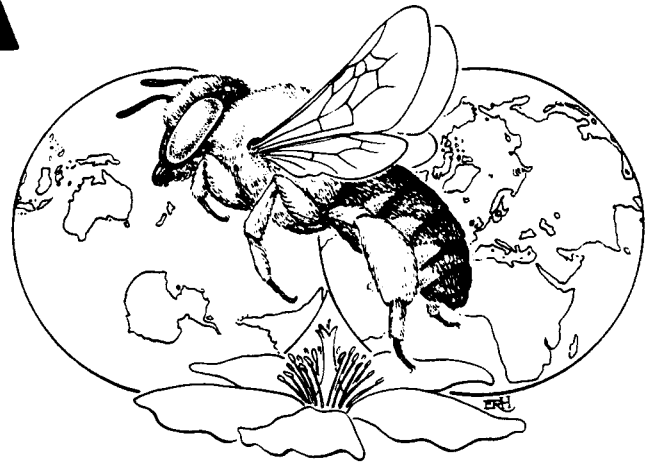
MELISSA

The Melittologist's Newsletter -2-

Editors:

Ronald J. McGinley
Department of Entomology
Smithsonian Institution, NHB-105
Washington, D.C. 20560

Charles D. Michener
Entomological Museum, Snow Hall
University of Kansas
Lawrence, Kansas 66045



Number 2 - February, 1987

Editorial Comments

Response to the first issue of Melissa and the supplementary Melittologist's Directory has been highly favorable. Many thanks to all of you who have contributed to the Melissa project with information and encouragement. During the past year we have heard from 51 additional workers, bringing the total to 398 contributing biologists in 48 countries (we have a valuable new entry from Iraq). The actual mailing list is slightly larger because it includes other entomologists (non-bee specialists) and a number of libraries.

Increased levels of computer support at the Smithsonian Institution will soon make Melissa more aesthetically appealing as well as more useful. Melissa is currently produced as a WordStar 2000+ word-processing document on an IBM-XT and printed with a NEC-7730 quality printer. For the next issue, the IBM file will be converted over to a MacIntosh computer with enhanced graphic capabilities and then printed off a new departmental laser printer. Improved looks are nice, but increased utility is even better - the entire Directory, including addresses, telephone numbers, research interests, research keywords, etc., has been converted from a word-processing document to a dBASE-III file (the dBASE application program was written by Kathleen Smith, Department of Invertebrate Zoology, Smithsonian Institution). This format makes possible data searches and reports, ranging from the simple, e.g., a listing of bee workers in the U.S.S.R., to the relatively complex, e.g., those workers in Sweden who are interested in halictid nesting biology. The new "dBASEd" Directory also serves as a mailing list and can generate mailing stickers like the one you received for this mailing. We are willing to make this program and database available to those biologists who have the necessary computer hardware and software (for details, contact Ron McGinley). Please use this opportunity to update and/or correct your Directory file, otherwise, misinformation concerning your address, telephone number, research interests, etc., will be distributed to hundreds of workers in 48 countries.

We initially thought we would produce two newsletters each year; however, one issue per year seems more realistic. We need more input from bee specialists around the world. While so many of you have expressed to us your appreciation for Melissa, very few (with notable exceptions) have sent in news items for distribution since the original questionnaire responses were sent in during the summer/fall of 1985. We need your input if Melissa is to continue. An increase in contributions received would result in increased frequency of news dissemination and increased quality control for the computerized Directory.

One last general item - Kenneth W. Cooper recently wrote in asking "...why not asterisk note-sized factual items that an author grants prior permission to cite? For example, my little note on Megachile apicalis [included herein] is one that not only would I grant the right to citation, but anyone recording new records for the bee would almost certainly wish to be permitted to cite it. Why should anyone have to write to me for such permission if I would willingly grant it beforehand?" We presume that most contributors to Melissa welcome wide dissemination of their comments and do not object to citations of their work by others. If for reasons of incompleteness, preliminary nature of findings, etc., any contributor prefers that his work not be cited, he should so indicate so that an appropriate notice can be published. Thanks for bringing this matter to our attention, Ken.

As for the last issue of Melissa, we thank Dr. Beth Norden (Smithsonian Institution) for proofreading this contribution and for her help with a variety of technical matters.

General News and Reports

INTERNATIONAL POLLINATION RESEARCH NEWSLETTER

By Margaret Adey and Charles Stirton
International Bee Research Association, Cardiff, United Kingdom
and Royal Botanic Gardens, Kew

The last couple of years have seen an upsurge of interest in all facets of pollination biology. This has resulted in a flood of papers covering a wide range of specialized topics, often dealing with the same subject but interpreted differently by the different disciplines. Pollination biology is thereby in danger of becoming a field of increasing specialization and decreasing synthesis.

The International Pollination Research Newsletter draws all contributing disciplines together and provides a forum for the exchange of information about current developments in pollination biology and breeding systems in the broadest sense. It is our hope that the contacts and information gained through this newsletter will foster a better liaison between those in pure and applied research. To this end, we hope to establish gradually an international directory and database of researchers and their current projects. The Newsletters are based on a standard questionnaire which is enclosed with them.

We plan to produce two Newsletters per year, issued free, for which we gratefully acknowledge the support of the Royal Botanic Gardens, Kew and the International Bee Research Association [note new address listed under Adey in

Changes of Address section]. Enquiries to Mrs. Janice Goodwin at the International Bee Research Association.

IAAD NEWSLETTER

By Diana Sammataro, Medina, Ohio

IAAD/News is a quarterly newsletter devoted to beekeepers in developing countries. It contains low technology ideas for honey and wax processing, queen rearing, equipment plans and plant lists, including crops and agroforestry trees that also produce honey. To join, contact R. Dillinger, 3201 Huffman Blvd., Rockford, Illinois 61103, U.S.A.

APICULTURAL ABSTRACTS

By Margaret Adey
International Bee Research Association, Cardiff, United Kingdom

Melissa readers may be interested to learn of a useful source of current information on bees, published by the International Bee Research Association.

Apicultural Abstracts aims to give a complete survey of research and technical developments concerning all bees, and beekeeping, throughout the world. It covers all aspects of the honeybee Apis mellifera and of other Apis species. Apoidea in general are included, especially foraging and social behaviour and pollinating activities; taxonomy is not dealt with exhaustively. Social aspects of other insects are considered where useful. Relevant general aspects of pollination are covered, in addition to the economic use of both social and solitary bees for crop pollination. Developments in techniques and equipment for beekeeping and for processing hive products are covered fully.

Apicultural Abstracts is printed by computer-aided processes in the Commonwealth Agriculture Bureaux International system. Publications reported are classified according to the Universal Decimal Classification (UDC) system; the annual Subject and Author Indexes are published in a fifth issue for each volume. For further information and a free copy of Apicultural Abstracts please write to International Bee Research Association, 18 North Road, Cardiff CF1 3DY, UNITED KINGDOM [NOTE NEW ADDRESS].

A GATHERING OF MELITTOLOGISTS IN LAWRENCE, KANSAS

by Charles D. Michener
University of Kansas, Lawrence, Kansas

Their visits synchronized almost by chance, four bee specialists spent about a week together working on the bee collection and talking about bees at the University of Kansas, Lawrence. Visitors were (1) Michael S. Arduser from the University of Missouri at St. Louis, studying Sphecodes and eastern U.S. Osmia; (2) Ricardo Ayala B. from the Chamela Field Station, Instituto de Biologia, Universidad Nacional Autonoma de Mexico, studying and identifying bees largely from Chamela (in Jalisco); (3) Terry L. Griswold from the Bee Biology and Systematics Laboratory, USDA, Logan, Utah, studying mostly Megachilidae; and (4) Laurence Packer from the University of Toronto, studying mostly Halictini. These four, along with the local melittologists Luisa Ruz, Robert W. Brooks and Charles D. Michener, had a worthwhile and also very enjoyable time together. Ricardo stayed for about two weeks, getting

identifications, planning for descriptions of new species, and helping with identifications of materials in the KU collection.

PROGRAMA COOPERATIVO SOBRE LA APIFAUNA DE MEXICO

Summary of Workshop, October, 1986

By Radclyffe B. Roberts, Rutgers University, New Brunswick, New Jersey

From October 9th to 17th, 25 participants in the PCAM-86 Workshop planned for the coming year and conducted field studies in Quintana Roo, Mexico. The goals of the Workshop were to coordinate grant proposals to be submitted to funding agencies in Mexico and the United States and to survey the bees of Quintana Roo.

After reviewing the history of survey work on Mexican bees, Michener emphasized the principal objectives of PCAM as: 1) investigation of the taxonomic diversity and distribution of the bees in Mexico; 2) establishment of permanent collections of bees in Mexico; 3) investigation of the biology of Mexican bees, not only nesting behavior but floral ecology and pollination problems; 4) establishment of a training program designed to strengthen the Mexican base of expertise on bees. In accord with established PCAM policy, half the bees collected by foreign participants will be returned to Mexico.

LaBerge and McGinley are assembling information which will form the basis of a proposal for a survey of the bees of Mexico. This proposal will be submitted to the Systematic Program of the National Science Foundation in the United States. LaBerge asked every PCAM participant for a brief (ca. 1 page) summary of their current research and intended role in PCAM. This should be sent to him as soon as possible (additional workers interested in the program should contact LaBerge immediately). In connection with the survey proposal, Ayala and Bullock made a list of biological field stations in Mexico and McGinley mapped their locations. With input from all PCAM participants, McGinley also mapped bee collecting expeditions in Mexico. Ayala made a list of the bee collections in Mexico. Murillo compiled information on the identified bee species in these collections. McGinley estimated the percentage of Mexican material in 65 collections in the United States. Parker has a partial list of the bees collected in Chamela, Jalisco during PCAM-85 and wishes to have supplementary lists from other PCAM-85 participants.

Proposals submitted to the Consejo Nacional de Ciencia y Technologia (CONACYT) will be coordinated by Ayala. CONACYT proposals will focus more on applied ecology than systematics.

McGinley and Roubik will submit a proposal to the Smithsonian Institution that is intended to support comparative studies of pollen utilization by bees and associated palynological studies on the west coast of Jalisco and the east coast of Quintana Roo (both similar latitude). These funds are intended to support and be coordinated with associated, ongoing efforts by Ayala, Bullock, Parker and Villanueva.

Eickwort will assemble a proposal for the Office of International Cooperation and Development, Scientific and Technical Exchange Program (OICD/STE). If funded, it will help defray the cost of travel and lodging of participants in the next PCAM workshop.

McGinley discussed the importance of establishing standard methods for the collection of data by PCAM participants. It was agreed that the data associated with specimens go beyond the usual locality, date and collector to include latitude, longitude, altitude, time of day and (when possible) plant host. This information can be put into a computerized data base and sorted in

a variety of ways. McGinley has the capability of producing computer generated, publication quality distribution maps if PCAM participants supply him with a latitude/longitude list of localities.

Foreigners working in Mexico need collecting permits from Mexican authorities. Furthermore, U.S. customs requires that all material entering the U.S. be lawfully taken from the country of origin. Thus, it is doubly important that such permits be obtained. All bees entering the United States must be accompanied by a permit issued by APHIS (cf. Melissa no. 1, Feb., 1986). The matter of collecting permits and a central Mexican depository for bees collected by the PCAM survey is being considered by Mexican authorities.

In the field, participants had the opportunity to visit La Reserva Sian Ka'an and other localities in the vicinity of Puerto Morelos and Felipe Carrillo Puerto. Bees in these areas were not significantly different, doubtless because the vegetation is similar. Fewer than half the species encountered nest in soil, an unusually low proportion. In addition to collecting a large number of bees, PCAM participants gathered information on nest architecture, floral preference, embryonic development and wing beat frequency.

PCAM wishes to thank the following persons who contributed to the success of the Workshop: Lic. Joaquin Gonzalez Castro, Mayor of Cancun; Dr. Enrique Carrillo Barrios Gomez, General Director of CIQRO; Mr. Jose Luis Martinez Alday, Operational Manager of Viajes Turquesa del Caribe Mexicano, S.A.; Mr. Juan Benitez, Head of Tourism, Puerto Morelos; CIQRO personnel in charge of organizing and coordinating the PCAM meeting and the researchers' wives who helped organize the welcoming reception. Participants are indebted to Villanueva, the primary host, for making the 1986 PCAM Workshop an unqualified success; there were no logistic problems despite the difficulty of arranging housing in two cities and transportation for a record number of participants.

Persons wishing to obtain a copy of the PCAM-86 summary report should contact Roberts (indicate preference for Spanish or English version).

AN INDEX FOR RANKING THE BARBS ON STINGERS

By Christopher K. Starr
De la Salle University, Manila, Philippines

The tendency for honey-bee stingers to be irretrievably caught in the skin of a stung vertebrate is well known as sting autotomy (Hermann, H.R. 1971. Sting autotomy, a defensive mechanism in certain social Hymenoptera. Ins. Soc. 18:111-120). This is caused by backward-pointing barbs on the lancets, which become embedded in the manner of the barb on a fishhook. Such barbs are commonly found in wasps and bees, though they are not so well developed in most species as to bring about sting autonomy.

Until now, there has been no quantitative way of comparing the development of the barbs in different species. In the course of a comparative study of the stinger in Ropalidia social wasps, though, my student Eric Macalintal and I found it necessary to devise such a measure, which we call the index of serration. This is equal to the sum of the lengths of all acute barbs, measured on the anterior (shorter) side, as a fraction of the width (in lateral view) of the middle part of the lancet. We find that we can derive serration values up to 1 fairly consistently to the nearest 0.1, and above

that to about the nearest 0.25. In an imaginary example, illustrated below, the first barb is ignored as obtuse, while the other five have a sum of lengths about 70% of the lancet width. This value, 0.7, is close to that found in three hornet species.

The highest serration values we have gotten so far from any wasp or bee are from the giant honey bee Apis breviligula, usually 3.5 to 4.0 From A. cerana and mellifera we get modal values of 2.0 and 3.0 respectively. The only comparably barbed wasp so far measured is Synoeca septentrionalis, 2.5-3.0. All other species measured have values below 1. The only other bees we have looked at were two undetermined Xylocopa, with values of 0.2 and 0.3.

As far as we can see, this index allows realistic comparison between species of differing size and stinger structure.

ADDITIONAL RECORDS OF Megachile (Eutricharaea) apicalis Spinola FROM CALIFORNIA

By Kenneth W. Cooper, University of Riverside, Riverside California

Since publication of the existence of a population of M. apicalis, resident at least since 1982 in the vicinity of Santa Barbara, California (1984. Ent. News 95:225-6), 12 males of this species were taken by Prof. John Pinto (Dept. of Entomology, University of California, Riverside) some 620 km or so to the north of Santa Barbara. The collection was made at: CA, Glenn County, Black Butte Reserve, Grizzley Flat Recreation area, 7 June 1984. The bee is evidently now established at least at several localities in California. More records are desirable, and of special interest would be any collections made in California before 1982 (although it is obvious that M. apicalis must have previously occurred in California not later than 1981).

A FORGOTTEN PAPER ON SOUTH AMERICAN BEES

By Charles D. Michener
University of Kansas, Lawrence, Kansas

Old and previously ignored papers in which genera and species are named are an ever-present danger to stability in nomenclature. Such a problem for neotropical bees deserves attention.

Some years ago Prof. J. van der Vecht gave me a photocopy of a paper by l'abbé J. Dominique entitled Coup d'Oeil sur les Mellifères Sud-Américains du Museum de Nantes (Bulletin de la Société des Sciences Naturelles de l'Ouest de la France, 8:57-65, 1898). This paper was a summary of a collection of bees made in French Guiana by M. Bar. The material is from the Maroni River which forms the border between French Guiana and Surinam. J. Pérez provided names for the bees and was to describe the new species. No such paper was published, perhaps because he realized that in view of Dominique's summary, many of the new names would be attributed to Dominique.

Dominique mentions both previously described and new species. The new ones are attributed to Pérez, but the commentary is clearly Dominique's.

Some of the new species names are not accompanied by descriptive

comments. They are nomina nuda, of no nomenclatorial significance; they are ignored here and should be ignored in the future. Some names, however, are only arguably nomina nuda. For example, there are three new names in the genus Melissa. All are said to be beautiful metallic green, less brilliant than their congener from the Maroni, M. decorata Smith. Thus a character is given for the group of three new species but nothing is provided to differentiate them from one another. I regard these as nomina nuda but the Rules may not justify this decision.

Other new names are validated by brief descriptive comments. The following list consists of new names for which characters are given: Melipona soror Dominique; M. bomboides Dominique; Euglossa affinis Dominique; E. bari Dominique (almost a nomen nudum, green, but not differentiated from cordata, etc.); E. violascens Dominique; E. bureaui Dominique; Eulaima (sic) maroniensis Dominique; Centris dominiquella Dominique; C. debilis Dominique; C. zonalis Dominique; Hoplostelis Dominique (new subgenus of Stelis; two species are included but no characters are given to differentiate them; I therefore regard them as nomina nuda); Bureauella Dominique, new genus; Bureauella insignis (no specific characters given, but the species name is valid since it is characterized by the comments on the genus); Augochlora bari Dominique.

Clearly stability in nomenclature would be best served if Dominique's paper could be removed from nomenclatural consideration by action of the International Commission on Zoological Nomenclature. As such action by the Commission is unlikely, it is best that melittologists consider the names listed above. Some of the species are perhaps identifiable in spite of the brevity of Dominique's descriptions thanks to considerable material from French Guiana in the Snow Entomological Museum and elsewhere.

The specimens collected by Bar in French Guiana, including those for which names were validated by Dominique, are preserved in the Museum d'Histoire Naturelle, 12 rue Voltaire, Nantes, France. The conservateur, Madame Baudouin, does not wish to send specimens through the mail but indicates that she would permit transport by a responsible person.

INVALID NAMES FOR SPECIES OF Lotus VISITED BY BEES

By Kenneth W. Cooper
University of Riverside, Riverside California

My field studies include interactions of megachilid bees with the frequently asymmetrical flowers of species of Lotus (see Lotus Newsletter 16:51-53, 1985). The current Catalog of Hymenoptera in America North of Mexico, Vol. 2, 1979, includes nearly all records of visits of megachilids to flowers of Lotus (and corrects some of them) published by Hurd and Michener (1955, Bull. California Insect Survey, vol. 3), Grigarick and Stange (1968, ibidium, vol. 9), and Moldenke and Neff (1974, Technical Rept. 74-3, Univ. Cal., Santa Cruz).

Eleven of the names of Lotus referred to in the catalog are misspellings (2), unpublished names in Lotus (3), or junior synonyms. Thus, argyrophyllus (pp. 2024, 2025) and brightii (p. 2141) are certainly to read as argophyllus and wrightii respectively. The following are unpublished names in Lotus: andersoni, canadensis, and rosea. Finally, Lotus americanus is a junior synonym of L. purshianus var. purshianus, L. eriophorus = L. heermanii var. orbicularis, L. glaber = L. scoparius var. scoparius, L. leucophaeus = L. grandiflorus var. grandiflorus, L. subpinnatus = L. wrangelianus, and L.

torrevi = L. oblongifolius (fide Isely, 1981, Memoirs New York Botanical Garden 25 (3):128-206, 236-246).

NEOTROPICAL MELIPONINAE IN THE FFCLRP COLLECTION AVALIABLE FOR EXCHANGE

Dr. João M.F. Camargo has compiled a valuable listing of Neotropical Meliponinae available for exchange from the Dep. de Biologia, Faculdade de Filosofia, Ciências e Letras de Ribeirão Prêto, USP, 14 1000 - Ribeirão Prêto, SP, Brasil. Of the total listing of 312 species and subspecies (including some manuscript names), Dr. Camargo lists 138 species and subspecies available for exchange; 137 not available for exchange (only 37 taxa were not represented in the FFCLRP Collection). He also includes a listing of 27 Euglossini males available for exchange and indicates they have Neotropical bees in other families in exchangeable numbers. The complete listing is available from Ron McGinley, Department of Entomology, Smithsonian Institution. Requests for exchange should be directed to Professor Camargo. [Eds.]

THE PUBLICATIONS OF G.A. MAVROMOUSTAKIS ON APIDAE

By G. van der Zanden
Eindhoven, The Netherlands

The well-known apidologist G.A. Mavromoustakis (1898-1968), who lived all his life at Limassol (Cyprus), delivered some 70 papers on Apidae, mostly from the Palearctic and Ethiopian regions, in which he described many new species and subspecies. He worked primarily on the Megachilidae, but also on Andrena, Nomada and certain parasitic groups. I do not know his exact profession, but clearly he devoted most of his time to the study of the Apidae. Due to his relative geographic isolation he did not have the opportunity to study much type-material, but on the other hand, he had extensive contacts with contemporaries like Popov, Gussakovsky, Cockerell, Enslin, Friese, Bischoff, Dusmet, Benoist, etc., who supplied him with material for comparison or who studied the new species which he sent them.

Students of the Apidae will find in his writings a treasury of taxonomic and faunistic data. I have often wondered why a complete list of Mavromoustakis' papers was never published and am glad for the opportunity to present one here now. My gratitude goes to Miss P. Gilbert, librarian at the British Museum, who took the trouble to check this list and make some emendations.

The Mavromoustakis-collection is now the property of the Ministry of Agriculture and Natural Resources, Department of Agriculture, at Nicosia, Cyprus. This Department strictly refuses to lend specimens for study! One has to go to Cyprus to see the material there, which is in my opinion a serious drawback for further study of this valuable collection. Especially since it contains a great number of species and subspecies that Mavromoustakis named as new taxa but failed to describe.

1934. New Ethiopian bees of the subfamily Anthidiinae. Ann. Mag. Nat. Hist., (10) 14:35-48.
1936. New and little-known African bees of the subfamily Anthidiinae, Part I, A.M.N.H., (10) 17:31-47.--Idem, Part 2, 600-606.--Notes on some Anthidiine bees from Borneo. A.M.N.H., (10) 18:288-289.

1937. Some new Asiatic bees of the subfamily Anthidiinae. A.M.N.H., (10) 19:151-157.--Three new species of the genus Osmia from Cyprus. A.M.N.H., (10) 20:520-525.--Scientific results of the Vernay-Lang Kalahari Expedition March to September 1930: New bees of the genus Anthidium. Annals of the Transvaal Museum, 17(2), 1936:141-144.--Report on some Anthidiine bees in the S. African Museum. Ann. S. Afr. Mus. 32(3):265-267.--Some new African bees of the subfamily Anthidiinae. Ann. Transvaal Mus. 17(4):229-232.

1938. On some Anthidiine bees from Palestine, Part I. A.M.N.H., (11) 2:15-18.--New bees of the genera Osmia and Megachile from Cyprus. A.M.N.H., 11(2):464-473.--New African Anthidiinae. Ann. Transvaal Mus. 18(2):147-150.

1939. New and little-known bees of the subfamily Anthidiinae, Part I. A.M.N.H., 11(3):88-97.--On the bees of the genera Osmia and Megachile from Cyprus, Part I. A.M.N.H. 11(4):154-160.--Some bees from Palestine. A.M.N.H., 11(3):225-230.--New and little-known African bees of the subfamily Anthidiinae, Part III. A.M.N.H., 11(3):346-352.--On the Anthiidine bee of Hissar Mountains. A.M.N.H., 11(3):376-388.

1940. Some bees of the genus Serapista (Hym. Apoidea). Ann. Transvaal Mus., 20(2):65-69.--Descriptions of new African Anthidiinae. Ann. S. Afr. Museum, 32(6):663-667.

1945. On some Anthidiine bees from Palestine, Part 2. A.M.N.H., 11(12):112-117.--New and little-known African bees of the subfamily Anthidiinae, Part 4. A.M.N.H., 11(12):180-186.

1947. New and little-known bees of the subfamily Anthidiinae, Part II. A.M.N.H., 11(14):420-428.--On some Anthidiine bees from Palestine, Part III. A.M.N.H., 11(14):428-434.--On some Megachilidae from Spain and Morocco. Eos, 23:357-367.

1948. New and little-known bees of the subfamily Anthidiinae, Part III. A.M.N.H., (12) 1:171-177.--New bees of the genus Eriades. A.M.N.H., 12(1):177-181.--Further contributions to our knowledge of the bees of Palestine. A.M.N.H., 12(19):213-224.--On the bees of Cyprus, Part I. A.M.N.H., 12(1):541-587.

1949. New bees of the family Megachilidae from Palestine. Eos, 25:285-297.

1951. On the bees of Cyprus, Part II. A.M.N.H., 12(4):334-354.--New and little-known bees of the subfamily Anthidiinae, Part IV. A.M.N.H., 12(4):617-624.--Further contributions to our knowledge of the Ethiopian Anthidiinae and their classification, Part I. A.M.N.H., 12(4):962-981.

1952. On the bees of Cyprus, Part III. A.M.N.H., 12(5):814-843.

1953. New and little-known bees of the subfamily Anthidiinae, Part V. A.M.N.H., 12(6):637-639.--On the bees of Cyprus, Part IV. A.M.N.H., 12(6):769-781.--On some Anthidiine bees from Palestine, Part IV. A.M.N.H., 12(6):791-796.--New and little-known bees of the subfamily Anthidiinae, Part VI., A.M.N.H., 12(6):834-840.

1954. Two new Megachilidae from Syria. Eos, 30:95-98.--New and little-known bees of the subfamily Anthidiinae, Part VII. A.M.N.H., 12(7):249-252.--Idem, Part VIII, 12(7):395-400.--On the bees of Cyprus, Part V. A.M.N.H., 12(7):578-588.--New and little-known bees of the subfamily Anthidiinae, Part IX. A.M.N.H., 12(7):711-715.--On some north-African anthidiine bees. Boll. Museo Civ. Venezia, 7:111-114.--New and little-known bees of the subfamily Anthidiinae, Part X. A.M.N.H., 12(7):919-924.--New and interesting bees from Israel. Bull. Res. Council Israel, 4(3):256-275.

1955. On the bees of Cyprus, Part VI. A.M.N.H., 12(8):97-105.--On the bees of Lebanon, Part I. A.M.N.H., 12(8):326-336.
1956. On the bees of Syria, Part I. Eos, 32:215-229.--On some bees of the genus Andrena from the islands of Crete and Cyprus. Beitr. Z. Ent., Bd. 6(5/6):580-589.
1957. On the bees of Lebanon, Part II. A.M.N.H., 12(9)(1956):853-863.--Hym. Apoidea in: "Ent. Results of the Finnish Expedition to the Canary Islands, 1947-1951". Soc. Scient. Fennica, Comment. Biol., 16/12:1-3.--The bees of Cyprus, Part VII. A.M.N.H., 12(10):321-337.
Idem, Part VIII, 843-850.--New bees of the genera Andrena and Nomada from the island of Cyprus, Part I. Beitr. Z. Entom., Bd. 7(1/2):42-49.
1958. Idem, Part II, Beitr. Z. Entom., Bd. 8(1/2):212-219.--The bees of Attica (Greece), Part I. A.M.N.H., 13(1):433-447.--On some bees from Greece. Ent. Ber., Amsterdam, Bd., 18(1):9-13.
1959. New and interesting parasitic bees. Ent. Ber., Amsterdam, Bd. 19(2):31-36 & Bd. 19(3):51-56.--A contribution to our knowledge of the bees of the island Rhodos, Part I. A.M.N.H., 13(2):281-302.
1960. The bees of Attica (Greece), Part II. A.M.N.H., 13(3):719-727.
1963. On the bees of Lebanon, Part III. A.M.N.H., 13(5):647-655.--A new genus of parasitic bees. A.M.N.H., 13(5):443-445.--On the bees of Attica (Greece), Part III. A.M.N.H., 13(5):689-696.--On some parasitic bees. A.M.N.H., 13(5):751-754.
1964. The parasitic genus Oxybiastes. A.M.N.H., 13(6)(1963):297-298.--Further contributions to our knowledge of the Ethiopian anthidiine bees and their classification, Part II. A.M.N.H., 13(6):481-499.
1965. On some bees of the family Megachilidae from Afghanistan. Ann. N.H. Musei Nat. Hungarici, 57:407-412.
1968. New and little-known bees of the genus Ammobates. Polski Pismo Ent., 38(1):141-157.--New and little-known bees of the family Megachilidae. Boll. Mus. Civ. Venezia, 28:125-149.

A REPORT ON A PERSONAL APOID BIBLIOGRAPHIC CATALOG

By Yuriy A. Pesenko
Academy of Sciences, Leningrad, U.S.S.R.

My bibliographic catalog, maintained since 1963, now includes approximately 28,000 paper titles covering all aspects of apoid research (excluding literature on Apis mellifera and apiculture). I have examined and annotated most of these papers, and estimate it to be 90-95 percent complete. Cards with titles and annotations are arranged alphabetically by author and then by publication date for each author. The key to the catalog is a separate subject matter-systematic card index (usually only broken down to the family level). The index includes about 200 topic categories distributed among four general areas: 1) faunistics, geography, etc., 2) systematics, taxonomy, morphology, etc., 3) bionomics, life history, ecology, nests, pests, etc., 4) trophic relationships, pollination activities, etc. Each card in the key index file includes the author-publication date citation of each paper dealing with a particular topic.

In 1988 or 1989, I hope to publish (in book form) an annotated bibliographic catalog entitled "Russian and Soviet Literature on Bees (except Apis mellifera)" which will include approximately 1000 titles and several indices. This book will also include introductory chapters on the "History of Bee Research in the USSR" and on the "Present State of Knowledge of the Bees

of the USSR". In due course, I will send translations of these chapters for distribution in Melissa. [Dr. Pesenko's bibliographic catalog recently contributed significantly to two recent publications by the editors of Melissa: A Catalog and Review of Immature Apoidea (Hymenoptera), Smithsonian Contributions to Zoology (McGinley, in press) and Family-Group Names among Bees, J. Kansas Entomol. Soc., 59 (2):219-234 (Michener, 1986).--Eds.]

APOIDEA CATALOGING

By Terry Griswold and Ron McGinley
Bee Biology & Systematics Lab, Logan, Utah and Smithsonian Institution

There are indications of renewed interest in developing up-to-date catalogs of bees. Because of the considerable time and effort involved in cataloging, it seems advisable to coordinate this work. Below we review three catalog projects that we are most familiar with. Undoubtedly, others are involved in catalog work. Information on these efforts would be greatly appreciated and would be reviewed in the next issue of Melissa.

1) The publication of the Catalog of Hymenoptera in America North of Mexico (Krombein, et al., 1979, 2735 pp., Smithsonian Institution) heralded a new era in the field of systematic cataloging. Never before had the taxonomic and biological data for a major order of insects (approximately 18,000 species) been entered into an electronic data base (SELGEM) that made editing, updating, querying, and data manipulation possible (for details see Krombein, Mello and Crockett, 1974, The North American Hymenoptera Catalog: A Pioneering Effort in Computerized Publication, Bull. Entomol. Soc. Amer. 20:24-29). The files included a wealth of biological information that made the data base valuable to a wide variety of scientists, for example, parasite-host records for those interested in biological control and bee-plant associations of value to pollination ecologists and botanists.

It was anticipated that the data base would be regularly updated and certain aspects of the data structure refined to allow for more precise querying capability. However, nothing has been updated or modified in recent years due to the transition from the Smithsonian Honeywell mainframe computer to a new IBM mainframe. The database is currently being modified and prepared for conversion from SELGEM to INQUIRE, the new database system. We plan to enlarge the coverage of the catalog to include the Mexican fauna, and hope to include a complete bibliography so that titles can be searched. We are not planning to publish the catalog in its entirety any time in the near future; we are, however, maintaining a uniform format throughout so that this possibility exists down the line. Some specialists are extremely interested in publishing certain sections that are already especially out of date.

We would like the file to be viewed primarily as a dynamic database with enhanced querying capabilities, not a catalog manuscript waiting to be published. The Smithsonian Press is interested in exploring innovative approaches to making the database available "online", including the possibility of distributing tapes to depository libraries so that colleagues at other institutions can generate their own hard copy and produce specialized reports. We also would produce hardcopy for our own use and for distribution to scientists lacking computer support.

2) An Annotated Catalog of the Halictid Bees of the Western Hemisphere (J.S. Moure and P.D. Hurd, Jr., Smithsonian Institution Press). At the time of Paul Hurd's death in 1982, Moure and Hurd had virtually completed the above mentioned halictid catalog. This is a SELGEM file, similar to the Catalog of

America North of Mexico. Only minor items needed correcting and were expertly dealt with by George Eickwort and Sandra Shanks. After final proofing, all that was needed were the computer generated indices to taxa, hosts, and predators. Due to reassignment of the participating computer specialists to other Smithsonian projects this last phase of the project was greatly delayed. Fortunately, the indices are now complete and this valuable contribution will be distributed in early 1987.

3) Megachilidae of the World: A computerized world catalog of the Megachilidae is being developed by Terry Griswold. Completion of the first draft is anticipated by summer of 1987.

BEE RESEARCH IN POLAND - PAST AND PRESENT

By Józef Banaszak
Polish Academy of Sciences, Poznan, Poland

"Time will reveal what is still hidden now; the curiosity of the wise ones will show us what we are not yet aware of." K. Kluk, "Domesitic and Wild Animals ...", IV, p. 15, 1780.

The Past

Over two hundred years have passed since the publication of Krzysztof Kluk's work on "Domestic and Wild Animals ...". This publication contained the first listing of bees from Poland, including 60 apoid species. In an attempt to give a full and detailed picture of this fauna, including biological and economic considerations, Kluk presented his own observations as well as those published by his contemporaries, especially those of Linnaeus.

Krzysztof Kluk (1739-1796) played a very important role in the popularization of natural sciences. He is one of the most representative figures of the Polish Enlightenment, being the pioneer of natural history and proponent of the so-called "New Agriculture". He wrote a three volume work on economic botany entitled "Necessary Plants ..." (1777-1779), a four volume economic zoology book "Domestic and Wild Animals ..." (1779-1780), a two volume handbook covering mineraloy, metallurgy and geology, a "Dictionary of Plants ..." (1786-1788) and a "Botany for National Schools" (1785) (the latter published in collaboration with a medical doctor, P. Czempinski).

Kluk's progressive thinking is still quite comtemporary today. He compiled the first synthetic treatment of the Polish flora and fauna, and the first Polish encyclopedia of natural and agricultural information. He was the first to introduce the Linnean system to Polish science, and pointed out both its positive (clarity) and negative (artificiality) aspects. Kluk faulted Linnaeus for basing his taxonomy primarily on external features and advocated the study of internal structures. According to Kluk, the most ideal system should be based on homology rather than morphology (Dictionary, pp. XVII-XVIII). He also refuted many misconceptions in incorrect theories, and strongly opposed the naive medieval theory of autogeny. He lived during the transition from archaic methods of beekeeping to the beginnings of modern apiculture, and promoted the principles of modern bee keeping in Poland. Kluk wrote, "We know the profits brought by bees (...). At last there is an insect that helps plants to survive: carries pollen from flower to flower thus fertilizing the seed" (Domestic and Wild Animals ..., IV, p. 15).

Although the first half of the 19th century witnessed an intensive development of European apidology, only very few lists from that period

concerned Poland: Schummel (1830), Schilling (1849) and Siebold (1850). The second half of that century brought a keener interest in the Polish fauna. At that time investigations were carried out by Brischke in Pomerania (1888 and others), and Wierzejski (1868), and Snieżek (1894) in Galicia [now the southeastern part of Poland and part of Ukraine]. Most of the more detailed information about the Polish bee fauna comes from studies published at the beginning of the present century by such authors as Dittrich (1903), Alfken (1912, 1913), Torka (1913) and Bluthgen (1919). A number of important papers were published during the inter-war period, most significant of which were Noskiewicz's (1936) revision of palearctic Colletes, Kuntze and Noskiewicz's (1938) "Outline of the Zoogeography of Polish Podolia", and numerous lists of the fauna compiled by Drogoszewski, Minkiewicz, Moeschler and others. In all, research carried out by almost 70 biologists over two hundred years has shown there to be over 450 species recorded from Poland.

The Present

In the past, agricultural environments were not considered to be very interesting faunistically and therefore were usually excluded from study. Interest in general aspects of crop pollination arose during the 1960's and primarily concerned pollinators of alfalfa and red clover. These early studies helped develop methods for evaluating species composition and for estimating individual numbers and effectiveness. Present research is aimed at establishing the density of these pollinators required for proper pollination of plants as well as determining the optimal regions for plant cultivation (among others, works by Honczarenko, 1965; Wójtowski, 1967; Wójtowski and Wilkaniec, 1979; Ruszkowski, 1968; Ruszkowski and Biliński, 1968; Dylewska et al., 1970; Anasiewicz, 1975; Biliński, 1977; Banaszak, 1984a). We have already obtained data concerning the species composition and density of pollinators of winter rape [among others, Banaszak (1984a)] and other Cruciferae (Prabucki, 1982; Ziółkowski, 1979) and similar data for fruit trees and shrubs (Anasiewicz, 1972). Wide-scale studies of the pollinators of vegetable plants, particularly carrots and seed onions have been intitiated. Information from Ruszkowski's (1968) study of bumblebee food plants has been utilized in recent attempts to start artificial bumblebee hives intended for practical applications in crop pollination.

There have been numerous unsuccessful attempts to introduce Megachile rotundata (F.) from the American continent to various European countries. Despite this lack of success, experiments are currently underway to establish colonies of this species in Poland as well as cultures of other Megachile species and other bees. Methods of keeping solitary bees in nest traps for practical applications have been successfully implemented in this country based on techniques presented by Wójtowski and Wilkaniec (1969). Biliński (1976) has shown that it is now possible to utilize bumblebees for crop pollination.

The increased interest in crop pollination in Poland has been associated with a reduced interest in the ecology of natural habitats. Since Dylewska's (1958, 1962) studies of the bees of the Carpathian region, the only publications concerning the numbers of Apoidea in this region were primarily those of Banaszak (1980, 1982b, 1982c, 1982d, 1984b, and other papers). The bumblebees of western Bieszczady were examined by Kosior (1980). Over the past ten years, Banaszak has developed research on the ecology of polish bees, particularly the regularities of occurrence of Apoidea in the landscape and the possibilities of shaping the agricultural landscape in order to increase

the number of pollinators (Banaszak, 1983, 1986). Wild bee communities in xerothermic habitats were studied by Pawlikowski (1985).

The Future of Apidology in Poland and Elsewhere

Since the time of Kluk's pioneering work there have been over 300 papers published that deal with the Apoidea (except Apis) of Poland. Nevertheless, information on the distribution and species composition of bee communities in this area is still incomplete. This is primarily due to the fact that various parts of the country have been relatively unstudied and remain virtually unknown. Furthermore, the actual occurrence of various apoid species in Poland still needs recent confirmation (many records are based on data from papers published 50 years or more ago). The fauna has undoubtedly changed considerably and species listings clearly need updating. I believe this is a general problem and that we will be able to see the real nature of changes, their speed and direction only with modern, broad ranging investigations. Irrespective of prevailing "fashions" which often determine the course of scientific investigations, every generation of zoologists should feel compelled to carry out faunistic research as well. Regrettably, faunistic studies have not been viewed as being fashionable in recent years. Methodological insufficiencies and the fragmentary nature of many faunal publications have undoubtedly contributed to the development of this unfortunate situation.

Classical faunal studies, practically abandoned today, never gave information about quantitative faunal resources. Changes in the environment occurring rapidly today, must have negatively influenced the fauna, although we cannot be sure to what extent. Considering that in most developed countries, a high percentage of the land is occupied by agroecosystems (in Poland about 60%) this environment should be intensively researched. Studies should include not only the cultivated plants but also other elements of the landscape such as mid-field forests, roadsides, etc. Our present information concerning the species composition of bees in different crop fields is negligible with the exception of alfalfa, red clover and rape systems. We need to extend these investigations to entomophilic plants in both natural and semi-natural habitats.

There are many other important and unsolved problems in apidology in Poland and elsewhere. The author believes, however, that the ones mentioned in this report are of primary importance. [Dr. Banaszak raises a most important question - WHAT ARE THE MOST IMPORTANT AND UNSOLVED PROBLEMS IN APIDOLOGY ON A WORLDWIDE BASIS? What are your thoughts? Why not write in with a list of research priorities? We will tally these up and give you a summary in Melissa #3.--Eds.]

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Collection Reports

ST. JOHN'S COLLEGE, OXFORD

by Donald B. Baker
St. John's College, Oxford, United Kingdom

The collection for which I am responsible is housed in 60 cabinet drawers and over 100 boxes. It comprises primarily Old-World material and at the genus group level is virtually completely representative for the Palaearctic, Oriental and Ethiopian regions. The Australasian Region and the Americas are generally less well represented.

At the species level, Hylaeus and Halictus (both s. latiss.) and the Xylocopini are represented only selectively; the representation of other groups is general, but with emphasis on parasitic forms. The collection is particularly rich in material from S.W. Asia (especially Iran, Afghanistan and the Gulf States), the Indian region and Malaysia, but includes also extensive material from the Mediterranean region and Central Europe. Material from Central and East Asia, Arabia and the Ethiopian region is less extensive and representation is biased towards certain groups.

The collection includes few primary types but many secondary types (including type material of, inter alios, Alfken, Bluthgen, Dusmet, Friese, Mavromoustakis, Morawitz, Perez, Pittioni and Stockhert); it also includes extensive material from certain more recent collections (including the Balthasar, Mader, Pittioni, Priesner and Winkler collections) and some material from older collections (including remnants of the Jussel [Vorarlberg] and Milchersich [Jugoslavia] collections).

The collection includes many undescribed or unpublished forms (the latter being those for which descriptions and figures are held), but otherwise is about 95% determined to species. No immature stages, and no separate duplicate collection, are held. Lists of taxa represented are available. Loans may be made to competent specialists; visits may be arranged.

ZOOLOGICAL INSTITUTE, ACADEMY OF SCIENCES, LENINGRAD

By Yuriy A. Pesenko
Academy of Sciences, Leningrad, U.S.S.R.

The Apoidea collection of the Zoological Institute is housed in two large cases (100 boxes in each case) and in 42 smaller cases (24 boxes in each). The wooden boxes are 42 x 37 x 7 centimeters and have peat-layered bottoms; most have glass tops. In all there are about 400,000 pinned and labeled bees in our collection with approximately 200,000 additional unpinned bees stored on cotton layers. The majority of specimens were collected within the USSR. Three-fourths of the pinned bees are determined and arranged in systematic order. As much as one half of the systematic collection was currated before World War II. The collection contains about 4,000 determined Palearctic species and about 1,000 species from other zoogeographical regions. It includes the types of more than 700 species, primarily described by F. Morawitz, E. Eversmann, A.S. Skorikov, P. Blüthgen, V.B. Popov and many other Russian and European authors.

I will be publishing label data, status, sex, etc., on all bee types in the series "Catalogue of the Type Specimens of the Collection of the Zoological Institute of the USSR Academy". In collaboration with my post-graduate Ms. Marina V. Podbolotskaya I am currently completing such a catalog

on the family Apidae. The catalog will include the data on the types of more than 250 taxa of a species group (mainly described by A.S. Skorikov).

Individual News Items

John Alcock (Arizona State University, Tempe, Arizona, U.S.A.). CURRENT PROJECTS: "A study of a territorial colletid whose males occupy Banksia inflorescences in southwestern Australia."

Michael Edward Archer (College of Ripon and York St. John, York, UNITED KINGDOM). CURRENT PROJECTS: "Survey projects relating to general and specific areas of Britain; biology of individual species as opportunity affords, e.g., at present, Halictus rubicundus."

Mike Arduser (University of Missouri, St. Louis, Missouri, U.S.A.). Mike writes: "I am working up a review of eastern North American Osmia and would be happy to look at (and hopefully determine) any material from that area (more or less east of the 100th Meridian). I have put together a preliminary key (minus illustrations, or at least any good ones) and would be happy to send a copy to anyone interested in working with it."

George Bohart (Bee Biology & Systematics Lab, Logan, Utah, U.S.A.). HELP: "Would like to borrow Micralictoides and Protodufourea. Willing to determine miscellaneous Dufoureinae."

Waldemar Celary (Polish Academy of Sciences, Cracow, POLAND). CURRENT PROJECTS: "Parasitic bees from Poland (Part I, Megachilidae), (Part II, Halictidae), (Part III, Anthophoridae without Nomada), (Part IV, Anthophoridae: Nomada). HELP: Literature to Nearctic Nomada. GENERAL: Recent fieldwork in Poland and Bulgaria.

Leland Chandler (Texas Tech University, Lubbock, Texas, U.S.A.). GENERAL: "I returned to the United States this year after 10 fabulous professional years in Brazil. Because of the responsibilities and expectations of the positions there, I made a deliberate decision to put my bee interests aside until such studies became an appropriate part of developing programs. I was initiating my first bee research there when it became necessary to leave. At the present time, I am out of the 'mainstream' tho' I retain my great interest. I certainly plan to become involved again but I have a lot of 'catching up' before me." Leland goes on to relay that "in Brazil, theses and dissertations are often printed in quantity and distributed as such. In many ways, these are 'publications' and are so-cited altho' they are never published in the legal sense. A great deal of information appears in program abstracts and meeting summaries. There are excellent data on biology, physiology and morphology. I have been impressed. If this Brazilian literature could be obtained (Padre Moure?), I would assist in the Portuguese translation."

Rémy Chauvin (Le Château, 18380, Ivoy le Pré, FRANCE). CURRENT PROJECTS: "Study of hive metabolism; study of new pheromone in honeybee."

Kenneth Cooper (University of California, Riverside, California, U.S.A.). Ken writes: "Can it be so - a hibernating Californian Megachile? In the proceedings of the Pacific Coast Entomological Society, 2 (7):110, 1927-28, it is stated that Mr. [I.] Simmons (of the Fresno Dried Fruit Laboratory), at the meeting of 3 December 1927,..."exhibited photographs of a bee belonging to the genus Megachile, which he found hibernating in the interior of figs." Alas, no other details - date of discovery, vitality of the bee, or discussion is recorded."

Ignacio Cuadriello (Centro de Investigaciones Ecologicas del Sureste, Tapacula, Chiapas, MÉXICO). CURRENT PROJECTS: "Biology and ecology of the bees of Chiapas and their relationships with the African bee." HELP: "I would like to receive papers related to the Meliponinae (pollination and systematics)." GENERAL: Ignacio has been actively collecting bees in Chiapas.

Robert L. Dressler (University of Florida, Gainesville, Florida, U.S.A.). CURRENT PROJECTS: "Key to Central American Euglossini." HELP: "Euglossine material always welcome."

Mike Edwards (Midhurst, West Sussex, UNITED KINGDOM). GENERAL: "My own standing is that of an amateur, consequently my efforts have been rather restricted to the British Isles. I have however spent an interesting period of nearly three weeks collecting in southern Morocco, in between dodging the land-mines and other paraphanalia of war we kept running into. In my madder moments I am currently trying to make some sense of the bees collected then, particularly the Andrenidae. George Else and I hope to be able to revisit Morocco next year, concentrating once more upon the inland side of the southern Atlas and as far into the Sahara proper as conditions and circumstances will allow."

Marco Gaiani (University of Kentucky, Lexington, Kentucky, U.S.A.). CURRENT PROJECT: "Study of the male genitalia of the bees in the genus Euglossa." HELP: Literature. GENERAL: "Collecting trips to the Venezuelan Andes in December of 1985. Several groups were collected but mainly Euglossa and Eufriesea. In June of 1986, I am planning another collecting trip to Venezuela and plan to visit several collecting sites around the Andes and the Venezuelan "llanosa" (flatlands)."

Robin M. Giblin-Davis (University of Florida, Fort Lauderdale, Florida U.S.A.). CURRENT PROJECTS: "Culture, biology, and systematics of nematode associates of bees. I am currently culturing and examining nematodes from the Dufour's glands of Floridian halictines." HELP: "Interested in cooperators who would be willing to dissect and examine the Dufour's glands and reproductive tracts of Anthophora abrupta, Augochlora pura, Megalopta genalis, Colletes validus, C. inaequalis, C. thoracicus, and/or the abdominal glands of Andrena vega, A. fulva, or A. albicans for nematode associates.

Jorge González Acereto (Depto. de Apicultura de la Escuela de Medicina Veterinaria y Zootécnia, Mérida, Yucatán, MÉXICO). CURRENT PROJECTS: "Desarrollo de cuatro módulos de Meliponicultura utilizando las colmenas P.N.N., P.A.1 y P.N.A.1 para conocer la adaptación a éstas de: Melipona beechei, T. tetragona (Frieseomelitta) nigra y T. (Scaptotrigona) pectoralis Dalla Torre. Medición de los parámetros biologicos de T. cephalotrigona capitata S. para posteriormente sugerir su transferencia a una colmena

racional que se ajuste a sus exigencias biológicas." HELP: "Establecer relación con personas que estén trabajando con Formicidae y en forma muy particular conel género Eciton y su actuación depredadora sobre Apis. Establecer relación con especialistas que tengan interés en realizar identificaciones de Meliponinae, Anthophoridae, Euglossini y Bombinae en general. Poder tener acceso a literatura nueva sobre meliponinos y abeja africanizada (Apis mellifera)." GENERAL: Recent field work in Quintana Roo, Yucatan, Costa Rica and Panama.

David R. Greenwood (DSIR, Palmerston North, NEW ZEALAND). CURRENT PROJECTS: "1) A chemnical ecological approach to improve the management of Bombus; 2) Incubation pheromones of Bombus."

Terry Griswold (Bee Biology & Systematics Lab, Logan, Utah, U.S.A.). HELP: "Would like to borrow bright metallic North American Osmia (Chenosmia) for revisional work; also black (non-metallic) boreal North American species of Osmia (species such as O. inermis and O. nigriventris).

David A. Guinn (University of Alaska, Fairbanks, Alaska, U.S.A.). CURRENT PROJECT: "The bee fauna and use of bees by the entomophilous flora of a south-facing bluff in interior Alaska." HELP: Africanized bee literature would be greatly appreciated. GENERAL: "Summers of 1985 and 1986 collecting solitary and social bees in open habitats (slit-bars, south-facing bluffs, burn areas) in interior Alaska."

Carlos M. Herrera (Estación Biológica de Donana, Sevilla, SPAIN). CURRENT PROJECT: "Reproductive ecology of southern Spanish Mediterranean scrubland plants with particular reference to pollination and seed dispersal." HELP: Identification of specimens.

Herbert Hohmann (Übersee-Museum, Bremen, WEST GERMANY). CURRENT PROJECTS: "Hymenoptera of the Canary Islands." HELP: "Specimens of the Canary and other Macaronesian Islands." GENERAL: Recent collecting in Canary Islands.

Masao Ito (Hokkaido University, Sapporo, JAPAN). CURRENT PROJECTS: "Faunal makeup of bumblebees in Eastern Asia."

Silvola Jouko (University of Joensuu, Joensuu, FINLAND). CURRENT PROJECT: "Nectar production of different natural plants and red currant; foraging activities of pollinators (Bombus, Apis) - this research takes place in Ilomantsi (eastern Finland) together with Kari Varonen."

Hans Larsson (Swedish University of Agricultural Sciences, Alnarp, SWEDEN). HELP: Literature on the Malagasy bee fauna. GENERAL: In Madagascar, 1980-82.

Stephen Leong (Agricultural Research Centre, Semongok, Kuching, SARAWAK, MALAYSIA). CURRENT PROJECTS: "Adoption of modern beekeeping by using a suitable movable frame hive to establish an apiary of strong and healthy colonies of Apis cerana; 2) bee botany and foraging." HELP: "Help is needed especially for Apis specimen identification and literature on Apis cerana)."

B. Mallik (Seshadripuram, Bangalore, INDIA). CURRENT PROJECT: Studies on the bee fauna of South India. HELP: "Literature pertaining to some of the descriptions of Indian bees published during 1900's and earlier, and in journals outside India are urgently required. Any workers willing to help in identification of Indian bees are most welcome." GENERAL: Recent fieldwork "has been mostly in Karnataka State of India."

Ron McGinley (Smithsonian Institution, Washington, D.C., U.S.A.). I have recently completed "A Catalog and Review of Immature Apoidea" in which the systematic literature covering the larvae and pupae of all bees is reviewed and presented in catalog form. Historical aspects of the study of immature apoids are reviewed with emphasis placed on what yet needs to be accomplished and which taxa should be considered primary targets for collection [Smithsonian Contributions to Zoology, in press]. The original draft of this manucript was immeasurably improved by the additions, corrections and suggestions from 13 bee specialists interested in immature bees. Any further additions/corrections from interested Melissa readers would be greatly appreciated. Updates to the larval database will be maintained and distributed upon request (contact McGinley for further details).

HELP: I recently published a revision of New World Lasioglossum (Halictidae) [Smithsonian Contributions to Zoology, no. 429, 294 pp.]. The Smithsonian Press had a large overrun on this contribution and I am having trouble storing all the additional reprints. If you would like a copy of this paper, PLEASE contact me. I would be happy to send one (two or three) copies to you.

Ali S. Moalif (University of Basrah, IRAQ). CURRENT PROJECTS: "1) nesting biology of two species of Anthophora; 2) native pollinators of sunflower; 3) systematic studies of Anthophoridae and Halictidae of Iraq." GENERAL: "In the past three years I have collected more than 6,000 specimens of wild bees, mostly from southern Iraq."

José Octavio Morales A. (UNAM, México, D.F., MÉXICO). CURRENT PROJECT: "Survey of Augochlorini bees in Morelos State (México)." HELP: Identification and literature. GENERAL: "I have been collecting bees in the Sierra de Atoyac, Guerrero State. This is an area rarely collected; specimens are deposited at the Museo de Zoologia for those interested."

Chris Nagano (L.A. County Museum, Los Angeles, California, U.S.A.). CURRENT PROJECTS: "1) Development of California Invertebrate Red Data Book; 2) insect survey of Pacific Northwest (Oregon and Washington)."

Göran E. Nilsson (Uppsala University, Uppsala, SWEDEN). CURRENT PROJECT: "Collecting Aculeata in Sweden - the bee-fauna is poorly known and many 'white-areas' exist."

Robert B. Parks (Santee, California, U.S.A.). CURRENT PROJECTS: "I am currently involved in the collection and identification of Hymenoptera at the Torrey Pines State Reserve and Anza Borrego State Park." HELP: "Help with identifications (all families) would be greatly appreciated."

R.J. Paxton (University College, Cardiff, UNITED KINGDOM). CURRENT PROJECT: "Behavior, nesting biology and sex ratios of two local Andrena

species." HELP: "Information/literature on biology of the local Andrenidae and Halictidae."

R.S. Pickard (University College, Cardiff, Wales, UNITED KINGDOM). CURRENT PROJECTS: "Bumblebee domestication; Nosema pathology; bee brain; queen propagation; pollen in honey; African apiculture; Acarapis; insecticide effects on bees; pollination (kiwi fruit/lupins); foraging behavior."

Helmut Riemann (Übersee-Museum, Bremen, WEST GERMANY). CURRENT PROJECT: "Hymenoptera Aculeata of Northwest-Germany." GENERAL: Collecting in northwest Germany.

Arturo H. Roig A (University of Kansas, Lawrence, Kansas, U.S.A.). CURRENT PROJECTS: "Analysis of the Epeolini and revision of the genus Doeringiella Holmberg." HELP: Epeolini specimens.

Enrique Ruíz C. (Monterrey, N.L., MÉXICO). CURRENT PROJECTS: "I am now collecting Ichneumonidae, Braconidae, Vespidae and diverse bees. My Ph.D. thesis is on the Ichneumonidae of northeast Mexico. However, bees have taken much of my current attention and I am planning to participate in the Programa Cooperativo sobre la Apifauna Mexicana." HELP: "Literature on the taxonomy and biology of Mexican bees, especially those of Northeast Mexico." GENERAL: "We collect in Tamaulipas and Nuevo Leon states, mainly Ichneumonidae, but also Braconidae, Vespidae, Sphecidae, Pompilidae, Aulacidae, Gasteruptiidae and, of course, bees of the families Apidae, Halictidae and Anthophoridae."

Diana Sammataro, (Medina, Ohio, U.S.A.). CURRENT PROJECTS: "I am working on a list of timber crops that are also honey/pollen plants for the National Academy of Science; will screen sunflower varieties for attractiveness to honeybees in spring, 1987." HELP: "List of timber trees that also produce nectar/pollen."

F. Scholten (Royal Tropical Institute, Amsterdam, THE NETHERLANDS). GENERAL: "As part of my job, I try to collect a wide range of beehives and other beekeeping tools used in the tropics and subtropics. This to build up a collection for our museum. There is a possibility in the near future of holding a beekeeping exhibition. My last field trip was carried out in 1981: a beekeeping feasibility study in Sri Lanka."

Jon Seger (University of Utah, Salt Lake City, Utah, U.S.A.). CURRENT PROJECT: "Long-term field study (with J.W. Stubblefield) of Philanthus sanbornii at Littleton, Massachusetts, and associated bee community."

Makoto Shiokawa (Yakumo High School, Hokkaido, JAPAN). CURRENT PROJECT: "Systematic studies of the subgenus Ceratinidia (Anthophoridae: Ceratina) of eastern Asia." HELP: "I need specimens and literature."

Marinus J. Sommeijer (State University of Utrecht, Utrecht, THE NETHERLANDS). CURRENT PROJECTS: "Interactions of queen and workers; various aspects of the social behavior of stingless bees." HELP: "Identification of bees from Caribbean, Central America and Surinam." GENERAL: "I visited Panama and Trinidad in 1985 and Surinam in 1986, mainly for fieldwork on the behavior of Stingless Bees."

A.W. Steffan (Bergische Universität, Wuppertal, WEST GERMANY). CURRENT PROJECT: parasocial bees of SE Africa. GENERAL: recent fieldwork in the coastal region of Tanzania.

Colin B. Tod (Massey University, Palmerston North, NEW ZEALAND). CURRENT PROJECTS: "Relationship between artificial feeding of bumblebee nests and colony size and production of elite groups; relationship between the size of elite groups and colony size; separation, identification and synthesis of bumblebee queen dominance pheromone."

C. van Achterberg (Rÿksmuseum van Natuurlÿke Historie, Leiden, THE NETHERLANDS). CURRENT PROJECT: "A student has finished a review of the Oriental bee genera." GENERAL: "Collected some bees during the stay in Sulawesi."

Carlos H. Vergara (University of Georgia, Athens, Georgia, U.S.A.). CURRENT PROJECTS: "1) Comparative pollination efficiency of Africanized and European honeybees; 2) distribution of Acarapis woodi in Argentina."

Rogel Villanueva Gutiérrez (CIQRO, Cancún, MÉXICO). CURRENT PROJECTS: "Study of the melliferous and polliniferous flora of the Biosphere Reserve of Sian Ka'an, Quintana Roo, México; collections of plants and Apis mellifera have been made since May, 1985."

John W. Wenzel (University of Kansas, Lawrence, Kansas, U.S.A.). CURRENT PROJECTS: "Kinship and pheromonal covariation in Lasioglossum zephyrum; genetic structure of wild populations of ground nesting bees; several topics in chemical communication and comparative nest architecture in Vespidae." HELP: "I am always eager to see literature on the nesting and mating biology of wild bees."

Ingrid Melvi Williams (Rothamsted Experimental Station, Harpenden, UNITED KINGDOM). CURRENT PROJECTS: "Pollination requirements of oilseed rape (Brassica rapus), lupins (Lupinus albus) and sunflowers (Helianthus annuus); queen pheromone, alarm pheromones, Nasona pheromone and footprint pheromone in the honeybee."

Díeter Wíttmann (Fundaçâo Zoobotanica do Rio Grande do Sul, Porto Alegre, RS, BRASIL). CURRENT PROJECTS: "1) Biogeography of Euglossini in southern Brasil; 2) mating behavior of Xylocopa nigrocincta; 3) coevolution: mating and pollinating behavior of Callonychium (Andrenidae) on Petunia; 4) in nest behavior and chemical communication in Lestrimelitta limao; 5) parasites in Megachile; 6) crop pollination by wild bees." HELP: "Identification of megachilid bees." GENERAL: Since 1984, I have been collecting bees in southern Brasil to establish a collection at the Museum of the Fundacao Zoobotanica do Rio Grande do Sul in Porto Alegre. Any donations of bee specimens from all over the world would be appreciated (exchange possible). I have made recent collecting trips all over the State of Rio Grande do Sul, Brasil."

Address Changes

Margaret Adey, International Bee Research Association, 18 North Road, Cardiff CF1 3DY, UNITED KINGDOM.

Maria Christina de Almeida, Departamento de Zoologia, IBBMA - UNESP Rubiao Junior, 18600 - Botucatu - SP, BRASIL.

Sydney A. Cameron, Department of Entomology, Ohio State University, Columbus, Ohio 43210, U.S.A.

Clifton V. Dixon, Department of Geography and Planning, Johnson Hall, Memphis State University, Memphis, Tennessee, 38152 U.S.A.

Lawrence D. Harder, Assistant Professor, Department of Biology, University of Calgary, Calgary, Alberta, CANADA T2N 1N4 [403-220-6489].

Juan M. Labougle, Michoacan 19-A203, Miguel Hidalgo, Tlalpan, 14410 D.F., MEXICO.

Laurence Packer, University College of Cape Breton, P.O. Box 5300, Sydney, Nova Scotia, B1P GL2, CANADA.

Brian H. Smith, Division of Biological Control, University of California, Albany, California 94706, U.S.A.

Additions To Directory

John Alcock, Professor of Zoology, Department of Zoology, Arizona State University, Tempe, Arizona 85287, U.S.A. [602-965-7304]. INTERESTS: "The evolution of mating system diversity." AREA: southwestern USA. [behavior]

Michael Edward Archer, Reader, Department of Biology, College of Ripon and York St. John, York Y03 7EX, England, UNITED KINGDOM [York, 56771]. INTERESTS: "1) Social bees and the evolution of the social habit; 2) distribution and general biology of British bees." AREA: For social problems worldwide, otherwise British. EXCHANGE: yes. [behavior; pollination; nesting biology; collecting; all bee families]

Ramon Balbuena Vidal, Asistente de Investigador, CIES, Area Agroecologica, Apartado Postal 36, Tapachula 30700, Chiapas, MÉXICO [(962)-50085]. INTERESTS: "1) metodos de colecta de abejas en general, con especial referencia en solitarias; 2) diseccion, extraccion y montaje de genitalias en las abejas; 3) manejo de equipos de laboratorio y campo para el estudio de las abejas." AREA: Chiapas, México. [systematics; collecting]

Waldemar Celary, Assistant, Institute Systematics and Experimental Zoology, Polish Academy of Sciences, Cracow 31-016, ul. Slawkowska 17, POLAND [22-70-66, ext. 297]. INTERESTS: "Evolution, biology, zoogeography and systematics of Nomada of the World." AREA: Primarily Palearctic, Worldwide (Nomada), central Europe (remaining parasitic bees). IDENTIFICATIONS: "Nomada (Palearctic): 30 percent retained for the collection of my Institute; willing

to exchange." [systematics; behavior; Halictidae (parasitic); Megachilidae (parasitic); Anthophoridae (parasitic)]

Leland Chandler, Research Scientist and Lecturer, Department of Entomology, Texas Tech University, Lubbock, Texas 79409, U.S.A. [806-742-2828]. INTERESTS: "a) descriptive life histories; b) construction of partial life tables; c) biological expressions as related to geographic distributions; d) design of trap-nesting systems to study responses to various population densities and consequences of interspecific competition." [systematics; behavior; pollination; nesting biology; collecting; Halictidae; Megachilidae; Anthophoridae; Bombus]

Rémy Chauvin, Professor emeritus, Le Château, 18380, Ivoy le Pré, FRANCE [48 58 91 72]. [behavior; physiology; Apis]

Ignacio Cuadriello, Investigador Asociado, Centro de Investigaciones Ecologicas del Sureste, Area Agroecologica, Apartado Postal 36, 30700 Tapacula, Chiapas, MEXICO [(962) 5-00-85]. INTERESTS: "Bee-plant coevolution; etnozoology." AREA: Mexico (Chiapas). IDENTIFICATIONS: Meliponinae of Mexico; willing to exchange. [pollination; collecting; Meliponinae; Africanized bees]

Robert L. Dressler, Visiting Curator, Department of Natural Sciences, Florida State Museum, University of Florida, Gainesville, Florida 32611, U.S.A. [904-392-5934, 392-1767]. INTERESTS: "Systematic botany, floral ecology." AREA: Tropical America. IDENTIFICATIONS: yes (Euglossini); willing to exchange. [systematics; pollination; Euglossini]

Mike Edwards, Lea-side, Carron Lane, Midhurst, West Sussex, GU29 9LB, UNITED KINGDOM [Midhurst 3785]. INTERESTS: Behavior and systematics of bees. AREA: Western Palearctic. EXCHANGE: yes. [systematics; behavior; collecting; Colletidae; Andrenidae; Halictidae; Melittidae; Megachilidae; Anthophoridae; Euglossini; Meliponinae; Bombus; Apis]

Manfredo A. Fritz, Entomologist, Instituto Entomologico, Salta INESALT, Casilla Correo 3 - 4405 - Rosario de Lerma, Salta, ARGENTINA [087-931023]. AREA: Neotropics. EXCHANGE: yes. [systematics; collecting; Megachilidae]

Marco Gaiani, Student/Assistant Curator, Department of Entomology, University of Kentucky, Lexington, Kentucky 40506, U.S.A.; PERMANENT ADDRESS: Av. Miranda #3-69 Bocono Estado, Trujillo, VENEZUELA [(072) 52177]. INTERESTS: "Systematics of the Euglossini and their relationships with orchids and the gathering of aromatic compounds by the males of this group. Also interested in pollination of plants in the Neotropical region by other apid groups." AREA: Neotropics. EXCHANGE: yes. [systematics; behavior; pollination; morphology; chemical ecology; nesting biology; collecting; Euglossini]

Luis Manuel Godinez Garcia, Asistente de Investigacion, Apartado Postal 36, Tapachula 30700, Chiapas, MÉXICO [(962)-50085]. INTERESTS: "Sistemática, Biogeografía y Taxonomía de Apoidea, en particular de abejas solitarias; colecta de abejas en general." AREA: Chiapas, Guanajuato. [systematics; biogeography; collecting]

Robin M. Giblin-Davis, Assistant Professor, Fort Lauderdale Research and Education Center, University of Florida, I.F.A.S., 3205 College Avenue, Fort Lauderdale, Florida 33314, U.S.A. [305-475-8990]. INTERESTS: "Biology, systematics, and ecology of nematode associates of Apoidea". AREA: Worldwide. [Nematode associates: Colletidae; Andrenidae; Halictidae; Anthophoridae]

Jorge González Acereto, Asesor e Investigador del Depto. de Apicultura de la Escuela de Medicina Veterinaria y Zootécnia, Calle 20 #199-D x 13 y 15. Col. García Gineŕes, Mérida, Yucatán, MÉXICO [25-01-74]. INTERESTS: "Systematics.- Conocer las últimas modificaciones a nivel de género y especie en Meliponinae en su sistemática. Behavior.- Formas de organización conocidas en los Euglossini y sus procesos. Comportamiento reproductivo de los Meliponinos y procesos de: aprovisionamiento de celdas, oofagia, ovoposición en obreras y fijación de la reima. Desarrollo de las colonias y nidificación de los Bombus en el Trópico. Ethología de los Xylocopinae. Termoregulación y factores determinantes en la defensa del nido de T. (Cephalotrigona) capitata. Collecting.- Posibilidad de obtener a través del intercambio muestras de trigonas africanas y asiáticas, así como autralianas. También algunas meliponas de Centro y Sur América. Muestras de Apis florea, Apis mellifera capensis. Métodos para conservar los especímenes en buen estado, sustancias preservativas para clima tropical." AREA: Africa Ecuatorial, India, Indonesia, Cuba y Jamaica. IDENTIFICATIONS: yes; "En condiciones realmente precarias ya que no contamos con ningún especialista en Yucatán y nuestra preparación al respecto es muy elemental. Recibimos un curso my breve sobre sistemática realizado por el Profesor J.M.F. Camargo." EXCHANGE: yes. [systematics; behavior; chemical ecology; nesting biology; collecting; Anthophoridae; Apidae]

David R. Greenwood, Research Scientist, Applied Biochemistry Division, Department of Scientific and Industrial Research (DSIR), Private Bag, Palmerston North, NEW ZEALAND [(063) 68019]. AREA: New Zealand. EXCHANGE: yes. [behavior; chemical ecology; nesting biology; Bombus]

David A. Guinn, Graduate Student, Department of Biology, Fisheries and Wildlife, University of Alaska, Fairbanks, Alaska 99775-0180, U.S.A. [907-474-7151]. INTERESTS: "Solitary bee - floral resource associations in south-facing bluff habitats in interior Alaska; Africanized bees." AREA: Interior Alaska; California (western U.S.A.). EXCHANGE: yes, on limited basis. [systematics; pollination; collecting; Megachilidae; Apis]

Carlos M. Herrera, Profesor de Investigación, Estación Biológica de Donana, Apartado 1056, E-41013, Sevilla, SPAIN [(54) 23 23 40]. INTERESTS: "Evolutionary ecology of plant-consumer interactions, particularly plant-pollinator, plant-disperser and plant-herbivore systems." AREA: Mediterranean Basin. EXCHANGE: yes. [behavior; pollination]

Herbert Hohmann, Curator and Head of Biology Department, Übersee-Museum, Bahnhofsplatz 13, D 2800 Bremen, WEST GERMANY [0421 3979743; home: 0421 654147]. AREA: Canary Islands. IDENTIFICATIONS: "Specimens of the Canary Islands; willing to exchange for other Macaronesian specimens." [systematics; behavior; nesting biology; all bee families]

Masao Ito, Postdoctoral Associate, Zoological Section, Institute of Low Temperature Science, Hokkaido University, Sapporo, 060 JAPAN [011-716-2111, ext. 5498]. INTERESTS: "Evolution and phylogeny of bees." AREA: Worldwide, especially eastern Asia. EXCHANGE: yes. [systematics; evolution; morphology; Euglossini; Bombus]

Silvola Jouko, Associate Professor, University of Joensuu, Department of Biology, P.O. Box 111, 80101 Joensuu, FINLAND [73-28311/317]. INTERESTS: "Research interests mainly in botany, but also in pollination energetics." AREA: Boreal regions in Europe. [pollination; physiology; energetics; Bombus, Apis]

Jossif A. Khalifman, Pouchkin str. 12, 140140 - Udelnaya MO, U.S.S.R. [behavior; pollination; genetics; nesting biology; Halictidae; Bombus; Apis]

Vladilen E. Kipyatkov, Assistant Professor, Department of Entomology, Faculty of Biology, Leningrad State University, Leningrad 199034, U.S.S.R. [218-96-79]. INTERESTS: "Origin and evolution of social behavior; regulation of seasonal cycles and cast determination in social insects." AREA: Worldwide. [behavior; social behavior; genetics; nesting biology; Halictidae; Euglossini; Meliponinae; Bombus; Apis]

Hans Larsson, Scientific Officer, Swedish University of Agricultural Sciences, Department of Plant and Forest Protection, Box 44, S-23053 Alnarp, SWEDEN [0413/40251]. AREA: Scandinavia, Madagascar. EXCHANGE: yes. [behavior; pollination; nesting biology; collecting; Colletidae; Andrenidae; Halictidae; Melittidae; Megachilidae; Anthophoridae; Euglossini; Meliponinae; Bombus; Apis]

Stephen Leong, Entomologist, Agricultural Research Centre, Semongok, P.O. Box 977, 93720 Kuching, SARAWAK, MALAYSIA [611171, 611172, 611173]. INTERESTS: "1) Basic beekeeping research on Apis cerana, 2) identification and evaluation of different pollen and nectar sources, 3) bee botany and foraging, 4) bee management, honey, beeswax and processing, 5) bee collection and Apis species identification." AREA: Malaysia, Borneo. EXCHANGE: yes. [behavior; pollination; collecting; Apis]

Kenna MacKenzie, Graduate Student, 11369 Surrey Road, Surrey, British Columbia, V3R 5T2, CANADA [604-585-0344]. INTERESTS: "Native bee pollinators on small fruits in Fraser Valley, British Columbia; effects of pesticides on honeybees." EXCHANGE: yes. [behavior; pollination; collecting; Bombus; Apis]

B. Mallik, Associate Professor of Entomology, No. 30, II Cross, Kempanna & Bros. Lay out, Seshadripuram, Bangalore - 560 020, INDIA. INTERESTS: "Presently engaged in collecting bees of South India to study community composition and floral associations. In the future I am interested in working on coevolution of flowers and pollinators." AREA: Oriental. EXCHANGE: yes. [systematics; behavior; pollination; nesting biology; collecting; Halictidae; Megachilidae; Anthophoridae; Meliponinae]

Ali S. Moalif, Head, Department of Plant Protection, College of Agriculture, University of Basrah, Basrah, IRAQ [040-218300, ext. 320]. AREA: Middle East. EXCHANGE: yes. [systematics; pollination; morphology; nesting biology; collecting; Halictidae; Megachilidae; Anthophoridae]

José Octavio Morales A., Curator, Museo de Zoología, Facultad de Ciencias, UNAM, Apartado Postal 70-399, México, D.F., C.P. 04510, MÉXICO [(915) 550-52-15 Ext. 3946]. INTERESTS: "Systematics of the family Halictidae, in particular the tribe Augochorini." AREA: México, especially Morelos State. EXCHANGE: yes. [systematics; behavior; Halictidae]

Chris Nagano, Biologist, The Monarch Project, c/o Entomology, L.A. County Museum, 900 Exposition Blvd., Los Angeles, California 90007, U.S.A. [213-744-3363]. INTERESTS: "1) Conservation of endangered insects and their habitats; 2) use of insects as indicators of environmental quality." AREA: Worldwide. [conservation]

Göran E. Nilsson, Department of Zoophysiology, Uppsala University, Box 560, S-751, 22 Uppsala, SWEDEN. AREA: Europe, especially Fennoscandia. EXCHANGE: yes. [systematics; behavior; nesting biology; collecting; all bee families]

Robert B. Parks, 10335 Restful Ct., Santee, California 92071, U.S.A. [619-562-7027]. AREA: Worldwide. EXCHANGE: yes. [systematics; behavior; pollination; chemical ecology; nesting biology; collecting; Hymenoptera photography; Colletidae; Andrenidae; Halictidae; Melittidae; Megachilidae; Anthophoridae; Euglossini; Meliponinae; Bombus; Apis]

R.J. Paxton, Postdoctoral Assistant, Bee Research Unit, Department of Zoology, University College, Cardiff, CF1 1XL, UNITED KINGDOM [0222 874000]. INTERESTS: "Population biology of solitary and social bees." AREA: United Kingdom. [behavior; genetics; nesting biology; Andrenidae; Halictidae; Bombus; Apis]

R.S. Pickard, Head of Bee Research Unit, Zoology Department, University College, Cardiff, CF1 1XL, Wales, UNITED KINGDOM [0222. 874312]. AREA: Worldwide. [behavior; pollination; morphology; physiology; neurobiology; genetics; pathology; Apis]

Helmut Riemann, Technical Assistant (Entomology), Übersee-Museum, D 28 Bremen 1, Bahnhofsplatz 13, WEST GERMANY [0421-397-8357; 0421-487448]. AREA: Northwest Germany (Central Europe). IDENTIFICATIONS: Nomada of West Germany, Austria and Denmark; Andrena of northwest Germany; willing to exchange. [systematics; faunistics; Colletidae; Andrenidae; Halictidae; Melittidae; Megachilidae; Anthophoridae]

Arturo H. Roig A, Years 1986-87: Snow Entomological Museum, Snow Hall, University of Kansas, Lawrence, Kansas 66045, U.S.A.; PERMANENT ADDRESS: Seccion Entomologia, Museo Argentino de Ciencias Naturales, Av. Angel Gallardo 470, 140S Buenos Aires, ARGENTINA [982-8370]. INTERESTS: Parasitic bees. AREA: Neotropics. IDENTIFICATIONS: Epeolini of the Neotropics; willing to exchange. [systematics; morphology; collecting; Anthophoridae]

Enrique Ruíz C., Teacher/Researcher, Tordillo 2308, Frac. Valle del Huajuco, Monterrey, N.L., 64820, MÉXICO [55-56-11]. INTERESTS: "I am currently learning the genera and species of many bee groups; later I plan to work on the behavior of interesting species in our area of Mexico." AREA: northeast Mexico. EXCHANGE: yes. [systematics; behavior; pollination; chemical ecology; collecting; Halictidae; Anthophoridae; Meliponinae; Apis]

Diana Sammataro, 7011 Spieth Road, Medina, Ohio 44256, U.S.A. [216-722-2021]. INTERESTS: "Developmental beekeeping; plants useful as crops, timber, land reclamation that are also honey/pollen producers; curator of the Hewitt Honey Bee Museum and Research Center (antique beekeeping equipment/books)." AREA: Third World beekeeping areas. EXCHANGE: yes. [pollination; Apis]

F. Scholten, Assistant, Royal Tropical Institute, Museum Department, Mauritskade 63, 1092 AD Amsterdam, THE NETHERLANDS [020-5688455]. AREA: Australia, the tropics. [behavior; pollination; nesting biology; collecting; Bombus; Apis; hives; primitive beekeeping]

Jon Seger, Assistant Professor, Department of Biology, University of Utah, Salt Lake City, Utah 84112, U.S.A. INTERESTS: "Bees as prey of Philanthus." AREA: New England and Great Basin (U.S.A.). EXCHANGE: yes. [systematics; behavior; pollination; genetics; sex ratio; community ecology; nesting biology; Andrenidae; Halictidae; Melittidae; Megachilidae; Anthophoridae]

Makoto Shiokawa, Head Teacher, Yakumo High School, 88 Sumizome-cho, Yakumo, Hokkaido, 049-31 JAPAN [01376-3-2106]. AREA: East and Southeast Asia. IDENTIFICATIONS: Ceratina (Anthophoridae); willing to exchange. [systematics; morphology; nesting biology; Anthophoridae; Bombus; Apis]

Marinus J. Sommeijer, Lecturer, Department of Social Insects, State University of Utrecht, Jan van Galenstraat 40, 3572 LA Utrecht, THE NETHERLANDS [030-733 408/03465-63933]. AREA: Worldwide, especially tropics. EXCHANGE: yes. [behavior; pollination; morphology; physiology; nesting biology; collecting; Euglossini; Meliponinae; Bombus; Apis]

A.W. Steffan, Professor, Fachrichtung Zoologie, FB Naturwissenschaften II, Bergische Universität (GHS), D-5600, Wuppertal 1, WEST GERMANY [0202-4392497]. EXCHANGE: yes. [systematics; behavior; sociality; pollination; morphology; nesting biology; Melittidae; Bombus; Apis]

R.I. Storey, Experimentalist, Department of Primary Industries, P.O. Box 1054, Mareeba, AUSTRALIA 4880 [070-921555]. AREA: Australia. EXCHANGE: yes. [systematics; collecting; Colletidae]

Colin B. Tod, Master's Student, Botany/Zoology Department, Massey University, Palmerston North, NEW ZEALAND [69099 ext. 4035]. AREA: New Zealand. [behavior; pollination; chemical ecology; nesting biology; collecting; Bombus]

Alfred Traverse, Professor of Palynology, Deike 435, Pennsylvania State University, University Park, Pennsylvania 16802, U.S.A. [814-863-3419]. INTERESTS: "I am primarily interested in paleopalynology but have done and do research on honeybee legloads in relation to agricultural practices." AREA: Western Hemisphere. [behavior; pollination; apiculture]

C. van Achterberg, Curator of Hymenoptera, Rÿksmuseum van Natuurlÿke Historie, Postbus 9517, 2300 RA Leiden, THE NETHERLANDS [071-143844]. INTERESTS: "Bee-collecting in southern Spain in Spring (March, April) with students." AREA: Worldwide. EXCHANGE: yes. [systematics; morphology; collecting]

Carlos H. Vergara, Graduate Student, Department of Entomology, University of Georgia, Athens, Georgia 30602, U.S.A.; Permanant address: Apartado Aereo 47600, Bogota, COLOMBIA [404-542-2816]. INTERESTS: "1) systematics of Meliponinae; 2) altitudinal distribution and thermoregulation of neotropical stingless bees; 3) competition between Africanized honeybees and native bees; 4) economically important pests of Apis mellifera; 5) mimicry between certain anthophorid and apid species; 6) different aspects of predation." AREA: Neotropics, subtropical South America. [systematics; behavior; pollination; nesting biology; Anthophoridae; Euglossini; Meliponinae; Africanized honeybees]

Rogel Villanueva Gutiérrez, Investigador Asociado, Centro de Investigaciones de Quintana Roo, Apdo. Postal 886, Cancún, Quintana Roo, MÉXICO. INTERESTS: Palynology. AREA: Yucatán Peninsula. [behavior; pollination; palynology; Meliponinae; Apis]

John W. Wenzel, Graduate Student, Snow Entomological Museum, University of Kansas, Lawrence, Kansas 66045, U.S.A. [913-864-4610]. INTERESTS: "I am interested in chemical communication and mating biology of bees." AREA: Worldwide. [behavior; chemical ecology; genetics; sex ratio; nesting biology; collecting; all bee taxa except Apis]

Ingrid Melvi Williams, Senior Scientific Officer, Entomology Department, Rothamsted Experimental Station, Harpenden, Hertfordshire, AL5 2JQ, UNITED KINGDOM [05827 63133 ext. 2450]. INTERESTS: "Pollination requirements of agricultural and horticultural crops; pheromones and behaviour of honeybees." AREA: United Kingdom, tropics. [behavior; pollination; chemical ecology; nesting biology; Bombus; Apis]

Dieter Wittmann, Visiting Postdoctoral Associate, Fundação Zoobotanica do Rio Grande do Sul, Caixa Postal 1188, Rua Salvador Franca 1427, 90.000 Porto Alegre, RS, BRASIL [361518 ext. 625]. INTERESTS: "Behavior, ecology and biogeography of tropical bees." AREA: South America, southern Brasil. EXCHANGE: yes. [systematics; biogeography; behavior; pollination; nesting biology; bee parasites; collecting; Andrenidae; Halictidae; Megachilidae; Anthophoridae; Euglossini; Meliponinae]

Recent Literature

By Beth Norden and Ron McGinley, Smithsonian Institution

The following bibliography is a "quick and dirty" effort to list some of the non-Apis bee papers that were published in 1986. It seemed of value to present such a list in Melissa to assist those workers without access to Apicultural Abstracts or other data bases.

This list was compiled through the use of the National Agricultural Library's computer-based bibliographic retrieval system by searching AGRICOLA, BIO-ABS/RRM, CAB, and ZOOL. REC. Key words included: Apoidea, bees, and all bee generic names excluding Apis. We thank Suzanne Batra for her help in obtaining the print-outs. Because of the lag time between publication and computer pick-up, papers appearing in the later part of 1986 were not listed.

We attempted to obtain some of these from journals in the Smithsonian library and from reprints sent for Melissa.

We apologize to those whose papers are not cited, and at the same time ask all authors to share the responsibility for making the 1987 list as complete as possible (including the 1986 papers not listed below). As you publish, please send a copy of your article (or at least the citation) to: Melissa c/o Beth B. Norden, NHB stop 105, Smithsonian Institution, Washington, D.C. 20560. Thanks for comments, suggestions, and help!!!

Aliev, H. 1986. A synopsis of the bee genus Hylaeus of Soviet Azerbaijan USSR. Senckenb. Biol. 66 (4-6):261-270.

Arduser, M. 1986. Records of Dufourea maura (Hymenoptera: Halictidae) from Isle Royale National Park, Michigan. Great Lakes Entomol. 19(3):175-176.

Arretz, P., and R. MacFarland. 1986. The introduction of Bombus ruderatus to Chile for red clover pollination. Bee World 67(1):15-22.

Baird, J.M. 1986. A field study of thermoregulation in the carpenter bee Xylocopa virginica virginica (Hymenoptera: Anthophoridae). Physiol. Zool. 59(2):157-168.

Barrows, E., G. Chapman, J. Zenel, and A. Blake. 1986. Ultrastructure of Dufour's glands in active and inactive horn-faced bees Osmia cornifrons (Hymenoptera: Megachilidae). J. Kans. Entomol. Soc. 59(3):480-493.

Bernhardt, P. 1986. Bee-pollination in Hibbertia fasciculata (Dilleniaceae) Plant Syst. Evol. 152(3-4):231-241.

Bernhardt, P., and P. Burns-Balogh. 1986. Floral mimesis in Thelymitra nuda (Orchidaceae). Plant Syst. Evol. 151(3-4):187-202.

Bodnarchuk, L., and V. Radchenko. 1985 (Recd. 1986). Rhophitoides bees and their use for the pollination of alfalfa seed plantings. Vestn. Zool. (6):38-44.

Bowers, M. 1986. Resource availability and timing of reproduction in bumble bee colonies (Hymenoptera: Apidae). Environ. Entomol. 15(3):750-755.

Cane, J. 1986. Predator deterrence by mandibular gland secretions of bees (Hymenoptera: Apoidea). J. Chem. Ecol. 12(6):1295-1309.

Ebmer, P., and K. Schwammberger. 1986. The bee genus Rophites (Insecta, Hymenoptera, Apoidea, Halictidae, Dufoureinae, illustrated keys). Senckenb. Biol. 66(4-6):271-304.

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Eisikowitch, D. 1986. Morpho-ecological aspects on the pollination of Calotropis procera Asclepiadaceae in Israel. Plant Syst. Evol. 152(3-4):185-194.

Fisher, R., and R. Tuckerman. 1986. Mimicry of bumble bees and cuckoo bumble bees Psithyrus ashtoni by carrion beetles Necrophia americana (Coleoptera: Silphidae). J. Kans. Entomol. Soc. 59(1):20-25.

Galen, C., R. Plowright, and J. Thomson. 1985 (Recd. 1986). Floral biology and regulation of seed set and seed size in the lily Clintonia borealis. Am. J. Bot. 72(10):1544-1552.

Girish, P. 1984 (Recd. 1986). Role of bees in the pollination of summer squash (Cucurbita pepo Linne) with special reference to Apis cerana Fabricius. Mysore J. Agric. Sci. 18(3):248.

Goukon, K., S.F. Sakagami, and Y. Maeta. 1986. Bionomic comparison of two populations of a eusocial halictine bee, Lasioglossum duplex, in northern Japan. Jap. J. Ecol. 35:587-600.

Gould, J.L. 1986. The locale map of honey bees: do insects have cognitive maps? Science 232:861-863.

Griswold, T. 1986. Notes on the nesting biology of Protosmia rubifloris new combination (Hymenoptera: Megachilidae). Pan-Pac. Entomol. 62(1): 84-87.

Harder, L. 1986. Influences on the density and dispersion of bumble bee nests (Hymenoptera: Apidae). Holarctic Ecol. 9(2):99-103.

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Heinrich, B., and S. Buchmann. 1986. Thermoregulatory physiology of the carpenter bee, Xylocopa varipuncta. J. Comp. Physiol. B. Biochem. Syst. Environ. Physiol. 156(4):557-562.

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Huang, H., K. Richards, and E. Kokko. 1986. Role of the leaf-cutter bee in dissemination of Verticillium albo atrum in alfalfa Medicago sativa. Phytopathology 76(1):75-79.

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Morrissette, R., A. Francoeur, and J. Perron. 1985 (Recd. 1986). Importance of native bees Apoidea in the pollination of lowbush blueberries Vaccinium spp. in Sagamie Quebec Canada. Rev. Entomol. Que. 30(1-2): 44-53.

Nilsson, L., L. Jonsson, L. Rason, and E. Randrianjohany. 1985 (Recd. 1986). Pollination of Plectranthus vestitus Lamiaceae by trap-lining hovering bees in Madagascar. Plant Syst. Evol. 150(3-4):223-236.

Packer, L. and G. Knerer. 1986. The biology of a subtropical population of Halictus ligatus Say (Hymenoptera: Halictidae). Behav. Ecol. Sociobiol. 18:363-375.

Pauly, A. 1986. The bees of the subfamily Halictinae in New Guinea and the Bismarck archipelago (Hymenoptera, Apoidea, Halictidae). Zool. Verh. (Leiden) (227):3-58.

Parker, F. 1986. Factors influencing mortality and nesting in managed populations of the sunflower leafcutter bee Eumegachile pugnata (Hymenoptera: Megachilidae). Environ. Entomol. 15(4):877-879.

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Posey, A., R. Katayama, and J. Burleigh. 1986. The abundance and daily visitation patterns of bees (Hymenoptera: Apoidea) on oilseed sunflower Helianthus annuus in southeastern Arkansas USA. J. Kans. Entomol. Soc. 59(3):494-499.

Pulliainen, E. and H. Rantatupa. 1986. Ecological observations on Bombus lapponicus (F.) (Hymenoptera, Apidae) in eastern Finnish forest lapland. Notulae Entomologicae 66(1):55-60.

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Schmidt, P.J. and J.O. Schmidt. 1986. Apis mellifera, an unusual prey for a paper wasp, Polistes major castaneicolor (Hymenoptera). Ent. News 97(2):73-75.

Schoenitzer, K. 1986. Comparative morphology of the antenna cleaner in bees (Apoidea). Z. Zool. Syst. Evolutionsforsch 24(1):35-51.

Sihag, R. 1985 (Recd. 1986). Can alfalfa pollinating subtropical megachilid bees overcome Coelioxys parasitization? Curr. Sci. (Bangalore) 54(23): 1250-1251.

Sihag, R. 1986. Reproduction in alfalfa pollinating sub-tropical megachilid bees. 1. Functional anatomy and histology of the organs of reproduction. Zool. Anz. 216(3-4):191-203.

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Sihag, R. 1986. Reproduction in alfalfa pollinating sub-tropical megachilid bees. 3. Mating receptivity as influenced by eco-physiological factors. Zool. Anz. 216(3-4):218-230.

Sihag, R. 1986. Reproduction in alfalfa pollinating sub-tropical megachilid bees. 4. Vitellogenesis and oosorption and factors inducing these processes. Zool. Anz. 216(3-4):231-249.

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Steiner, K. 1985 (Recd. 1986). Functional dioecism in the Malpighiaceae the breeding system of Spachea membranacea. Am. J. Bot. 72(10): 1537-1543.

Stoddard, F. 1986. Pollination and fertilization in commercial crops of field beans Vicia faba. J. Agric. Sci. 106(1):89-98.

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Vinson, B., G. Frankie, and H. Williams. 1986. Description of a new dorsal mesosomal gland in two Xylocopa species (Hymenoptera: Anthophoridae) from Costa Rica. J. Kans. Entomol. Soc. 59(1):185-189.

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Wu, Y., and C. Michener. 1986. Observations on Chinese Macropis (Hymenoptera: Apoidea: Melittidae). J. Kans. Entomol. Soc. 59(1):42-48.
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