SPHECOS

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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

The response from those receiving Sphecos #1 has been gratifyingly enthusiastic. Important contacts have been made as a result of the first issue, certain problems have been solved (Spinola 1805 does exist!), and many people have applauded the current literature section. So far however, your enthusiasm has not been accompanied by much "hard copy" in the form of news items. I cannot produce material for each issue alone. It only takes a few minutes of your time to write up a short report of your current research or of a recent museum or collecting trip for example. Surely most of you have something in progress that would interest the readers.

Do YOU want to continue to receive SPHECOS?

Future issues of Sphecos will ONLY BE SENT to those of you that filled out the questionnaire that accompanied the first issue and mailed it back to me - no exceptions!!! Failure to return the completed questionnaire to me will be taken as a sign disinterest and you will be dropped from the mailing list (libraries exempted). Procrastinators have been forewarned.

Another function of the questionnaire is the production of the Directory of Wasp Workers which will be distributed later this year. Apparently the vast majority of the readership is not interested in having photographs and biographies accompanying their names. I have only received two photographs and a half a dozen or so biographies. Consequently the Directory will include only names, addresses and research interests or specialties. The few biographies received will by printed in future issues of Sphecos under "Profiles".

Most of you probably wonder how Sphecos is being produced. Information for each issue is typed into a WANG word processor. For those of you that are unfamiliar with this machine it is basically a computerized typewriter without paper. As you type, your copy appears on a TV screen in front of you. When finished the ms. is transferred

by the computer to a small record-like disk for storage. Subsequent editing of the ms. and insertion of additional material is a simple matter. Information on the disk is transferred back into the computer and then produced page by page on the TV screen which allows you to add new data, and to edit or delete anything. When the ms. is finalized a computer generated typewriter produces camera ready copy (with justified margins if desired). The things that you can do with this machine are truly amazing. Unfortunately the duplicating department did not do a very good job of reproducing Sphecos #1 (they spilled something on the first page thus bluring words in the first paragraph, some copies had pages missing or with double images, etc. If any of you received a copy of the first issue with pages missing please let me know and I will send a replacement.

Headings for this issue have been centered and printed in large letters to make them standout better. Hopefully various categories of information will be more readily located.

The birth of Sphecos has affected the production of two of the newsletters cited on page 1 of the first issue. Chris Starr of the Polistine Information Bulletin has notified me that the consensus of its readership was that it should be discontinued because of the broad coverage of Sphecos. Chris will send me the material that he has been accumulating for a future issue of PIB so that it can be incorporated in the next issue of Sphecos. The yearly list of sphecid literature compiled by W. J. Pulawski (Sphecos 1:1) has been discontinued. "Woj" will continue to collect references but will forward them to me for inclusion in the "Recent Literature" section of Sphecos.

Two additional Hymenoptera newsletters have been brought to my attention. Apicultural Abstracts lists articles on solitary as well as social bees, and provides abstracts of some of them. It is published by the International Bee Research Association (thanks to C. D. Michener for bringing this publication to my attention). J. M. Cherrett, Dept. of Applied Zoology, University College of North Wales, Bangor, Gwynedd, LL57 2UW, Great Britain, is editor of Attini, a newsletter for persons interested in leaf cutting ants (thanks to David Smith).

Aside from a few typographical mistakes apparently there were only two significant errors in Sphecos 1. The two Russian books described by Alex Rasnitsyn on page 6 of the first issue are not yet published. They are due out sometime in 1980. David Smith's name somehow was omitted from the list of collaborators of the new Hymenoptera Catalog (Sphecos 1:4). (Sorry Dave!).

The request for information on Spinola (1805) in Sphecos 1:11 has paid off. Dr. Karl-Johan Hedqvist located a copy in the Swedish Academy of Sciences library in Stockholm. I will print a facsimile of this early paper in the next issue of Sphecos. This is an example of how Sphecos can work for you. Perhaps you have a problem that someone else can solve. If so, send me your request for help. We reach over 300 people around the world.

I'd like to thank Sue Hevel for handling the task of typing the Recent Literature section for this issue.

Research News

Patricia L. Lebau (graduate student), Dept. of Entomology, Univ. of California, Davis, Calif. 95616, has begun a study of the biology and reproductive behavior of subsocial wasps at an interspecific nest site aggregation.

Christopher Starr (graduate student), Dept. of Entomology, Univ. of Georgia, Athens, Georgia, is conducting research on defensive behavior in Polistes. He is also preparing an annotated key to the social wasps of Costa Rica and Chris would like to hear from anyone with specimens of Protopolybia, Pseudochartergus, Charterginus, Chartergellus or Nectarinella (Vespidae, Polistinae) from that country.

Joan Strassmann, Dept. of Biology, Rice University, Houston, Texas 77001, is studying natural populations of Polistes annularis and P. exclamans, focusing on the evolution of their social behavior. She is also conducting laboratory experiments on the hormonal and pheromonal control of dominance rank in P. annularis.

Mark F. O'Brien (graduate student), Entomology Department, SUNY College of Environmental Science and Forestry, Syracuse, N.Y. 13210, is studying the ethology and ecology of Podalonia luctuosa, P. robusta and P. violaceipennis in northern New York. Mark is also studying the behavior of Alysson conicus in the Adirondacks of New York, and the ethology of Liris argentata.

Larry French (graduate student), Dept. of Entomology, University of California, Davis, Calif. 95616 is working on a revision of the chrysidid genus Hedychrum in North America.

Richard Bohart and his wife Margaret have spent about three months collecting wasps in the southern part of Western Australia. They are now back at the University of California, Davis, and hopefully we will receive a report of their adventures for the next issue of Sphecos.

R. C. Miller, former graduate student at Cornell University, Ithaca, N.Y., who most recently resided at San Simon, Arizona, has terminated work on his unfinished revision of the sphecid genus Crossocerus. All of the material that he had on loan was left at the Dept. of Entomology, Univ. of California, Davis. R. M. Bohart and R. O. Schuster have returned all of the material to the various lending institutions involved. Miller is now reported to be living in Grass Valley, California.

M. K. Giri (graduate student), Dept. of Entomology, University of Kentucky, Lexington, Ky. 40546, is studying the biosystematics of Haplogonatopus (Dryinidae).

Steven Alm (graduate student), New York State Agric. Exper. Station, P.O. Box 727, Hudson Valley Lab., Highland, N. Y. 12528 is studying the ethology of Anoplius tenebrosus (Cresson) in New York. This species is quite similar to the European A. fuscus (L.) and he

would like hear from anyone with ethological data of fuscus. Steven is also studying the ultrastructure of pompilid antennae using scanning electron microscopy.

Jim Cane (graduate student), Dept. of Entomology, Univ. of Kansas, Lawrence, Kansas, 66045, has been working on the chemical ecology of solitary bees, and would like to hear from anyone that is studying chemical defensive behaviors in wasps and bees. Particularly useful would be predator records.

Lynn S. Kimsey and Richard M. Bohart, Dept. of Entomology, Univ. of California, Davis, Calif. 95616, are beginning a generic revision of the Chrysididae of the world. "We have a fair representation of species from the Western Hemisphere, but have a desperate need for representative material from other parts of the globe. Any individual or institution willing to trade material for sphecids or chrysidids from the Western Hemisphere should contact us. We are especially interested in specimens from Russia, China, southeast Asia, India, Malaysia and central to northern Africa".

Reece Sailer, Dept.of Entomology and Nematology, Univ. of Florida, Gainesville, Fla. 32611 is studying the feasibility of using Larra bicolor (F.) and other species of the genus in mole cricket control in Florida.

Borge Petersen, Zoologisk Museum, Universitetsparken 15, DK 2100 Copenhagen, Denmark, is studying Mutillidae from Sri Lanka and other parts of the Oriental Region. He went to Thailand in July and August, 1979.

Guido Nonveiller, 11080 Zemun, Nusiceva 2a, Yugoslavia, is conducting revisional work on African Mutillidae, and his IXth contribution, now ready for publication, deals in part with the genus Smicromyrmilla. This genus was established by Suarez in 1965 and includes, as Nonveiller demonstrated in 1973, all species formerly placed in the genus Nanomutilla Andre, except the type species vaucheri Tournier (female) from the Palearctic, and the south African microsoma Andre (female, not male). Besides these species formerly assigned to Nanomutilla and two others classified by Bischoff, 1920, in his heterogeneous Ctenotilla, the genus Smicromyrmilla will include more than 20 new species from different parts of Africa. Smicromyrmilla is also represented in the Oriental Region by several new species which will be described by B. Petersen, Copenhagen, in a paper dealing with the Mutillidae from the Oriental Region.

In a second paper included in the IXth contribution, the description of a new species of the genus Dasylabroides is given. This species is closely related to neavei and has been collected in Cameroon which seems to represent the extreme western part of the distribution of the genus. The center of dispersal of the genus is undoubtedly South Africa since only a few representatives have spread to Central and East Africa. The descriptions of some other species related to the above mentioned are included, but Nonveiller recognizes the future necessity of doing a revision of the genus because it has some interesting, and even curious morphological peculiarities which have been insufficiently taken into account in earlier contributions on Dasylabroides.

The third part of the IXth contribution represents a revision of the males of the genus Trogaspidia which were considered by Bischoff 1920 as subspecies of medon Smith because they share the same color pattern. But genitalia and other morphological studies have demonstrated that these "subspecies" represent not only as many different species, but even belong to different phylogenetic groups.

Finally in outline form, Nonveiller will give the results of his research on the mutillid fauna of Cameroon carried out during the period from 1962 to 1975 (he was sent there by the F.A.O. (United Nations) to teach agricultural entomology at the University and to carry out research work on pests of tropical crops). Guido will explain the methods and organization he employed which enabled him, in spite of the fact that he could only devote a part of his time to the study of Mutillidae, to assemble about 120,000 specimens, representing 420 species (250 of which are new), and belonging to 2 families, 7 subfamilies, and 37 genera. Formerly only 37 species were recorded from Cameroon, and the total number of African Mutillidae was less than 1400 species. Of particular interest are the 1600 pairs of mutillids caught in copula, which represent 70 species. A lot of new taxonomic data have been derived from studying this material which will necessitate revising Bischoff's 1920 monograph of the African Mutillidae. To suppliment the material that Nonveiller collected in Cameroon, he has borrowed most types of described species, material studied by earlier workers, and about 10,000 specimens of unnamed African Mutillidae from 55 African, European and North American museums and other research institutions, as well as from 26 private collections. This material includes first, an important number of new species from different parts of the continent; the number of species in each genus has generally increased by 100%. Secondly new genera will have to be described. In the outline observations on biology, mating behavior, numerical abundance of species, distribution in biotopes (particularly in the tropical rain forest and on mountains), seasonal fluctuations and correlation between body color and environment are given, as well as some examples of the faunistic relationships between Cameroon and other parts of the continent. An attempt has also been made to determine the biogeographical areas of Cameroon based on an analysis of the Mutillidae.

In order to complete his studies Nonveiller would like to see additional material of African Mutillidae. Revisions of various genera are progressing well, or are planned. These studies are being carried out in close cooperation with D. Brothers of the University of Natal, who is also studying African Mutillidae (see Sphecos 1:9-10), and Borge Petersen.

Albert Finnamore (graduate student), Dept. of Entomology, Macdonald College of McGill University, Ste. Anne de Bellevue, Quebec, Canada H9X 1C0, is working on a revision of the psenine genus Mimesa (hopefully worldwide) and would welcome the loan of additional material from anywhere in the world. Species of Mimesa are often found in unsorted Ichneumonidae, and may be separated from other psenine sphecids by the following set of characters: forewing with 3 submarginal cells, body 8-14 mm long, omaulus curving semicircularly forward toward prothorax ventrally, hypoepimeral area of mesopleuron granular or more often longitudinally ridged, abdomen red basally, rarely entirely black.

Regine Eck, Staatliches Museum fur Tierkunde Dresden, DDR 801 Dresden, Augustusstr. 2, East Germany, is conducting biometrical studies of Dolichovespula and Vespula on a world basis, and she would like to borrow series of specimens from one nest, or simply long series from one collecting locality.

Ali Moalif (graduate student), Dept. of Biology, Utah State University, Logan, Utah 84322, is revising the North American Euodynerus for his Ph.D. thesis problem.

Scientific Note

Mark O'Brien submitted the following note on the "Nocturnal activity of Vespula maculata (L.)":

"While conducting research at the State University of New York Cranberry Lake Biological Station, at Cranberry Lake, N. Y. during August 1979, I happened to observe nocturnal behavior of Vespula maculata. During the evening of August 8, workers were observed returning from foraging flights to the nest after dusk (2000 hr.). The nest was situated under the eave of the front porch of my cabin, 2 meters from a light bulb on the ceiling. While the light was on from 2100 to 2300 hours, the workers seemed disturbed by it, and emerged from the nest, flew around the light, landed near it, and on the screen door of my lit room. Prey capture was occasionally seen, but more often the wasps seemed annoyed by the light, as it was so close to their nest. Up to 25 wasps were seen outside the nest at any one time. The wasps may have also been disoriented by the light, for they often flew into it repeatedly, much as a moth would. After turning off the porch light, the wasps returned to the nest within a short time."

"It appears that the short lapse of time between the normal termination of diurnal activities (foraging flights) and the turning on of the light resulted in the wasps emerging from the nest, for when the light was turned on at a later time (2200 hrs.) on subsequent nights, the wasps did not emerge."

A New Journal

David Girling, Commonwealth Agricultural Bureaux (CAB), Farnam House, Farnham Royal, Slough SL2 3BN, England, sends the following announcement for a new biological control journal:

Biological News and Information

BNI is a new journal from CAB. Prepared by the Commonwealth Institute of Biological Control Information Service, it will keep not only biological control workers, but other scientists concerned with pest control up-to-date with developments in the use of biotic agents in pest management. As well as abstracts from the CAB database, it will contain news items, review articles and new abstracts from literature not at present scanned by CAB units.

The contents will include items on research leading to the introduction, augmentation and mass release of natural enemies against animal and plant pests, techniques, basic research, catalogues of natural enemies and interactions with other control measures. It is hoped that it will also become a valuable source of information on current research, availability of cultures and other matters, but this will depend on the cooperation of subscribers, who are encouraged to send in items of news. It is therefore a departure from the usual abstract journal and offers an opportunity for an exchange of news between workers whose interests are in biological or integrated control involving natural enemies. The journal will be of importance to entomologists and plant pathologists concerned with plant protection, weed scientists and vector biologists concerned with the suppression of human and animal diseases.

Missing Persons

Does anyone know the present address of J. M. Davidson or Don Horning? Please contact Menke if you do.

Collecting Report

Woj Pulawski has provided us with the following interesting account of his recent trip to "Soviet Middle Asia":

"Soviet Middle Asia", also known as Transcaspia, is a highly attractive area because of the diversity of landscapes ranging from hot deserts to glaciers, and the resulting richness of the animal life. Several possibilities are open to a Polish zoologist who wants to visit that part of the world. First, he may go there on a service trip, but chronic shortages of funds and various bureaucratic obstacles are usually insurmountable. Second, he may go there as a tourist, but prices are often prohibitive. For instance, my monthly earnings are just enough to pay 16 days at an Intourist hotel, food, and transportation not included, and cheaper hotels are not available to foreigners. Since my university years I have dreamed of visiting Middle Asia and it came true in an unconventional way. Because my wife Veronica is a Russian and her relatives live in Leningrad, we are allowed to visit them once a year. The legal basis for such a visit is a so called invitation, a document issued by the Soviet police at our relatives request. It is valid for a stay of 90 days, but as a foreigner I am not supposed to travel freely within the Soviet Union (my movements are limited to Leningrad and environs). Veronica, who still holds her Soviet citizenship, is not bound by these restrictions. However, a foreigner who applies to the police may get permission to go to other towns. Although generally reluctant, the authorities usually give such permission, and my own requests have never been refused. Since 1976, Veronica and I have visited several parts of the Soviet Union in this way: Alma Ata, Dushanbe, Northern Caucasus. Illegal travelling would hardly be possible. For example, you cannot buy an airplane ticket if the police authorization is not

indicated on your invitation. The official motives of my travels are never entomological, but purely personal: I want to visit my friends. Indeed, on each trip I have been offered hospitality by a good will person who accepted us in his or her home and whose name was cited in my application.

In 1979, we went to Dushanbe again for 33 days. The Soviet Union is a huge country (the world's largest) and going from Leningrad to Dushanbe is quite a shock. The temperature was about 10 degrees C (50 F) when we left Leningrad on a night flight. The next morning, after some 4000 km and two intermediate stops, we found ourselves in a place where daily temperatures reach 42 degrees C (107 F).

Dushanbe is a young town, totally built during the Soviet period. It was known as Stalinabad during some 20 years of its history. Its architecture is rather banal, though efforts to give individual style to many official buildings are evident. The town is full of trees and bushes, and numerous blossoming Hibiscus are particularly nice. Irrigation canals along the sidewalks are typical of Dushanbe and most Transcaspian towns. The Oriental character of the place can be seen at once: many people wear traditional, national costumes. Women in loose Oriental trousers and bright multicolored robes, and old men full of dignity with their short, sharp, white beards, large fabric belts and ornate caps immediately catch your attention. Many girls and young women have their brows painted so as to form a single, continuous line over their eyes, and they wear up to 20 thin, long tresses. You feel you are in a fabulous Oriental place, and thoughts of Harun-al-Rashid and of a Thousand and One Nights start coming to mind.

Dushanbe is the capital of Tadzhik SSR (also known as Tadzhikistan) and Tadzhiks can best be described as Soviet Persians. They speak a medieval form of the Persian language, and they easily communicate with both Iranians and Afghanis. Their tongue is of Indo-European origin. For example, Dushanbe means Tuesday, and the syllable du- is similar to the Latin word duo or the English word two, and has the same meaning. Most people in Dushanbe are Tadzhiks, but Russians, Uzbeks and other nationalities are also numerous. To my surprise, many people speak only broken Russian (much worse than my own), and we even met a middle aged woman in a mountain village whose only Russian word was spassibo (= thank you). The Tadzhiks are proud of their cultural traditions, their ancient astronomers, and their rich medieval poetry. One of their great men is Ibn-Sina-Abu-Ali, known as Avicenna in the West.

The first thing we did in Dushanbe was to register ourselves with the police, and I applied for permission to go to the Varzob Valley, a local recreational area. Permission was given two days later, and we moved there. The Varzob Valley, some 70 km long and a few hundred meters wide, owes its name and its very existance to the Varzob River. This is a mighty, mountain river, running at wild speed, full of unforseen curves. Falling into it would mean certain death as the water would throw you against one of many submerged boulders. In the evening when everything is quiet and you are a few hundred meters off, you get the impression that two merchandise trains are just passing in opposite directions. Silence does not exist in the Varzob Valley.

Kondara is a small settlement some 35 km north of Dushanbe, at an altitude of 1100 m where a lateral canyon opens into the Varzob Valley. It is well known among Soviet naturalists: many scientists

evacuated from Leningrad lived here during World War II. As a result, Kondara became the type locality for many new species. There is a fine botanical garden there, dedicated mainly to reforestation problems and to fruit trees. There is also a small mine. With the help of friends we were able to stay without charge in an adobe house which is a field station of the Tadzhik Academy of Sciences.

Kondara Canyon is a natural reserve, and it is well protected against cattle and sheep grazing. However, the local people are permitted to go inside and collect dry wood and grass (which is used as hay). In the morning and evening at certain hours, donkeys heavily loaded with grass and dry branches can be seen. Collecting grass and wood is done mostly by boys, usually 10 years old or so. Some of them transport dry branches on their shoulders. Such a picture can be seen in many montane areas of Tadzhikistan.

Our living conditions in Kondara would probably dissatisfy many westerners. Though our house had electricity, running water or a refrigerator were not available, not to mention the absence of air conditioning. A cantine for miners was open to the public but the main dishes served there 6 times a week were borshch and hard boiled eggs. However, we could buy food at a local shop and this combined with food brought from Dushanbe and Veronica's smart cooking soon gave us alimentary independence. Washing was another problem. We washed ourselves, our clothes and dishes in one of several small irrigation canals which ran near the house. They contained crystal clear water from Kondara Creek, and we did not complain too much. Neither in Kondara nor in Dushanbe was I able to find a hand mirror, and I shaved myself without seeing my own face. It was a funny experience to see my own reflection once a week, when we returned to Dushanbe for a day back in "civilization". At night we had trouble with rats running on our plywood ceiling (which sounded like a drum), and their active squeaking. They also destroyed our food supplies during the day when we were away. As soon as a rat trap was borrowed and set up they completely disappeared and not one was caught. Blackflies were a serious nuisance. Their larvae could be seen by the thousands in Kondara Creek, often on vertical parts of small waterfalls.

Our relations with the local people were mutually courteous. Several times we asked for small services (rat trap loans, repairing electricity) and their reactions were always favorable. People knew I was a foreigner, and obviously they liked the fact that Kondara was so well known abroad. Besides they are accustomed to naturalists (both professional and amateurs) coming to Kondara from various parts of the Soviet Union. My impression was that scientists were esteemed by the people of Kondara.

The natural beauty of the area fully compensated us for all these hardships. Like the Varzob River, the surrounding mountains (the Hissar Range) are wild, great, beautiful, and menacing. After all, the Hissar Range is part of the vast mountain system which includes the Himalayas. Most slopes are dangerously steep. Many of them were almost bare, covered with pea size granite stones, isolated grasses and bushes. Others were covered with dense dry grass which reached up to your waist, and also with sparse maple and wild almond trees. The bottom of Kondara Canyon is full of willows, but plantains, wild fig trees, wild apple trees, and wild grape vines are also found. Northern slopes were usually covered with walnut trees and junipers could be found at higher elevations.

Excursions along Kondara Creek were difficult. During a one hour walk we had to ford the river 12 times and the water was not particularly warm. In fact, Veronica caught a bad cold on the second day (after some 48 crossings), in spite of the high air temperature. She was given a handfull of various pills (aspirin, vitamins, etc.), all free, at the first aid room of the local mine.

Another excursion was along the ridge which separated Kondara Canyon from the next one. After some 2 hours of climbing we arrived at the crest which was basically horizontal. It looked like an elephant's back with slopes of 30 to 60 degrees on both sides. Sliding down could not be prevented in many places. The view was really majestic: Kondara just below your feet several hundred meters down, and peaks covered with snow on the horizon, perhaps 50 km away. We were exhausted, thirsty, heavily perspiring, and there was no shade. We watched an eagle soaring in the distance - it was a great feeling.

Still another excursion led us to the upper part of Kondara Canyon which divides into several smaller canyons in a fanlike fashion. After following the famous ridge we went down into the canyon just below the tree line at about 1900 m (the alpine zone extends up to about 3500 m). We decided to follow Kondara Creek back to our headquarters. It proved to be difficult. We went down one valley, crossed a ridge, went down another valley, crossed another ridge, and so on. We followed a stream whose valley gradually changed into a narrow granite gorge. A few hundred more meters and we came to a waterfall. I closed my eyes when Veronica approached its brim, just keeping above water on a narrow granite strip, in an effort to see if we could descend. There was no way, and we had to go back, crossing on more ridge before finding another way down. The waterfall proved to be some 12 m high. We walked for some 6 hours without seeing a person. Suddenly we heard squeaking below us coming from a grove of walnut trees. Veronica said "whats this?" and I answered "probably wild boars". "Are they dangerous?" "Not unless they are defending their young". At that very moment we saw a group of wild boars running up across the slope toward us, with several young among them. We started shouting and they turned aside. Bears also occur in the Hissar Mountains and they do not always run away from man. We did not meet any but we were able to understand the feelings of primitive man, surrounded by hostile forces when he, and not the wildlife, was an endangered species.

Entomologically Kondara Canyon is quite exotic for a Central European. Only a few species are shared with Central Europe. More numerous are species which occur both in Kondara and the Mediterranean countries (e.g. Prosopigastra orientalis). Many species are widely distributed in Transcaspia and some are limited to Tadzhikistan. Prosopigastra gigantea is in this category. It was described by Gussakovskij (1935) and we collected several specimens on sandy patches (some of them only a few square feet) both in Kondara Canyon and in some other canyons. Tachysphex radiatus, another Gussakovskij species, was known from 3 females when I monographed the Palearctic species in 1971. It was found here in numbers, mainly between dead leaves and between grass stems. Several unusual and yet undescribed Miscophus were also common. These are just a few examples of the interesting things collected by us.

It was a pleasant surprise for me to meet a sphecidologist in Dushanbe: Mrs. Shahodat Nazarova. She is a graduate student, and she works on the sphecid fauna of Tadzhikistan. She has already collected over 400 species (less than 200 species occur in Poland). However, Mrs. Nazarova faces tremendous difficulties in identifying her species, and nearly all other aspects of her project. First, most genera occurring in Tadzhikistan have never been revised. Second, not only Transcaspian species described by Russian authors (F. Morawitz, Shestakov, Gussakovskij) must be considered, but also species described from India and Pakistan by British authors. Having almost no literature and no every day access to a large museum, she is in real difficulty. Dr. V. I. Kazenas, of Alma Ata, is of considerable help to her however.

In conclusion I would say that no inner tranquility is possible for me as long as the alpine zone above Kondara Canyon remains unexplored by me.

More on Baja California

Roy Snelling sent in the following:

"Marius Wasbauer's report on his trip to Lower California (Sphecos 1:19) brought out a problem which exists but is persistantly ignored by very nearly every biologist who goes there. There is no such entity as Baja California del Norte. Twenty-five years ago there was. At that time, the peninsula was divided into two territories: Baja California del Norte and Baja California del Sur. When the northern territory became a state, it was named simply Baja California; the southern region became Territorio del Sur de Baja California. The latter ultimately became a state, Baja California Sur. So, the correct designations for these two political entities are: Baja California and Baja California Sur".

"Of course, the entire peninsula is also called Baja California. As a result, biological literature is replete with references to Baja California with no indication, as a rule, to what the author is talking about (and a lingering suspicion that he doesn't know!)".

"In my paper on the social wasps of that region I suggested that we use Lower California for the entire peninsula, rather than the confusing Baja California (it is, after all, a direct translation). As I pointed out there, usage of Lower California is not new; in entomological literature it is over a hundred years old (hence it has "priority"). Only in recent years has Baja become commonly used by those who place great emphasis on being current. How many of those also are sufficiently current that they use Republica Dominicana, México, Brasil, Habana, Québec, Moskua or España?"

"Our papers are rife with carelessness in citing geographical entities. The problem of Baja California is one which is easily corrected and I strongly urge everyone to consider the matter. We should be more concerned with precision of understanding more than we should be with appearing to be "with it" in our use of currently fashionable jargon."

"Spring collecting in Baja California Sur is not especially productive. This is the dry season. The best season there is mid August to mid October, the rainy season. This can be exciting when the "chubascos" (hurricanes) roar through, but the collecting is good. At Boca de la Sierra (near Miraflores) and at Rancho la Burrera

(near Todos Santos) it is possible to hire guides and horses for a pack trip to La Laguna, a very large meadow at 1600-1700 m. elevation in the Sierra de la Laguna. This is in mixed hardwood conifer forest and is really a fascinating area with many northern elements otherwise absent from the peninsula except in the extreme north, in the Sierra Juarez."

"In Baja California (the state) spring collecting is similar to that of the desert regions of southern California -- unpredictable and patchy. Especially interesting areas are off the paved road at San Bjorja, Pozo Aleman, Arroyo Calamajue (4 wheel drive recommended), Calmalli, Santa Gertrudis. The collecting can be good, too, in August and September if there is even a little rain; without rain it is very patchy, but can be very productive, especially in the Sphecidae and Eumenidae."

"There are many fascinating areas throughout the peninsula. While some are accessible via conventional vehicle, many others are not and some require horses. Spare auto parts are strongly recommended, especially such items as ignition points, fuel and water pumps, fan belts, distributor parts, etc. Mexican mechanics do work miracles at times, but don't push your luck!"

"The road is paved from Tijuana to La Paz. South of La Paz there are two routes to Cabo San Lucas, both paved. One goes via El Triunfo and San Jose del Cabo; the other via Todos Santos."

ERKKI VALKEILA

Word has been received from Ole Lomholdt that Erkki Valkeila of Hameenlinna, Finland passed away a few months ago. Erkki was a specialist on sphecid wasps. We hope to receive an obituary from Ole for the next issue of Sphecos.

An Unknown Genus

The following description by Ferdinand Meunier published in Le Naturaliste (ser. 2) 3:24-25, 1889, is reprinted here with the hope that someone can identify the creature. Presumably it is a sphecid wasp but it might belong in some other aculeate family. If you think you know what Mellinusterius is please contact Menke.

Description d'une nouvelle espece ou peu connue de "crabronides" de la tribu des Mellinites

Mellinusterius aphidium, Nov. sp.

Mon corsespondant et ami, M. Carlos Moreira, preparateur d'osteologie au Musee national de Rio-de-Janeiro, vient de m'expedier quelques hymenopteres des environs de cette ville, parmi lesquels il s'en trouvait un qui vivement a attire mon attention. C'est une espece de Crabonide de la tribu des mellinites, fort voisine de notre espece indigene, le Mellinus arvensis. Dans une lettre accompagnant ce lot, il me dit que cet insecte fait son nid dans les endroits chauds et arides, mais il n'enonce rien au sujet des moeurs de

l'animal. Toutefois, il m'ecrit que l'insecte approvisionne son nid avec des pucerons.

Rio-de-Janeiro (Amerique du Sud).

Female 14 a 16 millimetres. Tete ausse large que le corselet. Celui-ci et tout l'abdomen, a l'exception de l'anus, avec un leger reflet dore. Labre jaune. Epistome homogene anterieurement, faiblement reborde, plus long que large, avec la bande jaune qui occupe le tiers de la surface sinuee au sommet. Mandibules jaunes, unidentees, rouge ferrugineux, arrondies a la partie externe. Couleur du chaperon se continuant en longeznt l'orbite interne des yeux pour aboutir aux trois quarts de ces organe. Cette couleur forme une bande presque triangulaire, diminuant depuis la base jusqu au sommet. Entre les antennes, se trouve une macule jaune. Immediatement en dessus, se trouve un leger espace incolore, puis une tache quelque peu ronde de la meme couleur. L'orbite externe des yeux possede un faible lisere jaune s'amincissant vers la partie superieure. Antennes ferrugineuses, une bande noire en dessous.

Premier article grand, renfle legerement au sommet. Deuxieme, beaucoup plus petit (caractere diechotomique essentiel de la tribu des mellinites). Articles de l'extremite quelque peu epaissis. Ocelles diposes en triangle sur le vertex. Face de la tete garnie de poils courts, faiblement roux. Thorax brun avec le reflet dore plus prononce que celuui de l'abdomen. Prothorax court, quadriforme. Une legere ligne jaune non interrompue anterieurement. Mesothorax grand, entierement glabre, a points assez nombreux, de grandeur moyenne, espaces. Scutellum du mesothorax rectangulaire, a points plus grands et considerablement plus eloignes. Il est muni d'une bande jaune fort distincte. Post-scutellum petit, quelque peu ovoide. Metathorax plan. L'espace triangulaire du dessus, parseme de lignes parallels, longitudinales, et formant relief. Face posterieure rugueuse. Parties laterales avec la pubescence courte et tirant au roux. Abdomen entierement unicolore. Premier segment court, pedoncule, a ponctuation espacee. Anus ferrugineux fonce. Une macule jaune touche au segment precedent. Pattes, ferrugineux, noiratre. Tarses, brun, noiratre. Tibias munis d'epines assez longues. Crochets du dernier article tarsal, forts et courbes. Pelotte grande. Ailes de grandeur moyenne, legerement jaunes a part la bande noire bleuatre que commence depuis la base et aboutit a peu pres jusqu'au sommet. Cellule radiale longue, peu large relativement a la longueur, l'extremite arrondie et s'ecartant legerement de la cote.

Quatre cubitales. Premiere plus grande que les deux autres, ou a peu pres. Deuxieme hexagonale et recevant les deux nervures recurrentes. Troisieme plus grande que la precedente, en losange. Quatrieme incomplete a peine commencee, mais tracee. Ecaille, ferrugineux pale.

Range Extension

Gary Dunn, Dept. of Entomology, Michigan State University, East Lansing, Mich. 48824, reports that the introduced European vespid, *Vespula germanica*, was taken in Calhoun Co., Michigan in 1975. (I would appreciate being informed of any other new range extensions for this yellow jacket - editor).

Natural History Museum of Los Angeles County (LACM)

"The collection of nearly four million insects is now housed in a recently installed "compactor" system of movable modules in Cornell type insect drawers. Emphasis is largely on faunas of the Southwest and Neotropics, but is world-wide and growing with more than 20,000 specimens per year being added."

"Early famed for the Lepidoptera collections and not much else, we now have significant collections of other groups, including Aculeate Hymenoptera with major emphasis on Formicidae, Vespidae and "Apoidea". We are weak, but improving, in the other groups, especially Mutillidae, Pompilidae and Sphecidae. We encourage exchanges of material which will improve our overall representation."

"The collection of Formicidae consists of more than one million specimens. The pointed collection is stored in 200+ Cornell type drawers; the alcohol material usually consists of duplicate and larval material. In addition to the material obtained by Snelling over the years, the LACM has received the collections of A. C. Cole, Jr., W. S. Creighton and T. W. Cook. Cole's and Creighton's field notes are also here. Although essentially a collection of North American (including Mexico) ants, our representation from other regions, especially Central and South America, is growing rapidly through exchanges with other institutions and individuals and material submitted for identification."

"Vespidae are represented largely by pinned material and are contained in 60 drawers. The representation of New World social wasps is good to excellent. Of Old World groups, the Palearctic species are well represented while others tend to be somewhat spotty. The large genus Ropalidia, for example, is represented by 21 identified and perhaps a dozen unidentified species."

"The social bees (Apidae) are contained in 35 drawers and is primarily a New World collection. Old World groups are erratically represented; poorest perhaps is the large genus Trigona (Meliponinae). This probably reflects Snelling's general lack of involvement with the Apidae." (submitted by Roy Snelling).

Profiles

Arkady Lelej

"I was born in 1946. From 1965-70 I was a student in the biological faculty of Kazakh State University (Alma-Ata). I began to study Mutillidae in 1967, and my first paper on new and little known species from Middle Asia was published in 1971. From 1973-77 I was a graduate student in the Institute of Biology and Pedology (Far Eastern Scientific Centre, Vladivostok). In 1978 I defended my thesis on "The wasps of the families Mutillidae and Myrmosidae of the fauna of USSR" and received my degree. I collected Mutillidae and other wasps in Middle Asia (1966-69, 1976, 1978), Crimea (1979), Transbaikalia (1977), Amur region (1975), Sakhalin (1978), and the Primorje territory (1973-78)."

"A little about my dissertation: I studied more than 10,000

specimens in the Zoological Institute (Leningrad), the Zoological Museum (Moscow University), and in other institutes. In the USSR there are 21 genera and 133 species of which 2 genera and 23 species are new for science. 12 species were recorded for the first time for the fauna of the USSR. The names of 53 species, 7 subspecies and 8 varieties were synonymized. Keys to subfamilies, tribes, genera and species are given for males and females."

H. R. Hermann

"H. R. Hermann received his doctoral degree from Louisiana State University in 1967. At that time he was interested in the morphology and histology of the venom apparatus in selected species of ants. Examination of the venom apparatus throughout members of the Hymenoptera was a later extension of this work. Function of the venom apparatus led to studies of defensive behavior in the social Hymenoptera, especially in the polistine wasps. Although he currently is primarily interested in defensive behavior, occasional investigations of general biology and morphology are carried out by him. Currently he and his students have completed studies on eye development, general biology, spinning and ontogenetic changes in the pupae of Polistes annularis and defensive behavior in polistine species in their area. Also, H. R. Hermann has published his first book on Social Insects through Academic Press and currently two other books are in press on that subject. Also, he has signed a contract with Praeger Press to edit a volume on Defense Mechanisms in the Social Insecta."

Manuel de Assuncao Diniz

"I was born February 21, 1926, in Coimbra, a small town in the center of Portugal, celebrated for the romantic surroundings along the Mondego River and for its old University (founded March 1, 1290) where I graduated in Biology, 1955. When a student I worked on plant taxonomy (African Lythraceae); as a reminiscence for this botanical period my daughters were given flower names, Rosa and Margarida."

"In 1957 I was offered a post as taxonomist in Zoology, went to Madrid to specialize in Hymenoptera with Prof. G. Ceballos (1959-61) in the Spanish Institute of Entomology. After returning to Coimbra I was incharge of the general insect section of the Department's Museum with the task of expanding its small Hymenoptera collection. Since then I have been actively engaged in collecting trips which have covered the whole country. My special interest lies on Sphecoidea and Apoidea but I have dealt with all hymenopterous groups, except ants and the Parasitica. On my own evaluation, the collection can give now a very good portrait of the Portuguese Aculeate fauna."

"I have tried systematic biochemistry (ugly facts destroyed a brilliant idea) and attended a course on numerical taxonomy (1971, with Sneath, Sokal and Rohlf), another on Automatic Generation of Identification Keys (1978, with Pankhurst). I was appointed Chief Entomologist in 1965, elected President of the Department's Direction during the boiling years which followed the "Carnation" revolution of 1974. Having returned again to the quiet taxonomical work I am

preparing revisions of all the groups studied and just began a quantitative study of the seasonal variation of pollinator and predator populations in fields around Coimbra."

Josef Gusenleitner

"I was born on September 17, 1929, in Hagenberg, Upper Austria. Since 1930 I have been living in Linz. I attended the grammar school, studied zoology and botany at the University of Vienna, and finished in 1953 with the doctor's degree. Since 1954 I have been head of the Department of Biology at the Federal Agricultural and Chemical Research Station of Linz. There I work especially on questions of viruses of potatoes. I am also teacher at a pedagogical academy. In my leisure time I work in entomology and I am especially interested in aculeate Hymenoptera."

Reece I. Sailer

"Born Nov. 8, 1915, Roseville, Illinois. Attended Western Illinois State Teachers College (now Western Illinois State University), 1934-36; Kansa University, 1936-38 (B.A.) and 1938-42 (Ph.D.). Employed as Heteropterist 1942-57, U.S.D.A., Systematic Entomology Laboratory; Assistant Chief, Insect Identification and Parasite Introduction Branch, U.S.D.A., 1957-60; in charge, U.S.D.A. European Parasite Laboratory, Nanterre, France, 1960-66; Chief, Insect Identification and Beneficial Insect Introduction Institute, Science and Education Administration, U.S.D.A., 1972-73; Graduate Research Professor, University of Florida, 1973 to present. Research activities: Taxonomy of Heteroptera with emphasis on Pentatomidae; biology of Alaskan mosquitoes, blackflies, and punkies; interspecific hybridization in the genus Euschistus (Pentatomidae); biological control of insect pests -- which brings me to justification for notice in Sphecos. I am currently interested in the role of flowering plants as factors influencing the abundance and activity of sphecoid and vespoid wasps as natural enemies of pests, most immediately -- that of Larra bicolor F. as an enemy of mole crickets."

Anthony Clifford Harris

"Born 2 July 1945. Fanatically interested in insects continuously since the age of 3 years. Won first prize in two world-wide science competitions in the 7th. form - one for a study of geographical variation and evolution in flightless alpine weevils; the other (for the 1962 English "Research" competition) was on sand dune beetles. Received first class honours for a thesis on pompilid wasps (1973). Have concentrated on New Zealand solitary wasps (biosystematics) for the past 10 years. Position held: Invertebrate Zoologist, Otago Museum, King Street, Dunedin, New Zealand, since 1974."

Roy R. Snelling

"Born in Turlock, California on 30 September 1934, by the time I was a high school freshman I had decided to be an entomologist, employed at a museum, working on Hymenoptera taxonomy. I never passed through the butterfly or gaudy beetle phase; always concentrated on Hymenoptera. A highpoint in my life took place in 1949; at a meeting of the Pacific Coast Entomological Society I met my first, live entomologists, and what a heady experience that was! E. O. Essig, G. F. Ferris, E. G. Linsley, E. S. Ross, P. D. Hurd, Jr., H. B. Leech, E. C. Van Dyke, J. W. MacSwain and R. L. Usinger."

"Higher education at the University of Kansas was a fiasco; I was not emotionally ready and departed after a disasterous first semester. Returned to the west, where I worked as an entomologist for a Mexican cotton company; then, back to California to work for USDA and California Department of Agriculture. I came to the Natural History Museum of Los Angeles County in 1963."

"My earliest interests were in taxonomy of Polistes (which I've never outgrown) and of various bee genera (esp. Centris). While at Sacramento with the California Department of Agriculture I became involved with ants - a group I had steadfastly refused to consider - and have been involved with this intriguing group ever since. My most notable achievements, to date, include a study of the ants of Chile (with J. H. Hunt); revision of the ant genus Myrmecocystus; a chapter on "Classification of the Social Hymenoptera" for vol. 2 of "Social Insects" (H. Hermann, edit.); the taxonomy, distribution and ecology of California desert ants (with C. D. George, a report to Bureau of Land Management). I am presently completing a revision of the hylaeine bees of sub-Saharan Africa and have begun a revision of the bee genus Nomada in the New World (a joint project with P. H. Timberlake and G. E. Bohart). A revisionary study of North and Central American Polistes is an on and off sort of thing of low priority. I am also revising the North American harvester ants genus Veromessor."

Ivica Radovic

"I was born on 29 January 1950 at Risan near Kotor, Montenegro, Yugoslavia. There I finished primary and secondary school and in 1968 enrolled at the Faculty of Sciences in Belgrad, Dept. of Biology. During my studies I was especially interested in Zoology and I graduated from the Faculty in July 1972. After graduating I became a teaching assistant for Comparative Morphology and Systematics of Animals in the Institute of Zoology, Department of Biology, Faculty of Sciences in Belgrad. I finished post graduate studies with the Animal Ecology group of the same Faculty. In 1976 I wrote my M.S. thesis "Morphological characteristics of living forms of digger wasps (Sphecidae) with special emphasis on adaptive changes of fore leg structure and the sting". The results of the thesis were reported at the VIII Assembly of Entomologists of Yugoslavia."

"My main research interest is with the comparative morphology, taxonomy, and ecology of the Sphecidae. I also work with Prof. Dr. M. Krunic on ecophysiological research of cold hardiness of insects, and I have published papers on this research and presented reports at

congresses and symposia."

"I was recently chosen as an associate of the Institute of Biological Research in Belgrade. I am also a Secretary of the Entomological Society of Serbia. In December, 1978, I applied for and subsequently was awarded a ten month grant for scientific training in the United States from the Research Council of Serbia for the period 1 October 1979 to 1 August 1980. I am now at the Smithsonian Institution in Washington DC where my advisor is Dr. A. S. Menke of the Systematic Entomology Laboratory, USDA. I am conducting a comparative morphological and phylogenetic analysis of the Sphecoidea and Apoidea, with special reference to the sting apparatus, leg structure, mouth parts, and wings."

Lynn Siri Kimsey

"I was born February 1, 1953, and grew up in the San Francisco Bay area in California. My interest in insects first began when I was given a butterfly net at the age of five. In high school my interests moved to marine invertebrates, especially pycnogonids and isopods. During this time I worked as a professional SCUBA diver in the summer for Sea Grant funded research projects in San Diego, California. My college career started at the University of California at San Diego in 1971 where I pursued my interest in marine biology. The curriculum proved unsatisfactory so I transferred to the University of California, Davis, where I have been ever since. Here my interest in insects returned and I received a B.S. in Entomology in 1974. Because of my interest in systematics and because Dr. R. M. Bohart was at Davis I pursued the Ph.D. there under his guidance. My thesis was a revision of the euglossine bee genus Euplusia. I am still working on the behavior and physiology of these bees. Most of this research was conducted in Panama during the summer, beginning in 1974. My principle interests lie with the taxonomy and behavior of the Sphecidae, Pompilidae and Chrysididae. Currently I am working on a world revision of the Chrysididae in a postdoctoral position at U.C., Davis, and job hunting."

Dates of Publication

The important early paper by Lepeletier and Brulle entitled "Monographie du genre Crabro, de la famille des Hymenopteres fouisseurs" (Ann. Soc. Ent. France 3:683-810) is usually cited as 1834, occasionally as 1835. Mick Day of the British Museum in a recent letter to Menke has conclusively demonstrated that 1835 is the correct date. The BM copy of the journal has its original wrappers intact. The Lepeletier and Brulle paper was in part 4 of vol. 3 (pp. 654-825 + lv-cvi). On page xciii it says "Membres recus depuis le 1 Janvier, 1835, jusqu'au 15 Mars suivant". A note inserted in this volume says "post March 1835".

Several hundred copies of volumes 1 & 2 of the new "Catalog of Hymenoptera in America North of Mexico" were distributed by the U. S. Government Printing Office in mid 1979 (mailing date was June 5 for vol. 1, July 13 for vol. 2). Thus, these are the dates of publication

for the two volumes. Copies of the corrected Catalog (see Sphecos 1:4) were mailed in November to hymenopterists around the world.

Hymenoptera Catalog Availability

Currently the Catalog is out of print, e. g., the U. S. Government Printing Office does not have copies for sale. However, additional copies of the Catalog will be printed so that people will be able to purchase it, possibly as early as February, 1980. The three volumes (Volume 3, the index, has not yet been published) will be available from the Superintendent of Documents, Government Printing Office, Washington DC 20402, at the following prices:

Vol. 1, Symphyta and Apocrita (Parasitica), pp. i-xvi + 1-1198
Stock number 047-001-00139-7.....US $30.00
Vol. 2, Apocrita (Aculeata), pp. i-xvi + 1199-2209
Stock number 047-001-00140-1.....US $28.00
Vol. 3, Indexes, pp. i-xxx + 2211-2735
Stock number 047-001-00138-9.....US $20.00

The catalog is not available gratis or as an exchange item from the Smithsonian. Individuals may wish to purchase either Volume 1 or Volume 2 depending upon their specialized interests, but Volume 3 will be indispensable.

More errata - Sphecid Wasps of the World

p. 463, LC, l 16 from bottom of page: fig. 146 is correct
p. 559, Fig. 184 C: dewitzii is correct

Recent Literature
(Compiled by Sue Hevel)

Achterberg, C. van
1977. Sensory bristle-field of the petiolar segment in some Hymenoptera. Ent. Bericht. 37:101-102.

Agren, L.
1978. Mandibular gland morphology of Cerceris rybyensis (L.). Zoon 5:91-95.

Akre, R. D., C.F. Roush, and P. J. Landolt
1977. A Vespula pennsylvanica - Vespula vulgaris nest. Environ. Ent. 6:524-526.

Alcock, J.
1978. Notes on male mate-locating behavior in some bees and wasps of Arizona. Pan-Pac. Ent. 54:215-225.

Allalouf, D., A. Ber, and J. Ishay
1975. Properties of testicular hyaluronidase of the honey bee and Oriental hornet: comparison to insect venom and mammalian testicular hyaluronidases. Comp. Biochem. Physiol. 50, 2B:331-337.

Archer, M. E.
1977. Tree wasp workers (Hymenoptera: Vespidae) excavating soil from underground nests. Ent. Mon. Mag. 112:88.
1977. A hornet's nest in Derbyshire and a plea for help with numerical data. Ent. Mon. Mag. 112:246
1977. A nest of Vespula rufa (L) - V. austriaca (Panzer)(Hym., Vespidae). Ent. Gazette 28:263-264.
1977. The weights of forager loads of Paravespula vulgaris (Linn.)(Hymenoptera: Vespidae) and the relationship of load weight to forager size. Insectes Sociaux 24(1):95-102.
1978. The Cuckoo Wasp, Vespula austriaca (Panzer)(Hym., Vespidae) in Yorkshire. Naturalist 103:133-134.
1978. Hymenoptera: Vespidae, Social Wasps. Provisional atlas of the Insects of the British Isles. Part 9. Inst. Terr. Ecol., Huntingdon.

Barr-Nea, L. and J. Ishay.
1975. Effect of the venom sac content of the Oriental hornet (Vespa orientalis) on the metamorphosis of the toad tadpole (Bufo viridis). Experientia 31:212-214.
1977. Eosinophilia in mice and rats injected with extracts from venom of the Oriental hornet (Vespa orientalis). Toxicon 15:375-378.
1977. Histopathological changes in mouse and rat skin injected with venom sac extract of the Oriental hornet. Toxicon 15:301-306.

Barr-Nea, L., N. Papo, and J. Ishay.
1979. Lipid accumulation in hepatocyte following treatment in-vitro with a venom sac extract of the Oriental hornet (Vespa orientalis). Toxicon 17:180-182.

Barr-Nea, L., P. Rosenberg, and J. Ishay.
1976. The venom apparatus of a Vespa orientalis: morphology and cytology. Toxicon 14:65-68.

Barr-Nea, L., M. Sandbank, M. and J. Ishay.
1977. Pseudolymphoma of skin induced by Oriental hornet (Vespa orientalis) venom. Experientia 32:1564-1565.

Barrows, E. M.
1979. Polistes wasps show interference competition with other insects for Kermes scale insect secretions. Proc. Ent. Soc. Wash. 81:570-575.

Berio, E. and G. M. Dibisceglia
1976. Alcuni nomi di determinatori specialisti Italiani in Entomologia. Boll. Soc. Ent. Italiana (Inform. Giovane Ent.) 17:13-16 (includes names and addresses of Hymenopterists in Italy).

Bohart, R. M. and L. S. Kimsey
1979. A key to the species of Ectemnius in America north of Mexico with notes and description of a new species. Proc. Ent. Soc. Wash. 81:486-498.

Bonelli, B.
1976. Osservazioni eto-ecologiche sugli Imenotteri aculeati dell'Etiopia VIII. Boll. Inst. Ent. Univ. Bologna 33:33-43.

Brockmann, H. J.
1979. Nest-site selection in the great golden digger wasp, Sphex ichneumoneus L. Ecol. Ent. 4:211-224.

Brockmann, H. J., A. Grafen and R. Dawkins
1979. Evolutionarily stable nesting strategy in a digger wasp. J. theor. Biol. 77:473-496.

Burton, J. F.
1979. The hornet (Vespa crabro L.) in Warwickshire. Ent. Rec. 91:161.

Byers, G.
1978. To Professor Charles Duncan Michener. J. Kansas Ent. Soc. 51:529-530.
1978. Nests, prey, behavior and development of Cerceris halone. J. Kansas Ent. Soc. 51:818-831.

Cane, J. H., and M. M. Miyamoto
1979. Nest defense and foraging ethology of a Neotropical Sand Wasp, Bembix multipicta. J. Kansas Ent. Soc. 52:667-672.

Caron, D.
1979. Controlling wasps. Univ. Maryland Coop. Ext. Service Bull. 248, 12p.
no date. Hornets and Yellowjackets. Guide to safe control. Univ. Maryland Coop. Ext. Service Ent. Leaflet, 105, 2 p.

Carvalho, G. G. and M. T. da Silva
1975. Algunos aspectos do desenvolvimento larval de Polybia paulista Richards. Stud. Ins., 18:555-568.

Coville, R. E.
1979. Biological observations on Trypoxylon (Trypargilum) orizabense Richards in Arizona. J. Kansas Ent. Soc. 52:613-620.

Cowan, D. P.
1979. Sibling matings in a hunting wasp: Adaptive inbreeding? Science 205:1403-1405.

Croitoru, N., J. Ishay, L. Arcan, and B. Perna
1978. Electrical resistance of the yellow strips of social wasps under illumination. Photochem. Photobiol. 28:265-270.

Currado, I. and M. Olmi
1979. On the identity of some Indian Dryinid parasites of rice leaf-hoppers. Rivista Il Riso 28:179-181.

Day, M. C.
1979. The species of Hymenoptera described by Linnaeus in the genera Sphex; Chrysis, Vespa, Apis and Mutilla. Biol. J. Linn. Soc. 12:45-84.

DeJong, D.
1979. Social wasps, enemies of honey bees. Amer. Bee J. 119:505-507, 529.

Dias Filho, M. M.
1975. Contribuicao a morfologia de larvas de vespideos sociais do Brasil. Rev. Bras. Ent. 19:1-36.

Duman, J. G. and J. L. Patterson.
1978. The role of ice nucleators in the frost tolerance of overwintering queens of the bald-faced hornet. Comp. Biochem. Physiol. A 59:69-72.

Eck. R.
1979. Biometrische Untersuchung zur Klarung der Artunterschiede bei sozialen Faltenwespen. Ent. Abhandl. 42:315-344.

Edery, H., J. Ishay, S. Gitter, and H. Joshua.
1978. Venoms of Vespidae. In: Arthropod Venoms, handbook of Exp. Pharmacol. Springer Verlag, Berlin 48:691-771.

Edwards, R.
1979. The number of wasp's nests destroyed by local authorities. Environ. Health 87:100,105.
1977. Trapping wasps (Vespula spp.) and bees (Apis mellifera) at a sweet factory. Proc. 8th Int. Congr. I. U. S. S. I. p. 300.

Elliott, N. and F. Kurczewski, S. Claflin, and P. Salbert.
1979. Preliminary annotated list of the wasps of San Salvador Island, the Bahamas, with a new species of Cerceris. Proc. Ent. Soc. Wash. 81:352-365.

Erlandsson, S.
1978. Notes of aculeate Hymenoptera from the Macronesian Islands. Vieraea 7:201-206.

Evans, H. E.
1979. Additions to knowledge of the Bethylid fauna of Hispaniola. Proc. Ent. Soc. Wash. 81:456-459.
1979. A reconsideration of the genus Bakeriella. J. New York Ent. Soc. 87:256-266.

Ferro, D. N. et al.
1977. Standard names for common insects of New Zealand. Bull. Ent. Soc. New Zealand 4:1-42.

Fischl, J., J. Ishay, and N. Talmor.
1975. Monosaccharidase activity and pyruvate, lactate and carbon dioxide content of Vespa orientalis hemolymph. Comp. Biochem. Physiol. 50:71-74.
1976. Trehalase: extraction from the midgut of larvae of the Oriental hornet and its use in microdetermination of trehalose. Insect Biochem. 6:53-58.

Fitton, M. G. et al.
1978. A check list of British Insects, Part 4: Hymenoptera. Handb. Ident. British Insects. 11(4), ix + 159p.

Frilli, F. and W. Pizzaghi.
1975. Contributio alla conoscenza dell'entomofauna dell'Appennino e della pianura attorno a Piacenza. Entomologica 11:29-80.

Gamboa, G. J. and J. Dropkin.
1979. Comparisons of behaviors in early vs. late foundress associations of the paper wasp, Polistes metricus. Can. Ent. 111:919-926.

Gayubo, S. F.
1978. Aprovechamiento de la melaza de Tuberolachnus salignus (Gmelin, 1790) por varios Vespidae y Crabroninae. Bol. Asoc. Esp. Ent. 1:188.
1979. Contribucion al conocimiento de los Vespidos de la Sierra de Bejar. Bol. Asoc. Esp. Ent. 3:35-43.
1979. Contribucion al conocimiento de la espicie Vespula (Vespula) rufa (Linne, 1758). Bol. Asoc. Esp. Ent. 3:73-77.
1979. Contribucion al estudio de la especie Encopognathus braunsi Mercet, 1915. Bol. Asoc. Esp. Ent. 3:1185-191.

Gillaspy, J. E. and J. A. Grant.
1979. Mass collection of Polistes wasp venom by electrical stimulation. Southwestern Ent. 4:96-101.

Gillaspy, J. E. and J. R. Lara.
1979. A new species of Dasymutilla from South Texas. Southwestern Ent. 4:235-237.

Girling, D. J.
1979. Parasierola sp., a parasite of Eldana saccharina Wlk. Ent. Mon. Mag. 113:1360-1363.

Gorbatovsky, V. V.
1977. A contribution to the taxonomy of nocturnal myzinines. Zool. Zhur. 56:1309-1314.

Gordh, G. and A. S. Menke, E. C. Dahms and J. C. Hall.
1979. The privately printed papers of A. A. Girault. Mem. Amer. Ent. Inst., No. 28, 400p. (Girault's 63 privately published papers are reprinted in original form in this book, and all taxa are indexed. Includes a Girault biography).

Gorton, R. E.
1978. Observations on the nesting behavior of Mischocyttarus immarginatus (Rich.) in a dry forest in Costa Rica. Insectes Soc. 25:197-204.

Greene, A.
1979. Behavioral characters as indicators of Yellowjacket phylogeny. Ann. Ent. Soc. Amer. 72:614-619.

Guichard, K. M.
1978. Additions to the Greek wasp fauna. Ann. Mus. Goulandris 4:267-272.

Guiglia, D.
1975. Tabella preliminare delle feminine palearctiche del genere Meria Illiger (1807), osservazioni sulla loro biologia e distribuzione geografica. Ann. Mus. Civ. Stor. Nat. Genova. 80:263-280.
1976. Contributo alla conoscenza del Polistini dell'Iran. Ann Mus. Civ. Stor. Nat. Genova. 81:195-201.

Gupta, V. K. and B. P. Das.
1977. Distributional pattern of Indian Vespidae with reference to altitude. Entomon 2:209-213.

Haeseler, V.
1975. Pterocheilus phaleratus (Hymenoptera: Vespoidea), ein Nektardieb an den Bluten von Lotus corniculatus (Fabales: Fabaceae). Ent. Germ. 1:213-221.
1978. Die von F. und R. Struve in den Jahren 1932 bis 1942 auf Borkum gesammelten aculeaten Hymenopteren. Oldenburgen Jahrb. 75/76:183-202.
1978. Zum Aufreten aculeater Hymenopteren in gestorten Hochmoorresten des Fintlandsmoores bei Oldenburg. Drosera 12:57-76.
1978. Zur Fauna der aculeaten Hymenopteren der Nordseeinsel Mellum, Ein Beitrag zur Besiedlung kustennaher Inselen. Zool. Jahrb. Syst. 105:368-385.
1978. Flugzeit, Blutenbesuch, Verbreitung und Haufigkeit der solitaren Faltenwespen in Norddeutschen Tiefland (BRD). Schr. Naturw. ver. Schlesw.-Holst. 48:63-131.
1979. Landschaftsokologischer Stellenwert von Zaunpfahlen am Beispiel der Nistgelegenheiten fur solitare Bienen und Wespen. Natur und Landschaft. 54:8-13.

Harris, R. A.
1979. A glossary of surface sculpturing. Calif. Dept. Food Agric. Occas. Papers Ent. 28:1-31. (An attempt to standardize surface sculpture terminology. Illustrated with scanning electron photographs).

Hermann, H. R.
1975. The ant-like venom apparatus of Typhoctes peculiaris, a primitive mutillid wasp. Ann. Ent. Soc. Amer. 68:882-884.

Hermann, H. R. (Editor).
1979. Social Insects, Vol. 1. Academic Press, N. Y. 437p.

Hermann, H. R. and M. E. Douglas.
1976. Comparative survey of the sensory structures on the sting and ovipositor of hymenopterous insects. J. Georgia Ent. Soc. 11:223-239.

Hermann, H. R. and J. W. Krispyn.
1975. The hymenopterous venom apparatus. XIV. Vespula maculata. J. Georgia Ent. Soc. 10:307-13.

Hoffman, D. R.
1977. Allergens in Hymenoptera venoms. IV. Comparison of venom and venom sac extracts. J. Allergy Clinical Immun. 59:367-370.
1978. Allergens in Hymenoptera venom. V. Identification of some of the enzymes and demonstration of multiple allergens in Yellow Jacket venom. Ann. Allergy. 40:171-176.
1979. The use of interpretation of rast to stinging insect venoms. Ann. Allergy 42:224-230.
1979 Comparison of the radioallergosorbent test to intradermal skin testing in the diagnosis of stinging insect venom allergy. Ann. Allergy. 43:211-213.

Hoshikawa, T.
1979. Observations on the polygynous nests of Polistes chinensis antennalis Perez in Japan. Kontyu. 47:239-243.

Hurd, P. D. and E. G. Linsley.
1975. Some insects other than bees associated with Larrea tridentata in the Southwestern United States. Proc. Ent. Soc. Wash. 77:100-120.

Institute of Zoology, Academia Sinica, Zhejiang Univ.
1978. Atlas of natural enemies of economic insects of China. Science Press, Beijing. iii + 300p., 50 color plates. (in Chinese with Latin names. Includes Chrysidoidea, Scolioidea, Vespoidea).

International Commission on Zoological Nomenclature.
1978. Opinion 1106. Conservation of the generic name Rhopalum Stephens, 1829. Bull. Zool. Nomencl. 34:237-239.
1979. Opinion 1115. Validation of the generic name Nysson Latreille as from 1796. Bull. Zool. Nomencl. 35:175-179.

Ironside, D. A.
1978. The Macadamia twig girdler. Queensland Agric. J. 104:29-30.

Ishay, J.
1975. Caste determination by social wasps: cell size and building behaviour. Anim. Behav. 23:425-431.
1975. Glucose levels in Vespa orientalis: the effect of starvation. Comp. Biochem. Physiol. 52:91-96.
1975. Glycemis changes in social insect haemolymph. Comp. Biochem. Physiol. 52:533-537.
1975. Hyperglycemia produced by hornet venom sac extract. Toxicon 13:221-226.

1975. The frequencies of the sounds produced by the Oriental hornet Vespa orientalis. J. Insect Physiol. 21:1737-1740.
1977. Acoustical communication in wasp colonies (Vespinae). Proc. XVth Internat. Cong. Ent., pp.406-435.
1979. Anticholinesterase-like activity by Oriental hornet (Vespa orientalis) venom and venom sac extract. Experientia 35:636-639.

Ishay, J. and L. Barr-Nea.
1977. Effects of hypergravity on rat fertility, pregnancy, parturition and survival. Experientia 33:244-246.

Ishay, J., D. Ben-Schacher, Z. Elazar, and E. Kaplinsky.
1975. Effect of Melittin on the central nervous system. Toxicon 13:277-283.

Ishay, J., A. Borit, U. Sandbank, and D. Allalouf.
1976. Electron-microscopic study of the effect of whole venom sac extract of Oriental hornet and one of its fractions on frog striated muscle. Toxicon 14:291-294.

Ishay, J. and M. B. Brown.
1975. Patterns in the sounds produced by Paravespula germanica wasps. J. Acoust. Soc. Amer. 57:1521-1525.
1975. Patterns in sounds produced by Vespa orientalis larvae. Experientia 31:1044-1046.

Ishay, J. S. and N. Croitoru.
1978. Photoelectric properties of the 'Yellow stripe' of social wasps. Experimentalia 34:340-342.

Ishay, J. S. Gitter, R. Galun, M. Doron, and Z. Laron.
1976. The presence of insulin in and some effects of exogenous insulin on Hymenoptera tissues and body fluids. Comp. Biochem. Physiol. 54:203-206.

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. Y. Lass, and U. Sandbank.
1975. A lesion of muscle transverse tubular system by Vespa orientalis venom: electron microscopic and histological study. Toxicon 13:57-60.

Ishay, J., E. Megory, et al.
1979. Hornet building orientation in a vertically rotating centrifuge. Life Sci. Space Research. 17:247-252.

Ishay, J. and D. Nachshen.
1975. On the nature of the sounds produced within the nest of the wasp Paravespula germanica F. Insectes Sociaux 22:213-218.

Ishay, J., and B. Perna.
1979. Building pheromones of Vespa orientalis and Polistes foederatus. J. Chem. Ecol. 5:252-279.

Ishay, J., B. Perna, Y. Hochberg, and M. Goldstein.
1979. The effect of hornet venom on the photoelectric properties of hornet cuticle. Toxicon 17:407-411.

Ishay, J., and D. Sadeh.
1977. Geotropism of hornet comb construction under persistent acceleration. Behav. Ecol. Sociobiology 2:119-129.
1978. Geotropism and hornet comb construction under persistent acceleration. Life Sci. Space Research 16:93-98.

Ishay, J., A. Shved, and S. Gitter.
1977. Lethality of venom sac extract of the Oriental hornet (Vespa orientalis) as related to ontogenesis. Toxocon 15:307-315.

Jacob-Remacle, A.
1976. Une operation nichoirs artificiels pour Hymenopteres dans trois jardins de Liege. Bull. Ann. Soc. Ent. 112:219-242.

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.

Jervis, M. A.
1979. Parasitism of Aphelopus species by Ismarus dorsiger (Curtis). Ent. Gazette 30:127-129.
1979. Courtship, mating, and "swarming" in Aphelopus melaleucus (Dalman). Ent. Gazette 30:191-193.

Jonathan, J. K. and M. Dhar.
1976. A new record and redescription of Trogaspidia similis Hammer from India. Newsl. Zool. Survey India 2:186-187.

Joshua, H, and J. Ishay.
1977. Factors affecting the hemolytic activity of the Oriental hornet (Vespa orientalis) venom and venom sacs. Toxicon 15:217-250.

Kartzev. V. M.
1979. An evidence of the ability of wasps Paravespa germanica for generalization of visual stimuli. Zool. Zhur. 58:1419-1420.

Kazenas, V. L.
1979. Wasps of the genus Cerceris Latr. of far eastern SSSR. Pp. 68-89 in Terrestrial Arthropods of the Far East. Academy Nauk SSSR, Far Eastern Scientific Center, Institute of Biology and Pedology, Vladivostok. (Entirely in Russian. Includes figs. and a key to species).
1979. New Species of Digger wasps from Southeastern Kazakhstan. Ent. Rev. 57:454-456 (English translation).

Khalifman, I.
1978. The four-winged corsairs. Moscow, Detskaya Piteratura. 317p. (in Russian)

Kisliuk, M., and J. Ishay.
1977. Influence of an additional magnetic field on hornet nest architecture. Experientia 33:885-887.
1978. Hornet building orientation in additional magnetic fields. Life Sci. Space Research 16:56-62.
1979. Influence of the Earth's magnetic field on the comb building orientation of hornets. Experientia 35:1041-1042.

Krombein, K. V.
1979. Biosystematic studies of Ceylonese wasps, V: A monograph of the Ampulicidae. Smithsonian Contrib. Zool., No. 298, p.1-29.

Kugler, J. and M. Motro and J. S. Ishay.
1979. Comb building abilities of Vespa orientalis L. queenless workers. Insectes Soc. 26:147-153.

Kurczewski, F. E. and N. B. Elliott.
1978. Nesting behavior and ecology of Tachysphex pechumani Krombein. J. Kansas Ent. Soc. 51:765-780.

Landolt, P. J. and R. D. Akre.
1977. Effects of colony division on Vespula atropilosa (Sladen). J. Kansas Ent. Soc. 50:135-147.

1979. Ultrastructure of the thoracic gland of queens of the Western Yellowjacket Vespula pensylvanica Ann. Ent. Soc. Amer. 72:586-590.

Leclercq, J. and C. Gaspar, M.-P. Delecluse, and C. Thirion.
1976. Premier examen du repeuplement entomofaunique des bermes de l'autoroute de Wallonie. Bull. Soc. Roy. Sci. Liege 45: 136-151.

X Leclercq, J. and C. Gaspar, and C. Verstracten.
1978. Atlas provisoire des insesctes de Belgique. Cartes 1001-1200 (Halictinae, Tiphiidae et Nyssoninae).

Lefeber, B. V.
1977. Een nieuwe wegwesp in Nederland en Belgie. Ent. Ber. 37:110.
1978. Interessante vangsten van Hymenoptera-Aculeata voornamelijk in 1976 en 1977 in Nederland en Belgie. Ent. Ber. 38:134-138.
1979. Verspreidingsatlas van 64 soorten Nederlandse Graafwespen. Nederlandse Faunist. Meded. 2:1-95. (distribution maps of Sphecidae in the Netherlands.)

Lelej, A.
1978. Superfam. Mutilloidea, in: Keys to the insects of the European part of USSR. Hymenoptera 3:71-84
1979. New genus of the velvet-ants from South-Eastern Asia. Zool. Zhurnal 58:1065-1067.
1979. New species of the velvet-ants of the genus Smicromyrme Thomson from the Middle Asia, in: New species of the insects, "Nauka":169-171.

X Lin, N.
1978. Contributions to the ecology of the cicada killer, Sphecius speciosus. J. Wash. Acad. Sci. 68:75-82.

Litte , M.
1979. Mischocyttarus flavitarsis in Arizona: social and nesting biology of a Polistine wasp. Z. Tierpsychol. 50:282-312.

Marshakov, V. G.
1979. Fossorial wasps of the genera Crossocerus Lepeletier & Brulle, 1834, Ectemnius Dahlbom, 1845, and Towada Tsuneki, 1970 of far eastern SSSR. Pp. 90-107 in Terrestrial Arthropods of the Far East. Academy Nauk SSSR, Far Eastern Scientific Center, Institute of Biology and Pedology, Vladivostok. (Entirely in Russian. Includes figs. and keys to species. Corenocrabro Tsuneki synonymized with Crossocerus L. & B., subgenus Acanthocrabro Perkins. Corenocrabro ectemiformis Tsuneki = Crossocerus vagabundus. Additional synonymy provided in Crossocerus and Ectemnius).

Masner L.
1979. Pleural morphology in Scelionid wasps - an aid to higher classification. Can. Ent. 111:1079-1087.

Masner, L., and G. A. P. Gibson.
1979. The separation bag-a new device to aid in collecting insects. Can. Ent. 111:1197-1198.

Matthews, R. W. and J. R. Matthews.
1979. War of the Yellow Jacket queens. Nat. Hist. 88:56-65.

X May, T. E. and T. Piek.
1979. Neuromuscular block in Locust skeletal muscle caused by a venom preparation made from the Digger wasp Philanthus triangulum F. from Egypt. J. Ins. Phys. 25:685-691.

Menke, A. S.
1979. A review of the genus Larrisson Menke. Australian J. Zool. 27:453-463.

Michener, C. D. and A. Fraser.
1978. A comparative anatomical study of mandibular structure in bees. Univ. Kansas Sci. Bull. 51:463-482.

Mingo, E.
1979. Himenopteros - sobre los Omalus Panz., 1804, de Espana. Graellsia 33:199-219.

Miotk, P.
1979. Biology and ecology of Odynerus spinipes (L.) and O. reniformis (Gmel.) inhabiting loess-walls in the Kaiserstuhl-area. Zool. Jahrb., Syst., Okol., Geog. 106:374-405.

Moczar, L.
1979. New Sulcomesitius and Heterocoelia species from Sri Lanka. Pac. Insects 21:241-252.

Motro, M. and U. Motro, J. S. Ishay, and J. Kugler.
1979. Some social and dietary prerequisites of oocyte development in Vespa orientalis L. workers. Insectes Soc. 26:155-164.

Nascimento, P. T. R.
1979. Catalogo de tipos entomologicos do museu Goeldi. Bol. Mus. Paraense Emelio Goeldi, Nova Serie, Zool. 98:1-18. (lists Hymenoptera types of various authors, primarily Aculeata)

O'Brien. M. F. and F. E. Kurczewski.
1979. Observations on the nesting behavior of Alysson conicus Provancher. Proc. Ent. Soc. Wash. 81:435-437.

Pallett, M. J. and R. C. Plowright.
1979. Traffic through the nest entrance of a colony of Vespula arenaria. Can. Ent. 111:385-390.

Perna, B., N. Croitoru, and J. Ishay.
1978. Dominance and hierarchy in Polistes gallicus colonies attained through photoelectric properties. Experientia 34:1022-1024.

Petit, J.
1977. Hymenopteres Aculeates interessant pour la faune de la Belgique et des regions limitrophes (2). Lambillionea. 77:39-46.
1978. Hymenopteres Aculeates interesant pour la faune de la Belgique et des regions limitrophes (3). Lambillionea 77:83-88.

Pflumm, W.
1979. Zur Abhangigkeit des Putzens von der Konzentration der Zuckerlosung bei der Gemeinen Wespe (Paravespula vulgaris). Z. Tierpsychol. 50:129-135.

Poinar, G. O., Jr., R. S. Lane, and G. M. Thomas.
1976. Biology and redescription of Pheromermis pachysoma (V. Linstow) n. gen, n. comb. A parasite of Yellowjackets. Nematologica 22:360-370.

Preuss, G.
1979. Crossocerus podagricus (V. D. Linden). - Wiedernachweisse fur die Rheinpfalz. Pfalzer Heimat. 30:86-87.
1979. Lindenius subaeneus Lep. - Neu fur Rheinland-Pfalz. Pfalzer Heimat. 30:86.
1979. Crossocerus congener Dahlbom. - Neu fur die Rheinpfalz. Pfalzer Heimat 30:12.
1979. Rhopalum nigrinum Kiesenetter - Neu fur Rheinland-Pfalz. Pfalzer Heimat 30:41.

Pulawski, W.
1979. Two new synonyms in Transcaspian Sphecidae. Polskie Pismo Ent. 9:303-304.
1979. Two new Dienoplus from Turkey. Polskie Pismo Ent. 49:475:480.
Rathmayer, W.
1978. Venoms of Sphecidae, Pompilidae, Mutillidae, and Bethylidae. Handb. Exper. Pharmacol. 48:661-690.
Reed, H. C. and S. B. Vinson.
1979. Nesting ecology of Paper wasps (Polistes) in a Texas urban area. J. Kansas Ent. Soc. 52:673-689.
Richards, O. W.
1978. The Australian social wasps. Austr. J. Zool.(suppl. series) 61:1-132, 46 figs.
1978. The Hymenoptera Aculeata of the Channel Islands. Rept. Trans. La Soc. Guernesiaise 1978:389-424.
Ring, B., H. Slor, B Parna, and J. Ishay.
1978. Deoxyribonucleases of the Oriental hornet (Vespa orientalis) venom: II, partial characterization and effects in vivo on insects and mammals. Toxicon 16;473-478.
Rosenberg, P., J. Ishay, and S. Gitter.
1977. Phospholipase A and B activities of the Oriental hornet (Vespa orientalis) venom and venom apparatus. Toxicon. 15:141-156.
Sadeh, D, J Ishay, and R. Yotam.
1977. Hornet ventilation noise: rhythm and energy content. Experientia 33:335-377.
Saini, M. S. and S. S. Dhillon and T. Singh.
1979. Position variations and modifications relating to the protergum in Hymenoptera. J. New York Ent. Soc. 87:208-215.
Saka, T.
1979. Gyosei-side kara mita hachi no kujo ni tsuite. Kankyo-Eisen 6:6-13.
Salbert, P. and N. Elliott.
1979. Aspects of the nesting behavior of Cerceris watlingensis in relation to its geographical location. J. New York Ent. Soc. 86:318.
1979. Observation on the nesting behavior of Cerceris watlingensis Ann. Ent. Soc. Amer. 72:591-595.
Sandbank, M., L. Barr-Nea, and J. Ishay.
1978. Pseudolymphoma of skin induced by Oriental hornet (Vespa orientalis) venom. Arch. Dermatol. Res. 262:135-141.
Schluter, T.
1978. Zur Systematik und Palokologie Harzkonservierter Arthropoda einer Taphozonose aus dem Cenomanium von NW-Frankreich. Berliner Geowiss. Abh. 9:1-150.
Schmidt, J. O. and M. S. Blum.
1977. Adaptations and responses of Dasymutilla occidentalis to predators. Ent. Exp. Appl. 21:99-111.
Schmidt, J. O. and A. W. Hook.
1979. A record population of Pseudomethoca simillima (Smith). Fla. Ent. 62:152.
Schmidt, J. O. and C. E. Mickel.
1979. A new species of Dasymutilla from Florida. Proc. Ent. Soc. Wash. 81:576-579.

Schremmer, F.
1977. Das Baurinden-Nest der neotropischen Faltenwespe Nectarinella championi, umgeben von einem Leimring als Ameisen Abwehr. Ent. Germ. 3:344-355.
1978. Eine neotropische Faltenwespen-Art, die Buckelzirpen-Larven, bewacht und deren Honigtau sammelt. Ent. Germ. 4:183-186.
1978. Zum Einfluss verschiedener Nestunterlagen-Neigungen auf Nestform und Wabengrosse bei zwei neotropischen Arten sozialer Faltenwespen der Gattung Parachartergus. Ent. Germ. 4:356-367.

Simon Thomas, R. T.
1979. Kan de bijenwolf weer een plaag worden? Maandschr. Bijent. 81:139.

Simon Thomas, R. T. and A. M. J. Simon Thomas-Heijmans.
1978. Verspreiding en gedrag van de bijenwolf. Maandbl. Koninkl. 4:450-456.

Slosr, H., B. Ring, and J. Ishay.
1976. Nucleases of the Oriental hornet (Vespa orientalis) venom sac extract: I. acid, neutral and alkaline deoxyribonucleases and their pharmacological effects on cat blodod in vitro. Toxicon 14:427-433.

Smithers, C. N. and G. A Holloway.
1977. Recent specimens of Vespula (Paravespula) germanica (Fabricius). Australian Ent. Mag. 4:75-76.

Starzyk, J. R.
1976. Common wasp, Vespula vulgaris (L.), a predator of imagines of Leptura rubra L. Ent. Mon. Mag. 112:1348-1351.

Strassmann, J. E.
1979. Honey caches help female paper wasps (Polistes annularis) survive Texas winters. Science 204:207-209.

Suarez, F. J.
1979. Una nueva especie de Paramyrmosa Saussure, 1880, de Tunez. Rev. Espanola Ent. 53:309-313.
1979. Una nueva especie del Afganistan y propuesta de un genero nuevo para la misma (Hymenoptera, Mutillidae). Nouv. Rev. Ent. 9:71-77.

Sugerman, B. B.
1979. Additions to the list of insects and other arthropods from Kwajalein Atoll (Marshall Islands). Proc. Hawaii Ent. Soc. 13:147, 151.

Suzuki, T.
1978. Area, efficiency and time of foraging in Polistes chinensis antennalis Perez. Jap. J. Ecol. 28:179-189.

Tachikawa, T.
1976. Record of Cephalonomia gallicola (Ashmead) from Japan. Trans. Shikoku Ent. Soc. 13:64.

Taffe, C. A.
1978. Temporal distribution of mortality in a field population of Zeta abdominale in Jamaica. Oikos 31:106-111.
1979. The ecology of two West Indian species of mud-wasps. Biol. J. Linn. Soc. 11:1-17.

Taffe, C. A. and K. Ittyeipe.
1976. Effect of nest substrata of the mortality of Eumenes colona Saussure and its inquilines. J. Anim. Ecol. 45:303-311.

Tepedino, V. J.
1979. Notes on the flower-visiting habits of Pseudomasaris vespoides. Southwestern Nat. 24:380-381.

Teras, I.
1978. The activity of social wasps at low temperaure. Ann Ent. Fenn. 44:101-104.

Tsuneki, K.
1979. Studies on the genus Trypoxylon Latreille of the Oriental and Australian regions. III. Species from the Indian subcontinent including Southeast Asia. Spec. Publ. Japan Hym. Assoc. 9:1-176.
1979. Studies on the genus Trypoxylon Latreille of the Oriental and Australian regions. IV. Species from Sri Lanka. Spec. Publ. Japan Hym. Assoc. 10:1-20.
1979. Studies on the genus Trypoxylon Latreille of the Oriental and Australian regions. V. Species from Sumatra, Java and the Lesser Sunda Islands. Spec. Publ. Japan Hym. Assoc. 11:1-68.

Turillazzi, S.
1979. Tegumental glands in the abdomen of some European Polistes. Monitore Zool. Ital. 13:67-70.

Turillazzi, S. S. Tonarelli and A. Ugolini.
1979. Adoption of artificial nests in Polistes. Monitore Zool. Ital. 13:218.

Turillazzi, S. and A. Ugolini.
1978. Nest defense in European Polistes. Monitore Zool. Ital. 12:72.
1978. Osservazioni su colonie miste sperimentali di Polistes gallicus (L.) e Polistes foederatus (Kohl). Redia 61:233-249.
1979. Rubbing behaviour in some European Polistes. Monitore Zool. Ital. 13:129-142.

Van Lith, J. P.
1979. Notes on palaearctic Psenini IX-XIII. Ent. Bericht. 39:150-153.
1979. The New World genus Pluto. Tijdschr. Ent. 122:127-239.

X Vikberg, V.
1979. Erkki Valkeila in memoriam. Not. Ent. 59:137-138.

Wahis, R.
1977. Les Episyron de L'Ile de Ceylan (Sri Lanka). Bull. Ann. Soc. Roy. Belg. Ent. 114:198-208.-

West-Eberhard, M. J.
1978. Polygyny and the evolution of social behavior in wasps. J. Kansas Ent. Soc. 51:832-856.

X Wharton, R. A.
1979. Some predators and parasitoids of dung-breeding Diptera from Central California. Pan-Pac. Entomol. 55:181-186. (Oxybelus predation)

Wolf, H.
1978. Some Spider wasps described or mentioned by Haupt. Deut. Ent. Zeitschr. 24:381-392.
1979. Bestimmungsschlussel zu den mit Arachnotheutes und Pedinpompilus verwandten Wegwespen-Gattungen und ihrer westpalaarktischen Arten. Ent. Generalis 5:269-278.

X Wooton, R. J.
1979. Function, homology and terminology in insect wings. Syst. Ent. 4:81-93.

Yamane, Sk.
1978. Suzmebachi-doku no hanashi. Hornet. 16:30-35.
1979. Notes on Eumenid wasps from Japan and its adjacent regions III. New Ent. 28:8-12.

Yany, K. D., H. Haug, and J. Ishay.
1978. Trypsin-like endopeptidases from the midguts of the larvae from the hornets of Vespa orientalis and V. crabro. Insect Biochem. 8:221-230.

Yany, K. D., H. Haug, G. Pfleiderer, and J. Ishay.
1978. Enzymatic and chemical properties of an endopeptidase from the larva of the hornet Vespa crabro. Biochemistry 17:4675-4682.

Young, A. M.
1979. Attacks by the army ant Eciton burchelli on nests of the Social Paper wasp Polistes erythrocephalus in Northeastern Costa Rica. J. Kansas Ent. Soc. 52:759-768.

Zalom, F. G., R. P. Meyer, and P. H. Mason.
1979. Sympatric associations of Systropus spp. and Ammophila spp. Pan-Pac. Entomol. 55:239-240.