. Ent. 116:183-184) a queen of V. orientalis was found alive in a box of grapefruit from Cyprus. The authors of the note rightly, I believe, concluded that the queen was unlikely to found a colony in the temperate climate of Belgium, even if she had survived the winter. Nevertheless, this shows how easily vespines and other Aculeates can be spread around the world. Surely it is only a matter of time before this species and some others become established in foreign countries. I doubt if any exotic species will breed in Britain, for with our poor summer weather, I often wonder how anything breeds here! Still, it would be rather nice to find a colony of Vespa mandarinia in my back garden.

POLISTES GALLICUS IN NORTH AMERICA

by
Mary A. Hathaway
(Museum of Comparative Zoology, Harvard Univ.,
Cambridge, Mass. 02138)

Polistes gallicus (Linnaeus) has been introduced into Massachusetts, in the Boston area. The species is native to Europe (except northern Europe), northern Africa, the Middle East, and Asia through eastern China. It is extremely common throughout most of its range (see Guiglia, 1972, Les Guepes Sociales d'Europe Occidentale et Septentrionale. Faune de l'Europe et du Bassin Méditerranéen, VI. Paris: Masson et Cie. 181 p.). Specimens were collected in Cambridge in 1980, and in Cambridge, Somerville, Belmont, and Newton in 1981. Species identification was verified by Dr. Arnold Menke of the U.S.D.A. In 1981 colonies were quite common in Cambridge.

A brief review of the biology of P. gallicus in the Old World, along with some sketchy observations of the wasp in Massachusetts, will be published in *Psyche* 88 (1-2), which may be out in late 1981.

ON MALAISE TRAPS AND COLLECTING BAGS

by

Anthony Harris

(Otago Museum, Dunedin, New Zealand)

"Since 1971 I have used five different designs of malaise traps throughout New Zealand's three main islands. When the American Entomological Society type was run beside one made to Henry Towne's (1972) design, the latter was on average 3 - 4 times as effective in capturing Hymenoptera. The Townes design is by far the most effective of all designs used in almost all situations, particularly when placed across an insect fly-way with a patch of low, sun-lit vegetation beneath the high end, and with the black middle wall of the trap interrupting the flight path to the sun-lit leaves.

A tiny trap (the "Oliver trap") was more effective in capturing Pompilidae in very confined areas. There is a tendency for solitary wasps of both sexes to fly around small sunny spots in the forest, the area outlined, say, by a tree, a fallen log, and a pile of logs and vegetation. The wasps frequently circle around such areas close to the ground, and alight on the ground. While hunting females range further afield, males of many species patrol in a regular, circular pattern. When females fly to the ground, males, watching from the foliage, fly down to them. In this situation, the small malaise trap is the most effective, particularly if lianas and low vegetation restrict the area. Nevertheless, the Townes (1972) trap always contains the largest number of insects of all orders, regardless of where the traps are set.

OLIVER MALAISE TRAP (For collecting solitary wasps in very confined areas; designed by Mr. Hugh Oliver of Ruakumara Animal Research Station, Hamilton, New Zealand, for collecting Phoridae (Diptera)).

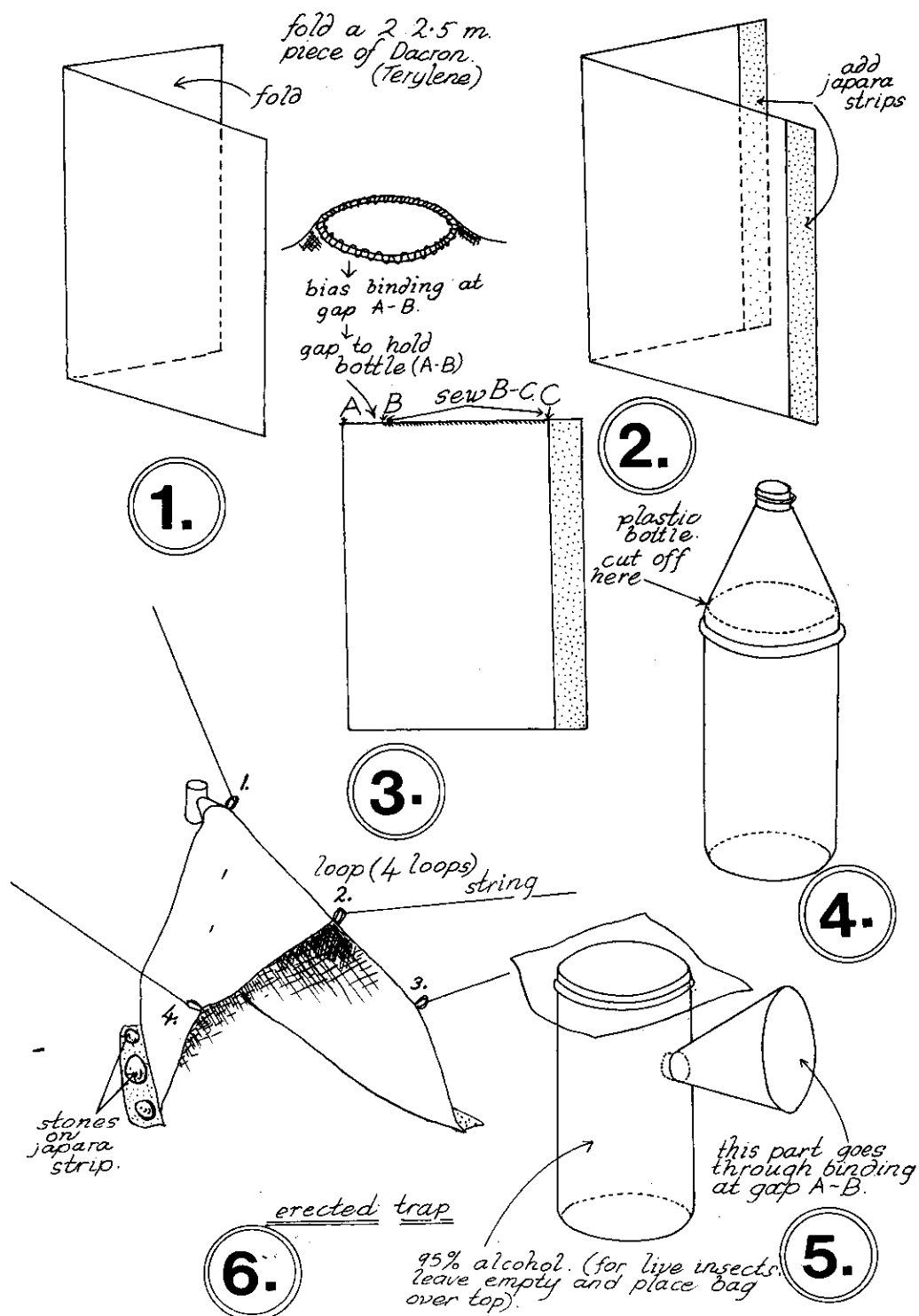
This trap is extremely simple to make. Take two, to two and a half metres of Terylene (= Dacron) and fold in half (fig. 1). Sew a seam (fig. 3, B - C) leaving a small aperture at A - B. The aperture should be strengthened by bias binding. Buy a plastic bottle with a conical area beneath the neck. Cut the conical end off the bottle just past its greatest diameter and place the wide end through the aperture (A - B): the bias binding should fit tightly. A circular hole the size of the mouth of the bottle is cut into the wall of the remainder of the bottle and the mouth of the conical part pushed through it and cemented on (fig. 4). A plastic bag is attached with a rubber band to the cut-off end of the bottle (fig. 5). Setting loops for strings are attached to the Terylene at four points as shown in fig. 6; the strings will be attached to trees/vines, etc. A strip of oiled japara is sewed onto the base of the trap (figs. 2, 3) and stones or logs placed on it to weight it down.

NOTE: This trap is extremely easy to make and set up, and light to transport, but is only of use in areas where flight patterns are tight, confined, and well-known beforehand to the collector.

PLASTIC BAGS:

In many situations, plastic bags are more effective than nets for capturing solitary wasps on the ground, on certain types of bushes, and such places. A stiff plastic bag, about 9 inches long and 7 inches wide is held by the sealed end, bunched in such a way that the open end is circular. The bag is brought rapidly over the wasp, which usually flies up inside the bag. The bottom is then rapidly closed. A small vial of 95% alcohol, carried in the pocket, is then produced, the cap removed, and the bottle placed inside the bag (held through the bag), the plastic wall of the bag being brought tightly over the bottle. The

CONSTRUCTION OF THE OLIVER TRAP



wasp, meanwhile, has been kept in a small part of the bag pinched off from the remainder with the fingers. The bottle is slid towards the closed off area of the bag containing the wasp until the area is brought above the mouth of the bottle. The wasp is then forced down into the alcohol.

A series of wasps can be taken in the same bottle quite rapidly in this way. There are times and places where one must take a minimum of equipment, and this method enables one to store all of one's collecting gear in a breast pocket."

Townes, H. 1972. A light-weight malaise trap. Ent. News 83:239-247.

Obituaries

In memory of Dr. Sc. Nat. EBERHARD KONIGSMANN
(1930 - 1980)

Dr. Eberhard Konigsmann, a respected colleague and internationally recognized hymenopterist, died of thyroid cancer on 16th November 1980, shortly after his 50th birthday and shortly after receiving the degree of Doctor scientiarum naturalium.

He studied Botany, Zoology and Phytopathology at the Institute of Phytopathology in Leipzig in 1949-1953. Even before finishing his thesis (on a gall producing mite species) he became acquainted with Professor Hennig of the Deutsches Entomologisches Institut, Berlin-Friedrichshagen and switched his interests to hymenopterology. In 1957 he was appointed scientific assistant in Berlin, a decisive step for his whole future life. His duty was not only curating an important collection of Hymenoptera, but also conducting taxonomic studies of some Hymenoptera groups. During that period he did three revisions of Alysiinae (Braconidae), with descriptions of a new genus and new species. Influenced by the scientific meetings at the Institute, held under the leadership of Professor Hennig, he became actively interested in phylogenetic problems. His first paper was dedicated to the phylogeny of Parametabola, with special emphasis on Phthiraptera.

In 1962 Konigsmann moved from the Deutsches Entomologisches Institut to the Institut für Spezielle Zoologie und Zoologisches Museum der Humboldt-Universität. Because of the size and condition of the Hymenoptera collection under his responsibility, most of his time was spent in curation. Only someone familiar with the very unsatisfactory state of the various collections can appreciate the nearly 20 years it took him to put them in proper order and have everything catalogued. Thanks to his searching and correspondence much of the materials misplaced or appropriated during the World War II were returned to the Museum. Especially meritorious was his cataloging of genera, species and type material for a large part of the Hymenoptera collection. Individual collections, except for a few historically important ones, were consolidated into one general collection and partly rearranged according to the Hymenoptera Catalogue by Muesebeck, Krombein & Townes.

He undertook field collecting trips only occasionally. His trips took him to the Mediterranean Region, an area he greatly enjoyed both faunistically and floristically: to Albania with the DEI Expedition in 1961, and to Yugoslavia in 1965 and 1966. He spent much time preparing for the Albania Expedition and working on its results. In a short time and in an outstanding way he prepared, together with Dr. G. Friese, general and bibliographic accounts of the Albania Expedition, which constitute a basis for all consecutive studies of the Albanian fauna. He also published various papers on vespoids and tenthredinids, particularly from Yugoslavia and Albania where he himself had collected.

While working for the Zoologisches Museum he became more and more interested in general problems of zoology and hymenopterology. Thus arose a paper on zoological nomenclature, various lexicons, and biographical notes on Bischoff, Bluthgen, Hedicke and Alfken.

He undertook field collecting trips only occasionally. His trips took him to the Mediterranean Region, an area he greatly enjoyed both faunistically and floristically: to Albania with the DEI Expedition in 1961, and to Yugoslavia in 1965-1966. He spent much time preparing for the Albania Expedition and working on its results. In a short time and in an outstanding way he prepared, together with Dr. G. Friese, general and bibliographic accounts of the Albania Expedition, which constitute a basis for all consecutive studies of the Albanian fauna.

Konigsmann was also interested in local faunistic problems. He surveyed the area of Grossmachnower Weinberg [near Berlin] where Bischoff and Hedicke had actively collected. He actively supported the newly organized Hymenopterological Circle of the Zentral Fachausschuss (Central Branch) Entomologie at the Cultural Society of the German Democratic Republic.

For the last five years of his life he became more and more interested in phylogenetic systematics. Besides smaller papers, his Phylogenetic System of Hymenoptera (parts 1-4, 1976-1978) was published. This work is an outstanding application of Hennig's theory, and supplements Bischoff's Biologie der Hymenopteren. Konigsmann's analysis of many morphological problems and evaluation of criteria for phylogenetically important characters were greatly facilitated by his linguistical talents, especially in papers by Brues, Wheeler, Malyshev, Viktorov and Rasnitsyn. Unfortunately his study of the larvae of Hymenoptera remains unfinished.

We lost in Eberhard Konigsmann a highly conscientious and dedicated colleague who will be also remembered by the many visitors, both native and foreign, to the Hymenoptera Section of the Humboldt Museum.

Joachim Oehlke
Institut für Pflanzenschutzforschung
Kleinmachnow
13 Eberswalde-Finow 1
German Democratic Republic
(translation to English by Woj Pulawski)

HERMAN A. SCULLEN
(1887 - 1981)

Herman A. Scullen, Professor Emeritus, Oregon State University and charter member of the Oregon Entomological Society, died in his sleep May 17, 1981, in Boise, Idaho. He was born November 27, 1887, on a farm in Pierce County, Wisconsin. His family moved to Ashland, Oregon in 1901 where his father died the same year. After graduating from Ashland Normal School in 1906, Herman enrolled in a pre-med and zoology major at the University of Oregon, Eugene, where he received the B.A. degree in 1910. His interest in insects started in Ashland and crystallized in Eugene where, as an undergraduate, he carried out biological studies of the box elder bug.

After two years as principal, teacher and athletic coach at Junction City High School, Junction City, Oregon, he accepted a position as Instructor in Zoology at Iowa State University, Ames, where he remained on the staff from 1912 to 1918. During this period he began his graduate studies and became interested in bees and beekeeping.

In 1918 Herman accepted a position as Apiculturist with the U.S.D.A. and was headquartered at Pullman, Washington. In 1920 he decided to go into commercial beekeeping and moved to Corvallis, Oregon, to set up operations. In the fall of 1920 he taught beekeeping on a half-time basis to World War I veterans in a

training and rehabilitation program established by Oregon State University. The program was so popular that he was soon teaching full time. The veteran's program was phased out in 1923, and he remained on the staff teaching General Entomology, Apiculture, Insect Morphology and Insect Physiology.

Herman pursued his graduate studies diligently on a part-time basis and received the M.S. degree from the University of Oregon in 1927. His thesis, on the bumblebees of western Oregon, was published in the Pan-Pacific Entomologist. He received his Ph.D. from Iowa State University in 1934. His dissertation was a biological and taxonomic study of the wasp genus Eucerceris, an endemic North American group, and was published as Oregon State Monographs, Studies in Entomology #1 in 1939.

During his academic career, Herman was also Apiculturist in the Agricultural Experiment Station where his duties included both research and extension. He published dozens of experiment station and extension service bulletins, circulars and information leaflets. He was Secretary of the Oregon State Beekeepers Association for 20 years.

Following his retirement in 1953 Herman devoted full time to his taxonomic studies of the cercerine wasps, Cerceris and Eucerceris, of the western hemisphere. Of his 23 taxonomic papers, 18 were published following his retirement. These included three major revisionary works published by the Smithsonian Institution. Grants from the National Science Foundation supported extensive collecting trips to the southwestern United States, Mexico, and Central America during the 50's and 60's. He described 23 new species and subspecies of Eucerceris and 64 new taxa in Cerceris. He terminated his studies on South American Cerceris in 1975 due to ill health.

His collecting and support led to the building of the collections of the Systematic Entomology Laboratory at Oregon State which now houses over 2 1/2 million specimens. This collection is perhaps his greatest contribution to Northwest Entomology. During the decades of the 20's, 30's and 40's, he and a few students who accompanied him on some of his trips collected extensively throughout the state. In the groups with which I am familiar, virtually every species known from the Northwest is represented in the OSU collection. Many new species were collected and some 15 or 20 species of insects have been named in his honor.

Herman was active in the Boy Scouts of America for over 30 years and received the Silver Beaver Award. He was a past master and 50 year member of the Corvallis Masonic Lodge, and he was active in the First Congregational Church, the Men's Garden Club and many civic activities.

He served 5 years as Secretary of the Pacific Branch of the American Association of Economic Entomologists and as Branch President in 1935-36. He served as an officer in the Oregon Entomological Society longer than anyone else. He was the second President (1941) and was Secretary four times (1945, 1949, 1950, 1951). He was also a member of the American Entomological Society and the Iowa Academy of Sciences. He was a past president of the Oregon State Chapter of Sigma Xi and was active in many campus activities.

He is survived by his wife Bessy of Boise, Idaho, a son-in-law and two grandsons.

H. H. Crowell and George R. Ferguson
Dept. of Entomology
Oregon State University
Corvallis, Oregon

JOHAN GEORGE BETREM
1899 - 1980

Johan George Betrem died at the age of 81 on July 16th, 1980. He was born March 21, 1899 at the Hague. In 1920 he started with his study in biology at the State University at Leiden. In 1922 he got his B. Sc. and in 1925 his Master's

degree. His majors were zoology, botany, and phytopathology. In the period 1922-25 he was assistant at the Zoological Laboratory at Leiden. In 1926 he acquired a similar position at the Entomological Laboratory of the Agricultural University at Wageningen. From January 1st, 1928 to January 15th, 1930 he held the position of phytopathologist at the aforementioned laboratory. In 1928 Betrem received his Ph.D. from Leiden University. His thesis was titled "Monographie der indo-australischen Scoliidien (Hym., Aculeata) mit zoogeographischen Betrachtungen".

In 1930 he left for Indonesia. From 1930-39 he was entomologist at the Research station for mountain cultures at Malang, Java. During his leave in 1936 he visited numerous German and English museums. From 1939 to 1946 he was head of the Department Central Java of the Malang Research Station at Semarang. Actually Betrem held this position only until December 8th, 1941 because during the Japanese occupation he was in prison because of his Dutch nationality. Owing to his former position as a reserve-captain in the Dutch army, he was able to help other entomologists who lived under even worse conditions in Japanese prison camps. In February 1946 he was returned to the Netherlands and became a teacher at the College for Tropical Agriculture at Deventer, teaching tropical agriculture, zoology (entomology), and botany. He remained active in research, e.g., in 1959 he visited Cali, Colombia to investigate the damage in coffee-plantations and he developed a control program. From July 1961 to June 1962 he held a position at Cornell University in Ithaca, New York so that he could continue his studies of the Scoliididae with Prof. Bradley.

Meanwhile he had become vice-director of the College of Tropical Agriculture in Deventer; and in 1964 he retired at the age of 65. This left more time for travelling. From September 1964 to December 1965 and from August 1966 to August 1967 he was again working at Cornell University. In addition he visited numerous museums and institutions in the USA and Europe. Working became difficult for him in the early 70's because of declining health, and his research finally came to a standstill. His important entomological collection (Dr. P. A. van der Laan, Wageningen saved what survived the Japanese occupation) and an important part of his extensive library are at the Rijksmuseum van Natuurlijke Historie at Leiden. A card system of the (available) taxa published in Hymenoptera by Betrem has been made.

The main merit of Betrem's scientific work was his taxonomic research on the Scoliididae and the Formicidae. However, he was also interested in other groups, e.g., Ichneumonidae, Braconidae, and Psychidae. He did a lot of research on the biology and control of noxious insects; e.g., he discovered the relation between the elm scolytids and Dutch Elm Disease. In the period 1930-41 Betrem was working fast and extensively for the interest of planters of the mountain cultures at Java, who had large problems with pests in coffee, and cocoa-cultures. His wide knowledge of many insect-groups soon made him one of the authorities in this field. Moreover, he had an extensive knowledge of agriculture and horticulture in general, without doubt because of his former position at Wageningen University. In cooperation with his colleagues, assistants and planters, Betrem conducted a lot of fundamental and applied entomological research, which proved to be very important (and still is). His main entomological interest remained in Scoliididae; he could go on with the species of the genus Campsomeris because of their relation to the biological control of white grubs. These scarabeid larvae are the most important pests in dry areas of Central and East Java, and the study of the natural enemies was also of importance for the planters. Betrem's final paper was on the African Campsomerinae; unfortunately he was not able to complete an MS on the Neotropical Scoliididae.

Betrem can be characterized as a person who was extremely helpful to colleagues, to which his love for teaching and his meek character may have

contributed a lot. A list of his papers (with the numerous Dutch titles translated in English) will be published in Entomologische Berichten, Amsterdam. [see Recent Literature, p. 48]

Kees van Achtenberg
Rijksmuseum van Natuurlijke Historie
Postbus 9517
2300 RA Leiden, Netherlands

HYMENOPTERA PUBLICATIONS OF J. G. BETREM

1926. Opmerkingen over Scoliiden (Notes on Scoliidae). Tijdschr. Ent. 69:xii-xiv.
1926. De Mierenfauna van Meyendel (The ant-fauna of Meyendel (near the Hague)). Levende Nat. 31:211-220.
1927. Zur Erforschung des Persischen Golfes. Beitrag 9. Scoliidae (Hym.). Ent. Mitt. 16:288-296.
1927. Het geslacht Scolia (The genus Scolia). Tijdschr. Ent. 70:xciii-xcviii.
1928. Monographie der indo-australischen Scoliiden (Hym., Aculeata) mit zoogeographischen Betrachtungen. Treubia 9 (Suppl.):1-388. (Thesis).
1929. Nachtrage zur Monographie der indo-australischen Scoliiden. Wien. Ent. Ztg. 46:36-37.
1932. De Scoliiden-fauna van Banka (The Scoliid-fauna of Banka). Ent. Ber. 9:412-415.
1932. Eine merkwürdige Ichneumoniden Gattung Klutiana nov. gen. Tijdschr. Ent. 75 (Suppl.):89-96.
1932. Eine neue, aus Manga-Früchte gezuchtete Pimpline (Ichneumonidae). Treubia 14:21-28.
1933. Die Scoliiden der indo-australischen und palaarktischen Region aus dem Museum für Naturkunde zu Dresden (Hym.). Stettin. Ent. Ztg. 94:236-263.
1933. De bladwespen van Meyendel (The sawflies from Meyendel (near the Hague)). Levende Nat. 37:376-383.
1934. Het vermoedelijke klimaat van Java in het Pleistoceen en zijn verband met de zoogeographie (The supposed climate of Java in the Pleistocene and its connection with the zoogeography). Versl. Vergad. Afd. Ned.-Oost-Indie Ned. Ent. Vereen. 1(5):cxxxiv-cxlii.
1935. (With J.G.E. Kalshoven). Merkwaaardige streng met cocons van een Meteorus-soort (Hym., Braconidae)(Peculiar strand with cocoons of a Meteorus species). Ent. Meded. Ned.-Indie 1:20-21.
1935. Beitrage zur Kenntniss der palaarktischen Arten des Genus Scolia. Tijdschr. Ent. 78:1-78.
1936. Een naamsverandering: Scolia quadripunctata F. 1775 = Scolia sexmaculata (O.F. Muller 1766) nec F. 1781 (A change of name). Tijdschr. Ent. 79:1xxvii-lxxix.
1937. The males of the indo-australian Campsomeris species with yellow metanotum (Hym., Scoliidae). Proc. R. Ent. Soc. Lond. B, 6(5):91-96.
1938. De Scoliiden fauna van Celebes en haar ontstaan (The scoliid fauna of Celebes and its origin). Hand. Ned.-indisch Natuurw. Congr. 8:357-359.
1941. Etude systematique des Scoliides de Chine. Notes Ent. Chin. 8:47-188.
1941. Notes on the genera Goryphus Holmgren 1868 and Ancaria Cam. 1902 (Hym., Ichn., Cryptinae). Notes on Indo-Malayan Ichneumonids 4. Treubia 18:46-101.
1947. Analyse van enkele fauna-elementen van de Maleische Scoliiden (Analysis of some fauna-elements of Malayan Scoliidae). Tijdschr. Ent. 88:409-416.
1949. De mannetjes van Cratichneumon fabricator (F. 1793) en Cratichneumon annulator (F. 1793)(The males of Cratichneumon fabricator and C. annulator). Tijdschr. Ent. 91:xxvi-xxiv.
1949. Over Scolia sexmaculata en Scolia hirta (On Scolia sexmaculata and S. hirta). Tijdschr. Ent. 91:lxv.

1950. Analysis of some elements of the Scoliidae-fauna of the Malayan region. Int. Congr. Ent. 8:347-350.
1951. Spathius polonicus Niez. 1909 in Nederland (Hym., Braconidae). Tijdschr. Ent. 94:xvi-xvii.
1951. Voor Nederland nieuwe exodonte Braconiden (On exodont Braconidae new to the Netherlands). Tijdschr. Ent. 94:xvii-xix.
1952. Remarks concerning the frontal parts of the heads of some Hymenoptera. Int. Congr. Ent. 9(1):97-100.
1953. Enkele opmerkingen over de soorten van de Formica-rufa groep (Hym.) Some remarks on the species of the Formica rufa group). Ent. Ber., Amst. 14: 1-xiii.
1954. De satermier (Formica exsecta Nyl., 1846) en enkele van haar problemen (Hym. Formicidae) (Some problems about Formica exsecta Nyl.). Ent. Ber. 15:224-230.
1955. One some Ant types of Fabricius. Ent. Ber. 15:291-293.
1955. De systematische plaats van Formica congerens ab. thijssei Starckek). Ent. Ber. 15:391-393.
1958. (With 'D. Guiglia). The identity of the Scoliidae described by J. L. Christ (Hym.) Ann. Mus. Civ. Stor. Giacomo Doria 70:92-99.
1960. Über die Systematik der Formica-rufa-Gruppe. Tijdschr. Ent. 103:51-81.
1960. Formica truncorum F., niet inheems (Formica truncorum F. not native of the Netherlands). Ent. Ber. 20:130-134.
1961. Bemerkungen über der palaarktischen Scoliiden. Int. Congr. Ent. 11(1):247-250.
1961. The identity of Pimpla lineata Kon., 1897 (Hym., Ichneumonidae). Ent. Ber. Amst. 21:145-146.
1961. Cephalonomia stephanoderis spec. nov. (Hym., Bethyidae). Ent. Ber. 21:183-184.
1962. Die neue Systematik der Formica-rufa-Gruppe. Int. Congr. Ent. 11(3):198-299.
1962. Quelques remarques sur l'identite de la Formica nigricans. Ent. Ber. 22:38.
1962. The taxon Trielis (Hym., Scoliidae) and its type. Ent. News 73:146.
1962. The taxon Dielis (Hym., Scoliidae) and its type. Ent. News 73:205-207.
1963. A new neotropical subgenus of Campsomeris (Hym., Scoliidae). Ent. News 74:70-72.
1963. (With J. C. Bradley). Annotations on the genera Triscolia, Megascolia and Scolia (Hym., Scoliidae). Zool. Meded. Leiden 39:433-444.
1963. (With J. C. Bradley & C. Jacot-Guillarmod) Heterelis Costa 1887 (Insecta, Hym.): Request for a decision on the type species Z.N.(S.) 1175. Bull. Zool. Nomencl. 20:204-205.
1963. The regulation in accordance with current usage of five proposals of the specific name maculata by ancient authors, for use in the order Hymenoptera Z.N.(S.) 1544. Bull. Zool. Nomencl. 20:238-240.
1963. (With J. C. Bradley & Co. Jacot-Guillarmod). Ascoli Guérin-Meneville, 1839 and Ascoli Betram, 1926 (Insecta, Hym.): proposed rejection as unavailable Z.N.(S.) 1176. Bull. Zool. Nomencl. 20:294-295.
1964. (With J. C. Bradley). Annotations on the genera Triscolia, Megascolia and Scolia (Hym., Scoliidae), 2nd part. Zool. Meded. Leiden 40:89-96.
1964. Einige Bemerkungen über Formica-Material aus Nordostkarelien. Waldhygiene 5:215-216.
1964. (With J. C. Bradley) The Fabrician types of Scoliidae (Hym.). Spolia Zool. Mus. Haun. 11:5-37.
1965. The African Scoliids and their affinities. Int. Congr. Ent. 12:120.
1965. Sulla sistematica di alcune specie del Gruppo Formica rufa. Collana Verde 16:80-85.
1965. (With J. C. Bradley). Burmeister's work on Scoliidae with especial reference to types and synonymy (Hym., Scoliidae). Beitr. Ent. 16:73-84.
1966. Algemeen overzicht van de parasitaire Hymenoptera (General survey of the parasitic Hymenoptera). Wet. Meded. K. Ned. Natuurk. Veren. 64:1-28.

1967. The natural groups of Campsomeriella Betrem, 1941 (Hym., Scoliidae). Ent. Ber. 27:25-27.
1967. Het sexuele dimorfisme bij de Campsomerinae (Hym., Scoliidae) (Sexual dimorphism of the Campsomerinae). Ent. Ber. 27:103-106.
1967. (With J. C. Bradley) The types of the Scoliidae described by Frederick Smith (Hym.). Bull. Br. Mus. Nat. Hist. 20:289-327.
1968. (With J. C. Bradley). Friedrich Klug's material of Scoliidae with especial reference to his Type-specimens. Dt. Ent. Z. 15:321-334.
1970. (With H. W. Allen) The Sichel specimens of the genus Paratiphia (Hym., Typhiidae). Proc. Ent. Soc. Wash. 72:71-72.
1972. (With J. C. Bradley) The African Campsomerinae (Hym., Scoliidae). Monogr. Ned. Ent. Ver. 6:1-326.

Necrology

Richard P. Dow passed away Feb. 23, 1981.

Harry W. Allen passed away Aug. 20, 1981.

Hubert Marion, a French Hymenopterist who published a few papers on the Aculeata, mainly wasps, died recently according to Jean Leclercq.

Collecting Trip Reports

EXPEDITION TO SAUDI ARABIA - K. M. Guichard
(14 Bolton Gardens, London SW5, England)

For many years I had wanted to visit Saudi Arabia and seemed fated to collect only on its peripheries - Palestine, Jordan, Oman, Aden and the Hadhramaut. The Hymenoptera of this great land mass have always been something of a mystery and it was, I think, some Oman publications that prompted the Saudis to examine their own fauna more closely. "Fauna of Saudi Arabia" Vol. I, 1979, provided the long awaited opening to suggest the visit that materialized in 1980. However, as far back as 1948 I had caught a few Hymenoptera at Buraiman near Jeddah while functioning for a fortnight in April as a locust control officer.

Largely through the good offices of Dr. Abdul Talhouk I arrived at Riyadh Airport on 12 March, accompanied by a slight whiff of ethyl acetate which was not strong enough to subdue Customs who cast a heady eye on my collecting gear but lost interest when I indicated the venerable figure of Dr. Talhouk waiting with an air of authority beyond the barrier.

I am a consistent rain bringer and even the threat of my appearance anywhere is sufficient to open the heavens. Consequently there had been good recent rainfall in many areas including the heavens. Consequently there has been good recent rainfall in many areas including Riyadh. My first day's local collecting was near the dam at Wadi Hanifa on 16 March. After plucking bees (Osmia and Andrena) from yellow composite weeds growing in the cultivations amongst the palm groves along the wadi, I spotted an Ochradenus bush (Resedaceae) in full flower and very soon my first Saudi eumenids and sphecids were in the bag. The desert wadis within 30 kms. of Riyadh provide some excellent collecting areas and even in Riyadh itself there are many finds to be made in long-established gardens with fallow areas and undisturbed banks. On 18 March I went to the great red sand dunes beyond Muzahimiyah, 93 kms. from the capital, but in spite of plenty of flowering ephemerals little was found. The following day the deep wadi at Al

Ha'ir (500m). proved much more fruitful with the Ochradenus again in flower and Heliotropium attracting masarids and parasitic bees.

But Riyadh was only a prelude to Jizan near the Yemen border. In Saudi Arabia there is an excellent internal flight system and on the evening of 22 March I made the two hour journey to Jizan and in darkness stepped out into a warm humid atmosphere to be greeted by a driver holding a card with my approximate name on it. I was soon installed in the resthouse of the FAO Agricultural Experiment Farm near Abu Arish. The next morning the sun shone on an almost African scene with brilliant golden and black weaver birds nesting in the trees outside. Mr. Walid, an enterprising Jordanian, showed me round the farm and while outwardly admiring its agricultural triumphs and experimental plots, I was secretly preoccupied with patches of white Aerva and other delectable leguminous weeds such as Cassia and Indigofera that were growing on the banks separating the fields. Left to my own devices, by mid-day I was exhausted by the heat and the pursuit of Cerceris, Chalybion, Ammophila, Tachytes, Meria and an odd little scoliid and staggered back to the resthouse.

In spite of the quantity of Hymenoptera on the wing, I judged that by the state of the rapidly dying off natural vegetation, that I was late in the field for the best results and my original plea to arrive in January was fully justified.

The general impression of tropical Africa in this south-west corner of Arabia was soon strengthened by the sight of bee-hive grass huts and a local negroid population in typical African villages. Bee-eaters, a Chanting Goshawk and a nesting Nectarinia Sunbird in an Acacia as well as the occasional Colotis butterfly further confirmed this impression and a more detailed study of the Cerceris by Empey has also established the African connection. Nor were poisonous snakes absent and a warning was issued about Carpet Vipers, one of which has recently killed an American.

During this first day, Mr. Walid acted as my host and after making only a small impression on a mountain of mutton, rice and beans and a huge water melon, I dozed unashamedly through that period of the day when all respectable hymenopterists and most of their prey avoid the sun. Besides, later on in the afternoon in Arabia is much better for a second session of collecting and in a way is more pleasant than the morning. The sun's heat declines instead of increasing and a number of things - Pompilids and some bees - come on the wing. As the sun goes down there is always the chance of picking up roosting Hymenoptera. One's whole attitude to life as well becomes more contemplative: birds can be watched with pleasure as they become more active and flowers assume an unexpected brilliancy.

My evenings at the farm were busy. While returning from an Italian mess hall to the resthouse, I lingered at various lights to bottle ant lions, mantids and an occasional male Apterogyna.

On the rough road back to Abu Arish I found some irrigated and weedy gardens which were swarming with Hymenoptera of all kinds - a fine large undescribed orange and black Masarid on Heliotropium, an elusive Palarus and examples of most of the genera including Encopognathus and Prosopigastra and in the Eumenids a Paramiscocyrtus. In one of the gardens there was a large solitary Ilb tree (Zizyphus) the shade of which formed a clubhouse for all the wasps and many bees. The most unusual of the club members was Paranysson of which a cluster of some twenty males was clinging to a pendant branchlet while others were hovering around. The evil thorns on this tree prevented a massive haul of specimens of every kind. This occasion was the only one in Saudi Arabia when I observed and caught a number of Mutillids copulating, the males in flight carrying the females which were running about in the shade and under dead leaves.

From Mr. Walid I heard a glowing account of some hot springs that were a naturalist's paradise but difficult of access. A special driver was detailed for the job of following the appalling track towards the Yemen border, nor was I disappointed at the result. These medicinal springs lay among wild palms on a ridge in a large depression occupied by a pelican-dotted lake that was held in

check by the giant Malak Dam. Grim, dark and barren mountains lay all around. However, it was the sandy banks of a nearby wadi flowing into the lake and visited by migrant duck, waders and Glossy Ibis that attracted my special attention. Some isolated clumps of Aerva, Cassia and Chrozophora swarmed with aculeates, many coming to an aphid secretion on the Cassia leaves. Back near the hot springs a spiny Acacia was noted in flower with various wasps in attendance. But these spiny situations give rise to frustration and torn nets so I concentrated instead on catching Eremochares, a lover of the more saline situations.

Leaving Jizan my next objective was the Asir Mountains that run in a narrow chain from the Yemen border for 600 kms. north to Taif which lies inland a short distance from Jeddah. On 30 March a Landrover took me the 240 kms. to Abha in the highlands. There was little time for collecting en route but a half-hour stop at the Wadi Maraba at the foot of the escarpment gave a hint that these unexplored wadis debouching from the foothills of the Asir are rich collecting areas. Among the eumenids I took my only Synagris and Zethus (shades of Africa!) and among a few sphecids an unrecognized Cerceris which I discovered later that Empey had described from a series collected years ago beyond Aden - by me! In this wadi a large troop of baboons went grubbing along the hillside above me.

After climbing 2500 metres to Abha the southern center of the highlands, by a monumental tarmac road which was still being built, I spent my first and only night in a small hotel. The next morning I contacted the Department of Agriculture and was installed in a disused guesthouse at the foot of the Abha Dam on the edge of some promising looking waste ground which did not fulfil its promise. Nor did Abha so far as Hymenoptera were concerned and I blamed the altitude. The Department kindly provided a vehicle and I managed to spend two hours at Al Soda among the junipers, the highest part of the Asir at about 300 metres. All was green was breathing views to the west and east - to the Red Sea and the confines of the Rub al Khali. Hymenoptera consisted of a few Halictus although I missed one Ammophila, but the butterflies were more interesting and a Mylothris turned out to be the first for Saudi Arabia and an extension of the Yemen fauna. During my short visit I was lucky to see a pair of magpies (Pica pica asirensis) a bird found nowhere else in the Peninsula, as well as Fan-tailed Ravens, Yemen Linnets and an Olive Thrush - all typical Yemen species. The day was not improved by the antics of the restless and complaining driver, perpetually eager for coffee, sloth and the hubbly-bubbly contraption. Irritated beyond endurance by this prima donna, I dismissed him on 12 April and leaving Abha without regrets and saying goodbye to the kind little Yemeni driver who saw to it that I didn't starve, I sought refuge with the German PRI Road Construction Company to whom I had an introduction. Through the kindness of the manager, Mr. Kohler, I was that day lifted 150 kms. to As Nimas (2450m) where

Mr. George Vogel received me with open arms at a PRI permanent camp, several acres enclosed by a high wall inside of which no herbivorous livestock had profaned. That same evening I sampled the Asir moths at George's light trap. George was busy too at the light in an effort to stem the appetite of an enormous chameleon which, if it can be believed, ate thirty-seven moths and to George's surprise the following night refused all food and only gazed at him with glazed and distended eyes.

Cool and green as was As Nimas, Hymenoptera were few with the bees predominating and it seemed logical to blame the altitude. Four days were spent here and thanks to a lift from George I had two hours rather feverish collecting by a wadi to the north, 34 kms. beyond Adamma on the Tail road at less than 2000 metres. Two Prosopigastra did not fit into Pulawski's recent excellent revision of the genus - but that is the fault of Arabia.

On 7 April a 5-hour drive in a German Embassy car along a perfect road enabled me to reach the PRI quarters at AL Hada (2000m) on the outskirts of Taif. On my last evening at As Nimas it rained.

The Tail area was better than it looked. A day spent near the Wadi Zuffer among the junipers started badly until I stumbled on a small waterhole with

several species of eumenids coming to drink every few minutes, including the females of a palaearctic Ancistrocerus I had taken high up on Mount Sinai. I stood by the waterhole for the rest of the day, disturbed only by two friendly Saudis who were familiar with the best spots in London's Park Lane and a fauna other than Hymenoptera. The local gardens below the PRI residence proved unexpectedly good with a fine series of what now looks like an undescribed Bembix with a red underside that was visiting Marrubium. Al Hada lies on the road to Jeddah just before it descends the great Asir escarpment for fourteen winding kilometres and of which the last quarter was very interesting. Unusual plants grew here and I wished I had been two months earlier. A roadside water seepage as usual attracted some good Eumenids and Sphecids.

On 12 April the Agricultural Department at Taif took me the hour's drive to Jeddah where I was passed to the entomologist, Dr. Hamdi. At first, accommodation seemed to pose a problem, especially when I turned pale at the mention of a hotel. Then my past association with the desert locust was recalled as well as the existence of an old locust control centre back on the Taif road. Indue course I was installed in a defunct laboratory adjoining a languishing plant nursery. The enormous sprawling city of Jeddah overawed and filled me with a kind of terror. In 1948 I had known it as a pleasant slumbering backwater with the charm of fine but decrepit wooden buildings of which I seem to remember our consulate was one. Jeddah was then part of the old Arabia incurable locust officers loved. But at least this laboratory where I was housed had the air of abandonment associated with some tranquility. Hymenoptera in fair numbers had long been established there. The garden was also subject to invasion by some forward young ladies without veils who nipped in through holes in the fence to snatch a sprig of bougainvillea and to tease the head guardian if he happened to be awake. At night when all was quiet under the scented neem trees the place became eerie when I tried to concentrate on a large collection of insects made by former locust officers that I found tucked away in a steel cabinet.

I was now in the coastal lowlands of the Tihama where it was certainly warming up. Some 30 kms. along the road to Taif, the gardens behind Bahra looked enticing, if only for their peace and quiet. I found there an isolated tamarisk bush in full flower - a Mecca for all Hymenoptera and one without thorns. It lay in a sunken sandy depression and for two hours I stood and swiped at it until I was exhausted. Everything came to the bush from the giant Chlorion hirtum to the smallest Cerceris of which there were several species that all looked alike. On another day I visited the old locust control camp at Buraiman. It was a sad experience. The desert I remembered stretching in clean unbroken solitude to the sea's edge where one watched the shadows of giant fish gliding up creek channels had gone. Roads and tracks ran everywhere to mushroom growths of buildings and the whole land surface was ploughed up, channelled and distorted beyond recognition. The locust camp lay in ruins - a symbol of man's conquest of the desert locust. So back I went to Bahra. On 16 April, after a small gift to the old ghaffir at the laboratory - of many sound sleepers the only one who had prayed in silence - I was driven to the hugh Jeddah Airport. Mbarak, an old and cheerful locust control driver of the classic period, was at the wheel. He had taken me everywhere and waited uncomplainingly as only those know how who have had long experience of peculiar single-minded people who chase insects. This I can say - there will never again be drivers like Mbarak, not with the quiet patients of the martyr leavened with humor and kindness.

Back in Riyadh I felt compelled to revisit the localities where I had collected in March and was rewarded with newly emerged species at the still flowering Ocgrades. I stayed with English friends at the King Faisal Specialist Hospital and on some waste ground opposite this model institution took a small series of Philanthinus theodori, a rare sphecid I had only met with once near Jericho in Jordan.

My last area for exploration was the huge palm oasis of Hofuf 300 kms. to the east of the capital. I stayed at the veterinary farm resthouse and nearby at

a patch of the yellow composite, Flaveria, soon found a number of wasps not previously seen, including a large yellow Polistes and several Eumenids not observed in Riyadh. The Hofuf fauna is different from that further west and has distinctly oriental affinities of which the White-cheeked Bulbul is one of the most striking examples. Dr. Hamad of Hofuf University showed me round the vast oasis including the dense reedy swamps, Qara Mountain and the extraordinary caves the entrances to which I searched in vain for nesting Eumenids. Mr. Gordon Dean of the University Agricultural Faculty also took me to some gardens in front of his bungalow which kept me busy for two days and yielded an undescribed Cerceris and probably a new Bembix, while a definitely oriental link was provided by a single specimen of Palarus comberi.

I returned to Riyadh on 26 April on a very smart train with swivel seats. In the carriage I found myself facing a heavily veiled bundle of garments which judging by subterranean tremors enshrined a female form. Its loveliness or the reverse could only be wildly surmised - but not for long. I was myself under severe scrutiny from all sides and was very soon earnestly requested to use the swivel. I did so and then found myself facing a male who could be looked straight in the naked face. An eye for an eye, so to speak. What fun all our Arab friends must have in the London Underground!

My last day's collecting in Saudi Arabia, accompanied by Dr. Talhouk's tireless assistant, Sarcou Tilkian, was at Al Ha'ir on 30 April. The Ochradenus was still in flower and swarming with insects. It is obvious that in Arabia every month will yield Hymenoptera. I suspect the hottest months from July to September will astonish the collector for their variety of species. Nobody collects at this time if they can help it. And yet the non-alcoholic beer is excellent.

TEXAS, MEXICO, FLORIDA, ARGENTINA AND CHILE - Charles Porter
(Fordham University, Bronx, NY 10458)

In 1980 and '81, I did extensive collecting in Texas, Mexico, Florida, Argentina and Chile. The emphasis, as usual, was on Ichneumonidae, but I did pick up some perhaps notable aculeates. In Argentina, a little north of Tucuman across the border in Salta Province, is a charming agricultural community, Rosario de la Frontera. It's located in low hills and occupies a polymorphous ecotone between Chaco and subtropical wet forest vegetation. Out 5 km or so from town is a pleasant, new Automobile Club hotel, with good collecting localities on all sides. During the time of my visit--February 1980--the area was swarming with unusual sphecids, of which I was particularly happy to pick up an unidentified species of Megistommum (mimicks Stelopolybia), several small Liogorytes, and the genuinely spectacular Sagenista scutellaris. Unfortunately, prices in Argentina at that time were astronomical and I did not accomplish as far-ranging fieldwork, as I would have liked. Anyone planning to visit Argentina, should get an estimate of cost from several different sources (both extrinsic and intrinsic). I believe the high cost of living is declining, but one should be very sure that he will not have to pay \$80 to \$120/day.

While in Argentina, I was able to get across the border for a week of fieldwork around Santiago, Chile. Chile is moderately expensive, but of course, endowed with a largely unique fauna. March, when I visited Santiago, is not an ideal collecting season for that Mediterranean climatic zone, but I was able to get small series of some nice species belonging to a number of endemic or semiendemic genera or species, such as a large Clitemnestra (this genus actually has many undescribed Argentine, Bolivian & Peruvian species), the magnificent Sphex latreillei, Zethus d. dicomboda, and absolute swarms of an autochthonous Agapostemon-like halictid bee, Ruizantheda proxima. To my horror, the commonest vespoids were not the wonderful Hypodynerus, but rather, in incalculable swarms (especially on Conium), the shockingly adventive Vespula germanica! While Vespa

crabro seems (to me) a harmless and welcome addition to our northeastern US fauna, I am not sure that Vespula germanica is going to turn out as innocuous in Chile. In any case, Vespula notwithstanding, entomologists who plan work in South America should not hesitate to enjoy the marvels of Chile, from Tarapaca to Magallanes. They will be welcomed by distinguished colleagues, such as Dr. Raul Cortes P., find excellent accommodations close to profitable natural areas, and travel, free of bureaucratic restrictions, in a hospitable environment. Peru, Ecuador, Bolivia, Argentina, and Chile well may be the world's most beautiful and entomologically exciting countries, but Chile occupies a select place among these genuine marvels.

Turning northward, in late May and early June 1981, I started fieldwork with a most rewarding trip through Florida (Acala, Archbold Station, the Keys) in the company of Lionel Stange, now Research Entomologist at the Florida Department of Agriculture. Here, we obtained lots of relatively well-known aculeates, but also some fairly unusual species. Along the Sante Fe R., not far from Gainesville, I swept my first specimen of Dolichurus greeniei. At the Archbold Station, we found Wild Grape literally inundated with Hymenoptera. The only one I'll mention is Tanyoprymnus moneduloides. I've taken a few of these in south Texas but always considered it a rare species. At Archbold, it swarmed and 65 were obtained in a single day. Down on the Keys, where it has been my hope to find the almost mythic Sphecius hogardii, we mainly picked up eumenids (Zethus slossonae, some of the red Floridian Stenodynerus, Pachodynerus erynnis, and what appears to be a member of the Pachodynerus nasidens complex, as well as Eumenes smithii). Sphecids were a little scarce but, on Upper Matecumbe Key at Islamorada, at the edge of a Subtropical Hardwood Hammock, we netted more than 100 Sphex jamaicensis--all flying like bullets a few inches off the ground and all but 1 males.

In Texas and north Mexico, I spent most of July and August collecting in environments from semi-rainforest to Chihuahuan Desert. On Condalia obovata flowers at the base of the Sierra de los Picachos near Cerralvo, I got 1 Pison (Entomopison) sp.--somewhat out of place zoogeographically! Farther west, we visited the edge of the great "Despoblado" in the Cuatro-cienagas Basin. Here, in the 3rd week of August, we found Baccharis neglecta growing along irrigation ditches and practically alive with Hymenoptera. I was pleased to get Glenostictia clypeata, Stictiella pulchella, Steniola sp., which I had never before encountered. Both in Mexico and south Texas, I continued to amass a confusing array of Sphecius. Some few evidently are grandis, many others look like speciosus, others might be convallis, but vary so much in the extent of ferruginous staining on the gaster that one hesitates to place them there or with speciosus. Are speciosus and convallis just eastern and western geographic races? Are they "good species" but variable in color toward the eastern and western extremes of their ranges respectively? Why do there seem to be no Sphecius in southern Middle America and northern South America, although a quite typical form--spectabilis is common in the Argentine Deserts (north of Mendoza, at least) and has been reported from Brasil? Even the most common and conspicuous genera need more taxonomic analysis and more collecting, on which to base the taxonomic analysis. If Sphecius can be a minor headache--just think of Cerceris or of the insanely complex Polistes!

SAN RAFAEL DESERT, UTAH - Frank Parker and Arnold Menke

The San Rafael Desert in south central Utah (Emery and Wayne Counties) is a little known area that bears scattered creeping sand dunes and has an average elevation of about 5000'. This desert covers about 2500 square miles and is almost completely isolated by mountainous barriers, the isolation going back to the late Pliocene. This area has more endemic plant species than any other in the Intermountain Region. Insect collecting here has been negligible until Parker and his group at the Bee Biology and Systematics Lab, Utah State University, Logan, Utah, "discovered" the area in 1979. Frank's group made occasional collecting

trips to a few sand dune sites in the San Rafael Desert during 1980-1981 and they have collected an impressive number of new or rare bee and wasp species. Frank found new species of bees in Anthocopa, Anthophora, Emphoropsis, Encylaeus, Nomada, Osmia, Perdita, Stelis, Synhalonia, and Triepeolus, and new sphecoid wasp species in the genera Bembix, Philanthus and Plenoculus. Arnold, accompanied by his son Kurt, joined Frank for one week in the desert in late August, 1980. Wasp collecting was fantastic. Eight or nine of the 32 known North American Philathus were taken, and the rare Ammophila moenkopi (known previously only from its Arizona type locality) and Stizus iridis Dow were common. The last was a real challenge to collect, being fast and illusive. Members of the Sphecinae, especially Palmodes morio, were common, as were various Cerceris spp., bembecines, Tachytes, etc. The most productive collecting was around isolated dunes where wasps frequented Eriogonum, Gilia, Helianthus, Chrysothamnus, Sphaeralcea, Asclepias and Tamarix. We camped for several days near some dunes on a dirt road that ran east from state route 24 near Little Gilson Butte. We took malaise traps along but they produced few insects. Pitfall traps set out around dunes captured various mutillid and tiphiid females and other insects.

SAN RAFAEL DESERT, UTAH - Eric Grissell, FRES

From 24 to 28 August I had the opportunity of collecting in the San Rafael desert environs of Utah. My host, Frank Parker, his associates Don Veirs and Terry Griswold, and I were treated to fairly good weather (with the exception of evening lightning, wind, and drifting sand...not to mention tents). Desert bloom was locally abundant, but not particularly swarming with insects (there were, however, loads of bees). My normal collecting patterns are to sweep for chalcid wasps first and then to collect the interesting things (i.e. aculeates). Both methods provided material (e.g. Ammoplanops, Cerceris, Philanthus, Stizus), but it was not the best desert collecting I have ever experienced. We worked off the relatively low desert (ca 5000 ft) up to the pine-juniper association, which was not good at all. An isolated spring (Buckskin Spring near Goblin Valley State Reserve) provided good sweeping for chalcids and a few Sceliphron. Later in the trip we moved up into the Henry Mountains which arise from the desert floor to over 11,000 feet (10,500 ft. accessible by car). Here we dodged a few raindrops and collected between the clouds all day. Collecting (for me) was restricted mostly to sweeping Artemisia and a few thistles, and then frantically looking for "biggies" when the sun came out. The relatively poor collecting was offset by spectacular views, good weather, and amiable companions.

NORTHWESTERN VENEZUELA - Arnold Menke

I spent three weeks in April 1981 searching for wasps in the desert country that covers large areas in the Venezuelan states of Zulia, Lara and Falcon. Unfortunately the rains had not started and the countryside was extremely dry and collecting poor. Ultimately I was forced to give up on the deserts and concentrate on rain and cloud forest zones in order to salvage the trip. I was accompanied by Linda Hollenberg who acted as my technician. Transportation in the form of a Toyota Landcruiser was generously provided by Edmundo Rubio and Jose Labrador of the Universidad del Zulia in Maracaibo.

The first week was spent in the coastal thorn scrub in the state of Aragua near the town of Ocumare de la Costa (just over the mountain from the famous Rancho Grande). This locale was terrific in 1976 in May and June but it was now terribly dried up. We managed to accumulate thousands of seed ticks on our clothes and bodies - "creeping freckles" as we called them - but not much in the way of wasps, even in our malaise traps. The late afternoon dips in the ocean at Bahia de Cata, site of our beach cottage under the coconut palms, resurrected our spirits and also helped rid us of the seed ticks. A prettier bay would be hard to find. After 3 fruitless days we retraced our route to Maracaibo, stopping here

and there in the desert hill country near the town of Carora in the state of Lara. Collecting was likewise poor due to lack of rain although we had fair wasping around a desert pond. Some of the desert country in Lara and Falcon states is very reminiscent of southern Arizona. In some places Opuntia forms huge, impenetrable mats, impenetrable that is except for goats, most of whom bear numerous Opuntia pads on their bodies. One really feels sorry for the poor critters, some of whom had pads between their eyes!

The second week began with Eric Grissell joining us. We left for Parque Nacional Yacambu which is in the northern Andes in the state of Lara. This cloud forest preserve contains a research station administered by the Dept. of Entomology and Zoology, Universidad Centro Occidental, Barquisimeto. Our access to the research station was facilitated by Dr. Hugo Chavez T. of the Universidad. Yacambu is a little visited area but it potentially could prove even better than the famous Rancho Grande as a study and collecting area. The forest at Yacambu has trails, open areas, and a small lake. We stayed at Yacambu two days enduring almost constant rain (either no rain or too much). We departed with dampened spirits but with a fair number of insects.

From Yacambu we threaded our way through the Andes, our goal being to reach the Paramo near the old town of Merida. We stopped to collect here and there along the road to Bocono, but wasping was slow, although the scenery was fantastic at times. We reached the Paramo in the late afternoon of the second day and took some lubber grasshoppers and examined the Espeletia that dot the barren looking landscape. It was too cold and cloudy for much insect activity at 10-11,000 feet. We arrived in Merida late at night. The valley southeast of Merida through which the Rio Chama flows becomes very dry. It is an isolated pocket of desert about 40 kms. long surrounded by Paramo and Rain Forest. We had one profitable afternoon here in the river's wash. Lots of sphecids and other wasps. This valley is another area that wasp workers should explore more thoroughly.

Our final week was spent primarily along the base of the Sierra de Perija, the mountain range that forms the boundary between Colombia and Venezuela. Most of our time was spent in the rain forest near Los Angeles del Tucuco, a Catholic indian mission. This spot is about 50 kms. sw of the town of Machiques and it is an excellent collecting area. We tried collecting orchid bees using oil of cloves, oil of wintergreen and eucalyptus oil as attractants on tree trunks. Within minutes we had swarms of beautiful green, blue or coppery bees buzzing about. What fun!

Near the end of our final week the rains had begun and we decided to try the desert again. We spent 2 days in the Sahara-like sand dunes along the coast at Coro in Falcon State. The dunes are very extensive but there are scattered pockets of vegetation where collecting was possible. Our best collecting was out on the neck of the Peninsula de Paraguana north of Coro. Good series of wasps were taken here on mat-like vegetation. Microbembex anilis was very common here.

Address Changes

(Please notify editor if you want your new address listed here)

Vincente Perez D'A., Casilla 709, Punta Arenas, Chile.

Massimo Olmi, Institute of Entomology, Faculty of Agriculture, University of Tuscia, 01100 VITERBO, Italy.

Wojciech Pulawski, Dept. of Entomology, California Academy of Sciences, Golden Gate Park, San Francisco, Calif 94118

Qabir Argaman (formerly Carol Nagy Grosman), Plant Protection Dept., P.O. Box 15030, Yaffo 61150, Israel.

Mark F. O'Brien, Insect Division, Museum of Zoology, Univ. of Michigan, Ann Arbor, Mich. 48109.

Mr. Sk. Yamane, Dept. of Biology, Faculty of Science, Kagoshima University, Korimoto, Kagoshima, 890 Japan.

Don Horning, State Pollution Control Commission, Box 2626 G.P.O., Sydney, N.S.W. 2001, Australia.

John Huber, Dept. of Entomology, Univ. of California, Riverside, Calif. 92521.

Chris Starr, Dept. of Plant Protection, Visayas State College of Agriculture, Baybay, Leyte 7124, Philippines.

Scott E. Miller, Museum of Comparative Zoology, Harvard University, Cambridge, Mass. 02138.

Translations

Robin Edwards has an English translation of the following paper which he can send to any interested person:

Eck, R. 1980. Dolichovespula loekenae n. sp., eine neue soziale Faltenwespe aus Skandinavien. Reichenbachia 18:213-217.

Chris Starr writes: Paul Marchal's 1897 paper on nutritional castration has been influential in the biology of primitively eusocial Hymenoptera and is often cited. I've always found it hard to understand, though, and the frequent misstatement of what the paper says (e.g., castration nutriciale is often rendered in English as nutritional castration, quite far from Marchal's meaning) indicates that I am not alone. In order to properly penetrate the paper, I took the extreme measure of preparing a formal translation, and then found it quite easy to understand. For this reason and because of the paper's importance, I thought it might be useful to share the translation with you.

P. Marchal, 1897. La castration nutriciale chez les Hymenopteres sociales. C. r. Soc. Biol. Paris (10)4:556-57.

Cast differentiation in the social Hymenoptera is based on the fertility or sterility of colony members and on the division of labor between sterile (workers, soldiers) and fertile individuals (1). We have previously (1) tried to show that eggs which give rise to workers develop under conditions very different from ancestral conditions, so that worker-production can be viewed as a special case of experimental dichogeny or teratology, caused by the insects themselves and maintained by natural selection.

Among the guiding factors in the evolution of castes, the trophic regime has been of prime significance. Many authors, among them Herbert Spencer and Carlo Emery, also viewed the partial starvation of larvae as important in the ontogenetic production of workers (trophic castration), and indeed this appears to be the key factor.

An additional important factor arises from the effects of brood-care on the adults which are raising the brood. Our experiments with social wasps have shown that when the disappearance of the queen or removal of larvae puts an end to brood-care, worker fertility is strongly affected (1). In some cases, more than half of the workers showed ovarian development, and this is especially evident among younger individuals.

One of the prime causes of worker sterility in wasps, then, is the compulsion of these younger individuals to devote themselves to caring for a large group of larvae. Experiments have shown that this brings about the suppression of ovarian development. We propose to call this mechanism in caste determination nutrician castration (2).

Nutrician castration is much less evident as we go from primitive to more advanced social levels. We can consider it to have been a necessary condition in the earliest stages of caste differentiation, such as Polistes occupies today. In more socially advanced species, such as the honey bee, on the other hand, trophic castration is a sufficient mechanism, so that nutrician castration plays no part under normal conditions.

(1) P. Marchal 1896. La reproduction et l'evolution des guepes sociales. Arch. Zool. exp. gen. (3)4:1-100.

(N. B. The actual date cited by Marchal is 1892, but this is incorrect).

(2) From nutrix. We could as well use the term brood-care castration, (castration nourriciere), but this could lead to confusion with trophic castration (castration alimentaire).

Book Review

I. A. Khalifman, 1978. (Wasps: The flying brigands.)* Detskaya Literatura, Moscos, 319 pp.

This is a wonderful book. I haven't read it.

Like many of you with only a classroom knowledge of Russian, I can transliterate with ease and recognize many entomological words, but reading whole sentences is slow and difficult. This review, then, is by a self-confessed illiterate.

Detskaya Literatura is a publisher of children's books, but the material of The flying brigands is much more substantial than most juvenile writing. By our standards it should better be characterized as for general readership, and I would place it somewhere near the book of Evans & Eberhard (1970) in terms of the background needed to understand it. Unlike the books of Peckham & Peckham (1905), Rau & Rau (1918), Reinhard (1929) or Evans (1963), Khalifman's is not a record of personal wasp-watching. It is more in the overview category of Ormerod (1868), Morley (1900), Michener & Michener (1951), Evans & Eberhard, Spradbery (1973) and Edwards (1980), but with a difference.

What distinguishes The flying brigands is its historical theme. Although the subject is various aspects of the life of wasps, this is not approached as a review of what we know, or even a commentary on what we would like to know, but as a narrative of the discovery of wasps. The 43 chapters are grouped into 9 sections, of which 5 have explicitly historical titles: "From Aristotle's to Darwin's wasps", "Fabre's wasps", "Malyshev's wasps", "The Polistes of Lena Grechko and others", and "Montagner's and Maschwitz's wasps". Lena Grechko was a schoolgirl who studied wasps; some of her observations are reported.

Those other sections with titles such as "The flight of wasps" and "The world of wasps and waspish worlds" are also imbued with a strong and entirely laudable historical tone. This is emphasized by the liberal use of pictures of past and present wasp-watchers, such as Fabre, Lubbock, Malyshev and Schremmer, and of other biologists, like Darwin and Lorenz, whose contributions are crucial in understanding the life of wasps. I count portraits of 36 persons, two-thirds of them still living, and I must say that I absolutely approve of this practice

*Acknowledgement: I am grateful to the very literate Woj Pulawski for comments on this review.

and advocate its wider adoption. It's wonderful at least to know what Darchen, Maschwitz and Pardi look like.

My admiration is tempered, though, by the reservation that Khalifman's treatment is seriously uneven. The historical emphasis and the 36 portraits are entirely European, for no good reason that I can see. Some noted Japanese and American entomologists are mentioned in the text (I notice Yoshikawa, Sakagami, Akre, West-Eberhard, Alcock), but surely this is not enough. Khalifman makes the error of giving substantial weight to some modest Soviet and western-European contributors, while such influential figures as Iwata, Evans, Jeanne and the Peckhams appear to be left out.

The flying brigands has a very satisfying physical aspect. In contrast to many entomological books from the Soviet Union, this one is well printed on fine paper, with a truly marvelous cover, and with layout and other design features which are just downright hip. I suspect that the publishers approached the book with enthusiasm similar to my own. The use of illustrative material is superb, and even an illiterate can feel confident in praising Khalifman's energy and imagination in assembling a wide range of photographs and drawings from many sources. The historical approach is once again emphasized, through the frequent use of plates from the work of such early workers as Reaumur and Saussure. They are used, first, because they are suitable to illuminate the relevant aspect of wasp life, but it is to be hoped that the reader, in noticing that Reaumur was using such clear and accurate drawings in 1720, will be provoked to take an interest in the pioneering work itself. In addition, at least 1 of the 3 pinned specimens figured is a historically important specimen, and the use of such illustrations as a letter from Darwin to Fabre and a page from Malyshev's notes is appropriate and impactful.

I regret, though, that the reproduction of illustrations is not especially good and often quite poor. They have suffered the same transformation as we get from photo-copiers, in increased contrast and loss of detail. Many of the Polistes photographs, for example, are the same as used in Michener & Michener's book, and when I place the two reproductions side by side, the comparison is unflattering for The flying brigands. Fortunately, this can be corrected in any new edition.

In my opinion, an English edition is called for. I point out that this is not a history book, but a wasp book with a historical approach to what we know. As such, it is fresh, imaginative and necessary. At a time when most Entomology students in the United States have only the vaguest idea or none at all of who Fabre was (really; I have asked them), any work which draws attention to the past and near future of the discovery of wasps is unquestionably a good thing. I'll contribute the English title.

C. K. Starr

Profiles

MASSIMO OLMI

I was born in Pistoia (Toscana), Italia, October 13, 1942, and spent my youth in the Vercelli (Piemonte) area. I have had a life long interest in nature and began collecting insects before I was 15 years old. My early insect interests were beetles. The first professional entomologist that I met was my cousin Giorgio Fiori, who was professor of agricultural entomology at the Sassari University. My first collection of insects (including a "scorpion"!) was composed by the few species collected by me and mostly by species sacked in the collections of the above named cousin Giorgio Fiori and of my uncles, Andrea Fiori, coleopterist and professor of Natural Sciences in a high school in Bologna, and Attilio Fiori, lepidopterist and dentist in Bologna.

After high school, I attended the faculty of Agriculture, University of Torino. During these years I published my first paper in 1963 on some cave insects collected during researches made in Cilento (Campania). In the meantime I prepared my graduation thesis on the leaf-hopper pests of rice in Italian paddy-fields under guidance of Athos Goidanich, professor of agricultural entomology.

After the degree in agriculture I joined the Institute of Agricultural Entomology, University of Torino (1968) where I was Assistant Professor of Zoology. In August, 1981, I moved to the University of Viterbo where I will teach agricultural entomology.

My broad research interests center on systematics of palaearctic Dryopoidea and of world Dryinidae. From some years I have neglected the Dryopoidea because I have been very engaged in trying to solve the numerous difficulties of dryinid systematics. My first papers on dryinids were in collaboration with Italo Currado, but now I work alone because he is now working in forest entomology.

As I have already seen nearly 95% of the types of the described species and I have resolved numerous systematics problems, I am writing a monographic revision of the world Dryinidae. I hope to finish in the course of two years. The new taxa described in this book are already 247, including a new subfamily and 9 new genera. The world species of dryinids now number 577, (as of late 1980) and the work isn't finished!

I hope that all institutions and private persons with dryinid collections will send me their specimens on loan for determination. I have already studied nearly 10.000 specimens from all over the world.

P. BENNO

I was born on June 13, 1905. Although not having received a professional education in academic biology I have always taken much interest in private field-observations of plants and insects. It was only after my discharge from my task as teacher at our seminary (1938) [he is a Capuchin Priest - edit.] that I specialized in the study of aculeate wasps and bees - mainly inspired for this area by contact with J. P. Thijssse and the publications of B. E. Bouwman about these insects. Initially I was more engaged with the dutch fauna, but the past 20 years I have expanded gradually to include foreign faunas and specially these of Surinam, the Dutch Antilles and other neotropical regions. The last were forwarded mostly by my two brothers at Paramaribo and other relations in South America.

Most of my publications up to now deal with the Dutch fauna although some papers are about the Surinam fauna of bees and wasps. The former appeared mainly in "Entomologische Berichten", Amsterdam and "Wetenschap-Mededelingen van de k. nederlandse natuurhistorische vereniging", 1940-1977.

VLADIMIR B. POLACEK

I was born June 1, 1926 at Prague (Praha), Czechoslovakia. I studied biology and geography at the Faculty of Science, Charles University (Prague), 1945-1949, where I obtained the PhD. in Entomology in 1953. I worked as Librarian, Czechoslovak Academy of Sciences, Prague (1954-1962), and was Curator of the Library, Czechoslovak Entomological Society, Prague (1949-1957). Since 1962 I have been Information Officer, Institute of Microbiology, Czechoslovak Academy of Sciences, Prague. I was married in 1949, and have one daughter (1955). I have served on various editorial boards and have been an Honorary Officer of a nature conservancy since 1960. As an entomologist I have published in Lepidoptera, Hymenoptera, Orthoptera, and Coleoptera. I am also interested in the bibliography and history of entomology and nature.

I have made entomological field observations (incl. sphecoid wasps), and made collections of material in Czechoslovakia, Austria, Germany, Hungary, Italy, Poland and Switzerland.

URBAN WAHLSTEDT

Born in Stockholm, Sweden on the 21st of September, 1936. Married, 3 children. School studies until 1955. Qualifying and practice as a taxidermist until 1964. Sculptor education during 5 years at an Institute of Art until 1972. Puppet Theatre, staging, and making properties for theatre until 1979. For the present I give popular biological lectures, using demonstration material, for example, model animals, created by myself.

From childhood I have been studying and observing nature as an amateur. My specialties are Orthoptera and Vespinae.

HENDRICK WIERING

Born: 5-XII-1929 in Utrecht (Netherlands). After finishing the secondary school in 1948 I studied biology at the University of Amsterdam, in particular genetics, plant physiology and entomology. I finished my biology studies - interrupted by doing my civilian service - in 1959. From 1959 to 1979 I worked at the Institute of Genetics of the University of Amsterdam: teaching genetics and investigating the flower colour genetics of *Petunia Hybrida*. Since 1979 I have been the director of the Botanical Gardens of the University of Amsterdam.

In 1950 I became a member of the Netherlands Entomological Society. I was treasurer of this Society from 1962 till 1968 and from 1973 till 1980, a time-devouring job, therefore practically no time to work on entomology! My special interest is the taxonomy of aculeate Hymenoptera of the western palaerctic, particularly Sphecidae and Apidae.

G. VAN DER ZANDEN

Born 1915, educated a.o. at Technical College of Amsterdam, retired in 1974 after 39 years in industry. Started collecting aculeates in 1950, gradually restricting to Apidae and Sphegidae "only". Since 1974 specialised on Megachilidae and *Cerceris*. In 1979 the Leiden Museum had me appointed by the government as a scientific collaborator in their department of Hymenoptera.

MAXIMILIAN SCHWARZ

I was born August 30th, 1934 in Vienna, Austria. In 1945 I moved to Linz, where I took my professional training and final Exams. Since my earliest youth I was interested in Hymenoptera and begun to study them. I was generously supported by Prof. H. Priesner and Prof. H. Hamann. In 1976 I was appointed to a legal adviser for science to the government of Upper Austria. Since 1978 my professional position is Factory Manager in a local Food industry. I generally use my leisure time for research work on Hymenoptera - Sphecidae and Apidae - and have now specialised on parasitic Apidae. Since January 1980 I am the Editor and Publisher of "Entomofauna" a periodical publishing manuscripts from the whole field of Entomology.

DONALD G. MANLEY

I was born September 15, 1946, in the Los Angeles area of southern California. Although I developed an interest for insects at a very early age, it was not until my high school biology class that the interest was really cultivated. I entered UCLA as a premedical student but it was not long before I

realized that my interests were in the natural sciences, specifically entomology. I received a B.A. in zoology from UCLA in 1973.

I have long had an interest in velvet ants from a collector's viewpoint. When I was unable to find an answer to a seemingly simple question on their biology, I was launched on my studies for my master's degree at California State University, Long Beach. During those studies on the biology and ecology of mutillids, I came to know, through correspondence, Dr. Clarence Mickel. Dr. Mickel was most helpful to me and it was he who was instrumental in my attending the University of Arizona after receiving an M.A. in 1975.

As it turned out, my studies at Arizona were in the field of agricultural entomology, but I was still able to meet with Dr. Mickel occasionally and maintained my interest in mutillids. Since receiving a Ph.D. in 1978, I have been employed as an assistant professor with Clemson University, as an extension entomologist for field crops. My free time, however, is still devoted to my interest in the biology, ecology, behavior, and taxonomy of mutillid wasps.

NORM SMITH

I was born on December 7th, 1948 in San Jose, California but before I was a year old my father was transferred to Sacramento, California where I spent the next 19 years of my life. I must have been born liking bugs because some of my earliest memories are of me with a homemade butterfly net catching whatever poor, hapless butterfly strayed into my neighborhood. I had no guidance then and not knowing how to properly preserve insects I either let them go or fed them to garden spiders. I can also remember rearing numerous *Polyphemus* moths for the purpose of impressing school mates and for the sheer fascination of watching the life cycle of these magnificent moths.

Unfortunately, my lack of guidance during this early period eventually caused my interest in insects to be placed on the back burner. Another misfortune is that it was not rekindled until many years later than I took an entomology class at U. C. Davis - unfortunate because from the ages of 20 to 22 I spent two years in the Far East in the Navy in places like the Philippines, Okinawa, Taiwan, Japan and Malaysia, areas rich in exotic insects. Though, admittedly, as anyone who has been in the Navy knows, with shore leave approaching a young man's thoughts seldom are on insects after two months at sea.

At U. C. Davis my rekindled interest in insects led to a B. S. in Entomology in 1974. I entered the masters program at Davis that same year and completed my thesis on a microlep in 1977, rather unusual when you consider that my major professor was Dr. R. M. Bohart. For my Ph. D. though, which I recently completed in January of 1981, I finally succumbed to his influence and revised the genus *Pulverro*, a member of the subtribe *Ammoplanina*, subfamily *Pemphredoninae*, family *Sphecidae*, and reviewed the subtribe *Ammoplanina*. Publications of both sections will be forthcoming. Dr. Bohart and I also have a previous publication on the *Ammoplanina*, a revision of the genus *Ammoplanops*. Obviously, the *Ammoplanina* are my main research interest but future works will cover *Spilomena*, *Xysma* and perhaps reviews of foreign *Ammoplanina*.

I am presently employed as the Fresno County Entomologist in California, a job that, among other things, requires me to survey the insect fauna of the central Coast Range, Central Valley and central Sierra Nevada, collecting localities that are surprisingly lacking in most major collections. Anyone wishing any aculeate Hymenoptera from this area in order to verify range limits is welcome to contact me for assistance. I will also occasionally collect insects in other orders. My address is: 1730 S. Maple, Fresno, CA 93702.

Anyone else in North America who has *ammoplanines* is welcome to send them to me for identification, though anything that I consider to be unique I would like to keep for research purposes.

HEINRICH WOLF

I was born on April 26th, 1924 in Siegen, Westphalia, West Germany. From 1947 to 1953 I studied biology, chemistry and geography at the University of Marburg an der Lahn and finished my study with the State examination. Since 1955 I am a teacher for biology and chemistry at the grammar-school of Plettenberg, Westphalia; 1974 I was appointed "Studiendirektor". I am married and have two children.

As a boy of ten years I dug the nests of Halictus quadricinctus out of the loess, which inspired me for entomology. At an age of 20 years I was acquainted with the special literature about aculeate Hymenoptera and its systematic manner and ethology by the famous entomologist Dr. Paul Bluethgen; until that time I only knew the little book by "Friese, Die Bienen, Wespen, Grab- und Goldwespen". My first papers which were rather modest, were published in 1949. By 1980 I had published eighty entomological titles in foreign and german periodicals. Most of them deal with the systematics of the pompilids of the western palearctic region; they contain many new descriptions. Seven species of Hymenoptera we dedicated to me by non-german entomologists. I am also interested in local Hymenoptera faunas and observe the dimunition of the species under the influence of the human being.

My friends, Dr. Michael Day (BMNH, London) and Raymond Wahis (Chaudfontaine/Belgium), enjoy aiding me in my studies; for that I am hearty thankful to them. I am happy to be an entomologist, and I am glad to be permitted to tell my curriculum vitae in "Sphecos".

LARS-AKE JANZON

I was born 13 September 1945. I am a graduate student at the University of Stockholm where I have studied botany, historical geology, chemistry and zoology. In 1972 I started to work at the Swedish Museum of Natural History. I worked with different subjects at various sections - for example with endangered Swedish species at the botanical section, cleaning seal skeletons at the vertebrate section, air-borne pollen grains at the palynological section and mostly museum and taxonomic subjects at the entomological section. When no more money was available for me at the Museum I started my thesis work. The title is "Taxonomy of parasitoids (Chalcidoidea, Hymenoptera) on Tephritis (Diptera, Tephritidae) in flower-heads of Asteraceae." I have worked on my thesis for one year. In my spare time I have been collecting aculeate Hymenoptera in Sweden and the mediterranean countries for almost ten years. My principle interests lie with Eumenidae, especially the taxonomy of Symmorphus, Sphecoidea and Apoidea. I am also interested in pollination studies, and I am soon ready with an investigation of Campanula persicifolia L.

FRIEDRICH (FRITZ) SCHREMMER

I was born 10-9-1914 in Vienna, Austria, being one of 9 children. My father was a tinsmith. I attended schools in Vienna and obtained my Ph.D. in 1938 from the University of Vienna in Zoology and Natural History. I was in military service from 1938 to 1943, being a prisoner of war from May to December of 1945. From 1946-1948 I worked in private industry, but in 1949 I became an assistant in the Zoological Institute at the University of Vienna. In 1951 I received the Dr. habil. from this university, and became a professor there in 1959. In 1964 I became a full professor at the University of Heidelberg and also director of the Zoological Institute. I retired in 1977 due to ill health and returned to Vienna.

I have published the following papers and made the following films:

1941. Versuche zum Nachweis der Rotblindheit von Vespa rufa L. Z. fur vergl. Physiologie 28:457-466.

1949. Die Wiese als Lebensgemeinschaft. Sammlung BIOS Bd. 7, Bruder Hollinek, Wien.
1957. Singzikaden. Die Neue Brehmbucherei-193, A. Ziemsen, Wittenberg-Lutherstadt (D.D.R.)
1959. Blütenbiolog. Beobachtungen in Istrien (Jugoslawien). Osterr. Botan. Z. 196:177-202.
Der bisher unbekannte Pollensammelapparat der Honigwespe Celonites abbreviatus Vill. (Vespidae, Masaridae). Z. morphol. Okol. Tiere 48:424-438.
1960. Hornet workers' role. Nat. Hist. 69:18-23.
1961. Morphologische Anpassungen von Tieren-insbesondere Insekten- an die Gewinnung von Blummahrung. Verh. Deutsche Zool. Ges. in Saarbrücken 1961, 375-401. (Morphology: glossa of Celonites, Masaridae).
1962. Wespen und Hornissen. Die Neue Brehmbucherei-298, A. Ziemsen, Wittenberg-Lutherstadt (D.D.R.)
1972. Beobachtungen zur Biologie von Apoica pallida (Oliver, 1791), einer neotropischen sozialen Faltenwespe (Hymenoptera, Vespidae). Insectes sociaux 19:343-357.
1973. Eumenes abdominalis (Vespidae), Nestbau und Brutfürsorge (Film). Encyclopedia Cinematographica El868/1972, IWF Gottingen.
1973. Synoeca cyanea (Vespidae), Alarmverhalten und Nestreparatur (Freilandaufnahmen). Encyclopaedia Cinematographica - El886/1973. Inst.fur den wissenschaftlichen Film, Gottingen 1973. B.R.D.
1977. Das Baumrinden-Nest det neotropischen Faltenwespe Nectarinella championi, umgeben von einem Leimring als Ameisen-Abwehr. Ent. Germ. 3:344-355.
1978. Zum Einfluss verschiedener Nestunterlagen-Neigungen aur Nestform und Wabengrosse bei zwei neotropischen Arten sozialer Faltenwespen der Gattung Parachartergus (Hymenoptera: Vespidae). Ent. Germ. 4:356-364.
1978. Das bisher unbekannte Nest von Charterginus carinatus, einer neotropischen sozialen Faltenwespe (Hymenoptera: Vespidae). Ent. Gen. 5:17-23.

GRAHAM BROWN

Graduated University of New South Wales, 1973, B. Sc. (Honours). Awarded M. Sc. 1981 (University of New South Wales) for thesis titled "Biological and toxicological studies on Chrysodeixis spp. (Lepidoptera: Noctuidae) and their Litomastix eccelae ms (Hymenoptera: Encyrtidae) parasite". Currently undertaking a Ph.D. (University of New South Wales) on "The taxonomic revision of Rhagigaster Guerin (Tiphidae: Thynninae)". The following papers are in press:

Three new species of Hemithynnus Ashmead from Australia (Hymenoptera: Tiphidae). J. Austr. Ent. Soc.

Pentzeleboria, a new genus Australian Thynnini (Hymenoptera: Tiphidae). J. Austr. Ent. Soc.

Recent Literature

Ajmat, M. D. V., and A. Willink

1980. The genus Parazumia (Hymenoptera, Eumenidae). Acta Zool. Lilloana 36:81-86.

Akre, R. D., A. Greene, J. F. MacDonald, P. J. Landolt, and H. G. Davis

1981. The yellowjackets of America north of Mexico. U.S.D.A. Agric. Handbook 552. 102 p. [includes keys to species, biology, control, sting reactions, etc.]

Akre, R. D., L. D. Hansen, H. C. Reed, and L. D. Corpus

1981. Effects of ash from Mt. St. Helens on ants and yellowjackets. Melanderia 37:1-19.

Akre, R. D. and H. C. Reed

- 1981. A polygynous colony of Vespula pensylvanica (Saussure)(Hymenoptera: Vespidae). Ent. News 92:27-31.
- 1981. Populations cycles of yellowjackets (Hymenoptera: Vespidae) in the Pacific Northwest. Environ. Ent. 10:267-274.

Alcock, J.

- 1980. Communal nesting in an Australian solitary wasp, Cerceris antipodes Smith (Hymenoptera: Sphecidae). J. Australian Ent. Soc. 19:223-228.
- 1980. Notes on the reproductive behaviour of some Australian solitary wasps (Hymenoptera: Sphecidae, Tachysphex and Exeirus). J. Australian Ent. Soc. 19:259-262.
- 1981. Notes on the reproductive behavior of some Australian thynnine wasps (Hymenoptera: Tiphidae). J. Kansas Ent. Soc. 54:681-693.
- 1981. Seduction on the wing. Natural History 90:36-41. [thynnine wasp mating behavior in Australia].

Anonymous

- 1978. Controlling wasps. U.S.D.A. Home and Garden Bull. 122. 8 p.

Archer, M. E.

- 1981. Numerical characteristics of nests of Vespa crabro L. (Hym.: Vespidae). Ent. Monthly Mag. 116:117-121.
- 1981. The Euro-Asian species of the Vespula rufa group (Hymenoptera: Vespidae), with descriptions of two new species and one new subspecies. Kontyu 49:54-64.
- 1981. A simulation model for the colonial development of Paravespula vulgaris (Linnaeus) and Dolichovespula sylvestris (Scopoli) (Hymenoptera: Vespidae). Melanderia 36:1-59.
- 1981. Successful and unsuccessful development of colonies of Vespula vulgaris (Linn.)(Hymenoptera: Vespidae). Ecol. Ent. 6:1-10.
- 1981. Taxonomy of the sylvestris group (Hymenoptera: Vespidae, Dolichovespula) with the introduction of a new name and notes on distribution. Ent. Scand. 12:187-193. [includes key to species]
- 1981. A new species of Dolichovespula and subspecies of D. pacifica (Hymenoptera: Vespidae) from China. Entomon 5:341-344.

Banaszak, J.

- 1979. The new classification of Hymenoptera, Aculeata by Denis J. Brothers. Przegląd Zool. 23:241-244. [review article].
- 1980. Chrysididae. Catalogus faunae Poloniae. 23(3):1-52.

Beiko, V. B., V. M. Kartzev, and G. A. Mazokhin-Porshnyakov

- 1981. A comparison of food and nest orientation in wasps (Hymenoptera: Vespidae). Zool. Zhurnal 60:1109-1112. [Paravespula vulgaris, in Russian with English summary]

Birket-Smith, S. J. R.

- 1981. The male genitalia of Hymenoptera - a review based on morphology in Dorylidae (Formicoidea). Ent. Scand. Suppl. 15:377-397.

Bonnelli, B., L. Bullini, and R. Cianchi

- 1980. Paralyzing behavior of the wasp Rynchium oculatum (Hymenoptera, Eumenidae). Monit. Zool. Ital. 14:95-96.

Bordoni, A.

- 1980. Su alcuni Mutillidi e Mirmosidi Italiani (Hymenoptera). Boll. Soc. Ent. Italiana 112:177-185.

Borg-Karlson, A.-K. and J. Tengo

- 1980. Pyrazines as marking volatiles in philanthine and nyssonine wasps (Hymenoptera: Sphecidae). J. Chem. Ecol. 6:827-835.

Brooke, M. de L.

- 1981. The nesting biology and population dynamics of the Seychelles potter wasp Eumenes alluaudi Perez. Ecol. Ent. 6:365-377.

- Brothers, Denis J.
1981. Note on the biology of Ycaploca evansi (Hymenoptera: Scoliidae). J. Ent. Soc. South Africa 44:107-108.
- Brothers, D. J. and F. W. Gess
1980. Obituary. Charles Frederic Jacot Guillarmod. J. Ent. Soc. South Africa 43:379-384. [photograph and list of publications].
- Brown, J. J. and Yahaya bin Hussain
1981. Physiological effects of volcanic ash upon selected insects in the laboratory. Melanderia 37:30-38. [includes Vespula].
- Burke, H. R.
1981. Rev. Gotthilf Birkmann and his collections of central Texas Hymenoptera. Melsheimer Ent. Ser. (30):21-27.
- Burton, John J. S.
1979. Entomologists in west Malaysia. Malays. Appl. Biol. 8:165-175. [names, addresses and research interests of entomologists].
- Callan, E. McC.
1980. Erroneous record of the mud-dauber wasp, Sceliphron laetum (Hymenoptera: Sphecidae), in New Zealand. New Zealand Ent. 7:134-135.
1981. Nesting behavior and prey of Argogorytes Ashmead (Hymenoptera: Sphecidae). J. Wash. Acad. Sci. 70:160-165.
1981. Further records of Macrosiagon (Coleoptera: Rhipiphoridae) reared from eumenid and sphecid wasps in Australia. Australian Ent. Mag. 7:81-83.
- Cameron, P., J. Valentine, E. W. and C. F. Butcher
1980. Prospects for biological control of pasture Scarabaeidae (Coleoptera) in New Zealand. Proc. 2nd. Australasian Conf. Grassland Inverteb. Ecol. Palmerston North, New Zealand. Wellington, New Zealand. 294 p. [Thynninae in biological control].
- Carmean, David, Roger D. Akre, Richard S. Zack, and Hal C. Reed
1981. Notes on the yellowjacket parasite Bareogonalis canadensis (Hymenoptera: Trigonalidae). Ent. News 92:23-26.
- Carpenter, James, M.
1981. The phylogenetic relationships and natural classification of the Vespoidea (Hymenoptera). Syst. Ent. 7:11-38. [dated 1982 but mailed in Dec. 1981 - edit.]
- Carre, S.
1980. Biology of 2 predators of the solitary bee Megachile rotundata (= Megachile pacifica, Hymenoptera, Megachilidae), Trichodes alvearius and Trichodes apiarius (Coleoptera, Cleridae). Means of control. Apidologie 11:255-300. [includes clerid predation on two sphecid wasps].
- Chandra, G.
1980. Dryinid parasitoids of rice leafhoppers and planthoppers in the Philippines. 1. Taxonomy and bionomics. Acta Oecolog., Oecolog. Appl. 1:161-172.
- Chadab, Ruth and Carl W. Rettenmeyer
1980. Observations on swarm emigrations and dragging behavior by social wasps (Hymenoptera: Vespidae). Psyche 86:347-352.
- Chu, Yau-i and Yoshihiro Hirashima
1981. Survey of Taiwanese literature on the natural enemies of rice leafhoppers and planthoppers. Esakia 16:33-37.
- Cooper, M.
1980. Notes on the biology of Dynatus nigripes (Westw.) and Penepodium albovillosum (Cam.) (Hym., Sphecidae). Ent. Monthly Mag. 116:87-89.
- Correa, Maria Virginia Colomo de
1981. Clave para los generos Argentinos de la subfamilia Pompilinae (Hymenoptera, Pompilidae). Neotropica 27:17-26.

Crowson, Roy A.

1981. A Russian palaeontomological view of insect phylogeny. Ent. Gen. 7:105-108. [a review of "The Historical Development of the Class Insecta" by Rohdendorf and Rasnitsyn - see Sphecos 1:6, 4:37.]

Currado, Italo and Missimo Olmi

1979. Descrizione del maschio di Mesodryinus niger (Kieffer) e note sulle specie correlate (Hymenoptera: Dryinidae). Doriana 5(234):1-6.

Danthanarayana, W.

1980. Parasitism of the light brown apple moth, Epiphyas postvittana (Walker) by its larval ectoparasite, Goniozus jacintae Farrugia (Hymenoptera: Bethyridae) in natural populations in Victoria. Aust. J. Zool. 28:685-692.

Day, Michael C.

1981. A revision of Pompilus Fabricius (Hymenoptera: Pompilidae), with further nomenclatural and biological considerations. Bull. Brit. Mus. Nat. Hist. (Ent.) 42:1-42. [includes a lengthy discussion of the tangled history of the family name, i.e. Pompilidae vs. Psammocharidae and a list of all the family group names; Pompilus is redefined and restricted to the Old World].

Day, M. C., George R. Else, and David Morgan

1981. The most primitive Scoliidae (Hymenoptera). J. Nat. Hist. 15:671-684.

Delfino, G., M. T. Marino Piccioli and C. Callioni

1981. Ultrastructure of the corpora allata in Polistes gallicus (L.) (Hymenoptera, Vespidae). Monitore Zool. Ital. (n.s.) 15:29-52.

Delmotte, C. and J. Leclercq

1980. A propos d'un frelon oriental intercepte vivant a Gembloux (Hymenoptera, Vespidae). Bull. Ann. Soc. Roy. Belge Ent. 116:183-184. [Vespa orientalis intercepted in grapefruit]

Dollfuss, H. and F. Ressler

1981. Die Grabwespenfauna des Verwaltungsbezirkes Scheibbs, Niederosterreich (Hymenoptera, Sphecidae). Entomofauna 2:311-333.

Donath, H.

1980. Zwei bemerkenswerte Grabwespen-Arten erneut nachgewiesen (Hymenoptera, Sphecidae). Biol. Stud. Kreis Luckau 9:61-62.

Dropkin, Jennifer A. and George J. Gamboa

1981. Physical comparisons of foundresses of the paper wasp, Polistes metricus (Hymenoptera, Vespidae). Can. Ent. 113:457-461.

Duffield, R. M., M. Shamim, J. W. Wheeler, and A. S. Menke

1981. Alkylpyrazines in the mandibular gland secretions of Ammophila wasps (Hymenoptera: Sphecidae). Comp. Biochem. Physiol. 70(B):317-318.

Dunkle, S. W.

1980. Sexual competition for space of the parasite Xenos pallidus Brues in male Polistes annularis (L.) (Strepsiptera, Stylopidae, and Hymenoptera, Vespidae). Psyche 86:327-336.

Eck, Regine

1980. Dolichovespula loekenae n. sp., eine neue soziale Faltenwespe aus Skandinavien (Hymenoptera, Vespinae). Reichenbachia 18:213-217.

1981. Zur Verbreitung und Variabilitat von Dolichovespula norvegica (Hymenoptera, Vespidae). Ent. Abhandl. Staatlich. Mus. Tierk. Dresden 44:133-152.

Elliott, Nancy B., William M. Elliott, and Paul Salbert

1981. Nesting behavior of Cerceris zonata (Hymenoptera, Philanthidae). Ann. Ent. Soc. Amer. 74:127-129.

Elliott, Nancy B. and Paul Salbert

1981. Observations on the nesting behavior of Tachytes tricinctus (F.) on San Salvador Island, Bahamas (Hymenoptera, Sphecidae, Larrinae). J. New York Ent. Soc. 88:170-173.

Endo, Akira

- 1980. On the host-cleptoparasite relationship between the spider wasp Episyron arrogans (Smith)(Hymenoptera, Pompilidae) and the miltogrammine fly Metopia sauteri (Townsend) (Diptera, Sarcophagidae). Jap. J. Ecol. 30:117-132. [in Japanese with English summary]
- 1980. The behaviour of a miltogrammine fly Metopia sauteri (Townsend) (Diptera, Sarcophagidae) cleptoparasitizing on a spider wasp Episyron arrogans (Smith)(Hymenoptera, Pompilidae). Kontyu 48:445-457.
- 1981. Nesting success of the spider wasp, Episyron arrogans (Smith)(Hymenoptera, Pompilidae), and the effect of interactions with other insects around its nesting site. Physiol. Ecol. Japan 18:39-75.

Evans, Howard E.

- 1981. The genus Microphadnus Cameron in Australia (Hymenoptera, Pompilidae). Ent. News 92:81-83.
- 1981. Biosystematics of ground-nesting species of Pison in Australia (Hymenoptera, Sphecidae, Trypoxylini). Proc. Ent. Soc. Wash. 83:421-427.

Evans, H. E., Mary Alice Evans and Allan Hook

- 1981. Observations on the prey and nests of some Australian spider wasps (Hymenoptera, Pompilidae). Austr. Ent. Mag. 8:9-12.

Evans, H. E., Robert W. Matthews, and Allan Hook

- 1981. Notes on the nests and prey of six species of Pison in Australia (Hymenoptera, Sphecidae). Psyche 87:221-230.

Evans, H. E. and William L. Rubink

- 1978. Observations on the prey and nests of seven species of Cerceris (Hymenoptera, Sphecidae). Great Basin Nat. 38:59-63.

Farrugia, D.

- 1981. Three new Australian species of Goniozus Foerster (Hymenoptera, Bethyridae), and G. antipodium Westwood redescribed. Bull. Ent. Res. 71:317-322.

Ferguson, George F.

- 1981. Synonymy and distribution records in the genus Eucerceris (Hymenoptera, Philanthidae). J. New York Ent. Soc. 89:172-183.

Freeman, B. E.

- 1981. The dynamics in Trinidad of the sphecid wasp Trypoxylon palliditarse: a Thompsonian population? J. Anim. Ecol. 50:563-572.

Freytag, Paul H.

- 1980. A description of the male Neogonatopus niger (Fenton)(Hymenoptera, Dryinidae). Ent. News 91:145-146.

Fritz, Manfredo A. and Jorge A. Genise

- 1980. Notas sobre nido de barro de Sphecidae (Hymenoptera) constructores, inquilinos, parasitoides, cleptoparasitos y detritivoros. Rev. Soc. Ent. Argentina 39:67-81.

Gadagkar, Raghavendra

- 1980. Dominance hierarchy and division of labour in the social wasp, Ropalidia marginata (Lep.)(Hymenoptera, Vespidae). Curr. Sci. 49:772-775.

Gamboa, George J.

- 1981. Nest sharing and maintenace of multiple nests by the paper wasp, Polistes metricus (Hymenoptera, Vespidae). J. Kansas Ent. Soc. 54:153-155.

Gayubo, S. F.

- 1981. Sobre dos especies interesantes de la esfecidofauna iberica (Hymenoptera, Sphecidae). Nouv. Rev. Ent. 11:195-202.
- 1981. Himenopteros superiores de la Sierra de Bejar: Sphecidae II: Ampulicinae, Sphecinae y Pemphredoninae (Hym.). Bol. Asoc. Esp. Ent. 4:131-149.

1981. Descripcion de un nuevo esfecido de Espana, Ammoplanellus angelae sp. nov. (Hymenoptera: Sphecidae). *Nouv. Rev. Ent.* 11:115-118.
- Genise, Jorge Fernando
1979. Interaccion social en una agrupacion de Rubrica nasuta (Christ)(Hymenoptera, Sphecidae, Nyssoninae). *Physis* (Secc. C)38:29-30.
1980. Evolucion de mecanismos de transporte de presas en avispa. Reclasificacion de los tipos mandibulares y esquema evolutivo general. *Rev. Soc. Ent. Argentina* 39:19-36.
1980. Comportamiento de nidificacion de Prionyx bifoveolatus (Tasch.)(Hymenoptera, Sphecidae). *Physis* (Secc. C)39:51-54.
1981. Comportamiento de nidificacion de Sphex argentinus Tasch. y S. dorsalis Lep. (Hymenoptera: Sphecidae). Revision de esta actividad en el genero. *Rev. Soc. Ent. Argentina* 39:251-262.
1981. Comportamiento de copula de Sceliphron asiaticum (L.) en Cautiverio (Hym., Sphecidae). *Rev. Soc. Ent. Argentina* 39:315-323.
- Gess, F. W.
1981. Some aspects of an ethological study of the aculeate wasps and the bees of a karroid area in the vicinity of Grahamstown, South Africa. *Ann. Cape Prov. Mus. (Nat. Hist.)* 14(1):1-80.
- Gordh, Gordon and Bradford Hawkins
1981. Goniozus emigratus (Rohwer), a primary external parasite of Paramyelois transitella (Walker), and comments on bethylids attacking Lepidoptera (Hymenoptera: Bethyridae; Lepidoptera: Pyralidae). *J. Kansas Ent. Soc.* 54:787-803.
- Greathead, D. J.
1980. Biological control of tsetse flies an assessment of insect parasitoids as control agents. *Commonw. Inst. Biol. Control, Biocontr. News Inform.* 1:111-123. ["...Mutillidae provide the best hope for biological control...."].
- Grechka, E. O.
1980. [Behavior of the wasp Polistes callicus L. (Vespidae) on the nest during rain.] *Vestnik Zool. Kiev* (6):91-92. [entirely in Russian]
- Grissell, E. Eric
1980. Digger wasp (vol. 6:174), Wasp (vol. 20:45-46) - review subjects in: *The Academic American Encyclopedia*.
1981. Nesting behavior of Prionyx "thomae" (Fabricius)(Hymenoptera, Sphecidae). *J. Kansas Ent. Soc.* 54:16-21.
- Guichard, K. M.
1980. A preliminary account of the sphecid wasps of Oman (Hymenoptera, Sphecidae). *J. Oman Studies, Spec. Rept. no. 2*, pp. 223-232.
- Gusenleitner, Josef
1981. Revision der palaarktischen Stenodynerus-Arten (Hymenoptera, Eumenidae). *Polskie Pismo Ent.* 51:209-305.
- Gwynne, Darryl T.
1980. Female defence polygyny in the Bumblebee Wolf, Philanthus bicinctus (Hymenoptera, Sphecidae). *Behav. Ecol. Sociobiol.* 7:213-225.
1981. Nesting biology of the Bumblebee Wolf Philanthus bicinctus Mickel (Hymenoptera, Sphecidae). *Amer. Midland Nat.* 105:130-138.
- Hall, J. C.
1981. A new species of Lepidophora Westwood (Diptera, Bombyliidae) from Costa Rica reared from Trypoxylon Latreille (Hymenoptera, Sphecidae). *Ent. News* 92:161-164.
- Hansell, M. H.
1981. Nest construction in the subsocial wasp Parischnogaster mellyi (Saussure) *Stenogastrinae* (Hymenoptera). *Insectes Soc.* 28:208-216.

Heath, John, and Jean Leclercq

1981. Provisional atlas of the invertebrates of Europe, maps 1-27. European Invertebrate Surv. [maps 13-23 represent Hymenoptera - Tiphidae, Sphecidae and bees].

Hefetz, A. and S. W. T. Batra

1980. Chemistry of the cephalic secretions of eumenid wasps. Comp. Biochem. Physiol. 65B:455-456.

Hibino, Y.

1981. Foraging behavior of the Japanese paper wasp Polistes jadwigae Dalla Torre (Hymenoptera, Vespidae). Jap. J. Appl. Ent. Zool. 25:89-93. [in Japanese with English summary].

Hogue, C. L. and S. E. Miller

1981. Entomofauna of Cocos Island, Costa Rica. Atoll Res. Bull. 250:1-29. [includes Bethyidae, Eumenidae, Sphecidae].

Hook, A.

1981. Nesting biology of Tanyoprymnus moneduloides and Ammatomus icarioides (Hymenoptera, Sphecidae). Ann. Ent. Soc. Amer. 74:409-411.
1981. Hesperidae as prey of Stictia carolina (Hymenoptera, Sphecidae). J. New York Ent. Soc. 89:202-203.

Hook, Allan W. and Robert W. Matthews

1981. Nesting biology of Oxybelus sericeus with a discussion of nest guarding by male sphecid wasps (Hymenoptera). Psyche 87:21-37.

Huber, J. T. and D. H. Pengelly

1980. Two new species of Elampus (Hymenoptera, Chrysididae) from Puerto Rico and Cuba with notes on Elampus viridis Cresson. Proc. Ent. Soc. Ontario 110:47-51.

Hutson, A. M.

1981. A preliminary list of Diego Garcia Atoll, Chagos Archipelago. Atoll Res. Bull. 243:1-29. [includes Eumenidae, Scoliidae, Sphecidae, Vespidae].

Ishay, Jacob

1981. On the filial attachment phenomenon in colonies of the Oriental Hornet, Vespa orientalis (Hymenoptera, Vespidae). Ent. Gen. 7:167-174.

Ishay, Jacob and T. B. Shimony

1980. Changes in the cuticular pigment of hornets induced by xanthine feeding and light exposure (Hymenoptera, Vespidae). Ent. Gen. 6:25-38.

Ishay, Jacob, K. Zusman, V. A. Poaniry, E. Rosenzweig, and M. B. Brown

1980. Longevity of hornet workers exposed to different light, diet and crowding conditions (Hymenoptera, Vespidae). Ent. Gen. 6:39-47.

Islamov, Sh. D. and V. L. Kazenas

1979. [Food relationships between entomophilous plants and digger wasps (Hymenoptera, Sphecidae) in mountain regions of Uzbek SSR, USSR.] Uzbek Biol. Zhurnal (4):64-65. [entirely in Russian]

Itoh, H.

1980. Habits of Cephalonomia gallicola (Ashmead) (Hymenoptera, Bethyidae). Jap. J. Sanit. Zool. 31:296-298.

Iwata, Kunio

1979. [Fifty years observing insect life]. vol. 3, 269 + xxiv pp. Asahi-shinbun-sha publisher. [Entirely in Japanese. Contains papers on Euodynerus, Passaloecus, Allepyris, and cell dividing in wasp nests.]
1980. [Fifty years observing insect life]. Vol. 4, 232 + xxix pp. Asahi-shinbun-sha publisher. [Entirely in Japanese. Contains papers on Stenodynerus, Batazonellus, Gorytes, and Diptera hunting by vespids.]
1980. [Memoranda of a naturalist]. Vol. 1, part 1, pp. 1-148 [originally published in 1944], and part 2, pp. 149-285 [originally published in

- 1975]. Asahi-shinbun-sha publisher. [Entirely in Japanese. Contains papers on Ammophila, Stigmus, Crabro, Ectemnius, pompilids, Methocha, Chlorion, Pseumenes, and Prionyx.]
1980. [Memoranda of a naturalist]. Vol. 2, part 1, pp. 1-134; part 2, pp. 135-263 [both originally published in 1975]. Asahi-shinbun-sha publisher. [Entirely in Japanese. Contains papers on Bembecinus, Eumenes, Larra, Chrysis, Isodontia, Sceliphron, Goniozus, Anterhynchium, Rhynchium, Sphex, Lyroda, Rhinonitela, and spider wasps.]
1981. [Memoranda of a naturalist]. Vol. 3, part 1, pp. 1-125 [originally published in 1975], part 2, pp. 126-272 [originally published in 1978]. Asahi-shinbun-sha publisher. [Entirely in Japanese. Contains papers on Ectemnius, Chalybion, Hoplammophila, Discoelius, Stenogasterinae, Parischnogaster, Pararrhynchium, Dienoplus, Isodontia, Cerceris, Chrysura, Ropalidia, Ammophila, Polistes, Dicranorhina, and Belonogaster.]
1981. [Memoranda of a naturalist]. Vol. 4, part 1, pp. 1-140; part 2, pp. 141-282. Asahi-shinbun-sha publisher. [Entirely in Japanese. Contains papers on Symmorphus, Ancistrocerus, Episyron, Anoplius, Batazonellus, Trypoxylon, Pison, Eumenes, and Bembix.]
- Jeanne, Robert L.
1981. Book review: "Social wasps: their biology and control" by Robin Edwards. Quart. Review Biol. 56:346.
1981. Chemical communication during swarm emigration in the social wasp Polybia sercea (Olivier). Anim. Behav. 29:102-113.
- Kasparyan, D. R.
1981. The functional aspect of evolution of the sting in the Hymenoptera. Ent. Rev. 59:49-54. [English translation of Russian article published in 1980].
- Kasuya, Eiiti
1980. Behavioral ecology of Japanese paper wasps Polistes spp. (Hymenoptera, Vespidae). 1. Extranidal activities of Polistes chinensis antennalis. Res. Popul. Ecol. 22:244-254.
1981. Polygyny in the Japanese paper wasp, Polistes jadvigae Dalla Torre (Hymenoptera, Vespidae). Kontyu 49:306-313.
- Kawai, N., T. Abe, S. Hori, and A. Niwa
1980. Venoms of bees, wasps and hornets. Adv. Neurol. Sci. 24:898-906.
- Kazenas, V. L.
1980. [New species of the genus Bembix F. (Hymenoptera, Sphecidae) from Kazakhstan]. Trudy Inst. Zool. Akad. Nauk Kazakh SSR 39:137-143. [entirely in Russian]
1980. [A new Turanian species of the genus Cerceris Latr. (Hymenoptera, Sphecidae)]. Trudy Inst. Zool. Akad. Nauk Kazakh SSR 39:144-146. [entirely in Russian]
1980. New species of the genus Cerceris Latr. (Hymenoptera, Sphecidae) from southern Kazakhstan. Ent. Rev. 58:133-135. [English translation of Russian article published in 1979 - see Sphecos 4:33].
1980. [New species of digger wasps (Hymenoptera: Sphecidae) from Tadzhikistan]. Izvestia Akad. Nauk Tadzik SSR, Div. Biol. Sci. 4:49-55. [In Russian. New species in Ammophila, Cerceris, Bembix].
1980. [Parallelism in the evolution of wing venation in the digging wasps (Hymenoptera: Sphecidae)], pp. 81-87 in: Parallelism and direction of evolution of insects. Akad. Nauk SSSR, Far East Scientific Center, Biol.-Soil Inst., Vladivostok. [In Russian].
- Kerrich, G. J., D. L. Hawksworth, and R. W. Sims
1978. Key works to the fauna and flora of the British Isles and northwestern Europe. Systematics Assoc. Spec. Vol. 9, xii+179 p. [Hymenoptera references listed on pages 83-91, Aculeata on pages 88-91].

Khalifman, I.

1978. [Wasps in the forest]. Les I Chelovek, 1978, pp. 123-124. [Vespidae, in Russian].

Kimsey, Lynn S. and R. M. Bohart

1981. A synopsis of the chrysidid genera of Neotropical America (Chryridoidea). Psyche 87:75-91. [includes key to genera in English and Spanish].

Kimsey, Lynn S. and Robert B. Kimsey

1981. A new species of Bembix from the California desert (Hymenoptera: Sphecidae). J. Kansas Ent. Soc. 54:486-488.

Kimsey, Lynn Siri, Robert B. Kimsey, and Catherine A. Toft

1981. Life history of Bembix inyoensis in Death Valley (Hymenoptera: Sphecidae). J. Kansas Ent. Soc. 54:665-672.

Kojima, Jun-ichi and Seiki Yamane

1980. Biological notes on Vespa luctuosa luzonensis from Leyte Island, the Philippines, with descriptions of adults and larvae (Hymenoptera: Vespidae). Insecta Matsumurana (n.s.) 19:79-87.

Krispyn, Joan and Henry R. Hermann

1977. The social wasps of Georgia: hornets, yellowjackets, and polistine paper wasps. Res. Bull. Georgia Agric. Exp. Sta. no. 207, 39 p. [includes keys to genera and species].

Kritsky, Gene

1981. Charles Darwin's contribution to entomology and an index to his insect references. Melsheimer Ent. Ser. (30):1-14. [includes index to all insect references in Darwin's works].

Krombein, Karl V.

1980. Biosystematic studies of Ceylonese wasps. I. A preliminary revision of the Amiseginae (Hymenoptera: Chrysididae). P. E. P. Deraniyagala Commemoration Vol., (Sri Lanka), no. 20, pp. 246-260. [includes key to genera and species.]

1981. Biosystematic studies of Ceylonese wasps, VIII: a monograph of the Philanthidae (Hymenoptera, Sphecoidea). Smith. Contrib. Zool. (343):1-75.

Kurczewski, Frank E.

1981. Observations on the nesting behaviors of spider-wasps in southern Florida (Hymenoptera; Pompilidae). Fla. Ent. 64:424-437.

Kurzenko, N. V.

1980. [Contribution to the basic directions of evolution and phylogeny of the family Eumenidae (Hymenoptera, Vespoidea)], pp. 88-113 in: Parallelism and direction of evolution of insects. Akad. Nauk SSSR, Far East Scientific Center, Biol.-Soil Inst., Vladivostok. [in Russian].

Lanham, U. N.

1981. Evolutionary origin of bees (Hymenoptera; Apoidea). J. New York Ent. Soc. 88:199-209. [suggests that bees are most closely related to ants and scolioid wasps].

Larch, Christine M. and George J. Gamboa

1981. Investigation of mating preference for nestmates in the paper wasp Polistes fuscatus (Hymenoptera: Vespidae). J. Kansas Ent. Soc. 54:811-814.

Leclercq, Jean

1978. La guepe maconne Sceliphron caementarium (Drury) (Hymenoptera: Sphecidae) s'installe en Europe meridionale. Entomops (Nice) 47:245-252.

1980. Crabroniens du genre Quexua Pate trouves en Amerique latine (Hymenoptera: Sphecidae). Bull. Rech. Agron. Gembloux 15:61-70. [includes key to species].

1980. Crabroniens d'Amerique Latine appartenant aux genres Entomocrabro Kohl et Tracheliodes Morawitz (Hymenoptera: Sphecidae). Bull. Ann. Soc. Roy. Belge Ent. 116:233-245. [includes key to species of Entomocrabro].
 1981. Travaux sur les Hymenopteres publies poar les chercheurs de Gembloux, de 1970 a 1980. Notes fauniques de Gembloux 5:1-28.
- Lee Tie-sheng
1981. A new species of Vespoidea from Sichuan, China (Hymenoptera: Vespoidea: Eumenidae). Acta Zootax. Sinica 6:423-424. [in Chinese with English summary - Symmorphus sichuanensis n. sp.].
- Lee, Tie-sheng and Yen-sheng Ma
1981. [Contest on green leaves]. Xin Hua Book Co., Beijing Press, 107 p. [Entirely in Chinese. This is a book for high school students and is about biological control although this is not stated in title.]
- Lefebvre, V.
1981. Enkele nieuwe vindplaatsen van de goudwesp Chrysis immaculata Buysson. Natuurhist. Maandblad 70:149-151.
- Lelej, A. S.
1977. A new genus and species of mutillid wasps (Hymenoptera; Mutillidae) from Turkmenia. Rev. Ent. URSS 56:195-197. [in Russian with English summary].
 1980. The genus Pseudophotopsis Andre, 1896 (Hymenoptera, Mutillidae) from the USSR and adjacent countries. Rev. Ent. URSS 59:634-649. [in Russian with English summary. Includes key to species].
 1981. Velvet ants of the subfamilies Kudakrumiinae and Myrmosinae (Hymenoptera, Mutillidae) in the fauna of Palaearctic. Zool. Zhurnal 60:371-379. [In Russian with English summary. Includes key to species of Pseudomyrmosa and genera of Kudakrumiinae].
- Lelej, A. S. and O. N. Kabakov
1980. On Bradynobaenidae and Mutillidae (Hymenoptera) of Afghanistan. Rev. Ent. URSS 59:181-196. [In Russian. Includes a few keys. English translation published 1981 in Ent. Rev. 59:141-156].
- Litte, Marcia
1981. Social biology of the polistine wasp Mischocyttarus labiatus: survival in a Colombian rain forest. Smithsonian Contr. Zool. (327):1-27.
- Longair, Robert W.
1981. Sex ratio variations in xylophilous aculeate Hymenoptera. Evol. 35:597-600.
- MacDonald, J. F.
1980. Biology, recognition, medical importance and control of Indiana social wasps. Bull. Coop. Ext. Serv., Purdue Univ., no. E-91, 24 p.
- MacDonald, J. F. and R. W. Matthews
1981. Nesting biology of the Eastern Yellowjacket, Vespula maculifrons (Hymenoptera, Vespidae). J. Kansas Ent. Soc. 54:433-457.
- MacDonald, J. F., R. D. Akre, and R. E. Keyel
1980. The German Yellowjacket (Vespula germanica) problem in the United States (Hymenoptera, Vespidae). Bull. Ent. Soc. Amer. 26:436-442.
- Machado, Vera Ligia Letizio
1977. Aspectos da biologia de Protopolybia pumila (Saussure, 1863) (Hym., Vespidae). Rev. Brasil. Biol. 37:771-784.
- Madden, J. L.
1981. Factors influencing the abundance of the European Wasp (Paravespula germanica [F.]). J. Aust. Ent. Soc. 20:59-65. [Discussion applies to the Australian population].
- Makino, Shun'ichi, Seiki Yamane, Teruhiko Ban, and Iwao Kunou
1981. The Japanese hornet Vespa simillima Smith, an important nuisance pest in urban areas (Hymenoptera, Vespidae). Jap. J. Sanit. Zool. 32:203-213.

Mamaev, B. M.

1979. [Entomophaga (Scleroderma Latr., Hymenoptera, Bethyridae) of tree trunk pests, taxonomic aspects, USSR.] Nasekomye-Razrushiteli Drevesiny I Ikh Entomofagi, Nauka, Moscow. pp 44-64. [entirely in Russian]

Marshakov, V. G.

1979. Fossorial wasps of the genera Protostigmus Turner and Ammoplanus Giraud (Hymenoptera, Sphecidae) from Mongolia and Middle Asia. Insects of Mongolia 6:362-374. [In Russian].
1980. Fossorial wasps of the genus Odontocrabro Tsuneki (Hymenoptera, Sphecidae). Insects of Mongolia 7:323-326. [in Russian].
1980. Fossorial wasps of the subgenus Othyreus Marshakov of the genus Crabro Fabricius (Hymenoptera, Sphecidae). Insects of Mongolia 7:327-335. [in Russian].
1980. Fossorial wasps of the genus Crossocerus Lepeletier et Brulle (Hymenoptera, Sphecidae) from Mongolia, Kazakhstan and Middle Asia. Insects of Mongolia 7:336-365. [in Russian, includes key to species].

Martins, Ubirajara R.

1980. Recursos humanos da entomologia sistematica no Brasil. Rev. Bras. Ent. 24:157-164. [lists museums with acronyms, staffs and specialties, etc.]

Masner, L. and Henri Goulet

1981. A new model of flight-interception trap for some hymenopterous insects. Ent. News 92:199-202.

Matsuura, Makoto

1980. Hibernation of the social wasps. The Insectarium 17:344-349. [In Japanese but figures have English subtitles].

Matthews, Robert W., Richard A. Saunders, and Janice R. Matthews

1981. Nesting behavior of the sand wasp Stictia maculata (Hymenoptera, Sphecidae) in Costa Rica. J. Kansas Ent. Soc. 54:249-254.

Matthiesen, F. A. and Vilma Maule Rodrigues

1980. On an anomalous individual of Polistes versicolor (Olivier, 1791)(Vespidae, Polybiinae). Insectes Soc. 27:343-344.

Menke, A. S. and Colin Vardy

1980. A synopsis of the tribe Scapheutini (Hymenoptera: Sphecidae). Pap. Avulsos Zool. 34:73-85. [includes keys to genera and species].

Merisuo, A. K.

1980. Das Mannchen von Passaloecus ribauti Merisuo (Hymenoptera, Sphecoidea) gefunden und beschrieben. Ann. Ent. Fennici 46:83-84.

Mertins, J. W.

1979. Biology of Laelius pedatus, a bethylid parasite of Anthrenus verbasci. Proc. North Cent. Branch Ent. Soc. Amer. 33:1-80.
1980. Life history and behavior of Laelius pedatus, a gregarious bethylid ectoparasitoid of Anthrenus verbasci, the varied carpet beetle. Ann. Ent. Soc. Amer. 73:686-693.

Michener, Charles D.

1981. Comparative morphology of the middle coxae of Apoidea. J. Kansas Ent. Soc. 54:319-326.

Miller, Scott E. and Arnold S. Menke

1981. Entomological bibliography of the California Islands. Santa Barbara Mus. Nat. Hist. Occ. Pap. no. 11, 78 p. [annotated to indicate taxa known from different islands, etc.]

Moczar, L.

1980. On the insect fauna of the alkali flat at Kiskundorozsma. Acta Biol. Szeged 26:147-159.

Nasarova, Sh. and Sh. B. Baratov

1981. On the predatory wasps (Hymenoptera: Sphecidae, Vespidae) of Tajikistan and their role in regulation of the horse-flies. Rev. Ent. URSS 60:97-102. [In Russian with English summary].

Nonveiller, G.

1979. Etat actuel de nos connaissances de la faune des Mutillides de Yougoslavie et plus particulièrement de la faune de Serbie. Arch. Sci. Biol. Beograd 28:103-117.
1979. La Glossomyrme mervensis (Radoszkowski) 1893 (male)(Smicromyrme fertoni Invrea 1953 male) est-elle l'autre sexe de l'Artiotilla biguttata (Costa) 1858 (female)? (Hymenoptera, Mutillidae). Acta Ent. Jugoslavica 15:5-18.
1980. Recherches sur les Mutillides de l'Afrique (Hymenoptera, Mutillidae) X-XII. Nouvelles contributions a la connaissance des Mutillides africaines. Mem. Inst. Protect. Plantes Beograd, no. 14, 148 p. [contains three papers: X = Bref aperçu des résultats des recherches sur la faune des Mutillides du Cameroun effectuées au cours de la période 1962-1975, pp. 13-58; XI = Revision des males du genre Trogaspidia Ashmead 1899 (male, female) apparentes ou semblables a medon (Smith) 1855 (male) avec description du nouveau sous-genre Tuberocoxotilla (males), pp. 69-108; and XII = Dasylabroides remota nov. (male, female) espece nouvelle du Cameroun, representant le plus avance vers le nord-ouest du continent d'un genre essentiellement sudafricain avec des remarques sur des especes connues et avec des descriptions d'especes nouvelles du genre, pp. 109-145.]
1981. Studies on african mutillids (Hymenoptera, Mutillidae). IX. The history and the present status of our knowledge of the Mutillidae fauna of Africa south of the Sahara (excluding Madagascar). Acta Ent. Jugoslavica 16:29-41.

O'Brien, Mark F. and Frank E. Kurczewski

1980. Further observations on the nesting behavior of Crabro advena Smith (Hymenoptera; Crabronidae). Proc. Ent. Soc. Wash. 82:668-674.

Oehlke, J.

1980. Mitteilung des Zentralen Fachausschusses Entomologie. 2 Arbeitstagung der Hymenopterologen der DDR. Ent. Nach., Dresden 24:141-142.

Olafsson, Erling

1979. Um geitunga (Hymenoptera, Vespidae) og skyldar gaddvespur a Islandi. Natturufraeingurinn 49:27-40. [review of species of Vespidae in Iceland].

Olmi, Massimo

1979. Revisione del genere Paragonatopus R. C. L. Perkins (Hymenoptera, Dryinidae). Frustula Ent. (n. s.) 1:217-221.

O'Neill, Kevin M. and Howard E. Evans

1981. Predation on conspecific males by females of the Beewolf Philanthus basilaris Cresson (Hymenoptera, Sphecidae). J. Kansas Ent. Soc. 54:553-556.

Opler, Paul A.

1981. Polymorphic mimicry of polistine wasps by a neotropical neuropteran. Biotropica 13:165-176.

Overall, W. L., Dercio Simoes, and Nivar Gobbi

1981. Colony defense and sting autotomy in Polybia rejecta (F.) (Hymenoptera, Vespidae). Rev. Bras. Ent. 25:41-47.

Page, Jake

1981. Me and the wasp and the TV. Science 81. 2:84, 86.

Papademetriou, Minas K.

1977. Some aspects of the flower behavior, pollination and fruit set of avocado (Persea americana Mill.) in Trinidad. Calif. Avocado Soc. Yearbook 1976:106-152. [flower visitors in family Vespidae, p. 150]

Pardi, L. and M. T. Marino Piccioli

1981. Studies on the biology of Belonogaster (Hymenoptera, Vespidae). 4. On caste differences in Belonogaster griseus (Fab.) and the position of

this genus among social wasps. *Monit. Zool. Italiano* (n.s.) Suppl. 14, (9):131-146.

Parker, Frank D.

1981. Nests and nest associates of a desert bee, Osmia marginata Michener. *Southwest. Ent.* 6:184-189. [mentions chrysidid parasite]

Parker, Frank D., V. J. Tepedino and D. L. Vincent

1981. Observations on the provisioning behavior of Ammophila aberti Haldeman (Hymenoptera, Sphecidae). *Psyche* 87:249-258.

Pawlikowski, Tadeusz

1980. [Some remarks on construction of underground wasp nests]. *Wszechswiat Pismo Przyrodnicze*, no. 3, pp. 73-74. [In Polish. Results of studying 150 nests of Vespula germanica reported].

Peckham, David J. and Allan W. Hook

1980. Behavioral observations on Oxybelus in southeastern North America. *Ann. Ent. Soc. Amer.* 73:557-567.

Perez, Vicente D'A.

1981. El genero Ochleroptera Holmberg en Chile (Hymenoptera: Sphecidae: Nyssoninae). *Rev. Chilena Ent.* 10:35-36.

1981. El genero Pseudisobrachium Kieffe, en Chile (Hymenoptera: Bethyridae: Pristocerinae). *Rev. Chilena Ent.* 10:61-62.

Perna, B. and J. S. Ishay

1980. Dominance and hierarchy in Polistes colonies: correlation with photoelectric properties of their yellow strips. *Insectes Soc.* 27:312-327.

Petit, J.

1980. Hymenopteres Aculeates interessants pour la faune de la Belgique et des regions limitrophes (5). *Lambilliona* 80:39-44.

1981. Note sur Oxybelus argentatus Curtis (Hymenoptera, Sphecidae). *Lambilliona* 81:11-17.

Pirkle, W. H. and P. E. Adams

1979. Broad spectrum synthesis of enantiomerically pure lactones. 1. Synthesis of sex pheromones of the carpenter bee Xylocopa virginica, rove beetle Creophilus maxillosus, japanese beetle Popillia japonica, black tailed deer, and oriental hornet. *J. Organ. Chem.* 44:2169-2175.

Ponomarenko, N. G.

1981. [A new hymenopterous insect of the family Dryinidae from the late Cretaceous of Tamir and Canada. *Paleontolog. Zhurnal* 1:139-143. [Entirely in Russian].

Porter, Charles

1981. New records for Monobia Saussure (Hymenoptera: Eumenidae) in south Texas and northeast Mexico. *Florida Ent.* 64:260-267. [Includes key to Monobia species of United States].

1981. Minixi Giordani Soika (Hymenoptera: Eumenidae) in the lower Rio Grande Valley. *Florida Ent.* 64:437-441.

1981. Scoliidae (Hymenoptera) of the lower Rio Grande Valley. *Florida Ent.* 64:441-453.

Post, David C.

1980. Observations on male behavior of the Eastern Yellowjacket, Vespula maculifrons (Hymenoptera: Vespidae). *Ent. News* 91:113-116.

Post, David C. and Robert L. Jeanne

1981. Morphology of the sternal glands of Polistes fuscatus and P. canadensis (Hymenoptera: Vespidae). *Psyche* 87:49-58.

1981. Colony defense against ants by Polistes fuscatus (Hymenoptera: Vespidae) in Wisconsin. *J. Kansas Ent. Soc.* 54:599-615.

Powell, Jerry A.

1981. Endangered habitats for insects: California coastal sand dunes. *Atala* 6:41-55. [lists 6 endangered wasps from the Antioch Dunes].

Pulawski, Wojciech

1980. Book review of "Sphecid Wasps of the World". Przegl. Zool., Wrocław 24:354-355. [in Polish].

1980. Book review of "Catalogue of Hymenoptera in America North of Mexico". Przegl. Zool., Wrocław 24:355-356. [in Polish].

Rasnitsyn, A.

1981. Book review of "Catalog of Hymenoptera in America North of Mexico". Rev. Ent. URSS 60:231-233. [in Russian].

Rodrigues, Vilma M., B. Baptista dos Santos, C. A. Teixeira de Lucca and M. de Almeida

1981. Vespideos sociais: estudo de colonias de Polybia (Trichothorax) chrysothorax (Lichtenstein) (Hymenoptera, Vespidae, Polistinae, Polybiini). Rev. Bras. Ent. 25:149-153.

Rognes, Knut and Klaus Mohn

1981. Pseudovespula omissa (Bischoff, 1931)(Hym., Vespidae) recorded from Norway. Fauna Norvegica (B)28:118.

Ross, Nancy M. and George J. Gamboa

1981. Nestmate discrimination in social wasps (Polistes metricus, Hymenoptera: Vespidae). Behav. Ecol. Sociobiol. 9:163-165.

Rubink, William L and Howard E. Evans

1980. Notes on the nesting behavior of the bethylid wasp, Epyris eriogoni Kieffer, in southern Texas. Psyche 86:313-319.

Saini, Malkiat S. and Sukrjit S. Dhillon

1980. Changing course of the mesopleural suture in the order Hymenoptera. J. Anim. Morph. Physiol. 27:1-9.

1981. Evolutionary changes in the symphytan cranium pertaining to epicranial and paroccipital sutures (Hymenoptera). J. Kansas Ent. Soc. 54:458-464.

Schone, Hermann and Jan Tengo

1981. Competition of males, courtship behaviour and chemical communication in the digger wasp Bembix rostrata (Hymenoptera, Sphecidae). Behaviour 77:44-66.

Seeley, Thomas D. and Robin Hadlock Seeley

1981. A nest of a social wasp, Vespa affinis, in Thailand (Hymenoptera: Vespidae). Psyche 87:299-304.

Sekijima, Masanori, Masaaki Sugiura, and Makoto Matsuura

1980. Nesting habits and brood development of Parapolybia indica Saussure (Hymenoptera, Vespidae). Bull. Fac. Agric. Mie Univ. (61):11-23.

Shcherbakov, D. E.

1980. Morphology of pterothoracal pleura in Hymenoptera. 1. Ground plan. Zool. Zhurnal 59:1644-1653. [In Russian with English summary].

Sielfeld, Walter K.

1981. Presencia de la subtribu Ammoplanina en Chile (Hymenoptera: Sphecidae: Pemphredoninae). Rev. Chilena Ent. 10:67-70.

1981. Las especies de Sphecidae (Hymenoptera) conocidas para territorio Chileno. Rev. Chilena Ent. 10:71-76. [a catalog of Sphecidae known from Chile].

1981. Nuevos antecedentes sobre el genero Solierella Spin. en Chile (Hymenoptera: Larrinae: Miscophini). Rev. Chilena Ent. 10:85-90. [includes n. sp. and list of neotropical taxa in genus].

Silfverberg, Hans

1981. Additions to the Finnish insect fauna during the years 1976-1980. Notulae Ent. 61:45-61.

Simoes, Dercio, and Ronaldo Zucchi

1980. Bionomics of Protopolybia exigua (De Saussure) 1. Age polyethism and life-table (Hymenoptera, Vespidae, Polybiini). Naturalia 5:79-87.

Simon Thomas, R. T. and A. M. J. Simon Thomas

1980. The Beewolf, Philanthus triangulum (F.)(Hymenoptera, Sphecidae), a pest of honeybees. Honeybee Sci. 1:167-170. [in Japanese].

Soika, A. Giordani

1981. Eumenidi raccolti nell'Arabia Meridionale da K. Guichard. Nota II. Boll. Mus. Civ. Venezia 31:111-116.

1981. Notulae vespilogicae XLIII. Nuovi Polistes delle Nuove Ebridi. Boll. Mus. Civ. Venezia 31:117-119.

Spoczynska, Joy O. I.

1975. The world of the wasp. Frederick Muller Ltd., London. 188 pp. [a popular account of the biology and habits of Hymenoptera with some emphasis on British species, but the well traveled author discusses species from different parts of the world].

Steinmann, Erwin

1981. Über die Nahorientierung solitärer Hymenopteren: Wahlversuche mit Eingangsmasken. Mitt. Schweiz. Ent. Ges. 54:215-220.

Steyskal, George C.

1981. A bibliography of the malaise trap. Proc. Ent. Soc. Wash. 83:225-229.

Strassmann, Joan E.

1981. Wasp reproduction and kin selection: reproductive competition and dominance hierarchies among Polistes annularis foundresses.. Florida Ent. 64:74-88.

Suarez, F. J.

1980. Una nueva e interesante especie Española de efecido, y genere nuevo para Europa (Hymenoptera, Sphecidae, Philanthinae). EOS 55-56:295-302.

Suzuki, Tadashi

1981. Flesh intake and production of offspring in colonies of Polistes chinensis antennalis (Hymenoptera, Vespidae). II. Flesh intake and production of reproductives. Kontyu 49:283-301.

Svensson, Bo G.

1979. Social bees and wasps (Ins.: Hymenoptera, Apidae and Vespidae) from the estuary of the River Angaran, Sweden. Fauna Norrlandica 3:1-5.

Swaminathan, S. and T. N. Ananthakrishnan

1981. Oviposition behavior in 2 species of dryinid parasites (Dryinidae, Hymenoptera). Proc. Indian Acad. Sci., Anim. Sci. 90:113-116.

Tikhomirova, A. L. and A. P. Rasnitsyn

1981. Recapitulations in ontogenesis of Dolichovespa saxonica (Hymenoptera, Vespidae). Zool. Zhurnal 60:1010-1023. [in Russian with English summary].

Toro, H. and J. C. Magunacelaya

1980. Factores mecanicos en la precopula de Sphex latreillei Lapeletier (Hymenoptera, Sphecidae). Anal. Mus. Hist. Nat. Valparaiso 13:245-253.

Toro, H., J. C. Magunacelaya, and E. de la Hoz

1979. Factores mecanicos en la aislacion reproductiva de Thynninae (Hymenoptera, Tiphiidae). Acta Zool. Lilloana 35:475-498.

Tsuneki, K.

1981. Studies on the genus Trypoxylon Latreille of the Oriental and Australian Regions (Hymenoptera, Sphecidae). VIII. Species from New Guinea and south Pacific islands. Spec. Public. Japan Hymen. Assoc. (14):1-98. [includes key to species].

1981. Studies on the genus Trypoxylon Latreille of the Oriental and Australian Regions (Hymenoptera, Sphecidae). IX. Species from Australia. Spec. Public. Japan Hymen. Assoc. (14):99-105. [includes key to species].

1981. Studies on the genus Trypoxylon Latreille of the Oriental and Australian Regions (Hymenoptera, Sphecidae). X. Revision of the Formosan species. Spec. Public. Japan Hymen. Assoc. (15):1-56. [includes key to species].

1981. Studies on the genus Trypoxylon Latreille of the Oriental and Australian Regions (Hymenoptera, Sphecidae). XI. Additional specimens from various parts of the regions, with an appendix on some species from other regions. Spec. Public. Japan Hymen. Assoc. (16):1-90. [includes revised key to species of Sri Lanka, and a key to species of Burma].
- Turillazzi, Stefano
1981. Use of artificial nests for rearing and studying Polistes wasps. Psyche 87:131-140.
- Turillazzi, S. and L. Pardi
1981. Ant guards on nests of Parischnogaster nigricans serrei (Buysson) (Stenogastrinae). Monitore Zool. Ital. (n.s.) 15:1-7.
- Ugolini, A.
1981. Initial homeward orientation after displacement in Polistes gallicus. Naturwissenschaften 67:487.
- van Achterberg, C.
1981. Johan George Betrem (21.III.1899-16.VII.1980). Ent. Bericht. 41:134-141. [includes photograph and list of publications].
- van Bendegem, Jack P., David L. Gibo, and Thomas M. Alloway
1981. Effects of colony division on foundress associations in Polistes fuscatus (Hymenoptera: Vespidae). Can. Ent. 113:551-556.
- van der Vecht, J.
1980. The identity of Bembix westermanni Spinola (Hymenoptera, Sphecidae, Nyssoninae). Proc. Kon. Nederlandse Akad. Wetenschappen (C)83:399-402.
 1981. Corrections to several of the author's papers on Hymenoptera. Ent. Bericht. 41:73-79.
 1981. On some Neotropical Eumenidae described by A. Ducke. Boll. Mus. Civ. Venezia 31:121-124.
- van der Zanden, G.
1981. Aantekeningen over Nederlandse Hymenoptera Aculeata, VIII. Ent. Bericht. 41:129-131.
- van Doesburg, P. H.
1980. Genitalia vials from PVC tube. Ent. Bericht. 40:177-178.
- Veenendaal, R. L.
1981. Eennieuwe Nederlandse vindplaats van Mimumesa sibiricana Bohart op Texel (Hymenoptera: Sphecidae). Ent. Bericht. 41:156.
- Vestergaard, D. A.
1981. Waarnemingen van interessante Hymenoptera in Nederland. Ent. Bericht. 41:113-116.
- Westrich, Paul
1980. Die Stechimmen (Hymenoptera Aculeata) des Tübinger Gebiets mit besonderer Berücksichtigung des Spitzbergs. Veroff. Naturschutz Landschaftspflege Bad.-Württ. 51-52:601-680.
- Wharton, Robert A.
1980. Insects and arachnids associated with Zygophyllum simplex (Zygophyllaceae) in the central Namib Desert. Madoqua 12:131-139. [includes aculeate wasps].
- Willink, Abraham
1980. Sobre la presencia de Vespula germanica (Fabricius) en la Argentina (Hymenoptera, Vespidae). Neotropica 26:205-206.
- Willink, A. and M. D. V. Ajmat de Toledo
1979. Gayella luispenai new species (Hymenoptera, Masaridae, Gayellinae). Acta Zool. Lilloana 35:427-434.
- Wolf, H.
1980. Zur Kenntnis der Aculeaten-Fauna (Hymenoptera) von Gran Canaria und Tenerifa. Vieraea 9:67-78.
 1981. Bemerkungen zu einigen Wegwespen-Arten (IV) (Hymenoptera, Pompilidae). Nachrichtenblatt Bayerisch. Ent. 30:128-131.

1981. Uber Wegwespen der Sammlung F. Morawitz (I) (Hymenoptera, Pompilidae). Entomofauna 2:77-79.
- Wootton, Robin J.
1981. Support and deformability in insect wings. J. Zool. London 193:447-468.
- Yamane, Seiki, Shun'ichi Makino, and Rod P. Macfarlane
1981. Embryo nest architecture in three Vespula species (Hymenoptera, Vespidae). Kontyu 49:491-497.
- Yamane, Seiki, Shun'ichi Makino, and Masanori J. Toda
1980. Nests of Dolichovespula albida from the arctic Canada (Hymenoptera: Vespidae). Low Temp. Sci. (B)38:61-68.
- Yamasaki, M., K. Yamaguchi, and M. Iga
1980. Predation of Papilio xuthus larvae by Polistes wasps in relation to the colony development of the principal predator, Polistes jadwigae Dalla Torre (Hymenoptera, Vespidae). Jap. J. Appl. Ent. Zool. 24:28-30. [in Japanese with English summary].
- Young, Allen M.
1981. Notes on the moth Pericopus leucophaea Walker (Lepidoptera: Pericopidae) as a defoliator of the tree Vernonia patens H. B. K. (Compositae) in northeastern Costa Rica. J. New York Ent. Soc. 89:204-213. [mentions Polybia simillima attempting to capture larvae].

Recent Literature on the Vespinae (Compiled by Robin Edwards)

- Barr-Nea, L., J. Ishay, and A. Shved
1979. Hepato-toxic effects of envenomation by the Oriental hornet, Vespa orientalis. Toxicon 17 (Suppl. 1):6.
- Brian, M. V.
1980. Social control over sex and caste in bees, wasps and ants. Biol. Rev. 55:379-415.
- Brown, G. R.
1979. The European wasp is a potentially dangerous import. Agric. Gaz. N.S.W. 90(5):38-39.
- Burton, J. F.
1979. The hornet (Vespa crabro L.) in Warwickshire. Entomologist's Rec. J. Var. 91:161.
- Chase, J.
1980. Orange-loving yellowjackets. Pest Control 48(7):49.
- Cherfas, J.
1979. Genes take care of their own. New Scientist 81(4 Jan):31-33.
- Chipps, B.E. et al.
1980. Diagnosis and treatment of anaphylactic reactions to Hymenoptera stings in children. J. Pediat. 97:177-184.
- Cooter, J.
1979. Further observations on the hornet, Vespa crabro L. Bull. amat. ent. Soc. 38:131.
- Craig, R.
1980. Sex investment ratios in social Hymenoptera. Am. Nat. 116:311-323.
- Craik, J. C. A.
1979. Large numbers of hornets in a moth trap at Ashurst, Hampshire, in 1978. Bull. amat. Ent. Soc. 38:129-131.
- Crozler, R.H.
1980. Genetical structure of social insect populations. In: Markl, q.v.

- Dascal, N. and J. S. Ishay
1980. Presynaptic effects of midgut extract from larvae of the Oriental hornet (Vespa orientalis). *Toxicon* 18:339-343.
- Davydova, E. D.
1979. (Neurosecretory system of medial protocerebrum of Hymenoptera (Insecta).) *Zh. obshch. Biol.* 40:610-617 (in Russian).
- Diniz, M. de A.
1978. (The Portuguese species of wasps (Hymenoptera, Vespoidea) in the museum and zoological laboratory of the University of Coimbra, Portugal.) *Cienc. Biol. ecol. Sist.* 4:7-22 (in Portuguese).
- Eck, R.
1980. *Dolichovespula loekenae* n. sp., eine neue soziale Faltenwespe aus Skandinavien (Hymenoptera, Vespidae). *Reichenbachia* 18:213-217.
- Es'kov, E. K. and A. I. Toroptsev
1980. Comparative analysis of thermoregulation in nests of some species of social insects. *J. evol. Biochem. Physiol.* 15:431-437. (Translation from *Zh. evol. Biokhim. Fiziol.* 15:500-507, 1979.)
- Francke, W., G. Hindorf and W. Reith
1979. Alkyl-1,6-dioxa spiro[4.5]-decanes - a new class of pheromones. *Naturwissenschaften* 66:618-619.
- Francke, W., W. Reith, G. Bergström and J. Tengö
1980. Spiroketal in the mandibular glands of Andrena bees. *Naturwissenschaften* 67:149.
- Frazier, C. A.
1981. This year's bee and wasp stings. *Lancet* 1 (8210):53.
- Golden, D. B. K., M. D. Valentine, A. Kageysobotka and L. M. Lichtenstein
1980. Regimens in Hymenoptera venom immunotherapy. *Ann. int. Med.* 92:620-624.
- Green, A. W., R. E. Reisman and C. E. Arbesman
1980. Clinical and immunologic studies in patients with large local reactions following insect stings. *J. Allergy Clin. Immunol.* 66:186-189.
- Hamilton, R. G. and N. F. Adkinson
1981. Quantitation of antigen-specific immunoglobulin-G in human serum. 2. *J. Allergy Clin. Immunol.* 67:14-22.
- Hibino, Y., Y. Ito and E. Kasuya
1980. Reconstruction of nests by Polistes jadwigae and Polistes chinensis antennalis workers. *Appl. ent. zool.* 15:190-192.
- Hintzer, K., R. Weber and V. Schurig
1981. Synthesis of optically active 2S-, and 7S-methyl-1,6-dioxa-spiro[4.5] decane, the pheromone components of Paravespula vulgaris (L.), from S-ethyl lactate. *Tetrahedron Letters* 22:55-58.
- Hirai, Y., Y. Ueno, et al.
1980. A new mast cell degranulating peptide, Polistes Mastoparan, in the venom of Polistes jadwigae. *Biomed. res.* 1:185- .
- Hoffman, D. R., J. S. Miller and J. L. Sutton
1980. Hymenoptera venom allergy - a geographic study. *Ann. Allergy* 45:276-280.
- Hussain, S. A. and S. Ali
1979. Beehive predation by wasps (genus Vespa) and its possible benefit to Honeyguides (Indicatoridae) in Bhutan, India. *J. Bombay nat. Hist. Soc.* 76:157-159.
- Hutchinson, R.
1979. A Vespula wasp (Hymenoptera: Vespidae) with a male Enallagma boreale (Zygoptera:Coenagrionidae) in its mouth. *Cordulia* 5 (4):84.
- Ishay, J. S. and N. Dascal
1979. Presynaptic effects of Oriental hornet (Vespa orientalis) midgut extract. *Toxicon* 17 (Suppl. 1):75.

- Ishay, J. S., B. Perna, Y. Hochberg and M. Goldstein
1980. Photoelectric properties of the "yellow strips" in Vespa orientalis: a mathematical model. Bull. math. Biol. 42:681-690.
- Ishay, J. S. and T. B. Shimony
1980. Changes in the cuticular pigment of hornets (Vespa orientalis) induced by xathine feeding and light exposure (Hymenoptera, Vespidae). Ent. Generalis 6:25-38.
- Ishay, J. S., K. Zusman et al.
1980. Longevity of hornet workers exposed to different light, diet and crowding conditions (Hymenoptera: Vespidae). Ent. Generalis 6:39-48.
- Jaisson, P.
1980. Les relations parentales chez les hyménoptères sociaux. Reprod. Nutr. Dévelop. 20 (3B):771-778.
- Kawai, N., T. Abe, S. Hori and A. Niva
1980. Effects of a neurotoxin in hornet venom on neuromuscular junctions of lobster. Comp. biochem. physiol. 65 (C):87-92.
- Kilpatrick, C. W., J. W. and S. M.
1981. A wood mouse (Peromyscus leucopus) nest site in a hornets nest. Am. Midl. Nat. 105:208- .
- Kim, C.-W.
1980. Distribution atlas of insects of Korea. Series 3. Hymenoptera and Diptera, pp. 83-92.
- King, T. P.
1980. Immunochemical studies of Hymenoptera venom allergens. Allergy 35: 200-202.
- Kleinhaus, D.
1979. Diagnostik der Insectentoxinallergie (Biene, Wespe) mit dem Radio-Allergo-Sorbens-Test. Z. Hautkrankheiten 54 (4):123-129.
- Kojima, J. and Sk. Yamane
1980. Biological notes on Vespa luctuosa luzonensis from Leyte Island, The Philippines, with descriptions of adults and larvae (Hymenoptera: Vespidae). Insecta matsum. 19:79-87.
- Kral, K.
1978. Die Orientierung der Rhabdome in den Ocellen der Honigbiene Apis mellifica carnica Pollm. und der Erdwespe Vespa vulgaris L. Zool. Jb (Zool, Physiol) 82:263-271.
- LaFleur, R. A., R. W. Matthews and D. B. McCorkle, Jr.
1979. A re-examination of the Mallia insect pendant. Am. J. Archaeology 83:208-212.
- Littlewood, S. C.
1980. Wasps, aphids and hornets. Bull. amat. Ent. Soc. 39:18.
- Lockley, R. F.
1980. Cost of testing and treating with Hymenoptera venom extracts. J. Allergy Clin. Immunol. 65:398-400.
- Madden, J. L.
1981. Factors influencing the abundance of the European wasp (Paravespula germanica[F.]). J. Aust. ent. Soc. 20:59-65.
- Markl, H. (Ed.)
1980. Evolution of social behaviour: hypotheses and empirical tests. Verlag Chemie, Weinheim, Florida, Basel.
- Mazokhin-Porshnyakov, G. A. and Kartsev, V. M.
1979. [A study of flight sequence in insects to food sources of equal value (contribution to the strategy of visual search).] Zool. Zh. 58: 1281-1289 (in Russian).

- Meriney, D., Z. Goel and M. H. Grieco
1981. Allergens in yellow jacket venom as determined by Sephadex fractionation, enzyme and RAST assays. *J. Clin. Lab. Immunol.* 5:1-7.
- Meriney, D., T. Nall et al.
1980. Comparison of venom and whole-body RAST and intradermal testing in Vespid-sensitive patients. *Int. Archs Allergy appl. Immunol.* 62: 442-453.
- Metcalf, R. A.
1980. Measuring fitness in social insects. In: Markl, q.v.
- Mielke, U. and W. Böhm
1977. Gesundheitsschadlinge als Vektoren von Bakterien und Pilzen. *Z. ges. Hygiene Grenzgebiete* 23:367-370.
- Monzon, C. and J. Miles
1980. Haemolytic anaemia following a wasp sting. *J. Pediatrics* 96:1039-1040.
- Ólafsson, E.
1979. Um geitunga (Hymenoptera, Vespidae) og skyldar gaddvespur á Íslandi. [A review of the wasps recorded in Iceland.] *Náttúrufræðingurinn* 49 (1):27-40.
- Owen, R. E.
1980. Population genetics of social Hymenoptera with worker-produced males. *Heredity* 45:31-46.
- Renck, B. and R. Binarsson
1980. Application of high speed aqueous gel permeation chromatography to insect venoms. *J. Chromat.* 197:278-281.
- Richman, P. G. and H. Baer
1980. A convenient plate assay for the quantitation of Hyaluronidase in Hymenoptera venoms. *Analyt. Biochem.* 109:376-382.
- Rosenberg, P. (Ed.)
1978. Toxins. Animal, plant and microbial. Proc. 5th Int. Symp. on animal, plant and microbial toxins, held in San José, Costa Rica, in Aug. 1976. Pergamon, Oxford.
- Rosenberg, P., W. B. Elliot, J. Ishay and J. Fletcher
1979. Phospholipase A and phospholipase B activities of reptile and hymenoptera venoms. *Toxicon* 17 (Suppl. 1):154.
- Rust, R. W.
1979. Pollination of Impatiens capensis. Pollinators and nectar robbers. *J. Kans. ent. Soc.* 52:297-308.
- Santrach, P. J., L. G. Peterson and J. M. Yunginger
1980. Comparison of diagnostic tests for Hymenoptera sting allergy. *Ann. Allergy* 45:130-137.
- Schmidt, J. O., M. S. Blum and W. L. Overal
1980. Comparative lethality of venoms from stinging Hymenoptera. *Toxicon* 18:469-474.
- Schousboe, C.
1980. Fund af Aphomia sociella L. (Lepidoptera: Pyralidae) i reder af gedehams og mus. *Ent. Meddr.* 47:117-118. (in Danish. The species of wasp is not given, but "gedehams" usually refers to Vespula spp.)
- Shvarts, G. Ya.
1979. Pharmacological regulation of the activity of the kinin system of the organism. *Pharm. Chem. J.* 13:118-128. (Direct translation from *Khim.-Farm. Zh.*)
- Sidhu, D. S., D. Mukesh and R. Garg
1979. Comparative studies on the total glycogen reserves of some adult insects. *Indian J. Zool.* 7:1-6.

- Sobotka, A. K., N. F. Adkinson Jr., M. D. Valentine and L. M. Lichtenstein
1978. Allergy to insect stings. IV. Diagnosis by radioallergosorbent test (R.A.S.T.) J. Immunol. 121:2477-2484.
- Tepedino, V. J.
1980. Sex ratio of Hylaeus bisinuatus Forster (Hymenoptera: Colletidae). J. Kans. ent. Soc. 53:805-810. (Also refers to Vespula raiding the bees cells.)
- Tipton, W. R.
1980. Influence of histamine controls on skin tests with Hymenoptera venom. Ann. Allergy 44:204-206.
- Traynor, L. A.
1980. Serum albumin in insect venom. J. Allergy Clin. Immunol. 65:81.
- Wicher, K., R. E. Reisman et al.
1980. Comparison of the venom immunogenicity of various species of yellow jackets (genus Vespula). J. Allergy Clin. Immunol. 66:244-249.
- Witt, R. J. von
1980. Topical aspirin for wasp stings. Lancet II (8208/9):1379.
- Yajima, H., J. Kanaki et al.
1980. Studies on peptides. 84. Synthesis of the tetradecapeptide amide corresponding to the wasp venom Mastoparan-X. Chem. pharm. bull. Tokyo 28:882-886.
- Yajima, H., J. Kanaki et al.
1980. Studies on peptides. 86. Application of the trifluoroacetic acid-thioanisole deprotecting procedure for the synthesis of a wasp venom Mastoparan. Chem. pharm. bull. Tokyo 28:1214-1219.
- Yanaihara, C., M. Sakagami et al.
1979. Synthetic bradykinin-like peptides. In: Fujii, S., H. Moriya and T. Suzuki (Eds.) Advances in experimental medicine and biology. Vol. 120A, pp. 185-194. Plenum Press, London and New York.

