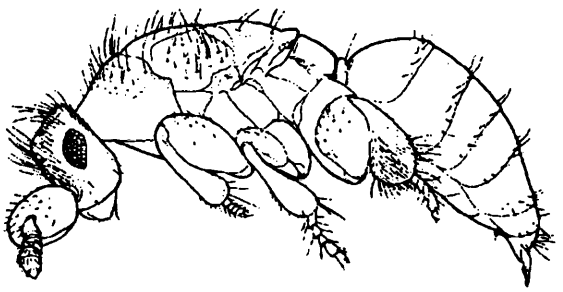
Chalcid Forum

A Newsletter to Promote Communication Among Chalcid Workers

No. 16 – March 1993



Editors' Notes

Here it is! Six months late and a whole year short since the last issue. It's not entirely our fault, however, because if there had been a great flurry of earth-shattering news we would have been prompted to get this out a bit faster than we have. Instead, we've had to bully several of you into writing things for *Chalcid Forum*. It seems to work, too. In this issue there are reports on several projects associated with computerized databases of Chalcidoidea and a diatribe on morphology reprinted from our sister newsletter *Sphecos*. Also there is a belated obituary for Barney Burks. As usual, John Huber has done a fine, not to mention unprompted, job of compiling the accumulated literature since March of 1992. The masthead drawing for this issue is of *Tachinobia repanda* Boucek from Boucek, 1977.

Editors of this Issue:
E. E. Grissell and M.E. Schauff
Syst. Ent. Lab., USDA
National Museum of Natural History, NHB 168
Washington, D.C. 20560

Alternate Editors
Gary Gibson and John Huber
Biological Res. Div., CLBRR
K.W. Neatby Bldg., CEF
Ottawa, Ontario K1a OC6
Canada

FORUM

DATABASING OUR WAY THROUGH THE CHALCIDOIDEA

The following three reviews treat a single subject that seems to be evolving rapidly in today's age of computers. How many ways are there to do the same job? Your future comments would be appreciated

Computerised Database of World Chalcidoidea

by John Noyes
The Natural History Museum, London

I am currently attempting to compile a computerised database of world Chalcidoidea.

The Natural History Museum holds a complete and up-to-date catalogue of World Chalcidoidea. This is being used as a basis for the computerised database. Taxonomic information is currently stored on 30,000 5X3" library record cards arranged systematically, each containing an average of of about 5 entries.. In addition to taxonomic information, a good proportion of entries include information concerning hosts, distribution and use in biocontrol. There is also a bibliography which contains over 25,000 references relating to Chalcidoidea, probably more than 95% of the literature ever published on this group. Transfer to a computerised format to facilitate access was started in August 1991. Since then the total bibliography has been computerised and this is providing a good basis for the second phase — inclusion of the taxonomic data. I am now checking as many references as possible to ensure the accuracy of each citation and keyword content.

Computerisation of the taxonomic catalogue is progressing well, although frustratingly slowly because of its complex nature. Although the card catalogue is up to date, it contains errors or omissions that need to be corrected and this is proving to be quite time consuming. However, this is made a lot easier by the museum's superb library facilities. We have easy access to more than 90% of the world's entomological literature (nearly 100% of the older literature). I can also get help from other local chalcidologists (Zdenek Boucek, Marcus Graham, John LaSalle and Andy Polaszek). Given these facilities I hope to complete the task of a basic computerised taxonomic catalogue of the World's Chalcidoidea within two years, or even sooner if I can get assistance in keyboarding and checking data. Once this has been completed I can begin the third-phase — incorporating useful published biological and other information.

Ultimately, I hope to make the complete database available to anyone who requires information relating to Chalcidoidea. I am currently attempting to find a means of making the database available as part of a larger database that we will be plugged into "bitnet" or similar network system. CAB International have also shown an interest in marketing the database as a CD ROM. There is also the possibility of making the database available as a series of 3.5" floppy discs.

At the present rate, the timetable for completing the various parts of

phase two (systematic catalogue) will be something like: Encyrtidae (March 1993); Aphelinidae (April 1993); Trichogrammatidae (May 1993); Pteromalidae (October 1993); Eulophidae (February 1994); Chalcididae (April 1994); Eurytomidae (June 1994); Mymaridae (July 1994); Torymidae (August 1994); Agaonidae (September 1994); smaller families (October 1994); Eupelmidae (November 1994).

The database is arranged primarily for on-line access and not for producing camera-ready or other types of hard copy. In this respect it is essentially different from that developed by Gary Gibson and colleagues in Ottawa, although we have been collaborating on field structures, codes, etc. to make the two databases compatible so that information can be exchanged reasonably easily between them.

My database uses Borland's "Paradox" version 4.0 as the software. Paradox 4.0 is probably now the fastest database software available for PC's and has a new "memo field" facility not available on the previous versions. The memo field is not fixed length (as with the alpha-numeric fields) and each field can store up to 250mb of information.

The database is relational and consists of two basic parts. The first, and smallest part is the bibliography. The second part is a functional taxonomic database which presently consists of eight different linked tables which deal with taxonomy, hosts, key words, distribution and parasitoid and host misidentifications.

The taxonomic part is designed to be updated regularly and easily and so that any information attached to each taxon will remain attached to the taxonomic name with which it has been cited irrespective of whether that name is currently being treated as invalid due to synonymy, homonymy, etc. This allows for the dynamic properties of classification and nomenclature. Thus a taxon is synonymised and later removed from synonymy for one reason or another, all the information attached to that name does not become irretrievably lost as a result of the initial synonymy.

On-line searches can be very broad (e.g. all records of chalcidoids from any part of the world, or a list of all species recorded as parasites of a given host) or very specific (e.g. the effect of pesticides on a particular species of chalcidoid in a particular country as a parasitoid of a given species of host, or even to searches asking for information on the hibernation habits of given chalcidoid species). Original references can be obtained for all individual records so that the validity of records can be confirmed if necessary. Obviously, searches such as these are very specific and depend on the information already being in the database something that will not be truly possible until phase three is well under way. It is also now possible to store visual information with individual records, e.g. habitus drawings of species, complete taxonomic keys, descriptions, biological papers and perhaps ultimately video images of holotypes, etc.).

Currently I am trying to find a pot of gold somewhere so that I can pay for assistance to help in this work. To this end I am willing to make the database available (provided that any future sponsors do not object) to anyone who makes a reasonable offer for the whole database or any part of it. Obviously, it would also help if a good number of offers were made since the cost to individuals could then be kept to a minimum. At the moment I shall not consider offers to input data in exchange for parts of the catalogue. This work is best done here because of easy literature access and because I can foresee too many logistical problems associated with making the card catalogue available. However, I am interested in exchanging parts of the database with similar databases on Chalcidoidea provided that information can be exchanged easily. If anyone out there is interested, please contact me at: Department of Entomology, The Natural History Museum, Cromwell Road, South Kensington, London SW7 5BD, England (Tel. (071) 938-9328; FAX (071)-938-8937). I am willing to consider anything from an on-line search, or a one off payment for part of the database as it currently stands, to a subscription for the complete database and updates.

Necessity as the Mother of Invention

by Gary A.P. Gibson
Biological Resources Division
(CLBRR), Agriculture Canada,
Ottawa, Ontario

Taxonomy differs from other sciences because rules of zoological nomenclature impose historical constraints on what taxonomists can do and how they can do it. Researchers in other scientific disciplines can decide arbitrarily that prior publications are no good or are out of date and can be ignored, but to do our jobs correctly we have to know and take into account who did what for the last 235 years. Because of this working restriction, identification and collection of relevant literature is as critical to taxonomists as is the collection and identification of research specimens. Relatively few taxonomists have ready access to extensive libraries or have inherited comprehensive reprint files compiled by predecessors. Yet even if literature is readily available, each new generation of taxonomists has to relearn what the previous generation had to learn - what literature is relevant for their groups of "expertise" and what information is contained in that literature. Requirement of this knowledge often lead taxonomists to compile card catalogues wherein information on the nomenclatural history, biology, and distribution of taxonomic groups was condensed and organized. Examples include a card catalogue on the Chalcidoidea compiled by Ozzie Peck in Ottawa and a similar card catalogue maintained at The Natural History Museum, London. Though substantial time and energy go into compiling card catalogues, they are

extremely inefficient because they are inaccessible to other taxonomists or users of taxonomic information. Published catalogues are much more valuable because they make the information available to all, but published catalogues also have limitations. Like all published data, information quickly becomes out of date and is difficult to update or correct without costly republications. As well, information can be retrieved from published catalogues only in the static format that it is presented on paper.

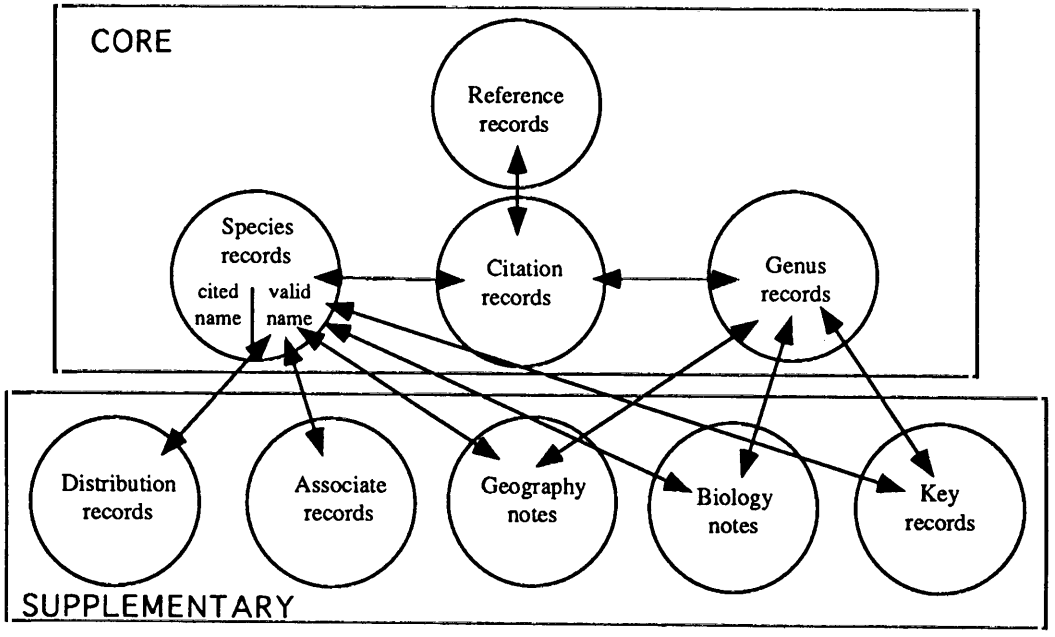
Computers have revolutionized information storage and retrieval throughout all aspects of society. Taxonomic information is ideally suited for computerization because biological classification is hierarchal in structure. All taxonomic and biological information can be reduced to binary relationships (one to one or one to many) with the valid scientific name serving as the unique code to link diverse data.

Taxonomists at various institutions have been developing databases based on individual needs and interests. John Noyes has developed a database for the information currently stored in his card catalogue of the Chalcidoidea at The Natural History Museum (see article in this issue). We in Ottawa have also been developing a "generic" database/cataloguing programme called BASIS (Biological and Systematic Information System). BASIS is a relational databank programme designed to assist taxonomists, regardless of taxonomic group, to compile and integrate data on the classification, nomenclatural history, distribution, biological associations, and respective literature of arthropods at and below the family level on a world or regional basis, and, as one type of output, to automatically compile and format the data as camera-ready systematic catalogues for different taxonomic and information levels designated by the user. A family-level scope was selected because this is the research level of most taxonomists. BASIS is compiled in FoxPro 2, but it is a stand-alone programme, i.e., an IBM compatible microcomputer is all that is required to run it.

The figure below illustrates the linking relationships for the nine databases that currently comprise BASIS. Four of the databases can be thought of as "core" because they store the necessary data to organize taxonomic and nomenclatural information at a family-level and to associate all inputted data with the original literature. "Genus" contains data on suprageneric classification, generic nomenclature, and the type species; "species" contains data on species nomenclature and the type specimen; "reference" contains complete citations for all referenced publications; and "citations" is an intermediary database that links data stored in any of the databases with the original literature. The citations database also enables users to summarize contents of publications relative to any valid genus or species, which can be outputted as part of the catalogue. Five "supplemental" databases, linked to valid genus and/or species names, enable users to store data of additional interest to most taxonomists and users of taxonomic information. Respectively, the supplemental databases store information on distribution of species based on biogeographic region, country, and subpolitical unit (province or state); biological associations (e.g. hosts, foes, flowers visited, etc.) and ecological attributes (e.g. primary endoparasite of larvae, inquiline in gall on leaves, etc.) of species; summary statements about the distribution and biology of genera and species; and published keys to species.

Catalogues to family, subfamily, tribe or species can be generated using BASIS and programming is planned so that users will be able to produce regional catalogues based on distribution. Catalogue output is similar to that of the "Catalog of Hymenoptera of America North of

BASIS Data Bases



Mexico" (Krombein et al. 1979), except that complete literature citations are outputted at the end of a catalogue; fields are included for who discovered/proposed nomenclatural or taxonomic "errors" such as synonyms and homonyms; published keys can be outputted as separate sections under genus and species; distribution can be listed by region, region plus country, or by region, country, and subpolitical unit; biological associations are listed alphabetically by order, family, genus and species of the associate; and original literature reference(s) for each host or other associate record can be outputted if the user wishes.

Some of the supplementary databases permit storage of more information than is outputted as part of catalogues. For example, such information as host type (primary, secondary, either), host stage attacked, and parasite action (endoparasitoid or ectoparasitoid), can be included for parasitoids in the associates database. Similar types of ecological information can be stored for taxa with other life history attributes.

Considerable effort has gone into making the programme user friendly. Much of the user manual is integrated into the interface because we realize that most individuals read user manuals only if all else fails. Instructions on what information should be entered into a field or how to access pick lists or execute other functions are displayed across the bottom of the screen based on the specific field being edited. The programme also makes extensive use of user-editable pick lists for fields that store repetitive types of information, such as journal titles, museum acronyms (for type deposition), distribution (region, country, unit), and ecological attributes. Pick lists ensure data integrity by preventing inadvertent typos and inconsistent methods of data entry and enable the user to customize data entry for maximum efficiency. User- defined default settings can also be selected for all pick lists, when and if desired. When selected, the programme automatically enters the default data into the correct field(s). For example, if one was about to enter a series of distribution records for species from Queensland, Australia, that record would be set as the default and "Australasian, Australia, Queensland" would be entered automatically into the appropriate fields until a new or no default was designated.

It is envisioned that once a family level database is compiled and published as a catalogue, authors would also distribute the database to use in conjunction with the catalogue. Distribution of the database itself would enable dynamic sorting and listings of data fields based on user needs and interests rather than author defined hard copy. It is also envisioned that authors would distribute periodic updates of the database to ensure currency and continued accuracy of information. Ultimately, individual family databases might be stored together as master databases at superfamilial and ordinal levels. Because the master database would be modular, consisting of individual family level databases, families could be added as they become available rather than trying to coordinate large collaborative efforts with fixed deadlines.

The family Eupelmidae was used as an ongoing test for BASIS programming and structure. Currently, I have compiled a world database/catalogue to the family, though innumerable biological and distributional records remain to be entered for species (one has no concept of the amount of published information there is on taxa until one starts to catalogue!). We have also just initiated broader on-site testing within BRD, distributing the programme to two other hymenopterists, two dipterists, a lepidopterist and an aphidologist. I am uncertain when the programme will be available for external distribution, but individuals wishing to know more about the field structure and capabilities of BASIS should contact me for information.

Hymenoptera Database System (HDS)

by Eric Grissell
Syst. Ent. Lab., USDA,
Washington D.C.

The *Catalog of Hymenoptera in America North of Mexico* (1979) was produced as a mainframe database by the Hymenoptera staff of the Systematic Entomology Laboratory and the Entomology Department of the Smithsonian Institution. Beginning in the late 1980's, the catalog was converted from SELGEM, an apparently archaic computer language, into INQUIRE, an IBM mainframe database system. In addition to the straight-across conversion, new fields were added (e.g., for holotype data and depositories), modified (e.g., host records grouped under family names), or refined. Not only have the conversion and modifications been plagued with problems, but updating and editing on the mainframe have not been as pleasant as might be expected. Bob Carlson, the ichneumonid specialist here with the Systematic Entomology Laboratory, has been working to modify a front-end software system called askSam that allows for text storage and easy modification. Our current goal is to be able to download a taxonomic category (e.g., family, tribe, genus) from the mainframe, upgrade the information for this category on the PC, and then pass this upgrade back to the mainframe. The mainframe would be searchable and reports could be made at any time. At present HDS is still primarily oriented towards the Nearctic fauna, but provisions are being made to upgrade the system for the New World and eventually the Old World as well.

In the first catalog (1951), nearctic Chalcidoidea were treated by Oswald Peck with the assistance of A. B. Gahan. Then Barney Burks updated the sections that were published in 1958 and 1967. Finally, an entire new catalog was produced in 1979 based largely on the efforts of Burks with some help from

Gordon Gordh and myself. The new HDS has created some opportunities for group participation by a new wave of specialists and has also posed questions that require much thoughtful introspection. Those of us working on the conversion up to this point (in the case of Chalcidoidea, Mike Schauff and myself), have thought it would be a good idea to have various specialists update sections in which they are interested. Each specialist would be the sole author of his/her section, but the information periodically uploaded to the mainframe would be searchable by all participants in the project. Based upon this scenario, the specialist would update the database only with information from *published* sources to preclude the problem of access to unpublished data among all participants. Unpublished changes (i.e., known only to the specialist through his/her own work), would have to be recorded elsewhere until such time as the specialist publishes them or until such time as the catalog (or parts of it) is published.

There are no immediate plans to publish either the entire catalog or parts of it (e.g., as fascicles). Thus, for some time, updating the catalog would appear to be along the lines of "public service" for which the only rewards would be the greater good of all participants. I'm afraid that in many cases it would be easier for each specialist simply to take what is already in the published catalog (itself not always reliable), to rekey it on a PC, and to use it however they wanted to. It would certainly be much quicker than fussing with downloading and uploading from the mainframe. Alternatively, it would make sense to work with the Canadian program (see Gibson , p. 2) if that will become available for public use.

By way of summary of HDS and comparison with the databases of both John Noyes and Gary Gibson, I can offer the following. HDS is a mainframe based (but PC exportable) system that can handle a huge amount of data including extensive text files. It is considered to be a text based flat-file for those who understand computer lingo. Gibson's system is a relational database that emphasizes taxa, whereas Noyes' system is a relational database that emphasizes literature. It would seem that between the three systems a consensus could be found, but that appears to be easier said than done. We are all attempting to standardize data between us, but even this is not always easy.

Notauli and Parapsidal Lines: what are they?

by Arnold Menke
Syst. Ent. Lab., USDA
Washington, D.C.

The scutum of aculeate wasps often has one or two pairs of well-marked linear features. (This discussion excludes the admedian lines, often present anteromedially on the scutum.) Members of the inner pair, the **notauli** (singular notaulus), which originate anteriorly, are usually sulciform (ie, a "furrow") but sometimes these grooves may be represented by a linear row of pits. The notauli extend posterad and are either more or less parallel or they converge and meet at the midline of the scutum. Members of the outer pair, the **parapsidal lines**, originate posterolaterally mesad of the tegulae, and extend a variable distance anterad. They are typically represented simply by "marks" in higher aculeates, ie, they are line-like; they are often sulciform in other Hymenoptera.

The **notauli** are usually represented internally by phragmata that are positioned between the areas of attachment of the dorsolongitudinal indirect flight muscles and the dorsoventral indirect flight muscles (Gibson, 1985). According to Gibson "the spatial relationship between the notauli and the two sets of indirect flight muscles indicates homology of the notauli throughout Hymenoptera".

The **parapsidal lines** are feebly represented internally. Daly (1964) demonstrated that they indicate the location of initial attachment of the dorsoventral indirect flight muscles in the pharate pupa. In adults these muscles enlarge, surrounding the original site.

There has been considerable agreement in usage of these terms among modern authors, including a number of significant papers and books . The following examples illustrate this point (*ie.* notaulus and/or parapsidal line are used in the sense described in my opening paragraph): Snodgrass (1935) *Principles of Insect Morphogy*, Duncan (1939) *A Contribution to the Biology of North American Vespine Wasps*, Michener (1944) *Comparative External Morphology, Phylogeny, and a Classification of the Bees*, Townes (1969) *The Genera of Ichneumonidae*, Betrem (1972) *The African Campsomerinae*, Bohart and Menke (1976) *Sphecid Wasps of the World*, Richards (1977) *Hymenoptera, Introduction and Key to Families*, Evans (1978) *The Bethylidae of America North of Mexico*, Olmi (1984) *A Revision of the Dryinidae*, Gibson (1985), Boucek (1988) *Australian Chalcidoidea*, Gauld and Bolton (1988) *The Hymenoptera*, Masner and Huggert (1989) *World Review and Keys to Genera of the Subfamily Inostemmatinae*, etc., Ronquist and Nordlander (1989) *Skeletal morphology of an archaic cynipoid, Ibalia rufipes*, and Kimsey and Bohart (1990) *The Chrysidid Wasps of the World*. Richards (1977) was inconsistant in his treatment of notaulus. In sawflies, he used the term prescutal sulcus for the notaulus. Ronquist and Nordlander modified parapsidal lines to parapsidal signa.

Until the postwar years notauli and parapsidal lines were often used interchangeably for the inner pair of scutal grooves, and there is occasional confusion even today. For example Snodgrass (1910) used "parapsidal suture" for what is really the notaulus. However he corrected this in his 1935 book, *Principles of Insect Morphogy*. Schmiedeknecht (1930) in the second edition of his *Die Hymenopteren Nord- und Mitteleuropas* (first published in 1907) used "Parapsidenfurchen" but recognized that his usage was synonymous with notauli. His book evidently influenced a number of subsequent

European workers. For example, Nikol'skaya (1963), Oehlke (1971) and Tobias (1978) used the equivalent of parapsidal lines for the notauli. Other examples of misapplication of parapsidal line are Weld (1952) who, in his *Cynipoidea*, used the term for the true notaulus; Matsuda (1970), who, in his study of the thorax, used "parapsidal suture" for the notaulus; and Riek (1970) who, in *Insects of Australia*, also partly mixed up these terms. Riek's fig. 37.6B on p. 872 shows the scutum of a *Sphecius* and he misapplied parapsidal line to a sulcus associated with the oblique scutal carina. The true parapsidal line of *Sphecius* was labeled the "notaulix" by Riek, and the true notaulus was labeled "admedian line". Riek correctly applied notaulus and parapsidal line on fig. 37.6A, a tenthredinid. In the second edition of this book, Naumann (1991) used Riek's figures and perpetuated the mislabeling of *Sphecius* (fig. 42.6B on p. 919), and in an apparent lapsus on fig. 42.6D (a trigonalid), labelled the true notaulus both notaulus and parapsidal line.

I decided to see if I could find out just who originated notaulus and parapsidal line in order to determine if contemporary authors were interpreting them correctly. Gary Gibson (1985), in his masterful and basic study of the thorax in Hymenoptera, gave a good historical account of these two terms. He, as well as most other modern workers, relied heavily on the paper by Tulloch (1929) for the historical origin of notaulus and parapsidal line. I discovered that Tulloch has mislead his readers to some extent.

Tulloch attributes origin of the term notaulus to Kokujev (or Kokouyew) (1899) [1898 is incorrect] in Horae Soc. Ent. Rossicae, vol. 32. My examination of vol. 32 revealed that Kokujev did use the word "notauli" in descriptions of braconid species in two papers (pages 307, 316, 376, 379, 383, 388, 393, 397, 399, 405, 408), but he did not define the term. In earlier papers in the Horae, Kokujev did not use the term notauli. For example, in vol. 29 (1895 p.366), Kokujev used the word "parapsidis" instead.

Tulloch also cited Morley (1903) *Ichneumonologia Britannica*, vol. 1, for notaulus, and the term is clearly defined in Morley's glossary (p. xiv). Forbes (1940) credited Morley with originating the term notaulus, not Kokujev, probably because Morley defined it. Apparently the word notaulus is based on the Greek words noton (= back) and aulon (= channel). Forbes (1940) gave a more thorough attempt at derivation of the word. Notaulus is singular, notauli is plural. Richards (1977) and some others have used incorrect spellings for this term (notaulix, notaulices).

Origin of the term parapsidal line is more muddled. Tulloch (1929) traced the origin of the word "parapsides" (parapsides is pleural, parapsis is singular; the word is formed from para [=beside or near] and apsis [= rim]) back to MacLeay (1830), who, Tulloch said, proposed the term for the area of the scutum lateral to a posterolateral line in a species of *Polistes*. Tulloch, in his discussion of MacLeay, coins the term parapsidal line, stating that "naturally the furrows delimiting these regions [ie, the parapsides] are the parapsidal furrows although MacLeay does not specifically designate these furrows as such."

When you examine MacLeay's paper it obvious that Tulloch does not tell the complete story. MacLeay uses the genus "*Chalcis*" as an example of a hymenopteran with completely formed parapsides. He mentions *Polistes* (he also figured and labeled the scutum of this genus) and *Scolia* as examples of wasps with incompletely formed parapsides, and says that in *Leucospis* they are absent. When you examine the scutum of these wasp genera it becomes obvious that MacLeay used both pairs of scutal grooves to delimit the lateral scutal area he called "parapsides". The grooves in *Chalcis* are the modern day notauli. The lines present in *Polistes* and *Scolia* are modern day parapsidal lines (they are sulciform in *Scolia*), and notauli appear to be absent in both genera.

This confusion by MacLeay explains why Mayr (1887) used the apparently new term "Parapsidenfurchen" (= parapsidal furrows in English) for the inner most pair of grooves in male ants (ie, notauli of Kokujev and Morley). It also explains why the inner most pair of grooves have been called notauli by some workers, and parapsidal furrows (or grooves) by others. MacLeay based his extensive description of the thorax on *Polistes* however, and one could justifiably argue that this vespid genus should serve as the basis for determining the correct application of the term parapsidal line. In fact MacLeay illustrated the thoracic dorsum and side of *Polistes billardieri* (Fabricius) (fig. 4) (MacLeay's material came from Cuba and *billardieri* does not occur there; he probably had the species *cubensis* Lepeletier) and his explanation of these figures states ". . . shews vestiges of the sutures which separate the Parapsides from the Scutum." My figure 2 is adapted from MacLeay's figure and in *Polistes* there are no visible notauli. These facts lead Tulloch to propose the term parapsidal line.

It would appear, however, that Mayr (1887) may have been the first worker to actually coin a name for a scutal groove derived from MacLeay's area term parapsides. (If anyone knows of an earlier use parapsidal line please let me know.) Unfortunately Mayr's term, Parapsidenfurchen, applied to what most modern workers now call the notaulus. Emery (1900) in his morphological study of the ant thorax, pointed out Mayr's mistake, and proposed the term "solchi di Mayr" (= Mayrian furrows in English) to replace Parapsidenfurchen (Emery's term has generally been discarded by modern ant workers, most of whom use notauli.) Emery pointed out that the term parapsidal lines (he called them "solchi parassidiali" in Italian) is more properly applied to the lines in *Polistes* that MacLeay used to delimit his parapsides. Emery (1900) appears to have been the first person to define parapsidal line sensu MacLeay's *Polistes*.

Although parapsidal furrows

(or lines) sensu Mayr (1887) has priority over notauli sensu Kokujev (1899) and Morley (1903), most contemporary workers use parapsidal lines sensu Emery (1900) and Tulloch (1929). I agree with Gibson (1985) that this usage should be maintained. Nothing would be gained by attempting to make parapsidal line the proper term for what now is generally called the notaulus. Such action would also necessitate a new term for the contemporary parapsidal line. Furthermore, notaulus has only one meaning while parapsidal line has been used for two different grooves.

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OBITUARY

BARNARD DeWITT BURKS

1909-1990

by Paul M. Marsh
Syst. Ent. Lab. USDA
Washington, D.C.

Dr. Barnard D. "Barney" Burks, retired taxonomist with the USDA's Systematic Entomology Laboratory, died December 15, 1990 in Sun City, Arizona. He was born November 12, 1909 in East Las Vegas, New Mexico. His family later moved to Illinois, and in 1929 he entered the Univ. of Illinois at Urbana where he received his B.A. degree in 1933, M.A. degree in 1934 and Ph.D. degree in 1937. Barney was appointed as a taxonomist for the Illinois Natural History Survey in 1937 and was given the task of preparing a monograph of Illinois mayflies. In 1942 he was commissioned as a first lieutenant in the Army Sanitary Corps and was stationed in Algeria. His knowledge of electricity caused him to be transferred to the Army Signal Corps from which he was discharged as a major in 1946. He returned to the Illinois Natural History Survey until July, 1949 when he was hired by the Insect Identification Division, USDA (present Syst. Ent. Lab.) and assigned research on Chalcidoidea. He served in this capacity until his retirement on June 28, 1974. This early retirement was for medical reasons resulting from a concussion received from a fall at his home. He remained in Washington for a few years working on several unfinished research projects and moved to Arizona with his wife, Kellie O'Neill Burks, in May, 1977.

During his virtually uninterrupted 40-year career as a research taxonomist, Barney attained prominence as one of the world's authorities on the systematics of parasitic wasps belonging to the superfamily Chalcidoidea. His earlier taxonomic work on the mayflies of Illinois continues to be the standard reference on those insects. The results of these studies were pre-

sented in 81 publications. He was also involved in other activities in support of entomology such as a consultant on numerous occasions and being sponsoring scientist on eight government supported projects in India, Pakistan, Israel, and Taiwan. He served as the Hymenoptera Unit Leader of the Syst. Ent. Lab., was Editor and President of the Entomological Society of Washington, and in 1945 was elected a Fellow of the Entomological Society of America.

Barney was a very personable individual and was particularly helpful to new hymenopterists that were hired by the laboratory. He enjoyed mountain hiking and often took newly hired staff for a days hike to Old Rag mountain in Virginia. He was an enthusiastic hobbyist having interests in electronics and gardening, and was a lover and authority on classical music of all periods. In fact, music was his chief pleasure throughout his life. As a high school student in Illinois Barney studied voice and began his extensive classical record collection. His beautiful tenor voice earned him a few extra dollars as soloist with various church choirs while a graduate student in Urbana. Unfortunately, wartime injuries put an end to his singing voice. His gardening expertise was always evident where he lived in the Washington, D.C. suburb of Silver Spring, Maryland. His first home boasted very fine examples of Franklinia and Cunninghamia; at his second home he grew *Oxydendron, Pieris, Buddleia* and many kinds of gesneriads under lights. After moving to Sedona, Arizona, he continued his interest in music, hiking and gardening. He hiked with Sedona Westerners as long as he was able, always at the leader's heals. Barney and Kellie set up a herbarium of native plants for the Forest Service office in Sedona; he succeeded in growing Colorado blue spruce in the unsuitable climate of central Arizona, and he grew the only edible-fig tree in Sedona. He frequently shared his knowledge of biological pest control with local garden clubs. Always interested in nature, he took up astronomy in his last few years, encouraged by the clear night skies of Sedona.

Barney died after a brief illness and his ashes were inurned with those of this fellow soldiers in Arlington National Cemetery.

[Editors' note: The above will be published this year in the Proc. Entomol. Soc. Wash. and will include a complete bibliography of Barney's works.]

BARNEY BURKS

by Eric Grissell
Syst. Ent. Lab., USDA
Washington, D.C.

I had the pleasure of meeting Barney on four occasions at the USNM from 1969 to 1974. My initial contact with him was as a beginning Masters degree student, and I must admit that our our first interaction was not what I expected.

In those days there were few students working on chalcidoids. In fact, Gordon Gordh and I are the only two I can think of. When I wrote to Barney and asked to borrow a synoptic collection of females and males of 3 species of the genus *Eurytoma*, he told me that he did not loan specimens to students. Nor did I have the feeling that he much liked students. It turned out that he'd once loaned a large part of the torymid collection to a student in the 1950's, and it was never returned. Other such problems were hinted at.

The only recourse was to work in the dark or to visit the museum at my own expense. In 1969 I visited the museum (which was still very much like working in the dark for me). After that Barney accepted me as a potential chalcid worker and was more than willing to loan anything I needed for my studies. His measure of a student's interest was whether or not the student was willing to sacrifice a bit for the cause. (With hindsight, I can well sympathize with his attitude at times!)

After that, my visits to the USNM were always met with cordial enthusiasm from Barney. Several times he invited me for dinner at his home. Here we shared a common interest in music, although Barney was rather overstocked in the opera department for my taste. He had several thousand 78 rpm records and was quite an audiophile. He was fond of conversing about current state-of-the-art equipment -- discussions often lost on a student who could barely afford to eat. On a few occasions he took me to the exclusive Cosmos Club for supper, which was not only a great treat but also was something a typically malnourished student could directly relate to.

In the days when Barney worked for the old Insect Identification Division, the laboratory had no restrictions on insects accepted for identification, and Barney had a tremendous identification load. At one time he identified all chalcidoids, sawflies, cynipoids, and Hymenoptera larvae. It's a wonder he found time to pursue research much less publish it.

Barney was not a collector. He believed that the only good chalcidoid was a reared one, and his work relied entirely on the efforts of others working in the field. At that time there were many researchers providing reared material for him to study.

I once tried to interest Barney in coauthoring a paper, but he told me that such papers were more trouble than they were worth. He was nothing if not perceptive, and it is a point upon which time has brought us into nearly complete agreement.

HELP

Aprostocetus hagenowii Colonies

Daniel Suiter, a Ph.D. student in entomology at the Univ. of Florida, writes that he is working on a project involving the cockroach oothecal parasitoid *Aprostocetus hagenowii*. He wants to obtain specimens from as many locations as possible. Does anyone out there have colonies of this wasp? If so, please contact: Mr. Daniel R. Suiter, USDA-ARS, Medical & Veterinary Ent. Research Lab., 1600 S.W. 23rd Drive, P.O. Box 14565, Gainesville Fl 32604, phone (904) 374-5903 or 5935.

RESEARCH NEWS

Some Notes on Synonymy

by Paul Dessart
Institut Royal des Sciences Naturelles de Belgique, Brussels

I'm dispatching this letter both to the readers of *Proctos* and *Chalcid Forum*.

When reviewing the publications received weekly at my institute, I happened twice to discover junior synonyms of microhymenopteran genera.

The first is *Cea* Gonzales-Sponga, 1988, for a "harvestman" (Arachnida Opiliones) from Venezuela. Its etymology is amusing as this is the acronym of "Centro de Educacion Artista 'Andres Eloy Blanco'", to which the author is much indebted. Of course, the name is preoccupied by *Cea* Curtis, 1837 (Hym. Pteromalidae) — without mentioniny *Cea* D'Orbigny (Bryozoa) nor *Cea* Grote, 1883 (Lepidoptera). I politely wrote in November 1988 to Dr M. A. Gonzalez-Sponga, through the Academia de Ciencias Fisicas, Matematicas y Naturales in Caracas: I got no answer, even after a second letter in May 1992, to his private address found in another publication of his.

[Incidentally, Gonzales-Sponga, in his work, coined some odd and amusing names, but unfortunately grammatically inaccurate (though valid): *Curimagua infrequentis*: "del latin infrequens no frecuente"; why in the genitive? Or *Unare videodifficultatis*. The only two correct forms would have been "videodifficultatem" or "difficultatemvideo."]

The second homonym is *Psix* Alonso-Zarazaga, 1989, for a weevil, preoccupied by *Psix* Kozlov & Le, 1976 (Hym. Scelionidae), another prioritary "crumb". I wrote to the author, at the address mentioned in his Italian publication, namely in Malaga, Spain, in March 1992. The letter was sent back, closed, without indication of the reason (moved? deceased?). I then sent a copy to the Italian editor of the review 'Fragmenta entomologica', Roma, asking (in Italian) for eventual information on the wherabouts of the author or for the forwarding of my letter to his new address, if ever. This mail also remained unacknowledged nor answered.

Discovering such a "mistake" as having created a homonym is never pleasant for an author: but my letters were quite polite and gentle and I respected the deontology in giving these authors the ouportunity to coin nomina nova. Haliday will not turn over in his grave because of *Cea* nr. 4, nor will Kozlov & Le lose their sleep thinking about *Psix*-bis. Embrik Strand is no more in a state to create nomina nova to compensate the inertia of the hispanophone authors; and myself I do not intend to deal with Opiliones or Curcu's. But I am bent on mentioning this, because more and more I deplore that so many polite inquiring letters remain unanswered...

For some ten years, I vainly looked for the date of publication of *Andrena delta* Kby [Kirby] mentioned by Vierek when he renamed *Andrena delta* Viereck, 1903, as *A. didelta* Viereck, 1908 (which did not prevent the description, the same year, of *Andrena delta* Saunders, 1908). Year after year, I have written to three colleagues having published on *Andrena* (even cataloguing partly the genus) in three countries: no one has even replied or acknowledged my letter to say, for instance, he could not solve the problem — finally solved by myself, however. I wrote to several entomologists who had bred cecidomyids, inquiring whether they had not happened to get some ceraphronid parasitoids in their breedings: no one ever wrote to say "No, sorry." Two coauthors, Japanese and American, alluded in an entomological work to a very low chromosome number among the mammals: I vainly wrote twice to the first and, dispairing of the Oriental courtesy, I applied to the second, to know that number and the mammal's name, that both they have in their files (to spare my time in long bibliographical research): despite the fact that I explained I intended to allude to their interesting researches in a review of popularised science, it took three letters and exactly 8 months to yet the information: it reached me, sent from Japan, while I was writing the draft of these lines.

A few years ago, an English colleague wrote to me for some information useful for his studies, apologizing for the disturbance: I immediately sent to him the answer, specifying that instead of being disturbed I was happy to seize the opportunity to remind him of several letters he had left unanswered for many years and to ask for the loan of a paratype of a ceraphronoid he had recently described, though a specialist of a quite different superfamily. Sorry to say I got no thanks for the information, nor the paratype, useful for my studies.

That's why I beg the great majority of my correspondents to accept my vivid feelings of gratitude for the kindness whereof they gave proof in our epistolary relations, and which comforts me with respect to the tiny minority of the silent remainders.

New Hymenoptera Book

A new book called *Hymenoptera of the World, an Identification Guide to Families*, edited by Henry Goulet and John Huber (a Chalcid Forum alternate coeditor) will be published later this year. In addition the section on Chalcidoidea is authored by none other than our other alternate coeditor Gary Gibson. The book contains original keys to superfamilies and families with figures for most couplets, a standardized vocabulary, an illustrated glossary, and over 1000 illustrations. For each family a habitus drawing, a diagnosis, biological notes, and major literature references are given. The guide provides fully illustrated keys to 99 families of Hymenoptera and 155 subfamilies of ichneumonoid and aculeate wasps (except bees). The book is approxi-

mately 650 pages and is soft bound. The price has not been set. To order by telephone the number is (819) 956-4802, by fax it is (819) 994-1498. By mail the address is Canada Communications Group - Publishers, Ottawa, Canada K1A 0S9.

Drying Methods for Insects from Alcohol

by Terri L. Taylor
Bio. Lab. Tech
Syst. Ent. Lab., USDA

Two specimen drying techniques were recently compared to evaluate the quality of specimens produced with relation to critical point drying. The techniques tested included air and freezer drying. This experiment used soft-bodied chalcidoids which were hand selected from alcohol for normalcy and uniformity. A sub-objective of the experiment was to evaluate the inclusion versus exclusion of tissue liners in the glass containers used in the comparison.

Specimens of Eulophidae and Mymaridae were removed from alcohol storage vials and transferred into vials filled with 95% ethyl alcohol to soak for one hour. The specimens were then transferred into watch glass containers. Half of these containers were lined with Kimwipe™ tissue and the other half of the containers remained unlined. The specimens were minimally covered with fresh absolute alcohol. Next,approximately half of the containers (unlidded) were placed in a self-defrosting freezer and the remaining containers were allowed to air dry. After three days specimens in the freezer were removed and compared, together with the air dried specimens, with critical point dried specimens which served as a standard. The processed specimens were found to be nearly comparable in appearance and quality. A few insects displayed antennal and abdominal collapse but the condition was evenly distributed and did not occur in large numbers among the test groups. The wings of insects from the critical point drying method were somewhat flatter than those of insects from the freezer and air drying methods. However, the overall quality of the specimens and their structures was good from all of the drying methods that were evaluated. These results may be useful to individuals who do not have access to critical point drying equipment but require some satisfactory method of insect specimenpreservation. Large quantities of hard-bodied specimens in alcohol might be economically and speedily prepared for mounting using the freezer technique.

The secondary objective in this experiment involved the inclusion or exclusion of a tissue liner in the glass container used for freezer or air drying preservation methods. The wings of some of the specimens in the unlined containers adhered to the glass bottoms of the containers as they dried. Care was required to prevent tearing the wings as specimens were removed from the glass surfaces. The wings of some of the specimens in the tissue lined containers also adhered to the liners as they dried. However, very little pressure was required to lift the wings from the tissues. These wings appeared more resilient when manipulated from the tissue surface than the adhered wings of the insects in the unlined containers. This resilience may have been due to greater circulation of air around the wing which promoted more thorough structural drying and less moisture-induced adhesion. It was clearly demonstrated that the inclusion of a tissue liner helped maintain the structural integrity of the specimens.

ADDRESSES

In the last mailing list sent out in March 1992 at least one person was accidentally omitted. If you know of anyone who falls into this category could you please let us know.

ADDITIONS:

Alexandre Pires Aguiar
Department of Entomology
Purdue University
1158 Entomology Hall
West lafayette, IN 47907-1158
USA

Andriano Cazzvoli
via Mazzone No.11B
41037 Mirandola (Mo)
ITALY

CIRPON
Casilla de Correo (Central) No. 90
4000 - San Miguel de Tucuman
REPUBLICA ARGENTINA

Saul Frommer
Department of Entomology
University of California
Riverside, CA 92521

Eiji Ikeda
Entomological Institute
Faculty of Agriculture
Hokkaido University
Kita 9 Nisi
Kita-ku, Sapporo 060
JAPAN

Nick J. Mills
Division of Biological Control
University of California
1050 San Pablo Avenue
Albany, CA 94706
USA

Rosichon Ubdidillan
Museum Zoology Bogor
JL. 1R Juanda No. 18
Bogor, Java
INDONESIA

Bogdan Wisniowski
Museum of the Ojcow National Park
32-047 Ojcow
POLAND

CHANGES:

Steve Compton
Dept. of Pure and Applied Biology
The University of Leeds
Leeds LS2 9JT
ENGLAND

Gordon Gordh
Department of Entomology
University of Queensland
St. Lucia, Queensland 4072
AUSTRALIA

Yoshito Suzuki
Laboratory of Pest Management Systems
Kyushu National Agricultural Experiment Station
Nishigoshi, Kumamoto 861-11
JAPAN

Stefan Vidal
Institut für Pflanzenkrankheiten
Universität Hannover
Herrenhäuser Str. 2
w - 3000 Hannover 21

GERMANY

CORRECTIONS:

Zerova, M. D. change postal code to 252601

LOST

We seem to have misplaced the following chalcid worker:

Sudha Nagarkatti (last address: National Center for Biological Control, Indian Institute of Horticultural Research, 142-III Main Road, Gangenahally Layout, Bangalore India)

RECENT LITERATURE

Chalcid Forum #16
(to February, 1993)
Compiled by John Huber, CNC

All titles and journal abbreviations should be checked by the reader for accuracy if they are to be quoted in scientific papers. Strictly taxonomic references are marked with an asterisk (*).

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Artigues, M., J. Avilla, M.J. Sarasua & R. Albajes. 1992. Egg laying and host stage preference at constant temperatures in Encarsia tricolor (Hym., Aphelinidae). Entomophaga 37: 45-53.

Artigues, M., J. Avilla, M.J. Sarasua & R. Albajes. 1992. Primary host discrimination and elimination of supernumeraries in the facultative autoparasitoid Encarsia tricolor (Hymenoptera: Aphelinidae) Ent. Gen. 17: 131-138.

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*Askew, R.R. 1992. An English record of Neochalcid fertoni Kieffer (Hym. Chalcididae). Ent. Mon. Mag. 128: 164.

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*Barannik, A.P. 1992. Coruna (Pachycrepis) clavata Walker (Hymenoptera: Pteromalidae), a rare species of aphid hyperparasite. Ent. Rev. 70: 150-151.

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*Boucek, Z. 1991. The identity of Dynatogmus Mayr (Hym., Agaonidae: Sycophaginae). Ent. Mon. Mag.127: 190.

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Bourchier, R.S. & V.G. Nealis. 1992. Patterns of hyperparasitism of Cotesia melanoscela (Hymenoptera: Braconidae) in southern Ontario. Environ. Ent. 21: 907-912.[Tritneptis, Eurytoma, Dimmockia, Hypopteromalus].

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