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# METALEPTEA

SOCIEDAD PANAMERICANA  
DE ACRIDIOLOGIA



PAN AMERICAN  
ACRIDOLOGICAL SOCIETY

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The Pan American Acridological Society, or PAAS, is an international scientific organization with members in 23 different countries. Its purpose is to facilitate communication among those interested in, and concerned with, New World Acridology; to encourage collaborative research and control programs in Acridology among the countries of the New World; and to disseminate information and to promote, to conduct, and to foster other activities designed to increase knowledge and understanding of Acridology and its implications.

Some fifty persons interested in forming PAAS met at San Martin de los Andes, Neuquén, Argentina, late in 1976. A Constitution and By-Laws were prepared and approved in 1978. The Society is now engaged in a full range of programs and activities toward the satisfaction of its above-mentioned objectives.

The present Governing Board consists of President S. K. Gangwere, of Detroit, Michigan, U.S.A., President-Elect R. A. Ronderos, of La Plata, Argentina, North American Representative J. E. Henry, of Bozeman, Montana, U.S.A., Central American Representative C. Marquez Mayaudon, of Mexico City, Mexico, South American Representative C. S. Carbonell, of Montevideo, Uruguay, Executive Secretary I. J. Cantrall, of Ann Arbor, Michigan, U.S.A., and Co-Editors N. Lafuente Indo, of Valparaiso, Chile, and M. Tyrkus, of Detroit, Michigan, U.S.A.

PAAS membership is open to all persons, professional or amateur, who have an interest in New World Acridology by virtue of their research, teaching, or other activities. Inquiries may be addressed to Prof. S. K. Gangwere, Department of Biology, Wayne State University, Detroit, Michigan 48202, U.S.A.

## THE LIEBERMANN INTERVIEWS

**Editor's Note** During the late summer and fall of 1962 Professor José Liebermann, distinguished Honorary Member of PAAS, interviewed three of the giants of Orthopterology: Ashley B. Gurney, Theodore H. Hubbell, and the late James A. G. Rehn. The interviews, as conducted, were quite general, dealing with items of personal history as well as opinions on the "state of the art." With the cooperation of Drs. Gurney, Hubbell, and Liebermann, we are able to present here portions of these interviews. Since a panel of the recent giants of Orthopterology would be incomplete without his inclusion, the Editorial Office petitioned Professor Liebermann to respond to the same questionnaire. He kindly concurred and his comments are included below.

WHAT INITIALLY ATTRACTED YOU TO THE STUDY OF ORTHOPTERA? WHAT REMEMBRANCES HAVE YOU OF YOUR CHILDHOOD?

**Gurney** My boyhood was spent on a small farm in western Massachusetts, in the section known as the Berkshire Hills. Though I was not especially interested in natural history then, there was constant contact with plants and animals. This background helped later during college vacations when I actively collected local insects. At the Massachusetts Agricultural College, now the University of Massachusetts, my interests in collections of various kinds attracted me to the beginning course in entomology, which at once brought me in contact with Dr. C. P. Alexander, truly an enthusiast among entomologists, and a born collector and taxonomist. Under his tutelage I majored in entomology and began to study Orthoptera. A. P. Morse's "Orthoptera of New England" was my guide, and Mr. Morse

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responded with encouragement to this, my first inquiry to a recognized specialist in the Order. As a consequence, special problems in college were undertaken which pointed my interests toward an Orthoptera specialty. At the University of Minnesota, Dr. William A. Riley encouraged me to continue in that direction.

**Hubbell** When I was a child in the city of Detroit, Michigan, my birthplace, I began to collect butterflies. I remember that when I was about 8 years old, I was very proud to give a collection of local butterflies to the elementary school I attended; it was mounted in a sealed case made by my father. The following year we moved to the Philippine Islands, where my father was at first City Engineer of Manila and later Director of Public Works for the islands; we lived there until I was 16 years old. The gorgeous tropical butterflies were wonderful, and together with a school friend who shared my interest in them and my pleasure in outdoor pursuits, I spent a great deal of time with a home-made, often-repaired net collecting in the overgrown gardens and estate of the old archbishop's palace that housed the American School and adjoined our Manila home. Later, I was able to capture other kinds of butterflies in the mountains around Montalban, not far from Manila, and on trips afoot and horseback from our summer home in Baguio, on the mile-high plateau of northern Luzon.

My friend and I had no books on insects except Packard's "Textbook of Entomology" and Holland's "Butterfly Book, neither of which was much help in identifying Philippine insects. We therefore had to invent our own system of nomenclature and spoke of the "spider-webs" (Marpesia or Cyrestis), the "black-and-golds" (Ornithoptera or Troides), the "white-spotted

blues" (Euploea), or the "tailed clear-wings" (Leptocircus). Finally, someone told us about the Philippine Bureau of science and its collections. There we met the young German entomologist W. Schultze to whom I shall always be grateful for the interest he took in two ignorant but enthusiastic boys. A cripple from birth, he was yet a skilled collector; on our field trips with him we watched with awe his delicate control of a tiny net mounted at the end of a 10-foot bamboo handle, with which he could pick off an insect from a flower cluster far to one side of the path or high above it. He taught us how to record field data, how to mount our specimens properly, and how to look things up in books. Most important of all, he gave us our first insight into entomology as a science, full of opportunity for observations and exciting discoveries. One of his beliefs was that every systematic entomologist should know most of the common insects of his local fauna but should also have some one group, even though a small one, in which he worked on a world-wide basis. This man probably had a more enduring influence in shaping my career than any other, although I knew him only a short time in my boyhood.

Our family returned to the United States in 1913, and I completed my high school training in the Benzonia Academy, a school founded in the last century by a pioneer colony in northern Michigan of which my grandparents had been members. There I continued to collect Lepidoptera - moths as well as butterflies by now - but eventually I realized that I could not build a personal museum. During the summers of 1914 and 1915 I worked as an assistant in the Forest Insect Laboratory at Falls Church, Virginia, under Drs. S. A. Rowher, F. C. Craighead, and H. B. Kirk. My duties consisted of caring for cages of wood-boring beetles,

mounting the specimens that emerged, and collecting beetles and other insects from tanglefoot bands and from under burlap "skirts" tied on trees in an experimental woodland. This experience, Kirk's enthusiasm for Coleoptera, and the fact that a beetle collection occupies much less space than does one of Lepidoptera, led me to turn to the collection and study of beetles, which I continued for some years.

In 1915 I entered the University of Michigan as a freshman in the School of Forestry - a field which I chose because I thought it would give opportunity for life in wild surroundings and for work with insects. I soon transferred to Zoology and worked as a student assistant with Profs. R. W. Hegner and Paul S. Welch. After a year in the Aviation Branch of the U.S. Army Signal Corps in 1917-18, I returned at the end of World War I to finish my work for the A.B. at Michigan, and in the fall of 1920 entered the graduate school of that university aided by an assistantship in the Insect Division of the Museum of Zoology. Frederick M. Gaige, then Curator of that division, started me on the study of the Orthoptera.

Gaige pointed out to me that while there were many students of Lepidoptera and Coleoptera, there were other insect orders in which only a few specialists were working. He suggested that I consider some of these and as a start gave me the entire collection of Orthoptera of the Museum to put in order. It consisted of 20 Schmitt boxes of specimens, mostly collected in Michigan on various of the Museum's expeditions and biological surveys. To begin with, I had only Blatchley's "Orthoptera of Indiana" to work with and had great difficulty, but before the year was out that author's "Orthoptera of Northeastern America" appeared. It became my Bible. I soon began to realize, however, that it did not solve

all the problems, and the more I worked with the Orthoptera the more interesting they became to me.

**Liebermann** My family emigrated to the Province of Entre Rios, Argentina, where I was born in 1897. From my earliest childhood I remember the periodic swarms of the locust Schistocerca paranensis Burmeister. It destroyed the herbage and trees in my father's fields. In its dispersal flights from the outbreak areas (then completely unknown) the locusts flew a distance of 3,000 kms. from north to south exterminating the plant life, and consequently the dependent animals, and devastating the province. I also remember so well S. paranensis' formidable enemy, the sarcophagid fly Servaisia caridei (Brethes) which exterminated the locust by the millions and ended the outbreaks. During these times I vowed to do something about the locust, this "Damocles spade" of agriculture. Also, I was delighted with the beauties of nature in my province, so I determined to learn what I could about them.

**Rehn** My first interest in natural history developed when as a ten-year old boy I visited the Wagner Free Institute of Science near my home in northwestern Philadelphia, and there became acquainted with the Curator of its Museum, Charles W. Johnson, a splendid all-around Zoologist and Paleontologist, who specialized in Diptera and Mollusca. With his encouragement a small group of boys developed into active local naturalists. Of this original lot Rehn is now the sole survivor. One member of this group became a well-known Hymenopterist (H. L. Viereck) and another an active Dipterist (Charles T. Greene). In succeeding years it became evident to me that little work was being done on the Orthoptera in proportion to the other groups of

insects, and with my preceptor's encouragement I devoted my interest in available hours to that order, at the same time keeping an active interest in mammals and birds, which I still have.

WHICH STATES OR PROVINCES HAVE YOU VISITED AND WHICH NOT? WHAT OTHER COUNTRIES?

**Gurney** I have visited all the states of the U.S. except Alaska, though some only briefly. Those in which I have traveled and collected most, in addition to my native Massachusetts and adopted state of Virginia, are Minnesota, Pennsylvania, Nevada, Oregon, California, Idaho, Utah, and Texas. Abroad I visited the Solomon and Philippine Islands during World War II, when I was in a Malaria Survey Unit of the United States Army. I collected mosquitos constantly while overseas but only a limited number of Orthoptera. More recent visits outside of the continental U.S. for collecting purposes include Puerto Rico, 1961; Egypt and Ethiopia, 1965; Dominica, 1966; Jamaica, 1966, 1975; South Africa, 1974; Ecuador, 1975; Chile, 1976.

**Hubbell** I have visited all of the United States. Those states in which I have done more or less extensive field work on Orthoptera are Michigan, Virginia, North Carolina, South Carolina, Georgia, Florida, Alabama, Tennessee, North Dakota, Oklahoma, Texas, New Mexico, Arizona, Idaho, Oregon, and California. I have also done some collecting in Massachusetts, New York, Pennsylvania, West Virginia, Kentucky, Ohio, Indiana, Illinois, Wisconsin, Iowa, Missouri, Arkansas, Mississippi, Louisiana, Colorado, South Dakota, Utah, Nevada, and Hawaii.

In Canada I have visited Ontario (where I did

considerable collecting) and Quebec. I have made several collecting trips to Mexico and in Central America have spent some time doing field work on Orthoptera in Honduras and Guatemala and made one trip by car through Mexico, Guatemala, El Salvador, Nicaragua, and Costa Rica, camping in the fields and forests and collecting by night and by day. I have also made short visits to various parts of Costa Rica. In 1963 I spent several months in the field collecting Orthoptera in company with Sr. Luis E. Peña G. in Tierra del Fuego, southern and central Chile, eastern Peru, and eastern and coastal Ecuador.

In 1960, following the meeting of the International Entomological Congress in Vienna, I studied and photographed Orthoptera types and other material at the principal museums in England, France, Belgium, Holland, Denmark, Sweden, Switzerland, Italy, and Australia. In Germany I visited only the museums of Hamburg, Bremen, Stuttgart, and Munich. I was able to do some Orthoptera collecting in Austria, Germany, Greece, Crete, and Rhodes.

In 1968-69, after attending the International Entomological Congress of Entomology in Moscow, I studied Orthoptera types in the Moscow and Leningrad Museums, again at Vienna, and in Madrid. I was able to do some collecting in Uzbekistan, around Moscow, in Austria, and in Spain. On our subsequent journey around the world I collected Orthoptera (most often at night on oatmeal trails) in Singapore, Cambodia, New Zealand, Australia, the Philippines, Taiwan, and Japan; and in 1970 I did some collecting when my wife and I visited Kenya, Tanzania, Uganda, Ethiopia, and Morocco.

**Liebermann** I have explored all the provinces of Argentina except Tierra del Fuego in the course

of research on the grasshoppers and locusts for INTA, the governmental agency where I worked until my retirement in 1973. I had an award to do a detailed study, in Chile, of Schistocerca cancellata (Serville) which was then considered to be the solitary phase of our species. I have taken a number of trips to Uruguay, Paraguay, and Brazil. In 1962 I traveled to the United States. I spent most of my time in Washington, Philadelphia, and Ann Arbor where there are extensive collections that I studied especially for Bruner's South American specimens. I had only a little time to get into the field for collecting in the United States. I was kindly helped to do so by the members of the Jewish Christian Church such as Mr. Schifrin, Miss Zipf, and other wonderful people.

**Rehn** I have visited all but four of the United States (these being Michigan, Wisconsin, Alaska, and Hawaii). In some states, such as California, Nevada, Arizona, New Mexico, Texas, Georgia, Florida, and Virginia, as well as my native Pennsylvania and adjacent New Jersey, I have worked many seasons. Abroad, I have collected in Cuba, Jamaica, Guatemala, El Salvador, Honduras, Costa Rica, Panama, Colombia, and Matto Grosso, Brazil. In Africa I have worked in Kenya, Uganda, the former Belgian Congo, and the former French colonies of Ubanghi-Shari, Congo Moyen, and Cameroun. In all since 1902 I have spent 42 seasons in field work, usually on Orthoptera, but on three extensive foreign expeditions as General Zoologist.

**WITH WHOM HAVE YOU COLLABORATED IN YOUR WORK?**

**Gurney** Collaboration with other entomologists, in the sense of joint authorship, was not begun

until the middle years of my publishing activity. Such collaboration, provided that each author contributes a significant share, results in combining the talents and advantages, so far as collection and literature availability are concerned, of two or more workers. When practiced by cooperative, fair-minded individuals, it can promote the exchange of specimens and ideas to great mutual benefit. Equally important is the cooperation between individuals of similar interests which is not designed to lead to joint authorship. In this sense, I have helped many individuals, some of them extensively over a period of years, and in one way or another they have assisted me. So long as such cooperation is mutual, benefits are very real, and I include in this category cooperation in field work as well as exchange of information. The recall of various collecting trips in our Far West, roughing it and doing some camping, with pleasant and enthusiastic companions in circumstances that sometimes made it unwise for one to be collecting alone, are among my happiest memories.

**Hubbell** The two men with whom I have worked most closely in the study of Orthoptera are Dr. Irving J. Cantrall, retiring this year as Professor of Zoology and Curator of Insects in the University of Michigan Museum of Zoology, and Dr. Theodore J. Cohn, Professor of Zoology in San Diego State University. Our collaboration has been primarily in field studies and discussion of problems rather than in joint publication. Others with whom I have published jointly include the following: Prof. W. Frank Blair, University of Texas (on the biotic districts of Oklahoma); C. C. Goff, Florida Agricultural Experiment Station (on the arthropod inhabitants of pocket-gopher



(*Geomys*) burrows in Florida); Prof. Albert Laessle, University of Florida (on the biotic environments of the Flint-Chattahoochee region of Alabama, Georgia, and Florida); Dr. Russell Norton, Yale University (on the systematics and biology of the cave-cricket of the tribe Hadenocini); Ada Olson and Prof. H. F. Howden (the scarabaeid beetle genus *Mycotrupes*); Prof. A. I. Ortenburger, University of Oklahoma (the Orthoptera of Oklahoma); and Fred W. Walker, Florida Agricultural Experiment Station (description of *Schistocerca ceratiola*). I have also published minor notes with Profs. Frank N. Young and Herbert S. Wallace and have worked with various other Orthopterists and colleagues in other fields.

**Liebermann** My collaborators have not been from Argentina, where much of the past Acridology has been of poor quality, but from the United States and other countries. I have collaborated with some of the giants of the field from the United States such as Rehn, Gurney, Hubbell, Grant, Cantrall, Gangwere, Tinkham, Roberts, Snodgrass, Slifer, and others. My collaborators from other countries include such luminaries as Uvarov, Z. Waloff, Chopard, Costa Lima, Ebner, Beier, Roonwal, and others. I exchanged material with all of them, and the early exchanges were particularly important in the development of my studies. Later on, I helped Carbonell, Mesa, Zolessi, and Silveira Guido with their determinations, and together with Ruffinelli we made the first catalog of the Uruguayan grasshoppers. The advice, years ago, of Ing. Roberto G. Mallo, Director of Vegetal Pathology, was important to me along with that of Ing. Ubaldo C. Garcia, now in Costa Rica. Christina S. de Wanger, an American lady then raising chinchillas in Calama

and Antofagasta, collaborated with me in my work in the Atacama Deserts. I want to take this opportunity to thank all of them.

**Rehn** In my published works with joint authors my collaborators have been the late Morgan Hebard, my son Dr. John W. H. Rehn, the late T. D. A. Cockerell, my present colleague Dr. Harold J. Grant, Jr., and similar colleagues Dr. David Eades and Dr. Robert Randell. In the field my collecting colleagues were Morgan Hebard (eighteen seasons in all), John W. H. Rehn (five seasons), the late H. L. Viereck (one season), the late Dr. V. S. L. Pate, a distinguished hymenopterist (one season), and the late Dr. Frank E. Lutz (one season).

#### WHAT IS YOUR RAREST SPECIES? GENUS? WHY?

**Gurney** *Shotwellia isleta* of New Mexico and northern Mexico is one of the rarest acridids described by me. In other groups, such as Grylloblattidae, Zoraptera, Psocoptera, and Neuroptera, I have been privileged to study various rare and unusual species.

**Hubbell** I am not sure exactly what is meant by this question. If it refers to the species known from the fewest specimens, I have described several species of *Ceuthophilus* from one or a few specimens, and of some of these no additional ones have since been found. I think, however, that you refer to the species and genus that I consider most distinctive or extraordinary. Even if this is so, I find it difficult to answer. Perhaps my candidates would be the following:

*Typhloceuthophilus* (n./g.) *floridanus*  
(n./sp.) 1940. This is the only described blind rhabdophorid. It lives only in the burrows of

the pocket-gopher Geomys floridanus in central Florida, and its behavior is modified to accommodate the presence of this large mammal in the narrow tunnels. At the least disturbance it takes refuge in small lateral burrows it makes for itself, or it presses its body into any small crevice it can find in the burrow wall to make room for the passage of the pocket-gopher. This adaptive behavior shows that T. floridanus has been associated as a commensal with Geomys for a long time, as does the fact that it dies very soon when removed from the burrow of its host.

Pristoceuthophilus gaigei (n./sp.) 1925. This small rhabdophorid which occurs from British Columbia to Oregon has in the male sex a most bizarre armature of spines and glandular prominences on the abdominal tergites, unequalled in any other orthopteran known to me. The dorsum is closely crowded with conical blunt-tipped projections surrounding an hour-glass-shaped elevation on the third abdominal tergite.

Tettigidea empedonepia (n./sp.) 1937. This grouse locust is known only from a single colony confined to a ravine in the bluffs on the east bank of the Apalachicola River in western Florida; from that colony about 100 specimens have been collected. It is completely wingless and neotenic and is most closely related to species that are not known nearer than Nicaragua and Guatemala. It is apparently a relict of pre-glacial or early Pleistocene expansion of a Central American stock, now isolated.

**Liebermann** Of the dozens of new species I have described I particularly want to mention Nahuelia rubriventris Liebermann which I found on Cerro Lopez and later on in mountains in Patagonia. At Cerro Lopez I spent the night collecting this material. N. rubriventris has been treated by,

among others, Dirsh, Rehn, Grant, and Mesa for its polychromism as related to climate and meteorological conditions. The citations dealing with it have multiplied since 1942, but we still do not know its annual cycle and its food habits in the places where it lives near ice. The highest insect known from Argentina, Platydicticus anasegalae, found at 5,000 m. on Mount Aconcagua, is another relict species. The genus was erected by Chopard from material I sent him from Chile and Chapelco, Argentina. Indeed, I think all species that one describes are especially rare and beautiful, so it is hard to choose.

**Rehn** This is hard to answer. If strangeness of character is concerned probably this would be my genus Mohavacris, which I described but have never been fortunate enough to collect, although I made one Spring trip to Southern California in part at least to try and find it. There are approximately several dozen North American species which I have collected which have seldom been taken by others and some, to date, have been taken by no one but Hebard and Rehn, but this is purely fortuitous. Given the proper time, required conditions and habitat, and a good year for food plants, I believe few species are really very rare. But the right combination of the above, plus weather, are requisites. Also, some locusts are clearly periodic, just why I think we are slowly ascertaining.

WHO ARE - FOR YOU - THE MOST IMPORTANT ACRIDOLOGISTS IN THE WORLD? IN THE PAST? IN THE PRESENT?

**Hubbell** The general system of classification of the Acridoidea was founded by Carl Stål and Carl

Brunner von Wattenwyl, and for this group they may be considered the most important of the earlier workers. Henri de Saussure was at least their equal and probably their superior in the quality of his work and in its importance for the Orthoptera as a whole, but his contribution to Acridology in the narrow sense was limited largely to the oedipodines. Ignacio Bolivar also belongs in this group for his studies on the tetrigids, acridines, and pyrgomorphs, but I would rank him somewhat below the other three in terms of the originality and critical insight exhibited in their work. Samuel H. Scudder and Lawrence Bruner were the outstanding workers on the New World acridid fauna, but one cannot omit Ermanno Giglio-Tos, whose keys and descriptions formed the basis for Bruner's earlier studies on the South American fauna. Among the earlier workers I could list many others whose publications have had a significant influence on Acridology, either good or bad or mixed - among them Francis Walker, Yngve Sjostedt, A. P. Morse, J. L. Hancock, and W. F. Kirby - but the men previously named seem to me the most important.

Among later workers, now deceased, certain names stand out above the rest, not always for the same reasons. James A. G. Rehn and his younger colleague Morgan Hebard published voluminously and were the most conspicuous figures in New World Acridology during the first half of the century; their work was almost wholly descriptive and revisionary, useful, but not innovative or interpretative. B. P. Uvarov, on the contrary, was not only a good systematist but proposed the phase theory of locusts, organized an international attack on the locust problem, and synthesized and summarized a vast amount of information on locusts and grasshoppers in his publications. Other important contributors to

Acridology during this time include G. Y. Bey-Bienko, V. M. Dirsh, H. H. Karny, W. Ramme, and C. Willems, to name only some of those who come immediately to mind.

It is difficult and invidious to assign relative degrees of importance to the work of one's colleagues and contemporaries, and I am not even going to try to answer the second part of the question. Much of the finest work now being done in Acridology is not classified as taxonomy, although the findings may be of great importance for classification. Witness M. J. D. White's cytogenetic studies on North American and Australian acridids, the comparative physiological, ecological, and behavioral work of numerous European and American students, including Dan Otte's studies on courtship and mating behavior of acridines and oedipodines, and the investigations on population biology and ecology of plague locusts that have been carried out by Entomologists associated with the Anti-Locust Research Centre in London.

**Liebermann** In this series of interviews Rehn, Gurney, and Hubbell have given a list of the Orthopterists of importance from the past and the present. I shall not comment on their selection. In my opinion many, many names are available as can be seen from the Acridological Abstracts, the "Bibliographia Acrididiorum" of Roonwal, and Uvarov's two volumes entitled "Grasshoppers and Locusts." (I have not seen his second volume but hope to soon). To my mind, Gurney, Hubbell, Roberts, Rehn, and Jago are among the important names as are Randall, the Canadian anatomist who worked with Rehn in 1962, and Cohn, Kevan, Vickery, Rentz, and Ragge. From Uruguay I shall mention Carbonell, Mesa (who is now in Brazil), Mrs. Zolessi, and Mrs. Gambardella. From

Argentina I regard the work of Bruner (1897) as fundamental, for it laid the early basis for us. I also note three Acridologists dedicated to the migrations, biology, etc., of *Schistocera*, viz., Daguerre, Kohler, and Maldonado (dead). Ronderos is presently working actively in the systematics of the acridoids.

**Rehn** To answer this is difficult. Some men have never been anything but "closet students" and knew almost nothing about the things they discussed as living entities. They usually had no interest in faunas as a whole -- seeing only their small part -- and any effort to elucidate possible phylogenies had no appeal to them. Others did approach our more modern angles of thought. We must always, in fairness, realize the limited collections and often imperfect data the earlier workers had at their disposal. Those of us who have had to build collections from scratch, without the inherited series of earlier students to assist them, realize fully what their predecessors had to do.

Of the past I regard Henri de Saussure as the greatest mind we have had working on the Orthoptera. His work is particularly important because he did more than merely point out differences; in fact, he created basic classifications, but not in the Acridoidea, with which he did but little work. Hofrath Carl Brunner von Wattenwyl did important descriptive work in the whole orthopteroid line, but he lacked the intangible something which Saussure had, and which permitted the latter to postulate broad relationships and suggest for the same what may have been their evolutionary development. Saussure did this in the Blattaria, Mantoidea, and all of the Grylloidea, as well as in certain groups of the Tettigonoidea. Brunner gave us

important cornerstone works, but they were sometimes contradictory in their presentations, and he frequently missed literature published outside of Europe. Carl Stål did excellent basic work on the Acridoidea, although at times it is difficult to comprehend the value of features he utilized, yet much of Brunner's later work rested largely on Stål. In America Samuel Scudder was clearly our most scholarly Orthopterist of the past, and his early contribution to our knowledge of Peruvian Andean Orthoptera was epochal. His many papers on North American Acridoidea comprise the greatest contribution made to the subject by any scholar of the Nineteenth Century and are not surpassed in their collective value by those of any European worker. In addition, his bibliographic work was unequalled ("*Nomenclator Zoologicus*" and "*Index to the Orthoptera of North America described in the Eighteenth and Nineteenth Centuries*").

Of the Orthopterists who personally worked with the Acridoidea of Central and South America before, say, 1910 Lawrence Bruner was clearly the most outstanding. He knew areas of western North America quite well in his early years and then did field work in parts of Mexico, this followed by his sojourn of some time in Argentina, the studies from which experience are essentially pioneer work in their covering of the Acridoidea of that country. Later, he visited Costa Rica and did important work there.

As to the present (1962), there are a number of scholars who have done excellent work. It is difficult to say who will eventually be regarded as having had a commanding lead. Uvarov has had unusual opportunities, and he has done a vast amount of constructive work but chiefly on the Old World faunas, and particularly Africa. His colleague Dirsh is now following in Uvarov's

steps. The experience of both with New World elements has been limited and unfortunately in some cases has apparently been influenced by preconceptions of relationship and set ideas as to centers of origin. To counter this American scholars are endeavoring to construct a more logical and warranted interpretation of these centers and in this way to give a more logical evaluation of numerous characters which have been discounted or overstressed.

WHAT IMPORTANCE DO YOU GIVE TO ECOLOGY IN THE SYSTEMATICS OF ACRIDIDAE?

**Hubbell** Knowledge of the ecological preferences, tolerances, and requirements of species can be of much importance in systematics. Observed ecological differences between morphologically similar individuals or populations may suggest that they are specifically or subspecifically distinct and lead to studies designed to test this hypothesis. Conversely, supposed specific differences between individuals or populations may prove on study to be the result of response to different environmental conditions affecting development, as is known to be the case in some plague locusts and other Orthoptera. Regionally sympatric species may prove to be locally allopatric because they occupy different habitats and consequently rarely have an opportunity to exchange genetic materials. The importance of such ecological information will vary from one situation to the next, but its possible significance needs always to be kept in mind.

**Liebermann** Ecology is the essential chapter in the story of natural sciences as will be seen some day by the triumph of man over locusts and grasshoppers through its lessons. Organic life

as a whole depends ultimately on adaptation in response to ecological factors. I regard the fundamental truths of ecology as especially ably discussed by Frost in his "Insect Life and Insect Natural History." I find the ecology of deserts particularly wonderful; so too the arboreal faunae as described by Roberts; the adaptations of the social insects, as studied by Wheeler, Frisch, etc.; the Patagonian Acrididae such as Bufoacris and Papipappus (in which I have seen 2- and 3-year diapauses like those Kreasky and Alexander saw among the montane acridids of the United States); the food habits of Orthoptera, as studied by Gangwere; the George Reserve ecology, as investigated by Cantrall, etc. I think future ecology must rely increasingly upon the tools of the other areas of science to which, in turn, ecology will contribute importantly.

**Rehn** I feel that what I would call "natural history" or "bionomics" is of importance in understanding the role of a species. Whether this is the equivalent of ecology is merely a matter of terms. However, unless the morphology has been influenced by such factors, I feel it is secondary in purely systematic work. But good systematic work today must go farther than basic morphology and at least make available what we know of the bionomics, this including things such as periodicity in species having marked periodic abundances, relation to plant, forest or ground cover, type of same, in terricolous forms relation of body surface characters to ground structure, etc.

WHAT DO YOU THINK OF THE FUTURE OF SYSTEMATICS?

**Hubbell** This could be the subject of a long essay, but I shall confine myself to a few

points. First, systematics will always be of basic importance since it furnishes the scheme of organization of, and means of access to, the whole immense body of accumulated information about organisms. Second, there will be increasing demand for trained systematists and systematically trained technicians, the first to extend, revise, and refine the classification of organisms as an exercise in pure science and for practical application in the fields of agriculture, health sciences, and conservation, and both kinds of workers to provide the accurate identifications for which there will be increasing demand by ecologists, behaviorists, physiologists, and other Biologists who deal with living organisms. In most groups, notably among the invertebrates and especially the insects, simply because of the impossibility of gathering detailed information on the ecology, behavior, physiology, cytogenetics, and genetics of the millions of species with which the systematist must deal, and the fact that the fossil record is essentially morphological. Nevertheless, fourth, data from those disciplines, to the extent that it becomes available, must and will be used to supplement, to interpret, and to correct conclusions about relationships arrived at from comparative morphological study. In modern systematics everything that can throw light upon evolutionary relationships should be taken into account to the extent made possible by the training and competence of the investigator and the limitations imposed by time and available resources. Among the techniques available to current workers but not to our predecessors are chromatography, electrophoresis, DNA matching, and, perhaps most important of all, use of the computer for increasingly sophisticated applications of numerical taxonomy based on

multiple characters in the analysis of relationship. But, fifth, the use of these new tools and interpretation of the results depends for its success on the investigator's knowledge of the group concerned. No amount of data or gadgetry can substitute for the trained and experienced mind of a good systematist.

**Liebermann** The cataloging of the living and fossil creatures of the world is important, but we must pass from alpha systematics to beta and gamma systematics because evolution is fundamental. How many years were we unable to resolve the systematics of our two most important *Schistocerca*'s? We failed until we turned to modern methods that took populations and behavior into account. The historical part of systematics is necessary, but the future lies elsewhere. I do not believe genitalia can resolve the status of some species though they are useful at the generic and family levels. With types and good morphological descriptions we will eventually solve most problems. It follows that good museum collections will always be required. The most important acridological collection of South American material is that of INTA.

**Rehn** Systematics must -- and will remain -- the key to what we are talking about, for regardless of how something is to be expressed, it will have to be by some type of system. I have little use for the many foibles of mechanical type which are endlessly suggested to replace the simple binomial system. We must have a language to identify the objects on which our conclusions are based, and it need be no more involved than the sanest of our scholars can make it. What we have has been fairly well tried and has stood up reasonably well. We cannot express the

relationships of complex living things the way one can a chemical formula unless we wish to fill a page with meaningless figures, which would obscure rather than elucidate what we are talking about. The future of systematics is, in my opinion, like the future of most lines of constructive thought, in the hands of the future.

WHAT IS THE BEST MEMORY YOU HAVE OF YOUR TRAVELS IN AMERICA?

**Hubbell** This also is a very hard question to answer. I have so many memories of beautiful places, interesting people, and stimulating experiences that it is hard to choose among them. Should it be the months I spent at Tikal in the Peten forest, when the restoration of that Mayan city was just being started? My first sight of Volcan Paricutin spouting fire in western Mexico? The spooky hours I spent alone in the bat chambers at Carlsbad Cavern, collecting cave crickets? My first summer afield in the Great Smoky Mountains of North Carolina, living in a cabin with mountain folk, or the weeks I lived alone among the lakes and forests on the Michigan-Wisconsin border, half-a-day's canoe trip from the nearest settlement? One very satisfying experience was the occasion when, on the basis of the known distribution of the species of a group of Melanoplus, I predicted where a new species should occur in Florida, and about what it should be like, and went there and found it! But the good times are too many and too varied even to begin to make a choice. Some of them were experiences when my wife, Grace, and I were traveling in South America - the hospitality we experienced everywhere we went, our first sight of Iguassú, coastal Chile in company with Luis Peña, flying over the Peruvian

desert, breath-taking Machu Picchu. But, generally speaking, the times I remember with most pleasure are those when work on Orthoptera was a part of the program.

**Liebermann** I have visited Chile all the way from Magellans to Arica. I remember most the beautiful southern lakes, the gigantic mountains, and the wonderful valleys. I have seen the entire panorama of the country that the Chilean writer Subercaseaux gave in his work "Chile One Mad Geography." I also recall the over 15 years of excursions that Claudio Gay took in the course of preparing the 30 volumes of his monumental "Historia Fisica y Politica de Chile." Another who traveled widely in Chile is the entomologist Carlos A. Reed. He is best known as the founder of the Zoological Gardens at Santiago. The Chilean entomological literature is rich as I know from my experiences preparing the paper "Synthesis of Chilean entomology to 1943."

My travels in beautiful Argentina from the Magellan Straits to Salta have been fruitful. I gave my impressions in the books "On the Roads of the Fatherland" and "Argentinian Geographical and Historical Flashes." I remember especially the magical Patagonia that so impressed Darwin. I remember the gigantic lakes, the snow-capped peaks, the mountains of San Pedro and San Pablo in Atacama and its little desert river on the banks of which was the grasshopper Trimerotropis. I found areas such as Neuquén, Salta, Mendoza, and Cordoba indescribably beautiful.

**Rehn** The most impressive things in nature which I recall from my field experiences in America are three: the great isolated, dead, snow-capped volcanoes of the northwestern United States in Washington and Oregon; the great escarpment-like

barrier of the Sierra Nevada, towering up ten thousand feet, as seen from the east in parts of California and Nevada; and the snow-crowned Sierra de Santa Marta in Colombia, reaching up over 16,000 feet above my view point in the lowlands of the Rio Magdalena (500 to 1700 feet), which in any airline was not ten miles from the glittering summit.

**Editors' Note** Professor James Abram Garfield Rehn died in January, 1965. The loss suffered by the science of Acridology with his passing has yet to be tempered by time.

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#### REPORT FROM THE PRESIDENT'S DESK

In this second number of Metaleptea I can report that the first issue (Summer, 1978) was well received. I think it has already begun to serve its intended purposes, viz., to facilitate communication among our member Acridologists and to further the cause of New World Acridology. I congratulate the Editorial Office on a job well begun, and I urge you, the members, to give the future assistance needed to continue developing this useful and informative newsletter.

These have been busy days for PAAS. Much has happened that is noteworthy. However, this issue of Metaleptea is already full to the brim, so I have decided to touch briefly on just a couple of items and to let the rest wait until the appearance of my 1978 Annual Report, scheduled for the forthcoming summer number.

The Society recently applied for tax-exempt status from the Internal Revenue Service of the

United States. To date, I have received no official response, but I anticipate no problems in eventually receiving this status that is so essential to PAAS both for holding grants and for the efficient management of our limited funds. In the meantime my institution, Wayne State University, has kindly agreed to administer on an interim basis any grants that PAAS might receive until IRS clarifies our tax status.

The Society recently prepared a training proposal for selected Central and South American investigators who will come to the United States on the occasion of the PAAS meetings at Bozeman, Montana, in summer, 1979, and will do research in United States institutions with programs in Acridology. I am pleased to report that the Tinker Foundation, of New York, has approved our proposal to the amount of \$25,000 conditional upon our receipt of a minimum of \$10,000 matching money from other sources. Wayne State University, Montana State University, and the University of Michigan have each pledged \$1,000 for this purpose. Unfortunately, we remain short of the total needed to implement this worthwhile project, so much of my time these days is spent at the door of granting agencies and other organizations that have funds for which we might qualify. I am confident of eventual success.

With these remarks and with belated best wishes to you, your family, and your associates for a Happy New Year I shall close for today.

Respectfully submitted,



S. K. Gangwere

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### REPORT FROM THE EXECUTIVE SECRETARY

During the past several months the activities of the Executive Secretary have been rather humdrum. A bank account has been opened to handle Society finances. This action has exposed PAAS to the possible scrutiny of the United States Government, so it has been necessary to obtain an Employer Identification Number. To protect the Society from having to pay taxes on its resources and to create an environment more amenable to receipt of possible grants-in-aid, President Gangwere has made application for the tax-free status of a non-profit organization. We are presently awaiting a response from the Internal Revenue Service.

Respectfully submitted,  
Irving J. Cantrall

### EDITORIAL

With the appearance of this, our second issue, Metaleptea will hopefully have become solidified as a regularly occurring entity anticipated by the membership. Once again, the Editorial Office must stress that Metaleptea will only be as good and as complete as the contributions of the membership.

To these ends a number of members have expressed a desire that a portion of Metaleptea be devoted to the publication and the dissemination of short research reports and

scientific notes. Several members have gone so far as to submit formal manuscripts to this office.

Since the membership desires that Metaleptea adopt such a publication policy, the Editorial Office is more than happy to comply.

It is our pleasure as Editors to announce that beginning with Volume 2, number 1 (June, 1979), Metaleptea will accept and utilize suitable manuscripts dealing with the orthopteroid insects. As we try our wings with this new understanding it will be necessary to place (at least temporarily) certain general restrictions on the type of manuscripts that may be utilized. The following format is to be adopted:

Papers of an appropriately short length dealing with any aspect of Orthopterology will be considered with preference given to those dealing with New World Orthoptera.

Membership in PAAS is not a prerequisite for publication, but due to space limitations papers submitted by members will be given priority.

Manuscripts must be typed, doublespaced, with wide margins on white 8½" X 11" or equivalent-sized paper and submitted in duplicate. Footnotes, legends, and captions for illustrations should be typed on separate sheets. No more than three figures and/or tables may be utilized per paper.

Photographs should be 4" X 4" or larger and glossy. Drawings, charts, graphs, and maps should be scaled to permit reduction (if necessary) without loss of detail.

Manuscripts may be submitted either in English or in Spanish.

This change, or rather evolution, of editorial policy will not change the nature of our feature, or lead, article which will continue to be by invitation.

With the above in mind, the Editorial Office continues to solicit contributions from the membership, be they formal reports, letters to the editor, research requests, or announcements.

**SECOND TRIENNIAL MEETING OF THE PAN AMERICAN  
ACRIDOLOGICAL SOCIETY  
AT  
MONTANA STATE UNIVERSITY  
BOZEMAN, MONTANA, U.S.A.**

**Dates**

July 23-26, 1979 - Sessions  
July 27 - Aug. 3, 1979 - Field Trips

**Tentative Program**

Monday, July 23, 1979

1:00 - 5:00 p.m. Registration\*  
2:00 - 4:00 p.m. Board meeting  
4:00 - 6:00 p.m. Opening session  
6:30 - 8:30 p.m. Mixer and buffet

\*Registration fees have not been established but are not expected to exceed \$10.00 (U.S.).

Tuesday, July 24, 1979

8:00 - 8:30 a.m. Registration  
8:15 - 11:00 a.m. Symposium: "Biogeography and Speciation of Acrididae"  
11:00 - 12:00 a.m. Submitted papers  
1:30 - 3:15 p.m. Roundtable discussion: "Economics of Control of Acrididae"  
3:30 - 5:00 p.m. Submitted papers

Wednesday, July 25, 1979

8:15 - 10:15 a.m. Roundtable discussion: "Evaluation of Taxonomic Characters"  
10:30 - 12:00 a.m. Submitted papers  
3:00 - 5:30 p.m. Workshop - poster session: "Behavior of Acrididae"  
7:00 p.m. Banquet

Thursday, July 26, 1979

8:15 - 10:15 a.m. Symposium: "Population and Community Ecology"  
10:30 - 12:00 a.m. Submitted papers  
1:30 - 5:30 p.m. Submitted papers

Friday, July 27, 1979

Field Trip - Montane habitat

Saturday, July 28, 1979

Field Trip - Grasshopper Glacier

Sunday, July 29, 1979

Tour: Yellowstone National Park

Monday, July 30, 1979 - Friday, August 3

Field Trip: Grasshopper habitats, research and control programs in Montana and adjacent states.

#### Official Languages of Meeting

Spanish or English (Attempts will be made to have abstracts read in the opposite language).

#### Publication

Symposium papers: Optional - Roundtable presentations and submitted papers will be published in abstract form. Abstracts of all papers are due by April 30 in order that they be available prior to the opening of the meetings.

#### Housing

- University housing in student dormitories (high rise):  
Single occupancy: \$5.50/day;  
Double occupancy (2 single beds):  
\$4.50/day/person.
- Commercial Motels - all 15- to 40-minutes walk from the University;  
\$15.00 - \$22.00 single occupancy;  
\$19.00 - \$30.00 double occupancy  
(Transportation will be available prior to, after, and at noon of each daily session).
- Camping facilities:
  - 3 commercial campgrounds within 3 to 11 km. of the University.

b. Public campgrounds - several within 25 km. of the University on Forest Service lands.

#### Meals

- Cafeteria service available throughout day at the Student Union (meeting site).
- Restaurants (4-5) adjacent to the University.
- Numerous restaurants and dining establishments within 20- to 40-minutes walk from the University.

#### Transportation

- Air: Northwest Airlines for east-west travel; Frontier Airlines for north-south travel.
- Railroads - Daily Amtrak service.
- Highways - Excellent throughout region. Interstate 90 is the main east-west highway.

#### Field Trips

- Montane collecting site: All-day trip within 150 km. of Bozeman. Transportation will be via state or private vehicles. Nominal fee will be charged for prepared lunch and possibly transportation. This should not exceed \$6.00/person. Habitat will be lush mountain vegetation inhabited with various species of Melanoplus (some of which are brachypterous), many slant-face species, and numerous species of crickets. Excellent general insect collecting. Dry ice for freezing insects will be available.

2. Grasshopper Glacier: (Pending report of a scouting trip prior to day of trip.) Full-day trip. Montane habitat, 13,000 m. elevation. The Glacier holds frozen specimens from past grasshopper and locust flights. Specimens of Melanoplus spretus, which was the only true migratory locust in North America and which now is extinct (since 1890's), have been taken from the Glacier, but only rarely. Within the past 2 years the wilderness area border has been extended and now in order to reach the Glacier it will be necessary to travel by foot the final 7 km. on an excellent and easy trail. Attempts are being made to have saddle horses from a local dude ranch available for those who might not be able to hike that distance. Cost is expected to be \$7.00 - \$10.00 per person for bag lunch and transportation. Cost for horses will be additional. There will be excellent general collecting along the trail to the Glacier. The trip also will feature Mammoth Hot Springs, a geothermic formation that will not be seen on the tour to Yellowstone Park the following day.

3. Yellowstone National Park: Full-day trip. commercial tour bus transportation to the major geothermic and scenic attractions of the park. Cost will be \$8.00 - \$10.00/person depending on number of people per bus (maximum 41/bus). Lunch and snacks will be available along route at additional personal expense. This is a must for those who have not seen the park. Collecting is absolutely prohibited in the Park.

4. Extended field trip (5 days): Depart from Bozeman Monday morning, returning Friday afternoon. Transportation is pending but is expected to be by private auto or state vehicles, both of which will necessitate a per person

average travel cost that should not exceed \$7.00/day. Food and lodging will be at additional personal expense. The trip will feature different grasshopper habitats where collecting will be varied and interesting, visits to ongoing research sites, and observation of a large-scale grasshopper control program involving large multi-engine aircraft. Dry ice will be available for freezing the insects. This will be a worthwhile trip for anyone who has not seen the intermountain and northern Great Plains regions of western United States.

#### FIRST OFFICIAL CALL FOR PAPERS:

Enclosed in this newsletter is a form to be filled out and returned to the Program Chairman by anyone wishing to submit a paper for presentation at these meetings. Anyone feeling they wish to make a larger contribution to any of the symposia, roundtables, or workshops should immediately contact the Program Chairman in order to be placed in contact with the convenor of the appropriate session.

Address requests for additional information to:

Dr. J. E. Henry  
 USDA - SEA  
 Rangeland Insect Laboratory  
 Montana State University  
 Bozeman, Montana 59717, U.S.A.

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## MEMBER NEWS AND ACTIVITIES

**Fariduddin Ahmad**, in addition to his own duties as Plant Protection Advisor and Director of the Department of Plant Protection for the Government of Pakistan is also serving as principal investigator of the five-year survey project described below.

**Mohammad Karimuddin Ahmed**, of the Department of Plant Protection, Pakistan, was recently appointed Senior Research Officer. In addition, he is serving as Councillor of the Entomological Society of Karachi. He has recently published several reports in various Pakistanian journals that deal with various aspects of his systematic and bioecological studies on the acridoids of Pakistan. In collaboration with the USDA he has undertaken a project designed to systematically survey the grasshoppers of Pakistan with the prime objective of determining their distribution.

**Andrew H. Barnum**, of Dixie College, Utah, after 12 years of full-time administrative activities has returned to full-time teaching and curating of the College's Museum. He is continuing to gather data on the Orthoptera of the Great Basin Province as well as compiling an up-date on the Orthoptera of Utah.

**Lic. Claudio Juan Bidau**, Facultad de Ciencias Exactas y Naturales, Ciudad Universitaria, Buenos Aires, recently published on the chromosomes of the genus Berosus (Coleoptera, Hydrophilidae) and has become an active member of the Argentinian Society of Genetics.

**O. S. Bindra**, visiting Professor of Entomology, Ahmadu Bello University, is conducting research on the grasshopper pests of crops in northern Nigeria, teaching pesticide application, and acting as advisor to the 10 northern states in crop protection matters. He was recently awarded the Rafi Ahmed Kidwai Memorial Prize in Entomology by the Indian Council of Agricultural Research. His recent contributions include several papers in economic entomology as well as the text "Pesticide Application Equipment." Dr. Bindra is continuing his studies on migration and the testing of synthetic pyrethroids for control purposes. He also attended the Geneva meeting of UNEP.

**D. K. Mc E. Kevan**, Mc Gill University, recently addressed the fine arts students and staff of the University of Colorado on the topic "Bugs in the Graphic and Plastic Arts (grasshoppers, crickets, etc., in the visual arts from the prehistoric to present times)." He recently completed "Land of the Locusts, Part I (Verses on Grasshoppers and Cicadas) Before 450 A.D.

**Herbert Knutson**, of Kansas State University, participated in the 4th International Symposium of Insects and Host Plants at Fullmer Grange near Slough, England (June, 1978). His current research deals with the biology of the acridids of Kansas as well as the physical and chemical relationships of Hypochlora alba to Artemisia ludoviciana.

**Georgina Cecilia Luna**, of the Facultad de Ciencias Naturales y Museo, La Plata, was recently honored by that institute and has received a grant from the Comisión de Investigaciones Científicas de la Prov. de Buenos

Aires that will enable her to continue her studies on Acrididae. Her recent activities include becoming an active member of the Sociedad Entomológica Argentina and of Neotropica.

**M. Paul Pener**, the Hebrew University Israel, recently served as visiting Senior Scientist at the Laboratory of Entomology of the Agricultural University, Wageningen, the Netherlands. He has just finished his term as President of the Entomological Society of Israel but is continuing his duties as a member of the Council of the Association d'Acridologie and the panel of referees of Acrida. Dr. Pener's recent investigations resulted in several publications dealing with the physiology, endocrinology, and photoperiodism of locusts.

**Suresh Kumar Raina**, of the Canada Agricultural Research Station, Saskatoon, Sask., received the Rotary International Fellowship (U.S.A.) and the National Research Council Award (Canada). He is continuing his research on the biological control of the grasshopper Melanoplus sanguinipes by Nosema locustae (this involves electron microscopic observation of the insect's life cycle and spore production through the use of tissue culture).

**D. C. F. Rentz**, of Canberra, Australia, has completed his key to the Tettigoniid subfamilies of the world, as well as a catalogue of the Australian species. He recently published a "Revision of the Marginatus group of the genus Melanoplus" in Acrida, in addition to reports dealing with the Hawaiian Cave Crickets (Pacific Insects), and Western Orthoptera records and new spp. (Pan Pac. Ent.). Dr. Rentz's activities for

the past season included field trips to Alice Springs and Coastal South Queensland.

**R. A. Ronderos**, of the Universidad Nacional de La Plata, is currently preparing revisions of the melanopline genus Propedies and of the family Ommexechidae. He is now serving as the Editor of the Argentina Journal of Zoology and is just finishing his term as President of the Entomological Society of Argentina. Dr. Ronderos is also President - Elect of the Pan American Acridological Society. His recent publications include a report on the Dichroplini of Colombia and Venezuela and a revision of the genus Jivarus and scientific notes on selected Jivari. His current activities include participation in a cooperative Argentinian-U.S.A. investigation of basic biological applications of pathogenic microorganisms in grasshopper and locust control as well as studies on the Dichroplinae of Bolivia; on the population dynamics of acridids in the Province of Buenos Aires, and on the protozoan parasites of Argentinian acridids.

**Norma Elba Sanchez**, Facultad de Ciencias Naturales y Museo de La Plata, was appointed Chief of Laboratories in the Department of Grasslands and Steppes. About to appear in print is her work on the effects of fire on population dynamics and biomass in the pastures of the Sierra Ventana Mountains. She has just recently received a grant from the Consejo Nacional de Investigaciones Cientificas y Tecnicas to continue her investigative studies into the population dynamics of the different species of Acrididae inhabiting the natural pastures near La Plata as both plagues and pests, their devastation of vegetation and possible competition with cattle.

**Shivashankara K. S. Sastry**, National Institute of Mental Health, U.S.A., is continuing his research on the structural aspects of Pest Control. He recently was an active participant in the 45th Annual Convention of the National Pest Control Association held in Orlando, Florida, and in the Washington Chapter of Registered Professional Entomologists.

**John D. Spooner**, of the University of South Carolina, is teaching courses in General Biology, Invertebrate Zoology, and General Entomology, as well as conducting research into the life histories, taxonomy, and behavior of selected Tettigoniidae. These activities contributed to his recent promotion to Professor of Biology. This past year he presented two papers at the annual meeting of the Southeastern Branch of the Entomological Society of America.

**V. R. Vickery**, of the Lyman Entomological Museum and Research Laboratory, MacDonald College, is teaching courses in General Entomology and Apiculture while conducting investigations into the biology of the orthopteroid insects of Canada. During the past year he has served as Acting Director of the Lyman Museum and Acting Chairman of the Department of Entomology (MacDonald College). His recent publications include two reports on the orthopteroid insects of the Magdalen Islands in collaboration with Dr. D. K. Mc E. Kevan and two joint reports with Dr. A. R. P. Journet on the biology of Nearctic Crospedolepta (Homoptera: Psylloidea). Dr. Vickery will be on sabbatical leave from September 1, 1979, to August 31 1980.

**Lucrecia Covelo de Zolessi**, of Montevideo, Uruguay, is now investigating the relationship of

anatomy and ecology as shown by the acridids of Uruguay. She has several manuscripts in preparation that deal with various aspects of these studies.

**Sergio Zapata Cerda**, of Santiago, was appointed to the post of Professor in the Facultad de Ciencias of the University de Chile and is continuing his studies on Dichroplus.

**Robert Lavigne**, of Laramie, Wyoming, is currently on sabbatical leave at the Waite Agricultural Research Institute, University of Adelaide, South Australia, where he is studying the feasibility of using robber flies in a biological control program. Before departing he addressed the North Central Branch of the ESA (Madison, Wisconsin) on the invasion of revegetated strip mine spoil piles by insects.

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#### LETTERS TO THE EDITOR

Dear Sirs:

With the establishment of PAAS a need for unity and communication among new world Acridologists has been fulfilled. On this occasion, I recommend that the young Acridologists direct their labor, in part, to the following problems: 1) the biogeography of the parasites of American Acrididae (knowledge of this will facilitate the solution of systematic problems, as well as be of future use in the biological fight against the enemy); 2) the study of the Argentinian plant Gomphrena vittata and its ecological impact and relations with acridids; 3) the ecology of the

numerous South American species, most specifically the bioecological and other aspects of the 4 "gregarious" areas found in the deserts of Chile with respect to Schistocerca; and 4) compile the badly needed list of type specimens available in the South American Collections.

I would like to inform the readers that I now consider Prionolopha daguerrei probably synonymous with P. serrata L.

Dr. José Liebermann

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#### PUBLICATION OF PROCEEDINGS

Plans are underway to facilitate publication of the Proceedings of the upcoming Bozeman meeting of PAAS.

Current expectations are that symposia presentations will be published in their entirety (at the authors option) with an accompanying abstract in the alternate language (English or Spanish) of the conference.

Submitted papers presented during the open sessions will be published in abstract form. Efforts are underway to secure funding sufficient to keep author costs at a minimum. The Editorial Office visualizes the growth of a uniform series of volumes as a result of this and succeeding PAAS meetings.

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#### RESEARCH REQUESTS

**Wanted** Information on the location of any

continuous cultures of non-diapausing species or laboratory strains of grasshoppers and locusts. Please send the name of the species, origin of the culture, and the name and address of the person responsible for the cultures. Contact J. E. Henry, USDA-SEA, Rangeland Insect Laboratory, Montana State University Bozeman, MT 59717 U.S.A.

**Wanted** Information on any established cell lines of grasshoppers or locust tissues. Contact J. E. Henry, USDA-SEA, Rangeland Insect Laboratory, Montana State University, Bozeman, MT 59717, U.S.A.

**Wanted** I am most anxious to acquire or receive information or publications on sculpture, paintings, trademarks, and cartoons that involve (in any way) grasshoppers, locusts, katydids, crickets, mantids, cockroaches, termites, and earwigs - so long as they do not cost much! Our museum now has a considerable number of such things and would welcome donations no matter how trivial. I am also still interested in obtaining verse (in any language and/or translation) relative to same insects, also anecdotes, folklore, etc. Contact D. K. Mc E. Kevan, McGill University, MacDonald Campus, Ste. Anne De Bellevue Que., Canada, H9X1C0).

**Wanted** Information on locality records (geographical) of Hypochlora alba; and, when possible, records of its association or actual feeding on specified species of Artemisia; same information also needed for Melanoplus bowditchi canus and M. flavidus. Contact Herbert Knutson, Department of Entomology, Kansas State University, Manhattan, Kansas 66506, U.S.A.

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## ANNOUNCEMENTS

V. R. Vickery, of MacDonald College, announces the relocation of the Lyman Entomological Museum and Research Laboratory in more spacious quarters in the MacDonald-Stewart Building on the MacDonald College Campus. The move took place during the summer of 1978. The new mailing address is: Lyman Entomological Museum and Research Laboratory, Box 800. MacDonald College, Ste. Anne de Bellevue, P. Que. H9X1C0, Canada. The new telephone number is (514) 457-2000, ext. 114.

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## AVISO

### Fondos para Viajes e Investigaciones para Participantes Latinoamericanos en la Reunion de PAAS en Bozeman, Montana, Verano de 1979

Nos place reportar que la Sociedad ha recibido \$25,000 (U.S.) de la Fundación Tinker, de Nueva York, a condición de que obtengamos fondos similares de otras fuentes. Debido a que los Oficiales de PAAS ya están a punto de obtener los fondos adicionales para implementar el programa de entrenamiento, nos es posible anunciar dicho programa en esta oportunidad aunque todavía no ha sido finalizado en todos sus detalles.

Estos fondos para viajes e investigaciones son para un grupo seleccionado de investigadores Latinoamericanos que participarán en la Reunión de PAAS en Bozeman, Montana, que visitarán Laboratorios de Acridología Norteamericanos, y que llevarán a cabo estudios científicos de dos o

tres meses de duración en uno o más de estos laboratorios. Ya que los fondos son para entrenamiento, resultan más apropiados para aquellos investigadores de América Central y del Sur que debido a su juventud y/o inexperiencia relativa realizarán el mayor beneficio en participar en la conferencia y en hacer investigaciones en las instituciones que han sido aprobadas.

Aplicaciones serán aceptadas inmediatamente de cualquier Acridólogo de la América Latina que crea estar calificado y que desee tomar parte en esta oportunidad excepcional. Los aplicantes deben presentar un ensayo sobre sus estudios científicos en la Reunión de Bozeman y tomar parte en todas las sesiones y excursiones que sean incluidas en el programa de la Reunión, durante y después de la conferencia. Aplicantes también deben de incluir en la aplicación un reseño de los estudios e investigaciones que ellos desean llevar a cabo en uno o más Centros de Acridología Norteamericanos. Cartas de aplicación junto con la información indicada en este párrafo y con dos cartas de recomendación por lo menos deben ser enviadas tan pronto como sea posible al Prof. S. K. Gangwere, Department of Biology, Wayne State University, Detroit, Michigan 48202, U.S.A. Aplicaciones recibidas hasta el 15 de Abril, 1979, serán consideradas.

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## NEW MEMBERS & ADDRESS CHANGES

Metaleptea is pleased to welcome the following to membership in PAAS as well as to make the following corrections. Included below are the addresses of new members, additions to

the mailing lists, and address changes of current members brought to our attention as of December 31, 1978.

Association d'Acridologie e  
c/o Dr. F. O. Albrecht  
President  
105 Boulevard Raspail  
75 - Paris 6e  
France

Sr. Dn. José Alonso Escobedo \* s  
Calle 20, #385 Sur  
Torreon, Coah., Mexico (new)

Lic. Claudio J. Bidau \* s  
Laboratorio de Genética  
Depto. Cs. Biológicas  
Facultad de Ciencias Exactas y Naturales  
Ciudad Universitaria, 1428 Capital Federal  
Argentina

Dr. O. S. Bindra \*e  
I.R.A., Ahmadu Bello University  
Samaru, PMB 1044  
Zaria, Kaduna, Nigeria (new)

Council for International Exchange  
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