



THE NEWSLETTER OF THE OTHOPTERISTS' SOCIETY

Metaleptea

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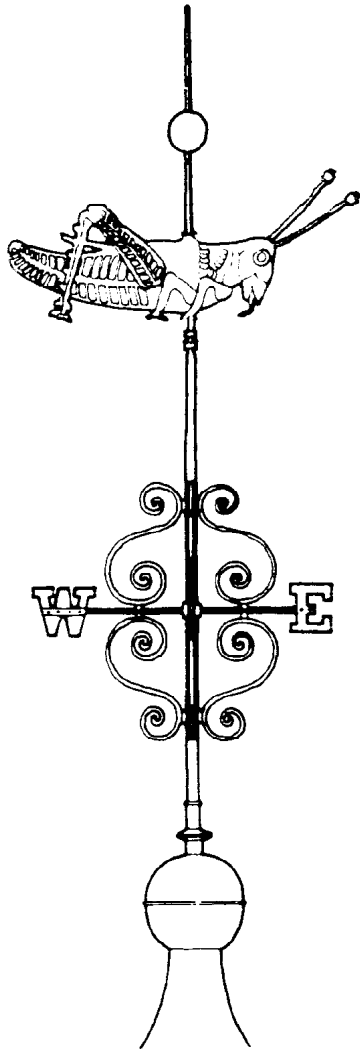
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America's Best-Known Grasshopper?

Last summer's family vacation took us to the northeastern region of the United States, which is a beautiful landscape despite its paucity of grasshopper outbreaks. Indeed, that was part of the allure — to escape from my professional responsibilities and simply enjoy being a husband and father. But escaping acridology for a couple of weeks didn't necessitate an abandonment of all intellectual and cultural pursuits. So while Ethan (son) voted for the beach, Erin (daughter) took us to Louisa May Alcott's house, and Nan (wife) had us meander through New Hampshire's White Mountains and lake country, I made sure that we visited Walden Pond, Robert Frost's house, and King's Chapel. We all enjoyed the walking tour of Boston, and I had almost forgotten about the growing list of emails, piles of memos, and stacks of phone messages that surely awaited my return, when we came across a most remarkable grasshopper. This wasn't just any acridid; it is perhaps the most famous grasshopper in all of the United States (notice that I exclude gryllids, thereby omitting Disney's Jimminy Cricket).

This grasshopper sits atop of Faneuil Hall. In the early 18th century, Peter Faneuil emerged as one of the wealthiest Boston merchants, and he decided to mark his success by building a central food market and meeting space for town gatherings. In 1742 the building was constructed and served the people of Boston until it burned in 1761. Faneuil Hall was rebuilt two years later, just in time to become the focus of revolutionary activity. Discussions of British taxes led to protest meetings that spilled into the streets of the city. Under the leadership of Samuel Adams and other "Sons of Liberty", raucous debates led the citizens



A finely pinned grasshopper

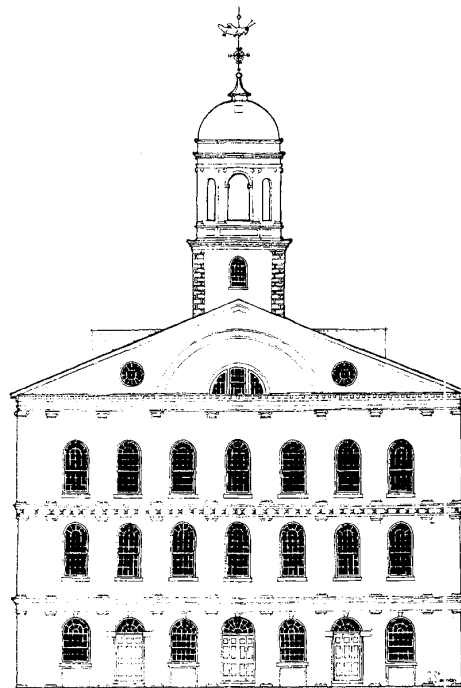
to oppose the Sugar Tax, the Stamp Act, and — most famously — the tax to be paid on a newly arrived consignment of tea destined to steep in Boston harbor. Reports of insurgency in Boston spread throughout the colonies, and Faneuil Hall earned its name as America's "Cradle of Liberty".

After the Revolution, Faneuil Hall was dramatically renovated and expanded, but it remained a forum for debates of national issues. Anti-slavery advocates held rallies in the 1840s and 50s, and noted speakers have included Frederick Douglass, Jefferson Davis, Daniel Webster, and Susan B. Anthony. The Hall underwent a major renewal in

the 1970s, while preserving its role as a site for debates of national and community issues. Thousands of visitors flock to the historic meeting hall and then make their way to the shops in the lower level (Faneuil Hall also maintains its historic role as a marketplace). At least of few tourists are intrigued by the odd assortment of souvenirs which includes (among lots of other treasures) socks emblazoned with grasshoppers. The grasshopper motif is in celebration of the charming and eccentric icon of this historic place.

For two centuries the grasshopper weathervane perched atop of Faneuil Hall has symbolized America's "Cradle of Liberty" (see drawings from the National Park Service brochure). Fashioned in 1742 by Deacon Shem Drowne, the weathervane may have been inspired by similarly designed ornaments gracing the Royal Exchange building in London. Perhaps most remarkably, the weathervane is the only part of Faneuil Hall which remains totally unmodified from the original structure. So it seems that grasshoppers have found their place in US history in a most unlikely venue — and, best of all, I was able sport a rather jaunty set of socks adorned with acridids for the balance of our vacation, much to the mixed delight and embarrassment of my children.

Jeffrey A. Lockwood



Faneuil Hall

CURRENT CONTROVERSIES

A New and Ongoing Column

With this column, I would like to initiate a discussion of current controversies at a very informal level. Any time two orthopterists get together, there is almost invariably an exploration of current problems. As these informal discussions continue, the maturation of ideas often result in major papers, but the process of publication itself often results in long delays. Would it not be advantageous for *Metaleptea* to serve as a forum for the discussion of important problems, and for broader but still very informal exploration of them before they reach the publication stage? I submit here an idea that needs much discussion before it is implemented or demonstrated to be without value. I welcome feedback by personal communication or by comments in succeeding issues of *Metaleptea*.

A Possible Solution to the "Taxonomic Impediment"

A very apt description of the problem of the "imbalance between our current . . . taxonomic knowledge and the full magnitude of organismic diversity," was presented by S. V. Green in a talk delivered at the 1997 International Meeting of the Orthopterists' Society (published last year in the *Journal of Insect Conservation*) and termed by him "the taxonomic impediment." Simply put, there are too few taxonomists publishing too few papers describing species and genera compared to the huge numbers of taxa still undescribed, a situation which is holding back research in many areas of biology.

In any study of the groups in which they specialize, many taxonomists develop quite early a very good idea of what the species are, their characters and their distributions. But thereafter a long delay

often ensues while more and critical material is gathered, measurements taken, variation studied, maps constructed, and the manuscript written and rewriting followed by further delay in the publication process after the manuscript is submitted. For example, once T. H. Hubbell and I broke the "code" of the characters of the camel cricket genus *Pristoceuthophilus* 15 years ago, it took us only a short time to sort out the species of this genus. Since then we (or I since Hubbell's death) have been doing much collecting to fill in geographic gaps, exploring various problems of sympatry and hybridization, analyzing large data sets of measurements, developing tabular means of identification, making drawings, all in preparation for the final manuscript.

Very early we could have easily published electronically a table of the species with their characters and distribution so that others could use this information far in advance of the formal publication. Such a table, if locked, could be easily modified and updated at any time whenever we had appropriate additional information. This preliminary table of course would not contain new names and formal descriptions, but a code (perhaps similar to what CSIRO is doing in Australia with a numerical system) for the name and whatever characters we had studied up to that point, and might even contain small line drawings of completed illustrations.

Published on the Society's Webpage, such a table would enable interested persons to see the diversity of the genus and the distribution of its species, would aid them to identify material they collect, and would certainly alert them to the work being done with the group so that help of the specialist could be obtained for their own studies.

These electronic tables would not be a substitute for the published revision. And even if a person becomes incapacitated before publication especially of long term

projects, the information in the electronic table could be easily published by others without a great deal of more work.

What might be the disadvantages of such a system? Would it encourage further delays in the completion of the revision? Is there a serious concern that unscrupulous taxonomists might simply publish the species under their own authorship? Your discussion would be appreciated

Theodore J. Cohn

produce a book like "The Insects of Australia" simply because we do not have the talent. The management gurus would just say that we would hire the talent if needed. The "need" will never arise because the funding for such a project will never be available. Federal funding agencies are suffering from reduced funding. The major taxonomic funding agency has a budget much less than some of the grants that the NSF provides in the USA!!

David C. F. Rentz

Opinions and Comments

FALSE ECONOMY IN AUSTRALIA

A WORLD-WIDE PROBLEM

For the past several years CSIRO has been operating under the management system called "Economic rationalism". This term has many euphemisms but what it generally relates is that everything has a price or a cost associated with it. As a result, the people who have to operate under such a system are more and more restricted as to what they can do. There is no better example than CSIRO Entomology. Over the past decade or so, this form of management has resulted in the "retirement" of many productive scientists and technical assistants to the degree that the organization is really only a ghost of its former self. We have a much reduced capacity to do jobs that we used to do and are now largely driven by the dollar and spend considerable time chasing the dollar. (Administrators, of course, do not have to engage in such activities even though they are pretty adept at spending the dollars others bring in.) The sad part is the human side where many productive scientists have been lost to the country and the science just because of the dollar savings in having them retire early. The result is that we could no longer be able to

Upgrades needed for the Expertise Field in our Webpage

One of the most important services the Society can provide its members and other biologists is readily available information on the expertise of our members. This is being done in a very accessible form on the Society's Webpage, where one can search the "expertise" field for all the members. Several of us have already been contacted by biologists using this method, concerning Orthoptera problems and those biologists have been pleased with the results. But many members have no expertise in this field, and others have only the barest essentials there. If each member were to upgrade this field, giving as many key words as possible (see for example my own upgrade—T.J. Cohn) regarding expertise, interests, willingness to identify, desire for specimens, etc., this would make the membership data base extraordinarily useful. You can do this from the luxury of your own computer as the fields are not restricted, and I believe that the space available is infinite (although it will not all show at once). Please, PLEASE upgrade your listing soon (because if you don't, we will soon be after you to do so).

And while you are doing so, please check to see that your E-mail address is included. This is a very inexpensive way of contacting you, and saves the Society and everyone else a great deal of time and money for postage.

News from your Board Members

MICHAEL SAMWAYS
(Regional Representative-Africa)

This last year or so has seen an interesting Orthoptera research thrust. Michael Samways' research students Solomon Gebeyehu and Richard Kinvig spent time respectively in the semi-arid Karoo and Namibia looking at grasshopper local distributions relative to local topography and grazing pressures. Southern Africa has a fascinating landscape, much of it dominated by mesas and inselbergs. These seem to be only marginally grazed by livestock, simply because of their inaccessibility. The research question therefore was whether these landmarks are island refugia for grasshoppers, especially in times of drought and overgrazing. Initial results suggest that this is indeed the case for the flat-topped, grassy mesas, but not for the rocky, pointed inselbergs. Grazing pressure interacts with topography and where the land has been restored, as at the Mountain Zebra National Park, there has been, not surprisingly, a return of grasses, and hence grasshoppers. These reserve islands, both mesas and parks, are clearly important in maintaining regional biodiversity.

MARIA MARTA CIGLIANO
(Regional Representative-South and Central America)

I am currently involved in three projects.

For the first, "Systematics of Neotropical Acridoidea", I am revising the genus *Dichroplus* Stal (Melanoplinae, Dichroplini), currently examining the *Dichroplus maculipennis* species group.

The second project is focused on the understanding of the major features of geographic and temporal variation in the diversity of grassland grasshopper species in the Pampas.

The third project is devoted to test hypotheses regarding the relationship of grasshopper population densities to soil properties, landscape and land use. Spatio-temporal analyses are being conducted in grasslands from southwestern Buenos Aires province. Landsat TM data are used to generate and update landuse coverages. Maps of landscape, land use, soil texture, soil type, and annual grasshopper densities are being integrated on a Geographic Information System and analyzed trying to identify areas prone to high grasshopper densities.

THEODORE COHN
(President)

Ted Cohn continues to work in Coastal Oregon on contact zones among species of the camel cricket genus *Pristoceuthophilus* where he is finding virtual parapatry or very narrow hybrid zones among closely related "forms" with strikingly distinctive tergal projections in the males (secretory structures), but with no other differences. In some cases there appear to be no physical barriers between them, and collecting gaps are of only a few miles or less. Any one with possible explanations are encouraged to give him ideas. This is part of what is now long term project revising this genus, members of which are very common in the Pacific Coast States and are mostly undescribed. He is using dry oatmeal bait which allows him to cover many miles each night, but often results in problems with police and irate ranchers

not very appreciative of lights flashing on their property in the middle of the night.

He is also cooperating with Dan Otte on a revision of some genera of western Mexican melanoplins with many new species, which he collected in large numbers many years ago while working on his katydid dissertation. We are finding the usual situation, spectacularly good aedeagal characters differentiating species, but virtually no aedeagal characters uniting them into genera. Again, most of these are parapatric and not separated by what WE think are very significant barriers.

DAVID RENTZ
(Past President)

Field activity has been severely curtailed in recent years because of budgetary policies at CSIRO. I have not had the opportunities of late that were afforded during the 80's prior to the economic irrationalists gaining control, so it was with considerable enthusiasm that I accepted an opportunity to drive to Darwin (about 4,000 km from Canberra) in February to help with a grasshopper project being finalized in Alan Andersen's lab. This provided ample collecting opportunities and the chance to obtain photographs of Australian acridoids in their habitat for a guidebook that retired technical assistant Bob Lewis and I plan to do. With 735 species of acridoids (Acrididae and Pyrgomorphidae, contra Flook et al, Syst. Biol.) in the country and no way to identify them other than to visit the ANIC (Australian National Insect Collection, CSIRO, Canberra), we thought we could use our vast holding of photographs to produce such a guide. With the advancements of digital imagery (just look at the Orthoptera Species File Online) we can show the distinctive features clearly and rather economically. Of course, management thought it a reasonable idea only if

funding could be procured. Much of this has been accomplished and we are in the initial stages of the project. We hope to be able to cover about half of the species in the guide. When proposed at the Cairns Meeting, the usual skeptics had reservations about such a book utilizing photography and not drawings in colour. Colleague Pete Cranston then undertook a survey. He asked his zoology classes both at the Australian National University and at UC Davis what sort of bird guides do they prefer—those with colour artwork consisting of drawings or photographic images. In both surveys photos were preferred in the area of 90+%!! That makes our project a challenge to satisfy the critics.

So it was with considerable interest that the trip to Darwin was taken. In total 14,000 km were traversed. During the trip I picked up the Human Dynamo, Piotr Naskrecki and he traveled back with me and saw a considerable portion of arid Australia. [Some of the results of his trip are illustrated on the Orthop Society webpage] We managed to see the country when at its peak condition. There had been several years of favorable rains and the orthopteroids had responded. We found many tettigoniids and lots of grasshoppers. More than 4400 specimens were collected and are awaiting mounting. (The labels are all done and ready to be affixed thanks to Piotr's database. If you haven't yet used it, you are really missing a shortcut.) In the reality of the laboratory, things are also progressing. Volume 3 of the Tettigoniidae of Australia is nearly complete. It should be ready for submission by year's end. The grasshopper project is proceeding at a reasonable pace. We still lack some funding, but there are prospects. (If the Orthoptera Society would make good for between \$A5000-10000, the logo could be on the front of the book!!) We still lack technical support but have two volunteers who are devoted to help-

ing and although they are only allowed to do 6 hours of work per week, it is most appreciated.

JEFFREY LOCKWOOD

(Executive Director)

In addition to his many other projects and responsibilities, Lockwood has accepted the directorship of the Association for Applied Acridology International, founded in December, 1998. A description of this organization can be found elsewhere in this issue of *Metaleptea*

ALEXANDRE LATCHININSKII (Regional Representative- Asia)

For the last several years I have been involved in a project entitled "Environmental factors governing population dynamics of rangeland grasshoppers in Siberia: a novel approach using GIS and Remote Sensing." "The use of RS, in particular, the Landsat TM imagery, finds a growing demand in the applied acridology. With resolution of 30 m, Landsat scenes allow an accurate mapping of the predominant landscape features, such as water bodies, rock outcrops, and different types of vegetation. In my study, two Landsat images of the Lake Baikal region of East Siberia covering approx. 70 by 70 km in a zone frequently affected by grasshopper infestations were used. The field part of the project consisted in identifying the exact locations (latitude and longitude coordinates) of the infested areas, as well as the sites with different types of vegetation cover using GPS. Such "ground truthing" allowed for a classification of different types of milieu from the satellite image. This classification was combined with the study of the "classical" paper maps describing soils, vegetation, precipitation and other geographic characteristics of the region. When superimposed on a grasshopper historical infesta-

tion frequency map, this allowed us to classify the study region according to the risk of grasshopper infestation. In an extensive and often difficult-to-access area, such "glance from space" [or: "eye in the sky"] helps to focus the grasshopper population monitoring and to dramatically reduce the survey costs.

Contributions to *Metaleptea* are solicited from all Members, including news, replies and rebuttals, book announcements, reviews, and ESPECIALLY material for the new columns, "Current Controversies," "Opinions and Comments," and "Techniques and Equipment." Send these to the Acting Editor, Theodore J. Cohn, Insect Division, Museum of Zoology, University of Michigan, Ann Arbor, MI 48109, USA

Montpellier

France in 2001

Mark your calendar for the Eighth International Meeting of the Orthopterists Society. Jeff Lockwood and Ted Cohn have signed the contract for our next meeting at Montpellier, 19-23 August 2001 under the auspices of CIRAD-AMIS-PRIFAS, the famous acridological research team founded in 1968, and its most hospitable head, Dr. Michel Lecoq.

Located in southern France and only 15 km. from the Mediterranean shore, this lovely old city is one of the oldest University towns in Europe. Negotiations have been conducted by Nick Jago because of his fluent French and friendship with Dr. Lecoq; he has visited Montpellier to check on the facilities, which are magnificent, and is arranging the post Meeting field trip. Registration is set for 19 August, followed by three full days of meetings with simultaneous translation of French/English and English/French. Arrangements are underway, but not yet completed for the banquet, probably on 22 August at the Château de Flaugergues, a day trip to the walled city of Carcassonne with a traditional lunch probably on 23 August, and a five day trip to the Massif Central.

We are hoping to have a somewhat different format, with symposia on exciting topics, each followed by a roundtable discussion by persons prepared for battle, and more posters in lieu of talks.

Announcing a New Grasshopper Organization

*Association for Applied Acridology
International: Solutions without Limits
by Scientists without
Borders*

Jeffrey A. Lockwood, Director

This organization came into existence in December of 1998, and we have spent the first half of 1999 building our base of expertise, support, and collaboration. To understand the rationale and nature of the Association, allow me to offer the following perspective.

As we all very well know, for thousands of years, grasshoppers and locusts have been among the most destructive pests in the world, threatening human prosperity and survival. Although many advances have been made in our capacity to manage these competitors for our food, agriculture continues to lose phenomenal quantities of production to these insects. Ironically, as new techniques, perspectives, and products have become increasingly sophisticated in the last 20 years, the capacity to refine and transfer the methods and knowledge has declined. Although many programs have dramatically diminished their capacities, the need for expertise, training, and research in grasshopper and locust management shows no evidence of diminishing.

And so, we are pleased to announce the development of the Association for Applied Acridology International administered at the University of Wyoming. The design of the Association avoids factors that have undermined previous efforts to provide expert advice, training, and research. The Association comprises two fundamental elements. First, there is a

group of 25 Associates representing the finest applied acridologists and supporting scientists from around the world. Second, 10 of the world's best organizations dedicated to the study and management of acridids form a group of Institutional Partners. The Association is funded through a coalition of industries and agencies. The diversification of expertise and funding allows the Association's scientists to apply their knowledge to a global clientele.

While the capacity for any single nation to sustain a critical mass of expertise in acridology has diminished, the quality and quantity of internationally dispersed experience and knowledge is extremely high. As such, the key is to bring together the world's best minds in the field of applied acridology to collaborate in an intellectually rigorous, professionally unbiased context to sustain natural and agricultural systems during grasshopper and locust outbreaks. This is the task of the Association for Applied Acridology International.

The goal of the Association for Applied Acridology International is to form a coordinated, operational pool of world experts, thereby creating opportunities for collaboration and enhancing access to this expertise by governments, agencies, and companies. This goal is explicitly intended to integrate world-wide expertise into a cohesive, stimulating, and synergistic organization that will allow existing programs to expand and build their services. The Association has three purposes that are designed to provide clear focus and to recognize current and future opportunities: 1) consulting services for grasshopper and locust managers throughout the world, 2) training programs for governments, agencies, agriculturalists, and companies, and 3) applied research, with year-round testing of new products and strategies in both hemispheres.

***Metaleptea* Editor Retires**

After many years of devoted service, David A. Nickle is retiring as Editor of this newsletter. Because he has been given the responsibility for the Thysanoptera in addition to the Orthoptera at the Systematic Entomology Laboratory, USDA, he can no longer devote the appropriate amount of time to ferreting out news items and announcements, or to leaning on members to submit items for *Metaleptea*. We owe him a debt of gratitude for publishing *Metaleptea* through sickness and through health, and for arranging publication of the agenda and the abstracts of papers presented at our Triennial Meetings. Dave took over *Metaleptea* in 1981 at the Maracay, Venezuela, Meeting when this newsletter was a small mimeographed publication. He and Dan Otte developed it into its present format in 1989.

Thanks for your many years of dedication to the Society.

Treasurer Retires

Twelve years ago Roger G. Bland was appointed the first Treasurer of the Society, when that office was officially separated from that of the Executive Secretary. This is one of the offices which is vital to any Society but which is little seen by the members, except when there has been a mixup, and for which its occupant receives very little credit. It requires much time and attention to detail which Roger Bland accomplished with singlemindedness of purpose for these many years. The job is made complex by many members paying dues and subscriptions in advance, in arrears, and often in amounts that are hard to apportion. Our VISA account adds to the complexity in the method used for depositing payments made to the Society in this way. And now that we have several investment accounts,

keeping a track of all financial dealings has become a time consuming task.

It was Roger who put the us on the road to financial security by suggesting that the Society move its funds from a savings account to a growth mutual fund and a corporate bond fund. This was done with prescience not long after the beginning of the great bull market in U. S. stocks. As a result of this move and of contributions to the Society, our net worth has increased over threefold in the last four and a half years, providing us with increased income and a financial cushion for new initiatives.

Roger, thank you for your steadfast and efficient service.

BOOK REVIEW

Grasshopper Country: the Abundant Orthopteroid Insects of Australia. DAVID C. F. RENTZ, University of New South Wales Press, Sydney, XI + 284 pp.,

What is the true test of a good book? Surely it is not the artistry of the cover or the strength of its spine. The only book I ever threw away before finishing, a horrible but artfully produced novel the title of which I choose not to remember, regretfully did not fall into pieces as it hit the trash can. No, the test is a sum of several less tangible components that depend on the type of the book. In the case of publications that combine scientific facts and practical reference information it is how attractively the facts are presented, how true and current they are, how the reference information is organized, and how exhaustive it is. Recently, while visiting Australia, I had a chance to put to the test such a book, David Rentz's "Grasshopper country: the abundant orthopteroid insects of Australia".

The book is divided into 3 parts, each with numerous chapters, a number of appendices, and a glossary of terms. Although its title suggests a focus on Australian fauna, the fact is that large portions of the book, especially its entire introductory part and a lot of the information on higher

taxa, are as applicable in North America or Europe as they are down under. I found especially useful the sections devoted to the rearing and feeding of orthopteroid insects, as well as those regarding various collecting and preservation techniques.

The first chapter of "Grasshopper country" introduces readers to orthopteroid insects, giving a broad overview of topics including their general classification, common names, geographic distribution and conservation problems as well as a detailed account of mating strategies in various groups of orthopteroids. It also provides a key for identification of most orders of these insects. The next three chapters deal with such topics as collecting techniques in various habitats, dealing with freshly collected material in the field (a very important topic for anyone who has ever collected in warmer climates), rearing nymphs, and preservation of various morphological structures, to mention just a few. This part of the book is profusely illustrated, presenting readers with photographs of different types of collecting setups, a proper way of making a killing jar, or the right way to spread the wings in preserved specimens. The only topic curiously missing from these chapters is a section devoted to the recording and sound analysis of singing Orthoptera, an increasingly important method of species identification among both professional entomologists and amateur naturalists.

The second and third parts of the book provide extensive yet engagingly written descriptions of all groups of orthopteroid insects known from Australia. This includes Orthoptera sensu stricto (katydids, crickets and grasshoppers) as well as cockroaches, mantids, and phasmids. A typical description of a taxon includes a detailed overview of the morphology of its members, information on their biology and distribution, economic importance, singing strategies (if applicable), and culture and preservation methods. Keys are provided for all taxa above the level of the genus, although descriptions of some groups additionally include generic keys. These parts of the book are superbly illustrated with hundreds of black and white photographs (most of them original scanning microphotographs of taxonomically important morphological features of the discussed taxa), a large number of line drawings, and, last but not least, over 400 stunning color photographs of Australian orthopteroid insects. The icing on the cake is the fact that many of the species and genera illustrated there have not yet been described, helping to make one of the points of the book – let's study these things before they are gone due to human impact on the environment.

The book closes with a comprehensive list of

references as well as a small section on Orthoptera photography. Additionally, a list and brief information on organizations interested in orthopteroid insects, recipes and formulas for mixtures used to feed and preserve orthopteroids, and a glossary of taxonomic terms used by orthopterists, are presented here.

But wait, there is more! "Grasshopper country" comes with a CD containing recordings of nearly 100 species of Australian crickets, katydids, and even a cockroach. Unfortunately, the CD was published separately by CSIRO, and some bookstores do not bundle it with the book, forcing readers to purchase it separately. Therefore, when buying the book, make sure that it includes the CD.

While many genera and most species of Australian Orthoptera are endemic to that continent, higher taxonomic categories, such as subfamilies and families, display nearly cosmopolitan (or at least pantropical) distribution, thus making the taxonomic information included in "Grasshopper country" valuable and interesting to not only Aussie entomologists, but entomologists the world over. The reference sections will be found useful by anybody interested in rearing or preserving Orthoptera, and descriptions of orthopteran behavior and economic importance will most likely engage anybody with even the most casual interest in insects.

So, how does Dave Rentz's book stand to the test of a good book? In one word, outstandingly. While collecting in Australia, I found myself spending every evening leafing through its pages, comparing my loot with the descriptions in the book and reading fascinating facts about their biology. I have used the recipes for feeding Orthoptera with great success and the techniques for preserving dead insects described in the book helped many of my specimens to retain their brilliant colors.

In the field of entomology, rarely is a book published that appeals to both professional entomologists and amateurs. We orthopterists should feel grateful that one of the leading experts in the field decided to share his unparalleled knowledge on the subject, and did it in a truly excellent way. "Grasshopper country" is a feast for the eyes and the brain.

Piotr Naskrecki

Grasshopper Country can be obtained for Aus\$79.95 within Australia and New Zealand, and for US\$79.95 elsewhere, from CSIRO Publishing, PO Box 1139, Collingwood, 3066 Victoria, Australia. Visa, Bankcard, Mastercard, American Express, and Diners credit cards are accepted as well as Fax orders (+61 3 9662 7555) and Email: sales@publish.csiro.au.

Grasshopper Meeting Notice

ACRIDOGENIC AND ANTHROPOGENIC HAZARDS TO THE GRASSLAND BIOME: MANAGING GRASSHOPPER OUTBREAKS WITHOUT RISKING ENVIRONMENTAL DISASTER

September 13-18, in Estes Park, Colorado

Funded by NATO

Among its more than 20 participants, are: Dan Otte, Gary Belovsky, Jeff Lockwood, Tony Joern, Jerry Onsager, John Larsen, Scott Schell (all USA), Owen Olfert (Canada), Mike Sergeev, Igor Sokolov, Mikhail Tchernyakhovsky, Liudmila Pshenitsyna, Alexandre Latchininsky (all Russia), Tibor Kisbenedek (Hungary), Michel Lecoq and Annie Monard (both France), Nick Jago (UK), Mike Samways (S. Africa), Vladimir Kambulin (Kazakhstan), Furkat Gapparov (Uzbekistan), Stephan Krall (Germany).

For more info, please contact Jeff Lockwood.

Back Issues of Journal of Orthoptera Research

Two issues of the Journal of Orthoptera Research that were exhausted have now been reprinted. The Society is now able to offer all back issues of the journal for \$15 each (plus postage), or at the reduced rate of \$50 for a complete set of back issues. A set weighs a ton so please include \$15 for shipping charges.

Part of the reason for reprinting these numbers is to be able to offer libraries complete sets of JOR in exchange for subscriptions. It is very important that JOR be represented in all major libraries as they represent a major window of the Society to the scientific world. We of course also need the income. Members associated with Universities, Colleges, Museums and Institutes ARE IMplored to SEEK

INSTITUTIONAL SUBSCRIPTIONS. A talking point in discussions with librarians is that students seeking thesis or term projects can see in our journal the enormous variety of research that is possible with Orthoptera.

*Please send your order to the Executive Director,
Dr. Jeffrey A. Lockwood,
Department of Renewable Resources (Entomology),
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3354*

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TECHNIQUES AND EQUIPMENT

I propose a new column devoted to a description of techniques and equipment used by orthopterists for any of their many activities. I submit herewith a description of a mounting technique used for many years at the Museum of Zoology of the University of Michigan, but probably originated at the Academy of Natural Sciences of Philadelphia.

The angle board mounting technique

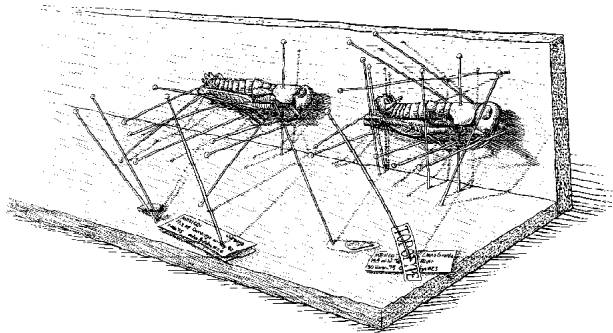
Because of their long legs, and often long antennae, orthopterans usually take up an inordinate amount of room if not mounted properly, or take a great deal of time to mount. At the UMMZ we have addressed this problem with a very simple but method. Two pieces of balsa wood, cut to

approximately 2 inch width and 12 inch length and glued together lengthwise. The balsa wood is (or was) standard material in model shops and used especially for building model airplanes. They come in 12 inch lengths but variable widths. Balsa wood varies considerably in density, so we have always brought an insect pin to the model shop to test various pieces- it should be soft enough so that a pin can be inserted for some distance, but hard enough to hold the pin rigid.

With the relaxed insect in one's fingers, the legs antennae and abdomen can be manipulated with forceps to stretch or break recalcitrant muscles so that the appendages can be more or less arranged in one's fingers.

The orthopteran is then pinned into the bottom balsa piece, close enough to the upright piece so that it presses against the legs on that side. It must be stuck firmly into the bottom piece so it does not move. The appendages and abdomen can then be manipulated with a pin into the proper position, and held there with other pins pressed into the side of the bottom balsa piece. With a little practice a grasshopper can be mounted in about two minutes; katydids and crickets take slightly longer because of their generally recalcitrant antennae.

Once dry (in a few hours or a day, depending on humidity) the pins can be removed very quickly by holding the board so that pins can be pulled out of the balsa only a few millimeters in the direction that they were inserted (thus preventing breakage)



and can be simply let go to fall into a unit tray, a great saving in time and energy.

The very great advantage of this method is that it allows infinite manipulation of the appendages and abdomen, and precise placement of these parts. Thus with minimal effort all parts can be arranged in exactly the same position so that whole trays or narrow boards can be examined under the microscope by moving quickly from specimen to specimen.

You will note that we prefer to have all the structures tucked in and up, and the antennae brought down and back. While this may obscure

some structures (such as the ventral portion of the hind femur), it protects all the appendages and minimizes breakage. This compactness makes it much easier and safer to manipulate the specimen especially under the microscope than if the legs and antennae are stretched out.

A further advantage of the angle board method is consistency- it is much easier to see if all the parts are in the same position when a whole row of insects is being mounted.

Finally, if an eye screw is inserted into the end of the boards, a whole series of them can be suspended on a wire stretched between two uprights of some sort, to prevent the attack of ants or rodents, and can be hung over a heater or stove to speed drying.

It is unlikely that this was a technique uniquely developed by Cantrall and Hubbell. I remember seeing the preparator at the Academy of Natural Sciences of Philadelphia mounting orthopterans in this manner around the inside of cardboard Schmidt box in the 1940's or 50's under J. A. G. Rehn's supervision. It is possible that Cantrall or Hubbell observed this method and sought to improve upon it.

Theodore J. Cohn

THE ORTHOPTERISTS' SOCIETY 1998 FINANCIAL STATEMENT (U.S. Dollars)

RECEIPTS¹

Dues.....	3,757.00
Publication receipts ²	3,715.02
Non-designated contributions	229.50
Surplus from 1997 Cairns meeting.....	11,062.10
Sponsored members contributions	270.00
Research award contributions	508.00
Research award matching contributions ³	6,285.23
Founder's endowment contributions	5,040.80
Interest on checking account.....	36.83
Miscellaneous (Visa service charge, field guides, etc.).....	309.00
TOTAL RECEIPTS.....	31,213.48

DISBURSEMENTS¹

Stationery & clerical supplies.....	64.00
Stamps, mailing & telephone	0.00
Clerical Assistance.....	35.17
Executive director compensation	1,584.00
JOR managing editor compensation.....	1,810.00
Treasurer compensation.....	500.00
Metaleptea editor compensation.....	500.00
Publication and printing ⁴	0.00
Travel reimbursement	0.00
Miscellaneous (executive director's office computer upgrade, tax consultant).....	1,075.00
Research awards ⁴	2,600.00
TOTAL DISBURSEMENTS⁴.....	8,168.17

Receipts less disbursements.....23,045.31

INVESTMENT ACCOUNTS

Bond Mutual Fund

Balance Jan. 1	\$6,950.79
Dividends and capital gain.....	710.22
Deposits	12,944.80
Withdrawals ⁵	7,218.64
Balance less withdrawals	13,437.17
Balance Dec. 31 with change in net asset value	13,495.24

Growth Mutual Fund

Balance Jan. 1	\$26,283.16
Dividends & capital gains.....	0.67
Deposits	2,500.00
Withdrawals.....	2,994.00
Balance less withdrawals	25,789.83
Balance Dec. 31 with change in net asset value	\$33,303.14

Growth Mutual Fund (for Research Awards)

Balance Jan. 1	\$16,354.69
Dividends and capital gains.....	2,572.73
Deposits	508.00
Withdrawals.....	0.00
Balance less withdrawals	19,435.42
Balance Dec. 31 with change in net asset value	17,410.42

Operating funds account (new)

Balance Jan. 1	\$0.00
Bond purchase.....	5,000.00
Bond dividend.....	188.63
Balance Dec. 31.....	\$5,188.63

Founders Endowment (new)

Balance Jan. 1	\$910.00
Deposits (\$7,500 from Cairns surplus + contributions)	14,535.00
Bond purchase.....	10,000.00
Index 500 mutual fund purchase.....	5,746.00
Dividends and capital gains.....	7.82
Bond value Dec. 31	10,087.50
Index 500 mutual fund value Dec. 31	6,256.67
Money market fund value Dec. 31	358.27
Balance Dec. 31.....	16,702.44

Society financial status Jan. 1, 1998.....\$51,611.15

Society financial status Dec. 31, 1998

Checking.....	\$2,040.19
Investments.....	86,099.87
Grand total ⁴	\$88,140.06

Footnotes

- 1—Does not reflect in-kind receipts and disbursements such as costs subsidized by officer's institutions for telephone charges, computer use, photocopying, and paper and stamps for mailing of correspondence, dues statements and publications.
- 2—Does not include page charges for JOR No. 6 (1997) which were billed in late 1998.
- 3—Includes matching contribution made in 1998 for 1997 awards.
- 4—Does NOT include approximately \$17,000 for items usually paid during the year (JOR, Metaleptea, Research Awards) which will now be paid in 1999.
- 5—Withdrawals for part of bond purchase, and to follow the new policy of withdrawing half of every 10% increase in fund value for deposit in operating funds account or bond mutual fund.

It's here ...

The Orthoptera Literature Database

On June 6, Piotr Naskrecki launched the *Orthoptera Literature Database* on the Orthopterists Society Webpage. The primary purpose of this new and exciting service is to register all recent papers on Orthoptera-related topics published by the members of the Society and others. Of course, your older works are entirely welcome on the site, as we are anxious to build this into the most complete database possible. The site has two basic elements:

FIND A REFERENCE:

By using a simple and intuitive system to set your search parameters, you can quickly and efficiently search by reference type, author, year, journal, keyword, and taxon.

ADD A REFERENCE:

The database currently contains only about 600 references, both recent and old. Building the database into a truly comprehensive resource is **your** responsibility! There is an extremely straightforward form to add your own references to the growing body of literature. If you have a whole set of references (e.g., from your own database, files, or vita), there is a simple and efficient method for getting the set listed as a block.

The Orthoptera Literature Database can be accessed directly at:

<http://viceroy.eeb.uconn.edu/library/library.qry?function=form>

Or you can find the database by accessing our HomePage at:

http://viceroy.eeb.uconn.edu/OS_Homepage

and scrolling to the "What's New" entry for June 6th (while you are at our site, you'll definitely want to take at least a brief, vicarious tour of the Orthoptera of Australia with Piotr Naskrecki and David Rentz by selecting the "What's New" posting for June 1, where Piotr has posted a set of 25 magnificent photos of Australian orthopterans and another 25 photos of the associated landscapes, flora, and non-orthopteran fauna!)

We are hoping that the Orthoptera Literature Database will grow rapidly into a vital, research tool for all orthopterists, but the key is in your hands - **ADD YOUR REFERENCES NOW !!!** As the use of the database increases, you'll want to be sure that your colleagues around the world are finding your citations, and you'll be pleased if your searches reveal the richest, most widest-ranging international literature available.

New Members

The Orthopterists' Society warmly welcomes the following new members, and we hope that they will find their membership interesting and rewarding. Additional information (including E-mail addresses, etc.) will be found in the membership section of the Society's Webpage.

Bakri, Abdeljelil—Unit of Biological Control of Insects, Faculty of Science Semalia, Univ. Cadi Ayyad, Marrakech, MOROCCO

Bess, James A.—President, Otis Enterprises, 13501 S. 750 W., Wanatah, IN 46390

Clark, Leonard W.—Director, Fort Worth Nature Center and Refuge, 9061 Fossil Ridge Rd., Fort Worth, TX 76135

Donohue, Mary E.—University of Florida, 1600 SW 23rd Dr., Gainesville, FL 32604

Francois, Alexandre—University of Lille, No 5 Rue de la Rochette, 62930 Wimereux FRANCE

Graham, Tim B.—USGS-Biological Resources, 82 Dogwood Ave., Moab, UT 84532

Grieneisen, Michael L.—President, Scientific Reference Resources, P. O. Box 73674, Davis, CA 95616

Gutiérrez, Esteban—Museo Nacional de Historia Natural, Obispo #61 e/ Oficios y Baralillo, La Habana Vieja, C. Habana, 10100 CUBA

Hemp, Claudia—University of Bayreuth, Animal Ecology II, NWI, D-95440 Bayreuth, GERMANY

Higgins, Laura A.—University of Texas
Department of Zoology, Austin, TX 78712

Holusa, Jaroslav—Hascická 3040, CZ-738 01
Frydek-Místek, CZECH REPUBLIC

Lee, Vincent—California Academy of Sciences
Golden Gate Park, San Francisco, CA 94118-4599

Lutz, Martha V.—University of Iowa, SEC, Van
Allen Hall, Iowa City, Iowa 52242

Muller, Kristin—State University of New York at
New Paltz, 86 Ricci Rd., Accord, NY 12404

Prothero, Brent—P.O. Box 2145
Sierra Vista, AZ 85636

Reinhardt, Klaus—Institute of Ecology
Dornburger Str. 159, 07743 JENA
GERMANY

Samietz, Joerg—Institute of Ecology
Dornburger Str. 159, 07743 JENA
GERMANY

Unal, Mustafa—Abant izzet Baysal Universitesi
Fen-Edebiyat Fakultesi Biyoloji bolumu
14280 Golkoy/Bolu, TURKEY

Vedenina, Varvara—Russian Academy of Sciences,
Bol'shoi Karetnyi per 19, Moscow 101441, RUSSIA

Walters, Ryan S.—CEO, WRI, 4425 Hastings,
Boulder, CO 80303

An Illustrated Catalog of Orthoptera

A CD ROM for Macintosh and Windows

It is our pleasure to notify you that a CD ROM "An Illustrated Catalog of Orthoptera. Vol. I. Tettigonioida (Katydid or bush-crickets)" is now available. This CD contains a complete taxonomic and synonymic database of all species of Tettigonioida of the world described until 1998. In addition to such data as full synonymy, bibliographic references, type locality and type depositories, this unique CD includes nearly 7,000 high quality color images of specimens, mostly of actual types, photographed in major museum collections in Europe, North America and Australia. The taxonomic database has been designed in such a way that even users with little or no previous computer experience will find it easy to use, without sacrificing any of the power and flexibility of its fully relational design.

WHO IS IT FOR?

Although designed primarily for entomologists interested in orthopteroid insects, this CD ROM is also an indispensable tool for insect collection managers and curators. It provides a quick way to find currently accepted names of katydids or bush-crickets as well as synonyms and literature references for these insects in your collection. In addition, thousands of images in the database will help you identify your specimens. A label-making capabilities will also allow you to effortlessly print pin or tray labels for species and genera of Tettigonioida. But you don't need to be a professional entomologist or a collection curator to find the "Catalog" useful. Casual naturalists all over the world can use it to find out what species of bush-crickets have been described from their country or region, find information on references describing their local species in detail or simply browse the images and learn about the amazing variety of life-forms of katydids.

ORDERING THE CD ROM

The *Illustrated Catalog of Orthoptera* has been published by the Orthopterists' Society at the Academy of Natural Sciences of Philadelphia (ISBN 1-929014-00-7). To order, please send a check (drawn on an American bank) or money order to:

Academy of Natural Sciences of Philadelphia,
Department of Entomology, attn.: Daniel Otte,
1900 Benjamin Franklin Parkway, Philadel-
phia, PA 19103-1195, USA—email:
otte@acnatsci.org

To pay with VISA, Mastercard, or American Express, please fill out the following and mail to the above address.

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Name (please print). _____

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Faxes will be accepted but please mail a copy of this form so that there will be an original signature on file.

PRICING

Regular price: USD \$95

Members of the Orthopterists' Society USD \$75

Students USD \$55 (students must provide a photocopy of a valid student identification document)

Please visit our web site for more information:
<http://viceroy.eeb.uconn.edu/cd>

Sincerely,

Piotr Naskrecki and Daniel Otte