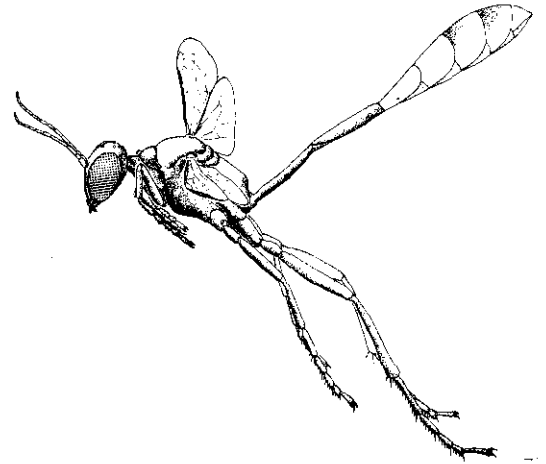


SPHECOS

Number 4 - January 1981

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 consists mainly of autobiographies and recent literature. A highlight of the latter is a special section on literature of the vespid subfamily Vespinae compiled and submitted by Robin Edwards (see p. 41).

A few errors in issue 3 have been brought to my attention. Dr. Mickel was declared to be a "multillid" expert on page 1. More seriously, a few typographical errors crept into Steyskal's errata paper on pages 43-46. The correct spellings are listed below:

On page 43:

p. 41 - Aneugmenus ---

p. 108 - Zaschizonyx montana and Z. pluricincta ---

On page 45:

p. 940 - ----feminine because Greek mastix ---

p. 1335 - Ampliyopone ---

On page 46:

p. 1957 - Lasioglossum citerior ---

My apologies to Dr. Mickel and George Steyskal.

I want to thank Helen Proctor for doing such a fine job of typing the copy for Sphecos 3 and 4.

Research News

Raymond Wahis, Zoologie generale et Faunistique, Faculte des Sciences agronomiques, 5800 GEMBLOUX, Belgium; home address: 30 rue des Sept Collines 4930 CHAUDFONTAINE, Belgium (POMPILIDAE of the World), is working on a revision of the South American genus Priochilus and is also preparing an annotated key of the members of the Tribe Auplopodini in Australia (Auplopus, Pseudagenia, Fabriogenia, Phanagenia, etc.).

He spent two weeks in London (British Museum) this summer studying type specimens and found that Turner misinterpreted all the old species and that his key (1910:310) has no practical value. Raymond discovered many new species but associating sexes is difficult due to insufficient material.

He would appreciate the opportunity to study additional specimens and would welcome the loan of material in these groups.

Leo Castro, Division Azul 3A, Teruel, Spain, reports: "I have recently started work on the Eumenidae of the Cordillera Ibérica south of the Jalón River (most of the Cuenca, Guadalajara, Teruel and Castellón provinces), with the intention of studying their distribution, environmental requirements and behaviour and establishing--as far as possible--a catalogue of species, subspecies, etc. I have found some 80 species so far (nearly half the number--around 200--for the Peninsula). Records from sites inside, or even slightly outside the area, would be very welcome."

Ed Callan, 13 Gellibrand Street, Campbell, Canberra, A.C.T. 2601, Australia, visited the British Museum (Natural History), London in June and August 1980. He met Colin Vardy, with whom he discussed research on sphecid wasps in Australia and New Zealand, Michael Day, Zdeněk Bouček, Geoffrey Kerrich and other hymenopterists. Callan is interested in parasitic beetles of the genus Macrosiagon (Rhipiphoridae), which attack aculeate wasps, and, aided by Peter Hammond, all Australian species in the BM collection were examined. In July 1980 he went to the Muséum national d'Histoire naturelle, Paris, where he met Simon Kelner-Pillault and spent some time in studying Sceliphron, Pison and other sphecid genera from New Caledonia and elsewhere in the Pacific area.

Help Needed

In Sphecos 3:35 we reported the move of Carol Nagy from Agigea, Romania to Israel. He and his family are now living in a camp for immigrants in Israel. They left their native country with only 40 kilos of baggage which consisted mostly of clothes for their baby. They are trying to cope with starting a new life in a new country: learning a new language, trying to find employment, find a permanent home, etc. Being a small country Israel offers few jobs for an entomologist, especially a taxonomist like Carol. Hence he faces the prospect of possibly having to continue his first love, the study of stinging wasps, in his spare time. Carol had to leave behind in Romania all of his entomological library, his collections, etc. The only entomological literature that he possesses is Sphecos. We can all help Carol by sending him reprints of our Hymenoptera papers or duplicates from other authors. If any of you want to help you should send your reprints to me, Arnold Menke, at the address on page one of this newsletter, and I will forward them to Carol. His current address is temporary. We can all give a big boost to Carol's morale by helping in this small way. He would appreciate literature on any group in the order Hymenoptera, but since Carol is trying to find work in entomology, particularly biological control, he desperately needs literature in this field. He would appreciate receiving any works on parasitic Hymenoptera such as Scelionidae, Pteromalidae, Chalcididae, as well as on aculeate wasps except the Vespidae s. s. Incidentally he has changed his family name from Nagy to Grosman.

Change of Address

Dr. Pastor Alayo Dalmau of Habana, Cuba has a new address: Ave. 19, No. 6009 Playa (Zona Postal 13), Ciudad de la Habana, Cuba.

Johan George Betrem

Dr. Betrem, a lifelong student of the scolioid wasps, passed away July 16, 1980, at the age of 81. Perhaps we will find someone willing to write an obituary on Dr. Betrem for a future issue of Sphecos.

Eberhard Königsmann

Word was received in mid December from G. van der Zanden that Dr. Königsmann recently passed away. No further details are available as this issue of Sphecos goes to press, but we hope to learn more soon. His death is a great loss for hymenopterology.

Presumably those needing loans of specimens from the Humboldt Museum can arrange for them through A. Wegener or Ursula Gollner-Scheidig.

Movie Review

"Paper wasp behavior" (Polistes exclamans). Produced (c.1976) by Gay Maher, with assistance of Mark McCarty. 16 mm, color, silent. Running time 17 min. Sale \$215.00, rental \$11.50. Film no. 22592 from Pennsylvania State University.

The nature of this clear and unpretentious film is expressed in the title. Together with accompanying printed text, it seeks to describe behavior patterns of a common nearctic paper wasp. If it had been titled "Sociobiology of Polistes exclamans" or "Adaptations for spite and altruism", it would have been a disappointment, but within its real aims it succeeds admirably and can be recommended. The film is restricted to a single colony in the superindividual stage of the colony cycle, that period between the emergence of the first workers and of the first males.

"Paper wasp behavior" is more a research than an educational film. By this is meant that entomologists and advanced students can use it to brief yourselves on just what these behaviors look like, but it won't serve usual classroom use. It is silent, lacks subtitles, and isn't structured as a description of social life or the functions of behavior in Polistes. The printed text has a good introduction into the biology of temperate-zone Polistes and remarks on the behaviors seen in the film. I'm not sure a spoken narration would be an improvement, but subtitles and occasional arrows in the film would enhance its use, and these could certainly be added.

About the technical aspect, it should possible be mentioned that it's not entirely of professional quality, in terms of pacing, editing and occasional mis-focus, but only in order to add that most of us will find the quality satisfactory. Certainly the numerous rough spots would be lacking if it had been made by an Oxford University team with greater control and 5 times as much film. So what?

Within its scope, "Paper wasp behavior" is wonderfully complete. In preparing a catalog of at-nest behaviors in this species in Georgia, under the same conditions shown in the film, I have observed 51 distinct behaviors. Of these, I find 36 shown in the film, and I find 2 others which I have inferred in my population but never actually seen. Of the other 15, 13 are either implied in other behaviors shown, or very rare, or not important for the film's behaviors shown, or very rare, or not important for the film's purposes. The film includes

an especially fine sequence of oviposition and associated behaviors, and sequences showing pedicel-smearing, social grooming, dividing and maxillating prey, and parasitoids (probably the chalcid Diabrachys cavus) attempting to penetrate the nest are also noteworthy. Unfortunately, the wasps' responses to the parasitoids are not equally well described, and this accounts for the only 2 behaviors whose absence I regret.

This film, then, is an illustration of important behavior patterns in a key genus of social insects, such as cannot quite be achieved with still photos and words. It has the virtues of clarity, completeness and reasonable price, and its tolerable roughness is no great obstacle to its aims.

Chris Starr

Vespula germanica continues to spread in North America

Roger Akre writes that this wasp was in Ohio at least as early as 1971 and is now widespread in Michigan. Bob Jeanne, Dept. of Entomology, Univ. of Wisconsin, Madison, WI 53706, collected germanica in Madison in the fall of 1979. One colony was found nesting in the wall of an old house. Bob says that of 17 Vespula queens collected this spring (1980) in Madison, 8 were germanica. T. D. Galloway, Univ. of Manitoba, Winnipeg, Canada, has taken germanica in the Winnipeg area, the westernmost record known so far for this fast spreading wasp (det. confirmed by Bob Jacobson). Galloway's material was taken from baited traps designed to collect Calliphoridae. These traps contained liver and bananas in water. Large numbers of yellow jackets entered them in the fall. The following is a list of species captured in the Winnipeg area in order of abundance: V. flavopilosa Jacobson, V. maculifrons (Buysson), V. vulgaris (L.), V. maculata (L.), V. arenaria (F.), V. germanica (F.).

Translations in Progress

Karl Krombein, Smithsonian Institution, reports that the following Russian publications are now being translated into English under the Smithsonian Translation Program:

Keys to the Insects of European USSR, Hymenoptera, Vol. 3: Part 1 (Superfamilies Scolioidea, Sapygoidea, Chrysidoidea, Mutilloidea, Pompiloidea, Vespoidea, Sphecoidea, Apoidea, Formicoidea); Part 2 (Superfamilies Bethyloidea, Chalcidoidea, Proctotrupeoidea, Ceraphronoidea). 1978. (See Sphecos 1:48)

A. P. Rasnitsyn, "The Origin and Evolution of Hymenoptera," Acad. Sci. USSR, Trans. Paleont. Inst., vol. 174, 1980. (See p. 37)

B. B. Rohdendorf and A. P. Rasnitsyn, "Historical Development of the Class Insecta," Acad. Sci. USSR, Trans. Paleont. Inst., vol. 175, 1980. (See p. 37)

Fabricius - Species Insectorum = 1781

Menke and Bohart in their 1979 errata paper for Sphecid Wasps of the World (Sphecos 1:40) offered evidence to suggest that Fabricius' "Species Insectorum"

was published in 1782. Evidently, however, 1781 is correct for part one as shown by the following from Mick Day: "Fabricius apparently booped in his autobiography re the date of "Species Insectorum (part I)" which probably was published in 1781." "Donald Baker found a reference to the work in Gottingische Gelehrte Anzeigen, 1781:1122." "Part II however was probably published in 1782."

Arnold Menke

Dufour - 1841

It has been generally overlooked that Dufour described some new species in his large 1841 work "Recherches anatomiques et physiologiques sur les orthopteres, les hymenopteres et les nevropteres" published in vol. 7 of the Mem. Savants Acad. Roy. Sci. Inst. France, Sci. Mathem. Phys. Several sphecid wasp species were described in this paper and they were omitted from Sphecid Wasps of the World by Bohart and Menke (1976). These names are noted in the errata to that book that follows below.

The generic name Hogardia appears for the first time in Dufour's 1841 paper on p. 492 where it is cited as a synonym of Stizus nigricornis Dufour. Fortunately this name is unavailable according to Articles 11 (d) and 16 (b) (ii) of the Code because otherwise it would have priority over Sphecius.

Workers in other families of Hymenoptera should check this publication to see if there are overlooked new taxa in their groups.

Arnold Menke

Still more errata - Sphecid Wasps of the World

TITLE PAGE: H. K. Court is correct.

p. 43, RC, L47, 48: 1802 should read 1800.

p. 45, RC, L28: delete Megerle,

p. 66, RC, L4 read: somere V inserted toward end of IV.

p. 94, RC, L39: 18G is correct

p. 100, RC, L 21: II of bothis correct

p. 114, LC, L26: 1800 is correct

p. 265, LC, L7: europaeus Kohl is a synonym of panzeri (Dufour), 1841 (Lyrops).

Insert with panzeri (Dufour) on p. 266, LC, after L52 with synonyms and subspecies.

p. 266, LC, L44: 1800 is correct

p. 272, LC, L6: 1881 is correct

p. 342, RC, L19: 1968b is correct

p. 380, LC, L14: 1897 is correct

p. 382, RC, L17: delete parenthesis around Cresson, and delete (Crabro).

p. 409, LC, insert after L25: tetraedrus Dufour, 1841; Saint-Sever, France
(?=Ectemnius).

p. 422, RC, L50: Clytochrysus is correct

p. 424, RC, L33, 42: (C1) is correct

p. 425, LC, L15: (C1) is correct

p. 425, RC, L9: (C1) is correct

p. 426, LC, last L = (C1) is correct

p. 427, LC, L6: (C1) is correct

p. 430, RC, insert after last L as synonym: ? quadrifera Dufour, 1841 (Crabro).

p. 434, LC, L21: (fig. 132C) is correct

p. 469, LC, insert after L37: dufourii Dufour, 1841; Saint-Sever, France
(?=Brachystegus)

- p. 485, LC, insert after Nearctic in L5: Palearctic
- p. 511, LC, insert after L27 as a synonym: nigricornis Dufour, 1841 (Stizus)
- p. 520, RC, insert after L39: tristrigatus Fabricius, 1794 (Vespa)
- p. 546, RC, L41: hokka is correct (change in index also).
- p. 547, LC, L7 from bottom: Sumatra is correct
- p. 549, LC, L40: westonii is correct. (Change in index also)
- p. 549, LC, insert after L3 from bottom: pygmaea Lichtenstein, 1796; "Coromandel"
- p. 577, LC, L4: amakosa Brauns is correct
- p. 577, LC, L53: delete "?"
- p. 578, LC, insert as synonym after L54: cristata Dufour, 1841
- p. 579, RC, L20: delete entire line
- p. 581, RC, L22 = gallienii is correct
- p. 610, RC, L39: 1972 is correct
- p. 622, RC, Turton: Edition cited here (1802) is the second. First edition was printed in 1800 at Swansea by David Williams.
- p. 627, LC, L18, 24: 1800 is correct
- p. 647, RC, L19: delete entire line

Arnold Menke

Offer of Bibliographic Help

Jerry Chmurzynski*/, Dept. of Neurophysiology, Nencki Institute of Experimental Biology, 3 Pasteur St., P.O. Box 64, PL00-973 Warsaw, Poland relates the following:

"I possess in my lab an extensive bibliography file (some 15 or 16 thousand items) mainly on Hymenoptera bionomics and ethology (including sensory physiology), quite a number of them with short abstracts in congress languages. Anyone interested will be welcomed to use it, although I realize that no one can make a journey to Poland for this purpose only. I should add that the file is arranged by (1) subject, (2) systematic order, and (3) alphabetical sequence of names. In very special cases I can give information by mail."

New Journals

Two new entomological journals are being published in India: Colemania and Ayyaria. The latter is designed for monographic or large papers. The stated objective of these journals is to provide entomologists with speedy, high quality outlets for their papers. Papers for the first issues of both journals are now being solicited by Kumar D. Ghorpade, editor, P.O. Box 2564, 123, Brigade Road, Bangalore 560 025, India, and he should be contacted for details.

From People's Republic of China comes a new journal, Entomotaxonomia, which, as its title suggests, is devoted chiefly to taxonomic papers. Foreign authors can submit papers in English, French, German or Italian. 50 free reprints will be given to each author. For further details write to: Prof. Dr. Io Chou, Entomotaxonomia, c/o N.W. College of Agriculture, Wukung, Shensi, China.

*/ "English speaking people wonder how we do pronounce my name. An answer is very simple: ch sounds as feeble h in "what", mu - like moo (e.g., in "moonlight"), rz - like s in "treasury" or "measure", y sounds ever deeper than i in "it," "dig", etc., n (corresponding to Spanish n) sounds like French gn, and ski just like "ski". - Hmoozhinski (for instance), isn't it simple? It is. It needs probably some practice... And my name Jerzy (=George) sounds Yezhi."

Profiles

KENNETH M. GUICHARD

"Single. Born in London 1914. Educated in Australia and later in England. World War II interrupted education which was never completed at London University. During war became a Locust Control Liaison Officer attached to the North African Economic Board in Algiers and subsequently tangled with locusts and Arabs in about equal proportions for many years. I am a general naturalist and at various times have collected most orders of insects as well as birds, reptiles and plants for the British Museum of Natural History mostly in Africa and Arabia, but have also pottered about Europe and once to Sabah and Malaya. Have for some years now settled down permanently with my ultimate love - the Hymenoptera Aculeata and they should see me off, although I always flirt with Lepidoptera and have had serious affairs with Orthoptera and Neuroptera. I am essentially an amateur and dilettante collector and occasionally publish small papers for amateurs and even unfashionable lists."

"My other great interest is the graphic arts - author of "British Etchers 1850-1940", much too expensive at £60 but the feeble royalties help towards buying entomological pins and repairing torn nets. I am too shy to send a photo as they usually give an impression of mental instability and criminal tendencies."

JAMES E. GILLASPY

"Born 15 October 1917, Bartlett, Texas and grew up 18 miles south, at Taylor. An ad of James Sinclair, San Diego, CA, offering to buy Lepidoptera caught my eye in 1926 and my father answered it for me, then bought the instruction book for which the ad was a come-on. Interest faded until 1932, when, encountering the book again, I was inspired to capture a few butterflies. Decided insect faunistics was my thing, but not butterflies. Casting about, I caught a few wasps helping bees clean up honey comb for a commercial beekeeper across the street, and aculeate wasps have been the main insect for me ever since. My father contributed still further by making very adequate pinning boxes out of apple crates. Then, after I had some knowledge of the humdrum fauna of the tight black clay around Taylor, he introduced me to the "sand hills" country of his own youth and I discovered aculeate splendor. Favorites became pompilids, bembicins, mutillids."

"I entered Texas A&M College (University) at College Station in 1936 to study entomology, served as student curator, then made two graduate quarters at Ohio State University in 1941, researching pompilids and collecting for the Ohio Biological Survey under Dr. Herbert Osborn. Mosquitoes prevailed during the War years, but with aid of GI Bill funding I undertook bembicin studies at the University of California at Berkeley in 1948. My 1954 Ph.D dissertation concerned the taxonomy and biology of the genus Steniolia. This was polished during a 1961-63 interlude as research associate at the Museum of Comparative Zoology and published in the Transactions of the American Entomological Society in 1964. My other publications deal mostly with bembicins, Polistes, and a new mutillid."

"With retirement one day from teaching at Texas A&I University in Kingsville I hope to find a niche from which I can travel, collect and do taxonomy, as well as experiment with Polistes. Geographically my present location isn't bad, although

not in prime bembicin country. Development of a general insect collection (386 drawers) for the Biology Department has turned up quite a few new and interesting records."

"Other than teaching general biology and entomology, collecting and curating, my effort at present goes into collaboration with R. M. Bohart in revision of the stictiellin bembicins."

ALEXANDR (ALEC) PAVLOVICH RASNITSYN

"I was born in Moscow on September 24, 1936, and started primary school in 1944. I have spent much time observing animals (particularly insects) since I was 8-9 years old. In 1949 I became a member of the Young Biologist's Circle at the Moscow Zoo (an organisation for children). The Circle had an old tradition (it was organized in 1924), and in my time the children's group was relatively independent with respect to the adults, a fact rather unusual at that period. The general atmosphere of the Circle, and also my parents' influence, taught me to be independent in my opinions and scientific hypotheses, and not to be afraid of differing with scientific authorities. I really owe a lot to this children's group: an active interest in living nature, a love for field work and teamwork, and many other useful habits. Independence of scientific thinking was probably the most important of them. My regular biological education started at Moscow University in 1955, but even before that date I frequented lectures and practical courses for teenagers at the chair of Entomology, given first by Anatoly V. Alexeev, and then George A. Victorov."

"The Zoo Circle organized regular field trips on Sundays. We mainly watched birds in fall and winter, and followed tracks on snow, but this kind of activity did not satisfy me fully. I was looking for the possibility of working with insects, and I found it by discovering, in 1952, associations of ichneumonid females which were overwintering under bark of dead trees and trunks and in moldering wood. I observed and collected overwintering Ichneumonidae for about 10 years, and the results were published in my first serious scientific papers, which appeared in Entomologicheskoye Obozrenie in 1959 and 1964."

"My education at the Faculty of Biology at Moscow University was fruitful and useful, but some blank spaces were left, particularly in general and evolutionary biology. (At that period T. D. Lysenko was still in power.) Such blank spaces had to be filled by reading books and by endless discussions with friends and colleagues. Contacts with the old generation geneticists and evolutionists were especially useful, and I particularly enjoyed meetings at the home of A. A. Lapunov, a renowned mathematician and a self-taught biologist. I was much interested in basic problems of biology till the mid 1970's, and after that date I concentrated on the phylogeny and paleontology of insects because of my increasing involvement in the team research done at the Arthropod Laboratory of the Paleontological Institute."

"During the University years, I also was under the influence of a Moscow botanist, Stanislav M. Razumovskiy, author of an original and creative theory which comprised phytocenology, phytogeography and florogenetics (only separate fragments of the theory have been published so far.) We became acquainted during a trip to the Northern Ural Mts. in 1958. His unusual views and his original analysis of apparently obvious facts, his opposition to follow the apparent, allowed Razumovskiy to catch (and to show to me) a deep order in the seemingly chaotical distribution of plant species and their associations. Unexpectedly for

me, I discovered that insects also obey the same principles of spatial distribution. This finding largely determined my views on the living world and studying its laws. Our cooperation continues to the present."

"I graduated from the Moscow University in 1960 and obtained a position at the Paleontological Institute of the Academy of Sciences of the USSR, namely in the Laboratory of Arthropods, headed B. B. Rohdendorf. Boris Borisovich was a rare type of a chief (as it seems to me) who did not restrict the liberty of research of his subordinates, almost did not guide them, but never refused to help them and thus he created a team of talented researchers and a creative atmosphere. In the Paleontological Institute I continued working on Hymenoptera, first on Symptya, but on Apocrita since 1969. I obtained the Candidate of Biological Sciences degree in 1967, a Russian equivalent of western doctorate. A book of mine, Origin and Evolution of Lower Hymenoptera (Nauka, Moscow) appeared in 1969, and another one, Hymenoptera Apocrita of Mesozoic (Nauka, Moscow) in 1975. The search for Hymenoptera ancestors caused me to undertake a critical revision of the classification system of all insects. The results were presented in a book, Origin and Evolution of Hymenoptera, which appeared in 1980. This book also represents the basis for my Doctor of Biological Science degree, a superior scientific degree which corresponds to Habilitate Doctor of some other countries, but which has no counterpart in the USA and Great Britain. Another book which deserves attention is the Historical Development of the Class Insecta which also appeared in 1980. My own system of Insects has been described in the book, and several orders were discussed by me."

"Besides paleoentomology, I also work on Ichneumonidae and wrote the chapter on Ichneumoninae for the Keys to the Insects of European USSR, which is in print now. In this connection I revised the types of Ichneumoninae described by Gravenhorst and Berthoumieu during my visit to Poland in 1978 and 1979."

"As a paleontologist I have been in the field frequently. I visited Middle Asia (=Transcaspia), Transbaicalia and Far East, and Taimyr Peninsula (which is the world's northernmost nonisland territory). The trips to Taimyr, organized by V. V. Zherikhin of our Laboratory, yielded several hundred kilograms of Cretaceous amber with entomological inclusions. These fossils supplied abundant material for the Middle Cretaceous Biocenotic Revolution concept, developed mainly by V. V. Zherikhin. This concept is also discussed in the Historical Development of the Class Insecta."

"Professor B. B. Rohdendorf died in 1977, and in 1979 I was appointed to be his successor as head of the Laboratory of Arthropods."

ERIC GRISSELL

"I was born 10 August 1944, much against my will and intuition and to the amazement of several doctors. I could neither read nor write, a condition which has not improved with advancing senility. My first 3 years were spent in Washington, D.C., which explains my fear of politicians. Next my mother moved to San Francisco, my father having been severely killed in the North African campaigns. My next 6 years were spent in this very beautiful but foggy place. In the backyard of our apartment I became interested in nature, especially the genus Nasturtium which I grew from seed. One day, after nearly 6 years, the fog lifted and we realized we lived in a city. We decided to move to the sunny side of the bay. After suffering severe sunburn, I discovered there was more to life than nasturtiums and I began the second stage of my life...growing plants other than nasturtiums and collecting various things, especially insects. After this, things

are not too clear. I recall going to the University of California, Davis where I earned my degrees under R. M. Bohart. Doc prompted my interest in aculeate wasps, at first taking me to the deserts (I always managed to find my way back) and then encouraging me to collect all of the active Vespula nests I could. After leaving the hospital I started work on chalcids which stimulated me to spend more time watching aculeate nesting behavior. My first job was 5 years with the Florida Department of Agriculture as state hymenopterist. When I recovered, I began working in 1978 alongside A. S. Menke at the Systematic Entomology Laboratory as a chalcidologist. He is a nice fellow alright, but he does not lose at darts gracefully [I never lose! - ASM]. Lately I have resumed my interest in nasturtiums and would like to become a professional gardener."

ROBERT S. JACOBSON

"I was born in May 1952 in Newark, N.J. My interests in natural history developed while I was a small child, and by the age of 10 I had a decided preference for Hymenoptera, especially social wasps and bees. I had a few opportunities in school to bring in wasp nests and tell about wasp biology. While still in elementary school I kept a few colonies of honey bees."

"Although my school years were spent in the south part of New Jersey, my interests in social insects declined because I had to move my bee hives to a farm 40 miles away, thus making it much less convenient to work with them. I devoted much time to other interests, including music."

"During my undergraduate career at Cornell University my interests were rekindled and I majored in entomology. My attention focused on Vespula and I studied the displacement of native species by V. germanica under the direction of George C. Eickworth."

"As a graduate student at the University of Georgia, I revised the Vespula vulgaris group in eastern North America, under the direction of Dr. Robert W. Matthews. This work included a description of a new species, V. flavopilosa."

"My interests are very strongly centered on biogeography and variation of Vespula, and so I deal with all species groups of Vespula and Dolichovespula on a world basis. Through the generous aid of many others, I have developed contacts with many hymenopterists in Europe and Asia, and these have been willing to exchange specimens, thus enabling me to build a comprehensive reference collection."

"I recently began working at Vespa Laboratories, Inc. in Spring Mills, PA. I believe that my training can be used in a growing business that precisely depends upon my areas of interest, and because of the large number of insects received I will have a dependable data source to further developing research areas, mainly pursued independently of my business responsibilities."

RODERICK PETER MACFARLANE

"Born 25 Jan. 1945. Prior to becoming a serious entomology student at 20, I received two very painful stings from Priocnemis (Pompilidae) as I carefully rescued them from a river on separate occasions, which was my first experience with aculeate wasps. Attended Lincoln College, New Zealand and completed a masterate of agriculture in 1970 on the insect fauna of lucerne in South Island. Appointed to DSIR, Lincoln in 1969 for pollination studies on lucerne. Since that time most of my efforts have been on studies on the biology, natural enemies and development of field hives for bumble bees. These studies were made in Ontario (1970-1973) for a Ph.D. (University of Guelph) and again in New Zealand. These

field hives were also used by the German wasp so incidental observations on incipient colonies have been made. This provides prospects for introducing natural enemies onto small colonies, an interest shared with my colleague Dr. B. J. Donovan. Also I have an academic interest in the zoogeography of social insect groups, and possible useful predatory wasps for use against New Zealand pests."

PAUL WESTRICH

"I was born July 26, 1947, and grew up in Landstuhl, a small town in the Palatinate Forest in SW-Germany. I attended the Grammar School, studied zoology, botany and palaeontology at the University of Tübingen and finished in 1976 with the Diploma in Biology. My interests in aculeate Hymenoptera began during an entomological collection trip to the Provence/France together with Prof. G. Preuss. Since then I work on aculeate Hymenoptera. My principle interests lie with the biology and ecology of trapnesting wasps and bees, the local fauna of SW-Germany and the taxonomy of Pompilidae. From 1976 to 1979 I wrote my thesis "Faunistik und Ökologie der Hymenoptera Aculeata des Tübinger Gebiets, vor allem des Spitzbergs, unter besonderer Berücksichtigung der in Holz und Pflanzenstängeln nistenden Arten" under the guidance of Prof. K. Schmidt. I finished in Nov. 1979 with the doctors degree. Currently I am working on the insect fauna of different nature preservation areas. Also I am working on the biology and ecology of parasitic hymenoptera, (Ichneumonidae, Chrysididae, Sapygidae) living with trapnesting wasps and bees."

LARRY D. FRENCH

"I was born in Seattle, Washington December 27, 1953. At the age of 10 I moved with my family to the San Francisco area where I continue to reside. My interest in entomology began while working for the Diablo Valley College Museum in Pleasant Hill, California. I worked there through high school and my first two years of college. Transferring from Diablo Valley College to the University of California at Davis in my junior year, I completed my B.S. Degree. I am continuing at Davis as a graduate student of Dr. R. M. Bohart in systematic entomology."

MARIA NEI DA SILVA

"I was born on 15 August 1950, in Campina Verde (Minas Gerais State, Brasil); but I grew up in Juiz de Fora, where I graduated in Biology, 1975. When a graduate student I worked on Siphonaptera taxonomy. Now I am a MS student in Zoology at the Rio Claro campus of the "Julio Mesquita Filho" State University. My dissertation research, under Dr. Vilma Maule Rodrigues, is on social biology of "Mischocyttarus atramentarius (Vespidae: Polistinae). I am also a teacher at the Juiz de Fora Federal University, in Juiz de Fora."

WOLFGANG SCHLAEFLE

"I was born in Zurich, Switzerland in 1937 of a Swiss father and a German mother. My father's interests in general natural history and in insect morphology especially brought me in contact with entomology. My dream profession as a child was to be an animal catcher for zoological gardens. Due to the impossibility to realize this dream I began to catch insects and hold them alive in my own mini zoological garden."

"At the age of about 15 I came in contact with Mr. Walter Linsenmaier of Ebikon, Switzerland (Chrysididae) who became my mentor. He guided me in many things such as biology, collecting techniques, systematics, especially with regard to Hymenoptera. Hymenoptera became my favorite group in collecting and studying insects. I began to travel and collect preferably in the southern part of Europe. Meanwhile in 1959 my professional education as a chemical engineer was finished in Switzerland and I began to work for Geigy AG in Basle in the Agricultural Division (formulating pesticides). In 1967 I left Switzerland with my family to work for a Venezuelan company in Venezuela (La Victoria, Aragua) as plant manager of a formulation plant. During 12 years I traveled and collected Hymenoptera all over Venezuela. It was a very happy time to learn and study the fantastic world of the tropics. Since 1980 I have been in Europe where I am working now again in Ciba-Geigy, Basle."

* MAURIUS S. WASBAUER

"I was born September 29, 1928 at Rockford, Illinois. When I was nine months old, my father returned to France and my mother and I moved to Berkeley, California. In my fifth year, some little friends took me fishing and I developed an enthusiasm for the sport which has never diminished. This interest in fishing gradually expanded to include the fish themselves, their habitats, food preferences, seasonal activities and other factors. By the time I entered Berkeley High School, my interests lay primarily in the field of biology. After graduation from high school, I entered San Francisco State College in the fall of 1946. Two years later I was employed in the biology department as a part-time technician and as part of my duties, was asked to work at a summer field school on an undeveloped site at Bixby Canyon on the Monterey County coast. Dr. J. W. Tilden had come up from San Jose State College to teach in the field school. In addition to being the first entomologist I had met, he had a broad knowledge of the natural history of the area and an ability to impart enthusiasm to his students. He set me to work watching a nesting aggregation of Sphex ichneumoneus (Linn.) and by the end of the summer, I had decided to enter the field of entomology and devote myself to a study of wasps. Having made that decision, I took Tilden's advice and I transferred to the University of California at Berkeley in 1949. My B.S. degree in entomology was awarded in 1950. I entered the army in 1959 for a two year tour of duty and was stationed at the Army Medical Field School, Fort Sam Houston, Texas for 18 months as an instructor in Preventive Medicine. While in the San Antonio area, my spare time was spent studying and collecting aculeate wasps, my collections subsequently donated to the University of California. After being discharged from the army, I returned to Berkeley and entered a graduate program at the university. I was fortunate to have as major professors, E. G. Linsley and P. D. Hurd, Jr. who encouraged my work on the aculeates. I completed a dissertation on the taxonomy of nocturnal tiphiid wasps of the genus Brachycistis and received my Ph.D. degree in 1961. I have been

employed as a systematic entomologist by the California Department of Food and Agriculture since 1959. My research interests are the biosystematics of the Tiphiidae and Pompilidae. Currently, I am working on the pompilid spider wasps of California with Lynn S. Kimsey. I served as secretary of the Pacific Coast Entomological Society for six years and was president of the society for 1980. Several years ago, I was elected a fellow of the California Academy of Sciences and am a research associate of the University of California, Berkeley. I have long been interested in the aculeate fauna of tropical ecosystems and have made the following expeditions:

- 1967 Mexico: Sinaloa
- 1968 Mexico: Taumalipas, Veracruz
- 1970 Mexico: Sinaloa, Jalisco, Colima
- 1976 Costa Rica: Guanacaste, Puntarenas, Alajuela
- 1979 Mexico: Baja California, mainly southern portion
- 1979 Mexico: Baja California Sur, Sierra de la Laguna

"Collections resulting from these trips are on deposit at the University of California, Berkeley, University of California, Davis and the California State Collection of Arthropods, Sacramento."

BARRY J. DONOVAN

"Born 18 February 1941 at Taumarunui, a small town near the centre of North Island, New Zealand. The immigrant Vespula germanica caused great excitement when it first reached Taumarunui in about 1950 (there being no other social wasps in the area before then). The discovery of a nest near my school stimulated an early interest in wasps. In 1953 I began keeping honey bees."

"German wasps proved to be a scourge of honey bees in late summer, autumn and winter, and commercial beekeepers sometimes had to move whole apiaries from badly infested areas to prevent hive destruction. At Auckland University I studied the biology of a native colletid bee for my Masters degree (gained in 1967). From late 1966 to late 1969 I studied for a Ph.D. (gained in 1969) in entomology at U.C. Davis, and for my thesis I revised the andrenid subgenus Cnemidandrena. Since my appointment to Lincoln, New Zealand, as a scientist in Entomology Division, Department of Scientific and Industrial Research, my main research has concentrated upon introducing alkali and lucern leafcutting bees to improve lucerne seed yields. I am also revising the 40-odd native bees of New Zealand. German wasps have been attacking leafcutting bee nests in the last several years, hence my renewed interest in German wasps."

JUSTIN SCHMIDT

"During my impressionable years in Central Pennsylvania I was caught up in chemistry and bugs. The former because my initial career: the latter a hobby (Odonta, Sphingidae, and Hymenoptera). Somewhere along the way toward my Masters in chemistry I got stung on the nose (or somewhere equally effective in gaining my attention) -- an occurrence which rekindled my interest in entomology. Thus began the marriage of chemistry and entomology in my career. My Ph.D. research at Georgia centered on the chemical ecology, toxinology, behavior, and biology of almost anything that stung, bit, or smelled. This generally included all aculeates, but I was particularly interested in ants, vespines, and mutillids. Currently I am investigating relationships involving hymenopterous perhomones and venoms and their roles in the lives of the hymenopterans. In addition, I am most

interested in human allergy to hymenopterous venoms and approach the problem from an entomological point of view using a combination of entomological and physiological/medical methods. Cold, dark Georgia winter evenings are wiled away studying mutillid biology and taxonomy."

M. (Mick) C. DAY
(autobiography - potted)

"Born 1.vii.1942, in Surrey, England (whilst Laslo Móczár was studying the nesting behavior of Pompilus plumbeus F.; Móczár, 1943, Zool. Anz. 143: 141-152."

"Educated Reigate Grammar School, Surrey, 1953-1961. Collected Lepidoptera, stamps, etc., Boy Scout usw."

"Worked 9 months 1961-62, Legal and General Insurance Socy. Ltd. Developed interest in outdoors, particularly Mountaineering and Caving. Acquired first car. Returned to student existence; 1962-1965, 2nd Class honours in Zoology at Coleg y Brifysgol Caerdydd, Brifysgol Cymru (University College, Cardiff, University of Wales), specialising in Entomology under M. F. Claridge. Married. 1965-68, post-graduate study under M.F.C. - parasitoid complex associated with a cecidomyiid galling Phragmites stems."

"1969 BM(NH) Entom. Dept., Hymenoptera sections, on solitary aculeates. Two daughters, born 1970, 1973. Live Harrow, Middlesex (N.W. London). Still go caving occasionally. Other 'hobbies': theoretical do-it-yourself ('this is how you should have done it), car (which facilitates caving, visiting colleagues in Europe, etc.), T.V. (soporific), sweet coffee (energises), cigars (stabilisers). Collected for five months (with four colleagues) in S. Africa, Namibia, Angola, Botswana, Rhodesia, during 1972. Lived and travelled in ex. military truck converted to our needs. Other desultory collecting in U.K. and Europe, last year in Greece."

"Poor correspondent; keen to obtain material and reprints for BM(NH) collection. We do try to keep our collection up-to-date; it is one of the few truly systematic world collections; our visitors as well as ourselves do benefit from seeing other people's faunas, paratypes, papers, etc. (end of plug)."

STELLAN ERLANDSSON

"I was born 31 August 1902. In the year 1924 I began my academical studies at the University of Upsala, with the result that in the spring of 1936 I graduated as a Ph.D. The title of my dissertation was "Dendro-Chronological Studies" which was an examination of the climatical influence of the development of the annual rings of Scottish pine (Pinus silvestris) in the northern part of Sweden and Finland. My studies on the aculeate hymenoptera began at 1946 and are still continuing. I have been retired since 1969 and now work at the Swedish Museum of Natural History."

MRS. BINA PANI DAS

"I was born in East Pakistan (=Bangla-Desh) in Jan. 1948 and moved to Calcutta, India in March 1948. My early education in science was initiated in Calcutta. I got married in Feb. 1965 and at that time I was a student of class XI. Next year I passed the Higher Secondary Examination from West Bengal Board of Secondary Education securing distinctions in Chemistry and Biology. Then I came to New Delhi and continued my studies as an under Graduate Honors student in the

Dept. of Zoology, University of Delhi. After graduation I took admission in M.Sc. Zoology (specialization in Entomology) in the same Dept. as a post graduate student and passed M.Sc. in the top grade."

"I was selected as a U.G.C. Research Fellow in 1975 and have been conducting research on "Taxonomic studies on Indian Vespidae." I am also preparing a Catalogue of the family Vespidae and Stenogastridae of the Indian Sub-Region. I worked as a lecturer of Zoology for a short period in a degree college in New Delhi."

NICKOLAY V. KURZENKO

"Was born May 21, 1950 in Alma-Ata (Kazakhstan). In 1967 I entered the Kazakh State University. I began studying eumenid wasps from the second year of the studies. After graduating from the University in 1972 I started working at the Institute of Zoology of the Kazakh Academy of Sciences, where I studied the problems of biological methods of struggle against bloodsucking insects."

"In 1974 I moved to Vladivostok, where I entered the postgraduate course at the Institute of Biology and Pedology of the Far-Eastern Scientific Centre of the USSR. For 3 years I worked on my thesis of the Eumenidae of the USSR which I defended in December 1978 at the Leningrad State University.

"At present I work as a junior scientist of the Laboratory of Systematics and Zoogeography of Terrestrial Arthropods of the Institute of Biology and Pedology. My main scientific interest is the taxonomy of the Eumenidae, Masaridae and Vespidae. In the future I plan to work on the Chrysididae."

ROGER D. AKRE

"Professor and Entomologist, Department of Entomology, Washington State University, Pullman, Wash. 99164. B.S. Univ. Minn., 1960, M.S. (1962) and Ph.D. (1964), Entomology, Kansas State University. I teach general entomology, insect morphology, insect behavior, and scientific photography. R.M. Wade award for excellence in teaching, 1969. From 1963-1969 I worked in Central America (Panama, Costa Rica) on army ants and their guests. From 1970 to present I have been working on ant guests and biology of yellowjackets, particularly of the Pacific Northwest. Editor, Melanderia, an irregular publication of the Washington State Ent. Soc. Hobbies: hunting, fishing, leatherwork."

DENIS J. BROTHERS

"I was born in Kroonstad, Orange Free State, South Africa, on 17th October, 1944. My father had been born in England but had lived in Kroonstad from about the age of four and my mother had been born in Basutoland (now Lesotho). After my primary schooling at the local English Primary School I went to boarding school at Kearsney College, Botha's Hill, Natal, in 1958. After missing an entire year of school, 1961, because of rheumatic fever, I completed my high school career as dux of the college."

"In 1964 I went to Rhodes University in Grahamstown, Cape Province, where I obtained my B.Sc. with major subjects of Entomology and Botany in 1967 and then completed my postgraduate year for the B.Sc. (Hons) in Entomology. The reason for my interest in Entomology is rather obscure, but it probably has some connection

with the fact that my late uncle, Mr. C. F. Jacot-Guillarmod, who was then entomologist at the Albany Museum in Grahamstown, had been working on various groups of wasps and thrips for many years. Our family also had long been interested in all things natural and my father had taken up wildlife cinematography while I was still at primary school. While at Grahamstown, I spent many happy and very valuable hours under the influence of my uncle, learning much about insects as we went out on Sundays to do collecting in the vicinity of the town."

"At the end of 1967 Dr. Jerome C. Rozen, Jr., the well-known apidologist from the American Museum of Natural History, and also Dr. Charles D. Michener, the apidologist par excellence from the University of Kansas, both visited South Africa on collecting expeditions. I was employed by Jerry Rozen as a field assistant for a month and then was employed by Mich in a similar capacity for another month. Needless to say, these experiences were very valuable for someone just starting out. I had already become interested in the Mutillidae in particular because my uncle had an excellent collection of mutillids that he had amassed, particularly during his extended stay of 18 years in Lesotho. Both he and my aunt, a very inspiring botanist, were keen that I continue my studies overseas, and so I took the opportunity of enquiring about the possibility from Mich. I had apparently acquitted myself satisfactorily as a field assistant, because he arranged a research assistantship at the University of Kansas for me, and I thus started at KU in the fall of 1968."

"While at the University of Kansas in Lawrence I was engaged in helping with Mich's research on primitively social bees and was fortunate enough to be able to publish a number of papers in co-authorship on this subject. My thesis research was initially on the higher classification of the Mutillidae but subsequently became extended as I tried to sort out the relationships of the various groups that had been included in this family. During this time I was also very fortunate in that Mich was appointed to head a commission of investigation into the problem of the African bee in Brazil just at the time that he was to have gone to Argentina to investigate pollinators of creosote bush as part of the International Biological Program. When the job of going to Argentina in his place was offered, I did not hesitate. I thus spent a most enjoyable and profitable three months collecting in Argentina and took the advantage of circumstances to visit South Africa briefly and the return to the United States via Europe where I visited various institutions and examined material for my thesis. I eventually obtained the Ph.D. in 1974 and my thesis was published in 1975."

"At the beginning of 1974 I was appointed as Lecturer in the Department of Entomology at the University of Natal, Pietermaritzburg, South Africa. In 1976 I was appointed Senior Lecturer and from the start of 1980 I have been promoted to Associated Professor. My interests remain the systematics of various aculeate groups, especially Mutillidae, and also the principles of systematics in general. Apart from courses in general entomology and insect classification I give an honours level course in principles of systematics and have recently initiated an interdepartmental programme leading to a Master's degree in biological systematics."

VLADIMIR LONGINOVICH KAZENAS

"I was born on April 14, 1941 in Alma Ata in a scientist family. I went to school in 1948. My childhood was spent among gardens and orchards at the foothills of Tien-Shan and this is where I developed my love of nature. I enjoyed

drawing and photographing beautiful places, flowers, and especially insects. Soon I began to dream of becoming a biologist and my parents supported the idea. When I finished high school in 1958, my dream became reality: I entered the Faculty of Biology of the Kazakh State University in Alma Ata. My first mentor in entomology was Dr. N. G. Scopin, a specialist in Tenebrionidae. In the summer of 1961 I took part in the Mangyshlak Anti-Locust Expedition organized by the Kazakh Plant Protection Institute under the leadership of Dr. M. P. Malkovsky. The Mangyshlak Peninsula is on the Caspian Sea, an inhospitable desert area. During the expedition I studied locust enemies and digger wasps, and the material collected was later studied by me at the University."

"In the summer of 1962 I participated in another entomological expedition to Mangyshlak. This one was organized by the Institute of Zoology of the Kazakh Academy of Sciences, and headed by Professor P. I. Marikovsky. The material collected and studied on this expedition formed the basis of my diploma thesis 'Digger wasps of the genus Ammophila in south-eastern Kazakhstan.' I graduated from the University in 1963 as a biologist-zoologist. From 1963 to 1965 I fulfilled my military obligation in the Soviet Army. Then I returned to my work as an assistant in the Kazakh State University."

"In November 1966 I started my Post-Graduate course at the Zoological Institute of the Kazakh Academy of Science. My research project was the fauna and ethology of the digger wasps in south-eastern Kazakhstan. I finished the research in September 1969, before it was due, and was then appointed to a Junior Scientist position in the Laboratory of Entomology at the Zoological Institute, Kazakh Academy of Science. In November 1972 I became a Senior Scientist, a position I presently hold."

"I continue to study the ethology of digger wasps in Kazakhstan and Middle Asia [Turkmen, Uzbek, Tadzhik and Kirghiz S.S.R)]. From 1972 to 1975 I participated in studies using insects in weed control. I have published about 40 papers including a monograph. I contributed to the Keys of Digger Wasps of the Soviet Far East [see Sphecos 2:26] and am currently working on a revision of Cerceris in Kazakhstan and Middle Asia."

SEVERIANO FERNANDEZ GAYUBO

"Nacido en Aranda de Duero, provincia de Burgos (España), el 27 de Octubre de 1952. Obtención del título de grado medio en 1970. Monitor y Director técnico de los campos Internacionales de Trabajo de Zoología de Béjar (Salamanca), para estudiantes universitarios desde 1972 a 1975. Licenciado en Biología (rama animal) en 1975. Obtención del título de Grado en 1975 con la máxima calificación. Doctor en Biología (Zoología, Entomología) en 1979 con la máxima calificación. Becario investigador (Becas de Plan de formación de Personal Investigador de Ministerio de Educación y Ciencia de España) desde 1977. Socio fundador de la Asociación Española de Entomología. Profesor del Departamento de Zoología de la Universidad de Salamanca desde 1975."

AKIRA ENDO

"I was born Oct. 10, 1947 in Tokyo, northern Hyogo, Japan. I graduated from Tokyo High School in March 1966. In April, I entered the Faculty of Science, Nagoya University. I was in the Department of Biology in April 1969 where I learned mainly developmental biology. I graduated from Nagoya University in 1971,

then, I turned my course to animal ecology. I entered the graduate course of the Faculty of Science, Kyoto University in April 1971. Because I was much interested in their various nesting modes, including their prey selection, I chose wasps for my research. These insects seemed to be suitable to approach the general problems of why and how the life patterns of insects diversify in the historical and ecological complexity of the animal community. I began to study the ecology of spider wasps, focusing on the interrelationships of insects."

HAL C. REED

"I was born in Fresno, California and have lived in San Francisco, Salt Lake City, Utah and Dallas, Texas. After finishing high school in Dallas, I attended Oral Roberts University in Tulsa, Oklahoma. I graduated in 1975 with a B.S. in Biology and a minor in Chemistry. I first became interested in insects and especially wasps while taking an Introductory Entomology course under Dr. John Nelson at ORU. After graduation I decided to work on a M.S. in Entomology at Texas A&M University. My research involved the nesting ecology of Polistes in urban and natural areas, and the life history of Elasmus polistis, a eulophid parasite of paper wasps. While at TAMU, I had the opportunity to spend 3 months in Costa Rica working with my major professor, Dr. Gordon W. Frankie, on the pollination biology of tropical deciduous trees in the lowland dry forest. Currently, I am working toward a Ph.D. under the direction of Dr. Roger D. Akre at Washington State University. My thesis research concerns biology and behavior of the forest-dwelling yellowjacket, Vespula acadica and its obligate social parasite, V. austriaca."

"My main 'bug' interests are parasitoids and social insects, especially social vespids. Other interests include basketball, football and tennis. My wife Nancy, also an ORU graduate and basketball player, is presently a computer programmer at WSU. This coming summer we hope to get out more and enjoy the beauty of Pacific Northwest."

TERRY D. GALLOWAY

"My interests in entomology arose at the age of 7, from a purely monetary basis. Students entering grade 10 in our district high school in Leamington, Ontario required an insect collection for their science course. I capitalized on the squeamish nature of the students towards insects and began selling entire collections and individual specimens on demand. This introduction to insects not only provided me with considerable wealth for a small boy but kindled an interest that has never died."

"At the University of Guelph, Dr. D. H. Pengelly provided me with boundless entomological stimulation and introduced me to the aculeate Hymenoptera. It was his input that has led to many of my present interests."

"I spent two summers during my undergraduate program at the Agriculture Canada Research Station in Harrow, Ontario under the supervision of Dr. W. M. Elliott, working primarily on aphids and a variety of crop pests. However, Bill always took the time to provide additional information to a budding entomologist on the different insects collected from the suction traps, light traps or sweep nets."

"I worked under Dr. Russel Wright on livestock insect pests at the University of Guelph before leading for Winnipeg in pursuit of my Ph.D. under Dr. R. A. Brust. My graduate research focused on the application of mermithid nematodes for control of biting flies as well as mermithid taxonomy."

"In 1977, I completed my Ph.D. and accepted a position at the University of Manitoba as a livestock entomologist and museum curator. My research has included ecology of cattle dung inhabitants, calliphorid seasonal dynamics, control of livestock insect pests and the taxonomy and, to a lesser extent, biology of selected Manitoba aculeate families."

"Since 1973, I have also been actively involved in the promotion of entomology to the public, especially to young people. This has taken me into numerous Beaver ponds (pre-Cub Scout organizations), Cub Scout Troops, classrooms and school science fairs. It has also included the operation of entomological displays in shopping malls around Winnipeg."

LLOYD EIGHME

"I was born in Wenatchee, Washington, January 15, 1927. I grew up in a rural community in the Puget Sound country and then moved to Northern California for my undergraduate education in a small school, Pacific Union College, in the hills above the beautiful Napa Valley. My interest in insects began early with small collections and biological observations which I used at every opportunity for school projects and papers from as early as the fourth grade. My first real entomology education came with the purchase of a 1938 edition of Comstock and Herrick - A Manual for the Study of Insects, which I still own and cherish. My childhood hero was Edwin Way Teale and I relived every moment of his books such as Grassroot Jungles. Later I discovered Fabre and William Beebe. I had very little formal education in entomology because all of the schools I attended through the M.A. degree in biology offered nothing in that area. After completing the M.A. degree, I began a career in teaching, first at Junior High level in 1953. I encouraged my students to study insects and we learned together. In 1962, I decided to do something to satisfy my desire for more knowledge about insects and entered a doctoral program in entomology at Oregon State University, where I spent three of the most interesting years of my life studying under the guidance of professional entomologists. After completing the Ph.D. program at O.S.U., I returned in 1965 to my undergraduate alma mater, Pacific Union College, in Napa County, California, where I proceeded as a Professor of Biology to develop an interest in entomological science in a small school. The insect collection has grown from a few dozen specimens to over 40,000, mostly collected by students. Summer field methods classes enabled me to combine my interests in insects and backpacking and I took small groups of students into the Salmon-Trinity Mts. and other areas of the North-Coast Mountains of California. Sphecid wasps have always been my major interest, so we naturally collected with an emphasis in that direction. I described two new species of Pulverro from the North-Coast Ranges and am currently trying to untangle the confused taxonomy of Diodontus so we can determine which of our specimens represent new species in that group. Teaching in a small school has put limits on my time for research, but the close relationship with small groups of students has been very rewarding."

"In retrospect, I owe much to the writers of insect natural history for creating an enduring interest in the insect world during my younger years. I have attempted to repay my debt in a humble way by writing a small book of insect stories for young people entitled 'Insects You Have Seen,' which will come off the press in January 1980."

DANIEL B. JAYASINGH

"I was born in Madras, South India on 17th June, 1939 and obtained my first and second degrees from the University of Madras. I taught biology for four years and left India in 1966 for Ethiopia. While in Ethiopia, I started collecting solitary aculeates and developed a keen interest in their biology and behaviour. I left Ethiopia in 1969 for Jamaica where I obtained a Ph.D degree in Entomology.

"Greatly influenced by the work of Dr. K. V. Krombein and Professor O. W. Richards, I began to develop special interest in the study of insects. Trap-testing techniques were very interesting, fascinating and rewarding. For my Ph.D. thesis I used more than 15,000 traps and collected data for 12 species of Solitary Aculeates."

"I have undergone special advanced training at London on storage pests and pest management. Recently I have undergone training in Radiation Biology at the Institute for Atomic Sciences in Agriculture, Wageningen, Netherlands.

"Although I devote most of my time on agricultural pests, I still spend some time on Solitary Aculeates."

PETER MIOTK

"Born Aug. 19, 1946, in Danzig. Since 1957 I have been living in the Federal Republic of Germany. Attended grammar school (1959-1967), studied zoology, geobotany, limnology, and pedology at the University of Freiburg (Germany), and finished with a diploma in biology (1973) and the doctor's degree in 1978. Since 1978 I have been officially engaged in conservation of nature in Lower Saxony (Niedersachsen). Furthermore I'm teaching zooecology at the University of Hanover. My special interests are especially the biology and ecology of aculeate Hymenoptera."

ANDRE L. STEINER

"Born in Haguenau, Bas-Rhin, France, June 21, 1928, most of my High School and Elementary education was done at the "Lycee de Garcons" in this town, except during the war years (1939-45). I became interested in 'what animals do' early in life and as a child started catching and observing minnows, various fish, amphibians, spiders, caterpillars, mole crickets, grasshoppers, and later birds, also encouraged by my mother and relatives, who either had a keen interest in Natural Sciences or liked the outdoors. My Natural Sciences High School teacher, L. Hertzog, also a passionate Naturalist and Hymenopterologist, opened my eyes to many exciting facets and problems in these fields. He also showed me my first solitary wasps in the sandy pine forests, sand pits of Northern Alsace (he also worked in the Camargue)...and his wasp insect collection. Interest in insect behavior, biology, particularly wasps, also received a powerful impetus from reading Fabre's 'Souvenirs Entomologiques' and other authors, including Fabre's Critics."

"After I received my 'Baccalaureat' (1st part: Modern, in 1948; 2nd part: Experimental Sciences, in 1949) I registered at the University of Strasbourg, France, and majored in Natural Sciences, with a 'Licence es Sciences' (B.Sc.?) in 1952. My wish to undertake zoological research, particularly behavior in field conditions, preferably overseas, received warm encouragements and help from my zoologically-oriented Professors, particularly J. Vivien, who worked on fish endocrinology, and the Embryologist, Teratologist E. Wolff. Even though the

latter had been kind enough to consider the possibility of my undertaking research on his own team, he urged me, with J. Vivien, to seek advice from Prof. P.-P. Grasse, Paris, who had an extensive African experience, worked on termite behavior, and had a team actively engaged in ecologically and behaviorally oriented studies."

"I was very fortunate in being accepted by P.-P. Grasse on his own team, for a Doctorate and to receive a Scholarship (Research from the 'Centre National de la Recherche Scientifique', Paris (1952-56)). My original assignment was ecological: the Biological Station of Beni-Abbes, in the Sahara Desert, Africa, but it was later decided that I would work on the behavior of a larrine sphecoid wasp, Liris nigra at the Biological Station of Les Eyzies, Dordogne, France and at the 'Laboratoire d'Evolution', Paris. There I met E. P. Deleurance, actively engaged in a wasp (Polistes) study, who gave me precious advice on rearing methods he had successfully used with digger wasps (from the Camargue and other Mediterranean areas) and vespids. His extensive experience and keen knowledge of wasp behavior, both in field and lab. conditions were also of great help, as were L. Berland, Museum d'Histoire Naturelle, Paris (Hymenoptera, spiders), and P. Maillet, Director of the Station. I also made films on hymenopteran behavior, particularly that of a mud dauber, Sceliphron. I was lucky enough to have the latter film selected and promoted (under the title 'La Guêpe Maçonne' = The Mason Wasp) by the cine-photographer and scientist J. Dragesco, Paris, and by J. Painlevé, Director of the 'Institut de Cinematographie Scientifique,' Paris, and also by various Government, Education, and Private Agencies, including the French film media, also the Encyclopedia Cinematographica, Goettingen, Germany, etc."

"In 1956, I was offered a new position of Teaching Assistant in Zoology, pre-medical teaching (P.C.B.) at the University of Montpellier, France, by Prof. O. Tuzet. Thanks to the latter's help, I was able to continue my doctorate work there and received my D.Sc. (category National) from the University of Paris in 1960. I then became more directly involved in behavioral and psycho-physiological teaching and was promoted Lab. Coordinator in these fields."

"In 1961 I was offered a newly created teaching + research position of 'Maître de Conférences' (Lecturer?, Assistant Professor?), same disciplines and University. This also involved designing entirely and starting a new research unit and team in this field, including animal facilities (with other Colleagues), as part of a new Faculty of Sciences to be built at once. This absorbing task, along with new and multiple responsibilities and administrative duties, also at the Department level (as Coordinator, Secretary, of the rapidly growing Department of Animal Biology and related fields) left less and less time available for behavioral observations, so time-consuming and demanding, particularly in field conditions. Between 1962 and 1964 I made an unsuccessful attempt at starting a field project, overseas, in Madagascar, Africa."

"I was successful, however, in being able to spend one year in Montreal, Canada, at the Department of Biological Sciences, as Visiting Assistant Professor (1965-66) and became interested, with J. G. Pilon, in Brother Robert's collection of Hymenoptera, an excellent introduction to the Nearctic wasp fauna, new to me."

"In 1966 I applied for an open position in the Department of Zoology of the University of Alberta, Edmonton, Canada, which appeared unique to me with many varied and extensive Provincial and National Parks, where a great variety of wild animals could be observed, if only for personal enjoyment. I was appointed there, first as Associate, then Full Professor of Zoology. I became involved in the teaching of Animal Behavior courses and later on other courses too. My research interest also extended now to eco-ethology, social behavior, communication (mainly olfactory) of mammals and I undertook field and lab. research on various ground squirrels, particularly Columbian ground squirrels in the beautiful Rocky Mountains and foothills of southwest Alberta and Arctic ground squirrels in the Far North, fascinating frontier, land of adventure and midnight sun: the Yukon

Territory. I also continued my work on solitary wasps: their eco-ethology, behavior, including northern distribution, in Alberta, British Columbia, The Northwest Territories of Canada and Alaska, Oregon, U.S.A."

"In 1972-73 I spent an unforgettable and very rewarding sabbatical year in Arizona, U.S.A., at the Southwestern Research Station, Portal Monument and surrounding, enchanting, deserts, canyons and forests and also the Sonoran Desert of Mexico and subtropical areas further South. I met an incredible number and array of fascinating and colorful people and creatures I cannot mention individually and I worked on the behavior and eco-ethology of various wasps, both in field and lab. conditions (Liris spp.: an extension of my earlier work on Palearctic Liris, Prionyx spp., Spheg sp., various Ammophila, Clypeadon, Podalonia valida, etc.). I also made some observations on rock squirrels, this interesting intermediate between tree and ground squirrels."

"My comparative and evolutionary studies might extend to other animal and/or insect groups in the future."

LUIS DE SANTIS

"Nacido en La Plata (Buenos Aires - República Argentina) el 16 - V - 1914."

"Ingeniero agrónomo egresado de la Facultad de Agronomía de La Plata en 1937 y Doctor en Ciencias Naturales egresado del Instituto Superior del Museo de La Plata en 1946."

"Miembro de Número de la Academia Nacional de Ciencias de Buenos Aires."

"Actualmente es Profesor Emérito de la Facultad de Ciencias Naturales de La Plata y Director del Museo de La Plata."

"Es autor de más de 200 trabajos originales sobre los himenópteros parsitoides y los tisanópteros. Ha efectuado además, numerosas publicaciones docentes y de extensión."

"Miembro Correspondiente de las Sociedades Uruguaya y Chilena de Entomología."

"Obtuvo los Premios: Irineo Cucullú en los Concursos Universitarios de 1935-1936, otorgado por la Institución Mitre de Buenos Aires; Nacional de Ciencias Naturales y Biológicas para el trienio 1946-1948 por el trabajo Estudio monográfico de los Afelínidos de la República Argentina; Medalla de oro otorgado por la Fundación Filippo Silvestri de la Universidad Nápoles en 1964 y Angel Gallardo otorgado por la Academia Nacional de Ciencias Exactas, Físicas y Naturales de Buenos Aires, correspondiente a los años 1973-1974, por sus trabajos sobre los himenópteros signifóridos."

VIRGILIUS LEFEBER

"I was born November 1921 in Amsterdam. In 1940 I acquired a teacher certificate at a Teacher Training College in Maastricht. In 1941 I entered the Congregation of the Maastricht-Brothers. Subsequently I taught in Maastricht until 1943; taught at Helmond (a small town in the South of our country; industry of cotton and iron; Sand) till 1953; taught at The Hague (seat of our government; near the dunes of the North-Sea; Sand and peat-bog) till 1960; taught at Amsterdam (our Capital; peat-bog and Clay) till 1964 and then I returned to Maastricht, a beautiful old town on the Southborder, close to Belgium (Marl, Loess and Clay)."

"In 1978 I was prematurely pensioned off."

"From early youth I have been interested in insects, but since 1952 I have been mainly preoccupied with biology and collecting Aculeata; in 1967 I started collecting all faunistic data in the Netherlands."

"Starting in 1970 I collaborated with Prof. J. Leclercq at Gembloux (Belgium) at the E.I.S. (European Invertebrate Survey). Only in 1975 did that project also start in the Netherlands. I have made it my task to gather all the Dutch collection data for our databank at Leiden (National Museum of Natural History); preferably together with other entomologists, for one or more smaller groups of Aculeata some times (and with pleasure) taken over by a brother entomologist."

LASLO MÓCZÁR

"I was born in Kiskunfélegyháza, the 10th December 1914. I graduated as teacher as well as defended the Ph.D. at the University of Budapest in 1938 resp. 1937. I was qualified as a privat-docent at the University of Budapest in 1950/51. After this I was granted the degree 'candidate of biol.' and I obtained the degree 'Doctor of Biol.' by the Academy in 1961. Beginning in 1937, during nearly 30 years I was appointed by the Zoological Department of the Hungarian Museum of Natural History. Meanwhile I was nominated at the Teacher's Training Institute Kolozsvár, to a first assistant at the Zoosystematical Institute of the University in Kolozsvár. After 1950 my task was to develop the natural history departments of the Hungarian museums in Public education. From 1969 I have been nominated professor and head of the Department of the Zoological Institute of University Szeged. At the Hymenoptera Section of the Hungarian Museum of Natural History I put down the basis of the Hungarian Hymenoptera Collection. In the 1950 I launched the Catalogus Hymenopterum Hungariae comprising faunistical lists based on my zoogeographical map. This year was published the first Identification Book for Hungarian Animals with coauthors. The 2nd edition in 1969 and the 3rd one in 1981. Meanwhile I published 4 books with lot of closeup photos of insects. I was drawn into a four-year experiment concerning the lucerna-visiting wild bees and their role in pollination. In the Museum I set up a gall collection arranged on novel principles. I organised a Photograph Archive and a Laboratory. I studied a lot of collections of the Museums in Europe, as well as in Ottawa, New York, Washington or Canberra. I have published taxonomy chiefly on Aculeata, few Ichneumonidae and Tenthredinoidea, more on ethology of wasps and bees especially on the behavior and activity periods of Paragymnomerus spiricornis populations. I described some new genera, dozens of new species and at least one dozen was named after me. Last 10 years I organize in University a modern audio-visual education with more than 2500 slides and an ecological team for investigation of the National Park at Bugac. Now I am chiefly interested in the taxonomy of Ceropalidae, Mesitiinae (Bethyloidea) and Cleptidae of the world."

JACQUES DE BEAUMONT

"I was born in 1901 in Geneva, Switzerland. During my childhood I had the opportunity to pass each summer in the country. Thus, very early on, I learned about nature. With the help of an older sister, I learned how to make collections of feathers, birds eggs and nests, seeds, rocks, shells and, naturally, insects. Near our house was a large marsh where I collected many kinds of animals which were kept in jam jars for further observation. My favorite books were Souvenirs Entomologiques by J. H. Fabre."

"After finishing secondary school I entered the School of Science at the University of Geneva with specialization in Zoology. My teacher, a remarkable professor, had a low opinion of systematics and insect collections. His sole interest was general biology, so my doctoral thesis was done on the sex life of

frogs and toads. My first publication was titled: "Masculinisation chez le Triton." I continued in this field for several years while studying concurrently the chromosomes of Neuroptera."

"One of my friends who had just been appointed Professor of Zoology at the University of Lausanne, a town near Geneva, asked me to join him there. After several years there I became Professor of Entomology and Director of the Zoological Museum. During a sabbatical at a zoology station in southern France I collected insects described by Fabre, and I developed a strong interest in Hymenoptera. I became a specialist in the taxonomy and faunistics of the Aculeate Hymenoptera, principally the Sphecidae. During my scientific career I had students, made many study trips, developed relationships with colleagues around the world, and published about 100 papers. I hope that in a small way I have helped the science that is so dear to me and has given me great contentment. In addition I have presided over various scientific societies and in particular for six years, the Switzerland Academy of Sciences."

"I am now retired and live in a little village where I enjoy my various interests. I am happy, thanks to Sphecos, to be kept abreast of what goes on in the world of Hymenopterists."

DELFA GUIGLIA

"I have been able to frequent the most important research centres of the world. Thanks to a long stay (1951) at the Laboratory of Entomology in Paris, I was able to develop my research on the Oxybelini. In 1954 having been awarded the premium 'Marion Reiley' by the International Federation of University Women, I was able to finish the work on the Orussidae in London."

"Between 1956 and 1960 I participated in the Congresses of Entomology in Montreal (1956), Wein (1960) and the Congress of Parasitology of Lisboa (1958). I worked also at several centres in Finland (1959), Holland (1954), Sweden and Germany."

"In 1961 I traveled to Russia (Moscow, Leningrad, Minsk), Mexico City and San Francisco. From 1961 and 1965 I worked in London, Germany, Brisbane, Tahiti, Hawaii, Los Angeles and Washington where I was able to collect and study samples of the hymenopterological fauna in the Nearctic Region."

"From 1966 to 1976 I took part in the Congresses at Tokyo, Moscow, Canberra and Washington."

"In 1977 I made a long journey to the Siberian Region, collecting material and studying the examples in the local collections."

RAYMOND WAHIS

"Né à Liège (Belgique) le 29 mars 1929, je m'intéressai très jeune (vers l'âge de 12 ans déjà) aux Sciences naturelles et en particulier aux oiseaux et aux insectes. Après mes études primaires et secondaires, j'entrai comme élève à l'Ecole Normale de la ville de Liège. Peu après, j'eus la chance d'entrer en contact avec Mr. Jean LeClercq, alors assistant à l'Université de Liège, lequel s'efforçait de constituer, en ces années d'après-guerre, un groupe de jeunes naturalistes dans la région liégeoise. Cette rencontre devait décider de mon avenir entomologique puisque, à partir de ce moment, je m'orientai vers l'étude exclusive des Hyménoptères pour me spécialiser assez rapidement dans les Pompilidae, famille difficile et peu étudiée à l'époque en Europe."

"Mes premiers travaux (1948-49) traitèrent bien modestement du comportement de certains aculéates fouisseurs. Diplômé de l'Ecole Normale en 1949, je fis carrière dans l'Enseignement et fonctionnai à l'Ecole Princesse de Liège à Embourg (Chaudfontaine) tout en poursuivant parallèlement mes recherches entomologiques. Dans les années 50, collaborateur à l'Institut royal des Sciences naturelles de Belgique à Bruxelles, je m'intéressai particulièrement aux espèces belges et d'Europe occidentale pour aborder progressivement, dans la suite, les faunes tropicales et plus particulièrement les Pepsinae du sud-est asiatique (notamment le genre Hemipsis Dhlb.)"

"Entretiens, le Dr. Jean LeClercq, devenu Professeur, se voyait confier la direction du Laboratoire de Zoologie générale et de Faunistique de la Faculté des Sciences Agronomiques de Gembloux, à l'activité duquel je fus aussitôt activement associé."

"Dans la dernière décade, tout en maintenant un intérêt pour la faune européenne, je portai plus spécialement mes efforts sur les espèces d'Afrique, du Nouveau-Monde et d'Océanie dont je possède actuellement une fort bonne connaissance générale. Ma préférence va aux Pepsinae bien que, à l'occasion, il ne me déplaise pas de traiter d'autres genres n'appartenant pas à cette sousfamille. A titre d'exemples, je citerai: Episyron, Priochilus, Pygmachus, Irenangelus et Minotocyphus, sur lesquels j'ai des revisions en cours."

"Avec mes amis, Michael Day (BMNH, London) et Heinrich Wolf (Plettenberg), seuls spécialistes européens du groupe, nous envisageons, dans le futur, la mise au point d'un Catalogue des Pompilidae d'Europe qui compléterait en quelque sorte celui existant déjà pour les Etats-Unis."

"Avec Day, je m'intéresse plus spécialement à la classification des Pompilidae au niveau mondial, laquelle laisse toujours actuellement beaucoup à désirer."

"Depuis plus de 10 ans, j'ai accumulé un nombre considérable d'informations sur non nombre de genres africains et indo-australiens, notamment: Java, Diplonyx, Cyphononyx, Hemipepsis, Leptodialepis, Priocnessus, Heterodontonyx, Dinosalius, etc. Plusieurs genres et de nombreuses espèces attendent d'être décrites."

"Terminant mes activités d'enseignement en septembre 1980, il me sera enfin possible de consacrer tout mon temps à ce groupe passionnant."

OLE C. LOMHOLDT

"Born 8.5.1946 in Copenhagen, Denmark. Became elementary school teacher in 1968. Finished M.Sc. (Zoology) at the University of Copenhagen 1976. Ph.D. 1979. Employed at the Zoological Museum, Copenhagen since 1.11.1978 as a member of the scientific staff (research entomologist). Curator of Coleoptera and parts of the Hym. acul.-section. Main interests: Hymenoptera aculeata, mainly Sphecidae (Ph.D. thesis on "The Miscophini of Southern Africa and Madagascar etc." - still unpublished), phylogeny, zoogeography, and taxonomy. Initiator of and participant in several expeditions (mainly entomological) to Madeira, Tanzania, Kenya, and Namibia. Published the rather comprehensive work: The Sphecidae (Hymenoptera) of Fennoscandia and Denmark (1975-1976), 452 pp., 464 ill. and numerous smaller works especially on Danish aculeates. Secretary of the Entomological Society of Denmark, Fellow of the Royal Entomological Society of London. Now working on monographies of Sphodrotes and Sericophorus (Sphecidae)."

Recent Literature

- Abdurakhmanov, M. I.
1979. Biology of Scolia sinensis (Hymenoptera, Scoliidae) in Tadzhikistan. Zool. Zhurnal 58:1748-1750.
- Alcock, J.
1979. The behavioural consequences of size variation among males of the territorial wasp Hemipepsis ustulata (Hymenoptera: Pompilidae). Behaviour 71:322-335.
- Archer, M. E.
1980. Possible causes of the yearly fluctuations in wasp numbers. British Isles Bee Breeders Assoc. News 18:26-29.
- Baldrige, R. and H. D. Blocker.
1980. Parasites of Leafhoppers (Homoptera: Cicadellidae) from Kansas grasslands. J. Kansas Ent. Soc. 53:441-447.
- Banaszak, J.
1978. The occurrence of Scolia hirta in lower Vistula and the distribution of this species in Poland. Przegl. Zool. 12:45-48.
- Barr-Nea, L., N. Papo, and J. Ishay
1979. Lipid accumulation in hepatocytes following treatment in-vitro with a venom sac extract of the Oriental hornet (Vespa orientalis). Toxicon 17:180-182.
- Batra, S. W. T.
1979. Nests of the Eumenid wasp, Anterhynchium abdominale bengalense, from a termite mound in India. Oriental Insects 13:163-165.
1980. Sexual behavior and pheromones of the European Hornet, Vespa crabro germana. J. Kansas Ent. Soc. 53:461-469.
- Benedek, P.
1979. A zoogeographic analysis of the Bakony mountains. A Veszprem Megyei Muzeumok Kozlem., Termeszett 14:221-238.
- Bohart, R. M.
1980. A review of the North American species of Dienoplus (Hymenoptera: Sphecidae). Pan-Pac. Ent. 56:63-70.
1980. New genera and species of North American Chrysididae. J. Kansas Ent. Soc. 53:132-136.
1980. The middle American species of Stenodynerus (Hymenoptera, Eumenidae). Polskie Pismo Ent. 50:71-108.
- Bohart, R. M. and L. S. Kimsey
1980. A generic synopsis of the Chrysididae of America north of Mexico. J. Kansas Ent. Soc. 53:137-148. (includes key to genera)
- Brockmann, H. J.
1980. Diversity in the nesting behavior of mud-daubers (Trypoxylon politum Say: Sphecidae). Florida Ent. 63:54-64.
1980. The control of nest depth in a digger wasp (Sphex ichneumoneus L.). Animal Behav. 28:426-445.
- Brockmann, H. J. and R. Dawkins
1979. Joint nesting in a digger wasp as an evolutionarily stable preadaptation to social life. Behaviour 71:203-245.

- Callan, E. McC.
 1977. Notes on Meloidae and Rhipiphoridae (Col.) from Trinidad. Ent. Mon. Mag. 112:249-254. (Rhipiphoridae recorded from Eumenes canaliculatus in Trinidad and Campsomeris dorsata in Barbados).
 1979. The Sphecidae (Hymenoptera) of New Zealand. New Zealand Ent. 7:30-41.
- Casale, A.
 1979. Materiale tipico delle collezioni dell'istituto di entomologia agraria dell'Universita de Torino. Ann. Fac. Sci. Agrar. Univ. Stud. Torino 11:133-141. (lists types of Sphecidae, Eumenidae and Vespidae).
- Casolari C., and R. Casolari Moreno.
 1979. Catalogo della collezione imenotterologica di Massimiliano Spinola. Part 2. Boll. Mus. Zool. Univ. Torino 2:19-82.
 1979. Catalogo della collezione imenotterologica di Massimiliano Spinola. Part 3. Boll. Mus. Zool. Univ. Torino 4:91-130.
 1980. Cataloghi I - Collezione Imenotterologica di Massimiliano Spinola. Museo Regionale de Scienze Naturali, Torino. 165 pp. (History of Spinola Hymenoptera Collection and list of all extant material).
- Chadab, R.
 1980. Early warning cues for social wasps attacked by army ants. Psyche 86:115-123.
- Cooper, K. W.
 1980. Plasticity in nesting behavior of a renting wasp, and its evolutionary implications. Studies on Eumenine wasps, VIII (Hymenoptera, Aculeata). J. Wash. Acad. Sci. 69:151-158.
- Cornejo, L. G., L. De Santis, and J. A. V. Sarmiento
 1976. Ocupacion de una colmena por avispa invasoras. Rev. Soc. Argentina Apicult. (435):248-253. (Brachygastra lecheguana successfully invading a bee hive)
- Coville, R. E. and P. L. Coville
 1980. Nesting biology and male behavior of Trypoxylon (Trypargilum) tenocitlan in Costa Rica (Hymenoptera: Sphecidae). Ann. Ent. Soc. Amer. 73:110-119.
- Cretin, J. Y. and J. C. Robert
 1977. Donnees preliminaires a l'etude ecofaunistique d'un plateau calcaire dans le Jura Francais. Les Hymenopteres Aculeates (excepte Formicoides et Apoides). Ann. Sci. Univ. Besancon, Biol. Anim. (3)14:41-50.
- Croitoru, N. et al.
 1978. Electrical resistance of the yellow stripes of social wasps under illumination. Photochem. Photobiol. 28:265-270.
- Cross, E. A., A. E. Mostafa, T. R. Bauman, and I. J. Lancaster
 1978. Some aspects of energy transfer between organ-pipe mud dauber Trypoxylon politum and its araneid spider prey. Envir. Ent. 7:647-652.
- Cruysbergh, W. P.
 1978. Waarnemingen over het gedraf van Philanthus triangulum (Fabricius). Ent. Berich. 38:97.
- Dawkins, R. and H. Jane Brockmann
 1980. Do digger wasps commit the concorde fallacy? Animal Behav. 28:892-896.

- Day, M. C. and K. G. V. Smith
1980. Insect eggs on adult Rhopalum clavipes (L.) (Hymenoptera: Sphecidae): a problem solved. Ent. Gazette 31:173-176.
- Donovan, B. J.
1978. The German wasp, Vespula germanica (F.) (Hymenoptera: Vespidae) in New Zealand. Papers presented at Honeydew Seminar, Christchurch, New Zealand, August, 1978, pp. 49-63. Ministry Agric. Fisheries.
- Dunn, G. A.
1980. The introduced yellowjacket Vespula germanica (Fabricius) in Michigan and northern Indiana (Hymenoptera: Vespidae). Coop. Ext. Serv., Mich. St. Univ., Insect and Nematode Spec. Rept. 80-6, 10 unnumbered pages.
- Eck, S.
1979. Uber Cerceris rybyensis reginae ssp. n. von Gotland und andere Subspezies. Reichenbachia 17:21-24.
- Edwards, M.
1980. The Hornet, Vespa crabro L., in Sussex. Ent. Monthly Mag. 115:256.
- Edwards, Robin
1980. Social wasps, their biology and control. Rentokil Limited, Felcourt. 398 pp. (See Sphecos 3:5 for review).
- Empey, H. N.
1980. Taxonomic notes on Cerceris militaris Dahlbom, and the Brazilian species Cerceris rufonigra Taschenberg. J. Ent. Soc. So. Africa 43:51-52.
- Endo, A.
1976. Factors influencing the prey selection of a spider wasp, Episyron arrogans (Smith) (Hymenoptera: Pompilidae). Physiol. Ecol. Japan 17:335-350. (Japanese with English summary)
- d'Entreves, P. P.
1980. La Collezione Spinola di Tassarolo. Museo Regionale di Scienze Naturali. Guide alle Mostre Temporanee. 20 unnumbered pages. Torino. (lavishly illustrated history of Spinola and his collection)
- Evans, H. E.
1980. Book review of "Social Insects", vol. 1, by Hermann et al. J. Australian Ent. Soc. 18:198.
1980. The platycephalus group of the genus Rhabdepyris Kieffer (Hymenoptera, Bethyridae). J. Australian Ent. Soc. 18:377-381.
1980. A new species of Mystacagenia from Panama. Pan-Pac. Ent. 56:185-186.
- Evans, H. E., C. Kugler, and W. L. Brown, Jr.
1980. Rediscovery of Scolecbythus madecassus, with a description of the male and of the female sting apparatus (Hymenoptera: Scolecbythidae). Psyche 86:45-51.
- Evans, H. E., F. E. Kurczewski and J. Alcock
1980. Observations on the nesting behaviour of seven species of Crabro. J. Nat. Hist. 14:865-882.
- Findlay, S. R. et al.
1977. Polistes wasp hypersensitivity: diagnosis by venom-induced release of histamine in vitro. J. Allergy Clin. Immunol. 60:230-235.
- Finnamore, A. T.
1980. New species of Mimesa from North America (Hymenoptera: Pemphredonidae: Psenini). Can. Ent. 112:293-300.
- Fletcher, J. E., W. B. Elliot, J. Ishay, and P. Rosenberg.
1979. Phospholipase A and B activities of reptile and hymenoptera venoms. Toxicon 17:591-599.

- Francke, W. et al.
1978. Methyl-1.6-dioxaspiro (4.5) decaves as odors of Paravespula vulgaris (L.). Angew. Chem. 17:862.
- Freeman, B. E.
1980. A population study in Jamaica on adult Sceliphron assimile (Dahlbom)(Hymenoptera: Sphecidae). Ecol. Ent. 5:19-30.
- Freeman, B. E. and K. Ittyeipe
1976. Field studies on the cumulative response of Melittobia sp. (hawaiiensis complex) (Eulophidae) to varying host densities. J. Anim. Ecol. 45:415-423. (parasitic on Sceliphron assimile).
- Freeman, B. E. and B. Johnston
1978. Gregarious roosting in the sphecid wasp, Sceliphron assimile. Ann. Ent. Soc. Amer. 71:435-441.
- Fritz, Manfredo
1979. Nota sobre Cerceris imitator Smith. Acta Sci., Ser. Ent. (13):4-8.
- Fritz, Manfredo A. and Juan C. Mariluis
1979. Especies neotropicales del genero Cerceris Latr. del grupo "gaudebunda". Acta Sci., Ser. Ent. (12):21-39.
- Gamboa, George J.
1980. Comparative timing of brood development between multiple- and single-foundress colonies of the paper wasp, Polistes metricus. Ecol. Ent. 5:221-225.
- Gaspar, C. and C. Thirion
1978. Modification des populations d'hymenopteres sociaux dans des milieux anthropogenes. Memorabilia Zool. 29:61-77.
- Genise, J. F.
1979. Utilizacion de moldes de acrilico en el estudio de nidos de avispas cavadoras. Rev. Soc. Ent. Argentina 38:79-82.
1979. Comportamiento de nidificacion de Bicyrtes variegata (Ol.) y B. discisa (Tasch.) (Hymenoptera: Sphecidae). Rev. Soc. Ent. Argentina 38:123-126.
- Gess, F. W.
1980. Ethological notes on Kohliella alaris Brauns (Hymenoptera: Sphecidae: Larrinae) in the Eastern Cape Province of South Africa. Ann Cape Provincial Mus. (Nat. Hist.) 13:45-54.
1980. Prey and nesting sites of some sympatric species of Cerceris (Hymenoptera: Sphecidae) with a review and discussion of the prey diversity of the genus. Ann. Cape Prov. Mus. (Nat. Hist.) 13:85-93.
1980. Some aspects of the ethology of Dasyproctus westermanni (Dahlbom)(Hymenoptera: Sphecidae: Crabroninae) in the Eastern Cape Province of South Africa. Ann. Cape Prov. Mus. (Nat. Hist.) 13:95-106.
- Gess, F. W. and S. K. Gess
1977. Bricks without straw: the nesting of the wasp Dichragenia pulchricoma (Arnold). Eastern Cape Nat. (61):6-8.
1980. Ethological studies of Jugurtia confusa Richards, Ceramius capicola Brauns, C. linearis Klug and C. lichtensteinii (Klug) (Hymenoptera: Masaridae) in the Eastern Cape Province of South Africa. Ann. Cape Prov. Mus. (Nat. Hist.) 13:63-83.
1980. Spider vanquishers: the nesting of Tachypompilus ignitus (Smith) and Batozonellus fuliginosus (Klug). Eastern Cape Nat. (69):4-7.
1980. The whited sepulchre - the nesting of Chalybion tibiale (Fabr.). Eastern Cape Nat. (70):11-14.

Gibo, David L.

- 1980. Apparent nest site competition between the paper wasp Polistes fuscatus (Hymenoptera: Vespidae) and the house wren. J. New York Ent. Soc. 88:143-145.
- 1980. Overwintering of Polistes fuscatus in Canada: use of abandoned nests of Dolichovespula arenaria. J. New York Ent. Soc. 88:146-150.

Gillaspy, J. E.

- 1979. Management of Polistes wasps for caterpillar predation. Southwestern Ent. 4:334-352.

Giordani Soika, A.

- 1977. Results from the Danish expedition to the Cameroons 1949-1950. 33. Hymenoptera, Vespidae and Eumenidae. Steenstrupia 4:125-129.
- 1977. Contributo all conoscenza degli Eumenidi Australiani. Mem. Soc. Ent. Italiana 55:109-138.
- 1978. Tabella per l'identificazione dei generi Europei della famiglia Eumenidae. Soc. Veneziana Sci. Nat., Lavori 3:30-41. (Keys European genera of Eumenidae, see Guichard, 1980 for English translation).
- 1979. Revisione delle specie etiopiche e malgasce della sottofamiglia Discoeliinae. Boll. Mus. Civ. Stor. Nat. Venezia. 30:19-65.
- 1979. Eumenidi raccolti nel Niger, Mali e Sahara da K. Guichard. Boll. Mus. Civ. Stor. Nat. Venezia 30:235-246.
- 1979. Eumenidi paleartici nuovi o poco noti. Boll. Mus. Civ. Stor. Nat. Venezia. 30:247-263.
- 1979. Eumenidi raccolti nell'Arabia meridionale da K. Guichard. Boll. Mus. Civ. Stor. Nat. Venezia 30:271-285.

Gorbatovsky, V. V.

- 1978. Myzinine-wasps (Hymenoptera: Tiphidae, Myzininae) from Caucasus. Biol. Zhurnal Armenia 31:965-970. (in Russian, contains new subspecies and identification key).
- 1979. [Mesa viktorovi sp. n. (Hymenoptera, Tiphidae, Myzininae), a new species of myzinine wasp from the lower Volga Region]. Horae Soc. Ent. Unionis Sovieticae 61:167-168. (in Russian).
- 1979. Palaearctic species of the diurnal wasps of the genus Dermasothus Menozzi (Hymenoptera, Tiphidae, Myzininae) Rev. Ent. URSS 58:609-621. (In Russian with English summary).
- 1980. Myzininae (Hymenoptera, Tiphidae) from the Mongolian People's Republic and adjacent regions of the USSR and China. Insects of Mongolia 7:309-322. (In Russian).

Greene, Albert and Dewey M. Caron

- 1980. Entomological etymology: the common names of social wasps. Bull. Ent. Soc. Amer. 26:126-130.

Guichard, K. M.

- 1977. The Hymenoptera aculeata (excluding Dryinidae, Bethyridae and Formicidae) of Chobham Common, the Woking area and Oxshott Heath, Surrey. Ent. Gazette 28:245-259.
- 1980. Greek wasps of the family Eumenidae with a key to the European genera. Ent. Gazette 31:39-59. (translation into English of Giordani Soika's key to eumenid genera)

Guiglia, D.

- 1979. Contributo all conoscenza dei Vespidi dell'Afghanistan. Boll. Mus. Civ. Stor. Nat. Venezia 30:7-11.

- Gusenleitner, J.
 1979. Bemerkenswertes über Faltenwespen VII. Nachrichtenbl. Bayer. Ent. 28:60-63.
 1979. Die Microdynerus- und Pseudomicrodynerus-Arten des Balkans und der Türkei (Eumenidae, Hym.) Linzer Biol. Beitr. 11:75-94.
 1979. Die Arten der Untergattung Neoleptochilus Bluthgen, 1961, auf der Iberischen Halbinsel (Eumenidae, Hym.). Linzer Biol. Beitr. 11:95-103.
- Gwynne, D. T.
 1979. Nesting biology of the spider wasps (Hymenoptera: Pompilidae) which prey on burrowing wolf spiders (Araneae: Lycosidae, Geolycosa). J. Nat. Hist. 13:681-692.
- Gwynne, D. T. and K. M. O'Neill
 1980. Territoriality in digger wasps results in sex biased predation on males (Hymenoptera: Sphecidae, Philanthus). J. Kansas Ent. Soc. 53:220-224.
- Haeseler, Volker
 1980. Zum Necktarraub solitärer Faltenwespen (Hymenoptera: Vespoidea: Eumenidae). Ent. Generalis 6:49-55.
- Haggard, C. M. and G. J. Gamboa
 1980. Seasonal variation in body size and reproductive condition of a paper wasp, Polistes metricus (Hymenoptera: Vespidae). Can. Ent. 112:239-248.
- Haneda, Y.
 1979. A new species of Myrmosa (Hymenoptera: Tiphiidae) from Japan. Kontyu 47:540-542.
- Harris, A. C.
 1979. Occurrence and nesting of the yellow oriental paper wasp, Polistes olivaceus (Hymenoptera: Vespidae), in New Zealand. New Zealand Ent. 7:41-44.
- He, Jun-hua
 1979. Atlas of natural enemies of rice pests in Zhejiang Province. 210 p. (in Chinese, Dryinidae on pages 68-70)
- Hefetz, A. and S. W. T. Batra
 1979. Geranyl acetate and 2-decen-1-ol in the cephalic secretion of the solitary wasp Sceliphron caementarium. Experientia 35:1138.
- Hermann, H. R. (Editor)
 1979. Social Insects, Vol. I. Academic Press, N. Y. 437 p. [Contents: H. R. Hermann, Insect Sociality - An introduction; C. K. Starr, Origin of Insect Sociality: A Review of Contemporary Theory; F. M. Carpenter and H. R. Hermann, Antiquity of Sociality in Insects; Cesare Baroni Urbani, Territoriality in Social Insects; M. V. Brian, Caste Differentiation and Division of Labor; R. H. Crozier, Genetics of Sociality; G. C. Wheeler and J. Wheeler, Larvae of the Social Hymenoptera; D. H. Kistner, Social and Evolutionary Significance of Social Insect Symbionts.](Reviewed by Evans, 1980)
- Hollis, D.
 1980. Animal identification, a reference guide. Vol. 3, Insects. British Museum (Natural History), London. (Hymenoptera on pp. 141-155) [This is a handy reference to published keys to different taxa, etc. and it is very current].
- Hunt, J. H. and G. J. Gamboa
 1978. Joint nest use by two paper wasp species. Insectes Sociaux 25:373-374.

- Hunt, J. H. and K. C. Noonan
 1979. Larval feeding by male Polistes fuscatus and Polistes metricus (Hymenoptera: Vespidae). Insectes Sociaux 26:247-251.
- International Commission on Zoological Nomenclature
 1980. Opinion 1157. Sphex viatica [sic] Linnaeus, 1758 (Insecta, Hymenoptera): designation of lectotype. Bull. Zool. Nomencl. 37:96-98.
- Ishay, J.
 1979. Anticholinesterase-like activity by Oriental hornet (Vespa orientalis) venom and venom sac extract. Experientia 35:636-639.
- Ishay, J. and Y. Hochberg
 1979. Sound production in workers facing the queen in Vespa orientalis: frequency and amplitude auto-and cross associations. J. Acoust. Soc. Amer. 66:7-11.
- Ishay, J., E. Megory, A. R. Yunes, B. Perna, F. Konikoff, and Z. Y. Ishay
 1979. Hornet building orientation in a vertically rotating centrifuge. Life Sci. Space Res. 17:247-252.
- Ishay, J. and B. Perna
 1979. Building pheromones of Vespa orientalis and Polistes foederatus. J. Chem. Ecol. 5:259-272.
- Ishay, J., B. Perna, Y. Hochberg and M. Goldstein (Asanta)
 1979. The effect of hornet venom on the photoelectric properties of hornet cuticle. Toxicon 17:407-411.
- Jacob-Remacle, A. and J. Leclercq
 1980. Hymenopteres aculeates pieges dans trois jardins de Liege "intra muros". Bull. Soc. Roy. Sci. Liege 49:186-198.
- Jander, R.
 1976. Grooming and pollen manipulation in bees (Apoidea): the nature and evolution of movements involving the foreleg. Physiol. Ent. 1:179-194.
- Jander, R. and U. Jander
 1978. Wing grooming in bees (Apoidea) and the evolution of wing grooming in insects. J. Kansas Ent. Soc. 51:653-665.
- Jeanne, R. L.
 1978. Intraspecific nesting associations in the neotropical social wasp Polybia rejecta (Hymenoptera: Vespidae). Biotropica 10:234-235.
 1978. Construction and utilization of multiple combs in Polistes canadensis in relation to the biology of a predacious moth. Behav. Ecol. Sociobiol. 4:293-310.
 1980. Evolution of social behavior in the Vespidae. Ann. Rev. Entomol. 25:371-396.
- Jeanne, R. L. and E. G. Castellon Bermudez
 1980. Reproductive behavior of a male neotropical social wasp, Mischocyttarus drewseni. J. Kansas Ent. Soc. 53:271-276.
- Jonathan, J. K. and M. Dhar
 1976. Records of additional Campsomerinae from India. Newsl. Zool. Surv. India 2:112-114.
- Kaji, H.
 1978. On the distribution of Chrysis shanghaiensis Smith, a natural enemy of Cnidocampa flavescens Walker in Ishikawa Prefecture and the annual variation of its parasitic rate. J. Appl. Zool. Ent. Japan 23:110-112. (in Japanese)

Kazenas, V. L.

- 1979. [A new species of the genus Belomicroides Kohl from southeastern Kazakh SSR]. Horae Soc. Ent. Unionis Sovieticae 61:172-174. (In Russian).
- 1979. New species of the genus Cerceris Latr. (Hymenoptera: Sphecidae) from Southern Kazakhstan. Rev. Ent. URSS 58:857-859.
- 1980. New species of digger wasps of the genus Cerceris Latr. (Hymenoptera, Sphecidae) from Middle Asia. Zool. Zhurn. 59:792-795.
- 1980. A new species of the genus Gastrosericus (Hymenoptera: Sphecidae) from south Tadzhikistan. Zool. Zhurn. 59:1103-1105.

Kimsey, L. S.

- 1980. Notes on the biology of some Panamanian Pompilidae, with a description of a communal nest. Pan-Pac. Ent. 56:98-100.

Kisliuk, M. and J. Ishay

- 1979. Influences of the Earth's magnetic field on the comb building orientation of hornets. Experientia 35:1041-1042.

Kofler, A.

- 1975. Die Goldwespen Osttirols. Carinthia II 165/85:343-356.
- 1975. Die Faltenwespen Osttirols (Vespidae and Eumenidae). Ber. Nat.-med. Ver. Innsbruck 62:105-120.

Kugler, J., M. Motro and J. Ishay

- 1979. Comb building abilities of Vespa orientalis queenless workers. Insectes Sociaux 26:147-153.

Kurczewski, F. E.

- 1979. Nesting behavior of Tachysphex mundus Fox (Hymenoptera, Sphecidae, Larrinae). Polskie Pismo Ent. 49:641-647.

Kurzenko, N. V.

- 1976. New species of vespoid solitary wasps (Hymenoptera, Eumenidae) in the fauna of the USSR. Rev. Ent. URSS 55:434-437. (In Russian with English summary).
- 1979. [A new species of solitary wasps of the family Eumenidae from the eastern Karakum Desert]. Horae Soc. Ent. Unionis Sovieticae 61:171-172. (In Russian).

Leclercq, J.

- 1979. Lecrenierus genre nouveau de Crabroniens sud-americains (Hymenoptera, Sphecidae). Bull. Rech. Agron. Gembloux 12:55-70.
- 1979. Crabroniens du genre Rhopalum Stephens trouves in Australie. Bull. Soc. Roy. Sci. Liege 47:352-362.
- 1980. Crabroniens d'Amerique Latine appartenant aux genres que Vernon S. L. Pate nomma Chimila, Foxita et Taruma. Bull. Soc. Roy. Sci. Liege 49:70-83.

Leclercq, J. and L. Claparede

- 1978. Sceliphron caementarium (Drury) s'installe en Europe Meridionale. Entomops (47):245-252.

Leclercq, J. C. Gaspar et al.

- 1980. Analyse des 1600 premieres cartes de l'atlas provisoire des insectes de Belgique, et premiere liste rouge d'insectes menaces dans la faune Belge. Notes Fauniques Gembloux (4):1-104.

Leclercq, J. C. Gaspar and C. Verstraeten

- 1979. Atlas provisoire des insectes de Belgique (et des regions limitrophes). Cartes 1401-1645. Fac. Sci. Agron. Etat, Gembloux. (includes Sphecidae).

- Lefebvre, V.
1978. De ontwikkeling van Eumemes papillarius (Christ). Ent. Berich. 38:164.
- Lelej, A.
1979. [A new species of the genus Smicromyrme Thomson (Hymenoptera, Mutillidae) from middle Asia]. Horae Soc. Ent. Unionis Sovieticae 61:169-171. (In Russian).
- Lin, N.
1980. The weight of Cicada killer wasps, Sphecius speciosus, and the weight of their prey. J. Wash. Acad. Sci. 69:159-163.
- Linsley, E. G., J. W. MacSwain, and C. D. Michener
1980. Nesting biology and associates of Melitoma (Hymenoptera, Anthophoridae). Univ. Calif. Publ. Ent. 90:1-45. (Mutillid associated with this bee discussed).
- Lomholdt, Ole
1980. The Sphecidae (Hymenoptera) of the Rennell and Bellona Islands. Nat. Hist. Rennell Is., Brit. Solomon Is. 8:27-32.
1980. The female Aha evansi Menke, 1977 (Hymenoptera, Sphecidae, Larrinae). Ent. Scand. 11:241-244.
- MacDonald, J. F. and R. W. Matthews
1976. Nest structure and colony composition of Vespula vidua and V. consobrina (Hymenoptera: Vespidae). Ann. Ent. Soc. Amer. 69:471-475.
- MacDonald, J. F., R. W. Matthews and R. S. Jacobson
1980. Nesting biology of the yellowjacket, Vespula flavopilosa (Hymenoptera: Vespidae). J. Kansas Ent. Soc. 53:448-458.
- Macfarlane, R. P.
1979. Notes on insects of the Chatham Islands. New Zealand Ent. 7:64-70.
- Mac Lachlan, William B.
1980. A key to and notes on the Eumenes of America north of Mexico (Hymenoptera, Eumenidae). J. Kansas Ent. Soc. 53:617-621.
- Madsen, Henrik Breuning, E. Nielsen and S. Odum
1980. The Danish Scientific Expedition to Patagonia and Tierra del Fuego 1978-1979. Geogr. Tidsskrift (80):1-28.
- Makino, S. and Sk. Yamane
1980. Heat production by the foundress of Vespa simillima, with description of its embryo nest (Hymenoptera: Vespidae). Insecta Matsumurana (n. s.) 19:89-101.
- Mamaev, B. M. and A. Yagdyev
1979. Problems in the practical use of entomophagous insects of the genus Scleroderma (Hymenoptera, Bethyridae) - the natural enemies of some tree bole pests. Izvest. Akad. Nauk Turkmen. SSR, Biol. Nauk 3:76-79.
- Manley, D. G.
1980. Dasymutilla phoenix (Fox), a new synonym of D. foxi (Cockerell) (Hymenoptera: Mutillidae). Pan-Pac. Ent. 56:153-154.
- Marchal, J.-L. and J. Leclercq
1979. Les hymenopteres aculeates solitaires du carre de Gembloux (UTM:FS10). Notes Fauniques de Gembloux 3:1-32.
- Marion, H.
1978. Les pompiles de la Nièvre. Bull. Mens. Soc. Linn., Lyon. 47:313-321.

- Martinez, A. and M. A. Fritz
1980. Mutillidae neotropicales V. Contribucion al conocimiento de una nueva especie de himenoptero encontrado en el area del Proyecto Yacyreta. Entidad Binacional Yacyreta, Buenos Aires. 4pp. (contains one new species).
- Matthews, R. W., A. Hook and J. W. Krispyn
1980. Nesting behavior of Crabro argusinus and C. hilaris (Hymenoptera: Sphecidae). Psyche 86:149-166.
- McGinley, R. J.
1980. Glossal morphology of the Colletidae and recognition of the Stenotritidae at the family level (Hymenoptera, Apoidea). J. Kansas Ent. Soc. 53:539-552.
- Melville, R. V.
1980. Heterelis Costa, 1887 (Insecta, Hymenoptera): proposed procedure for concluding the case. Z.N.(S.)1175. Bull. Zool. Nomencl. 37:L117-118.
- Menke, A. S.
1980. Biological notes on Trachypus mexicanus Saussure and T. petiolatus (Spinola) (Hymenoptera: Sphecidae). J. Kansas Ent. Soc. 53:235-236.
- Merisuo, A. and A. Pekkarinen
1980. The styloid Paraxenos sphecidarum (Strepsiptera) - a parasite on Ammophila sabulosa and A. pubescens on the baltic island Gotland. Ent. Tidskr. 101:43.
- Mikkola, K.
1978. Spring migration of wasps and bumble bees on the southern coast of Finland (Hymenoptera, Vespidae and Apidae). Ann. Ent. Fennici 44:10-26.
- Minch, E. W.
1980. Notocyphus dorsalis arizonicus Townes (Hymenoptera: Pompilidae), a new host record of Theraphosid spiders. Wasmann J. Bio. 37:24-26.
- Miotk, P.
1979. Das Losswandokosystem in Kaiserstuhl. Veroff. Naturschutz Landschaftspflege Bad.-Württ. 49/50:159-198.
- Moczar, L.
1979. Priesnerius opacior Priesner and the related species (Hymenoptera: Ceropalidae). Acta Zool. Acad. Sci. Hung. 25:343-345.
1979. Some dryinids from Malaysia (Hymenoptera). Acta Biol. Szeged 25:77-83.
- Motro, M., U. Motro, J. Ishay and J. Kugler
1979. Social prerequisites and oocyte development in Vespa orientalis workers. Insects Sociaux 26:155-164.
- Murota, T.
1978. Variation of characters in the aculeate Hymenoptera collected in Hokkaido, Japan. Michimori-Ronso (Fukui) 6:1-15. (in Japanese)
- Myartseva, S. N.
1976. Notes on the biology of little known Sphecidae of Turkmenia. In: Ecology and Economic Importance of Turkmenian Insects. Ed. by A. Tashliev. Ylym, Ashkhabad, 134 pp. (in Russian)
- O'Brien, Mark F. and F. E. Kurczewski
1980. Further observations on the nesting behavior of Crabro advena Smith. Proc. Ent. Soc. Wash. 82:668-674.
- Oehlke, J.
1979. Zur Faltenwespenfauna der Insel Hiddensee Ein Beitrag zur Fauna von Naturschutzgebieten der DDR. Beitr. Ent. 29:289-293.

- Okuna, H.
1979. On the local variations of parasitic rate of Chrysis (Pentachrysis) shanghaiensis Smith upon Cnidocampa flavescens Walker at the front of its northward progress of distribution on the Japan Sea side. Hymen. Comm. 9:4-9. (in Japanese).
- Olmi, M.
1978. Esperienze e prospettive di lotta biologica coi Dryinidae (Hymenoptera, Bethyloidea). Atti XI Congr. Naz. Ital. Ent. pp. 371-373.
1979. I Driinidi e il controllo biologico delle cicaline (Hymenoptera, Dryinidae and Homoptera, Auchenorrhyncha). Ann. Fac. Sci. Agr. Univ. Stud. Torino 10:145-168.
- Olmi, M. and I. Currado
1979. Revisione del genere Haplogonatopus R. C. L. Perkins (Hymenoptera, Dryinidae). Ann. Fac. Sci. Agrar. Univ. Stud. Torino 11:37-44.
1979. Anteoninae conservati nel Museo Civico di Storia Naturale de Genova. Ann. Mus. Civ. Stor. Nat. 82:340-349.
- O'Neill, K. M.
1980. Territorial behavior in males of Philanthus psuche (Hymenoptera, Sphecidae). Psyche 86:19-43.
- Pagliano G.
1978. Fauna imentterologica delle Langhe (Nota faunistica I - Pompilidae). Boll. Gruppo Ent. Piemontese cai-uget (1):31-41.
1978. Tecniche entomologiche III: preparazione degli Imenotteri. Boll. Gruppo Ent. Piemontese cai-uget (1):46-49.
1980. Fauna imenotterologica delle Langhe (Nota faunistica II - Sphecidae). Riv. Piemont. St. Nat. 1:105-135.
- Pardi, L.
1976. Su alcuni aspetti della biologia di Belonogaster. Boll. Ist. Ent. Univ. Bologna 33:281-299.
- Parker, F. D.
1980. Wasps, the real story. Utah Sci., Spring, 1980, pp. 24-27.
- Petit, J.
1975. Les Chrysides de la faune belge, (Hymenoptera, Chrysididae). Notes faunistiques et ethologiques (1-2). Rev. Vervietoise Hist. Nat. 32:1-6.
1975. Les Chrysides de la Faune belge. Notes faunistiques et ethologiques (3) Rev. Vervietoise Hist. Nat. 32:58-64.
1979. Note sur Mimumesa sibiricana R. Bohart (Hymenoptera, Sphecidae). Lambillionea 79:9-14.
1980. Hymenopteres aculeates interessants pour la faune da la belgique et des regions limitrophes. Lambillionea 79:56-61.
- Pflumm, W.
1978. Influence of the temperature at the food source on the preening behaviour of foraging wasps (Paravespula vulgaris). Z. Tierpsychol. 48:288-305.
- Piek, T., P. Mantel, and H. Jas
1980. Ion-channel block in insect muscle fibre membrane by the venom of the digger wasp, Philanthus triangulum F. J. Insect Physiol. 26:345-349.

Ponomarenko, N. C.

- 1975. New genus of Hymenoptera from Baltic Amber. Paleont. Zhurnal 1:126-128.
- 1975. Family Dryinidae. In: Rasnitsyn, A. P., Hymenoptera Apocrita of Mesozoic. Trans. Paleon. Inst. Acad. Sci. USSR 147:104-105.
- 1978. Family Dryinidae. Keys to the insects of the European part of USSR III. Hymenoptera 2:16-27.
- 1979. On the fauna of Dryinids (Hymenoptera, Dryinidae) of the Mongolian People's Republic. III. Insects of Mongolia 6:354-361.
- 1979. New species of the genus Bocchus Ashmead (Hymenoptera, Dryinidae) from the Middle Asia. Horae Soc. Ent. Unionis Sovieticae. 61:166-167.

Porter, C. C.

- 1980. Bicyrtes Lapeletier (Hymenoptera: Sphecidae) in the lower Rio Grande Valley of Texas and in northeast Mexico. Fla. Ent. 63:281-285.

Post, David C.

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

Preuss, G.

- 1980. Voraussetzungen und Moglichkeiten fur Hilfsmassnahmen zur Erhaltung und Forderung von Stechimmen in der Bundesrepublik Deutschland. Natur und. Landschaft 55:20-26.
- 1980. (Hymenoptera: Sphecidae: Pemphredoninae) - Mimesa littoralis (Bondroit, 1933) - Neu fur Rheinland-Pfalz und Sudwestdeutschland. Pfalzer Heimat 31:113.

Pulawski, W. J. and A. P. Rasnitsyn

- 1980. On the taxonomic position of Hoplisus sepultus Cockerell, 1906, from the Lower Oligocene of Colorado (Hymenoptera, Sphecidae). Polskie Pismo Ent. 50:393-396.

Radovic, I. T. and M. D Krunic

- 1979. Morphological characteristics and adaptive modifications of the fore-legs structure in digger wasps (Sphecidae, Hymenoptera). Arhiv Biol. Nauka 28:161-167.

Rasnitsyn, A. P.

- 1980. Origin and evolution of Hymenoptera. Trudy Paleon. Instit. 174:1-190. (in Russian, see Sphecos 1:6)
- 1980. Book review: Keys to the identification of insects of European USSR. Vol. 3, Hymenoptera, part 1, pp. 1-584, part 2, pp. 1-760. Rev. Ent. URSS 59:479-482 (Entirely in Russian).

Ribi, W. A. and L. Ribi

- 1979. Natural history of the Australian digger wasp Spheg cognatus Smith (Hymenoptera, Sphecidae). J. Nat. Hist. 13:693-701.

Richards, O. W.

- 1980. Scolioidea, Vespoidea and Sphecoidea (Hymenoptera, Aculeata). Handb. Ident. British Insects 6(3)(o):1-118.

Rodendorf, B. B. and A. P. Rasnitsyn

- 1980. Historical development of the class Insecta. Trudy Paleon. Instit. 175:1-269. (In Russian, see Sphecos 1:6. Contains chapter on Hymenoptera by Rasnitsyn).

Rohlfien, Klaus

- 1979. Aus der Geschichte der entomologischen Sammlungen des ehemaligen Deutschen Entomologischen Instituts. III. Die Hymenopterensammlung. Beitr. Ent. 29:415-438.

- Rubink, William L. and Kevin M. O'Neill
 1980. Observations on the nesting behavior of three species of Plenoculus Fox. Pan-Pac. Ent. 56:187-196.
- Saini, Malkiat S. and Surjit S. Dhillon
 1979. Structural modifications leading to the formation of the hypostomal bridge in order Hymenoptera (Insecta). Israel J. Ent. 13:61-69.
 1980. Metapleural transformations with respect to propodeum and metapostnotum in Hymenoptera. Fla. Ent. 63:286-292.
- Sawada, H.
 1978. Discovery of the nest of Isodontia formosicola (Strand) in Taiwan. Hym. Comm. 8:21-25. (in Japanese)
- Schmidt, K.
 1979. Zweiter Beitrag zur Kenntnis der Grabwespenfauna Ost-Holsteins (Hymenoptera, Sphecidae). Sch. Natwiss. Ver. Schleswig-Holstein 49:51-60.
 1979. Materialien zur Aufstellung einer Roten Liste der Sphecidae (Grabwespen) Baden-Württembergs I. Philanthinae und Nyssoninae. Veröff. Naturschutz Landschaftspflege Baden-Württembergs 49/50:271-369.
- Schultern, G. G. M.
 1978. Campsomerinae from Malawi. Bull. Zool. Mus. Univ. Amsterdam 6:59-67.
- Simon Thomas, R. T. and A. M. J. Simon Thomas-Heijmans
 1979. Bijenwolfplaag in Limburg. Maandb. Kon. Vlaamse Imkersbond 65:220-223.
 1980. Philanthus triangulum and its recent eruption as a predator of honeybees in an Egyptian oasis. Bee World 61:97-107.
 1980. Levenswijze van de bijenwolf. Bijenteelt 58:106-108.
- Simon Thomas, R. T. and R. L. Veenendaal
 1978. Observations on the behaviour underground of Philanthus triangulum (Fabricius) (Hymenoptera, Sphecidae). Ent. Ber. 38:3-8.
- Smith, A. P.
 1978. An investigation of the mechanisms underlying nest construction in the mud wasp Paralastor sp. (Hymenoptera: Eumenidae). Anim. Behav. 26:232-240.
 1979. Life strategy and mortality factors of Sceliphron laetum (Smith) in Australia. Austr. J. Ecol. 4:181-186.
- Smith, A. P. and J. Alcock
 1980. A comparative study of the mating systems of Australian eumenid wasps (Hymenoptera). Z. Tierpsychol. 53:41-60.
- Spangler, H. G. and D. G. Manley
 1978. Sounds associated with the mating behavior of a Mutillid wasp. Ann. Ent. Soc. America 71:389-392.
- Stange, L. A.
 1979. Tipos de distribucion de la subfamilia Discoeliinae con las descripciones de dos generos nuevos de Argentina (Hymenoptera, Eumenidae). Acta Zool. Lilloana 35:729-741.
- Steiner, A. L.
 1979. Digger wasp predatory behavior (Hymenoptera: Sphecidae): fly hunting and capture by Oxybelus uniglumis (Crabroninae: Oxybelini); a case of extremely concentrated stinging pattern and prey nervous system. Canad. J. Zool. 57:953-962.

- Strassmann, Joan E. and R. R. Thomas
 1980. An analysis of the interrelationships among nest variables in Polistes exclamans (Hymenoptera, Vespidae). J. Kansas Ent. Soc. 53:770-780.
- Suarez, F. J.
 1980. Nuevo genero segregado de Myrmosa Latreille, y descripcion de una Paramyrmosa nueva de Espana. Rev. Espanola Ent. 54:275-280.
- Suda, H.
 1979. Contribution to the knowledge of two species of Eumenes occurring in Japan: E. micado Cameron and E. rubronotatus Perez. Chiba Seibutsu-shi 29:10-16. (in Japanese)
- Sundaramurthy, V. T. and K. Santhanakrishnan
 1979. The effect of population density of parasite Perisierola nephantidis on the mortality of coconut caterpillar, Nephantis serinopa (Lepidoptera, Cryptophagidae). Entomophaga 24:115-117.
- Suzuki, T.
 1978. Area, efficiency and time of foraging in Polistes chinensis antennalis Perez (Hymenoptera, Vespidae). Jap. J. Ecol. 28:179-189.
 1980. Flesh intake and production of offspring in colonies of Polistes chinensis antennalis (Hymenoptera, Vespidae). I. Flesh intake and worker production by solitary fondress. Kontyu 48:149-159.
- Takagi, M., Y. Hirose and M. Yamasaki
 1980. Prey-location learning in Polistes jadwigae Dalla Torre (Hymenoptera, Vespidae), field experiments on orientation. Kontyu 48:53-58.
- Tepedino, V. J., L. L. McDonald and R. Rothwell
 1979. Defense against parasitization in mud-nesting Hymenoptera: can empty cells increase net reproductive output? Behav. Ecol. Sociobiol. 6:99-104.
- Tsuneki, K.
 1979. Sphecidae and Chrysididae collected by Dr. K. Baba in northern part of Japan proper and Hokkaido, with descriptions of two new species. Insects of Niigata Prefecture, Japan. (edit. & publ. by K. Baba) pp. 9-14.
 1980. Studies on the genus Trypoxylon Latreille of the Oriental and Australian regions (Hymenoptera, Sphecidae) VI. Species from Borneo, Celebes and Moluccas. Spec. Publ. Japan Hymen. Assoc. (12):1-118.
 1980. Studies on the genus Trypoxylon Latreille of the Oriental and Australian Regions (Hymenoptera, Sphecidae) VII. Species from the Philippines. Spec. Publ. Japan Hymen. Assoc. (13):1-130.
- Turillazzi, S.
 1980. Seasonal variations in the size and anatomy of Polistes gallicus (L.). Monitore Zool. Ital. 14:63-75.
- Turillazzi, S. and A. Conte
 1980. Influence of temperature on caste differentiation in Polistes foederatus (Kohl). Monitore Zool. Ital. 14:116.
- Valetta, A.
 1979. Second contribution to the Hymenoptera Aculeata (excluding ants) of the Maltese Islands. Ent. Mon. Mag. 114:215.
- van der Vecht, J.
 1980. Sphaeromenes elizabethae new species (Hymenoptera, Eumenidae). Ent. Berich. 40:14-16.

- Vidano, C. and A. Arzone
1976. Sulla collezione Spinola conservata nel Castello di Tassarolo. Atti XI Cong. Naz. Ital. Ent., Portici-Sorrento. pp. 253-260.
- Viette, P.
1978. Les types des Mutilles malgaches decrites par G. Olsoufieff (Hymenoptera, Mutillidae). Bull. Soc. Ent. France 82:224-228.
- Wahis, R.
1980. Sur quelques Pompilides rares de la faune belge. Bull. Rech. Agron. Gembloux 14:187-194.
* 1980. Les Episyron des Iles Philippines (Hymenoptera, Pompilidae, Pompilinae). Zool. Meded. 55:301-312.
- Walker, A. K. and L. L. Deitz
1979. A review of entomophagous insects in the Cook Islands. New Zealand Ent. 7:70-82.
- Ward, G. L. and K. J. Cole
1977. Addition to the life history of Chalybion zimmermanni Dahlbom. Proc. Indiana Acad. Sci. 84:284.
- Webb, D. W.
1980. Primary insect types in the Illinois Natural History Survey Collection, exclusive of the Collembola and Thysanoptera. Illinois Nat. Hist. Surv. Bull. 32:55-191.
- West-Eberhard, M. J.
1979. Toward a unified theory of social insect caste. Quart. Rev. Biol. 54:430-433. (book review of "Caste and Ecology in the Social Insects" by Oster and Wilson)
- Westrich, P. G.
1979. Faunistik und okologie der Hymenoptera Aculeata des Tubinger Gebiets, vor allem des Spitzbergs, unter besonderer Berucksichtigung der in Holz und Pflanzenstengeln nistenden Arten. Kindsbach/Pfalz, publ. by author, 261 p.
- Wheeler, G. C. and J. Wheeler
1979. Larvae of some eusocial bees and wasps. Contrib. Sci., Nat Hist. Mus. Los. Angeles Co. (321):1-19.
- Wiering, H.
1980. Jan Pieter van Lith, 1912-1979. Ent. Bericht. 40:81-84.
- Wilson, M. V. H.
1978. Paleogene insect faunas of western North America. Quaest. Ent. 14:13-34.
- Wolf, H.
1976. Die Berg-Singzikade in Hessen und in Mitteleuropa. Jb. Nass. Ver. Naturk. 103:18-23.
- Yamane, Sk., S. Makino, T. Ban, and Y. Sato
1979. Protective suits against hornets. Kontyu 47:429-430.
- Yamane, Sk., R. E. Wagner and So. Yamane
1980. A tentative revision of the subgenus Paravespula of eastern Asia (Hymenoptera: Vespidae). Insecta Matsumurana (n. s.) 19:1-46. (Generic, subgeneric and species group concepts discussed, includes appendix with one new species)

Literature for the Subfamily Vespinae 1977 - 1979

(Compiled by Robin Edwards)

Arnold Menke is attempting to list all aculeate literature from 1975 - a herculean task! So far only about 40% of papers relating to the subfamily Vespinae have been listed. The references below, together with Sphecos Nos. 1 and 2, increase the coverage to nearly 100% for 1977, 1978, and 1979 (the last still incomplete due to late publication of some journals).

Readers with specific questions about the vespine literature, from Aristotle to 1976, are invited to contact me, Robin Edwards; there are nearly 3000 references to choose from! Address: Rentokil Ltd., Felcourt, East Grinstead, W. Sussex RH19 2JY, England.

1977

- Alexander, R. D. and Sherman, P.W.
Local mate competition and parental investment in social insects. *Science*, N.Y. 196:494-500.
- Anonymous
Detection. *New State records*. *Coop. Plant Pest Rep.* 2:250.
- Anonymous
The European wasp - a new threat to W.A. *J. Agric. West Aust.* 18:106-108.
- Cavagnol, R. M.
The pharmacological effects of hymenoptera venoms. In: Elliott, H.W. (Ed.) *Annual Review of Pharmacology and Toxicology*. Vol.17: 479-498. Paulo Alto, Calif.
- Croitoru, N., Ishay, J. and Arcan, L.
Electrical resistance of the yellow strips of social wasps under illumination. *Proc. VIII Int. Congr. IUSSI, Wageningen*: 154.
- Davies, N. B.
Prey selection and the search strategy of the Spotted flycatcher, *Muscicapa striata*: a field study on optimal foraging. *Anim. Behav.* 25:1016-1033.
- Gädeke, R., Helwig, H., Otto, M., Schindera, F. and Weineck, B.
Tödliche Vergiftungskrankheit eines Kindes nach massenhaften Wespenstichen. *Medizinische Klinik* 72:1487-1492.
- Gilboa, M., Goal-On, M. and Zonis, S.
Bee stings and wasp stings of the eye. Retained intralenticular wasp sting. A case report. *Br. J. Ophthal.* 61:662-664.
- Grogan, D.E. and Hunt, J.H.
Digestive proteases of two species of wasps of the genus *Vespula*. *Ins. Biochem.* 7:191-196.
- Hori, S., Kawai, N., Niwa, A. and Chotani, S.
Separation of neurotoxins from hornet (*Vespa insularis*) venom and their actions on crustacean neuromuscular transmission. *J. Neurochem.* 28:1183-1188.
- Hunt, J.H.
Digestive protease presence and abundance in social Vespidae. *Proc. VIII Int. Congr. IUSSI, Wageningen*: 75-76.

1977

- Hunt, K.J., Valentine, M.D., Sobotka, A.K., Amodo, F.J. & Lichtenstein, L.M.
A controlled trial of venom immuno-therapy for Hymenoptera hypersensitivity. *Ann. Allergy* 38:300.
- Ishay, J.
Filial attachment in Vespa orientalis colonies. *Proc. VIII Int. Congr. IUSSI, Wageningen*: 152.
- Izard, M.H. and Montane, F.
À propos d'une allergie aux piqûres de guêpe. *Revue Fr. allerg. immunol. clin.* 17:105-106.
- Jacobson, R.S.
A systematic study of the Vespula vulgaris group (Hymenoptera: Vespidae) in eastern North America. M.S.thesis, Univ. Georgia. (See Jacobson, Matthews & MacDonald, 1978 in *Sphecos* 1:34.)
- Jany, K.-D., Haug, H. and Pfeleiderer, G.
Characterization of the low molecular weight protease from the hornet, Vespa crabro. *Hoppe-Seyler's Z. physiol. Chem.* 358: 1225.
- Kawai, N., Hori, S., Niwa, A. and Ortani, S.
The action of neurotoxin isolated from hornet venom on neuromuscular transmission. *Jap. J. med. Sci. Biol.* 30:82-83.
- Kobayashi, K.
On the Insecta impaled by the Bull-headed shrike (Lanius bucephalus bucephalus Temminck & Schlegel) - II. *Gensei* 31: 1-5 (in Japanese).
- Koeniger, N.
Signals from brood in social Hymenoptera. *Proc. VIII Int. Congr. IUSSI, Wageningen*: 280-282.
- Krispyn, J. and Hermann, H.
The social wasps of Georgia: hornets, yellowjackets, and polistine paper wasps. *Georgia agric. Exp. Stns Res. Bull.* No.207:3-39.
- Kublis, G.G. et. al.
Comparison of structural and functional organisation of the ACTH and wasp venom kinin. *Biokhimiya* 42:616-621 (in Russian).
- Light, W.C., Reisman, R.E. and Arbesman, C.E.
Unusual reactions following insect stings: clinical features and immunological analysis. *Ann. Allergy* 38:299.
- Lord, W.D.
The occurrence of pestiferous Vespula spp. in northern Delaware (Hymenoptera: Vespidae). *Ent. News* 88:193-196.
- Lord, W.D., Nicolson, D.A. and Roth, R.R.
Foraging behaviour and colony drift in Vespula maculifrons (Buysson) (Hymenoptera: Vespidae). *Jl N.Y. ent. Soc.* 85:186.
- Loveless, M.H.
Triple stings by captive wasps to appraise and to booster immunity in venom allergy. *Ann. Allergy* 38:299.
- Matsuura, M.
Observations on the hornets hunting the cicadas. *Rostria* 27: 216-218 (in Japanese).
- Meriney, D., Nall, T., Wallace, D., Rosenzweig, D., Goel, Z. & Grieco, M.H.
Comparison of venom and whole body skin testing with radio-allergo-sorbent test in vespid hypersensitivity. *Ann. Allergy* 38:377.

1977

- Montagner, H. and Pain, J.
Comparative study of antennal communication in the domestic bee and the social wasps. 16mm colour film with optical sound. (English version; also available in French.)
- Motro, M., Kugler, J., Motro, U. and Ishay, J.
Social prerequisites and oocyte development in Vespa orientalis workers. Proc. VIII Int. Congr. IUSSI, Wageningen: 153.
- Müller, U., Spiess, J., Patrizzi, R., Roth, A. and Hoigne, R.
Die Bedeutung serologischer Untersuchungen für Diagnose und Therapie der Insektenstichallergie. Schweiz. med. Wschr. 107: 1747-1749.
- Nelson, J.
Yellow jackets. Pest Control 45 (April): 8.
- Ori, M. and Hiyama, O.
A case of anaphylactic shock caused by Vespa tropica. Jap. J. Sanit. Zool. 28:281-284 (in Japanese).
- Payne, R.M.
Insects attracted to Alexanders (Smyrnum obusatum L.). Entomologist's mon. Mag. 113:233-234.
- Perlman, F.
Stinging insect allergy - a historical sketch and a confused state. Ann. Allergy 39:285-287.
- Pflumm, W.
Welche Grössen beeinflussen die menge de von Bienen und Wespen an der futterquelle aufgenommenen zuckerlösung. Apidologie 8:401-411.
- Rakshpal, R. and Singh, A.
Effect of food on the amino acid composition of the haemolymph of some insects. Indian J. Ent. 38(1976):167-170.
- Riches, H.R.C.
Insect bites and stings. Practitioner 219:199-203.
- Roland, C., Horel, A. and Montagner, H.
The relationship between ecological factors, activity and rate of foraging success in societies of Paravespula vulgaris and Paravespula germanica (Hym., Vespidae). Proc. VIII Int. Congr. IUSSI, Wageningen: 71-74.
- Sandhall, Å. and Hedqvist, K-J.
Humlor, bin och andra steklar. ICA Bokförlag, Västerås, Sweden. (A 95-page 'nature guide' with 147 excellent colour photographs of Hymenoptera. Text in Swedish.)
- Schmidtman, E.T.
Muscid fly predation by Vespula germanica (Hymenoptera: Vespidae). Environ. Ent. 6:107-108.
- Schubert, W.
Brutausfälle beim Wespenbussard Pernis apivorus in Baden-Württemberg. Anz. ornithol. Ges. Bayern 16:171-175.
- Sobotka, A.
Diagnosis of insect hypersensitivity. J. Allergy Clin. Immunol. 60:213-214.
- Sobotka, A., Valentine, M.D., Hunt, K.J. and Lichtenstein, L.M.
Immunologic evaluation of insect allergy. Ann. Allergy 38:300.
- Starr, J.C. and Brasher, G.W.
Wasp sting anaphylaxis with cerebral infarction. Ann. Allergy 39:431-433.

1977

- Taoka, H.
Hibernation sites of Vespa simillima and Vespula A in Hokkaido. Nature & Insects 12 (13):36 (in Japanese).
- Tu, A.T.
Venoms: their chemistry and molecular biology. (No other details).
- Tuichibaev, M.V. et.al.
Characteristics of certain membrane-active components of the venom of Vespa orientalis. Biochemistry 42:1701-1707.
- West Eberhard, M.J.
The establishment of reproductive dominance in social wasp colonies. Proc. VIII Int. Congr. IUSI, Wageningen:223-227.
- Whiteley, H.N.
Wasps. A closer look at one of our social wasps. Environ. Health 85:201-202.
- Yamane, Sk.
A young nest of Vespa xanthoptera Cameron built within a bamboo tube in Honshû (Hymenoptera: Vespidae). New Ent. 26: 50 (in Japanese).

1978

- Anonymous
Insect venom counteracts stings. Chemistry (Oct):5.
- Anonymous
What to wear against wasp stings. Pest Control 46 (5):20-21,40.
- Anonymous
Systemic reactions to Hymenoptera stings. Medical Letter on Drugs & Therapeutics 20 (1/2):54-55.
- Arbesman, C.E. and Reisman, R.E.
Further clinical applications of the measurement of venom specific immunoglobulin E. J. Allergy Clin. Immunol. 61:135.
- Archer, M.E.
Sociobiology and the computerised wasp colony: a simulation model for the colony development of Vespula vulgaris (L.) and Dolichovespula sylvestris (Scop.) (Hymenoptera: Vespidae). Abs. 1st Europ. Congr. Ent., Reading 19-22 Sept. 1978:11.
- Bogolepov, N.K. et.al.
Allergic encephalo-myelo-poly-radiculo-neuritis from a wasp sting. A clinico-patho-morphological report. Zh. Nevropatol. Psikhiatr. im S.S.Korsakova 78:187-191 (in Russian).
- Boulard, M.
First case of ostensible mimicry seen in the Auchenorhynchus Homoptera. C.r.hebd.Seanc.Acad.Sci.,Paris 287D:1389-1392.
- Busse, W.W. and Yunginger, J.W.
The use of the radio allergosorbent test in the diagnosis of Hymenoptera anaphylaxis. Clin. Allergy 8:471-478.
- Butani, D.K.
Insect pests of fruit crops and their control: 25 - Mulberry. Pesticides 12 (8):53-59.
- Charnov, E.L.
Sex-ratio selection in eusocial Hymenoptera. Am. Nat. 112: 317-326.

1978

- Cymorek, S.
Über Wespen als Holzverderber - Schäden, Ursachen, Bekämpfung -
Praktische Schädlingsbekämpfer 30:53-61.
- Czechowski, W. and Pisarski, B. (Eds.)
Social insects in the anthropogenic environments. Proceedings
of the 2nd International Symposium held on 17-19th September,
1976 at Warszawa-Jablonna. Memorabilia Zool. 29.
- Davis, H.G.
Yellowjacket wasps in urban environments. In: Koehler, C.S.
and Frankie, G.W. (Eds.) Perspectives in urban entomology.
pp. 163-185. Academic Press, New York.
- Day, M.C. and Fitton, M.G.
Re-curation of the Linnaean Hymenoptera (Isecta), with a
reassessment of the taxonomic importance of the collection.
Biol. J. Linn. Soc. 10:181-198.
- De Jong, D. See Jong, D.de.
- Elliot, W.B., Fletcher, J. and Rosenberg, P.
Phospholipase B activity in stinging insect venoms. Fedn Proc.
Fedn. Am. Socs exp. 37:152.
- Else, G., Felton, J. and Stubbs, A.
The conservation of bees and wasps. Nature Conservancy
Council, London. 13pp.
- Fernandez Gayubo, S. See Gayubo, S.F. (Sphecos 2:22).
- Franke, W., Hindorf, G. and Reith, W.
Methyl-1,6-dioxaspiro 4.5 decanes as odors of Paravespula
vulgaris (L.). Angew. Chem. Int. Ed. Engl. 17:862.
- Gaspar, C. and Thirion, C.
Modification des populations d'Hyménoptères sociaux dans des
milieux anthropogènes. In: Czechowski & Pisarski, pp. 61-77.
- Hoffman, D.R.
Biochemical and allergenic studies of vespid venoms.
J. Allergy Clin. Immunol. 61:135-136.
- Hunt, K.J., Sobotka, A.K. et.al.
Sensitization following Hymenoptera whole body extract therapy.
J. Allergy Clin. Immunol. 61:48-53.
- Jany, K.-D. et.al.
Two papers quoted in Sphecos 2:32 erroneously under Yany.
- Jong, D. de.
Hymenoptera. In: Morse, R.A. (Ed.) Honey bee pests, predators,
and diseases. pp. 138-157. Comstock, Ithaca & London.
- King, T.P., Sobotka, A.K. et.al.
Protein allergens of white-faced hornet, yellow hornet and
yellow jacket venoms. Biochemistry, N.Y. 17:5165-5174.
- Kurzenko, N.V.
Vespidae. In: Medvedeva, G.S. (Ed.) Key to the insects of the
European part of the USSR. Vol. III. Hymenoptera. Part 1.
pp. 147-152. Leningrad (in Russian).
- Leclercq, M. and Lecomte, J.
Thérapeutique d'urgence des accidents provoqués par les piqûres
d'insectes. Revue med. Liege 33:240-249.
- Løken, A.
Notes on the Scandinavian fauna of social Aculeates (Hym.,
Vespidae and Apidae s.s.). Norw. J. Ent. 25:165-169.

1978

- Lord, W.D. and Roth, R.R.
Is there intraspecific competition in Vespula maculifrons (Hymenoptera: Vespidae)? J1 N.Y. ent. Soc. 86:304-305.
- Müller, U., Roth, A., Yman, L. and Patrizzi, R.
Use of RAST technique in wasp sting hypersensitivity. Cross-reactions between various insect allergens are specially considered. Allergy 33:197-202.
- Oster, G.F. and Wilson, E.O.
Caste and ecology in the social insects. Princeton U.P.
- Pamilo, P., Varvio-Aho, S-L. and Pekkarinen, A.
Low enzyme gene variability in Hymenoptera as a consequence of haplo-diploidy. Hereditas 88:93-100.
- Peters, G.A., Karnes, W.E. and Bastron, J.A.
Near-fatal and fatal anaphylactic reactions to insect sting. Ann. Allergy 41:263-268.
- Pflumm, W.
Temperaturabhängiges Putzen bei Sammelwespen (Paravespula vulgaris). Z. Tierpsychol. 48:288-305.
- Reierson, D.A. and Wagner, R.E.
Trapping to determine the sympatry and seasonal abundance of various yellowjackets. Environ. Ent. 7:418-422.
- Reisman, R.E., Arbesman, C.E. and Lazell, M.
Venom immunotherapy. J. Allergy Clin. Immunol. 61:135.
- Rhoades, R.B., Kalof, D., Bloom, F. and Wittig, H.J.
Cross-reacting antigens between imported fire ants and other hymenoptera species. Ann. Allergy 40:100-104.
- Ring, B., Abramov, I., Ishay, J. and Slor, H.
Deoxyribonuclease and ribonuclease activities in venom sac extracts from the social wasp Polistes gallicus (Polistinae, Vespidae). Toxicon 16:77-79.
- Rosenberg, P., Ishay, J. and Gitter, S.
Phospholipase activities of Oriental Hornet venom. Toxicon 16:139.
- Schmidt, J.O.
Venoms: A study of venom diversity. In: Shankland, D.L., Hollingworth, R.M. and Smyth Jr., T. Pesticide and venom neurotoxicity. Plenum, New York & London.
- Settipane, G.A., Klein, D.E. and Boyd, G.K.
Relationship of atopy and anaphylactic sensitization: a bee sting allergy model. Clin. Allergy 8:259-266.
- Shulov, A.
40 years of toxicological research in Israel. Period. Biol. 80 (Suppl. 1):1-4.
- Skibińska, E.
Influence de la pression urbaine sur les groupements de Vespidae. In: Czechowski and Pisarski. pp. 173-181.
- Smithers, C.N. and Holloway, G.A.
Establishment of Vespula germanica (Fabricius) (Hymenoptera: Vespidae) in New South Wales. Aust. ent. Mag. 5:55-59.
- Tautz, J. and Markl, H.
Caterpillars detect flying wasps by hairs sensitive to airborne vibration. Behavl Ecol. Sociobiol. 4:101-110.

1978

- Veith, H.J. and Koeniger, N.
Identifizierung von cis-9-Pentacosen als Auslöser für das
Wärmen der Brut bei der Hornisse. *Naturwissenschaften* 65:263.
- Verdcourt, B.
Late activity of Vespula vulgaris (L.) (Hym., Vespidae).
Entomologist's mon. Mag. 114:90.
- Weaving, J.N. and Cullen, M.J.
Unusual high volume of sarcoplasmic reticulum in a wasp leg
muscle. *Experientia* 34:796-797.
- Yamane, Sk.
Reference given in Sphecos 2:32. The article is a review of
Edery et.al. 1978. Venoms of Vespidae. (Sphecos 2:22).

1979

- Anonymous
Insect-venom shots cut sting reactions. *Medical World News*
April 16:11-12.
- Archer, M.E.
A simulation model for the colonial development of Paravespula
vulgaris (Linnaeus) and Dolichovespula sylvestris (Scopoli)
(Hymenoptera: Vespidae). Ph.D. thesis, Univ. Hull, England.
- Archer, M.E.
Provisional atlas (see Sphecos 2:20). 2nd Edition (with
printing errors corrected).
- Brian, M.V.
Caste differentiation and division of labor. In: Hermann, H.R.
pp. 121-222. (See Sphecos 2:24).
- Carpenter, F.M. and Hermann, H.R.
Antiquity of sociality in insects. In: Hermann, H.R.
pp. 81-89. (See Sphecos 2:24).
- Chipps, B.E. et.al.
Hymenoptera hypersensitivity in children. *J. Allergy Clin.*
Immunol. 63:179-180.
- Cobb, F.K.
Honey buzzard at wasps nest. *Br. Birds* 72:59-64.
- Crozier, R.H.
Genetics of sociality. In: Hermann, H.R. pp. 223-286. (See
Sphecos 2:24).
- Cyr, L.J.
How to control ground nesting yellow jackets. *Pest Control*
47 (1):11 (Letters).
- Davey, N.
Wildlife in miniature. *Wildlife* 21 (10):36-37. (Illustrates
a Japanese netsuke with a fine carving of a hornet.)
- Fletcher, J.E., Elliott, W.B., Ishay, J. and Rosenberg, P.
Phospholipase A and B activities of reptile and Hymenoptera
venoms. *Toxicon* 17:591-601.
- Ganderton, M.A.
Anaphylactic reactions to wasp and bee stings. *Br. med. J.*
1 (6172):1216-1217.

1979

- Gaunt, D.S.
Honey buzzard at wasps nest. Br. Birds 72:388.
- Golden, D.
Regimens of Hymenoptera venom immunotherapy. J. Allergy Clin. Immunol. 63:180.
- Green, A.W., Reisman, R.E. and Arbesman, C.E.
Clinical and immunologic studies of patients with large local reactions following insect stings. J. Allergy Clin. Immunol. 63:135.
- Hamilton, R.G., Sobotka, A.K. and Adkinson Jr., N.F.
Quantitation of allergen specific immunoglobulin G with an Iodine-125 protein A solid phase radio-immunoassay. J. Allergy Clin. Immunol. 63:138.
- Herbers, J.M.
The evolution of sex-ratio strategies in Hymenopteran societies. Am. Nat. 114:818-834.
- Hermann, H.R.
Insect sociality - an introduction. In: Hermann, H.R. pp. 1-33. (See Sphecos 2:24).
- Hirai, Y., Kuwada, M. et.al.
A new mast cell degranulating peptide homologous to Mastoparan in the venom of Japanese hornet (Vespa xanthoptera). Chem. Pharm. Bull. (Tokyo) 27:1945-1946.
- Hirai, Y., Yasuhara, T. et.al.
A new mast cell degranulating peptide "Mastoparan" in the venom of Vespula lewisii. Chem. Pharm. Bull. 27:1942-1944.
- Ishay, J.S. and Paniry, V.A.
Effects of caffeine and various xanthines on hornets and bees. Psychopharmacology 65:299-309.
- Jarisch, R., Yman, L., Boltz, A., Sandor, I. and Janitsch, A.
IgE antibodies to bee venom, phospholipase A, melittin and wasp venom. Clin. Allergy 9:535- .
- Jong, D. de. See De Jong, Sphecos 2:21.
- Kartzev, V.M.
An evidence of the ability of wasps Paravespa germanica (Hymenoptera, Vespidae) for generalisation of visual stimuli. Zool. Zh. 58:1419-1420 (in Russian with poor English summary).
[Note: the author means the vespine subgenus Paravespula, not the genus Paravespa (Eumenidae).]
- Kawai, N., Abe, T., Hori, S. and Niwa, A.
Effects of a neurotoxin HTX-E in hornet (Vespa insularis) venom on synaptic transmission. Neurosci. Lett. Suppl. (2).
- Kral, K.
Neuronal connections in the ocellus of the wasp (Paravespula vulgaris L.). Cell Tissue Res. 203:161-171.
- Lahiri, S.C. and Sarangi, B.
Acetylcholine, 5-HT and histamine in the venom of the wasp Vespa cincta Fabr. Indian J. med. Res. 69:505-512.
- Lamberg, L.
Beastly bee stings. American Way, May 1979:48-57.
- Lichtenstein, L.M., Valentine, M.D. and Sobotka, A.K.
Stinging insect allergy. J. Allergy Clin. Immunol. 64:5-13.

1979

- Lord, W.D.
Foraging, colony productivity and competition in Vespula maculifrons (Buysson). M.Sc. thesis, Univ. Delaware.
- MacDonald, J.F.
Biology, recognition, medical importance and control of Indiana social wasps. Purdue Univ., Agric. Exp. Sta. Bull. No. 219:1-22.
- Masne, G. le.
Problèmes actuels dans l'étude du comportement des Hyménoptères sociaux. Monitore zool. ital. 13:177-194.
- Morgan, M.J.
Social wasps in North Wales. Nature in Wales 16:278-279.
- Mumcuoglu, Y. and Wortmann, F.
The basophil degranulation test in the diagnosis of honeybee and wasp allergies. Schweiz. med. Wschr. 109:1183-1187.
- Pirkle, W.H. and Adams, P.E.
Broad-spectrum synthesis of enantiomerically pure lactones.
1. Synthesis of sex pheromones of the Carpenter bee, Rove beetle, Japanese beetle, Black-tailed deer and Oriental hornet. J. org. chem. 44:2169-2175.
- Plowright, R.C.
Social facilitation at the nest entrance of bumble bees and wasps. Insectes soc. 26:223-231.
- Ramirez, D.A. and Evans III, R.
The diagnosis of Hymenoptera hypersensitivity. J. Allergy Clin. Immunol. 63:136.
- Reisman, R.E.
Stinging insect allergy. J. Allergy Clin. Immunol. 64:3-5.
- Reisman, R.E., Arbesman, C.E. and Lazell, M.
Clinical and immunological studies of venom immunotherapy. Clin. Allergy 9:167-174.
- Observations on the etiology and natural history of stinging insect sensitivity. Application of measurements of venom specific immunoglobulin E. Clin. Allergy 9:303-312.
- Reisman, R.E., Wypych, J., Lazell, M. and Arbesman, C.E.
Sensitization to nonvenom constituents present in a yellow jacket venom preparation. J. Allergy Clin. Immunol. 63:137.
- Sensitization to nonvenom contaminants in a venom preparation. J. Allergy Clin. Immunol. 63:281-286.
- Richards, O.W.
The Hymenoptera Aculeata of the Channel Islands. Rep. Soc. guernés. 20 (1978):389-424. (Incorrect in Sphecos 2:29.)
- Rowland, C.M. and McLellan, A.R.
A model of a wasp colony population, Paravespula vulgaris (L.). Ecol. Modelling 7:151-162.
- Rust, R.W.
Pollination of Impatiens capensis. Pollinators and nectar robbers. J. Kans. ent. Soc. 52:297-308.
- Sagara, N. and Kobayashi, T.
Hebeloma spoliatum appeared from abandoned nest-chambers of Vespula lewisi, a ground wasp. Trans. mycol. Soc. Japan 20: 266-267 (in Japanese).

1979

- Santrach, P.J., Peterson, L.G. and Yunginger, J.W.
Comparison of diagnostic tests for stinging insect sensitivity.
J. Allergy Clin. Immunol. 63:135-136.
- Schmidt, J.O. and Blum, M.S.
Toxicity of Vespula (Dolichovespula) maculata venom. Toxicon
17:645-649.
- Settipane, G.A., Chafee, F.H. et.al.
Anaphylactic reactions in patients with a past history of
asthma. J. Allergy Clin. Immunol. 63:181.
- Sharp, J.L. and James, J.
Color preference of Vespula squamosa. Environ. Ent. 8:708-
710.
- Starr, C.K.
Origin and evolution of insect sociality; a review of modern
theory. In: Hermann, H.R. pp. 35-79. (See Sphecos 2:24).
- Urbani, C.B.
Territoriality in social insects. In: Hermann, H.R. pp. 91-
120. (See Sphecos 2:24).
- Valentine, M.D., Sobotka, A.K. and Lichtenstein, L.M.
Diagnosis and treatment of venom allergy; Overview. J. Allergy
Clin. Immunol. 63:180.
- Wheeler, G.C. and Wheeler, J.
Larvae of the social Hymenoptera. In: Hermann, H.R. pp. 289-
338. (See Sphecos 2:24).
- Wicher, K., Reisman, R.E. et.al.
Comparison of the immunogenicity of venoms from different
yellow jacket species. J. Allergy Clin. Immunol. 63:136-137.
- Wypych, J.I., Reisman, R.E. et.al.
Immunologic and biochemical evaluation of the potency of whole
insect body extracts. J. Allergy Clin. Immunol. 63:137 and
267-272.
- Yamane, Sk., Makino, S., Ban, T. and Satô, Y.
Protective suits against hornets. Kontyû 47:429-430 (in
Japanese).

