

# LEPIDOPTERA NEWS

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## VLADIMIR NABOKOV'S TROPICAL LEPIDOPTERY: A WINDOW ON THE PAST, A WARNING ABOUT THE FUTURE

by Kurt Johnson

"Nightmares cannot be measured with statistics, but they can be precisely described" — V. Nabokov, *The Lepidopterists' News* (1950: 4(6-7): 75).



Fig. 1. Vladimir Nabokov in Switzerland, 1971, fronting an early map of South America (from the Age of Exploration, 16th Century). Like many pioneer taxonomists, Nabokov based his studies of Latin American butterflies (in his case, "blues") on the surviving specimens of early expeditions and explorer/collectors of the 18th and 19th centuries. In retrospect, the baseline taxonomies for most Latin American butterflies derive from similar efforts by early "northern" scientists working from old museum material.

As events of the 1999 Nabokov Centenary year have unfolded, scientists and aficionados of the arts as well have both been somewhat surprised by the amount of "hoopla" heaped upon the writer/scientist from both sides of the celebratory arena — that is, both art and science. The coverage in the media has been rather astounding. Brian Boyd, in a recent article in *Natural History* magazine (July/August 1999) revealed much of the reason for this, that one of the functions of the Centenary year has been to put the implications of Nabokov's scientific work in focus for the first time. The greatest emphasis in this effort has been on Nabokov's pioneering work on Lepidoptera of the Neotropical realm, specifically Latin American "blues", to which he contributed the seminal generic names for what is now an extremely substantial fauna, both as to species numbers and their evolutionary and biogeographic implications.

In proper focus — as a substantial temperate Latin America fauna whose conservation problems are now only beginning to be appreciated (major environmental organizations to date have but two exploratory projects bearing on preservation or sustainable use in South America's temperate habitats) — there is obviously something "special" and "new" about "his blues," many only named in the last five years. However, the general hoopla of the Centenary also raises the question of whether there is anything special about Nabokov's lepidoptery in and of itself.

A number of answers to this question have been proposed in the new books of the Nabokov Centenary: *Nabokov's Blues*, *Nabokov's Butterflies* and *Vera's Butterflies*. The most general of these suggests that Nabokov's entomological career is an icon of two great transitions that have made modern biology what it is today. The first is the transition from 19th to 20th century science, what Stephen Jay Gould (in *Vera's Butterflies*) recalls as the era of the "upper class" aristocrat-naturalist (a tag that brought Nabokov some derision among less friendly colleagues at Harvard) and its speedy, nearly dizzying replacement by the complexification and specialization of modern science. The second transition is the rapid (and sometimes cataclysmic) transformation the world's tropical biotas have undergone during this same time period—what results in today's "biodiversity crisis."

(continued on page 4)

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**CONTENTS** for the journals are issued every two years.

### EXPEDITIONS:

ARGENTINA (Tucuman and Iguazu Falls)  
Please write for details.

Aug/Sep 2000

## TO OUR READERS

We are all getting ready for the big step of the next millenium: a new use for the number "2" in our dates, and ATL enters its 11th year. Members can note that our journals have gotten behind schedule but are in press (or will be shortly).

A few members are withholding their dues for 2000 until they see all the journals for 1999: this may be understandable but it hardly helps the society. These members seem to forget that this is not a commercial magazine with tight schedules but rather a scientific society with 100% volunteer labor for all functions. So, let us have some cooperation rather than antagonism for your own society. One thing we can all do more of in 2000 is cooperate, especially with fellow lepidopterists.

On page 8 you can note a long list of members for whom we have lost current addresses. There is a much longer list — over 400 — of members who are in arrears in their dues, and not just for 1999. Some may have dropped their interest in Lepidoptera but we urge fellow members to encourage these past members to renew their interest in ATL. New members are always welcome, too!

So, with the New Year fast approaching, an ATL goal will be to maintain our journal schedule! The *News* is also late, but issue 4, with the annual literature review, is shortly to follow. Finally, with the New Year, let us know your news and new projects; send your letters, notes or journal articles. And, remember the ATL Photo Contest, photo archives, and book series. Your support and interest make it happen! Thanks to all members who have been making donations along with their dues payments.

P.S. In this *News* issue is another note about the BMNH copyright matter, this time by H. Barlow. It should again be noted that, notwithstanding the premise of the note in support of the BMNH actions, this "copyright" idea is illegal — one cannot copyright biological entities, species, or specimens from nature and not made or invented by the hand of man. Every scientist and student should be allowed unencumbered access to scientific specimens and be allowed to photograph them. The BMNH action does encumber their specimens, no matter what they say, simply by their illegal copyright form one is required to sign. I hope the ICZN will take action and declare this museum copyright illegal in international law. One possible course of action also is for the ICZN to itself be the depository of all type specimens, thus taking these name-bearing specimens out of the hands of the British Museum.

J. B. Heppner  
Executive Director

## NOTES

1. **2000 Annual Meeting:** April 14-16 in Gainesville.
2. **2000 Annual Photo Contest:** deadline is March 15, 2000.
3. **Cover Photos:** members can note that color photos for journal covers are always sought. ATL does not pay royalties, but you do have the gratification of having your photo selected for one of the front or back covers. Photos should be exceptionally sharp and in our page proportion.
4. **ATL Debentures:** a number of ATL members have already taken advantage of our interest rates and invested in ATL debentures. Please let us know what you can do to help! Returns of principal (at end of period) and interest (paid annually) are guaranteed.
5. **ATL Home Page:** see it at <http://www.troplep.org>. Coming in 2000: color photo files of worldwide butterflies and moths!
6. **1999 Journals:** the journals are late this year but all will be mailed before the end of the year. There is at least one supplement coming for *Holarctic Lepidoptera* and one for *Tropical Lepidoptera*.
7. **Supplement Sale:** the backlog of orders has finally been mailed. Thus, anyone who ordered a supplement set at the special sale price and has not received it, please let us know.
8. **ATL Photo Archives:** Do not forget to consider ATL as the ultimate depository for your valued color slides of moths and butterflies and larvae. Do not let your investment of time and effort go to relatives who may not appreciate photographs of Lepidoptera; donate them to the ATL Photo Archives. You are also welcome to send listings of your holdings to add to the ATL Photofile database: let others know what species you have recorded on film. You may have unique life history photos never seen before.

# LETTERS

Once again I find some interesting items in the June *Lepidoptera News*. As always, the printing of H. B. Weiss' history is a major contribution and interesting reading. I was especially pleased to learn about Benedict Jaeger in Chapter VI, a man about whom there seems to be next to nothing in the botanical literature. In the last paragraph, Weiss mentioned Jaeger's request for one of botanist John Torrey's publications. Some 40 years ago I bought from a dealer in New England a copy of Vol. 1, part 1 of Torrey and Gray's *Flora of North America*. My copy of this part, published in 1838, has the original paper cover, on which is inscribed in Torrey's hand: "Professor B. Jaeger from the Authors." Ever since, I have wondered who B. Jaeger was; now I know, thanks to Weiss. I evidently have the very copy mentioned in the correspondence he found in New York.

On p. 3, you suggest that Holland's *Moth Book* was often reprinted "until about 1955." I wonder if there is any evidence for that date? I have a printing dated 1941 and have been under the impression that it was the last. My parents gave it to me for Christmas in 1941. Forgetting that, they tried to give it to me for my birthday in February of 1942 but were told that it was no longer available. They later gave me a 1942 printing of the 1931 revised *Butterfly Book*; the price of \$10.00 is still in it (it mentions that over 65,000 of the original edition had been sold).

The little 1915 *Butterfly Guide*, which has such charming advice and which started your item, I have in a 1935 printing, which I used considerably before being given the larger work. It seems identical to the original, including a dedication to the Boy Scouts, although there is no statement that it was designed especially for them, and there is no mention whatsoever of the Scouts in the pre-1915 pocket guides in same series, on flowers, trees, and birds.

ED VOSS  
Ann Arbor, Michigan

[Editor's Note: Glad to note later printings of Holland's *Butterfly Guide*. His *Moth Book* I believe was reprinted in the 1950s, but I do not have a copy at hand (there also was the Dover Press paperback reprint). The notes about the Jaeger book are most interesting: Jaeger was much maligned by critics of his little insect book, although it must have been of interest to the lay-man, and his illustrations were not as bad as the critics made out, being especially noteworthy for those times in any case by being in color (which in those years had to be hand-colored over printed outlines and details). Although revised in the 1859 and 1864 editions, the 1854 edition is much superior, being also more interesting for us today in having the biographical account of Hans Sloan (the founder of the British Museum) added to it at the beginning of the book; later editions dropped this introduction and changed the format of the book. His book was about the only guide to common insects in America written for the general public at that time.]

## BMNH COPYRIGHT DECLARATION

[NOTE: Henry Barlow kindly made available to ATL the following note first published in the *Friends of the Natural History Museum Newsletter*, June 1999 issue, for which he serves as editor. We reprint his article about the Natural History Museum, London, copyright controversy with permission and in the interest of our members. He begins with a reprinting of the NHM copyright declaration: this is omitted here as it has already been printed recently and can be read in our *Lepid. News*, March 1999 issue.]

The announcement has produced a strong reaction, chiefly from entomological researchers round the world who use material from The Natural History Museum. There is however evidence of more heat than light.

The background to this development is of course the historical quirk by which as a result of Britain's colonial expansion in the last century the NHM became custodian of vast collections of natural history specimens passed to the Museum by professional collectors and colonial administrators. With those collections came the responsibility, which the donors assumed to have been accepted by the Museum to make these collections available internationally for scientific study. This of course remains the case, but times have now changed, and the NHM is a nationally funded institution, shouldering formidable international responsibilities for the maintenance of a vast collection of 68 million specimens. Of these only a small fraction are directly relevant to Britain's reduced political role in world affairs. The remainder are

effectively curated, until recently at no expense to the world scientific community, through the inexorably diminishing generosity of Her Majesty's Government. Yet they form one of the two or three major world resources for the study of biodiversity, not just today, but the biodiversity such as has been preserved of the world in geologically distant eras. Closer to the present, the data on the abundant nineteenth century material offer a series of snapshots, valuable both from the historical and biodiversity points of view, of the distribution of organisms in the not so distant past, before *Homo sapiens* unleashed on the natural environment the forces of destruction with which he has armed himself in the last century.

The problem has been compounded over the last five years by the electronic revolution. Scanning and photographic technology has reached the stage where it is possible to create and reproduce in digital form thousands of copies not simply colour images of specimens, but also images of existing photographs, in every case with minimal deterioration in the reproduction. Add to the 68 million physical specimens the vast number of paintings and drawings, mostly previously unpublished in the incomparable NHM Library, and you have some idea of the potential within the NHM.

A further issue is that raised by the Convention on Biological Diversity (CBD). It is more than possible that museums may be held responsible to countries of origin for how their specimens are used. This is already the case for plant specimens that might be used for bioprospecting. Many herbaria already require users to sign a loan statement detailing what cannot be done to their specimens. It is thus evident that owning specimens, whether type or otherwise, will probably carry an increasing responsibility not only to provide access, but also to protect the rights of the country of origin.

It is against this background that the recent announcement by NHM referred to above must be considered. Certain researchers worldwide who rely on the NHM collections have expressed grave concern. They fear that the requirement to pay for each image from the NHM, whether of a complete specimen, or even a small detail captured on a microscope photograph of the internal structure of a specimen will be fully implemented. This, they argue would effectively put an end to taxonomic work using the NHM's collections, and would dissuade most taxonomists from lodging further type material with the Museum.

Dick Vane-Wright, the Keeper of Entomology at NHM has found himself at the sharp end of many of these late comments. He has responded by explaining that the regulation has been introduced to establish a record of the use of images, to be in a position to control their future use, and place the Museum in a position to act if it has evidence that such use has been exploited for commercial gain.

"It is not our aim to prevent academics from using any resources legitimately. But, not to try to protect against abuse would be negligent on our part,"

he writes. It is a view echoed by Christopher Mills, Head of Collections and Reader Services, Department of Library and Information Services. He also points out that this step has been taken merely to safeguard the NHM's position, and in fact reflects the policy of the NHM Library which has been implemented for some years.

It is also necessary to add that the NHM has been at the leading edge amongst world museums in declaring that they will repatriate specimen information to countries of origin, subject to the costs of this exercise being covered. They have already made major efforts to do this in a number of collaborative projects.

In this connection I consulted Dick Vane-Wright about a possible plan to develop software which would facilitate the development of virtual museums, based on images derived from Museum material. I received a prompt and encouraging response that provided the developers of the software signed the form above there would be no trouble about using the images in this way. Not said, but mutually understood was that if having developed the necessary software we attempted to exploit it for maximal personal gain, using NHM derived images, we could expect to be asked to pay copyright fees.

[continued on p. 8]

## NABOKOV (continued from page 1)

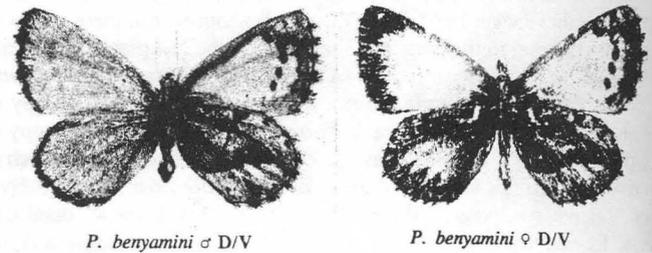
Nabokov's entomological career has all the marks of pioneer taxonomists who typified this transitional era: he had little or no formal training yet held, for a time, a paid position of some prestige (Harvard 1942-1948); he published research today considered the basic "alpha taxonomy" for his study groups; and, the frontier of his research was in the world's tropical regions — the home of biotas about which science fears it may well know "too little too late." A recent "Overview" of the demands placed on taxonomy by the biodiversity crisis, by Dr. A. Townsend Peterson in the ornithological journal *The Auk*, called particular attention to these characteristics in Nabokov's career. In "New Species and Species Limits in Birds," Peterson (of the Natural History Museum at the University of Kansas) outlined a four-step plan for taxonomy's confronting the biodiversity crisis. The piece is introduced by the statement: "theoretical issues aside, the real issues are how many species are there, where are they concentrated, which regions are highly unique, and what are the best strategies for conserving them?"

There is both general and specific (sometimes personal) resonance between Peterson's "Overview" and the career and research path of Vladimir Nabokov. The general resonance comes from the near perfect fit of Peterson's first three steps: (1) inventory and study of faunas from remote areas, (2) assembling research samples, (3) alpha systematics — and Nabokov's lepidoptery. Nabokov, like many other pioneer taxonomists of the transitional era, fulfilled the first three steps of Townsend's plan in his own personal work. When early taxonomists like Nabokov pioneered the nomenclature of entire groups for entire biogeographic realms, the fourth step outlined by Townsend, that of "synthesis" — knowing organisms in their environment and discovering their overall position in the larger ecologic and evolutionary picture — is all that remains for modern workers to accomplish. This last step is also the one that bears most on helping such organisms survive, in light of the biodiversity conundrum.

The specific, and rather personal, resonance between Peterson's "Overview" and Nabokov comes from the former's link to a position articulated by ornithologist Ernst Mayr. Mayr and Nabokov were contemporaries on the circuit that included working tenures, and attention to collections, at both Harvard and the American Museum of Natural History. It was Mayr, as readers of *Nabokov's Blues* and *Nabokov's Butterflies* will come to learn, with whom Nabokov often took public exception. Their jousts also interestingly reflect their era. Mayr was a trained and professionally acclaimed scientist, Nabokov a self-taught and confident intellect. The sometimes conflicting ideas of the two men met head-on occasionally, on the then rather level playing field of the Cambridge Entomological Club. Nabokov argued in 1944 (soon to be published) that many of Mayr's views on the emerging Neo-Darwinian synthesis, based on his knowledge of "warm-blooded" birds, were not particularly applicable to the "cold-blooded" realm of insects, especially for the work-a-day taxonomist. Particularly, Nabokov argued that species diversity was vastly underestimated in many groups of organisms, where refined studies of anatomy, like those he undertook himself, continued to discover many new species. In retrospect Nabokov, although sometimes appearing audacious at the time, won the day on several points.

As Peterson notes, Mayr attempted to write an epitaph on bird diversity in 1946 when he stated (Mayr, 1946) that 95% of the world's bird species were then known and that he expected less than 100 still remained to be named. According to Peterson, there

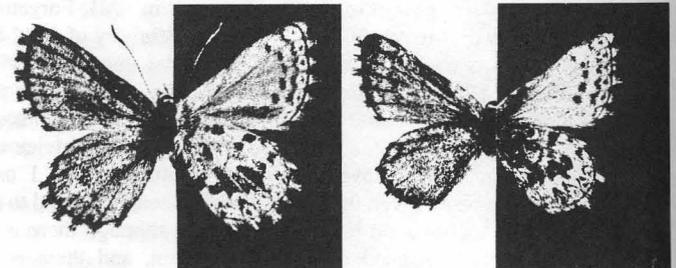
Fig. 2. Endangered South American Blues. Examples of butterflies from temperate South America (some named only in the last decade) whose life histories have only recently become known and which are also now extinct at their type localities and/or other major parts of their ranges.



*P. benyamini* ♂ D/V

*P. benyamini* ♀ D/V

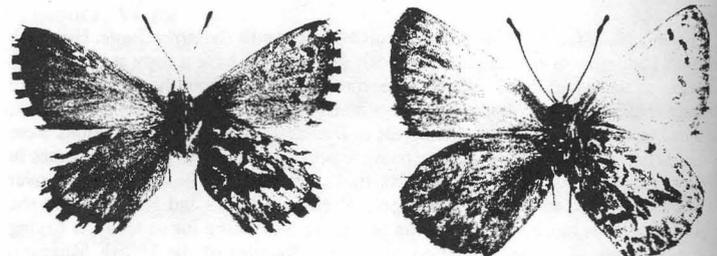
A. *Pseudolucia benyamini* Bálint and Johnson, 1994, extirpated from its coastal dune type locality (and adjacent dune regions) near Santiago, Chile, and surviving only on limited parcels of currently unused military land nearby.



*P. argentina* ♂ D/V

*P. argentina* ♀ D/V

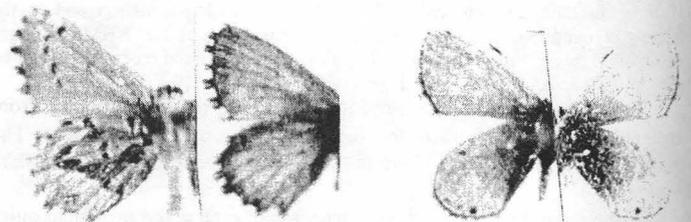
B. *Pseudolucia argentina* Balletto, 1993, unrecorded in the last decade from Aconcagua National Park, where it was once well-known from old specimens.



*P. neuqueniensis* ♂ D/V

*P. neuqueniensis* ♀ D/V

C. *Pseudolucia andina* (Bartlett-Calvert, 1894), *sensu lato*. Dubi Benyamini has documented additional species in this group from studies of life histories coupled with anatomical work by Johnson and Bálint. *P. neuqueniensis* Bálint and Johnson, 1995 (shown here) was one of the first of these named. Efforts have been thwarted, however, by disappearance of the study populations due to grazing off of their *Astragalus* foodplants by the ever expanding rabbit population.



D. *Pseudolucia scintilla* Balletto, 1993 (left, ♂ V/D), represented only by old museum specimens from 1954. Its shrubland habitats in Coquimbo have undergone extreme desiccation in the last decades and the species has not again been recorded, despite many efforts.

E. *Pseudolucia oligocyanea* (Ureta, 1956) (right, ♂ V/D), not locatable at its Antofagasta type locality or anywhere in Chile since its description.

resulted a "lapsing into the complacency of thinking that bird diversity [was] already well documented." Peterson says that Mayr actually erred by a large margin. To date, some 200 additional bird species have been named with, in Peterson's



F. *Pseudolucia sibylla* (Kirby, 1871), ♂ V/D (the old Paris Museum types of *L. endymion* Blanchard, which required the replacement name). Its *Adesmia* foodplant is a favorite of all the wandering livestock. Benyamini was lucky to rear it, especially since it is known from only about a dozen geographically scattered specimens from northern Chile. While it is arguable that in far-flung regions like Chile butterflies like these may well survive somewhere, it must be noted that the above species have been pursued through a rigorous geographic network set up by Dubi Benyamini and his co-workers (see *Nabokov's Blues*) and have "turned up" only to the extent noted.

words, "no sign of exhausting the supply." Lepidopterists will identify with the reason why. Nearly all the new species have resulted from the discovery of new taxonomic characters (e.g., bird life histories and songs) which distinguish otherwise similar-looking species, and the sorting out of long-entrenched problems of para- and polyphyly. Sound familiar?

It is Peterson's fourth methodological step for attacking the biodiversity crisis that frames Nabokov's life's work in the clearest perspective. Nabokov's tropical blue butterflies, typical of many other groups of organisms pioneered by early taxonomists (but thereafter sometimes long-neglected), are a group of organisms becoming known nearly simultaneously with their being documented as ecologically threatened. Nabokov's blues are also a group whose historical lack of study caused them to be officially "written off" in the biogeographical literature as small (even "depauperate") in diversity, a view which is entirely false. There has been extremely little emphasis on the fate of temperate insects in montane or low latitudes of South America. Conservation studies have concentrated almost solely on biota of the tropical habitats of that continent. Part of the reason, as noted by Arthur Shapiro in 1989 (Shapiro, 1989) is simply ignorance. Luis Peña and Alfredo Ugarte, in their *Butterflies of Chile* (which, in various stages, was "in press" for many years) appear to say that no butterflies of South America's southern cone are ecologically threatened or endangered. However, these authors' view of this question changed radically after Dubi Benyamini's meticulous field work and rearing of Lycaenidae, Hesperidae, and Satyrinae (Nymphalidae) in their region. Although Peña and Ugarte's book included some of Benyamini's new species (at the last minute and subsequent to Peña's death), it did not accurately convey the view all three men eventually came to share concerning conservation dilemmas in South America's southern cone. In his scientific work, Nabokov used the word "nightmare" to express the complexity of variation and infraspecific relationships he studied in detail among the Holarctic blues. When he ventured south of the equator in his pioneering work on the Neotropical blues, this complexity, heightened by the intricacy of tropical ecosystems, increased exponentially. Concerning Latin American blues,

Nabokov expressed astonishment, calling their variety "surprising," "unusual," "peculiar," "unexpected" and "unparalleled" (Nabokov, 1945). In fact, to decipher it, Nabokov commented the taxonomist would need a "Wellsian time machine."

In his pioneer work as a seminal classifier, Nabokov was playing the role of the traditional 19th century taxonomist—the absentee or armchair scientist circumscribing far-reaching classifications from series of dead specimens collected a continent away from his own personal experience. But, also typical of the 19th century taxonomist, he was simultaneously laying an important groundwork—creating new tools by exploring unknown morphologies and noting new taxonomic characters. Eventually, Nabokov also started asking questions about the life cycles of his blues (in his correspondence with many lepidopterists after he left Harvard in 1948 and even in his fiction, for instance *Ada* and *Pale Fire*). This focus appears to have developed from Nabokov's growing understanding of the importance of immature stages in determining the taxonomic status and fragile ecological niche of his endangered Karner Blue (*Lycaeides melissa samuelis* Nabokov, 1944). This same kind of fragility, in Nabokov's South American blues, has recently been discovered by achieving Peterson's fourth methodological step—knowing the organism in its environment. Dubi Benyamini's studies of the life histories of South American blues (so many only recently named) signal a clear warning concerning their precarious futures as well. Summarizing the results of his rearing of temperate Latin American blues (and many other butterflies from that region), Benyamini stated to me recently, "the general decline in butterfly diversity and abundance in the high Andes and southern South America is not a question, it is a fact"—a view that is consistent not only with his own results but a spectrum of historical and botanical literature reviewed during the preparation of the book *Nabokov's Blues*.

Behind the decline in temperate South American butterflies is a near millennial history of agricultural and other economic usage of temperate South American biomes which is often not fully appreciated. To begin with, the Inca-ruled native tribes of the Andes, as well as more primitive tribes of South America's lower latitudes, were agriculturally active for several centuries (historians say at least since the 1200s). Their agricultural methods were sophisticated, including water diversion (irrigation), hillside terracing, erection of flatland "raised-fields" (surrounded by complex moat systems), regular habitat burning, and widespread grazing of domestic herbivores (both avian and mammalian). These agricultural activities greatly eclipsed those of North American native tribes, mostly due to South America's lacking the vast temperate areas which readily accommodated nomadic lifestyles in many natives of the north. Recent anthropological studies in South America have produced many surprises. For instance, for centuries, Inca-ruled tribes not only cultivated vast areas but moved from place to place as local ecological collapses followed. Tribes in the southern cone, according to Argentine studies, had been regularly burning the pampas long before the arrival of the Europeans. Compared to North America, native agronomy in the south was both far more intensive, and on a grander scale.

As a consequence, when the Spaniards arrived in the early 16th century, habitats across temperate South America were already long-disturbed, and their butterfly faunas already remnant. Certainly, widespread areas remained as margins, and for harboring relict-maintaining metapopulations, but the pre-colonial centuries had already had extensive environmental consequences. The subsequent European encroachment, often assumed by

laymen as the first agricultural incursion into uplands and low latitudes in South America, actually initiated a second era of great disturbance. With the arrival of Europeans, the Andes region was immediately exploited. However, South America's southern cone was at first generally ignored. Deserts along the northern Chilean coast cut it off from easy exploration, impeding immediate annexation by lieutenants of the Spanish Viceroy at Cuzco who sought to establish fiefdoms of their own. However, by the late 16th century, central Chile and eastern Argentina were both found readily accessible by sea. Settlement by ship brought rapid agronomic transformation to central Chile, whose Mediterranean climate was compatible with Spanish agricultural methods. Then, in the 18th and 19th centuries, Spain's power in Europe waned. In the decade following 1810, when Napoleon's victories in Europe temporarily deflated Spanish power over Latin America, settlers from other European nations began flooding the southern cone. A rapid influx of farmers, cattlemen, lumbermen, and fishermen from central and northern Europe rapidly transformed areas of southern Chile. By the late 19th century, further encouraged by Chilean governmental support in quelling local natives and felling forests for agriculture, the southern region was already bearing immense pressure from farming, grazing, fishing, and lumbering. These enterprises thereafter expanded exponentially in the modern era.

To appreciate the pressure of competing herbivores on South America's temperate habitats, one must consider millennial activities of both native and domestic herbivores, vertebrate and invertebrate. Furthermore, due to an oddity of southern temperate agronomy, public land policy in southern South America has perennially allowed unrestricted livestock grazing, even in national parks and preserves. The problem is that southern latitudes are too dry and cool to grow corn, the standard seasonal feed crop for livestock in the Holarctic. Alfalfa, which easily grows in the warmer months in the southern cone, must therefore be relied upon for virtually all livestock feeding, allowing no other alternative in the summer but the wholesale release of livestock to feed on surrounding grasslands. The herds move upland with the season, following the path of fresh foliage—precisely the path Benyamini has documented for populations of butterfly herbivores (what he calls their annual "upslope shift"). If one adds cattle, horses, mules, donkeys and goats to feral rabbits, chinchillas, and various camelids, there results tremendous pressure on grassland environs in these regions. Considering this history, lepidopterists who sometimes question "authenticity" in butterfly records from these regions when specimens have not been collected in the last 50 years should probably rethink their "take" on this issue. Certainly, some old specimens may be mislabelled, but many northern workers tend to think of the agricultural history of the Andes and southern cone along lines similar to North America, a comparison which is simply not valid.

Benyamini first began assessing the problems of habitat destruction and butterfly losses in the Andes and southern cone in his studies of Nabokov's blues. When he arrived in Chile in late 1993, Luis Peña told him he suspected that the long history of agricultural and forest exploitation in the region, coupled with continuous climatic desiccation over the last three decades, had finally produced a "winning combination" on the side of destruction, initiating a possibly irreversible decline in the native insect fauna. Consistent with this fear, butterfly losses in Chile first became apparent to Chile's lepidopterists in the central "Mediterranean Region." Here, Peña reported to Benyamini, a dozen butterfly species named from the region (mostly lycaenids) had

not been caught in decades, some not in fifty years. Peña also reported a similar decline in beetles of Chile's central region, another group of insects that he collected rigorously.

Benyamini's intensive fieldwork after 1993 not only confirmed this fear but compounded it. Benyamini, too, was unable to locate many species once familiar from the central region, and his almost immediate discovery of a new species of *Pseudolucia* there (*P. benyamini* Bálint & Johnson, 1994) revealed its restricted coastal dune habitats already endangered by the proliferation of seaside hotels and homes within easy driving distance from Santiago. By 1995, only one of the original colonies of *P. benyamini* discovered by Benyamini was extant and the species' existence appeared to hinge on survival of its foodplant (*Chorizanthe*, Fabaceae) in a few small areas of thus-far undeveloped military land.

Peña, Ugarte and Benyamini's collections in the north (Region 1, Tarapacá) indicated a similar predicament. Although some butterflies of that region are "buffer" species (coming and going from Peru along the coast), 11 species have not been reported from Tarapacá in the last six years (including 6 lycaenids, 3 skippers, and 2 nymphalids). These comprise 20% of the butterflies once reported from the region. In Antofagasta (Chile's Region 2), 10 species endemic to the high mountains of the region have not been observed there for many years, most still known only from the type series collected in the 1950s by the Peña and others. Since many of these are good indicators of healthy southern Andean habitats, they are worth mentioning individually. They include: *Pyrgus barriosi* Ureta (Hesperiidae), *Tatochila mariae* Herrera, *Tatochila inversa rasmilici* Herrera, *Hypsochila penai* Ureta, *Pierphulia rosea maria* Field & Herrera, *Pierphulia isabella* Field & Herrera (Pieridae), *Argyrophorus penai* Hayward (Satyrinae), *Eiseliana flavaria* (Ureta), *Eiseliana rojasi* (Ureta) and *Pseudolucia oligocyanea* (Ureta) (Lycaenidae). Many visits to the region by Peña and Ugarte, and concerted efforts by Benyamini in the last five years did not turn these species up. Benyamini's efforts to locate a newly named blue from Coquimbo, *Pseudolucia scintilla* Balletto (simultaneously named *P. kinbote* by Bálint and Johnson from specimens collected by Peña in the 1950s) found its shrubland habitats extremely desiccated, perhaps the only hope being rediscovery during deserts "blooms" (which have become more and more infrequent in recent decades). Benyamini also corroborated Peña's fear that *Colias flaveola* Blanchard was disappearing in the montane areas of Coquimbo. Peña had once considered the species common above 3000m (along the Paso de Agua Negro between La Serena, Chile, and San Juan, Argentina) but reported his latest trips to the region found it curiously missing. Benyamini sampled the area for the ensuing five years and caught only ten scattered specimens. Its *Astragalus* foodplant (Fabaceae) was extremely rare on the Chilean side of the pass, a region in which he saw tens of thousands of cattle in vast, wandering, herds.

East of the central region of Chile, along the Andean spine shared with Argentina, Benyamini was surprised at the year to year destruction of habitats where he was seeking the life history of *Pseudolucia argentina* Balletto (simultaneously named from Aconcagua National Park in 1994 by Bálint and Johnson as *P. aconcagua*). He eventually discovered its foodplant to be *Adesmia* (Fabaceae) but observing the destruction of this plant within the national park by grazing animals was an "eye-opener." Along the trails used by the commercial climbing trade, mule trains are a staple and proliferation of rabbits (due to a die-off of their natural predators, pumas, eagles, and foxes) a looming problem. Throughout the park, *Adesmia* plants had been reduced to nothing,

many eaten completely into the roots. *Pseudolucia argentina*, its types series being from older museum specimens, was nowhere to be found. Frequent collections within the park throughout the 1990s convinced Benyamini that the species was extirpated there. He was able to document its life history from a few specimens caught in fenced areas around a railway tunnel outside the national park. He also learned that *Adesmia* (which is also the foodplant of blues of the *sibylla*-group of blues treated by Nabokov) was a favorite of cattle, goats, donkeys, horses, and mules. He timed a goat digging into one *Adesmia* plant, eating it to the roots in under two minutes. Benyamini also reported the disappearance of *Colias mendozina* Breyer from the region, an observation also shared by Arthur Shapiro in recent publications, and linked it to the same habitat destruction. Benyamini discovered that its foodplant is an *Astragalus* species, which is the favorite food of the locally proliferating rabbit population. The sulphur consumes the *Astragalus* leaves, while a blue, *Pseudolucia andina*, burrows into the pods, an economical "resource partitioning." However, the rabbits consume everything. The blue is also now absent from the park, although once well-known from there in old museum specimens. Benyamini was able to rear both species from small samples gathered along the fenced railway areas where he had also located *P. argentina*.

Similar evidence of disappearing butterflies was apparent south of the central region in Chile's temperate forest regions. Here, massive forest destruction is the problem. Logging began with the establishment of the first settlements in the region and grew rapidly in the 19th century when the Chilean Government, in part out of fear of possible Argentine incursion, promoted immigration from central and northern Europe and transformation of the landscape along European lines. Settlers established vast cattle ranches and forested areas were rapidly cut for timber and replaced with cultivation. Today, driving along the Pan-American Highway 5 from Concepción to Puerto Montt, Benyamini reports the dominant tree is Oregon "plantation" pine, which has replaced the native forests. There is international demand for high quality insect-free Chilean wood and the recent flourish in uses for wood chips has only escalated the process. Peña told Benyamini that, historically, attempts by Chile's government to regulate lumbering had been widely disregarded. He recounted how he was almost killed after reporting violations he had observed to the police. Someone mistaken for him was attacked and severely injured. It is an unfortunate fact of life that wood, and wood chips, are still the staple for all heating needs across the region.

Benyamini came to this region searching for the life history of the cluster of blues collectively referred to in common usage as *Pseudolucia andina*. Benyamini's research has documented different biological species in this cluster whose "arrowhead"-shaped wing patterns confused even Nabokov into thinking they belonged to the Holarctic genus *Scolitantides*. Nabokov was never able to locate a specimen to dissect and consequently did not know that *P. andina*'s genitalia were typical of his genus *Pseudolucia*! Benyamini's research has already been thwarted by the loss of these entities at their type localities before the work can even be completed. Benyamini notes that among the butterflies with the greatest loss in the south are satyrids endemic to the southern forests. Their population decline is so great that most of them have disappeared completely from the region where, particularly on the farm and ranchlands, *Colias vauthieri* Guérin-Ménéville (adapted to domestic *Trifolium*, Fabaceae) is now the common butterfly. Benyamini reports that Chile's "Giant Golden Skipper", *Argopteron aureum* Peña (named only in 1968 and endemic to the southern forests) also now appears to be extinct. In a foreboding,

but informative, development from his studies, Benyamini's rearings indicate that South American blues cannot prolong diapause in response to hostile climatic conditions (a trait the Israeli lepidopterist documented as relatively common in desert butterflies of the Middle East). Benyamini suggests this information may buttress the view that the ecological pressures now threatening temperate South American butterflies are of relatively recent origin.

During his tenure in Chile, Benyamini spent many hours with personnel of the governmental authority, CONAF (Corporación Nacional Forestal), which manages Chile's environmental protection, parks and preserves. Benyamini has little doubt that CONAF officials understand the urgency of the situation in Chile. The problem seems to be the larger question of the agency's overall power and influence. Benyamini suggests that only some wedding of the environmentally favorable instincts of CONAF and the world's various "green forces" may eventually wield some influence across the region. However, it is difficult to speculate on the probability of this at present. Arthur Shapiro, whose work on southern pierids was especially showcased in *Nabokov's Blues*, assessed the situation there for me as "depressing."

Consistent with the words of Vladimir Nabokov in the epigram introducing this commentary, the dimensions of the ecological nightmare in South America's temperate regions cannot presently be measured or characterized with statistical accuracy. Many of the butterflies involved have been known to science less than five years, their ecological problems only elucidated by habitat and life history studies during that same time period. But the potential nightmare can be more or less precisely described, as I have hoped to do herein, based on the important work of Dubi Benyamini. Hopefully, problems of language and relative isolation of Israeli lepidoptery aside, Benyamini will find the resources for further publication of his important discoveries.

Benyamini went to Chile in 1993 in search of the Nabokov's blues being named by Zsolt Bálint and me. He, Alfredo Ugarte and the late Luis Peña became fast friends. It is fitting that as the Centenary year for Vladimir Nabokov closes, lepidopterists can begin to have a bit of A. Townsend Peterson's "synthesis" in their understanding of South America's temperate region butterflies, a diverse component of which is comprised of blues. For their pointing out the potential nightmare that may ensue in those poorly known habitats and faunas, lepidopterists owe each of these pioneer workers a great debt.

## Notes and Sources

In preparing this general interest note, I drew from Dubi Benyamini's publications on life histories of temperate South American butterflies (*Reports of the Museum of Natural History, University of Wisconsin*, 1994, Nos. 51 & 52) and additional notes kindly provided by him (including botanical comments by Dr. E. Gomez-Sosa, Darwinian Botanical Institute, Buenos Aires, Argentina). Also utilized was a large body of miscellaneous literature concerning temperate South American habitats and history gathered during the writing of *Nabokov's Blues*, including books or papers by such writers as (abbreviating all but surname) W. D. Beatty, I. J. Cox, G. J. Butland, P. E. James, R. Levine, J. A. Mason, K. P. Schmidt, J. R. Scoble, J. L. Tigner, and A. P. Whitaker, and "inhouse" environmental publications provided by The Nature Conservancy and The World Wildlife Fund. Peña and Ugarte's *Butterflies of Chile* (1997, Editorial Universitaria, Santiago) and the books of the Nabokov Centenary (Funke's *Vera's Butterflies* (1999, New York: Glenn Horowitz Bookseller), Johnson and Coates' *Nabokov's Blues* (1999, Cambridge, Ma: Zoland Books), and Boyd and Pyle's *Nabokov's Butterflies* (2000, Boston: Beacon Press) need no further introduction to lepidopterists. Other, less familiar, citations require the following specific

listings:

- Nabokov, V. 1945. Notes on Neotropical Plebejinae (Lycaenidae, Lepidoptera). *Psyche*, 52:1-61.  
Peterson, A. T. 1998. Overview. New Species and New Species Limits in Birds. *Auk*, 115:555-558 (originally brought to my attention by George T. Austin).  
Mayr, E. 1946. The Number of Species of Birds. *Auk*, 63:64-69.  
Shapiro, A. 1989. Ignorance in High Places. *Paleobiology*, 15: 61-67.

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**TAIWAN NEWS**

Mr. Hsiao-Yue Wang, of the Taiwan Museum (now called the Taiwan National Museum), has informed ATL that all insect collections in Taiwan are safe following the recent earthquakes on the island state.

The most massive damage occurred in central Taiwan, especially around the former butterfly business city of Puli, near Sun-Moon Lake. Even there, however, the Wu family butterfly museum and the Lo family butterfly farms and entomologists' hotel are all safe. Past lepidopterist visitors to Taiwan will be familiar with these two sites.

Mountain roads, however, are in damaged condition in many areas. The Chingshan Hostel site in the central mountains was completely destroyed, along with the entire mountain-side forest which all fell into the valley below (this is on the main cross-island road from Taichung to Lishan). The Taiwan engineers, will quickly repair damaged roads but the central highway will certainly take some time yet. Other sites in Taiwan appear to not have experienced much damage.

**MEMBERS WITH UNKNOWN ADDRESSES**

The following ATL members have not sent in address changes. If anyone knows these persons, they could help by sending us the correct addresses or have the persons involved do so. In some cases, we have journals and newsletters to send but do not have a corrected address. Listed are names and last known city of residence.

Abey, Matthew O. - Topsfield, MA  
Ahola, Matti - Hämeenkoski, Finland  
Basa-Mauri, Esteve - Granollers, Spain  
Bito, Naruto, Nagoya, Japan  
Boardman, S. A. - Pacific, MO  
Busby, George W., III - Houston, TX  
Bruha, Don - San Carlos, CA  
Caine, Laurence - Newburgh, NY  
Cushing, David - Richmond, TX  
Daggy, Tom - Davidson, NC  
Deering, Mark - Lake St. Louis, MO  
Dion, Yves-Pascal - Charlesbourg, PQ, Canada  
Do Val, Francisca C. - São Paulo, Brazil

Edmonds, William M. M. - Toronto, ON, Canada  
Endo, Hiroshi - Motosu-gun, Japan  
Finch, Elizabeth - Pompano Beach, FL  
Fortner, Gretchen L. - Pasco, WA  
Gerardo, Nicole - Houston, TX  
Golia, Vince - Delray Beach, FL  
Guppy, Chris - Quesnal, BC, Canada  
Hart, Len - Boldon Colliery, T&N, England  
Hayashi, Joe - San Jose, CA  
Hecker, Thomas - St. Louis, MO  
Higgins, Dixie T. - Dade City, FL  
Kondla, Norbert - McBride, BC, Canada  
Kunuklovich, Kyrill - Charlottesville, VA

Lamy, Jean R. - Trois-Rivieres, PQ, Canada  
Lane, John - Santa Cruz, CA  
Loertscher, Mathias - Berne, Switzerland  
Orioli, Chris - Fairfield, CT  
Parker, Patrick H. - State College, PA  
Quinn, Michael A. - College Station, TX  
Rock, William B., Jr. - Chicago, IL  
Rosche, Richard C. - Chadron, NE  
Schulze, Christian H. - Würzburg, Germany  
Vaglia, Thierry - Montreal, PQ, Canada  
Watson, Charles N., Jr. - Franklin, TN  
Willmott, A. P. - Cambridge, England

**BMNH Copyright** (continued from p. 3)

If it is the policy of the NHM not to impose fees on those using the NHM for academic research, why is this not explained in the NHM statement? This was the question I asked Chris Mills. He responded that the policy had been introduced simply to safeguard the position of the Museum, adding that he believed that all museums should now be seriously considering this issue.

It would appear that the policy adopted by the NHM is similar to that announced several years ago over the introduction of bench fees. It will be recollected that this policy also raised a storm of criticism. The NHM gave itself the right to charge bench-fees, but in practical application free access continues to be available to bona fide academic researchers who are not grant-supported. In the case of those supported by grants, the NHM requests that provision be made for bench fees at the project preparation stage. In practical terms it is hard to argue that the policy has had a discriminatory effect in respect of bona fide and worthwhile research. It has in the meantime produced modest but useful income for the whole NHM of the order of £50-75,000 per annum.

There is every indication that the recent copyright regulation will be implemented in a similar discretionary fashion.

So what of the comments? One of the most forceful attacks on the new copyright policy came from the US based *Lepidoptera News* which ran an article by its editor, John Heppner. However he also printed a reply from Dick Vane-Wright part of which has been quoted above. Amongst a number of fiery letters of support from entomological researchers round the world, the most measured and balanced came from the well-known Prof. Paul Ehrlich, of Stanford University, USA. His comments in part read as follows:

"... one can be sympathetic to the plight of those trying to keep the BMNH going in the face of extreme cutbacks and the utter ignorance of most of the public and decision makers of the importance of biodiversity in general and museums in particular. In their current straits it is not unreasonable for the administration of the BMNH to attempt to get the systematic community to help pay to keep the collections functional. If dermestids eat them (as they did the Stanford collections, which were not maintained in the period between Gordon Ferris' death and my arrival), the loss will be incalculable. Therefore charging desk fees for those that can afford them and royalties from those (like the publishers of butterfly books) who profit from pictures of BMNH specimens, seems a sensible way to try to raise funds.

Above all, it is the responsibility of all scientists to try to educate the public to the importance of the work they do. We need a new ethic in which scientific work is not considered complete until the public is informed about the results. Then the value of institutions like the BMNH will be appreciated and people will feel their tax money well spent supporting them..."

The sentiments seem eminently sensible, and assuming the policy is applied with the same degree of discretion as applies to bench fees, it is difficult to believe it will lead to any hardship.

HENRY BARLOW  
Kuala Lumpur, Malaysia

# POLYOMMATINE ADDITIONS TO BERNARD D'ABRERA'S NEOTROPICAL LYCAENID VOLUME

ZSOLT BÁLINT

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Publishing part VII Lycaenidae of the *Butterflies of the Neotropical Region* in 1995, Bernard D'Abrera has completed his grandiose *Butterflies of the World* series (D'Abrera, 1995). The large folio pages will serve as an unavoidable basis for taxonomists of the next century. I praise D'Abrera's effort, because through his series a large amount of information is made available to the public: the famous BMNH (British Museum of Natural History, London; now called the Natural History Museum) card index, historical determinations and misinterpretations, historical specimens and their data. All of this can be now on a single bookshelf.

I was waiting for this last volume very much. As I knew that the BMNH polyommata material was very weak in blues, I compiled a small collection of my very recent findings and sent these to Bernard D'Abrera for his purpose, once I knew that the volume was in preparation. The material could be photographed in the last minute and be attached to the main body of the book as an Appendix. Unfortunately some inconsistencies appeared in the text of this Appendix concerning scientific names, authors and localities. A list is provided here to correct all of them.

I split the data into Section 1, BMNH material, and Section 2, material from various sources. I keep the original numerical sequence of the taxa listed in the Appendix, giving the combinations and authors according to D'Abrera. After the equals sign (=), I list the correct scientific name with the authors and year of description in bold typeface. Citations for original descriptions are not added, remaining consistent with the original body of the Appendix text. References can easily be taken from the recent publications of Gerardo Lamas, if necessary (Lamas *et al.* 1995; Lamas, 1997, 1998, 1999). After the scientific name, a note concerning the status of the specimen follows; where it appears to be a type, then with the acronym of its deposition (according to Heppner and Lamas, 1982). Where incorrect spelling of a locality occurs, or any other similar matter deserving correction, the original is always cited first between, then after the equals sign (=) the correct spelling is given.

## Section 1. BMNH Material

Nos. 1-19, p. 1254

1. ? Gen. *sylphis* Draudt, 1921 = ***Eldoradina sylphis* (Draudt, 1921)**
2. ? Gen., ? sp. Balint M/S = ***Eldoradina cyanea* (Balletto, 1993)**, holotype, and also holotype of *Polytheclus cincinnatus* Bálint & Johnson, 1993
3. *Nabokovia faga* Dognin, 1895 = ***Nabokovia cuzquenha* Bálint & Lamas, 1996**, 'Turco' = Cuzco
4. *Pseudolucia chilensis* Blanchard, 1852 = ***Pseudolucia chilensis* (Blanchard, 1852)**, 'Valdavia' = Valdivia, region in Chile
5. *Pseudolucia parana* Balint, 1992 = ***Pseudolucia parana* Bálint, 1993**, 'Castro Parana' = Castro, Paraná, Brazil
6. *Pseudolucia collina* Phillipi, 1860 = ***Pseudolucia lyrnessa* (Hewitson, 1874)**
7. *Paralycaeides vapa* Staudinger, 1894 = ***Paralycaeides vapa* (Staudinger, 1894)**, 'Coca' = Staudinger's manuscript name for the taxon
8. *Madeleinea moza* Staudinger, 1894 = ***Madeleinea moza* (Staudinger, 1894)**, 'Cocopata' = Cocopata, locality in Bolivia

9. *Madeleinea pelorias* Weyermer, 1890 = ***Madeleinea pelorias* (Weyermer, 1890)**
10. *Madeleinea pacis* Draudt, 1921 = ***Madeleinea pacis* (Draudt, 1921)**
11. *Madeleinea* ? sp., Balint M/S = ***Madeleinea ludicra* (Weyermer, 1890)**
12. *Madeleinea koa* Druce, 1876 = ***Madeleinea* sp. n. p. *ludicra***, this is still an undescribed taxon
13. *Madeleinea* ? sp., Balint M/S = ***Madeleinea nodo* Bálint & Johnson, 1995**
14. *Madeleinea* ? sp., Balint M/S = ***Pseudolucia argentina* (Balletto, 1993)**, lectotype (designated by me, see Bálint 1999), also holotype of *Pseudolucia sirin* Bálint, 1993, 'Reconte Inca' = Puente del Inca, the border station between Chile and Argentina
15. *Pseudolucia andina* Calvert, 1894 = ***Pseudolucia andina* (Bartlett-Calvert, 1894)**
16. *Itylos titicaca* Staudinger, 1894 = ***Itylos titicaca* (Weyermer, 1890)**
17. *Itylos fumosus* Balletto = two taxa are involved: v = ***Itylos titicaca* ssp. n.**; r = ***Itylos fumosus* (Balletto, 1993)**, holotype and also holotype of *Itylos luzhin* Bálint, 1993, 'Paramo' = paramo above Coronges, locality in dep. Ancash, Peru
18. *Itylos bogotana* Draudt, 1922 = ***Hemiargus bogotanus* (Draudt, 1921)**, 'Puerta de Boyacá' = Puente de Boyaca
19. *Itylos* ? sp., Balint M/S = ***Echinargus huntingtoni* Rindge & Comstock, 1953**

Nos. 42-54, pp 1257-1258

42. *Leptotes marina* Reakirt = ***Leptotes marina* (Reakirt, 1896)**
43. *Brephidium pseudofea* Morrison = ***Brephidium pseudofea* (Morrison, 1873)**
44. *Brephidium* ? sp. = ***Brephidium exilis yucateca* Clench, 1970**
45. *Echinargus huntingtoni* Rindge & Comstock = ***Echinargus huntingtoni* Rindge & Comstock, 1953**
46. *Echinargus isola* Reakirt = ***Echinargus isola* (Reakirt, [1867])**
47. *Echinargus martha* Dognin = ***Echinargus martha* (Dognin, 1887)**
48. *Cyclargus (Hemiargus) dominica* Moschler = ***Cyclargus dominica* (Möschler, 1886)**
49. *Cyclargus (Hemiargus) thomasi* Clench = ***Cyclargus thomasi* (Clench, 1941)**
50. *Cyclargus ammon* Lucas = ***Cyclargus ammon* (Lucas, 1857)**
51. *Cyclargus hanno* Stoll = ***Hemiargus hanno* (Stoll, [1790])**
52. *C gyas* Edwards, 1871 = ***Hemiargus ceraunus* (Fabricius, 1793)**, 'W. Yucatan' = W. Yucatan
53. *Cyclargus ramon* Dognin = ***Hemiargus ramon* (Dognin, 1887)**, 'Limato Moisca' = Lima to Chosica
54. *Pseudolucia lyrnessa* Hewitson = ***Pseudolucia tamara* Bálint & Johnson, 1995**, 'L. Nahuel, Hupi' = Lake Nahuel Huapi

## Section 2. Material from Various Sources

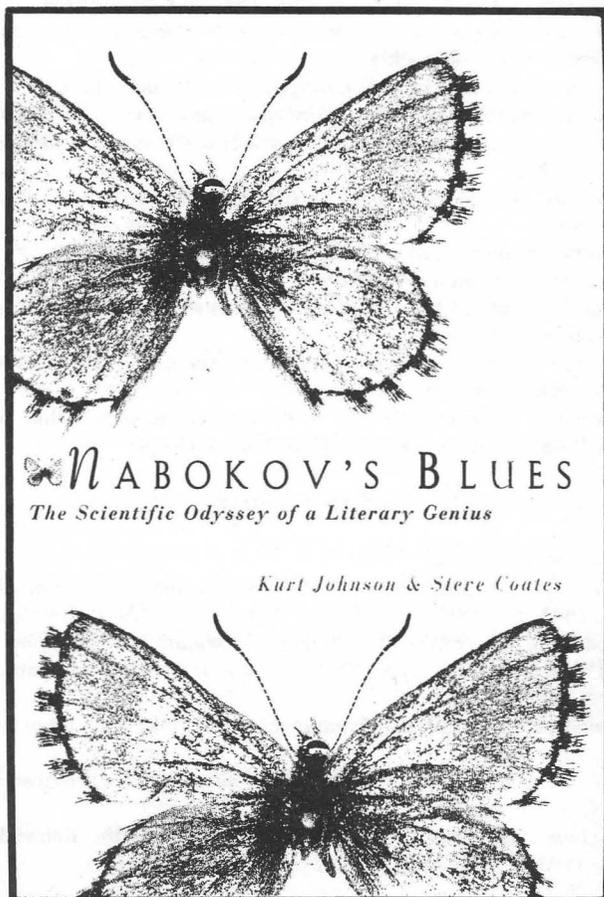
Nos. 20-41, pp 1255-1256

20. *Pseudolucia aureliana* Balint = ***Pseudolucia aureliana* Bálint & Johnson, 1993**, r = HNHM paratype (= allotype), v = AMNH holotype
21. *Pseudolucia oligocyana* [sic] Balint = ***Pseudolucia oligocyana* (Ureta, 1956)**, HNHM paratype, 'Tumbre Carol de Antofag.' = Tumbre, Cordillera de Antofagasta
22. *Pseudolucia penai* Balint = ***Pseudolucia penai* Bálint & Johnson, 1993**, UMCE holotype
23. *Pseudolucia vera* Balint = ***Pseudolucia vera* Bálint & Johnson, 1993**, HNHM paratype
24. *Pseudolucia benyamini* Balint = ***Pseudolucia benyamini* Bálint & Johnson, 1993**, HNHM holotype and paratype (= allotype)

25. *Pseudolucia charlotte* Balint & Johnson = *Pseudolucia charlotte* Bálint & Johnson, 1993, HNHM male and female paratype, 'Pucaru, Patagonie' = Pucará, Patagonia
26. *Pseudolucia annamaria* Balint & Johnson = *Pseudolucia annamaria* Bálint & Johnson, 1993, HNHM male and female paratype
27. *Pseudolucia hazeorum* Balint & Johnson = *Pseudolucia hazeorum* Bálint & Johnson, 1993, HNHM male and female paratype
28. *Pseudolucia clarea* Balint & Johnson = *Pseudolucia clarea* Bálint & Johnson, 1993, HNHM specimens
29. *Pseudolucia shapiro* Balint & Johnson = *Pseudolucia shapiro* Bálint & Johnson, 1993, AMNH holotype
30. *Pseudolucia lanin* Balint & Johnson = *Pseudolucia lanin* Bálint & Johnson, 1993, HNHM material
31. *Pseudolucia collina* Philippi = *Pseudolucia collina* (Philippi, 1859), HNHM material
32. *Pseudolucia* [sic] *talina* [sic] Balint = *Pseudolucia talia* Benyamini, Bálint & Johnson, 1993, HNHM holotype male, HNHM paratype (= allotype) female
33. *Pseudolucia nequenensis* [sic] Balint = *Pseudolucia neuquensis* Bálint & Johnson, 1993, ZMK holotype male, HNHM paratype (= allotype) female, 'Neaquen' = Neuquén
34. *Pseudolucia avishai* Balint = *Pseudolucia avishai* Benyamini, Bálint & Johnson, 1995, HNHM holotype male, HNHM paratype (= allotype female)
35. *Pseudolucia* [sic] *andina* Barlett-Calvert = *Pseudolucia andina* (Bartlett-Calvert, 1894), HNHM material
36. *Paralycaeides shade* Balint = *Paralycaeides shade* Bálint, 1993, MNHN holotype and paratype (= allotype) female
37. *Madeleinea nodo* Balint & Johnson = *Madeleinea nodo* Bálint & Johnson, 1995, HNHM paratype
38. *Madeleinea lea* Balint = *Madeleinea lea* Benyamini, Bálint & Johnson, 1995, HNHM holotype
39. *Madeleinea vokoban* Balint = *Madeleinea vokoban* Bálint & Johnson, 1995, AMNH holotype
40. *Madeleinea sigal* Balint = *Madeleinea sigal* Benyamini, Bálint & Johnson, 1995, HNHM holotype
41. *Madeleinea cobaltina* [sic] Balint = *Madeleinea cobaltana* Bálint & Lamas, 1994, v = HNHM material, r = AMNH paratype female, 'Erllich' = Ehrlich

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# THE PIONEER CENTURY OF AMERICAN ENTOMOLOGY

by H. B. Weiss

Continued from Chapter VI (see *Lepidoptera News*, June 1999) - J. B. Heppner, Editor

## CHAPTER VII

### THE GLOVER AND OSTEN-SACKEN PERIOD (1855 to 1860)

#### JOHN KIRKPATRICK

John Kirkpatrick of Cleveland, Ohio, from 1855 to 1861, wrote for the *Ohio Agricultural Reports* accounts of various economic insects such as bot flies, the plum curculio, armyworm, the pea weevil, the apple buprestid, rose chafer, Hessian fly, the grain aphid, etc. These appeared in volumes 10, 12, 13, 15 and 16. For the most part, Kirkpatrick's accounts were sound and orderly for the time, as he was familiar with the writings of Fitch, Harris, Kirtland and Say. Kirkpatrick also wrote entomological articles for the *Ohio Farmer*, and in 1864 the Entomological Society of Philadelphia printed in its *Proceedings* (vol. 3, pp. 328-330) his "List of diurnal Lepidoptera found in the vicinity of Cleveland, Ohio," in which he presented a list of species, with notes on their abundance.

#### FERDINAND HEINRICH STRECKER (1836-1901)

Although his publishing activities fall outside the period covered by this book, the entomological activity of Herman Strecker took place before 1865 and it is proper to mention them at this time. He was born in Philadelphia, March 24, 1836, of German parentage, his father having come to this country in 1835, locating first in Philadelphia and then in Reading (1846) where he engaged in business as a sculptor. In 1856, the elder Strecker died and Herman succeeded him in business, having worked with his father since his twelfth year. His hobbies were literary and scientific work, and the collecting of butterflies, all of which he did in his spare time. In time he owned the largest, most valuable and most remarkable collection of butterflies and moths on the American continent, comprising over 200,000 specimens from every part of the globe. In his early days, he visited Philadelphia and studied, at the library of the Academy of Natural Sciences, all branches of natural history, but finally narrowed down to insects, and then to Lepidoptera only.

In 1872, he commenced his work entitled *Lepidoptera*, *Rhopaloceres and Heteroceres, Indigenous and Exotic, with Descriptions and Colored Illustrations*, with which all lepidopterists are familiar. It was published in an edition of three hundred and illustrated by Strecker, who made the drawings on stone and colored them by hand. Eighteen parts appeared between 1872 and 1900. The plates were excellent and they appeared at a time when good figures of American insects were none too common. In 1878, he published his *Butterflies and Moths of North America* with directions for collecting, classifying, breeding, preparing, packing, etc., a catalogue of Macrolepidoptera, a bibliography and glossary.

In consideration of his knowledge, Franklin and Marshall College conferred the degree of Doctor of Philosophy upon him, in 1890. At one time Strecker traveled considerably and in 1855-56 he visited many islands in the West Indies. He also traveled in Mexico and Central America, examining Aztec monuments and adding to his collection. He was acquainted with some of the dead languages and a master of many living foreign ones. He eventually became one of the most eminent authorities in America on the Lepidoptera. At one time his collection contained upwards of three hundred types and as many co-types. He was constantly visited by scientific men from all parts of the world and his correspondence was considerable.

Dr. Ferdinand Heinrich Strecker died November 30, 1901, after a stroke of apoplexy. In his home at Reading, one entire floor of his house was devoted to his collection, arranged in glass-top drawers. His entire collection represented forty years of effort and an expenditure of \$30,000.00.

#### HANS HERMAN BEHR (1818-1904)

At a meeting of the Academy of Natural Sciences of California held August 27, 1855, Dr. Hans Herman Behr donated to the cabinet a specimen of *Saturnia ceanothi* and exhibited specimens of insects from Honolulu, saying that fifty per cent of them appeared to be American, twenty-five per cent East Indian, and twenty-five per cent native to the islands.

At the April 21, 1862 meeting, Behr read a paper on "Our California Argynnidæ," describing nine species in Latin with notes in English calling attention to their similarities and localities. This was published in the *Proceedings* (vol. 2, pp. 172-177). This was the beginning of a series of papers on California Lepidoptera that appeared in volumes 2 and 3 of the *Proceedings of the Academy of Natural Sciences of California*. These papers dealt with food plants, distribution, descriptions of new species (in Latin), identities and relationships. Doctor Behr wrote also upon other natural history subjects.

Doctor Behr was born August 18, 1818, at Coethen, in the German duchy of Anhalt. He studied at the Prince's college in Zerbst, at the gymnasium in Coethen and at the universities of Halle and of Würzburg, finally graduating as an M.D., from Berlin University in 1843. Medicine and natural science occupied his interest and at the time of his graduation entomology was receiving his attention. Upon the advice of Alexander von Humboldt and other prominent scientists, he traveled all over the world, visiting Australia, Brazil, Java and living two years in the Philippines. Returning to Berlin he practiced medicine, but after a while he visited the East Indies and in 1851 San Francisco, California, where he remained, except for a trip to Germany in 1853 to bring back his Polish bride, Miss Agnes Omylska. In 1854, he joined the California Academy of Sciences, eventually becoming curator and second vice-president. For many years he was professor of botany at the California College of Pharmacy and during that period he wrote two small books on the *Flora of San Francisco* to assist the students. He brought to the Academy, at a time when its founders were mostly amateurs, his solid background of learning and the rich experience of his foreign travels. He spoke more than six modern languages; he was well informed on comparative philology, and on the mythology and religion of East India; he knew Hebrew and Sanskrit, and of course Latin and Greek. During the meetings of the Academy he invariably had something of interest to say on almost every subject that was discussed.

In addition to his scientific work, Doctor Behr wrote several volumes of prose and poetry. A novel of his life in California was published in a magazine in Germany, and some of his poems appeared in the leading magazines there. His adventures in the Philippines were embodied in an article published in the *Atlantic*

*Monthly*. He was one of the early members of the Bohemian Club of San Francisco and the papers written by him for the amusement of the members were collected and printed under the title *The Hoot of the Owl*.

Behr was an active enemy of medical and scientific quacks and often expressed his opinions of them quite frankly, to the disadvantage of the financial success of his medical practice. As a result, he made enemies, one in particular, who started in his paper the popular Lutheran pastime of Jesuit baiting, as Behr was a Catholic. As a result Behr lost many of his German tradesmen-patients and he found it necessary to move into another German neighborhood where the residents were more intelligent. It is recorded that at one time Doctor Behr named a louse after his enemy but no record of this appears to be available.

Doctor Behr died in San Francisco on March 6, 1904, in his eighty-sixth year. His large and valuable collection of Lepidoptera was presented to the California Academy of Sciences previous to his death, but later it was unfortunately destroyed by fire. At his death, California lost a many-sided physician, a keen scientist, an author, poet, humorist and a cultured citizen.

#### PHILIP REESE UHLER (1835-1913)

While Doctor Behr was publishing on the Lepidoptera of California, a young man of twenty years, the son of a well-to-do philanthropic merchant of Baltimore, published his first paper in the *Proceedings of the Academy of Natural Sciences of Philadelphia* in 1856 (vol. 7, pp. 415-418). This was Philip Reese Uhler and the title of his work was "Descriptions of a few species of Coleoptera, supposed to be new." His next paper also appeared in the *Proceedings of the Academy* (vol. 9, pp. 87-63) and was entitled "A contribution to the Neuropterology of the United States." This included descriptions of new species from Maryland, Nebraska and California. This was followed the next year by "Descriptions of New Species of Neuropterous insects collected by the Rodger's North Pacific Expedition" (*Proc. Acad. Nat. Sci.*, vol. 10, pp. 29-31). His first publication on the Hemiptera appeared in 1862 and was devoted to the Hemiptera of the North Pacific Exploring Expedition. This too was published in the *Proceedings of the Academy* (vol. 13, pp. 282-284; 286-287). From this time on nearly all his papers related to the Hemiptera. In 1903, Samuel Henshaw published a list of these in *Psyche* (vol. 10) in which fifty-two titles are mentioned, only seven of which were published before 1865. Many of Uhler's papers relate to collections made during surveys of western areas. Numerous collectors and institutions sent their Hemiptera to Uhler for identification. He had a broad grasp of the entire group and he described many new species. In the *Standard Natural History*, the chapter on Hemiptera was written by Uhler.

Along with Harris and Fitch, Uhler realized the practical importance of economic entomology. Under the title "Insects Injurious to Vegetation," Uhler was the author of a paper that appeared in the *United States Commissioner of Patents Agricultural Reports for 1860* (pp. 312-322), in which he spoke of the millions of dollars' worth of damage that was done to fruits and vegetables by insects. He insisted that attention should be paid to the practical side of entomology. His paper dealt with the insect enemies of pears and apples and gave life-history, notes, types of injury, remedies, etc. Much of the information was probably drawn from the works of Harris and Fitch. Uhler also translated and edited with the help of Osten-Sacken, Hagen's *Synopsis of the Neuroptera of North America*, published by the Smithsonian Institution in 1861.

Uhler was born at Baltimore, Maryland, June 3, 1835. When he was ten years old, his father purchased a farm near Reisterstown, and at that time his interest in insects was discovered and encouraged by J. F. Wild, a German entomologist, and by John G. Morris, pastor of the First English Lutheran Church, which Uhler's grandfather assisted in founding. His early education took place at the Latin school of

Daniel Jones and at Baltimore College. In 1863, he became assistant librarian of the Peabody Institute at Baltimore, but early in 1864 he went to Cambridge, Massachusetts, at the request of Professor Agassiz. Here he was librarian in the Museum of Comparative Zoology, assisted Professor Agassiz, and taught entomology to the undergraduates. At the same time he was a regular student in the Lawrence Scientific School of Harvard University and attended the lectures by Agassiz, Asa Gray, Jeffries Wyman, Alexander Agassiz, and N. S. Shaler. Uhler joined the Academy of Natural Sciences of Philadelphia in 1858 and the Entomological Society of Philadelphia in 1859.

After leaving his position at Harvard, which was filled by H. A. Hagen, he returned to Baltimore and became assistant librarian of the Peabody Library. In 1870, he was made librarian. Regardless of his official duties, he studied entomology all his life, and geology interested him as well. His life was that of a student and he disliked publicity. When Johns Hopkins University was organized, he was the first associate professor who was appointed and in that position he remained until his death. He was curator of the Maryland Academy of Sciences, vice-president and later president. And in 1900, he was given the honorary degree of LL.D. by New York University.

This cultured and charming personality, tireless worker and typical naturalist died at his home in Baltimore, October 21, 1913. His large and valuable collection was divided between the Museum of Comparative Zoology and the United States National Museum.

#### TOWNEND GLOVER (1813-1883)

Another entomologist who started his entomological publishing career about the middle of the nineteenth century was Townend Glover, the first entomologist of the United States Department of Agriculture. It would be highly desirable to reprint here the very interesting account of the life and entomological work of Glover written by Charles R. Dodge and published in 1888 as Bulletin 18 of the Division of Entomology, United States Department of Agriculture, but as this is not possible it will be necessary to extract and summarize from Mr. Dodge's account the main facts about that unique personality, Townend Glover.

Before doing so, however, something should be said about Glover's published writings. His earliest works of which there is record were upon pomological subjects and appeared in 1853. He wrote, once in a while, for the *Fishkill Standard*, but not upon entomological subjects. In the *American Agriculturist* for November 9, 1853, there is a short article entitled "Popular Fallacies," that is devoted to the impracticable remedies that appear periodically in the farm press, usually unchallenged. Most of his writings on insects appeared in the various annual reports of the United States Commissioner of Patents (1854, 1855, 1858, 1859), in the monthly reports of the Department of Agriculture (1866, Jan. 1867, Jan. 1868, 1871, 1872, 1873, 1874, 1875, 1876) and in the annual reports of the Commissioner of Agriculture (1863 to 1877 incl.). In these reports, Glover covered insects injurious to cotton, wheat, grape, orange, the plum curculio, codling moth, peach borer, the hang [bag] worm, the potato beetle, destructive grasshoppers in California, the Utah cricket, the chinch bug, thrips, twig-borers, the Phylloxera, the grape gall louse, beneficial insects, etc., and various statements relative to the progress of the Museum.

In addition, Glover wrote "On Destroying Injurious Insects" for the *American Agriculturist* of October, 1856, and "A Vindication of the Entomological Division of the United States Department of Agriculture." This latter paper of six pages was privately printed in 1872 and was published as a reply to certain statements that had appeared in a pamphlet, issued in 1872, by the chief clerk of the Department, entitled "The Department of Agriculture, its History and Objects."

Of considerable interest, however, is Glover's ambitious work on insects, known as *Illustrations of North American Entomology*. In a letter which he wrote to Mr. Clapham in 1856, he expressed his idea

as follows:

"Another idea is to go on with my work on in sects—to have large engravings of our staple agricultural productions, such as cotton, corn, wheat, potatoes, and so forth. On the wheat root, place the cut-worm, chrysalis, and moth; on the ear place the wheat midge, etc., in short, to place every insect that destroys wheat upon the part injured, natural size and magnified, the plates to be issued by the Government, and distributed to every leading society, to be placed in their agricultural rooms. By looking at the place affected the farmer can see the insect in all its stages, and at the same time, by referring to the Patent Office Agricultural Reports, can find out the remedies in general use."

As early as 1847, Glover spent some time in Albany, New York, with Gavitt, the engraver, perfecting himself in copper engraving, and as time went on he made various plates both upon copper and upon stone. Notes accumulated, unfigured specimens were obtained from various entomologists, drawings were made and the work continued on and on. By the time a large number of plates had been made, his observations became more extended, entomological papers were increasing, and his notes all had to be recopied and extended. As time went on, his ideas changed. A complete reference book on entomology was his ideal, with appropriate and exhaustive text, that could be supplemented by new discoveries. But as time still went on, the publication of the work in its entirety became more and more remote. And so, in order to obtain recognition of the importance and usefulness of his work, he decided upon preliminary publication of some of the plates. So in 1871 he brought out an author's edition of 250 copies of 13 plates on the Orthoptera with letterpress, which included an introduction, arrangement of families, notes on habits and food of orthopterous parasites, food of the Orthoptera, list of genera and species. The work was imperfect and incomplete, and in addition it was a poor sample of what Glover had really done in the twelve or more years he had devoted to the undertaking. Fifty copies were given to prominent entomologists and the remainder eventually found their way to destruction as waste paper. However, Mr Glover received many favorable notices and letters about his publication and in 1874 he brought out a small edition of the Diptera, treated along the same lines but with more complete text. This was a work of one hundred and thirty-three pages printed from stone on plate paper, the letterpress being a facsimile of Glover's handwriting. Ten plates and their explanations accompanied the text. This was entitled *Manuscript Notes from my Journal or Illustration of Insects Native and Foreign Diptera or Two-winged Flies*. The title of his former publication on the Orthoptera was *Illustrations of North American Entomology*. Of his work on the Diptera, only forty-five copies were printed for gratuitous distribution. In 1876, he published an edition on the Hemiptera that was uniform with that on the Diptera and distributed fifty copies to almost the same persons and institutions which had received the former volumes. At the same time he was adding to his plates and text dealing with other orders of insects.

In 1878, he issued his last publication entitled *Illustrations of North American Entomology in the orders of Coleoptera, Orthoptera, Neuroptera, Hymenoptera, Lepidoptera, Homoptera and Diptera*, in an edition of twelve copies of his entire set of 273, plates, with 6,179 figures, with a printed title page, several pages devoted to classification and catalogues of species with references accompanying each order. This ended what had started out as a very ambitious undertaking. Walton has stated that while Glover's drawings are good, they are by no means strictly accurate or of the highest quality. Many of his figures have a flat and poorly modeled appearance. At one time Glover frescoed an oval or circular centerpiece on the ceiling of a room, in the old Department of Agriculture building in Washington, the design consisting of lepidopterous insects.

Townend Glover was born at Rio de Janeiro, Brazil, on February 20, 1813, at which time his father was engaged in commercial work in that city. When he was about six weeks old his mother died and

he was sent to relatives in England. Six years later his father died and Townend was then placed in charge of his paternal grandmother and maiden aunt in Leeds. His early education took place in a good private school, and following this he was apprenticed to Thompson, Scarf & Company, a firm of woolen merchants in Leeds, whose business he had no desire to learn and from which he divorced himself as speedily as possible when he was twenty-one.

His father had left him sufficient funds, but according to Glover, these had been dissipated through his father's business partners, and when he became of age he had only a small patrimony which had been held in trust for him by relatives in Leeds. Glover kept a diary at this period and from it one learns of his liking for art, his study of painting in Munich, his extreme individuality and his indifference to country or home and of his distrust of mankind and their motives.

After traveling in Europe he returned to Leeds, fitted up a room as a studio and painted industriously, surrounded by pets of every description. At this time he was about twenty-three years old. On June 24, 1836, he sailed for America and after arriving in the United States he traveled leisurely through various parts of the country, especially in the southern part, making New Rochelle, New York, his headquarters, where he finally settled in the spring of 1838 and where, with his gun and dog and boat, he devoted himself to pleasure. During a visit to Fishkill, New York, he met Miss Sarah T. Byrnes, whom he married in September, 1840, at New Rochelle. The following year they moved to Fishkill. For the next five years he interested himself in floriculture, natural history, taxidermy, painting, and with living the life of a country gentleman, cultivating his orchard and garden. During this period, he met A. J. Downing, the horticulturist, and became enthusiastic over pomology. This led to a desire to do something practical and hence was born his idea of illustrating American pomology by a series of facsimile models, designed so as to show the changes produced by various soils and climates. The formation of this collection occupied him for several years, and at different times between 1849 and 1852 his collection of fruits was exhibited at various state fairs and prizes were given to him. He judged fruits and wrote for the *American Agriculturist* on pomological subjects. In the winter of 1853-54, the models were taken to Washington for exhibition and about that time the new Bureau of Agriculture in the United States Patent Office was established and Glover was appointed to it June 14, 1854, "for collecting statistics and other information on seeds, fruits, and insects in the United States." Although his name is not noted in the official reports of the Commissioner of Patents, he was really the entomologist and special agent, and his duties required traveling upon agricultural missions. Charles Mason was Commissioner and the chief clerk in charge of the Bureau was D. J. Browne of New Hampshire.

In 1854, he studied grape and cotton insects in South Carolina; in 1855 he was in Florida working on various insects, including the enemies of cotton. During the winter of 1856-57, he was in British Guiana and Venezuela in charge of an expedition organized to restock Louisiana sugar plantations. In 1857 he was in Mississippi visiting cotton plantations; in 1858 in Florida working on orange insects. During these times he became acquainted with Uhler, Morris, Baron Osten-Sacken, Baird, Ulke, Girard, Cooper and others, and he also had rows with D. J. Browne, his chief, whom he did not regard highly and who insisted upon writing Glover's reports in a manner highly unsatisfactory to Glover. At the same time his sketching and etching and entomological note-making continued.

Early in 1859, Glover left the service because he could not get along with Mr. Browne, whom he considered unable and a man who shone only by reflected light.

In the fall of 1859, Glover became professor of natural sciences in the Maryland Agricultural College at a nominal salary and when not teaching or lecturing he worked on his *Illustrations of American Entomology* and made collections of birds and insects. In April,

1863, he was appointed United States Entomologist under Hon. Isaac Newton, the new Department of Agriculture having been established in 1862. His early reports were mostly popular discussions of the more important insects and their control, although they contained, as well, information on seeds, grains, silkworms, buds, domestic animals, etc. At this time his museum occupied his attention. In August and September, 1865, he attended the entomological convention held in Paris, at which he received the grand gold medal for his original work in entomology. In 1867, his collection of fruit models and birds and other materials was sold to the government for the museum, and Glover was busy on his book of manuscript notes and in corresponding with Walsh, Uhler, Riley, Sanborn, Grote, Robinson, and other entomologists. From 1872 to 1878, he issued and distributed his work, to which reference has been made. His last years were characterized by illness and inactivity. He died September 7, 1883, and was buried in London Park Cemetery, Baltimore.

Various friends and acquaintances of Mr. Glover have recorded their impressions of him. He was peculiar and at times eccentric. He made few friends and many acquaintances. He was thoroughly absorbed in his own work and numerous friends would have occupied time that he preferred to spend upon his own self-imposed tasks. He was generous in many ways but he was not interested in the work of others. Of a serious disposition, his sense of humor was keen and his remarks were to the point. This usually took the form of satire and verse. He was quick tempered, never forgot a kindness, and always remembered an injury. Upon himself he imposed a routine that was rarely broken, and early realizing the difficulties of students of nature in obtaining a knowledge of insects, his aim was to remedy the matter the best he could and in his own way. Much more could be written of his personality and work and all entomologists should read Dodge's fascinating account of this early entomologist.

#### WILLIAM F. ROGERS (1820-?)

In the *Proceedings of the Academy of Natural Sciences of Philadelphia* for 1856 (vol. 8, pp. 29-39) there was published a technical paper entitled "Synopsis of the species of *Chrysomela* and allied genera inhabiting the United States" by W. F. Rogers. A William F. Rogers was born in Northampton County, Pennsylvania, March 1, 1820, and followed the trade of printer until he was forty. In 1846 he moved from Easton, Pennsylvania, to Buffalo, New York, and in succeeding years he became a captain of militia, then colonel of the 21st Regiment New York Volunteers, then provost-marshal of the 30th district of New York, then comptroller of the city of Buffalo in 1866, then mayor of Buffalo in 1868 and finally a major general of the 4th Division, National Guard. I hope he also was the author of the chrysomelid paper.

#### VARIOUS ENTOMOLOGICAL STUDIES

Dr. James C. White, at the November 4, 1857, meeting of the Boston Society of Natural History (vol. 6, pp. 290-291), exhibited the eggs of what he called the "itch insect, *Sarcoptes hominis* and said that only the females burrowed, making their way "transversely" downward through the skin, but never to a great depth. Each day as she moved onward, she left an egg behind her and after fourteen had been deposited, the larva from the first laid egg matured and crept out upon the surface, there to ramble with other young until maturity. Doctor White made other observations and showed the spores of a parasitic plant.

At the October 7, 1857, meeting, Dr. B. S. Shaw, secretary of the Boston society, showed specimens of the larva of a species of fly (*Musca* or *Oestrus*) which had been found in the skin of the scalp, face, neck and back of a seven-year-old child. At the same time, he made remarks relative to other insects found infesting human beings, which he had collected from the literature. A full account was read before the Boston Society for Medical Improvement and published

in the *Boston Medical and Surgical Journal* for October 8, 1857.

In the *Cincinnati* in 1857, a journal devoted to scientific agriculture, horticulture, education, and the improvement of rural taste and edited by the faculty of Farmers' College, College Hill, Ohio, there appeared (vol. 2, Nos. 5, 7, pp. 212-216, 269-295) an anonymous article on the "Honey Bee" divided into three parts, "The Honey Bee," "Economy of Bee Keeping," and "Swarming." It was a general account covering the entire field briefly. In the first volume of this journal (vol. 1, No. 8, pp. 392-396, 1857) there were printed extracts from a paper that Glover had read before the National Agricultural Society on the subject of entomology as applied to agriculture, Glover's paper was general and contained numerous observations and statements on the ravages of cotton insects, the wheat midge, wheat joint worm, curculio, bees, birds, etc., together with the advice that farmers both for profit and pleasure should study insects,

Descriptive and diagnostic papers on entomology sometimes appeared in unexpected places. In 1858, there appeared in the *Annals of the Lyceum of Natural History of New York* (vol. 7 art. 2, pp. 11-12) "Descriptions of several new hymenopterous insects from the North West coast of America," by J. W. Greene. In this paper, Mr. Greene described *Bombus interruptus* and *Bombus occidentalis* from Washington Territory, Oregon, Ft. Vancouver, etc. In 1860, Mr. Greene published a more ambitious paper in the same journal (vol. 7. art. 21, pp. 168-176) entitled "Review of the American Bombidae, together with a description of several species heretofore undescribed, being a synopsis of the species of this family of hymenopterous insects thus far known to inhabit North America," thereby becoming at least the despair of bibliographers. In this paper, twenty-five species are listed, with brief diagnostic characters and indefinite localities.

A Dr. John W. Greene graduated in 1846 from the medical college in Cincinnati and practiced for many years in Greene County, Ohio. This Doctor Greene was also a member of the state legislature of Ohio from 1877 to 1879 and he served on the Fairfield village council and was also treasurer. He may have been interested in entomology. Definite proof is lacking.

In view of the interest in the grasshopper plagues of the West, Mr. Alexander S. Taylor of Monterey, California, furnished for the Smithsonian Institution in 1856 a fifteen-page paper entitled "An account of the grasshoppers and locusts of America." This was published as a *Smithsonian Report* (vol. 13, pp. 200-214). Mr. Taylor summarized the accounts of damage and flights, which had appeared in various newspapers, and from such press statements it was apparent that up to October 11, 1855, the insects had extended themselves over an area greater than ever before. This area included the territories of Washington and Oregon, every valley in the state of California, the territories of Utah and New Mexico, the dry mountainous areas of Mexico, the countries of Lower California and Central America, and the parts of Texas that resembled Utah and California physically.

The habits of the grasshoppers were noted and also the observations of numerous persons. In this connection, it is stated that the Indians swept the insects into holes or piles by surrounding them with fire. Later they roasted and pounded them into a meal, after the eating of which they were always sick. In addition, Mr. Taylor incorporated into his account extracts from published writings on the food habits of the grasshoppers, damage, species involved, enemies, etc. At the end it is suggested that collections should be made by intelligent observers and amateurs in different parts of the country, of all stages from egg to adult and the specimens forwarded to the Smithsonian Institution, so that the various species might be determined.

Grasshopper outbreaks in the West attracted considerable attention at times and brought forth recommendations from various people who were convinced of the effectiveness of their particular remedies.

Dr. Edward P. Vollum was the author of "Notes on the wingless grasshopper of Shasta and Fall River Valleys, California, and a plan for keeping them out of fields," appeared in a *Smithsonian Report* in 1861 (vol. 15, pp. 422-425). Doctor Vollum refers to the use of grasshoppers as food by the Digger Indians, and mentions their migratory habits. He gives a method of control, naming a mixture of strychnine, arsenic, corrosive sublimate, croton oil and lamp oil, which had been tried and which the grasshoppers had devoured with "perfect immunity." He recommends and describes a "tin protective" as the only successful method of keeping wingless grasshoppers from fields. If tin was not obtainable or the soil too crumbly, a ditch was to be dug around the field eighteen inches wide and two feet deep, shelving inwards toward the field and having holes two feet deep in the bottom, at intervals of a few yards. The grasshoppers collected in great numbers in the holes and died.

Another grasshopper paper, published in 1860 by the Smithsonian Institution (*Misc. Contr.*, vol. 2, art. 9, pub. no. 139) was entitled "Circular in reference to the history of North American grasshoppers," and was issued over the signature of Joseph Henry, secretary of the Institution. It really was a questionnaire and not a scientific paper. In view of the injury to crops by various species of grasshoppers, sixty-one questions, designed to furnish life-history facts, information on migrations, control, etc., were asked. These had been drawn up by Mr. P. R. Uhler and the circular was sent out to friends and correspondents of the Smithsonian Institution. The answers to many of the questions required careful study and observation if they were to be of value. Such a method of acquiring entomological information would be looked upon unfavorably and the replies would be discounted unless they came from persons having entomological training or experience.

Jacob Stauffer, to whom reference has been made previously, contributed in 1853 and 1859 some six articles on entomology to the *Cincinnati* (vol. 3, pp. 504-507; vol. 4, pp. 30-35; 105-109; 164-167; 310-313; 488-491), under the general title "Entomology—the natural history of insects." In the introductory matter of the first article, Stauffer mentions the fact that he is contributing monthly and that it is important for farmers to know something of the habits and history of beneficial insects. Accordingly, his first article deals particularly with the tiger beetles, after he has split the Coleoptera into the Pentamera, Heteromera, Pseudotetramera, and Pseudotrimeria, and after he has divided the Pentamera into tribes, etc., finally reaching the family Cicindelidae. He also presents a table for the identification of twenty-one species of *Cicindela*. The editor in a footnote promised "rich treats" in the future, from the pen of Mr. Stauffer. Nowadays, fresh and budding entomologists are led up to the subject more gracefully and are not plunged at once into the cold water of technical terminology.

In the same volume (*Cincinnati*, vol. 3, No. 4, pp. 145-153; No. 7 pp. 316-322, 1858), Mr. H. Y. Hind has "Description and classification of insects," a paper on which is a popular and general account of the characters of the orders and something about some of their members. Twelve orders are named, Coleoptera, Orthoptera, Neuroptera, Hymenoptera, Trichoptera, Strepsiptera, Hemiptera, Lepidoptera, Diptera, Aphaniptera, Thysanoura and Parasita. The material is presented in an orderly way, and was no doubt informative at a time when popular works were none too plentiful.

Mr. H. Y. Hind was professor of chemistry at Trinidad College, Toronto, Canada. He once wrote an essay on "The Insects and Diseases Injurious to the Wheat Crop," which was awarded the first prize by the Bureau of Agriculture and Statistics of Ontario. Extracts from this essay were printed in the *Cincinnati* (vol. 3, No. 4, April, pp. 145-153) under the title, "Importance of Entomology." According to one of the statements, the yearly cost of maintaining the wheat midge in the United States in 1854 was estimated as more than \$16,000,000. If to this figure there was added the annual amount of damage due to the chinch bug, Hessian fly, and fruit tree insects, the

annual cost was estimated as over \$30,000,000.

In 1858, A. R. Pope contributed to the *Magazine of Horticulture and Botany* (vol. 24, No. 5, May, pp. 219-222) an article on the "Pea Weevil" (*Bruchus pisi*), in which he mentioned the crow, blackbird and Baltimore oriole, as the chief bird enemies of the weevil. Of more interest, however, is his method of controlling the weevil. He stripped the peas, when ripe, from the pods and dried them for a day or two in the sun. They were then placed in a colander and covered with a plate. The colander was then placed over a vessel of boiling water and the peas thoroughly steamed. After this they were spread out to dry for a few minutes, and then put away. In this way every insect was destroyed.

In the same year, Professor J. B. Turner, of Jacksonville, read a paper entitled "Microscopic Insects," at the inauguration of the Illinois State Natural History Society at Bloomington, Illinois, on June 30. This was printed in the *Transactions of the Illinois State Agricultural Society* (vol. 3, pp. 644-650) but it contains no entomology to speak of.

For the *Report of the Smithsonian Institution, 1858* (vol. 13, pp. 214-228), Professor William W. Turner translated from the Russian V. Motschulsky's article "On the Means of Destroying the Grasshopper." This included the means of control in various Old World countries (Hungary, Russia, France, China, etc.) and various illustrations of collecting nets, rollers for crushing the grasshoppers, etc. It is concluded that the most effective and easiest method consisted of crushing the nymphs when they collected in swarms on their breeding grounds.

Silk culture still continued to appear to offer possibilities to some people. In 1861, the Academy of Natural Sciences of Philadelphia published Dr. Thomas Stewardson's remarks "On the Ailanthus silk-worm" (*Proc. Acad. Nat. Sci. Phila.*, Vol. 13, p. 525). At the March 5, 1861 meeting, Doctor Stewardson mentioned the recent introduction of the Ailanthus silk worm into France and its probable adaptation to our own country. He exhibited a case containing specimens of the silk-worm (*Bombyx cynthia*), of cocoons and of cloth woven from the silk, all of which he had obtained from France. He had obtained eggs from France and a manufacturer living near Philadelphia, Mr. Evans, had succeeded in rearing a few worms which spun cocoons in July. Toward the middle of August, moths appeared and their eggs hatched from August 30 to September 3. The larvae from these eggs were placed on ailanthus in different situations, such as in open-air, in a room, etc. Nearly all of those placed upon city trees matured and spun cocoons, about eighty. Many of those placed in the open air were destroyed by birds. The ailanthus silk worm was brought from China to Turin in 1857, was introduced into France by M. Guérin-Méneville in 1858, and Doctor Stewardson thought that it would do well in the latitude of Philadelphia, where two crops of "worms" could be raised.

#### DANIEL JAY BROWNE (1804-?)

D. J. Browne, the chief clerk for whom Glover had no use, wrote in the *Agricultural Report of the United States Commissioner of Patents for 1854* (pp. 58-59) a brief introduction to Glover's article "Insects Injurious and Beneficial to Vegetation" and made a general statement about the habits, transformations, etc., of insects. In the Commissioner's report for 1857, there were articles by Browne on the "Nature and habits of the honeybee" (pp. 107-121) and on "Persian Insect Powder" (pp. 129-130). The latter is a small article on the various species of *Pyrethrum*, its preparation and first use in the Russian Caucasus against injurious insects and the secrecy surrounding it until an Armenian merchant discovered the secret and began its manufacture in 1828. It is stated that the plant was introduced into Alexandropol and later into Germany. When Browne wrote his account, there were more than twenty villages in the district of Alexandropol engaged in cultivating the plant and collecting its flowers and leaves. Plants grown upon eighteen square

rods furnished one hundred pounds of powder.

An earlier article by Browne on "Bees, Wax and Honey-Bee-Culture in Russia" was printed in the Commissioner's report for 1855. Although Browne's productions were mostly compilations, they were probably useful in their day. Daniel Jay Browne was born December 4, 1804, at Fremont, New Hampshire. Although he took some courses at Harvard University, he was a practical farmer. His "literary" career started when he was twenty-six by the publication of a journal called *The Naturalist*. By the time he was twenty-eight he was the author of two books, *Sylva Americana* and *Etymological Encyclopaedia of Technical Words and Phrases Used in the Arts and Sciences*. During 1833-35, he traveled extensively in foreign countries. Later, he was engaged in engineering projects in New York and Cuba; he was secretary to various agricultural associations, assistant editor of the *American Agriculturist*, and from 1846 to 1851 he published four books on trees, birds, poultry, and muck. In 1852, he became connected with the United States Census Office and in June, 1853, he was made chief in the Patent Office and edited their *Agricultural Reports*. During his later years, his activities in this office, particularly those connected with the distribution of seeds, were the subject of much controversy in the agricultural press. The Agricultural Committee of the House of Representatives made an investigation and published their results entitled "Vindication of the Agricultural Division of the Patent office." Browne was found by this committee to be fully qualified for his duties. However, the criticism continued and later an agricultural advisory board was appointed for the Patent Office. This board approved the general operations, but Browne's appointment terminated October 10, 1859. Later, or in 1861, Browne was sent to Europe by the Patent Office to investigate the cultivation and manufacture of flax. It has been stated that the criticism of Browne's activities' came mostly from persons in the seed business and from those who objected to any national department of agriculture.

#### JAMES DWIGHT DANA (1813-1895)

J. D. Dana, who in 1858 published in the *American Journal of Science and Arts* on Agassiz's "Contributions to the Natural History of the United States," was the author in 1863 of a paper "On the homologies of the insectean and crustacean types" in the same journal (vol. 86, pp. 233-235). This was a short paper on the relation between the segmentation of insects and crustaceans. Previously, Dana had written a paper on "Fossil larvae in the Connecticut River Sandstone" (*Amer. Jour. Sci. Arts*, vol. 33, pp. 451-452, 1862).

James Dwight Dana was a geologist and zoologist who was born in Utica, New York, February 12, 1813. He was associated with Silliman and in 1840 he was made editor of the *American Journal of Science*. When the United States exploring expedition to the South Seas under Captain Wilkes was organized in 1837, Dana was made geologist and mineralogist of the expedition. For thirteen years, following his return in 1842, he was engaged in writing up his reports in Washington. Dana was the author of various text books on geology and mineralogy. He died April 14, 1895.

#### ALEXANDER SMITH TAYLOR (1817-1876)

In the same report (*Rep. Smithsonian. Inst. 1858*, vol. 13, pp. 200-214), preceding Mr. Turner's translation, there appeared "An account of the grasshoppers and locusts of America, condensed from an article written and furnished by Alexander S. Taylor, Esq., of Monterey, California."

Alexander Smith Taylor, an ethnologist, was born in Charleston, South Carolina, April 16, 1817, and died near Santa Barbara, California, July 27, 1876. He left Charleston in 1837 and traveled for several years in India, China, and the West Indies. In 1848, he went to California from China and lived at Monterey until 1860. Here he was clerk of the United States district court. Then he moved to a ranch near Santa Barbara. Taylor was the author of various magazine

and newspaper articles on the history of California, on Indians, and on natural history.

#### BARON OSTEN-SACKEN (1828-1906)

The first catalogue of North American Diptera was published in 1858 by the Smithsonian Institution (*Smithson. Inst. Misc. Contr.*, vol. 3, art. 1, 20 + 95 pp.). It was by Baron Osten-Sacken and was entitled "Catalogue of the described Diptera of North America." In the preface, the author states that his catalogue was planned the same as Melsheimer's *Catalogue of the Coleoptera of the United States* as revised by Haldeman and Leconte. It was intended to be a checklist of the described species and not a synonymical catalogue. Species are included from the United States, Mexico, Central America and the West Indies. Localities are given also, this feature having been omitted from the Melsheimer catalogue. Completeness was the first consideration and systematic arrangement the second. Osten-Sacken generally retained the generic groups adopted by Meigen and Wiedemann, and avoided the subdivisions of modern authors. For certain groups, he followed Walker's *Supplement to the List of Diptera of the British Museum*, and he also used Macquart's *Dipteres Exotiques*. Within the genus, the species are arranged alphabetically. Of Harris's *Catalogue of the Insects of Massachusetts*, Osten-Sacken stated that it contained the names of many species of Diptera never described or since described under other names. He expressed the wish that the study of the Diptera would proceed as rapidly, after the publication of his catalogue, as did the Coleoptera after the publication of a catalogue.

Osten-Sacken came to this country from Russia in 1856 and upon getting settled, he immediately began collecting a large amount of material in the Diptera, and making the acquaintance of many collectors in various parts of the country. Most of the material he accumulated was sent to Loew, in Guben, Prussia, for description. However, for himself, he retained a few families, principally the Tipulidae and Tabanidae.

As Osten-Sacken's entomological career in North America extends far into the period not covered by this book, it is not possible to refer specifically to his numerous papers. Up to 1865 he described new genera and species of North American Tipulidae, Ctenophorae, Limnobia, and Cynipidae. These descriptions appeared in the *Proceedings of the Academy of Natural Sciences* and in the *Proceedings of the Entomological Society of Philadelphia*. In addition, he wrote papers on the larval characters and habits of the Mycetophilidae, on Lasioptera reared from a golden-rod gall, on the Cynipidae of the North American oaks and their galls, and at one time he described fourteen coleopterous larvae, belonging for the most part to genera of which no preparatory states were known. These papers all appeared in the *Proceedings of the Entomological Society of Philadelphia*, mainly in volume 1.

In 1861, he wrote "On the sex of Cynipidae" (*Proc. Acad. Nat. Sci. Phila.*, vol. 13, pp. 150-152) and called attention to the total absence of males in some genera of Cynipidae. He mentioned Hartiz who had the patience to collect about 28,000 galls of *Cynips divisa*, and to rear and examine the flies, some nine thousand or ten thousand, one by one, only to find that all were females. Other investigators had similar results. At first Hartiz thought they were androgynous, but he soon gave up that idea. In view of the knowledge that the galls frequently produced Cynipidae of two different forms, the true gall flies and the inquilines, the latter of both sexes, Erichson suggested that the two forms, however different, might be the same species, that the male inquilines were in reality the males of *Cynips* and that their females might be considered as a second form of the gall producing female *Cynips*. Erichson's idea was not the result of investigation, but was advanced as a starting point for future work.

In addition, Siebold's hypothesis of parthenogenesis was mentioned. Osten-Sacken then gave the results of his own observations

on the galls on the leaves of red oak, namely that male and female occur in galls of two altogether different forms. He believed that the male which he reared from the spindle-shaped gall was specifically identical with the female from the common oak apple. He noted points of resemblance between the two insects and believed that his theory was strengthened because of the fact that both types of galls occurred on the same tree, the red oak, and because the adults appeared at the same time. He offered his theory as a starting point for future research.

In 1862, there was published by the Smithsonian Institution part 1 of *Monographs of the Diptera of North America* by Hermann Loew, edited by R. von Osten-Sacken. This work was in four parts and to Osten-Sacken fell the laborious task of translating the first three parts written by Loew. The second appeared in 1864, the third in 1872, due to a delay on the part of Loew, and the fourth, Osten-Sacken's monograph on the Tipulidae, in 1869. The fourth was delayed because of a fire in the Smithsonian Institution on January 24, 1865, which destroyed the original manuscript. Additional references to Osten-Sacken's work will be made in the account of his life, which follows, but for a bibliography one is referred to other sources.

According to Osten-Sacken's own account of his entomological life, published at Cambridge, Massachusetts, in 1903, under the title *Record of My Life Work in Entomology*, he divided his career into three periods, each of them being connected with his place of residence at a particular time. He was born in St. Petersburg, Russia, on August 21, 1828. During a temporary stay in Baden-Baden (1838-1839), he became acquainted with a young Russian, Joseph Nikolaievitch Schatilloff, who introduced him to the mysteries of collecting beetles, and later on, in St. Petersburg, where he was educated and where in 1849 he entered the service of the Imperial Foreign Office, he made a collection of insects in all orders except the Lepidoptera, which culminated in the publication of three papers in later years, one of which was devoted to a general survey of the insect fauna of the vicinity of St. Petersburg and included a list of the species except those of the Lepidoptera. Thus ended what Osten-Sacken was pleased to call the first period of his entomological career.

In 1856, he was appointed Secretary of the Russian Legation in Washington, and for twenty-one years he lived in the United States. From 1856 to 1862, he lived in Washington. In 1862, he was appointed Consul General of Russia in New York, which place remained his residence until 1871, when he resigned. Between 1871 and 1873, he made several journeys to Europe, finally settling as a private citizen in this country in 1873, where he remained until 1877. Most of the twenty-one years were spent, as regards entomology, in collaborating with Dr. H. Loew on the Diptera of North America and in forming his own collection of Diptera. An enormous part of his time was occupied in acting as a clearing house for material for Loew and in correspondence, identification, and translation. His purpose was to form a collection of North American Diptera, containing the type specimens described by Loew, as well as specimens identified by him from earlier authors. He expected that such a collection would eventually be returned to the United States and this actually happened. Through the activity of Professor Louis Agassiz, this collection containing about 1,350 species described by Loew and 350 species described by earlier authors, together with a large number of undescribed species, found its way in 1877 to the Museum of Comparative Zoology, in Cambridge, Massachusetts. After this second period of his entomological life, which ended in 1877, he returned to Europe and lived at Heidelberg, where he continued to publish papers on the larger phases of classification, on insect habits, on historical entomology, etc. He died at Heidelberg, May 20, 1906.

From his *Record of My Life Work in Entomology*, one may learn of his controversies with other entomologists, of Loew's persistent disregard of brother dipterologists, of the rise in public esteem of the

order Diptera during the nineteenth century, and of his impressions of various American and European fellow entomologists. Much of his *Record* is devoted to Loew, his work, his collection and his controversies, and at times he is quite critical. Osten-Sacken wrote in various languages, Russian, German, French, Italian, English and Latin. His English was clear, forceful and accurate. He corresponded with many collectors and his letters were frequently delightful. He was a master of detail, a characteristic which is necessary for a successful entomologist. His bibliography lists one hundred seventy-nine titles, fifty of which represent his writings while he was in this country, and twenty-three of these were written before 1865.

#### FRANCIS GREGORY SANBORN (1838-1884)

A collector who should be mentioned here is Francis Gregory Sanborn, at one time widely known to the entomologists of eastern United States by reason of his care in the preparation of insect collections and other objects of natural history.

Sanborn was born January 18, 1838, at Andover, Massachusetts. Following his graduation at Phillips Academy in Andover in 1853, after a six-year course of study, interrupted by ill health, he was employed in October of that year in the Massachusetts State Cabinet of Natural History, at the State House in Boston. He remained here until the summer of 1865, building up the collection, and at the same time acting as clerk to C. L. Flint, the secretary of the Massachusetts State Board of Agriculture. In the *Fifth Annual Report of the Secretary of the Massachusetts Board of Agriculture* (Boston, 1858, pp. 197-201), Sanborn commented on the increased interest of scientific men, students of nature, and farmers, in insects. Sanborn believed that if, after doing all he could and after spending money to produce a crop, the farmer still found his efforts nullified by insects, he should either study the creatures or employ someone to do it for him. He recommended the employment of one or more entomologists by every town or village,

"who should be prepared to describe the destroyers of agricultural products, to classify and name each specimen brought to them for examination, and direct the best means of treating it."

In 1865 and 1866, Sanborn was doing miscellaneous work in the museum of the Boston Society of Natural History. From 1867 to 1873, he was a regular assistant charged with the care of the insects, in addition to his general duties, lecturing and acting at times as secretary. In 1872, he was a justice of the peace and a member of the school committee of West Roxbury, Massachusetts. At this time he also taught at the Bussey Institution in Jamaica Plain and lectured in the Museum of Comparative Zoology in Cambridge. Becoming afflicted with a mental trouble, it was necessary for him to remain in seclusion for seven months at the state hospital in Worcester, Massachusetts. After recovery, he entered into relations with the Worcester Society of Natural History and afterwards became curator, holding this position until his death. In 1874, he was assistant in the Kentucky state geological survey, and in 1876 he was hired to prepare the entomological exhibit of the United States Department of Agriculture at the Centennial Exposition at Philadelphia. He belonged to various scientific organizations including the Cambridge Entomological Club, Entomological Society of Ontario, New York Entomological Society, etc. He died June 4, 1884, at Providence, Rhode Island.

#### CYRUS THOMAS (1825-1910)

On June 30, 1859, Cyrus Thomas read before the Illinois State Natural History Society (*Trans. Ill. St. Agric. Soc.*, vol. 3, pp. 665-670) at Bloomington, Illinois, a paper on "The study of Natural History" in which he spoke of the advantages to be gained from the study of insects and of the entire field of natural history. He spoke generally, and of the best method of teaching it in schools and of books for beginners in zoology, botany, geology and mineralogy.

And his talk was somewhat tinged with religion and with references to the Creator. During the same year, he wrote his list of the "Orthoptera of Illinois," which was published in the *Transactions of the Illinois State Agricultural Society* (vol. 3, pp. 662-685). This annotated list contained four species of Blattidae, one of Mantidae, two of Phasmidae, seven of Achetidae, seven of Gryllidae and twenty of Locustidae. Thomas realized the incompleteness of his list, but excused himself on the basis of having no copy of Say's *Entomology*.

In 1862, the Illinois State Agricultural Society published in their *Transactions* (vol. 5, pp. 401-468) Thomas's "Insects Injurious to Vegetation in Illinois." This is a lengthy account containing descriptive statements about various injurious species, their classification in a general way, recognition of the various orders, examples of the more injurious species in each order and methods of control. Harris, Fitch, LeConte, Haldeman, Melsheimer, and others are frequently cited.

Cyrus Thomas has been characterized as an archaeologist, ethnologist and entomologist. Born at Kingsport, Tennessee, July 27, 1825, he was educated in the schools and academies of eastern Tennessee, where he also studied law. In 1849, he moved to Jackson County, Illinois, and was county clerk there from 1850 to 1853. From 1851 to 1864, he practiced law at Murphrysboro in the same county. He entered the Evangelical Lutheran ministry in 1864 and in 1866 received his Ph.D. degree from Gettysburg College. From 1869 to 1874, he was the entomologist and botanist on the government geological survey of the territories, under Ferdinand V. Hayden. When the Southern Illinois Normal University opened at Carbondale, Illinois, in 1874, he was made professor of natural sciences, a position he held until 1876. From 1875 to 1882, he was state entomologist of Illinois, and for five years within that period he was also a member of the United States Entomological Commission, named to investigate the destruction caused by grasshoppers in the west. In 1882, he became archaeologist to the United States Bureau of Ethnology.

He began to publish entomological articles, mainly in the *Prairie Farmer* of Chicago, as early as 1859. In the fifth volume of the *Transactions of the State Agricultural Society of Illinois*, printed in 1864, is his prize essay on entomology, and also the prize essays of Walsh and LeBaron. He died at Washington, D.C., June 27, 1910.

#### JAMES BRACKENRIDGE CLEMENS (1829-1867)

American Tineina began to be seriously studied when Dr. J. Brackenridge Clemens appeared upon the entomological scene. His first paper, however, was not devoted to microlepidoptera but to the Sphingidae, being entitled "Synopsis of the North American Sphingidae." This appeared in 1859 in the *Journal of the Academy of Natural Sciences of Philadelphia* (n.s. vol. 4. pt. 21 pp. 97-189, illus.). In it, he defined species, genus, family, etc., gave a synoptical table of genera, and then took up the species within each genus. Notes on larvae, distribution, food plants, eggs, etc., are included, and the entire paper which exhibited great ability and research was the foundation for subsequent revisions of the species. On the microlepidoptera, Clemens published some seventeen papers in the *Proceedings of the Academy of Natural Sciences of Philadelphia* (vols. 11, 12) and in the *Proceedings of the Entomological Society of Philadelphia* (vols. 1, 2, 3, 5) in which he described thirty-one genera and about two hundred new species, giving at the same time notes on the larval habits of many. In 1872, H. T. Stainton, F.R.S., Secretary of the Linnaean Society of London, collected the writings of Clemens and republished them in book form under the title *The Tineina of North America by (the late) Dr. Brackenridge Clemens*. Included in the work, which appeared in London in 1872, are nine letters which Stainton had received from Clemens, showing him to be a man of unusual culture and a keen observer.

Doctor Clemens was born in Wheeling, Virginia, in 1829 or 1830. He attended the Virginia Military Institute for three years and then

the University of Pennsylvania, graduating from the Medical Department in 1849. Apparently he did not actively practice medicine. He married Susan Burke Wagner of Easton, Pennsylvania, in 1850, and four children were the result of this union. In 1859, he was elected a corresponding member of the Entomological Society of Philadelphia. Doctor Clemens died of typhoid fever on January 11, 1867, at his home in Easton, and his short but brilliant entomological work ended. His types were presented by his widow to the American Entomological Society in 1867.

#### DAVID HUMPHREYS STORER (1804-1891)

It may surprise some to know that Dr. David Humphreys Storer, known for his work on the fishes and reptiles of Massachusetts, at one time took a keen interest in entomology. As a successful physician of Boston, he was loved by his patients. The early meetings of the Boston Society of Natural History were attended by him along with Gould, Cabot, Jackson, Agassiz, Pickering, Gray, Brewer, Bryant and the brothers Roger, with Jeffries Wyman presiding. Doctor Storer was recording secretary during the first six years of its existence, having joined in 1830 immediately after it was founded, and was one of the seven members appointed to give lectures. In addition, he helped to raise funds for a building and he was generous in donating to the collections of the society. His interest in natural history started early in his life, and entomology occupied much of his interest. He gave popular lectures on insects at a time when lyceum lectures were first inaugurated. He was interested in birds, minerals, and shells, in establishing a private medical school, and in his practice.

At the January 5, 1859, meeting of the Boston Society of Natural History, he read a paper "On the power possessed by the larvae of various flies, of consuming without apparent injury to themselves the flesh of animals which have died from the effects of arsenic," (*Proc. Boston Soc. Nat. Hist.*, vol. 7, pp. 1-3). He mentioned the development of blow flies on the bodies of rats killed by arsenic and said that the pupae of the blow flies yielded metallic arsenic upon analysis.

Doctor Storer was born at Portland, Maine, March 26, 1804, and died at Boston, September 10, 1891, after a busy and successful life, during which he received many honors. His name will always be associated with the history of medicine and natural history in Massachusetts. His work on fishes and reptiles, to which he devoted his leisure time for twenty-five years and more, was published by installments in the *Memoirs of the American Academy*. He graduated from the Harvard Medical School in 1825 and after a hard struggle in his early days, became one of Boston's leading doctors.

#### CHARLES THOMAS JACKSON (1805-1880)

Another Boston physician, Charles T. Jackson, M.D., was also interested in insects, but from a somewhat commercial angle. He discovered that a permanent yellow dye could be made from the "red-bug," *Phyrrhocoris saturellus*, which infested the cotton plants of Florida. In the *Agricultural Report of the United States Commissioner of Patents for 1858* (pp. 272-273) he gives the process of making the dye and says that at first it was supposed that a red dye could be extracted, but it was found that no color of that kind was forthcoming. Instead, the whole substance of the insect could be converted into a rich orange-yellow dye that was readily fixed on woollen or silk fibers by the alum mordant liquor.

Dr. Charles Thomas Jackson was born at Plymouth, Massachusetts, June 21, 1805. He graduated from the Harvard Medical School in 1829 and then went to Paris and Vienna. He was interested in the utilization of electricity for telegraphy and on his return voyage in 1832 one of his fellow passengers was Samuel F. B. Morse, to whom, so he always said, he made known "the general idea of the magnetic telegraph and of the principles on which it depended." In 1834, he exhibited and successfully operated a telegraphic apparatus

similar to the one patented a year later by Morse. In addition to practicing medicine, he was a chemist and mineralogist and published reports on the geology of Maine, Massachusetts and Rhode Island. He was a member of the Boston Society of Natural History and contributed over four hundred titles on geological topics to various publications. He is considered by some to have been the discoverer of the anaesthetic properties of ether, but credit was claimed by his pupil, Dr. W. Thomas Green Morton, during a long, bitter controversy. He died at Somerville, Massachusetts, August 28, 1880.

#### ENTOMOLOGICAL BOOKS

In the catalogue of Bailliere Brothers, 440 Broadway, New York City, issued about 1859, very few American works on insects were offered for sale, for the reason that such works did not exist. As will be noted, European books on insects continued to circulate in this country. In Bailliere's catalogue, *The Natural History of the Rarer Lepidopterous Insects of Georgia* (London, 1797) is quoted at \$55.00; *Histoire Naturelle des Insectes Hemiptères* (Paris, 1843), \$3.25; Burmeister's *Manual of Entomology* (London, 1836), \$4.50; Catesby's *Piscium, Serpantum, Insectorum, &c de Carolinae, Floridae, et Bahamensium, Insularum* (Noremburgae, 1777), \$25.00; *British Entomology* by Curtis (1824-1840), \$120.00; Dejean's *Catalogue de la collection des Coleoptères de Dejean* (Paris, 1835), \$4.00; five volumes on the *Coleoptera of Europe* by Dejean, Boisduval and Aube, \$45.00; *Illustrations of Foreign Entomology* by Drury and Westwood (London, 1837), \$40.00; the first volume of Fallen's work on the Diptera (1814), \$2.00; Gravenhorst's *Monographia Coleopterorum Micropterorum*, \$1.25; and Kirby and Spence, *Introduction to Entomology* (London, 1857), \$1.50. Other works by Lacordaire, Latrielle, Linnaeus, Macquart, Mulsant, etc., were included. As for American works, we find only Say's *American Entomology*, 3 vols., \$30.00; *Insects of the State of New York* by Emmons, \$7.50, and Fitch's first and second reports (Albany, 1856), \$1.25.

#### CHARLES PICKERING (1805-1878)

Charles Pickering, best known as an anthropologist and botanist, was not impartial to the collection and study of insects although his publications on the subject were very few. In 1860, he spoke on the subject of the geographical distribution of species (*Proc. Amer. Acad. Arts Sci.*, vol. 5, pp. 81-82) at the Academy meeting of December 11, and Asa Gray supplemented his remarks with some critical observations. Doctor Pickering said that his experience led him to conclude

"that the main limiting cause in the diffusion of species is to be found in the envelope of the ovum; in other words, the shell of the ovum governs the diffusion of the species."

"When the shell of the ovum breaks before exclusion, as in animals called viviparous, the species cannot be diffused by means of ova."

"Other organic beings capable of locomotion are diffused both by ova and a wandering progeny; but plants are diffused exclusively by ova."

He believed that if the order of Nature were changed, if insect eggs were borne about by winds and waves, insects would disappear from the earth; and if the seeds of plants were hidden away in places where insects deposit their eggs, plants in time would become extinct.

Doctor Gray said that the aptitude for dissemination was only one of several elements and that by no means was it the determining element, at least not in the vegetable kingdom. He said that although the seeds of the Compositae were endowed with unusual facilities for dispersion, the species on the whole were not remarkable for their wideness of range.

Pickering corresponded with Say, Harris and others about entomological matters, although his chief interests were in other

fields. Of New England stock, he was born in Pennsylvania, November 10, 1805. He received three degrees from Harvard, one of them being M.D. In 1829, he settled in Philadelphia, joined the Academy of Natural Sciences and became librarian and one of the curators. In 1838, he was the principal zoologist of the United States Exploring Expedition to the South Seas. He was interested in the geographical distribution of animals and after the return of the expedition, he traveled extensively in foreign countries. He was a member of the American Philosophical Society and a fellow of the American Academy of Arts and Sciences, to both of which he made contributions. Some of his writings appeared in the *Smithsonian Contributions to Knowledge* and others were brought out at his own expense. He was not a prolific writer. He died in Boston March 17, 1878.

#### CHARLES WRIGHT (1811-1886)

At the meeting of the American Academy of Arts and Sciences held on May 8, 1860, Mr. Charles Wright made some remarks on the architecture of bees, and referred particularly to the symmetry of their cells. He said in part,

"these symmetries show how the cell might be the natural result of simple or sensible economy, as applied to the building of simple nests, the common type of which is a cylindrical cavity with a hemispherical base."

He stated that the construction of a series of nests, side by side, would, by the removal of interstitial material, result in cells like the normal ones in honeycomb,

Mr. Wright was born at Wethersfield, Connecticut, October 29, 1811, and died at the same place on August 11, 1886. He graduated from Yale College in 1835 and while there acquired a fondness for botany. He surveyed and botanized in Texas in 1837 and was connected with several expeditions, which took him to Georgia, Cuba, the southern states, etc.

#### SAMUEL BOTSFORD BUCKLEY (1809-1884)

Another author who wrote his first entomological paper in 1860 was Samuel Botsford Buckley. This was on "The Cutting Ant of Texas" and it appeared in the *Proceedings of the Academy of Natural Sciences* (vol. 12, pp. 233-236), being a general account of its life-history story and habits. In 1862, Mr. Buckley's paper dealing with observations on the tarantula and its destroyer was printed in the *Proceedings of the Entomological Society of Philadelphia* (vol. 1, pp. 138-139). This account, written somewhat popularly, appeared under the title "The tarantula (*Mygale hentzii* Girard) and its destroyer (*Pompilus formosa* Say)." A third entomological paper by Buckley, which also appeared in the *Proceedings of the Entomological Society of Philadelphia* (vol. 1, pp. 212-215, 1862), described two new species of termites from Texas and included a few notes about their habits.

Mr. Buckley was born May 9, 1809, in Yates County, New York, near Seneca Lake. He graduated from Wesleyan University, Connecticut, in 1836 and from that time on he traveled much in the southern states, collecting plants, shells and insects. In 1866, he was appointed State Geologist of Texas and lived at Austin. The skeleton of a *Zenglodon*, at one time in the Warren Museum at Boston, was discovered by Buckley in 1841 in Clarke County, Alabama. In the preparation of Mrs. Young's *Flora of Texas*, Buckley gave considerable aid. He belonged to the Academy of Natural Sciences of Philadelphia and to societies in New York, Buffalo and New Orleans. His death occurred February 18, 1884, at Austin, Texas.

#### PHILIP HENRY GOSSE (1810-1888)

Notice should be taken here of Philip Henry Gosse's *Letters From Alabama* published in London, 1859. This small book contains, in a series of letters, Gosse's impressions during a residence of seven or

eight months in the hilly regions of Alabama. It is devoted to birds, plants, mammals, insects, manners of the inhabitants, etc. A large share of it is concerned with butterflies, fireflies, dragonflies, cicadas, bees, beetles, wasps, moths, male cricket, mantids, walking sticks, robber flies and other insects, and nearly every letter describes the appearance and habits of several species, giving in most instances their scientific names. And all of this is in very readable prose. A fuller account of the work of Gosse will be found in the chapter devoted to entomology in Canada.

#### GEORGE HENRY HORN (1840-1897)

In 1860, there appeared the first paper of an author who was a born systematist, whose genius for arranging things, for discovering relationships and for consistent unification was developed to a remarkable degree. This was Dr. George H. Horn, by whom the study of the Coleoptera in this country was advanced enormously. Doctor Horn's first contribution to entomology was apparently written in 1860 and published in the *Proceedings of the Academy of Natural Sciences of Philadelphia* (vol. 12, p. 233). It was entitled "Descriptions of three new species of Gorgonidae, in the collection of the Academy." This was followed by his title "Descriptions of new North American Coleoptera, in the cabinet of the Entomological Society of Philadelphia" (*Proc. Acad. Nat. Sci. Phila.*, 1860, pp. 569-571). His next contribution consisted of observations on the habits of *Dermestes lardarius*, *Anthrenus destructor*, *Snoxydon basilare*, *Anobium paniceum*, *Clytus erythrocephalus*, and ten other species of Coleoptera, under the title "Notes on the habits of some coleopterous larvae and pupae" (*Proc. Ent. Soc. Phila.*, 1861, vol. 1, pp. 28-30). His fourth publication, "Monograph of the species of *Trogosita* inhabiting the United States" (*Proc. Acad. Nat. Sci. Phila.*, 1862, vol. 14, pp. 82-08) suggested itself to him by reason of the neglected condition of the genus, because of the scattered descriptions of half the described North American species and because some descriptions had been published by Pal. de Beauvois in his *Insects of Africa and America*. In Horn's paper his new species were obtained mostly from LeConte's collection.

In Horn's fifth paper, which completes the list of those appearing before 1865, he described a new species in each of the following genera: *Trogosita*, *Margarinotus*, *Languria*, and *Triplax*, some of his specimens having been received from Uhler (*Proc. Ent. Soc. Phila.* 1862, vol. 1, pp. 187-188).

In the chronological list of the published writings of Horn by Samuel Henshaw (1898) there are 265 titles from 1860 until 1896, a period of thirty-six years. During that time Horn proposed 154 generic names, 144 of which were still retained in 1908. In the same period, he described 1,582 new species of Coleoptera, 1,493 of which retained the name given, 37 of which were considered varieties and 52 of which were considered as synonyms in 1908.

Doctor Horn, in his work on the Coleoptera, set an example of thoroughness that has since been followed by numerous workers and his influence is apparent in the numerous coleopterous papers by writers who followed him. Doctor Horn's papers are not widely scattered. The greater proportion of them may be found in the *Proceedings of the Academy of Natural Sciences of Philadelphia*, the *Proceedings of the American Philosophical Society*, and the *Transactions of the American Entomological Society*. Few of his titles represent short notes. All represent original research and many of his titles cover one hundred printed pages and more. In many of his papers appear careful drawings made by himself. Horn will always be associated with Dr. John L. LeConte. They worked together. LeConte was the broader student of nature. Doctor Horn was narrower, but he had more knowledge of detail. His descriptions are models of clarity in which essentials are emphasized, structure given first rank, and minor details mentioned as incidents. The important thing to him was the combination of characters.

George Henry Horn was born in Philadelphia, April 7, 1840. His

early education took place in private and public schools in Philadelphia, and in July 1853 he entered the Central High School of Philadelphia. After leaving high school, he entered the Medical Department of the University of Pennsylvania, from which he graduated on March 14, 1861, with the degree, Doctor of Medicine. His zoological work began while he was a medical student, and at that time he studied the Coelenterates and Bryozoa, his papers on these subjects being written in collaboration with Mr. William M. Gabb and appearing previous to 1863. In July, 1860, Horn became a member of the recently organized Entomological Society of Philadelphia, and soon met Dr. John L. LeConte. In June, 1862, Horn went to California where he was commissioned by Governor Leland Stanford, Assistant Surgeon in the Second Cavalry, California Volunteers. On July 14, 1864, he was made surgeon of the First Infantry Regiment, California Volunteers. His Civil War service included additional commissions and finally terminated with the rank of Major in the Second Infantry Regiment, California Volunteers, on April 16, 1866. During the war he continued to collect and observe insects as opportunity afforded. He returned to Philadelphia in 1866, where he established himself as a physician and was elected president of the Entomological Society. In the spring and summer of 1874 he visited Europe, spending time in London and Paris, where he examined collections and became acquainted with European entomologists. Other visits were made to Europe in 1882 and 1883. In 1889, he was elected Professor of Entomology at the University of Pennsylvania, but he never gave any instruction under that title. Another visit to California took place in 1893. In 1895, his health began to fail rapidly and he died suddenly on November 24, 1897, in Philadelphia. Much more could be said of Doctor Horn, his ability, his personality, his friendships and his work, but this lies without the scope of the present volume.

#### HERMANN AUGUST HAGEN (1817-1893)

Another entomologist whose activity in this country started during what I am pleased to call the pioneer century was Dr. Hermann August Hagen. In 1861, the Smithsonian Institution published in its *Miscellaneous Contributions* (vol. 4, art. 1, 20 + 347 pp., Pub. No. 134) Hagen's *Synopsis of the Neuroptera of North America with a list of the South American species*. His synopsis was prepared at the special request of the Smithsonian Institution from material, in considerable part, from their own collections. Hagen was in Königsberg, East Prussia, at the time, and his manuscript, in Latin, was translated into English by P. R. Uhler, of Baltimore. The proofs were corrected by Uhler and Baron Osten-Sacken. The synopsis contained all the species known at that time to have been found in the United States, in the English and Russian colonies, Mexico, Central America and the West Indies. Various collections are listed as furnishing specimens and the synopsis was prepared from specimens which Hagen himself had examined. At the time it was written, Hagen stated that it contained only a fraction of the neuropterous fauna of America. In 1863, the Entomological Society of Philadelphia published in its *Proceedings* (vol. 2, pp. 167-272) a joint paper by Hagen and B. D. Walsh entitled "Observations on certain North American Neuroptera by H. Hagen of Königsberg, Prussia; translated from the original French MS. and published by permission of the author, with notes and descriptions of about 20 new North American species of Pseudoneuroptera by Benj. D. Walsh, M.A." In September 1862, Walsh had published in the *Proceedings of the Academy of Natural Sciences of Philadelphia*, a paper on the Pseudoneuroptera of Illinois, in which he described over forty species thought to be new. Later, he forwarded the duplicates to Doctor Hagen and the outcome was the joint paper referred to, and the development of the fact that Hagen's views, in most cases, coincided with those of Walsh. Nearly all the new species described by Walsh in the joint paper were collected within four miles of Rock Island, Illinois.

Doctor Hagen was born at Königsberg, East Prussia, on May 30,

1817. After graduating from the Kneiphofische Gymnasium in 1836, he studied medicine at the University of Königsberg. His interest in natural history was stimulated by such outstanding teachers as von Baer and von Siebolt, and his entomological interests were furthered by his father and grandfather, the latter a professor of natural history in Königsberg. He received his M.D. degree in 1840 and afterward studied in Berlin, Paris and Vienna, returning to Königsberg in 1843 where he practiced as a physician and surgeon. His first entomological paper was a "List of the Dragon Flies of East Prussia, which was published in 1839, and from then until within three years of his death his contributions amounted to over four hundred, many of them appearing in German periodicals before he came to this country.

While studying in Paris in 1842, he met Baron de Selys-Longchamps, of Liege, and this friendship resulted in their joint papers on the Odonata of Europe. Hagen also wrote on termites and on fossil Neuroptera, and his well known and widely used *Bibliotheca Entomologica* appeared in 1862 and 1863.

On October 12, 1867, Doctor Hagen arrived in Cambridge, Massachusetts, to take charge of the entomological department of the Museum of Comparative Zoology. This was upon the solicitation of Prof. Louis Agassiz, who desired to fill the vacancy caused by Mr. Uhler's departure to Baltimore to become superintendent of the library of the Peabody Institute. From 1868 to 1890, Doctor Hagen's reports show the volume of work accomplished in arranging the large and growing entomological collection of the Museum, a large amount of which he did himself.

Just before coming to America, Doctor Hagen (1863-67) was vice-president of the City Council of Königsberg and a member of the School Board of that city. His most important publications during his residence in America were on crayfishes, color mimicry of insects, and monographs and synopses on the Odonata, psocids, the butterfly genus *Colias*, embids, etc., many of which were illustrated by his own hands. In 1879, he gave his entomological library to the Museum. And during the summer of 1882, he made an economic survey along the line of the Northern Pacific Railroad, especially in Washington. In addition to his duties at the Museum, he gave at long intervals lectures to advanced students. Doctor Hagen was a man of marked character, simple tastes and sympathetic disposition. Many entomologists enjoyed his friendship and hospitality, and he was one of the outstanding entomologists of his time. His death occurred from paralysis, at Cambridge, Massachusetts, November 9, 1893.

#### SAMUEL HUBBARD SCUDDER (1837-1911)

Still another distinguished entomologist who started his career before 1865 was Samuel Hubbard Scudder, conceded at the time of his death to be the greatest orthopterist America had produced. The present classification of Orthoptera was built on the basis of Scudder's work. His first natural history contribution was a list of twenty species of terrestrial mollusks found at Williamstown, Massachusetts, which was printed in the *Williams Quarterly*, June, 1858 (vol. 5, p. 359). In the *Proceedings of the Boston Society of Natural History* for July, 1859 (vol. 72) appeared his report to the society on the collection of the insects of the late Dr. T. W. Harris. At the January 18, 1860, meeting of the Boston Society, he presented a chronological index to the entomological writings of Doctor Harris, listing ninety-nine titles, mostly in agricultural publications (*Proc. Boston Soc. Nat. Hist.*, vol. 7, pp. 213-222). At the May 2, 1860, meeting, Mr. Scudder reported on the supposed damage to grape vines by the American white ant (*Proc. Boston Soc. Nat. Hist.*, vol. 7, pp. 287-283). His first paper on Orthoptera was, "On the genus *Raphidophora*, Serville; with descriptions of four species from the caves of Kentucky and from the Pacific coast." This was published by the Boston Society in their *Proceedings* (1861, vol. 8, pp. 6-14). Up to 1865, and for that matter afterward, Doctor Scudder wrote on varied entomological topics, such as the synonymy of butterfly species, destructiveness of aphids, army worms, insect classification,

egg parasites, distribution of butterflies, the insect fauna of the White Mountains [N.H.], fossil insects and even on ancient pottery. Most of these contributions were printed in the *Proceedings of the Boston Society of Natural History*. In addition to his numerous papers on the Orthoptera, Doctor Scudder contributed extensively to the literature on diurnal Lepidoptera, his writings covering nearly all phases of the subject and numbering about one hundred or more papers, books and memoirs all involving extensive labor and research. His work *Butterflies of the Eastern United States and Canada with Special Reference to New England*, published (by the author), Cambridge, 1889, is well known as a valuable source of information about distribution, habits, life-histories and descriptions of the various stages of numerous species. Many other books on butterflies came from his pen. Doctor Scudder was also the foremost student of fossil insects in America, and in addition he contributed to the literature of classification, distribution, genitalic study and minute anatomy. His writings on American Orthoptera run well over one hundred papers. Some of them were published in the *Proceedings of the Boston Society of Natural History*; others appeared in *Entomological News*. His *Catalogue of the Orthoptera of North America described previous to 1867* (Washington, 1868) and his *Catalogue of the Described Orthoptera of the United States and Canada* (Davenport, 1900) are known to many workers in the general field of entomology.

For many years he edited *Psyche*, the organ of the Cambridge Entomological Club, and from 1883 to 1885 he was the editor of *Science*. Many journals, both American and foreign, published Doctor Scudder's contributions.

Samuel Hubbard Scudder was born April 13, 1837, in Boston, Massachusetts. He graduated from Williams College in 1857, and from the Lawrence Scientific School, in 1862. The work done in the Museum of Comparative Zoology attracted him, and he became an assistant to Professor Agassiz, in which position he remained until 1864. He served as secretary of the Boston Society of Natural History from 1862 to 1870, as custodian from 1864 to 1870, and as its president from 1880 to 1887. From 1879 until 1885 he was assistant librarian of Harvard, and in 1886 he became paleontologist of the United States Geological Survey in the division of fossil insects. Professor Cockerell has said that Scudder was the founder of American Paleontology and by far the largest contributor to that subject.

Doctor Scudder was active as an officer and as a member in many scientific societies, among other things, serving as general secretary of the American Association for the Advancement of Science in 1875 and as a vice president in 1894. In 1902, he definitely abandoned scientific work, being then sixty-five years of age. Nine years later, on May 17, 1911, he died. He was a man of culture, of refinement and of great scholarly attainments, whose ability was recognized at home and abroad. He added luster to the study of entomology in America.

#### FREDERICK ADOLPHUS WISLIZENUS (1810-1889)

At the July 1, 1861, meeting of the Academy of Science of St. Louis (*Trans. Acad. Sci. St. Louis*, vol. 2, pp. 159-160), Dr. Frederick Adolphus Wislizenus called attention to the "army worm" then devastating the neighboring fields of St. Louis. He referred to it as the grass caterpillar, *Bombyx graminis*, and spoke of its destructiveness in the north of Europe. In Sweden and Norway, in some years this species destroyed practically the entire crop of grass. Doctor Wislizenus then gave the life history of the species and recommended plowing while the insect was in the soil. He thought that the digging of ditches and the driving of hogs and chickens into the meadows might do some good. If a timothy field were invaded, he recommended the construction of ditches and the mowing of the timothy so that the caterpillars would either die or go in search of fresh food.

Doctor Wislizenus was primarily a botanist, physician and traveler, rather than an entomologist. Born May, 1810, in a German principality, he was forced to leave Germany because of his participation in an unsuccessful attempt to overthrow the monarchical government. Fleeing to Zurich, he became interested in the cause of Italy and joined an expedition to aid Mazzini in his struggle against Austrian rule, but he was forced to resume his studies and he graduated in Zurich in 1834 as a physician. In 1835, he was practicing in New York and writing verse and political pamphlets. In 1837, he set out for the west and joined Körner and other exiles who had founded a home in St. Clair County, Illinois. Until 1839 he practiced in Mascoutah and then moved to St. Louis where he joined one of the expeditions of the St. Louis Fur Company for trading with the Indians. He penetrated toward the source of the Green River, and when the rest of the party returned he joined a band of Indians and crossed the Rocky Mountains. Returning to St. Louis in 1840, he resumed his practice and became identified with the rapidly growing city. But he soon joined a trading expedition to Mexico where, because of the war between Mexico and the United States, he was taken a prisoner and not liberated until the spring of 1847. In the summer of that year, he returned to St. Louis. Congress requested him to publish his memoirs and these appeared in 1848. His later activities included a trip to Constantinople, where he married, a trip to Panama and the Pacific Coast, his return to St. Louis in 1852, where he settled down, his interest as one of the founders in the St. Louis Academy of Science, as an officer of the St. Louis Medical Society, and as president of the German Medical Society of St. Louis, and in the collection of botanical and mineralogical specimens and the making of barometrical observations. He died September 22, 1889, in his eightieth year.

#### THOMAS BEVERIDGE ASHTON (1826-1895)

On April 25, 1859, a letter from T. B. Ashton, of Washington County, New York, was read before the Entomological Society of Philadelphia. This dealt with his observations on *Podura nivicola* Fitch. At the meeting of February 10, 1862, another of Ashton's letters was read, this one dealing with his observations on *Aphis avenae* Fitch, on oats (*Proc. Ent. Soc. Phila.*, vol. 1, p. 32, pp. 141-142).

T. B. Ashton, one of the pioneer entomologists of Kansas, died December 28, 1895, aged sixty-nine, at Tonganoxie, Kansas. A native of Washington County, New York, Ashton was always interested in insects, especially the Coleoptera. He was one of the charter members and helped to found the Entomological Society of Philadelphia, the latter part of February, 1859. He was a skilled and persistent collector of Coleoptera and gathered a large and valuable collection. At times he contributed articles to eastern journals. On February 8, 1895, he wrote a letter to the late H. W. Wenzel, of Philadelphia, in which he mentioned some of his activities. This letter was printed not so many years ago by the late Warren Knaus, of McPherson, Kansas. In this letter, Ashton mentions visiting James Ridings, of Philadelphia, in 1852, and examining his collection and making exchanges with him. In 1853 in the same city, he met George Newman. His visits to Philadelphia continued every other fall, until the winter of the year in which the Entomological Society of Philadelphia was organized. During these years he made friends with all the collectors in the city. In the spring of 1869, he went to Kansas where he stayed the balance of his life, always interested in insects. He knew Dr. Asa Fitch, who was friendly to him from boyhood up, and at one time he received a rather curt letter from Dr. G. H. Horn, who objected to the drudgery of naming insects without even receiving a few specimens for his labor.

#### JAMES H. B. BLAND (1832-1911)

In 1861, James H. B. Bland published his first, paper on the Coleoptera, a "Catalogue of the Longicorn Coleoptera in the Vicinity

of Philadelphia." This was suggested to him by the large number of Cerambycidae, etc., which could be collected in the vicinity of Philadelphia. In view of the numerous wooden wharves and the commerce between Philadelphia and other coast cities, many species were introduced from other areas. Henry Feldman and George Newman, who collected extensively around Philadelphia, helped Bland with his list.

Bland, all together, published seven papers, all on Coleoptera. They appeared in the *Proceedings of the Entomological Society of Philadelphia* (vols. 1 to 4) and, except for the list referred to, consisted of the descriptions of new species in various genera. Bland's writings all appeared before 1865.

Mr. Bland was born in North Carolina about 1832. He died in Philadelphia, November 12, 1911. He became an organization member of the Entomological Society of Philadelphia on February 22, 1859, and was actively interested in the Society, serving as vice-president for two years (1861-62) and as president for three years (1863-65). His entomological work was encouraged by Dr. Thomas B. Wilson, who was such a friend and patron of science in the 1850s and early 1860s. During the last forty years of Bland's life, his interest in entomology was spasmodic, although he helped to organize the Feldman Collecting Social in December 1887, and was its first president.

## CHAPTER VIII

### FROM WALSH TO COWAN (1860 to 1865)

BENJAMIN DANN WALSH (1808-1869)

Many of our early entomologists were quite versatile, and the life of Benjamin Dann Walsh is an example of varied activities in different fields. Mr. Walsh was born in Frome, Worcestershire, England, September 21, 1808. Little is on record of his detailed career in England. He graduated at Trinity College, Cambridge, and he was intended for the ministry by his parents, but his own objective was different. He published a large pamphlet on university reforms, nearly all of which were eventually carried out, and in addition to contributing to Blackwood's and other English magazines, he wrote numerous newspaper articles. In 1837, he published Walsh's *Comedies of Aristophanes*. This was to have been finished in three volumes, but owing to publication difficulties, only one was issued, containing the Acharians, the Knights and the Clouds, all translated into English metres.

In 1838, he married and came to America, settling in Henry County, Illinois, near Cambridge, where he bought a three hundred acre farm on which he intended to lead the life of a philosopher. In fact he led a secluded life on this farm for thirteen years, and did all his own work, even to the extent of making his own shoes and mending his own harness. His health failing, he moved to Rock Island, Illinois, in 1851 and engaged in the lumber business for about seven years, at the same time submitting many fugitive pieces to the newspapers, principally on topics of political interest. He hated slavery and oppression and was a radical Republican. Suspecting in 1858 that the City Commission was defrauding the city, he ran for alderman, was elected, exposed the frauds, and resigned. During this time he made many enemies. After retiring from the lumber business, he built a row of buildings in the city, these being known as Walsh's Row. Although he had made a small collection of insects in England, he gave no attention to insects in America until after his buildings were erected, his first published account being a lecture he delivered before the Illinois State Horticultural Society at Bloomington, Illinois, in January, 1860. From 1862 until 1866, he contributed about a dozen scientific papers to the *Proceedings* of the Boston Society Natural History, the Entomological Society of Philadelphia, and the Academy of Natural Sciences of Philadelphia. One of these (*Proc. Ent. Soc. Phila.*, vol. 10, pp. 294-311) dealt with the genera of Aphidae found in the United States, and at that time (1862) the total number of species described from this country amounted to only seventy. Another was entitled "List of the Pseudo-Neuroptera of Illinois contained in the cabinet of the writer, with descriptions of over forty new species; and notes on their structural affinities" (*Proc. Acad. Nat. Sci. Phila.*, vol. 14, pp. 361-402). Still another dealt with certain colopterous, lepidopterous, and dipterous larval forms (*Proc. Boston Soc. Nat. Hist.*, vol. 9, pp. 286-318). He also wrote on dimorphism in the hymenopterous genus *Cynips* (*Proc. Ent. Soc. Phila.*, vol. 20, pp. 443-500), a subject in which Osten-Sacken was interested and about which they corresponded. At that time Walsh said that the classification of Cynipidae was in a state of chaos. Guest gall flies, because of their variability in size and color, were sometimes described two or three times.

In the *Proceedings of the Entomological Society of Philadelphia* (vol. 3, pp. 207-240) under the title "On certain entomological speculations of the New England school of naturalists," Walsh criticizes Agassiz's views as outlined in his book on Lake Superior. In volumes 3 and 5 of the *Proceedings of the Entomological Society of Philadelphia*, Walsh set forth his views on phytophagic varieties and phytophagic species, supporting his opinion that in some but not

all cases, difference of food was accompanied by differences in coloration, or structure, or both, in one or more stages of particular insects.

Walsh was interested in economic insects also, and contributed regularly to the *Prairie Farmer* of Chicago, Illinois, the *Illinois Farmer* of Springfield, Illinois, the *Valley Farmer* of St. Louis, Missouri, and to other farm papers. He tried to arouse the farmers to the large losses due to insects. In 1861, he wrote on "Insects injurious to vegetation in Illinois" (*Trans. Ill. State Agric. Soc.*, vol. 5, pp. 469-483), taking up in particular the armyworm, white grubs, leafrollers in clover hay, lepidopterous larvae on roses, etc. The armyworm, and its enemies, was the subject for additional pages in the transactions of the same society.

In October, 1865, the Entomological Society of Philadelphia commenced its monthly called *The Practical Entomologist*, edited by E. T. Cresson, Aug. R. Grote and J. W. McAllister. Soon, Mr. Walsh was added to the list as associate editor from the west and finally, in the second volume, he became the sole editor. The publication, however, ended in September, 1867. During the winter of 1868-9, Walsh was appointed State Entomologist of Illinois at a salary of \$2,000 per year. He really started his duties in June, 1867, without waiting for the action of the legislature, and his first report as acting state entomologist was issued in 1867 as an appendix to the *Transactions of the State Horticultural Society* for that year. In 1868, with Riley, the *American Entomologist* was started.

On November 12, 1869, while walking towards Moline on the tracks of the Chicago and Rock Island Railroad, Walsh was struck by a train and his left foot was mangled. It was amputated above the ankle and for a few days he seemed to be recovering, but he died on November 18.

Returning to Walsh's criticism of Agassiz, in Walsh's paper "On certain entomological speculations of the New England School of Naturalists" (*Proc. Ent. Soc. Phila.*, 1864, vol. 3, pp. 207-249) he takes issue with Agassiz, who had stated in his book on Lake Superior, in an unqualified manner, that the insects of the temperate zone of North America "differ specifically throughout," from those of Europe, and subsequently that,

"quite a number of European insects have been introduced into this country along with plants, among which may be mentioned some showy butterflies, as *Vanessa atalanta*, *cardui* and *Antiopa*, which are very erroneous considered by some entomologists as native Americans."

Walsh said that, owing to the influence exerted upon American naturalists by Agassiz for many years, most entomologists in this country had become devoted believers in his theories and that American describers of new species of insects,

"have generally been content with ascertaining that a species supposed to be new had not been hitherto described as American, and have troubled their heads but little as to whether the same species might not have been described as exotic."

Walsh made out a good case against Agassiz and listed as evidence the names of over three hundred species in nine orders from the writings of thirty-six entomologists who testified to the existence in the Old and New Worlds of identical species which could not be supposed to have been introduced.

In the same paper, Walsh also took the opportunity of pointing out that Agassiz had totally "misapprehended and misstated the Darwinian Theory" in his recent work, *Methods of Study*. And, in addition,

he criticised Prof. J. D. Dana's new classification of insects based on Dana's new principle of cephalization (*Silliman's Journal*, vol. 37, pp. 1033). Walsh protested in the name of science,

"against this arithmetical monomania which is perpetually seeking to fetter the limbs of Nature in mathematical formulae. Nothing is easier than by subdividing some natural groups and uniting others, and by giving prominence to certain characters and keeping others in the background, to form an artificial system of classification based upon any assignable arithmetical number from two up to ten. And when such Systems are formed—what are they worth? Absolutely nothing."

Dr. A. S. Packard, Jr., reviewed Walsh's remarks in volume 6 of the *Proceedings*, 1866 (pp. 209-218), and pointed out some holes in Walsh's thinking, and conclusions. Dana replied to Walsh in the *American Journal of Science and Arts* for March, 1866, and Walsh, under the title "Prof. Dana and His Entomological Speculations" (*Proc. Ent. Soc. Phila.*, vol. 6, 1866, pp. 116-120), replied that he had been misquoted three times by Dana and that he was ready to stand by the printed record.

#### RICHARD HILL (1795-1872)

That versatile and famous son of Jamaica, Richard Hill, was the author of several entomological papers that are now quite difficult to obtain. The *Jamaica Quarterly Journal* for 1861 carried three of his articles, one on insect vision, one on the sleep of insects and another on the cockroach. To the *West India Quarterly Magazine* for 1861, he contributed a paper on "The Walking Leaf Mantis," and to the *Jamaica Almanac* for 1843, an article on "The Jamaica Trap Door Spider."

According to Mr. Frank Cundall's account in the *Journal of the Institute of Jamaica* for July, 1896, Richard Hill was born at Montego Bay on May 1, 1795, his father having come from Lincolnshire to Jamaica in 1779. At an early age, Richard was sent to relatives in England and when old enough he entered Lady Huntingdon's college at Cheshunt. After his fourteenth year, he was entered in the Elizabethan Grammar School at Horncastle to finish his education.

Upon the death of his father in 1818, Hill returned to Jamaica. When the colored inhabitants of the island in 1823 began their agitation for equal privileges with the whites, Hill helped the movement with his writings and with his ability. In 1826, he went to England and there tried to obtain the help of the Anti-Slavery Party. Hill handled the petition from the colored people of Jamaica to the House of Commons and tried to educate the public of England about the real character of West Indian slavery. After living several years in England, he was commissioned by the Anti-Slavery Party to study social and political conditions in Santo Domingo, as well as its natural resources. He arrived at Port-au-Prince on June 16, 1830, and stayed on the island nearly two years. His report was published in both English and French. He sailed for England May 3, 1832, stayed there several months and then returned to Jamaica for the remainder of his life.

From 1834 until 1872, Hill was one of the stipendiary magistrates of the island, whose duties consisted in adjusting disputes between farmer slaveholders and their "apprentices." In 1835, Hill was appointed under-secretary to the Governor, and remained in that position until the time of abolition. In 1837 and 1838, he was in the House of Assembly, and from about 1855 to 1865 he was a member of the Privy Council. As his political career ended early, the balance of his life was devoted to his duties as a magistrate and to his literary and natural history activities. He was interested in the botany of the West Indies, in their agriculture, their ornithology, their ichthyology and their anthropology. Mr. Edmund Gosse knew Hill, and liked him and called him his friend.

Hill contributed to the scientific journals of England and America, was a member of various learned societies, and corresponded with

numerous scientists including Darwin. His contributions to literature were diverse and extensive, and in addition to scientific and agricultural subjects, they included poetry. He died, unmarried, at Spanish Town, where he had lived for many years, on September 28, 1872, at the age of seventy-eight. Much more could be written about this naturalist, his work, and his influence.

#### EZRA TOWNSEND CRESSON (1838-1926)

At the August 12, 1861, meeting of the Entomological Society of Philadelphia, there was read a letter on the "Capture of *Strategus anteus* and *Tetraops canteriator*," by a young man of twenty-three, who was destined to become, as Dr. Philip P. Calvert has stated, "one of the most kindly, helpful and amiable figures in American Entomology." This young man was Ezra Townsend Cresson, whose interest in entomology had been kindled and stimulated by James Ridings, an ardent collector and later Cresson's father-in-law.

Cresson was one of the originators and founders of the Entomological Society of Philadelphia, organized early in 1859, and was its first secretary. In May 1859, he moved to Texas, hoping to engage in the raising of cattle, but the venture was not successful, and in September of that year he was back in Philadelphia. When the Society started its *Proceedings* in 1861, Cresson and Charles A. Blake toiled over the publication, getting it out on a small hand press. Cresson was the compositor and helped in the press work. And all his life he was identified with the publications of the Society. In 1865, when *The Practical Entomologist* was started, Mr. Cresson handled the business correspondence. In 1866, he accepted the curatorship of the Society, a precarious and poorly paid position.

In addition to his employment, first as secretary to Dr. Thomas B. Wilson, then with the Franklin Fire Insurance Company of Philadelphia, and to his editorial duties and collecting activities, Cresson wrote many papers on the Hymenoptera and described many species. His first extensive paper was a "Catalogue of the Cicindelidae of North America" (*Proc. Ent. Soc. Phila.*, vol. 1, pp. 7-20). This was printed in 1861 and listed the described species with references to sources of descriptions, habits and localities. Never again did he write about Coleoptera. His second paper, also published in the *Proceedings of the Entomological Society of Philadelphia* (vol. 1, pp. 33-39), was a "Catalogue of the described Species of Tenthredinidae and Uroceridae inhabiting North America." He believed that students needed a catalogue of the described species of North American Hymenoptera and he proposed to publish a series of catalogues of American species, starting with the sawflies and continuing with other families, as time permitted, or until the appearance of M. Saussure's expected work on the Hymenoptera of North America.

Workers in Coleoptera, Diptera and Lepidoptera already had available Melsheimer's *Catalogue*, Osten-Sacken's *Diptera*, and Morris's *Lepidoptera*. Catalogues of other Hymenopterous families continued to come from Mr. Cresson, as well as descriptions of new species, and up to 1865 his authorship amounted to some seventeen papers, all of which were published in the *Proceedings* of his Society. For many years after, Cresson devoted himself to the Hymenoptera of America, Cuba and Mexico, producing up to 1882 some sixty-five catalogues, monographs, and synopses, ending in a *Synopsis of the Families and Genera of the Hymenoptera of America north of Mexico* (together with a catalogue of the described species and bibliography), a work of 350 pages, published in 1887 by the American Entomological Society. A detailed account of his life, his scientific work, some of his letters, together with estimates of his work by various specialists, was ably written by Dr. Philip P. Calvert in 1928 and published by the American Entomological Society.

Mr. Cresson was born at Byberry, Philadelphia, Pennsylvania, on June 18, 1838, and was educated in the public schools of Philadelphia. As a boy, he once took part in a balloon ascension under Mons. Godard. The balloon started from Lemon Hill, Philadelphia (now in Fairmount Park), July 16, 1857, and descended in Montgomery

County, seven miles north of Norristown, Pennsylvania. Cresson contributed an account of the voyage to the *Pennsylvania Inquirer* of July 17, 1857.

As an official of the Entomological Society and as a working entomologist, Mr. Cresson corresponded with many American entomologists, and in his papers are many references to his friends and associates. Nearly all his life was lived in Philadelphia. In 1883, he moved to Swarthmore, Pennsylvania, but after his wife's death in 1909 he lived variously with his married children. On April 19, 1926, he died at the home of his son, Ezra T. Cresson, Jr.

#### WILLIAM HENRY EDWARDS (1822-1909)

The name of William Henry Edwards will always be remembered in connection with the beautifully illustrated volumes issued by him on the *Butterflies of North America*. The study of diurnal Lepidoptera was his life-long work. The first series of this three-volume work was issued in April, 1868, and in 1872 the plates were published. The second series, begun in May, 1874, was finished November, 1874, and contained fifty-one plates. Mr. Edwards, finding himself without funds to publish his third volume, thought of offering his collection of North American butterflies to the trustees of the British Museum in order to obtain the money to enable him to continue his work. However, Dr. W. J. Holland, in order to preserve the types in America, offered to pay the bills for the publication of the third volume, as they became due, on condition that Edwards turn over to him his collection when he had completed his studies. This was done. Doctor Holland paid the drawing, lithographing and printing bills, and in that way the third volume was produced. The three volumes are a mine of information, as Edwards studied the eggs, larvae, pupae, various larval stages, life histories, food plants, habits, etc. He was careful and accurate in his work.

Mr. Edwards was born in Hunter, Greene Co., New York, March 15, 1822. He graduated from Williams College in the class of 1842, and was admitted to the New York bar in 1847. In 1846, he traveled up the Amazon River on a natural history trip, and wrote a book on his trip, *A Voyage Up the Amazon*, in 1847. He described many new species of diurnal Lepidoptera, and between 1861 and 1865 some thirteen of his papers were printed in the *Proceedings of the Academy of Natural Sciences of Philadelphia* (vol. 13-14) and in the *Proceedings of the Entomological Society of Philadelphia* (vol. 1-5), for the most part, in the latter. All told, his writings number about one hundred papers.

Edwards died at Coalburgh, West Virginia, April 4, 1909. During the last twenty years of his life he gave up entomology and became interested in the study of Shakespearian literature. In 1900, he published *Shaksper not Shakespeare*. At the time of his death, the *Entomologists' Record and Journal of Variation*, London, England (Oct. 1909, pp. 239-240), said that,

"A labour that ended in Edwards handing over his collection under the conditions above described, must have sapped his entomological life's blood. No wonder we read in the notices of his death in the American magazines, that, for the last 20 years of his life, Edwards gave up the study of entomology, and took to the study of Shakespearian literature. Dr. Holland's statement allows us now to picture clearly what entomology lost by the failure of individual entomologists to support the best work on Lepidoptera that America ever produced. Possibly, at least, two more volumes like the others might have been produced, had they both been supported, and in their place we have a wordy warfare as to how Shakespeare's name ought to be spelt!!"

#### EDWARD NORTON (1823-1894)

The first importer of Guernsey cattle into this country, a breeder of fine grades of cattle and for many years secretary of the American Guernsey Cattle Club, was also one of the few naturalists in this country to devote himself exclusively to the study of a single family of Hymenoptera. Although he was well acquainted with all hymenop-

terous families, Mr. Edward Norton, the man in question, specialized in the Tenthredinidae, describing upwards of two hundred and fifty species. His descriptive papers first appeared in the *Proceedings of the Entomological Society of Philadelphia* (1862-1864, vol. 1, 3). He also published in 1860 in the *Boston Journal of Natural History* and in the *Proceedings of the Boston Society of Natural History* in 1861 and 1862. His monograph on the sawflies of North America appeared in 1867-1869 (*Trans. Amer. Ent. Soc.*).

Mr. Norton was born in Albany, New York, in 1823 and died at Farmington, Connecticut, April 8, 1894. He graduated from Yale in 1844 and then traveled in Europe. Upon his return he spent several winters in the south in order to ward off lung trouble. His work was carefully done, but for many years previous to his death he took no active part in entomological things.

#### ALPHEUS SPRING PACKARD (1839-1905)

About this time, the celebrated investigator and teacher, Dr. A. S. Packard, Jr., became active. Few entomologists realize the extensive entomological work done by Doctor Packard, who was interested in the correction of error and the conveyance of knowledge. All his publications were written for such purposes. As a systematist he was primarily interested in the general arrangement of the Class and he was the first American entomologist who accepted the necessity of breaking up some of the Linnaean orders and who proposed a system of his own. His comprehension of entomology as a whole and his knowledge of the literature were extensive and sound. Almost in every order Packard did some systematic work, or discussed some classification point. He had a grasp of detail, in addition to his general knowledge, and his work was of a uniformly high standard.

His first appearance in print was perhaps a letter he wrote to *The Entomologist's Weekly Intelligencer*, a penny paper edited by H. T. Stainton (1859, vol. 7, pp. 14-15) stating that he wished to make a special study of the Geometridae, and asking for assistance from British entomologists. From 1859 until 1865, he has fourteen titles credited to him in the bibliography prepared by T. D. A. Cockerell. This is in comparison with a total of five hundred and seventy-nine, his final output. So at the end of the period covered by this work, Packard was only beginning his contributions. In 1860, he contributed articles on economic entomology to the *Maine Farmer*. In 1861, his report on the armyworm and grain aphid appeared in the sixth annual report of the Maine Board of Agriculture (pp. 130-145). The same report (pp. 373-376) also contained his "Report on the insects collected on the Penobscot and Allequash Rivers during August and September, 1861." In 1862, there was published in the second annual report upon the natural history and geology of the state of Maine (*7th Ann. Rept. Me. Bd. Agric. for 1862*), his paper on how to collect and observe insects, which he hoped would result in the extension of the knowledge of the habits and forms of the noxious and beneficial insects of Maine. Everything which the collector and student needed to know, at that time, was included. The books that he thought were necessary included Harris's *Treatise*, Doctor Fitch's *Reports*, Kirby and Spence's *Introduction*, and Westwood's *Introduction to the Modern Classification of Insects*. Extensive mention is then made of the systematic papers of European and American authors.

In 1863, the *Boston Journal of Natural History* (vol. 71, pp. 590-603) printed his article "On synthetic types in insects." While studying the hepialids and their position in relation to the main body of the family of Bombyces, he was impressed by the great resemblance of the genus *Gorgopis* Hüb., to the neuropterous genus *Polystaechotes*. He made a detailed comparison, which he gave in his paper, and cites the close resemblance of many small phryganeids to the small moths with long antennae, causing the Lepidoptera to be placed, by some writers, close to the Neuroptera, although in fact these groups are widely separated. He endeavors to show that similar synthesis among insects has its seat in the Neuroptera. The entire paper deals with the analogues of various orders in comparison with

those in the Neuroptera.

In 1864, his "Synopsis of the Bombycidae of the United States" appeared in the *Proceedings of the Entomological Society of Philadelphia* (vol. 3, pp. 97-130; 331-396). This was a revision based on specimens from the New England states, Middle Atlantic states, and a few from California and the British provinces. A long paper on "The bumble-bees of New England and their parasites, with notices of a new species of *Anthophorabia* and a new genus of Proctotrupidae," by Packard, was published in 1864 in the *Proceedings of the Essex Institute* (vol. 4, pp. 107-140). All species of bumble bees known to inhabit New England were described, together with descriptions of some of their parasites, and with notes on the habits of larvae, adults, etc.

Packard's papers in 1865 numbered only two, one on ichneumon parasites of *Samia columbia*, published by the Boston Society of Natural History in its *Proceedings* (vol. 9, pp. 345-346), and the other on an egg parasite of the American tent-caterpillar, printed in the *Practical Entomologist* (vol. 1, pp. 14-15).

An examination of the remaining titles in Packard's bibliography of five hundred and seventy-nine papers shows the extent and variety of his researches. These papers deal with the larger evolutionary processes, with classification, with descriptions of new species, with the economic application of his studies, and with the popularization of natural science. He described as new more than fifty genera and about five hundred and eighty species of animals. More than forty of these genera were in the Lepidoptera. Most of his new species were lepidopterous also. His *Guide to the Study of Insects*, a book of over seven hundred pages with numerous illustrations, appeared in 1869, and summarizing as it did the whole field of entomology as then understood, it went through eight editions, the last appearing in 1884.

Alpheus Spring Packard was born at Brunswick, Maine, February 18, 1839. For many years his father was one of the faculty of Bowdoin College, which Packard entered at the age of eighteen, coming under the influence of Dr. Paul A. Chadbourne, who encouraged his interest in zoology. While a student, Packard joined the Williams College expedition of 1860 to Greenland and Labrador, going, however, only as far as Labrador, where he remained two months, collecting, returning to college in time for the senior year. After graduating in 1861, he became the entomologist to the newly organized scientific survey of Maine, and in this position traveled over a large part of the wild northern section of that state. Next, after deciding to devote himself to zoology, he went to Cambridge, where he became a pupil of Agassiz, devoting himself to the study of entomology for three years. During part of the time he was an assistant to Agassiz. While he was studying zoology, he was reading medicine and attending lectures at the medical college, and in 1864 he received the degree M.D. Another trip was taken to Labrador in the summer of 1864, for the purpose of writing a memoir on the geology and natural history of the region. Upon his return and before writing up the results of the trip, he enlisted in the First Regiment of Maine Veteran Volunteers, as assistant surgeon, and soon he was on his way to join the Army of the Potomac. In July, 1865, he was mustered out after a military and medical experience lasting ten months. He then returned to Boston and acted for a year as librarian and custodian of the Boston Society of Natural History. In 1867, he was appointed one of the curators of the Peabody Academy of Science at Salem, Massachusetts, and for two years was the director of its museum. He founded a summer school of biology, lectured on economic entomology at the Maine State Agricultural College and at the Massachusetts Agricultural College at Amherst, and lectured on entomology and comparative anatomy at Bowdoin College. Numerous other activities entered his life, including his marriage, trips to Europe, his varied work and positions, including his election to Professor of Zoology and Geology at Brown University, where for twenty-seven years he found ample opportunities for teaching and research and where his intellectual abilities developed and matured.

A comprehensive account of the life and work of Packard was written by T. D. A. Cockerell and published by the National Academy of Sciences in 1920.

Packard wrote many important entomological monographs of which, to general entomologists, his *Monograph of the Bombycine Moths of America, North of Mexico* is perhaps the best known. One of his last books was on *Lamarck, the Founder of Evolution; his Life and Work*, Packard being an ardent evolutionist of the Neo-Lamarckian school, which he and Cope and Hyatt founded. Doctor Packard died at Providence, Rhode Island, February 14, 1905, but his influence continues in the scientific life of this country.

#### VARIOUS ENTOMOLOGICAL CONTRIBUTIONS

Various amateur entomologists contributed to the literature at this time, not extensively, but an occasional paper. In Brooklyn, New York, there appeared in 1862 a report on "The measure worm (*Ennomos subsignaria*); a description of the insect in all metamorphosis, history and progress, and a systematic plan for its final extermination, together with remarks on the state of the shade trees, in the city of Brooklyn, N.Y." This report, prepared by H. A. Graef and Edward Wiebe, was submitted to a large committee appointed by the Brooklyn Horticultural Society, and the committee ordered its publication.

The insect in question had been injuring Brooklyn shade trees for a number of years, and its depredations had been increasing. In 1860, a resolution of the Common Council was passed "to free the city from the perpetually increasing measure worm nuisance," even by "removing from our streets all trees infested by this insect." The report covered the life history, habits, etc., of the insect, a list of shade trees, the extent to which they were defoliated or in danger of injury, a list of immune trees, etc. The authors' plan of control, based on a mapping of the area, involved the systematic scraping of all egg masses from all trees. This was to be done during the winter. During the last half of April, tar rings, four inches wide, were to be applied to trunks and large branches. Such caterpillars as were found beyond the tar bands were to be removed with the foliage by means of hedge shears. Any caterpillars escaping these operations were to be syringed with a strong tobacco infusion or destroyed by daily repeated beatings or jerkings of the tree and branches with proper tools and machinery. Such caterpillars as resisted all these methods and spun cocoons were to be killed by gathering and destroying the cocoons. If, after all the foregoing had been done, adults appeared, they were to be caught in nets or syringed on the trees, like the caterpillars. Such uninterrupted warfare, carried on with energy, must as a matter of course, so the authors stated, reduce very considerably the infestation in a short time. In addition, the cooperation of wrens was to be enlisted, by the erection of cheap, useful, simple and lasting wren houses in the city streets.

In the preparation of their report, the authors consulted entomologists and other scientific and learned "gents." It was received flatteringly by almost everybody. There was, however, one exception. Doctor Trimble, of Newark, a member of the original Committee on Shade Trees, dissented. He said that it was useless to spend a single dollar, because a little fly was destined to do the controlling. The authors would not have mentioned this at all, only Doctor Trimble published his adverse opinion in the *Newark Weekly Mercury* of October 14 and sent, or caused to be sent, copies of this paper to most of the members of the Committee on Shade Trees in Brooklyn. The authors claimed that the insect had been getting worse over a period of twenty-five years and they did not believe that a parasite, all at once, would be able to combat an enemy so strong. As practical men, they preferred to rely on their own exertions, refusing any help from "a fanciful agency."

Mr. H. A. Graef came from Aix-la-Chapelle, Germany, in 1848, with his family and settled in what is now known as Bay Ridge, Brooklyn. Here he established himself as a florist and he was also

interested in natural history and in collecting local plants. His son, Edward L. Graef, previous to his death, was a well-known member of the Brooklyn Entomological Society.

Mr. H. T. Fay, who collected insects in the vicinity of Columbus, Ohio, during the winter months, wrote in 1862 a paper "On winter collecting" that was published in the *Proceedings of the Entomological Society of Philadelphia* (vol. 1, pp. 194-198). Three and a half pages of Coleoptera are listed, many having been found under the loose bark of trees and under moss.

Another collector who started his study of entomology about 1862 was Philip L. Sprague, of Boston, Massachusetts. At first he leaned toward the Lepidoptera and during intervals in his business he interested himself in the biological and technical sides of entomology. Becoming interested in the Coleoptera, he built up a collection. At the time of his death in his native home, Montpelier, Vermont, August 6, 1874, aged forty-five, he had been for some months an assistant and member of the Boston Society of Natural History. His collection went to the museum of that Society. From time to time he contributed to the *Canadian Entomologist* and to the *Proceedings of the Boston Society of Natural History*. He was also a member of the Boston Numismatic Society.

A popular account, "On the value of certain insects" by Wilson Flagg, was published in 1862 in the *Magazine of Horticulture and Botany* (vol. 28, No. 1, Jan., pp. 15-21). Mr. Flagg mentioned the various beneficial activities of insects and quoted DeGeer as saying in an oration before the Academy of Sciences at Stockholm, that

"we shall never be able to guard ourselves against insects but by means of other insects."

Flagg stated that DeGeer had made that statement one hundred years previously and that still the public had not acted upon it. He doubted the value of biological control, but said that he never heard of any experiments to test its practicability. Flagg often quoted Harris in his paper.

Before the July 2, 1862, meeting of the Essex Institute, Salem, Massachusetts (*Proc. Essex Inst.*, vol. 3, pp. 193-200), Mr. Carleton A. Shurtleff, of Brookline, Massachusetts, read a "Report on the armyworm, *Leucania unipuncta* Haw.," containing a general account of its habits, food plants, remedies, etc., including the observations on previous Massachusetts outbreaks, which Fitch had previously recorded in the *Boston Cultivator*, and the views of Walsh, Kirkpatrick, and others.

In the library of the Boston Society of Natural History, there is a blue-covered notebook with Mr. Shurtleff's name on the outside. Eleven pages are occupied by technical descriptions of caterpillars, each description being numbered, such as "White Mtn. grass caterpillar No. 1." There is no date on the manuscript, but one record refers to a "*Biston quernarius* larva taken last year," as transforming to an adult on April 28, 1864.

J. D. Dana in 1864 wrote "On fossil insects from the Carboniferous formation in Illinois" (*Amer. Jour. Sci. & Arts*, vol. 87, No. 109, art. 3, pp. 34-35). He described *Miamia bronsoni*, a neuropteran, and proposed the new genus *Hemeristia*, for the species *Hemeristia occidentalis*.

A physician, Dr. C. C. Helmuth wrote on "New species of Mordellidae collected in Illinois" in 1864, for of the *Proceedings of the Academy Natural Sciences of Philadelphia* (vol. 16, p. 105, 1864; vol. 17, p. 96, 1865). His descriptions averaged only from three to four lines in length. They were very short. In one paper in which he described four species, one in the genus *Mordella* and three in *Mordellestena*, two species are still recognized and two are in synonymy, according to the *Leng Catalogue*.

Another physician, Dr. Emil Brendel, described new species of Pselaphidae for the *Proceedings of the Entomological Society of Philadelphia* 1865 (vol. 5, pp. 28-32; pp. 255-260).

Once in a while, papers by foreign entomologists appeared in

American journals, but such occasions were rare. In 1864, a communication to William H. Edwards from H. W. Bates, of London, England, was printed in the *Proceedings of the Entomological Society of Philadelphia* (vol. 4, pp. 204-207). The subject was "Notes upon the variation of the sexes in *Argynnis diana*." Previously, or in 1863, Mr. H. T. Stainton, distinguished English entomologist, contributed to the *Proceedings of the Philadelphia Society* (vol. 2, pp. 130-132) a paper on "Observations on American Tineina."

#### JAMES RIDINGS (1803-1880)

James Ridings, one of the three founders of the Entomological Society of Philadelphia, is credited with the authorship of a paper entitled "Description of a supposed new species of Aegeridae from Virginia, and observations upon *Papilio daunus* Boisd.," in the *Proceedings of the Entomological Society of Philadelphia* (vol. 1, pp. 277-278), although it has been stated that he never published. Mr. Ridings was born in England in 1803 and came to Philadelphia in 1830. In 1864, he was collecting insects in Colorado and Kansas, in 1865, in Georgia. Other of his specimens came from the Shenandoah Valley, Virginia. In 1859, for one year, he was vice-president of the newly organized Society, and from 1875 to 1878, its curator. He died July 29, 1880. His daughter, Mary Ann Ridings, married Ezra T. Cresson on March 2, 1859, and his son, James H. Ridings, who was also interested in entomology, was recording secretary of the American Entomological Society for twenty-four years (September 1873 to December 1897).

#### SIMON SNYDER RATHVON (1812-1891)

Another Pennsylvania entomologist (previously noted) who was active before 1865, was Dr. S. S. Rathvon. To the United States Commissioner of Patents, *Agricultural Reports for 1861 and 1862*, he contributed two popular entomological papers. The first, which appeared in the 1861 report (pp. 585-620) under the title "Entomology and its relations to the vegetable productions of the soil with reference to both destructive and beneficial insects," was a general account of insects, their transformations, etc. Most of the paper dealt with various coleopterous families, notes on the habits of both injurious and beneficial species, life histories, etc., all generously illustrated by woodcuts, some very small and inadequate. His second paper (1862, pp. 372-390) was a continuation under the same title.

#### JOSEPH LEIDY (1823-1891)

In 1862, the eminent Philadelphia physician and naturalist, Dr. Joseph Leidy, to whom reference has been made previously and to whom we are indebted for the discovery of the existence of a bacterial flora in the intestines, made a "Report to the councils of Philadelphia on some of the insects injurious to our shade trees." (*Phila.*, 1862, 11 pp.). Doctor Leidy had been invited by the Councils of the City to advise them about the insects injurious to the city shade trees, and in his report he first mentioned the trees that he thought should be planted more extensively, naming among them the sugar maple, red maple, sycamore, horse chestnut, American linden, and silver poplar. He said that the silver maple was used too much to the exclusion of other trees. He believed that the Ailanthus, in spite of its odor during its flowering season, was an important shade tree on account of its comparative freedom from disease.

Birds are cited as important in keeping down undue increases of insects. As a general measure against insects, Leidy believed that there should be occasional examinations of the trees, that the trunks and larger branches should be swept with a stiff brush to remove eggs, cocoons, and insects, that ground debris be destroyed, and that there be introduced into the public squares of the city "a few turkeys, guinea fowls, and chickens which destroy all insects that come within their reach." His list of destructive insects at the time included the canker-worm, "the scale bug," "the tufted caterpillar," "the sack bearer" and "the borer." Brief life histories, notes on habits, and recommen-

dations for control are outlined. Against the canker-worm, he advised an infusion of tobacco stems, or a solution of whale oil soap "squirting" on the trees in May while the worms were small. In addition, the tree could be shaken after the application of a tar collar or an oil-trough to the trunk. Against the "scale bug" (*Coccus aceris*), the use of a stiff brush, attached to a pole, was advised. The "tufted caterpillar," or larva of the tussock moth, was to be controlled by scraping cocoons and egg masses from tree trunks and neighboring fences. "Sack bearers", or bag worms, were to be removed and destroyed in the spring while the trees were being trimmed, and as for the "borer" in maples, a species of *Aegeria* [now *Synanthedon*], this was not injurious enough to require special attention.

#### JOSEPH ALBERT LINTNER (1822-1898)

Although nearly all of Dr. Joseph Albert Lintner's contributions to entomology took place after 1865, a few were published previous to that year, and for this reason it is desirable to include some mention of him. His first paper appeared in the *Proceedings of the Entomological Society of Philadelphia* (vol. 1, pp. 286-293) and was entitled "Metamorphoses of *Ceratonia quadricornis* Harris." In this, Lintner described the transformations of this sphinx moth from egg to adult and outlined its life history. In the same journal later (vol. 3, pp. 50-64) appeared his "Notes on some of the diurnal Lepidoptera of the State of New York, with descriptions of their larvae and chrysalides." Lintner, for some time, had been making a collection of the insects of Schoharie, in eastern New York, and in this paper he utilized part of his notes; information on the first appearance in the spring, etc., is included. In the same volume (vol. 3, pp. 645-672), another of Lintner's papers was published, this being "Notes on some Sphingidae of the state of New York, with descriptions of their larvae and pupae."

Joseph Albert Lintner was born in Schoharie, New York, February 8, 1822, his forefathers having been among the earliest German settlers of the area near the Mohawk River. Lintner graduated from the Schoharie Academy in 1837 and then went to work for a mercantile firm in New York. However, his tastes were along literary and scientific lines, and he spent much time at the lectures and classes of the Mercantile Library Association. In 1848, he returned to Schoharie, and although he continued in business he began the study of entomology. Having married the daughter of a Utica man in 1856, he moved to that city in 1860, engaging in the manufacture of woolen goods until 1867. The following year he moved to Albany because he had been appointed zoological assistant in the New York State Museum of Natural History. For twelve years he held that position and wrote many papers on entomology that were printed in the annual reports of the Museum and elsewhere.

In the meantime, the importance of economic entomology had been recognized in New York. In 1854, the first state appropriation for the study of crop pests was made to the State Agricultural Society, and Dr. Asa Fitch was appointed entomologist to the society. Doctor Fitch died in 1879, after almost twenty-five years of service, and in 1880 legislation was enacted providing for a state entomologist and Lintner was appointed to the office by Governor Cornell. Lintner's voluminous and able reports on economic entomology are well known to entomologists. He was at one time president of the American Association of Economic Entomologists and was identified with many scientific societies in this country and abroad. When the State Museum of Natural History was reorganized in 1883, Lintner was made one of its scientific staff, and in 1884 the University of the State of New York made him a Ph.D. Doctor Lintner died in Rome, Italy, on May 5, 1898, and economic entomology then lost one of its oldest, ablest and most distinguished devotees. He was quiet, dignified, of great intellectual vigor, and his office was his laboratory, museum, library and insectary. Nearly all of his numerous contributions to economic entomology were published after 1865 (see Felt, E. P., *Bull. N. Y. St. Mus. Nat. Hist.*, vol. 5, No. 24, Oct. 1899).

#### AUGUSTUS RADCLIFFE GROTE (1841-1903)

One of the great students of American Lepidoptera began his publishing career at this time (1861 and 1862) by his contributions to the Academy of Natural Sciences of Philadelphia and to the *Proceedings of the Entomological Society of Philadelphia*. This was Professor Augustus Radcliffe Grote, and of his numerous papers in American and European entomological journals, about twenty-five appeared in the *Proceedings of the Entomological Society of Philadelphia* up to and including 1865.

Professor Grote was born February 7, 1841, in Aigburt, near Liverpool, England. He came to America as a child, and his very early years were lived in New York City. His scientific work began about 1861 or 1862. At one time he was curator for the Buffalo Society of Natural History and the first three volumes of the *Bulletin* of that Society (1873-1877) contain twenty-seven of his papers, mostly on American Lepidoptera, moths especially. About 1882 he left Buffalo for New Brighton, Staten Island, New York, where he lived until he went abroad in 1884. In July, 1879, he edited the *North American Entomologist*, published by Reinecke, Zesch and Baltz in Buffalo, New York. Only one volume of twelve numbers appeared.

Grote described over one thousand species of Lepidoptera, and his descriptive work has been characterized as good. He was especially active in the family Noctuidae. In 1884, he went to Bremen and in 1895 to Hildesheim Germany, and became director of the Roman Museum, having long been a student of ancient Roman matters. He died at Hildesheim, September 12, 1903. With the exception of about twenty years, nearly all his life was spent in the United States, where he devoted himself almost exclusively to the study of North American Lepidoptera. In one of his early papers, Grote wrote,

"In case any of my species should prove to be synonymous, I will cheerfully acknowledge them as such and give priority to the rightful author."

#### FREDERICK WARD PUTNAM (1839-1915)

Frederick Ward Putnam, who started his scientific career by joining the Essex Institute at the age of sixteen and who wrote on fishes, birds, reptiles and archaeological subjects, also gave some attention to insects. On October 22, 1863, he communicated to the Essex Institute two papers on bees. One was entitled "Notes on the habits of some species of bumble bees" (*Proc. Essex Inst.*, vol. 4, pp. 98-104) and consisted of notes on the nests and habits of *Bombus fervidus* Fabr., *B. vagans* Smith, *B. ternarius*, *B. separatus*, *B. virginicus*, and *B. pennsylvanicus*. The other, called "Notes on the leaf-cutting bee" (*Proc. Essex Inst.*, vol. 4, pp. 105-107), contained the results of his observations at Bridport, Vermont, on the habits of *Megachile*.

Putnam was born in Salem, Massachusetts, April 16, 1839. At the age of seventeen, one year after joining the Essex Institute, he was made curator of ornithology and keeper of the cabinet. In 1856, he entered Lawrence Scientific School and studied under Agassiz, who, within a few months, made him an assistant at the Museum of Comparative Zoology in special charge of the collection of fishes, and Putnam remained in this capacity until 1864, when he married and moved to Salem, where he took charge of the museum of the Essex Institute. At one time he was curator of the Peabody Museum of American Archaeology and Ethnology at Cambridge, and permanent secretary of the American Association for the Advancement of Science. He took an active part in the Essex Institute for many years and held many important offices.

Insects were frequently discussed at the meetings of the Essex Institute. On November 23, 1863, Mr. H. L., Ordway read a paper "On the canker-worm," (*Proc. Essex Inst.*, vol. 3, pp. 291-294), which dealt with its life history. He said that only recently had anything been written on this insect that was helpful to fruit growers. At this meeting, Mr. Putnam stated that there were at least three species of canker-worms, two belonging to the genus *Anisopterix*,

and alike in habits and general appearance, and one the larva of which was yellow. He mentioned also several beetle and wasp enemies of the canker-worm. Then Mr. C. C. Beaman, Mr. Ordway, J. M. Ives and Mr. Putnam discussed the distribution of the pest and concluded that Massachusetts was nearly the northern limit.

#### THOMAS HENRY KEMBLE OLIVER (1800-1885)

General [Thomas] Henry Kemble Oliver, Dartmouth and Harvard graduate, musician of note, one-time manager of the Atlantic Cotton Mills at Lawrence, Massachusetts, and mayor of that city, treasurer of Massachusetts for five terms, civic innovator, one-time mayor of Salem, etc., delivered on June 10, 1863, an address "On the natural history of the bee," the occasion being a meeting of the Essex Institute at the Town Hall. Among other statements, General Oliver told some interesting things about bees, including one that the late Rev. Dr. Flint of Salem had told him. Relative to the workers driving the drones out of the hive during the early fall, Doctor Flint said that one day he was watching that operation in his own hive, and assisting the bees by killing the drones as they were brought out by means of a needle in the end of a stick. After awhile, the bees, instead of worrying about the drone as they did before he assisted them, "simply remained holding on to the drone and waited patiently for him to finish the operation," going back for another when he had killed the last.

#### SIDNEY IRVING SMITH (1843-1926)

When Sidney Irving Smith, of Norway, Maine, was twenty years old, he published in 1863, in the *Proceedings of the Boston Society of Natural History* (vol. 9, pp. 342-345), a paper entitled "Description of a species of *Samia* supposed to be new, from Norway, Maine." Mr. A. E. Verrill read the paper for Smith, who had collected a pair of moths closely allied to *Samia cecropia* Hüb. As he could not refer them to any described species, he described the species, with the approbation of Mr. Packard, as *Samia columbia*.

Two years later, in 1865, Mr. Smith published a paper in the *Proceedings of the Portland Society of Natural History* (vol. 1, pp. 143-151), "On the Orthoptera of the state of Maine." in which he enumerated every species of which he had taken specimens in Maine, or which had been mentioned in the literature up to that time. He mentions the small amount of attention which the Orthoptera was receiving from collectors and entomologists and the absence of exact locality information. Smith's list which includes the description of a new species, *Pezotettix manca*, mentions about forty species in the families Forficulidae, Blattidae, Gryllidae, Locustidae, and Acrydidae [sic], the largest number being in the last-named family.

Mr. Smith was born in Norway, Maine, February 18, 1843. He graduated from the Sheffield Scientific School of Yale in 1867 and was then made assistant in zoology and finally professor of comparative anatomy. He had charge of the deep water dredging that was carried on in Lake Superior by the United States Lake Survey in 1871 and by the United States Coast Survey in the region of St. George's Banks in 1872. Smith was also associated in the biological work of the United States Fish Commission on the New England coast. His papers were published in the *Reports of the United States Fish Commission* and in other scientific and government publications. At one time Mr. Smith was the state entomologist of Maine and Connecticut. He died of cancer of the throat May 6, 1926, at New Haven, Connecticut.

#### WILLIAM SHARSWOOD

In June, 1858, William Sharswood wrote in Philadelphia, Pennsylvania, "Bibliographica liborum Entomologicorum in America boreali editorum," which was published in *Linnaea Entomologica*, Leipzig, Germany (vol. 13, pp. 333-353, 1859, and vol. 14, pp. 256-264, 1860). In this work he enumerated the names and works of the principal North American entomologists. In both parts, the second of

which includes corrections to the first and additional titles, two hundred and sixty-six papers are listed, by forty-five entomologists. The important American contributors to entomology up to that time were of course, T. W. Harris, Asa Fitch, S. S. Haldeman, Thomas Say, and John L. LeConte. However, the contributions of others, even though not numerous, were important. C. A. Dohrni, president of the Entomological Society of Sedina, encouraged Sharswood in the preparation of the bibliography, which it was hoped would be useful to European entomologists. In addition, Sharswood was indebted to Agassiz's bibliography and to John L. LeConte and S. S. Haldeman, his "beloved friends."

#### CHARLES ALFRED BLAKE (1834-1903)

In 1863, Charles Alfred Blake started in as a contributor to entomological journals by the publication of a "Description of a supposed new genus and species of Saturniidae from the Rocky Mountains" in the *Proceedings of the Entomological Society of Philadelphia* (vol. 2, p. 279). This was followed by a "Description of a new species of Cuban Lepidoptera," in 1865, in the same journal (vol. 4, pp. 313-314). Mr. Blake collected in all orders, but was interested particularly in the Hymenoptera and Lepidoptera. After 1865 he published other papers, short articles and notes, including a synopsis of the family Mutillidae, for which he is chiefly remembered.

Mr. Blake, was born at Brighton, England, July 23, 1834, and came to America in 1849. He was educated in the English Naval School at Greenwich. For more than forty years he was in the surgical and dental instrument business, and this led him to make entomological forceps, The Blake pinning forceps was well known for many years. He joined the American Entomological Society on October 22, 1860, and was an active member and supporter of the organization. For many nights, Mr. E. T. Cresson and Mr. C. A. Blake toiled over the printing of the proceedings and transactions of the society. They worked together. Mr. Cresson rolled on the ink and Mr. Blake, being stronger, pulled the press. C. A. Blake died June 24, 1903, and his collection came into the possession of the American Entomological Society.

#### HOMER FRANKLIN BASSETT (1826-1902)

About 1862, Homer Franklin Bassett began to study entomology, confining himself almost entirely to the gall producing insects of the Hymenoptera. His first papers appeared in 1863 and 1864, in the *Proceedings of the Entomological Society of Philadelphia* (vol. 2, pp. 323-333; vol. 3, pp. 679-691) and were concerned almost entirely with descriptions of new species of *Cynips*. Many additional new species were later discovered by him and described.

Bassett was born in Florida, Massachusetts, September 2, 1826. When he was ten years old, his family moved to Rockport, Ohio, where he worked on the farm until he was twenty. For a while he attended classes at Berea (Ohio) University and at Oberlin College, but overwork forced him to discontinue. From 1850 to 1853, he spent his winters teaching school in Ohio and Connecticut. Part of 1858 was spent in Kansas, but in the spring of 1859 he opened a private school in Waterbury, Connecticut, on the second floor of a building. After continuing for eight years, ill health forced him to abandon this activity, and in 1871 he started an insurance agency and real estate business. In 1872, he was appointed librarian of Bronson Library, and he held this position until March 1, 1901, when the infirmities of age and ill health caused him to resign. He died in Waterbury, Connecticut, June 28, 1902. His collection went to the American Entomological Society of which he was a corresponding member. In 1894, Yale conferred on him the degree M.A.

#### JOHN WILLIAM WEIDEMEYER (1819-?)

Some of our early entomologists were quite versatile, in fact, much more so than many present-day ones. For instance, John William

Weidemeyer, who published a "Catalogue of North American Butterflies" in 1863 (*Proc. Ent. Soc. Phila.*, vol. 2, pp. 143-154; pp. 513-542), was an author and playwright. His catalogue included all the described species of diurnal Lepidoptera known at that time to occur in North America from the Isthmus of Panama to the Arctic regions. Weidemeyer followed the classification of Doubleday and Westwood in their *Genera of Diurnal Lepidoptera*.

Weidemeyer was born in Fredericksburg, Virginia, April 26, 1819, his father having been a soldier in the life guards of Jerome Bonaparte, King of Westphalia. He was educated at the Columbia College grammar school. For a time he taught school in Ohio. Then he entered business in New York and made a large collection of butterflies, which was sold to the museum in Ratisbon, Germany. He wrote a number of articles for the *Christian Inquirer* and the *Atlantic Monthly*. His play entitled "The Vagabonds," written in 1841, was produced in New York City and in Philadelphia. He was the author of other works such as *Real and Ideal* (1865), *Themes and Translations* (1867), *American Fish, and How to Catch Them* (1885), and *From Alpha to Omega* (1889).

#### TRYON REAKIRT (1844-?)

Tryon Reakirt, of whom biographical information appears to be scarce, wrote eight papers between 1863 and 1865. These were devoted to the Lepidoptera of North America, Central America, Philippine Islands, descriptions of new species, notes, etc. These all appeared in the *Proceedings of the Entomological Society of Philadelphia* (vols. 2-5). Essig has stated that Reakirt collected butterflies throughout California, especially in the vicinities of Los Angeles and Sacramento, and in the Rocky Mountains.

#### ALEXANDER WINCHELL (1824-1891)

Professor Alexander Winchell, who has been called the first simplifier of science in America and whose reputation rests upon his ability as a teacher and upon his numerous geological papers, once wrote "On the currant worm of Ann Arbor Michigan" (*Amer. Jour. Sci. & Arts*, vol. 38, pp. 291-292, 1864). The account in the *American Journal of Science* was condensed from an article in the *Detroit Free Press* of July 9, 1864, and treated of "*Selandria ribis*," named by Winchell who had observed its habits and appearance the previous summer. He also investigated the cherry slug and wrote "Notes on *Selandria cerasi* Harris as it occurs at Ann Arbor, Mich." for the *Proceedings of the Boston Society of Natural History* (1865).

Alexander Winchell was born in Northeast, Dutchess Co., New York, December 31, 1824, and died in Ann Arbor, Michigan, February 19, 1891. He was industrious and versatile, so the standard accounts state, and on his seventh birthday recited the entire multiplication table without error. He held various teaching positions in New York, New Jersey, Alabama and Michigan. He was an entertaining lecturer on scientific subjects, especially geology and evolution, and he wrote various books on the results of his investigations. His educational work, it is said, widened the avenues of natural science and resulted in its introduction into secondary schools.

#### RICHARD COLVIN

The Federal Government, by its publication of articles on bees, continued to try to develop beekeeping in the United States. Richard Colvin, of Baltimore, Maryland, was the author of "The Italian honey-bee; or the culture and Italianization of the native or black honeybee," which appeared in the *U. S. Commissioner of Patents Agricultural Report for 1863* (pp. 530-546). His article dealt with the introduction of the Italian honey bee into the United States about 1855 by Messrs. Samuel Wagner and Edward Jessop, of York, Pennsylvania. At least these men made the first attempt even though the bees perished before their arrival. Other historical details were given, followed by a long discourse on the habits and characteristics of workers, descriptions of adult Italian workers, drones, breeding,

rearing, profits, etc. In addition, the differences between the Italian and our "native" black bees were gone into.

#### HENRY SHIMER (1828-1895)

Dr. Henry Shimer, known and respected in his community as a physician, scholar, scientist and distinguished citizen, commenced his entomological publishing activities in 1865. In that year he wrote a description of *Chrysops illinoiensis* that appeared in the *Proceedings of the Entomological Society of Philadelphia* (vol. 4, pp. 208-212) entitled "Description of the imago and larva of a new species of *Chrysops*." Later he described a new species of *Aleyrodes*, a new species of *Cecidomyia*, a new genus of Aphidae, several species of acarians and wrote upon the white pine louse and hickory gall insects, all of which were published in the *Proceedings of the Entomological Society of Philadelphia*.

Doctor Shimer was born September 1, 1828, in West Vincent, Chester Co., Pennsylvania. He received his M.A. from the University of Chicago and was identified with the work of the Smithsonian Institution and the scientific societies of New York and Philadelphia. He was extremely interested in educational affairs, and for a time he was the assistant state entomologist of Illinois.

#### BURT GREEN WILDER (1841-1925)

An interesting paper, "On the *Nephila plumipes*, or silk spider," was written by Burt G. Wilder and published in the *Proceedings of the American Academy of Arts and Science* in 1865 (vol. 7, pp. 52-57). Mr. Wilder's observations were made at the north end of Folly Island, south of the harbor of Charleston, South Carolina, on August 20, 1863. From a number of spiders, he wound 3,480 yards of silk upon the periphery and over the sides of a hard rubber ring. From the body of one spider, he reeled off silk for one and a quarter hours, at the rate of six feet per minute, making one hundred and fifty yards of beautiful shining golden silk. He describes the spider, saying he had found it only upon Long Island, Folly Island, and James Island. The habits of the adult and young are mentioned, and according to Wilder, the most remarkable thing about it was that it could be "fed and watered by hand." He fed it live flies and chicken liver and drops of water on a camel's hair brush.

Burt Green Wilder was born in Boston, Massachusetts, August 11, 1841. At the age of eighteen, he entered the Lawrence Scientific School at Harvard and studied comparative anatomy under Jeffries Wyman. He joined the Boston Society of Natural History and was president of the Agassiz Zoological Club. When only nineteen, he gave in 1860 a few public lectures on Du Chaillu's African collections. In 1862, he received his B.S. degree in anatomy and entered the Judiciary Square hospital in Washington, D. C., as a medical cadet. He became licentiate of the Massachusetts Medical Society in 1863, was appointed assistant surgeon of the 55th Massachusetts volunteer infantry, was promoted surgeon, and served in the regiment until its discharge in September, 1865. He received his M.D. degree from Harvard in 1866, and became an assistant to Professor Agassiz. During the winter of 1867-68 he gave a course of lectures at the University. In 1867, he was appointed professor of zoology in Cornell University. From 1874 to 1884, he was professor of physiology in the Medical School of Maine, and during the winter of 1876-77, he lectured at the University of Michigan. His writings embrace nearly one hundred and twenty technical papers, fifty reviews, and a like number of articles in various magazines.

#### THE PRACTICAL ENTOMOLOGIST (1865-1867)

In 1865, the Entomological Society of Philadelphia entered the economic field by the publication of a monthly bulletin entitled *The Practical Entomologist* — "for gratuitous distribution among Farmers and Agriculturists." In volume 1, number 1, dated October 30, 1865, it is hoped that the undertaking will be supported both by scientists and agriculturists, and it is stated that the "enquiring agriculturist"

must not expect to find in its pages any particular brew recommended for insect control. Attention is called to the quack remedies mentioned in agricultural journals and to the need for knowing the life history of the insects to be controlled. In the first issue, Benjamin D. Walsh has an article on "The New Potato-bug and its Natural History." In addition, there is a note on "The Black Onionfly" signed "Eds" and "The Tomato-Worm Story," unsigned.

*The Practical Entomologist* was sent regularly to those who sent twelve cents in stamps, for postage, to E. T. Cresson, Corresponding Secretary, 518 South 13th Street, Philadelphia. Eleven advertisements appeared in the first issue, representing such businesses as florist, nurseryman, printing, building, carpentry and heating. In this issue, James Ridings, 1311 South Street, Philadelphia, advertises himself as a dealer in insects. A special notice in this issue calls attention to a fund of \$50,000 necessary for the welfare of the Entomological Society of Philadelphia. Donations are solicited and mention is made of the donation of \$10,000 by the late Dr. Thomas B. Wilson. Contributing memberships at \$1.00 each and honorary memberships at \$100.00 each are also solicited. In addition to what has been mentioned, the first issue contains notes on various economic insects such as a scale on sugar maple, *Clisocampa americana*, *Datana ministra*, *Hyphantria textor*, rose-bugs, etc., signed by John A. Warder, Cincinnati, Ohio.

In the second number, November 27, 1865, there is an article on "Insects and the Cholera," one on the jointworm in which chalcis flies are recorded as parasites, another entitled "A few Remarks on Silk-producing Lepidoptera" by A. R. Grote, and still another, "Notice of an egg-parasite upon the American Tent Caterpillar" by A. S. Packard, Jr., M.D. A plea for more advertisers is made and Walsh states that he needs specimens of the joint-worm and that it is disgraceful that an insect which has destroyed millions of dollars' worth of crops should be imperfectly known.

In the third issue, December 25, 1865, the publication committee and editors are named as E. T. Cresson, Aug. R. Grote and J. W. McAllister. Benjamin D. Walsh of Rock Island, Illinois, is named as associate editor. According to this issue, the demand for copies was immense and the receipts from advertising were not enough to defray publication costs. Prompt publication was not possible and smaller type had to be used to give as much reading matter as possible. This issue included an article on the onion fly by the editor; one on the white pine weevil by H. F. Bassett, Waterbury, Connecticut; one on the thrips of the vine by B. D. Walsh; one on the woolly apple-tree blight by A. E. Verrill, New Haven, Connecticut; and notes on currant and gooseberry insects from Fitch's first report.

Volume 1, Number 4, January 29, 1866, was taken up by a long article on "Borers" by Walsh, apple, peach, locusts, hickory and currant borers. According to volume 1, Number 5, February 26, 1866, the circulation was eight thousand copies. The advertising columns were full and friends were thanked for their help. But in volume 1, Number 6, March 26, 1866, new subscribers are advised that they will have to pay fifty cents because both the circulation and expenses are increasing. In volume 1, Number 9, June 25, 1866, the question is raised as to continuing another year. Since free copies were stopped and the subscription placed at fifty cents, some people seemed to think that the publication committee wanted the money for their own pockets. As a matter of fact, the committee went into their own pockets to the extent of several hundreds of dollars in order to distribute eight thousand copies free. The contributions and advertising helped, but they were not sufficient. This issue said that unless five thousand subscribers at fifty cents each were received, the publication would cease. In the next issue, volume 1, Number 10, July 30, 1866, the same request was made. But in volume 1, Number 12, September 29, 1866, it is stated that although the desired number of subscribers was not received, *The Practical Entomologist* will continue to be published.

B. D. Walsh was a heavy contributor to all issues, and beginning

with volume 2, Number 1, he was the sole editor. And so it continued for another year, ending with volume 21, Numbers 11 and 12, August and September, 1867. In this, the last issue, Walsh takes leave of his readers and thanks various persons who helped him. At this time, he was appointed State Entomologist of Illinois.

#### ISAAC PIM TRIMBLE (1804-1890)

*A Treatise on Insect Enemies of Fruits and Fruit Trees* by Isaac P. Trimble (William Wood & Co., New York) appeared in 1865 and was favorably received and reviewed. This was a quarto work of one hundred and forty-nine pages, and eleven plates, devoted mainly to the plum curculio and codling moth, and the account of the plum curculio was the most complete that had appeared up to that time. In the introduction, Doctor Trimble stated that he had studied injurious insects for many years, first for the protection of his own crops and later for knowledge that he had not been able to find in books. In addition, his interest was increased by reading the works of Kirby and Spence, Hübner, Latreille, Say, Harris and Fitch. From observations recorded in his book, he traveled considerably through New Jersey and New York, always on the alert for the plum curculio and codling moth, and extremely interested in birds. He was fully alive to the many useless remedies proposed at that time for the plum curculio and kept a collection of them. He also experimented somewhat with various materials, and some of his results are recorded in his book. He was entomologist of the Horticultural Association of the American Institute and of the State Agricultural Society of New Jersey. To this latter organization the New Jersey legislature had appropriated \$3,000 for the preparation and publication of Doctor Trimble's *Treatise*. Nothing went to the author. The money was used by the society in publishing and purchasing copies of the book for free distribution. Eight dollars was asked for a copy with colored plates and five for one with plain-plates.

Trimble's book was very favorably mentioned in the *Magazine of Horticulture and Botany* (vol. 31, pp. 193-197, 1865) and Walsh in *The Practical Entomologist* (vol. 2, No. 3, Dec. 1866) advised every fruit grower to consult it, being critical only of the insect illustrations by Hochstein. Other species of insects are mentioned in Trimble's work, and it is, in addition, a source of information concerning the relations of birds to some of the worst pests of horticulture. Doctor Trimble made it a practice to examine the stomach contents of a large number of birds.

Doctor Isaac Pim Trimble was born at West Bradford, Chester County, Pennsylvania, on August 20, 1804. He entered the medical school of the University of Pennsylvania in October, 1824, and was graduated, M.D., April 7, 1826. For a time he was connected with the Pennsylvania Hospital for the Insane, where he was associated with Doctor Kirkbride in delivering a course of lectures. He also practiced in Chester County, at the same time giving a large part of his time to fruit culture. About 1840 he left Philadelphia and went to New York, where he married in 1841 Jane Riggs, a daughter of Caleb S. Riggs, an attorney-at-law. He continued his practice as a surgeon in New York until 1846, when he bought a farm on the Hudson and moved there with his family. He remained on the farm for ten years, raising and marketing fruit of a superior quality. In 1856, he moved to Newark, New Jersey, to assume his duties as an officer in the Customs House. He was also registered as a physician, according to the Newark city directories. He was a member of the New Jersey Assembly from Newark for three terms, and in 1866, chairman of the House Committee on Agriculture.

In 1873, Trimble retired from business and professional duties and lived until 1887 almost continually in New York. The last several years of his life were spent at a beautiful country home near Cornwall, New York, where he died September 27, 1890. He was wrapped up in nature, and although his most important entomological contribution was his *Treatise*, he wrote nine other articles on insects which were printed in various journals. He was a keen student and

a close observer.

#### ANTON HOCHSTEIN (1829-1911)

Anton Hochstein, who did the plates in Trimble's *Treatise*, came to this country about 1849 from Bavaria, with his father, mother, two brothers and a sister. He was born in Bavaria, in 1829. His brothers started a grocery business in Hoboken, New Jersey, about 1860, but Anton was not very active therein. He served in the Civil War and lived in New York City where he was employed in illustrating seedsmen's catalogs. He is supposed to have lived in Hoboken, New Jersey, from about 1869 until his death. In A. R. Grote's "Additions to the catalogue of United States Lepidoptera, No. 4" (*Proc. Ent. Soc. Phila.*, vol. 2. pp. 64-68), Hochstein drew the specimens for its accompanying plate. Hochstein painted in oil and water colors, some of his work depicting rural scenes, flowers, fruits, birds and insects. The Free Public Library of Hoboken, N. J., has some of his work. At one time his paintings were exhibited at Weber's art shop in Hoboken. Anton never married, and his death occurred November 3, 1911, in St. Mary's hospital, Hoboken, New Jersey.

#### FRANK COWAN (1844-1905)

An interesting and diverting book entitled *Curious Facts in the History of Insects, including Spiders and Scorpions*, was published in 1865 by J. B. Lippincott & Company. Frank Cowan was the author, and his work is a collection of statements ransacked from the writings of Greek, Roman, and later authors, dealing with early beliefs and superstitions about insects. Books of travel, history, poetry and suppletive works yielded their entomology to Cowan's industry. Such historical settings are not scientific facts as we understand them today, or even as they were understood in 1865, and although some are plainly absurd, Cowan made it plain in the preface of his book, that he was dealing principally with the statements of various writers. The arrangement of his material by orders and families of insects has a particular appeal to entomologists and bringing together as it does a mass of insect mythology, it furnishes a sort of historical background for the study of entomology.

Frank Cowan was born in Greensburg, Pennsylvania, December 11, 1844. His father, Edgar Cowan, was United States Senator from Pennsylvania from 1861 to 1867. Frank Cowan studied at Mount Pleasant and Jefferson Colleges, but did not graduate from either. In 1862, he became secretary of the senate committee on patents, of which his father was chairman. During the vacations of Congress, he read law with his father, and was admitted to the bar in 1865. It was during the winter of 1863-64 when, having the use of the Congressional Library, he began at the age of nineteen the compilation of his *History of Insects*. In 1866, he became one of the secretaries of President Johnson. In 1867, he started the study of medicine in the Georgetown Medical College and received his degree in 1869. From 1869 until 1872, he practiced medicine in Greensburg, Pennsylvania, and then became editor and proprietor of an industrial journal known as *Frank Cowan's Paper*, which continued until 1875. In 1878, he was district attorney. From 1880 to 1881, he made a tour of the world, entering Korea in advance of treaties between that and other countries, making an ethnological collection and sending to the United States government information about the exports and imports of Korea. In 1882, he resumed the practice of law. In 1884-85, he made a second tour of the world. In 1895-96, he was general superintendent of the Westmoreland Hospital. For some years previous to his death in 1905 he devoted his time to fruit growing and writing. His versatility is shown by his authorship of various pamphlets and magazine articles dealing with medical, historical, anthropological, biographical and evolutionary subjects, by his musical compositions, his poems, by his *History of Insects*, and by various other books that he wrote.

About 1880 he published privately at Greensburg, Pennsylvania, *Revi-Lona, A Romance of Love in a Marvelous Land*, apparently the

last, or one of the last, books he wrote. In this romance, the hero goes to the far South Seas on a whaling voyage and finally ends on an island completely dominated by Amazonian women, where he takes unto himself twenty-five governesses, each on successive joyous nights. Doctor Cowan wrote this book, so he stated,

"for the good and pure old man, to whom the world, the flesh and the devil are no longer foul and forbidden facts in himself and his surroundings, but fair and fascinating fancies in the glamour of the evening of life—or haply, flashing and scintillating in the lightening before death."

I recommend Doctor Cowan's first (1865) and last books to all entomologists. The next year there was an outbreak of grasshoppers in Kansas, but this was in 1866, and so it lies beyond the limits of this account.

ADDITIONS AND CORRECTIONS TO THE *BIBLIOGRAPHY OF BUTTERFLIES*,  
IN *ATLAS OF NEOTROPICAL LEPIDOPTERA*

No. III. COMPRISING MOSTLY WORKS PUBLISHED IN 1998

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The second set of *Additions and Corrections* to the annotated *Bibliography of Butterflies* (Lamas, Robbins, and Field, 1995) in the series *Atlas of Neotropical Lepidoptera*, Vol. 124, was published a year ago (Lamas, 1998, *Lepidoptera News* 1998(3):34-56). The 219 additional references included herein comprise mostly works published in 1998, such as were recorded until August 15th, 1999.

In the *Corrections* section, rather than repeating whole bibliographic entries, I have used **bold** typeface to indicate corrections made, which I hope will be self explanatory.

Julián Salazar, Angel Vilorio, and Andrew Neild were particularly helpful in providing data on publications omitted previously, and I am most grateful for their kind interest and assistance.

ADDITIONS

- Aguilar, Carlos**  
1996. See Kochalka, J. A. et al., 1996.
- Amarillo, Angela**  
1997. See Fagua, G. et al., 1997.
- Alonso, Alfonso, Eneida Montesinos, Eduardo Rendón, Lincoln Pierson Brower and Ken Oyama**  
1998. Influence of forest canopy closure on rates of bird predation on overwintering Monarch butterflies *Danaus plexippus* L. *Biological Conservation* 85(1/2): 151-159, 1 fig., 2 tabs. (July-August) [Mexico]
- Alonso, Alfonso, Eduardo Rendón, Eneida Montesinos and Lincoln Pierson Brower**  
1997. Use of lipid reserves by Monarch butterflies overwintering in Mexico: Implications for conservation. *Ecological Applications* 7(3): 934-947, 5 figs., 2 tabs. (August) [*Danaus plexippus* (Linnaeus)]
- Andrade, Miguel Gonzalo**  
1997. See Fagua, G. et al., 1997.  
1998a. Utilización de las mariposas como bioindicadoras del tipo de hábitat y su biodiversidad en Colombia. *Revista de la Academia colombiana de Ciencias exactas, físicas y naturales* 22(84): 407-421, 13 figs., 1 tab. (September) [general]  
1998b. See Fagua, G. et al., 1998.
- Anken, Ralf H.**  
1998a. 1. Beitrag zur Kenntnis der Tagfalterfauna von Poté. Bearbeitung der um des Jahreswechsel 1996/97 in Poté (Minas Gerais, Brasilien) gesammelten Tagfalter. Erster Teil: Lycaenidae und Nymphalidae (ohne Satyrinae) (Lepidoptera: Rhopalocera). *Facetta* 15(1): 18-44, pl. 4, 7 figs. (April) [new subspecies: *Dynamine mylitta thoenii*, *Eunica cuvierii bourrati*]  
1998b. Eine neue Art der Gattung *Splendeuptychia* Forster aus dem Minas Gerais Brasiliens (Lepidoptera: Nymphalidae: Satyrinae: Euptychiini). 5. Beitrag zur Kenntnis neuer neotropischer Euptychiini. *Entomologische Zeitschrift* 108(5): 184-192, 4 figs. (14 May) [*S. ava*]  
1998c. 2. Beitrag zur Kenntnis der Tagfalterfauna von Poté. Bearbeitung der um den Jahreswechsel 1996/1997 in Poté (Minas Gerais, Brasilien) gesammelten Tagfalter. Zweiter Teil: Pieridae (Lepidoptera: Rhopalocera). *Facetta* 16(2): 19-50, 25 figs. (1 December) [general]
- Anken, Ralf H., Thomas Kappel, Ute Jonas, Dirk Bremen and Maria Helena Pinto Bivar de Matos e Silva**  
1998. Wiederentdeckung von *Tegosa infrequens* Higgins (1981), beschrieben aus dem Bergwald Südost-Brasiliens. (Lepidoptera: Nymphalidae: Melitaeinae: Phycodini Higgins, 1981). *Facetta* 14(1/2): 4-12, 2 figs. (April)
- Anken, Ralf H., and Maria Helena Pinto Bivar de Matos e Silva**  
1998. Zur Kenntnis einer neuen Unterart von *Ortilia ithra* (Kirby 1871) aus dem brasilianischen Mato Grosso-Gebiet (Lepidoptera: Nymphalidae: Melitaeinae: Phycodini). *Entomologische Zeitschrift* 108(3): 122-128, 3 figs. (12 March) [*O. i. luiseana*]
- Anonymous**  
1998. The Butterfly King. *Wildlife Conservation* 101(3): 56-59, figs. (May) [*Danaus plexippus* (Linnaeus); migration; Mexico]
- Araya, José**  
1998. See Monge-Nájera, J. et al., 1998.
- Arista, M., P. E. Oliveira, P. E. Gibbs and S. Talavera**  
1997. Pollination and breeding system of two co-occurring *Hirtella* species (Chrysobalanaceae) in central Brazil. *Botanica Acta* 110(6): 496-502, 3 figs., 4 tabs. (December) [general]
- Ariza, Rubén D.**  
1998. See Duarte, H. W. et al., 1998.
- Arnqvist, Göran**  
1998. Comparative evidence for the evolution of genitalia by sexual selection. *Nature* 393(6687): 784-786, 1 fig., 1 tab. (25 June) [*Eueides*, *Heliconius*]
- Atria, Juan**  
1997. *Orden Lepidoptera (mariposas, polillas)*, pp. 94-103, 172-175, 11 figs. In: Cepeda, J. (Ed.), *Insectos de la Alta Montaña del Valle del Elqui*. La Serena, Universidad de La Serena [general; Chile]
- Attal, Stéphane, and Alain Crosson**  
1997. Papillons néotropicaux nouveaux des genres *Perisama* et *Epiphile* (Lepidoptera Nymphalidae). *Bulletin de la Société entomologique de France* 102(3): 287-291 ([28] August) [*P. lebasii selva*, *P. paraliccia bonita*, *P. canoma cyaneis*, *P. guerini nimballa*, *E. latefasciata obscurior*, *E. orea distalis*; Ecuador]
- Austin, George T.**  
1997. The Butterflies of Venezuela. Part 1: Nymphalidae I (Limenitidinae, Apaturinae, Charaxinae). A comprehensive guide to the identification of adult Nymphalidae, Papilionidae, and Pieridae. Andrew F. E. Neild. 1996. *Annals of the entomological Society of America* 90(5): 701-702 (September) [general; book review]  
1998a. Hesperidae of Rondônia Brazil: *Ridens* and the "proteus" group of *Urbanus*, with descriptions of new species (Pyrginae). *Journal of the Lepidopterists' Society* 52(2): 166-176, 12 figs. (21 July) [*R. bidens*, *U. villus*, *U. longicaudus*, *U. parvus*]  
1998b. *The correct name of the Danaus gilippus (Cramer) (Lepidoptera: Nymphalidae) in the Southwestern United States*, pp. 749-750. In: Emmel, T. C. (Ed.), *Systematics of Western North American Butterflies*. Gainesville, Mariposa Press ([18] December) [Mexico, Central America]  
1998c. *Limenitis archippus (Cramer) (Lepidoptera: Nymphalidae) in Western United States with special reference to its biogeography in the Great Basin*, pp. 751-761, 8 figs. In: Emmel, T. C. (Ed.), *Systematics of Western North American Butterflies*.

- Gainesville, Mariposa Press ([18] December) [Mexico]
- Austin, George T., and John F. Emmel**  
 1998a. *New subspecies of butterflies (Lepidoptera) from Nevada and California*, pp. 501-522, 66 figs. In: Emmel, T. C. (Ed.), *Systematics of Western North American Butterflies*. Gainesville, Mariposa Press ([18] December) [*Thorybes pylades indistinctus*, *Strymon columella clenchi*, *Junonia coenia grisea*; Mexico]
- 1998b. *A review of Papilio multicaudatus Kirby (Lepidoptera: Papilionidae)*, pp. 691-700, 12 figs. In: Emmel, T. C. (Ed.), *Systematics of Western North American Butterflies*. Gainesville, Mariposa Press ([18] December) [new subspecies: *P. m. grandiosus*; Mexico]
- Austin, George T., and Kurt Johnson**  
 1998. Theclinae of Rondônia, Brazil: *Olynthus*, with descriptions of new species (Lepidoptera: Lycaenidae). *Tropical Lepidoptera* 9(1): 5-13, 20 figs. ("20" [24] August) [new species: *O. occultus*, *O. ruberangulus*, *O. pressus*, *O. lividus*, *O. fulvovenstris*, *O. ochraventrtris*, *O. pallus*, *O. purpuratus*, *O. negrus*, *O. albosignum*]
- Austin, George T., and Olaf Hermann Hendrik Mielke**  
 1998. Hesperidae of Rondônia, Brazil: *Aguna Williams* (Pyrginae), with a partial revision and descriptions of new species from Panama, Ecuador, and Brazil. *Revista brasileira de Zoologia* 14(4): 889-965, 83 figs., 1 tab. (30 June) [*A. latifascia*, *A. coeloides*, *A. nicolayi*, *A. latimacula*, *A. penicillata*, *A. spicata*, *A. longicauda*, *A. panama*, *A. spatulata*, *A. similis*, *A. mesodentata*, *A. squamalba*, *A. parva*]
- Austin, George T., and Michael J. Smith**  
 1998a. *Revision of the Thessalia leanira complex (Lepidoptera: Nymphalidae: Melitaeinae): Thessalia leanira (C. & R. Felder), with descriptions of four new subspecies*, pp. 333-358, 67 figs. In: Emmel, T. C. (Ed.), *Systematics of Western North American Butterflies*. Gainesville, Mariposa Press ([18] December) [*T. l. austrima*; Mexico]
- 1998b. *Revision of the Thessalia theona complex (Lepidoptera: Nymphalidae: Melitaeinae)*, pp. 359-396, 223 figs. In: Emmel, T. C. (Ed.), *Systematics of Western North American Butterflies*. Gainesville, Mariposa Press ([18] December) [new subspecies: *T. t. costaricensis*, *T. t. brocki*, *T. t. mullinsi*, *T. t. minimus*; Central America, Colombia, Venezuela]
- Bálint, Zsolt, Kurt Johnson and Karl Ritter Kroenlein**  
 1998. New species of Eumaeini (Lycaenidae) from southeastern Brazil. I. Four new species of *Denivia*. *Acta zoologica Academiae Sientiarum hungaricae* 43(3): 257-269, 13 figs. (15 February) [*D. grava*, *D. secunda*, *D. ponsanota*, *D. striata*]
- Barnes, Matthew J. C.**  
 1998. If you want to collect in Central America, you better Belize it. *News of the Lepidopterists' Society* 40(4): 75-76, 1 map [general; Belize]
- Barnes, William, and James Halliday McDunnough**  
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- Barone, John A.**  
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- Benson, Woodruff W.**  
 1998. See Hernández, M. I. M. & W. W. Benson, 1998.
- Berger, Lucien A.**  
 1937. Variations et aberrations de lépidoptères. Formes nouvelles de *Colias*. *Lambillionea* 37: 146-147, pl. 9 (25 July) [*C. dimera f. superba*, *C. d. f. alba*; Colombia]
- Bezaury, Juan**  
 1992. See Maza, R. G. de la & J. Bezaury, 1992.
- Boggs, Carol L.**  
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- Boiça, Arlindo Leal, Jr., and José Djar Vendramim**  
 1993. Infestação de girassol pela lagarta *Chlosyne lacinia saundersii* em duas épocas de cultivo. *Scientia agricola* 50(2): 244-253, 6 tabs., 2 figs. (June-September) [host plant; Brazil]
- Bollino, Maurizio, and Giovanni Sala**  
 1998a. Un nuovo ibrido di *Papilio (Pterourus)* del Perù settentrionale (Lepidoptera Papilionidae). *Lambillionea* 98(1)(1): 46-48, 1 fig. (March)
- 1998b. Description of a new subspecies of *Papilio (Pterourus) zagreus* Doubleday, 1847 from south-eastern Peru with taxonomical notes on the species (Lepidoptera, Papilionidae). *Entomologia africana* 3(1): 19-27, pl. 3, 2 figs. [*P. (P.) z. nigroapicalis*]
- Bremen, Dirk**  
 1998. See Anken, R. H. et al., 1998.
- Brévignon, Christian**  
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- 1998b. Notes sur quelques espèces du genre *Parides* Hübner, 1819 en Guyane Française (Lepidoptera Papilionidae). *Lambillionea* 98(3)(2): 435-440, 24 figs. (September) [new subspecies: *P. anchises bukuti*, *P. erithalion inini*, *P. panthonus barbotini*]
- Brévignon, Christian, and Jean-Yves Gallard**  
 1998a. Inventaires des Riodinidae de Guyane Française. III. Riodininae: Riodinini. Description de nouveaux taxa. (Lepidoptera). *Lambillionea* 98(1)(1): 7-24, 42+10 figs. (March) [new taxa: *Chorinea amazon antoniana*, *C. batesii regina*, *Ithomeis satellites bernardi*, *Lepricornis atricolor malmanoury*, *Chamaelinnas briola batado*, *Baeotis hisbon disjuncta*, *B. euprepes obscurior*, *B. prima nigricans*, *B. expleta corentyna*; Guyana]
- 1998b. Inventaire des Riodinidae de Guyane Française. IV - Riodininae: Symmachiini, Charitini, Helicopini. Description de nouveaux taxa. (Lepidoptera). *Lambillionea* 98(2)(2): 304-320, 56+8 figs. (June) [new taxa: *Mesene arouany*, *Symmachia leena harveyi*, *S. falcistriga meyi*, *Pirascia devriesi*, *P. sticheli kawensis*, *Sarota miranda*, *S. flavicincta atlantica*]
- 1998c. Inventaire des Riodinidae de Guyane Française. V - Riodininae: "Emesini", Lemoniini. Description de nouveaux taxa. (Lepidoptera). *Lambillionea* 98(4)(1): 483-498, 53 figs. (December) [*Argyrogrammana talboti*, *Calydna caieta similis*, *C. venusta stolata*, *C. cabira belemia*, *Pachitone [sic] lateritia bourda*, *Lemonias egaensis reducta*, *Juditha majorina*, *Synargis chaonia indivisa*]
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- 1998b. *Heliconius* and related genera, by Helmuth and Ruth Holzinger. 1994. *Journal of the Lepidopterists' Society* 52(1): 120-122 (15 June) [general; book review]
- 1998c. A fair book review? A reply to Mr. Willmott. *News of the Lepidopterists' Society* 40(5): 106 (15 December) [general; Venezuela]
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 1997. See Alonso, A. et al., 1997.
1998. See Alonso, A. et al., 1998.
- Brown, Frederick Martin**  
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- Brown, Keith Spalding, Jr.**  
 1998. See Casagrande, M. M. et al., 1998.
- Buff, Sheila**

1998. *Nature's Window. Butterflies*. Kansas City, Andrews McMeel Publishing. 48 pp., figs. [general]
- Bugatti, Cristina L.**  
1998. Flores y frutales que atraen a las esquivas mariposas. *Mariposas del Mundo* (Buenos Aires) 4: 10, 1 fig. (March) [general; Argentina]
- Calvo, Renán**  
1998. Reproducción de *Oenomaus ortignus* [sic] (Lepidoptera: Lycaenidae) en Barva, Heredia, Costa Rica. *Revista de Biología tropical* 46(1): 101-104, 1 tab. (April) [life history; host plant]
- Cardoso, Márcio Zikán**  
1997. Testing chemical defence based on pyrrolizidine alkaloids. *Animal Behaviour* 54(4): 985-991, 2 figs., 2 tabs. (October) [general]
- Casagrande, Mirna Martins**  
1998a. See Mielke, O. H. H. & M. M. Casagrande, 1998a.  
1998b. See Mielke, O. H. H. & M. M. Casagrande, 1998b.  
1998c. See Mielke, O. H. H. & M. M. Casagrande, 1998c.
- Casagrande, Mirna Martins, and Olaf Hermann Hendrik Mielke**  
1998. Plantas hospedeiras das espécies de *Agrias* Doubleday (Lepidoptera, Nymphalidae, Charaxinae). *Revista brasileira de Zoologia* 14(3): 771-772 (30 April) [*A. claudina claudianus* Staudinger, *A. c. godmani* Fruhstorfer, *A. amydon ferdinandi* Fruhstorfer; Brazil]
- Casagrande, Mirna Martins, Olaf Hermann Hendrik Mielke and Keith Spalding Brown, Jr.**  
1998. Borboletas (Lepidoptera) ameaçadas de extinção em Minas Gerais, Brasil. *Revista brasileira de Zoologia* 15(1): 241-259, 25 figs. (14 August) [general]
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1995. See Torres, R. et al., 1995.
- Cevallos, Varsovia**  
1998. See Onore, G. & V. Cevallos, 1998.
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1997. See Prieto, A. V. et al., 1997.
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1998. Life history of *Eurytides protesilaus dariensis* (Rothchild [sic] & Jordan 1906). *News of the Lepidopterists' Society* 40(3): 45, 6 figs. (15 June) [host plant; Costa Rica]
- Clavijo, José**  
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1996. The skipper butterflies (Hesperiidae) of Trinidad. Part 8, Genera group E (second section). *Living World* 1995-1996: 27-37, 41 figs. (July) [new species: *Staphylus kayei*; life history; host plants]  
1998a. The skipper butterflies (Hesperiidae) of Trinidad. Part 9, Genera group E concluded (third section) with a description of a new species of *Clito*. *Living World* 1997-1998: 33-45, 43 figs. (March) [*C. trinidadensis*; life history; host plants]  
1998b. Two species of Hesperiidae recently established on New Providence. *Bahamas Journal of Science* 5(3): 12-15, 5 figs. (June) [*Asbolis capucinus* (Lucas), *Cymaenes tripunctus tripunctus* (Herrich-Schäffer), *Urbanus proteus domingo* (Scudder); life history; host plants; parasitoids; Bahamas]
- Constantino, Luis Miguel**  
1997a. See Prieto, A. V. et al., 1997.  
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- 1997c. See Ortega, O. E. & L. M. Constantino, 1997.  
1998a. Butterfly life history studies, diversity, ranching and conservation in the Chocó rain forests of Western Colombia (Insecta: Lepidoptera). *Shilap* 26(101): 19-39, 1 tab. (30 March) [general]  
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- September 1999

# BOOK NEWS

## **NABOKOV'S BLUES: the Scientific Odyssey of a Literary Genius**

by K. Johnson and S. Coates. 1999. 372pp, 8 B & W pl. (15 x 24cm). Zoland Books, Cambridge, MA. \$27 cloth.

The famous novelist, Vladimir Nabokov, is the subject of this biography in relation to his scientific pursuits with the blue butterflies of Latin America. This book gives the chronology of his studies on Neotropical blues, but also delves into the taxonomy of the species he studied. The readable text invites continued reading to the end, giving a fascinating commentary on Nabokov and this lesser known part of his life.

## **VÉRA'S BLUES: First Editions by V. Nabokov Inscribed to His Wife**

edit. by S. Funke. 1999. 267pp, 36 col. pl. (15 x 24cm). Horowitz Booksellers, New York, NY. \$125 cloth, \$75 paper.

Although this pricey book is an elaborate color sale catalog of the first editions collection Nabokov had in his library at the time of his death, each book inscribed to his wife Véra and with a colored drawing of a butterfly drawn by Nabokov (usually fanciful) added, this book catalog also includes an interesting commentary by Kurt Johnson and Brian Boyd. There are articles by S. J. Gould, M. Wood, J. Salter, and S. Schiff.

## **LEPIDOPTERA OF GUI SANDAO ISLET**

by H. Y. Wang and J. Y. Lee. [1999]. 166pp (full color). Ilan Co. Mus. Nat. Hist., Ilan, Taiwan. NT\$260 (ca. \$7.50).

Turtle Island (or Guisandao) is a well-known landmark just offshore from the northeast coast of Taiwan, just south of the Taipei latitude. The island is a mountainous cone not sampled for Lepidoptera in decades due to its former military use. The authors surveyed the island and completed the color booklet illustrating a number of species of moths and butterflies commonly encountered there. Text is in Chinese (scientific names in Latin).

## **ESPERIANA. Band 7**

edit. by H. Hacker. 1999. 773pp, 27 col. pl. (16 x 24cm). Esperiana Buchreihe, Schwabfeld, Germany. DM 295 (ca. \$185) cloth.

This 7th volume in the hard-bound journal, *Esperiana*, includes a number of papers on the insect fauna of Yemen as Part 1. Part 2 follows with a dozen other articles on various Old World genera, mainly on Noctuidae. The color plates are at the end of the book.

## **THE LIVING TROPICAL GREENHOUSE: Creating a Haven for Butterflies**

by J. Tampion and M. Tampion. 1999. 128pp (full color) (18 x 29cm). GMC Publ., Lewes, E. Sussex, England. £12.50 (ca. \$21).

This color book gives practical advice on how to care for tropical butterflies in a greenhouse. The most adaptable and available species for living colonies are discussed, including their rearing and feeding.

## **FLORIDA BUTTERFLY GARDENING: a Complete Guide to Attracting, Identifying, and Enjoying Butterflies of the Lower South**

by M. C. Minno and M. Minno. 1999. 210pp (full color) (21 x 28cm). Univ. Press. Florida, Gainesville, FL. \$34.95 cloth.

In addition to being a complete guide to butterfly gardening, this book also is a guide to the butterfly species of Florida and neighboring states. The species of each family are treated, noting identification points, life history and hostplants. The color figures include many photographs of the immature stages. Adults are mostly shown as spread specimens. There is a long introduction to butterfly ecology and natural history in Florida.

## **LE PAPILLONS DU QUÉBEC**

by L. Handfield. 1999. 984pp, 121 color pl. Broquet Publishing, Boucherville, PQ, Canada. \$90.

This color guide to the Lepidoptera of the Province of Quebec, Canada, includes figures of 2650 specimens and treats 1450 species. The work is in French, but there is an English "User's Guide" to help English-speaking users in using this book.

## **LEPIDOPTERA OF BELIZE: 1. Butterflies. 2. Emperor Moths and Hawk Moths**

by J. Meerman. 1999 (Dec). 64 pp, 3 color pl. (21 x 28cm). ATL (*Trop. Lepid.*, Vol. 10, Suppl. 1). Sent free with *Tropical Lepidoptera* journal (extra copies: \$10); \$18 non-members.

The catalogs for butterflies and two of the moth families for the small Central American nation of Belize are presented as based on surveys conducted by the author throughout Belize, with notes on historical listings and current distributions. Hostplants are noted for many species. There are separate host indexes and name indexes for the butterfly and the moth sections. The last pages include field forms to record all species of these groups in Belize. An introduction covers Lepidoptera habitats and ecology in Belize.

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## PASSINGS

† **Dr. Ross H. Arnett, Jr.**, 16 July 1999, in Gainesville, Florida, at age 80. Dr. Arnett was an eminent coleopterist, author of numerous books on beetles and insects in general. His most recent works included *Beetles of Northeastern North America* (co-authored with N. Downie) and his well-known *American Insects* (revised just before his death). He was working on a revision of his 1963 *Beetles of the United States* and had most of it already completed. He organized the Coleopterists' Society and founded its journal, the *Coleopterists' Bulletin*. He started and edited a popular insect journal in the 1970s, called *Insect World Digest*. He also was founder and editor of the journal, *Insecta Mundi*. He was a Life Member of ATL, supporting our organization from its inception even though his main interest was with beetles.

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## MEETINGS

2000 **Association for Tropical Lepidoptera**: April 14-16, Gainesville, Florida, USA  
**Societas Europaea Lepidopterologica**, May 28 - June 1, Bialowieza Forest, eastern Poland  
**XXI International Congress of Entomology**, August 20-26, Iguazu Falls, Brazil

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