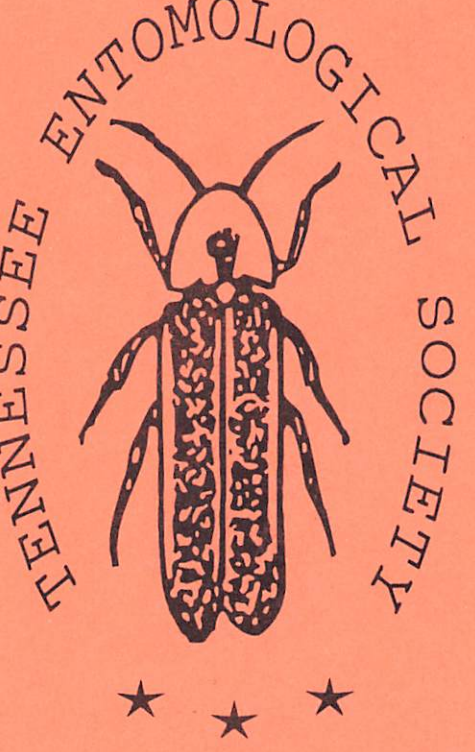
THE FIREFLY

Proceedings of the 1991 (Eighteenth) Annual Meeting of the Tennessee Entomological Society



October 17-18, 1991
Ramada Inn
Nashville, Tennessee

Volume Six

TABLE OF CONTENTS

PROCEEDINGS OF THE EIGHTEENTH ANNUAL MEETING

October 17 - 18, 1991

Ramada Inn

Seasonal Incidence and Laboratory Rearing of Selected Chloropid Flies Associated with Tall Fescue

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Rhopalopterum carbonarium Loew and *Appalates dissidens* Tucker (Diptera: Chloropidae) are among the most abundant species of insects associated with tall fescue in Tennessee. A two-year study is currently underway to monitor the seasonal incidence of these insects using emergence-trap and sweep-net samples at the Highland Rim Experiment Station, Springfield, TN. A technique for mass rearing of *R. carbonarium* in the laboratory has been developed. Life cycle and feeding of *R. carbonarium* reared in environmental chambers are being studied.

Overwintering of Treehole Culicoides in Eastern Tennessee

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NO ABSTRACT SUBMITTED

Arthropod Fauna in Fraser Fir Stands
in the Great Smoky Mountains National Park

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Fraser Fir, *Abies fraseri*, is a southern Appalachian endemic species restricted to high elevations with the largest remaining tracts in the United States occurring in the Great Smoky Mountains. As the evaluation increases above 4500 feet, Fraser Fir becomes the most dominant component of the 132 or so vascular plant species. The threat to Fraser Fir stand's existence resulting from massive infestations of the Balsam woolly adelgid over the past three decades is considered eminent. The loss of the Fraser Fir could be potentially devastating to the numerous arthropod species that inhabit Fraser Fir environs.

Because little information is available on population densities of arthropod species, a two-year project was initiated in May 1991. The objectives of this research project were to: (1) document the detritus-dwelling arthropod fauna present in Fraser Fir stands in the Great Smoky Mountains National Park, and (2) evaluate the seasonal abundance and distribution of selected arthropod species.

Arthropod specimens were collected from May through October at each of three sites (Clingman's Dome, Mt. Sterling, and Mt. LeConte) in Fraser Fir stands. At each study site, arthropods associated with 25 trees were sampled. Specimens were obtained using a combination of methods including: pit fall traps, detritus samples, handpicking, and sweeps. Soil samples (4"x4"x2") and pit fall traps (1/tree) from soil within the perimeter of the tree's foliage were obtained. Detritus from underneath each tree was collected and returned to the lab where it was weighed and placed into Berlese funnels to collect specimens.

Specimens were sorted, processed, tentatively identified and stored in Cornell drawers. Data recorded consisted of: the number of specimens/sample site/date, habitat parameters (stand age and density) and elevation. The highest number of taxa collected were in the orders Acarina and Coleoptera. The largest number of specimens obtained were species of Collembola and Acarina. Two specimens of the rare predaceous spider, *Microhexura montivaga* Crosby and Bishop, were collected from detritus samples.

Seasonal Incidence of Selected Insects Associated with Rapeseed in West Tennessee

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A two-year study was conducted to determine the species composition and seasonal abundance of arthropods associated with rapeseed in West Tennessee. Since rapeseed is a relatively new crop to Tennessee, little information is available on its arthropod complex. During this study, commercial fields in Fayette, Haywood, Henry, and Lake Counties were sampled utilizing whole plant collection and sweep net sampling. More than 75 insect species representing >30 insect families have been identified. Several insect pest species know to occur on rapeseed in other areas of the world were collected in West Tennessee.

Three species of aphids [the turnip aphid, *Lipaphis erysimi* (Kaltenbach), cabbage aphid, *Brevicoryne brassicae* (L.), and green peach aphid, *Myzus persicae* (Sulzer)] (Homoptera: Aphididae) were collected in 1990 and in 1991. The turnip aphid was the dominant species throughout the growing season, while cabbage aphid and green peach aphid occurred infrequently. Populations of turnip aphid were heavier in 1990 than 1991, and aphids were attacked by the wasp parasitoid, *Diaeretilla rapae* (M'Intosh) (Hymenoptera: Aphidiidae).

The cabbage seedpod weevil, *Ceutorhynchus assimilis* (Paykull) (Coleoptera: Curculionidae), infested commercial fields in Henry County in 1991. Weevils were collected throughout the sampling period, and populations were heaviest during the flowering stage of rapeseed. Adult weevils were observed moving about and mating on plants. Seedpods were collected in several fields, and damage indicated female weevils were ovipositing into developing pods.

Three species of *Phyllotreta* [*P. cruciferae* (Goeze), *P. striolata* (F.), and *P. zimmermanni* (F.)] (Coleoptera: Chrysomelidae) were collected and identified from samples in 1990 and 1991. Beetle populations were present during both sampling seasons. The literature indicates these beetles are a serious problem on spring rapeseed, but less so of winter rapeseed.

Lygus bugs (Hemiptera: Miridae) were collected in 1990 and 1991. Populations of lygus bugs were highest during early pod development, and collection of nymphs indicates *Lygus* species utilize rapeseed as a host in Tennessee.

Wild and Cultivated Host Plants of Corn Earworm and Tobacco Budworm in Eastern Tennessee

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Corn earworm, *Helicoverpa (=Heliothis) zea* (Boddie), and tobacco budworm, *Heliothis virescens* (F.), are polyphagous multivoltine insect pests which feed on a wide variety of cultivated and "wild" host plants. In eastern Tennessee during 1990 and 1991, *Helicoverpa zea* or *Heliothis virescens* were collected from 39 species of wild host plants in 11 families. This wild host plant complex represents one of the most diverse complexes reported for these insects.

Early season (June-July) wild host plants of both *Helicoverpa zea* and *Heliothis virescens* included common mallow, *Malva neglecta* Wallroth, black medic, *Medicago* lupulina L., and crown vetch, *Coronilla varia* L. Crown vetch continued to be a host plant for *Helioverpa zea* and *Heliothis virescens* into October. Early-season wild host plants classified as important to *Helicoverpa zea* and *Heliothis virescens* populations in other studies in the southern U.S. were not found to be frequent hosts in eastern Tennessee.

Late-season wild host plants of both *Helicoverpa zea* and *Heliothis virescens* included velvetleaf, *Abutilon theophrasti* Medicus, red clover, *Trifolium pratense* L., chickory, *Cichorium intybus* L., hophornbeam copperleaf, *Acalypha ostryaefolia* Ridell, and hairy galinsoga, *Galinsoga cilliata* (Raf.) Blake. In late season, *Heliothis zea* was frequently collected from prickly sida, *Sida spinosa* L., fall panicum, *Panicum dichotomiflorum* Michaux, tall morningglory, *Ipomoea purpurea* (L.) Roth, and ivy-leaved morningglory, *I. hederacea* (L.) Jaquin.

In this study, several new host plant records (i.e., crown vetch, hophornbeam copperleaf and hairy galinsoga) were recorded for both *Helicoverpa zea* and *Heliothis virescens*. Dovefoot geranium, *Geranium molle* L., is a new host plant record for *Helicoverpa zea*.

Hemocyte Types in the Mexican Mealybug, Phenacoccus gossypii Townsend and Cockerell (HOMOPTERA: Coccoidea: Pseudococcidae)

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CANCELLED

Seasonal Abundance of Cereal Leaf Beetle as Affected by Management Practices

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A two-year study was conducted to evaluate the influence of planting date and variety on the seasonal abundance of cereal leaf beetle (CLB), *Oulema melanopus* L., on wheat in Tennessee. Seasonal abundance of CLB was consistently affected by planting date during both years of this study. Densities of adult CLB per five sweep-net samples were greater in early-planted wheat than in middle- or late-planted wheat; however, CLB egg and larval densities were generally lower on early-planted wheat. Data suggest that adults were attracted to early-planted wheat, where they mated. Adults then moved to the younger plants in the middle- and late-planted wheat. The higher densities of eggs on middle- and late-planted wheat may be attributed to younger plant growth, less mature leaf pubescence, and/or a thinner stand.

Seasonal abundance of CLB also was influenced by variety; however, this influence was not consistent for each year. In general, densities of CLB adults as estimated by sweep-net sampling were lowest on Caldwell during both years. CLB egg densities were lowest on Pioneer 2555 and highest on Saluda.

Wheat growers should continue to scout their fields for incidence of CLB, especially closely monitoring those fields that are planted later in the season. Growers should implement appropriate insecticide treatments once CLB densities reach the economic threshold. In those areas where there is a history of CLB-damaged wheat, growers should consider planting varieties with some resistance to CLB.

A Synopsis of the Belostomatidae of Arkansas

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This paper presents the first statewide species list, as well as distributional and preferred habitat data, for Arkansas species of belostomatids. *Belostoma lutarium* is our most common species, having been recorded from 51 counties representing all physiographic provinces. It occurs in all aquatic habitats and has been collected during all months of the year. *Belostoma flumineum* was collected in 15 counties, in the Ozark, Mississippi Embayment and Crowley's Ride Provinces. *Belostoma testaceum* was collected in 10 counties, in the Mississippi Embayment and on Crowley's Ridge. *Belostoma fusciventre* is Arkansas' least common belostomatid, one collection each in the Arkansas River Valley and the Gulf Coastal Plain. *Lethocerus uhleri* has been collected in 24 counties of the Gulf Coastal Plain, Mississippi Embayment and Crowley's Ridge. *Lethocerus griseus* was found in 12 counties, and all physiographic provinces. *Lethocerus americanus* is represented by one street light capture, in Greene County (Crowley's Ridge). *Belostoma flumineum*, *B. testaceum* and *L. americanus* are new species records for Arkansas.

A Synopsis of the Notonectidae of Arkansas

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The purposes of this research are to present the first statewide species list, to delineate geographic distributions, and to define preferred habitats for notonectid species occurring in Arkansas. The information presented is a synthesis of the contributions of regional museums, pertinent publications, and collections by the authors. The genus *Notonecta* is well represented in Arkansas. *Notonecta irrorata* and *Notonecta indica* are each known from 27 of Arkansas' 75 counties, representing all five physiographic regions. *Notonecta undulata* is less common, occurring in 18 counties, representing all physiographic regions. *Notonecta raleighi* is reported from 16 counties and four ecoregions, but appears to be most common in the southern part of the state. These first four *Notonecta* species apparently frequent most types of aquatic habitat. *Notonecta uhleri* is reported as a new state record. Thus far it is known from five individuals, one each collected in five counties representing three ecoregions. Data are too sketchy to determine preferred habitat as yet. Unlike *Notonecta*, *Buenoa* is infrequently collected in Arkansas. *Buenoa margaritacea* is best known, having been collected in 11 counties in four ecoregions. It appears to occur most often in ponds. *Buenoa scimitra* has only recently been collected in large numbers. It is known from ten counties in four ecoregions. It occurs in a variety of aquatic habitats. *Buenoa confusa* is our least common species, as only ten specimens in three counties have been collected. This species seems to prefer clear water with abundant vegetation.

The Lepidoptera Fauna Collected in the Great Smoky Mountains National Park

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The introduction of exotic species into endemic ecosystems often interrupts the natural succession and development of the system. With the anticipation that the gypsy moth, *Lymantria dispar*, will soon infest the Great Smoky Mountains National Park (GSMNP), concern exists regarding the potential destructive capabilities to the flora, and for the impact that the loss of habitat sites will have on the survival of the native Lepidoptera fauna.

Because each Gypsy moth larva can defoliate a square meter area, heavy infestations in other states have resulted in the death of numerous acres of hardwoods. In addition, severe economic loss is often incurred by homeowners due to damage to the residence and to various industries such as loss of aesthetic value to the area.

Because no comprehensive systematic study has been completed for the Lepidoptera in the GSMNP, a cooperative project between the University of Tennessee and the National Park Service was initiated in 1987. The objectives of the project were to: (1) survey and determine the species of Lepidoptera present in the Park, and (2) determine the seasonal abundance and distribution of Lepidoptera species in the Park.

Study sites were located in 10 areas of the GSMNP representing habitats where gypsy moth defoliation could potentially occur. A light trap at each site was operated biweekly, and the specimens obtained were sorted, mounted, identified, and stored in the museum. The data (species name, author, date, number of specimens collected, collection date, site collected, and habitat type) were incorporated into Data Base Plus III files for storage and analysis.

From the specimens collected (n=>42,450) during the study, the highest numbers were obtained at Beetree Ridge, Mt. Sterling and Noland Creek. These specimens represent 663 species collected from the ten sites throughout the study period. The taxa collected included a mean of 16 (11-19) families, 149 (82-175) genera, and 222 (165-270) species per site. Species diversity was highest at the Smokemont site with 17 families, 175 genera and 270 species represented.

The highest numbers of specimens and species were found at the lower elevations from 2047 to 2541 ft, then diminished somewhat in those sites ranging from 2744 to 2852 ft, before increasing significantly in sites above the 4000 ft level. In a comparison of specimen and species numbers with host type, the highest numbers were found in the Mixed Mesic Hardwood sites and the lowest numbers in the Pine-Oak habitat. Both resident and migrant species of butterflies and moths were collected representing univoltine, bivoltine and multivoltine generations. A few rare species have been collected.

Expansion of Weevil Release Program for Area-wide Management of Musk Thistle

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A biological control program directed against musk thistle was initiated in Tennessee during 1989. Two species of weevils, the head weevil [*Rhinocyllus conicus*] and the rosette weevil [*Trichosirocalus horridus*], were released initially at 11 locations in eastern and middle Tennessee. Because of the successful establishment of the head weevil in the release areas during the initial two-year study, a program of further redistribution and establishment of these weevils throughout thistle-infested areas of Tennessee was implemented in 1991.

A plan was devised to release weevils in both public and private thistle-infested regions throughout the state by collecting weevils from reservoir areas, placing them in cardboard cartons and maintaining them in cold chambers for transport to the redistribution sites. Through interagency cooperation, release sites were identified and located along interstates, highways, and right-of-ways. Additional sites heavily infested with thistle also were identified and targeted for weevil releases. Weevils were redistributed into 12 new counties and additional releases were made in four counties where weevils had been released previously. Adult head weevils (ca. 5,000) were collected from heavily-infested sites during May and June and redistributed into other areas of the state. Although no head weevils had been released in Trousdale County, they were recovered in that county during May. Trousdale County is adjacent to Smith and Wilson Counties where weevils have been released; thus, suggesting the movement of head weevils into areas adjacent to release sites.

Releases of weevils into new counties are planned during the next four years. Rapid redistribution and establishment of these weevils will provide the maximum opportunities for area-wide reduction of musk thistle using biological control.

Tough Times in Store for Honeybee Pollinators

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The importance of honey bees for pollination and the major problems facing beekeepers will be discussed. Honey bees have been shown to contribute up to 77% of the necessary pollination for good apple production. Tennessee has 2,400 acres of apples with a production figure of 3 million dollars in 1991. Honey bees are important pollinators for many agricultural fruit and vegetable crops in Tennessee.

The three major problems facing beekeepers in Tennessee are tracheal mites (*woodi*), varroa mites (*Varroa jacobson*) and the Africanized honey bee.

Tracheal mites have been found in the majority of the counties in Tennessee. The loss rate of infested colonies that are not treated has been between 50% and 100%. With proper medication this loss is reduced by 30% to 40%. Heavy losses were experienced by beekeepers in 1990 who did not treat colonies with menthol.

The Varroa mite infestation in Tennessee is in its infancy. By July, 1991, only 7 counties had finds. In September, 1991, Blount County reported 5 different varroa-infested apiary sites. Proper medication of infested colonies is very effective.

The Africanized honey bee (AHB) has moved into texas. Continued migration of the AHB will put more pressure on the beekeeping industry.

A Home Gardener's Observation Concerning Pest Incidence on Exotic Vegetables

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Vegetables are perhaps the most important components of home gardening. These vegetables not only provide healthy nutrition to the gardeners, but also supplement their income. Availability and demand for exotic vegetables have opened avenues of new opportunities for home gardeners. This is primarily due to the influx of international ethnic groups into the United States of America. Additionally, a new dimension in America dietary habit probably has placed greater emphasis on the roles of vegetables in nutrition. An understanding of pest incidence and their control on vegetable crops is a very important aspect in the home gardening process. The present study is undertaken to focus upon the incidence of diseases and insect-pests on a number of vegetables. A typical home garden was used as an experimental plot. A few vegetables such as bitter gourd, long gourd, egg plant, contolla, tindora, and Indian small beans were grown using their native production practices. Pertinent production and marketing data were collected and analyzed. Additionally, routine observations were made on each vegetable crop concerning the incidence of diseases and other pests which are known to affect them. The results indicated that the vegetables in question are productive and profitable from the home gardener's viewpoint. As far as the incidence of diseases is concerned, there was no indication of any disease on any vegetable included in this study. This was true both for 1990 as well as 1991. There were some incidences of insects on some vegetables during the summer of 1990. For example, flea beetles and whiteflies were found on egg plants and the damage appeared to be economically significant. The remaining vegetables were found free from insect-pests both in 1990 and 1991. The rare incidence of diseases and insects on these vegetables may have been due to their recent introduction into this country. Furthermore, vegetables such as bitter gourds and contolla, are bitter in nature and this inherent characteristic might have worked as a repellent for certain insects.

In general, the results indicated that these exotic vegetables demonstrated good adaptive features and are productive. The insect-pests and diseases do not appear to be a major threat to these vegetables. However, it is recommended that further experimentation be undertaken to assess the production and productivity of these economically and nutritionally important vegetables.

Host and Insect Interaction

Larry Latsun
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CANCELLED

Use of Aquatic Insects for Detecting Water Pollution

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Aquatic macroinvertebrates, particularly insects, are widely used in evaluating impacts caused by water pollution. With more and more chemicals and potential pollutants being manufactured everyday, chemical analysis is becoming more impractical when used as the first tool to detect aquatic ecosystem pollution. A chemist needs to know what chemical to test for. Often-times an investigator has no clear cut idea of the causative agent of pollution. If impacts to stream fauna can be documented, an industry or other polluter can be held responsible for determining the cause and solution of the pollution problem.

Unpolluted streams will have a high diversity (100+ species) of insects. In pristine waters one will find many species which cannot tolerate even a slight degradation of water quality. By contrast, polluted sites have reduced diversity and/or most intolerant species are replaced by tolerant species. Pollutants wipe out the intolerant species which lessens competition with tolerant forms. The tolerant forms then become prevalent. Thus, diversity of the community and tolerance values of individual species within the community are appropriate measures of aquatic ecosystem health.

This principle is being used to determine Point and Non Point Source pollution impacts by the Tennessee Environmental Laboratory and the Division of Water Pollution Control. Several projects are underway at the present time. These include agricultural, industrial, residential, and municipal pollution sources. Long term goals include improving polluted sites to the quality of our pristine sites.

Results and Expectations of Water Quality Biomonitoring in West Sandy Creek, Henry County, Tennessee

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The recent history of Kentucky Lake Reservoir is one of declining water quality and lake productivity. Gathering the most public attention are dead and die fish and mussels observed in recent years, especially during periods of drought. Big Sandy and West Sandy bays, located on the western shore of Kentucky Lake north of Camden and west of Paris, have had recorded declines in fin and mussel fisheries. Our investigation (with Dr. Mack Finley, APSU), jointly funded by APSU's Center for Field Biology, the Tennessee Department of Health and Environment, and the Tennessee Wildlife Resources Agency, have monitored water quality problems in West Sandy Bay and the feeder stream draining northern Henry County. Monitoring in West Sandy Bay indicates poor water quality, especially during summer when dissolved oxygen is very low.

West Sandy Creek and its tributaries flow into a dewatering area behind a dike separating these channelized stream from the reservoir. During Fall and Winter, water is held behind the dike forming a wildlife area for migratory waterfowl. Throughout Spring the dewatering area is pumped down until the creeks are confined to their channels.

Biological monitoring in West Sandy Creek was conducted using Hester--Dendy multiplate samplers as artificial substrates for macroinvertebrate colonization. In the second year (1990) of our investigation an apparent episode of organic enrichment occurred during the spring dewatering period. These samples revealed macroinvertebrate densities 3.5 to 8 times greater (mean $\approx$ 2000/ft^2) than the subsequent two sampling periods in mid and late summer when the creek is confined to its channel. Measures of community richness, diversity, and evenness were significantly lower during dewatering.

Current investigations include additional Hester--Dendy sampling and semi-quantitative bank sampling. In addition, water quality in terms of physicochemical aspects, dissolved and suspended carbon, and total and fecal coliform will be measured. Attempts will be made to identify more precisely the source and mechanism of these enrichment events.

Caddisfly Phenology in Two Stenothermal Springbrooks in Land Between the Lakes

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As part of a five-year project to investigate the diversity and distribution of aquatic macroinvertebrates in TVA's Land Between The Lakes, Kentucky - Tennessee, two of the largest springs, Lost Creek and Pryor Creek springs, were selected for intense study. This study involved quantitative benthic sampling every six weeks, seasonal drift net sampling, and weekly emergence trapping. Occasional light trap samples were also taken at these sites. Emergence trapping began on 26 August 1988 and continued for over two years ending 3 November 1990. Six sampling sites were selected within each springbrook, three near the spring source and three on the lower portion of the springbrook near the confluence with their namesake creeks. During most of this study three traps were positioned in each stream. Following the weekly removal of the sample, the traps were moved between the odd and even sites to reduce site disturbance due to shading or altered flow patterns. The samples were returned to the lab for the sorting and identification of the trapped insects.

This report will present a preliminary analysis of the emergence patterns of caddisflies during the two years of sampling. This will include taxa richness estimates, longitudinal distribution patterns, seasonal occurrence, and sex ratios of captured taxa. In general, Lost Creek has a greater diversity of caddisflies than does Pryor Creek Spring. Also, in the lower sites the fauna becomes more like that found in the local streams while the upper reaches are more unique. These conclusions are confirmed by analysis of the benthic samples taken from these springbrook between September 1988 and October 1989.

A Veterinarian's Perspective on Lyme Disease

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Many well documented cases have established Lyme Disease as a distinct disease entity of humans. The transmission of the disease from the deer mouse to humans by the bite of *Ixodes dammini* has been demonstrated to occur in endemic areas. Explanation of the diagnosis of the disease in humans and animals outside endemic areas is problematical. Media coverage has served to heighten awareness of the disease and contributed to a reaction bordering upon hysteria.

Even though the disease agent (*Borrelia burgdorferi*) was identified almost 10 years ago, much confusion and controversy is present in the scientific community today relative to many aspects of Lyme Disease. The recent production of a vaccine for use in dogs has added to the controversy, especially among veterinarians.

The Ixodid Ticks (Acari: Ixodidae) of Shelby County: A Preliminary Report

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Nine species of ticks have been identified during a fourteen month study in Shelby County, Tennessee. Four thousand, six hundred and fifty-six ticks were identified from 22 of 27 mammals and birds captured, from ticks brought in and from CO_2 traps and flagging. These species are: *Dermacentor variabilis; Amblyomma americanum; Rhipicephalus sanguineus; Haemaphysalis leporispalustris; Ixodes scapularis; I. dentatus; I. cookei; I. texanus; and I. brunneus.* This preliminary report describes the tick population and their hosts.

Insect Immunity: An Overview

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NO ABSTRACT SUBMITTED

Isolation and Characterization of Phenoloxidase in *Heliothis virescens* Larvae

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The biochemical characterization of phenoloxidase (PO) was done using *Heliothis virescens* larval hemolymph. The molecular weight of PO was determined using gel filtration and HPLC. SDS-PAGE gel electrophoresis was done to determine if PO exists in an aggregated form of multiple subunits or as a single monomer. The optimal conditions for PO activity were determined which included pH, temperature and substrate concentration. It was determined that PO is not regulated by the calcium-dependent activator calmodulin and that calmodulin activity is mainly found in the fat body of *H. virescens* larvae. Calcium, SDS, EDTA and EGTA were also studied to determine their effects on PO activity.

Comparisons of the Initial Biochemical Composition (Protein and Lipid) of Eggs of the Red Swamp Crawfish, *Procambarus clarkii*, and the White River Crawfish, *P. zonanqulus*

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The crawfish egg yolk components (protein and lipid) are derived from stores of the hepatopancreas and to a lesser extent on an endogenous production by the egg itself. A question arises as to what quantities these biochemical components are distributed and how these components differ among species within the genus *Procambarus*. From data on other organisms I predicted that each individual egg from females of the same species should be given a near equal initial amount of energy and building materials at the onset of embryogenesis. Though health and nutritional uptake of the female in the months prior to vitellogenesis would seem to have an effect on the initial composition it is possible that under normal circumstances this variation may be minor in comparison to interspecific differences. In addition, females are capable of reabsorbing eggs. This absorption decreases fecundity and thus the numbers of eggs to be supplied with components. To determine whether initial egg composition is consistent intraspecifically, and interspecifically, a biochemical analysis of the protein and lipid components of eggs has been employed utilizing the eggs of several populations of two species of the genus *Procambarus*.

Tennessee Entomological Society
Minutes of the 1991 Annual Meeting
October 17 - 18, 1991

Board of Directors Meeting
(10:45 A.M., October 17)

PRESENT: Jaime Yanes, Jr., Joe Dunn, Paris Lambdin, Jerome Grant, Harry Williams, James Keener, Gene Burgess, Bruce Kauffman, Bill Shamiyeh.

President Bruce Kauffman called the meeting to order (10:45 A.M.) at the Ramada Inn, Nashville, Tennessee.

1) Discussion of Incorporating the Tennessee Entomological Society. This issue will be brought up at the business meeting.

2) Minutes of the previous meeting will be handed out during registration.

3) Two changes were made in the program. Two papers were cancelled [2:15 P.M. on Oct. 17 (Hemocyte Types in the Mexican Mealybug) and 9:30 A.M. on Oct. 18 (Host and Insect Interaction)]. The program will move up.

4) Announce to drop name tags in boxes after meeting to be used next year.

5) Moderators should keep presentations on time.

6) Students presenting papers will be treated by TES with a supper.

7) Board of Directors will meet after the last paper presentation.

8) There will be a committee sign-up sheet to be circulated during the business meeting.

9) Cost of the program for the 18th annual meeting was $13.50.

10) Invoices for expenditures for awards will be sent to the Secretary-Treasurer for reimbursement.

11) Secretary-Treasurers' books were audited prior to the meeting. Dr. Carroll Southards will read the auditors' report.

12) Dr. Gary Lentz proposed that Dr. Richard Caron should be commended for his work as Secretary-Treasurer.

The Board Meeting was adjourned by President Bruce Kauffman at 11:18 A.M.

Sessions of the Annual Meeting

The 1991 Annual Meeting of the Tennessee Entomological Society was called to order by President Bruce Kauffman at 1:00 P.M., October 17. Carroll Southards chaired Session I including seven papers from 1:00 to 2:45 P.M. Jaime Yanes chaired Session II including six papers from 3:00 to 4:30 P.M.

The T.E.S. Business Meeting was held on the morning of October 18, followed by Paper Session III, including nine papers and chaired by Jerome Grant.

Business Meeting
(8:15 A.M., October 18)

President Bruce Kauffman called the Business meeting to order at 8:15 A.M., October 18. President Kauffman thanked all committees for their hard work, especially the Program and Local Arrangement Committees. He also extended a special thanks to those people that presented papers. He also announced the circulation of sign-up sheets for committees and certification points.

The minutes of the October 1990 Meeting and the August 10 Board Meeting (handed out during registration on October 17) were accepted by the membership.

Special Reports:

a. Gene Burgess reminded the membership to sign sheets for recertification points.

b. Membership was reminded to sign up for committees.

c. Membership was advised to place the permanent name tags in a box at the end of the meeting.

d. The guidelines for committee responsibilities will be attached to sign-up sheets.

Treasurer's Report:

Bill Shamiyeh presented the treasurer report and financial balance of T.E.S. in the absence of Richard Caron, Secretary/Treasurer. The bank balance of TES as of October 6, 1991 was $2,680.00. The report was accepted by the membership.

T.E.S. TREASURER'S REPORT
8/27/91 to 10/21/91 (Final Report for Rich Caron)

Balance: $2,680.00
as of 10/11/91

Cash for October 1991 Meeting - $50.00		$2,630.00
Expenses (October 1991 Meeting)		
Ramada Inn (Student Meals)	$ 62.20	
Ramada Inn (Coffee)	18.41	
Don Sudbrink (Student Award)	50.00	
	$ 130.61	$2,499.39
Income (October 1991 Meeting)		
Dues	$ 175.00	
Registration	480.00	
Pins (3)	30.00	
Sustaining Members	50.00	
	$ 735.00	$3,234.39
Deposited Cash for Meeting - $ 50.00		$3,284.39

Number of pins on hand: 30 (October 21, 1991)

As of 10-11-91, audited by
Auditing Committee, Gary Lentz, Chairperson.

Funds transferred from Rich Caron to Harvey Barton 12-13-91.

Received from Rich Caron (Initial Deposit 12-13-1991) $3284.39

Received from Gary Lentz 30 T.E.S. pins 6-6-92.

Income		
Dues	$ 45.00	
Pins (3)	$ 30.00	
	$ 75.00	$3359.39
Expenses		
Checks (50)	$ 4.52	
Service Charge	$ 36.00	
	$ 40.52	$3318.87

Balance on hand (10-7-1992) ---------- $3318.87

Number of pins on hand (10-7-1992) ---------- 27

All T.E.S money is deposited in a checking account with The Arkansas Bank in Jonesboro, Arkansas. The following members have signed a signature card and have access to the account:

Harvey Barton, Treasurer
George Harp, Arkansas State University
Gary Lentz, Secretary

Committee Reports:

1. Constitution Committee - Joe Dunn (Chairperson)
   a. Motion was made that TES incorporation as a non-profit organization should be decided by the New Board Members. Incorporation fee is $50.00. Motion was passed.

   b. Separation of Secretary and Treasurer
   Reason - to divide workload.
   Motion was made and passed.

   c. Duties of Secretary and Treasurer
   remain the same as outlined on Page 44 of the 1990 Firefly under Section 4. Motion was made and passed.

   d. Changes in the constitution will be confined to the separation of secretary-treasurer. Motion made and passed.

   e. Creating a new position for editor - motion made and passed.

   f. Duties of Editor: The editor shall be a member of the Board of Directors and Chairman of the Publication and Editorial Committee. Motion made and passed.

   g. Length of term

   Secretary - 2 years changing to 3 years thereafter
   Treasurer - 3 years changing to 2 years thereafter
   Editor - 1 year changing to 3 years thereafter
   Historian - Remains at 5 year term.

Motion was made and passed.

2. Nominating Committee - Gene Burgess (Chairperson)

President-Elect	-	Richard Caron
Secretary	-	Gary Lentz
Treasurer	-	Harvey Barton
Members at Large	-	Steve Powell and Lee Greer
Editor	-	Jerome Grant

Passed by acclamation.

3. Publicity Committee - Harry Williams (Chairperson)

Notices of meeting were sent to newspaper, radio and television. Publicity is reaching many people in the state. Committee will canvass other colleges and institutions.

4. Program Committee - Jaime Yanes, Jr.

Thanked the members of the program committee for an outstanding program. Last year TES had 16 papers presented as compared to 20 papers this year. We had a wide diversity of topics with top caliber presentations.

5. Auditing Committee - C. J. Southards

Presented a letter from Gary Lentz that the books were audited and were in good order.

6. Publication and Editorial Committee - Jerome Grant (Chairperson)

Thanked all committee members for a job well done.

7. Local Arrangements Committee - Jim Bogard (Chairperson)

No formal report given. There were 20 rooms booked at the Ramada Inn. Thanked the committee members, and special thanks were expressed to Jim Keener and John Rochelle for assisting in registration.

6. Prediction and Evaluation Committee - Paris Lambdin (Chairperson)

Thanked all members of the committee. He will submit a 5 page report to the new editor for publication in the next Firefly.

7. Awards Committee - Paris Lambdin

a. Student Award - Don Sudbrink
$50.00 check - compliments of TES
Jacket & Hat - compliment of American Cyanamid

b. Howard Bruer Award - Plaque for Jennifer Hartsell, recent 4-H winner in Tennessee. Local newspaper will be notified of her award.

c. Outstanding Entomologist Award of the year for outstanding service and leadership - Joe Dunn.

Old Business - None

New Business

Next Meeting Place and Time - 2nd or 3rd week of October for the 1992 meeting - check other meeting dates for conflict. Motel accommodations will remain at the Ramada Inn in Nashville. Could ask for a larger registration area for the next meeting.

New Business from the floor:

Steve Murphee announced the 43rd International Science and Engineering fair will be held on May 12-13 at Vanderbilt. ESA has a standing committee and would ask entomologists from the State for Judging.

President recognized Charles Watson for the report of Membership Committee. A flier to Tennessee colleges and universities (42) was sent to advertize TES. He has collected addresses to schools adjoining Tennessee but work is not complete.

Brochure - prepared draft of brochure with one glossy print. Wants Membership Committee and Board of Directors to review brochure and make comments. Estimate of brochure would be around $300.00 per 1000 copies. Color print on cover would be more expensive.

Suggestion was made to contact High Schools around the area.

President-Elect Jaime Yanes was escorted to the podium by past Presidents. Bruce Kauffman passed the gavel to Jaime Yanes who was recognized as the President of the Tennessee Entomological Society.

Paris Lambdin, Chairperson of the Awards Committee presented a plaque to outgoing President Kauffman for his outstanding job as President.

Joe Dunn reminded people to sign a card that will be sent to Mike Cooper who has left the state for his outstanding support of the Tennessee Entomological Society.

The meeting was adjourned by President Jaime Yanes at 10:33 A.M.

Board of Directors Meeting
(12:10 P.M., October 18)

PRESENT: Jaime Yanes, Jr., Lee Greer, Jerome Grant, Bruce Kauffman, Steve Powell, Paris Lambdin, Bill Shamiyeh.

President Jaime Yanes called the meeting to order at the Ramada Inn, Nashville, TN.

1) Committee assignment sign-up sheets were almost full. Need to add an industry Representative to the nominating committee. Have the past president serve on this committee to have continuity. Joe Dunn was placed on the nominating committee. Add David Hughes to the membership committee. Add Harry Williams to the award committee. Add Gary Lentz to the publication committee.

2) Discussion on Brochure. President proposed to move on and commit to going ahead and producing the brochure. Jerome Grant to check on cost of brochure at the UT Print Shop. There will be cooperation between the Publication and Editorial Committees. Get it cranked out.

3) New Members - 16 new members were approved for membership.

4) Location for next meeting - Give freedom to the Local Arrangement Committee. Facilities were adequate except for the small registration area. Might use a facility on the coattail of another meeting. We might need a larger area.

5) Discussion on Banquet - Stays the same - no formal banquet.

6) Date of meeting - 2nd or 3rd week in October.

7) All expenses were paid for after the meeting.

8) No problems with audio visual encountered.

9) No new business presented.

10) Joe Dunn will initiate the paperwork for incorporation of TES.

11) Future Board Meeting - Will be set on Aug. 13, 1992, Thursday at the UT Extension Service District II office in the large conference Room (10:00 A.M.)

The Board of Directors Meeting was adjourned at 12:33 P.M.

Tennessee Entomological Society
Minutes of the Board of Directors
and Committee Chairperson Meeting

August 29, 1991

(This meeting was held as an organizational meeting prior to the annual meeting, October 17 - 18, 1991)

Present: Joe Dunn, Jaime Yanes, Jr., Jerome Grant, Paris Lambdin, Jim Bogard, Bruce Kauffman, Jim Keener, Rich Caron.

President Bruce Kauffman called the meeting to order (10:08 A.M.) at the Extension District II Auditorium, Ellington Agricultural Center, Nashville, TN.

1) The Board reviewed the minutes of the October 1990 business meeting.

2) Treasurer's Report - As of August 29, 1991 we have $2,745.10 in the account. This is about $300 more than at the same time last year. A treasurer's report will be available at the annual meeting.

3) Costs of the 1991 Meeting were discussed as they pertain to the treasurer's report.

Discussion:

1) Incorporation - There is a small fee involved (maybe under $100.00). A tax report needs to be filed each year.

2) Drs. Gary Lentz and Russ Patrick are able to obtain T.E.S. money out of the bank should something happen to the existing Treasurer.

3) The 1990 Firefly should include minutes of the August 10, 1990 and October 18-19, 1990 Board meeting and Annual meeting, respectively.

4) There are 8 honorary members of T.E.S. to date.

5) Kenneth Evers (licensed pest control operator in Memphis) paid $5.00 dues in December, 1990 by mail. The Board approved Kenneth as a new member of T.E.S.

6) The mailing of The Firefly to members not attending the Annual meeting was discussed. The attendance roster should be compared with the membership mailing list to determine who should receive a copy by mail.

Other state societies may receive The Firefly and may want to have a joint meeting with us in the future.

Jerome Grant will see about sending The Firefly to members as described above.

7) Possible Editor, Secretary and Treasurer positions were discussed. The positions are pending membership approval. The three positions will need descriptions for incorporation into the constitution. The Editor should be in charge of The Firefly and a possible T.E.S. newsletter in the future.

8) The Secretary, Treasurer, and Editor positions should be staggered such that the problem of nominations would be minimized. We need to cycle the positions. Therefore, if each position will be for 3 years, then one position should extend 2 years initially.

The Board decided 1) to elect a Secretary (for 2 years, changing to 3 years thereafter), 2) to elect a Treasurer (for 3 years), and 3) to elect an Editor in 1991 (for 3 years). Also, the Historian will be elected in 1992 (for 5 years).

9) Editor duties should be drawn up and brought before the membership during the next annual meeting. The Editor would handle the official publications of the T.E.S. as directed by the Board and/or the Publications Committee.

10) It would be advisable to have the abstracts for papers printed for the meeting at which the papers are being given.

11) The existing Constitution Committee Chairperson will describe the Editor position for the constitution, then the membership will vote on the amendment the following year. The Chairperson of the Publications and Editorial Committee should also be the Editor.

Committee Reports

1) Constitution Committee - Joe Dunn, Chairperson.

In a continuation of the above, Joe discussed the changes in the Constitution which would accommodate the Secretary and Treasurer positions. The changes will be presented to the membership during the next business meeting.

Incorporation procedures and mechanics will be investigated further for future consideration.

2) Nominating Committee: Gene Burgess, Chairperson - not present.

A new change in nominating should include a Secretary and a Treasurer.

3) Membership Committee - Charles Watson, Jr., Chairperson, not present.

Charles wrote a letter to President Kauffman indicating that Charles will send out packets (cover letter, membership application, call for papers) to biology departments of about 40 colleges and universities in Tennessee (and some in adjacent states). The T.E.S. brochure is delayed since it is not "university related" at Clemson. Charles will work on the brochure's layout and design.

[Note: Responsibilities of the Membership Committee were reviewed from the "Suggested Guidelines For T.E.S. Committees" file of the Secretary/Treasurer. It was suggested that each Committee's "Guidelines" be reviewed by the Board and eventually printed in The Firefly for membership scrutiny. The "Guidelines" are not a part of the constitution. They simply help guide each Committee. Changes in the "Guidelines may be made by the Board from time to time.]

The Board discussed potential new members. One "untapped" group includes entomological hobbyists.

4) Awards Committee - Reid Gerhardt, Chairperson, not present.

The student judging team should be established for the annual meeting. The Board reviewed existing "Guidelines for the Awards Committee".

5) Publicity Committee - Joe Dunn, Chairperson.

It is best for a commercial (sustaining) member to write to commercial newspapers and magazines on industry letterhead. A minimum of 5 months is needed to get our meeting on the press' meeting list in time. Recent T.E.S. sustaining members have included American Cyanamid, ICI Americas, and Valent.

6) Auditing Committee - Gary Lentz, Chairperson, not present.

Gary will audit the Treasurer prior to the Annual meeting and the Treasurer's Report can be made by another Board member during the meeting. Neither Lentz nor Caron can attend the 1991 annual meeting.

7) Program Committee - Jaime Yanes, Jr., Chairperson

Jaime sent out a "call for papers". Jaime would like to typeset and print the program. The Board agreed to have Jaime publish a program with high quality and at a competitive price.

8) Prediction and Evaluation Committee - Paris Lambdin, Chairperson

Paris will solicit reports from the membership. Three or four reports were turned in for last year. The report serves as a historical document. Certain regulatory news articles can be used for the report. The Prediction and Evaluation Committee report should continue, assuming that the report contains a good sampling of entomological information.

9) Publication and Editorial Committee - Jerome Grant, Chairperson.

So far, Jerome has received only 5 abstracts. He will follow essentially the same format for the next volume of The Firefly.

Anything that is important to the membership should be included in The Firefly.

TVA and TN Pest Control Operators may be a good place to draw members to T.E.S. Copies of The Firefly should be used to draw new members. We may need papers on PCO work to draw new members.

10) Local Arrangements Committee - Jim Bogard, Chairperson.

The Ramada Inn was selected for this year's meeting. Room rates are $33 single, $41 double, plus tax.

We have a free meeting room provided we fill 20 hotel rooms.

The Meeting room will hold 50 people. Jaime Yanes will let the local Arrangements Chairmen know the type of equipment that will be needed and will handle same. We need to know what the hotel can provide and supplement equipment where needed. A section of the restaurant was requested for the evening meal.

Other Business:

- Bruce Kauffman has the T.E.S. nametags.
- It was suggested that a table be set up for students to sell T-shirts and other merchandise during the Annual meeting.
- Informal lists of Board member duties from past minutes need to be included in The Firefly in the future.
- The Board approved the registration and fees as they were last year.
- There is a need for room reservation forms for hotel reservations to be sent to the membership.
- Is the Past-President automatically the nominating chairman? - No.
- Duties of the Secretary/Treasurer should be sent to Gene Burgess to advise potential nominees of responsibilities.

The Board Meeting was adjourned at 1:08 P.M.

Respectfully submitted,

Richard E. Caron
Secretary/Treasurer, T.E.S.

T.E.S. TREASURER'S REPORT
8/27/91 to 8/17/92

Balance: $2,745.10
(as of 8/27/91)

Expenses (Stamps, Mailout Charges, & Recording Tapes)	$ 65.10	$2,680.00
	as of 10/11/91 - audited by Auditing Committee, Gary Lentz, Chairperson	
Cash for October 1991 Meeting	$ 50.00	$2,630.00
Expenses (October 1991 Meeting)		
Ramada Inn (Student Meals)	62.20	
Ramada Inn (Coffee)	18.41	
Don Sudbrink (Student Award)	50.00	
	$130.61	$2,499.39
Income (October 1991 Meeting)		
Dues	$175.00	
Registration	480.00	
Pins (3)	30.00	
Sustaining Members	50.00	
	$735.00	$3,234.39
Deposited Cash for Meeting -	$50.00	$3,284.39
Received from Rich Caron for Deposit on December 13, 1991		$3,284.39
Income (December 13, 1991 to August 17, 1992)		
Dues	45.00	
Pin (3)	30.00	
	$75.00	$3,359.39
Expenses		
Checks (50)	4.52	
Service Charge	28.00	
	$32.52	$3,326.87 (August 17, 1992)

Number of pins on hand: 30 (August 17, 1992)

Note: All T.E.S. money is deposited in a checking account with the Arkansas Bank in Jonesboro, Arkansas. The following members have signed a signature card and have access to the account:

Harvey Barton, Treasurer
George Harp, Arkansas State University
Gary Lentz, Secretary

ATTENDANCE ROSTER OF THE 1991 ANNUAL MEETING OF THE TENNESSEE ENTOMOLOGICAL SOCIETY

MEMBER	AFFILIATION	LOCATION
Bancroft, Harold R.	Memphis State Univ.	Memphis, TN
Bogard, James B.	TN Dept. of Ag.	Nashville, TN
Boyd, Michael L.	Univ. of TN	Knoxville, TN
Brown, Carl D.	Memphis State Univ.	Memphis, TN
Burgess, Edward (Gene)	Univ. of TN	Knoxville, TN
Cagle, Jimmy L.	TN Dept. of Ag.	Winchester, TN
Caldwell, Pamela F.	Univ. of TN	Knoxville, TN
Cate, Randy H.	Univ. of TN	Martin, TN
Chaudhary, Hans R.	TN Dept. of Ag.	Harriman, TN
Colby, Deanna M.	Univ. of TN	Knoxville, TN
Cole, Bruce A.	TN Dept. of Ag.	McMinnville, TN
Dattilo, Jim J.	USDA-APHIS-PPQ	Nashville, TN
Dunn, Joe C.	American Cyanamid (Retired)	Nashville, TN
Eisler, James I.	TN Dept. of Ag.	McMinnville, TN
Gillis, Deborah L.	TN Dept. of Health/APSU	Clarksville, TN
Grant, Jerome F.	Univ. of TN	Knoxville, TN
Greer, Lee	Valent	Dunlap, TN
Hamilton, Steven W.	Austin Peay State Univ.	Clarksville, TN
Harp, George L.	Arkansas St. Univ.	Jonesboro, AR
Harp, Phoebe A.	Arkansas St. Univ.	Jonesboro, AR
Haun, Walker G. (Gray)	TN Dept. of Ag.	Louisville, TN
Heery, Frank	TN Dept. of Ag.	Harrison, TN
Henry, Kathleen A.	TN Dept. of Ag.	Lexington, TN
Holt, Howard Lee	Univ. of TN	Knoxville, TN
Hopkins, Alan	Mobay Corporation	Little Rock, Ar
Huff, Steve N.	Univ. of TN	Knoxville, TN
Hughes, David M.	Univ. of TN	Knoxville, TN
Kauffman, Bruce W.	TN Dept. of Ag.	Nashville, TN
Keener, James A.	TN Dept. of Ag.	Knoxville, TN
Kollars, Thomas M., Jr.	Memphis State Univ.	Memphis, TN
Lambdin, Paris L.	Univ. of TN	Knoxville, TN
Landau, Deborah	Univ. of TN	Knoxville, TN
Lockey, Timothy	Memphis State Univ.	Memphis, TN
Milam, Robert G.	USDA-APHIS-PPQ	Antioch, TN
Murphree, C. Steven	Belmont Univ.	Nahsville, TN
Noblitt, Steve	Memphis State Univ.	Memphis, TN
Powell, Steve D.	TN Dept. of Ag.	Nashville, TN
Powell, Stewart	TN Dept. of Ag.	Brentwood, TN
Rochelle, John B.	TN Dept. of Ag.	Elizabethton, TN
Self, Anni	TN Dept. of Ag.	Nashville, TN
Shamiyeh, N. B.	Univ of TN	Knoxville, TN
Skinner, John A.	Univ. of TN	Knoxville, TN
Snodderly, Lynn J.	TN Dept. of Ag.	Strawberry Plns., TN
Snodgrass, Mendell E., Jr.	USTVA	Knoxville, TN

Snodgrass, Mendell E., Sr.	USDA (Retired)	Knoxville, TN
Southards, Carroll J.	Univ. of TN	Knoxville, TN
Stinger, Patricia J.	Austin Peay State Univ.	Clarksville, TN
Sudbrink, Jr., Donald L.	Univ. of TN	Knoxville, TN
Vail, Elizabeth R.	Univ. of TN	Knoxville, TN
Vogt, James T.	Univ. of TN	Knoxville, TN
Watson, Charles N.	Clemson Univ.	Clemson, SC
Williams, Harry E.	Univ. of TN	Knoxville, TN
Yanes, Jr., Jaime	American Cyanamid	Memphis, TN

BOARD OF DIRECTORS

President - Bruce Kauffman
Past President - Harry E. Williams
President Elect - Jaime Yanes, Jr.
Secretary/Treasurer - Richard E. Caron
Historian - Charles R. Patrick
Member at Large - James Keener
Member at Large - Paris L. Lambdin

1990 - 1991
COMMITTEES

NOMINATING
Gene Burgess - Chair
Jerome Grant
Charles Pless
Paris Lambdin

MEMBERSHIP
Charles Watson, Jr. - Chair
Charles Pless
Michael Boyd
Elizabeth Vail
John Rochelle

AWARDS
Reid Gerhardt - Chair
Gene Burgess
Harvey Barton
Paris Lambdin

CONSTITUTION
Joe Dunn - Chair
Carroll Southards
Richard Caron
Gary Lentz
Elizabeth Vail

PROGRAM
Jaime Yanes, Jr. - Chair
Richard Caron
Reid Gerhardt
Jim Keener
Harvey Barton
Ray Nabors

PUBLICITY
Harry Williams - Chair
Michael Boyd
Elizabeth Vail

AUDITING
Gary Lentz - Chair
Reid Gerhardt
Carroll Southards

PREDICTION/EVALUATION
Paris Lambdin, Chair
Jimmy Cagle
Bruce Kauffman
Harry Williams
Jerome Grant

PUBLICATION/EDITORIAL
Jerome Grant - Chair
Bruce Kauffman
Charles Watson
Ray Nabors

LOCAL ARRANGEMENTS
Jim Bogard - Chair
Gene Burgess
John Rochelle

Tennessee Entomological Society

Prediction and Evaluation

Committee Report

October 17, 1991

Paris L. Lambdin - Chairman
Committee Members:
Jimmy Cagle
Bruce Kauffman
Harry Williams
Jerome Grant

STATUS OF THE HONEYBEE - 1991

JOHN SKINNER

Population levels of *Apis mellifera*, the state Agricultural insect, has declined in number of colonies by approx. one/half due primarily to:

1) Increasing population levels of the tracheal mite, *Acarapis woodi*, a very serious pest which is found throughout Tennessee.
This estimate is based upon conversations with hundreds of beekeepers throughout the state. We do not know exactly how many colonies of bees are present in the state, however, a conservative estimate would be at least 80,000.

2) The Varroa mite, *Varroa jacobsoni*, has been found in at least 7 counties and is suspected to be rapidly spreading throughout the state, especially from movement of contaminated bees from other states into Tennessee. We no longer have an Apiary branch in the Department of Agriculture to inspect or regulate bee pests or diseases, therefore I can only guess how fast Varroa has spread and can only pray that all individuals are following proper adherence to the Bee Laws. I predict serious losses of bee colonies due to Varroa this winter and these losses will increase in the future.

TENNESSEE COTTON INSECT CONDITIONS - 1991

RICHARD E. CARON

From late March to late April, a total of 221 boll weevils were captured in 116 traps located in West Tennessee. In 1989 and 1990, 732 and 83 weevils, respectively, were caught during nearly the same period (for comparison). The winter of 1990-91 was much more conducive to over-winter survival than that of 1989-90.

By late May, weevils were expected to peak in emergence earlier than normal due to extended warm and wet spring weather. The same weather hampered cotton planting such that cotton squared later than normal in many fields. Serious thrips infestations were occurring on early-planted cotton.

By June 10, thrips were still a problem. Cutworms, boll weevils, tarnished plant bugs and bollworms/tobacco budworms were active in cotton. Cotton was still being planted in early June. Concurrently, cotton planted in April was entering the pinhead square stage. There was a wide range of insect pest problems and potential problems. Pinhead square insecticide applications were being made for boll weevils and other applications were targeted towards tarnished plant bugs and thrips from mid to late June. Leafroller and bollworm/tobacco budworm problems arose. In Middle Tennessee, and to some extent in West Tennessee, European corn borer was found in cotton stalks. Damage was not widespread. Tarnished plant bug populations were relatively heavy during June and early July. Growers were still making pinhead square applications for boll weevils. Aphid colonies began to develop on older cotton and winged aphids were moving into young cotton. A high incidence of parasitic wasps was associated with the aphid colonies. In early July, European corn borers were found in squares. In late June and early July, beneficial insect species were abundant. These included damsel bugs, lacewings, lady beetles, bigeyed bugs, minute pirate bugs, and spiders.

Throughout July, bollworms and tobacco budworms were problems in cotton. Boll weevils caused up to 10% square damage in some fields and tarnished plant bugs were a threat to small square retention. Problems with yellowstriped armyworm and European corn borer were reported. Aphids were active and, where hot and dry conditions persisted, spider mites were building in populations. Green stink bug problems became apparent at the end of July.

Tobacco budworm and bollworm moth catches increased in pheromone traps in early to mid August. Both species caused economic damage to cotton throughout August. Heavy spider mite injury occurred in areas hit by persistent hot and dry conditions. Economic populations of boll weevils occurred in some fields where they were not controlled. By late August, European corn borers were reported in bolls at subeconomic levels.

In early September, boll weevil dispersal occurred. Weevils were observed in blooms in fields that were weevil-free up to that time. Bollworm problems still occurred. Two instances of hard-to-control sweet potato whitefly infestations occurred, primarily near greenhouses. Throughout September, numbers of potentially overwintering boll weevils increased.

Yield was expected to average 453 pounds of cotton lint per acre as of September 30.

COTTON - Boll weevil - moderate populations due to mild winter; good pinhead square control program reduced late season populations.

Bollworm - light to moderate due to availability of corn planted over an extended period.

European Cornborer - heavier than in recent years - though not economic in most fields, it has become more common.

Sweetpotato Whitefly (*Bemisia tabaci*) - found in several fields in Crockett Co. Defoliated 50 acres near greenhouse source. Found also in Shelby Co. on the Agricenter (also from a greenhouse). Numerous wild host plants recorded.

TENNESSEE SOYBEAN INSECT CONDITIONS - 1991

RICHARD E. CARON

Very few insect pest problems occurred on soybeans in Tennessee during 1991.

By June 10, growers were advised to watch for bean leaf beetles and grasshoppers as the crop began to emerge. A week later, threecornered alfalfa hoppers were added to the list of potential problems.

No pest problems were reported through July 22. Predaceous insect populations were very high at that time. Growers were advised to monitor corn earworm populations for the next few weeks. Green cloverworm populations began to build, with little problem arising.

During August and September, corn earworm problems were potentially critical due to prolonged and relatively high moth flights as monitored with pheromone and blacklight traps. Stink bugs also were a potential problem during this time period.

SOYBEANS

Corn earworm - light

Green cloverworm - light

Soybean looper - Pheromone traps at Jackson caught high numbers throughout the season. They may have been brought in as moths in an early season storm and survived well in the absence of natural predators and parasites. Trap catches were higher than most cooperating trap locations further south. Larvae were not a problem in surrounding fields.

FIELD CROP INSECT PESTS - 1991

BILL SHAMIYEH

SMALL GRAINS - WHEAT

Cereal Leaf Beetle: Infestation levels were moderate in Robertson county averaging 1.5 larvae/stem. Aphid populations were light.

FORAGE CROPS - ALFALFA

Alfalfa Weevil: Alfalfa weevil larvae counts were high in plots in Springfield averaging 50 larvae/sweep and moderate in Springhill averaging 10 larvae/sweep.

FIELD CORN

European Corn Borer: Infestation levels were 10% at Highland Rim and 84% at Greeneville with an average of 3 larvae/plant.

Fall Armyworm: Populations were very heavy in Middle and East Tennessee with infestation levels approaching 95%.

TOBACCO

Tobacco Aphid: Population densities of the red form were high in Middle and East Tennessee. Development of sooty mold fungus was observed at Greeneville.

Flea Beetles: Populations reached threshold densities during the growing season at both locations.

Budworms & Hornworms: Budworm populations were above threshold levels on dark tobacco early in the season. Hornworms were above 10% on both burley and dark tobacco late in the season.

VEGETABLE CROPS - SNAP BEANS

Mexican bean beetles: Very light infestation levels for both the spring and fall planting.

European corn borer: In late August, 4 ECB larvae were counted per 20 linear feet of snap beans planted in early July.

BROCCOLI

Worm Complex: Pre-treatment counts at Crossville averaged 9 worms/plant.

CABBAGE

Worm Complex: Worm counts averaged about 2 worms/plant at the Plateau Experiment Station.

SWEET CORN

Corn Earworm: Earworm populations at Crossville were very heavy averaging 2.3 worms/infested ear.

ORNAMENTALS AND FRUIT TREES

Japanese Beetle: Beetle populations were very heavy at Crossville with about 85% defoliation of Apple trees and Grape vines. Beetle were also heavy on Crabapples and Purple leaf plums.

GENERAL INSECT PEST PROBLEMS - 1991

HARRY WILLIAMS

Gypsy Moth: *Lymantria dispar*, Sequatchie and Rhea counties have established infestations with adult moths being trapped statewide.

Cockroach: New species record; *Pseudomops septentrionalis* (Hebard), pale bordered field cockroach; imported from Texas-Mexico; local infestations.

Imported Fire Ants: *Solenopsis invicta*, These ants have been detected in Washington, Cocke, Knox, Monroe and Hamilton counties; colonies were moved into these areas in nursery stock.

Camel Crickets: *Ceuthophilus brevipes* and *Ceuthophilus maculatus* found in abundant local populations.

Green June Beetles: *Cotinus nitdia*, common with abundant localized populations.

17 Year Periodical Cicada, Brood XIV; *Magicada septendecin*: East Tennessee, Middle Georgia to Illinois to Massachusetts. Reports of infestations and requests for information have been received from across the state.

Cicada Killer Wasp: *Sphecius speciosus*; lawns and fields in Middle and East Tennessee; common, abundant populations localized.

Cow Killer Ant, Velvet Ant; *Dasymutilla occidentalis*; other species common, localized populations.

European Hornets: *Vespo crabo*; common, localized, abundant populations.

Yellow Jackets: *Dolichovespula masulator*, the Bald Faced Hornet; *Vespula maculitrons*, Eastern Yellow Jacket; *Vespula squamosh*, Southern Yellow Jacket.

Populations of the Painted lady were abundant throughout middle and east Tennessee on musk thistle during the spring and early summer.

TENNESSEE ECONOMIC PESTS

BRUCE KAUFFMAN

General Ornamental Insect Pests: Bagworms on ornamentals; Boxelder bugs nymphs emerging; BRANCH CANKERS of hardwoods and pines; Dutch elm disease; Fall webworm on various hardwoods; Inner Bark and Wood borers of oaks and maples; Locust leaf mtners; Oak wilt; Red-headed pine sawflies on all pine species especially Christmas trees; Slime flux infections of oak; Verticillium wilt of maple; White pine weevil damage to terminal shoots.

Gypsy moth (*Lymantria dispar* L.): egg masses of the Asian species were found this spring on Russian ships in Canadian ports. The female moth of this species is a strong flier and would greatly increase the spread of this insect if it became established in the United States (USDA,APHIS Telemail)- Gypsy moth grid trapping (TDA) will concentrate primarily in a 31 county central Tennessee area. other grids will be established around each infestation in Rhea (TDA), Sequatchie (TDA) and Sevier (USDA, APHIS) Counties and in the urban counties of Memphis, Nashville, and Jackson (USDA, APHIS) as well as six counties (Carter, Greene, Johnson, Sullivan, Unicoi, Washington) in northeastern Tennessee (TDA). Division of Forestry employees will place traps in over 70 counties at campgrounds and other high hazard sites for the gypsy moth. Pupae of the gypsy moth began to appear on June 6 in Rhea County (Henry, TDA). This information could mean an appearance of the moth stage a week or two before the fourth of July.

A pyralid moth caterpillar fed abundantly on musk thistle in early May in Davidson, Franklin, Maury, and Smith Counties webbing the foliage as it went (J. Grant, U. T.) . European weevils (*Rhinocyllus conicus* Froelich & *Trichosirocalus horridus* (Panzer)) have been introduced over the past two years in limited numbers by the University of Tennessee In cooperation with the State Department of Transportation in an effort to provide area wide management of this thistle by their feeding on the rosettes and flower heads (J. Grant, U. T.). Similar programs have been successful in the Midwest in reducing the spread of this weed species.

Africanized honey bees: Bees have entered Texas this April and May from Mexico into a nine county area on line from Laredo to Kingsville to Mexico. A trapping program, scouting for wild swarms, and local bee colony sampling is ongoing throughout the locations. Twenty three swarms of this insect have been captured and destroyed through May 10 (TX Apiary Inspection Service).

Fire Ants: Surveys for the red imported fire ant (*Solenopsis invicta* Buren) and the black imported fire ant (*Solenopsis richteri* Forel) in Tennessee will be undertaken in the non-quarantined areas of Hardeman, Hardin, and McNairy Counties as well as Chester, Decatur, Fayette, Giles, Henderson, Lawrence, Shelby, and Wayne Counties. Treatment will also be carried out in selected areas.

Japanese beetle (*Popillia japonica* Newman): Trapping will be done on a limited basis to define the leading edge of the infestation in the eastern portion of central Tennessee. Trapping will also be conducted in selected counties in western and central Tennessee. The yearly survey to update the spread and impact of dogwood anthracnose (*Discola* sp.) in the state will begin this month in over 40 counties through the system of permanent plots established primarily in 1989. Plots falling on U.S. Forest Service lands will be handled by that agency.

Dogwood anthracnose (*Discula* sp.): was present on young saplings and older trees in Marion, Monroe and Rhea Counties this spring. The wet weather favored more severe leaf symptoms.

Hardwood Pests: Defoliation of the oak-hickory forest type was prominent on the ridge tops and ripper slopes of forest stands of the Western Highland Rim from mid-April to the middle of May. At one Wayne County site, three percent of the trees primarily in the red oak group were totally defoliated and another seven percent suffered light to moderate defoliation caused by the BUCK MOTH caterpillar, (*Hemileuca maia*). Saddled prominent larvae, (*Heterocampa guttivitta* (Walker)), several inchworm and cutworm species as well as leaf-rolling caterpillars (M. Hamm, PCA; J. Kirksey, TDF). Buck moth larvae and these associated caterpillars were also reported in Cheatham, Davidson, Hickman, Lawrence, Lewis, Robertson and Stewart Counties (M. Hamm, PCA; J. Gregory, TWRA; T. Melton, TDF). In Dickson, Houston, and Humphreys Counties, BUCK MOTH and CUTWORM larvae caused an average of 50 percent defoliation on trees of the red and white oak group on one-third of the forested acreage along the ridges (J. Woodcock, TDF).

In northeastern Tennessee, inchworm species were reported defoliating acreage of the oak-hickory type in Campbell, Hawkins, and Sullivan Counties (S. Bingham, M. Miller, R. Walker, R. Van Inwegen, TDF). Light defoliation was present at the Campbell County location, but heavy defoliation of 175 acres in Hawkins County and 45 acres in Sullivan County occurred along the ridge tops and upper slopes.

Eastern tent caterpillar (*Malacosoma americanum* (Fabricius)): defoliation continued to be heavy in areas north and east of Davidson County to Putnam County. Fifty percent of the cherries in Smith County were totally defoliated, and heavy defoliation of oak and cherry occurred on 10 acres in Putnam County (J. Replogole, G. Zimmerman, TDF). Elsewhere in the state, light to moderate defoliation was more common with generally 30 percent or less of the cherry trees sustaining over 50 percent defoliation.

The black-headed ash sawfly (*Tethida cordigera* (Padisot de Beauvois)): began defoliating white ash in Davidson County on May 11. May beetles (*Phyllophaga* spp.) stripped 50 percent of the leaves of a pin oak in Davidson County on May 3. Several reports described large numbers of these beetles being attracted to outdoor lighting.

HISTORICAL NOTES

Presidents of the Tennessee Entomological Society (1973 - Present)

President	Term	Affiliation
Mendell Snodgrass	'73 - '74	USDA
Omar Smith	'74 - '75	Memphis State
Don Clements	'75 - '76	Cook's Pest Control
Gary Lentz	'76 - '77	Univ. of Tennessee
Chester Gordon	'77 - '78	Tenn. Dept. of Agric.
Gene Burgess	'78 - '79	Univ. of Tennessee
Reid Gerhardt	'79 - '80	Univ. of Tennessee
Harold Bancroft	'80 - '81	Memphis State
Joe Dunn	'81 - '82	American Cyanamid
Bill Van Landingham	'82 - '83	Tenn. Dept. of Agric.
Carl Brown	'83 - '84	Memphis State
Charles Pless	'84 - '85	Univ. of Tennessee
Michael E. Cooper	'85 - '86	Tenn. Dept. of Agric.
Elmo Shipp	'86 - '87	Mobay
Bill Shamiyeh	'87 - '88	Univ. of Tennessee
Harvey Barton	'88 - '89	Ark. State Univ.
Harry Williams	'89 - '90	Univ. of Tennessee
Bruce Kauffman	'90 - '91	Tenn. Dept. of Agric.

Secretary-Treasurers of the Tennessee Entomological Society (1973 - Present)

Secretary-Treasurer	Term	Affiliation
Jimmy White	'73 - '76	Tenn. Dept. of Agric.
Harold Bancroft	'76 - '79	Memphis State
Lyle Klostermeyer	'79 - '82	Univ. of Tennessee
Bill Shamiyeh	'82 - '85	Univ. of Tennessee
Richard Caron	'85 - '88	Univ. of Tennessee
Richard Caron	'88 - '91	Univ. of Tennessee

Board of Directors Members at Large

Member	Term	Affiliation
Gary Lentz	'87 - '88	Univ. of Tennessee
Blake Bevill	'87 - '88	Ark. State Univ.
Michael E. Cooper	'88 - '89	Tenn. Dept. Agric.
Jay P. Avery	'88 - '89	Univ. of Tennessee
Joe Dunn	'89 - '90	American Cyanamid
Charles Pless	'89 - '90	Univ. of Tennessee
Paris Lambdin	'90 - '91	Univ. of Tennessee
Jim Keener	'90 - '91	Tenn. Dept. of Agric.

Historians of the Tennessee Entomological Society (1973 - Present)

Historian	Term	Affiliation
Charles Pless	'73 - '76	Univ. of Tennessee
Herb Morgan	'76 - '79	USDA
Mendell Snodgrass	'79 - '82	USDA
Russ Patrick	'82 - '87	Univ. of Tennessee
Russ Patrick	'87 - '92	Univ. of Tennessee

Honorary Members of the Tennessee Entomological Society (1982 - Present)

Honorary Member	Year	Affiliation
Myron Smith	1982	Hill-Smith Pest Control
Jimmy White	1982	Tenn. Dept. of Agric.
Howard Bruer	1983	Tenn. Dept. of Agric.
Mendell Snodgrass	1983	USDA
Carl Brown	1985	Memphis State
Myrtice Snodgrass	1985	Knoxville, TN
John A. Hammett	1987	Tenn. Dept. of Agric.
Joe C. Dunn	1990	American Cyanamid

Howard Bruer Award (est. 1975) Recipients of the Tennessee Entomological Society (1975 - Present)

Recipient	Year	Location
Whitney Eckler	1975	Memphis, TN
Joe Martin	1976	Bolivar, TN
Bryan Peters	1977	College Grove, TN
Tidus Pollard	1978	Huron, TN
John Bentley	1979	??
Melissa Hart	1980	Watertown, TN
Gary Miller	1981	Knoxville, TN
Harold Glass	1982	Knoxville, TN
-----	1983	(No award given)
-----	1984	(No award given)
Penny Thompson	1985	Davidson County
Matthew Fumich	1986	Munford, TN
Christie Greer	1987	Greene Co.
Dottie Hodges	1988	Hamblen Co.
-----	1989	(No award given)
Tim Gentry	1990	Woodbury, TN
Jennifer Hartsell	1991	Hamblen Co.

Outstanding Entomologist (Tennessee Entomologist of the Year) Award (est. 1981) Recipients of the Tennessee Entomological Society (1981 - Present)

Recipient	Year	Affiliation
Myron Smith	1981	Hill Smith Pest Control
Harry Williams	1985	Univ. of Tennessee
John A. Hammett	1987	Tenn. Dept. of Agric.
Joe C. Dunn	1991	American Cyanamid

Graduate Student Award (est. 1986) Recipients of the Tennessee Entomological Society (1986 - Present)

Recipient	Year	Location
Jay Avery	1986	Knoxville, TN
Laura Rogers	1987	Knoxville, TN
Jason Oliver	1988	Knoxville, TN
Steve D. Powell	1989	Knoxville, TN
Robert C. Brown	1990	Knoxville, TN
Donald L. Sudbrink, Jr.	1991	Knoxville, TN

CONSTITUTION
of the
TENNESSEE ENTOMOLOGICAL SOCIETY
(as of October 1991)

Article 1. Name

This Society is formed in the name and style of the "Tennessee Entomological Society", as an educational institution, not contemplating financial gain or profit. It is herein and after called the Society.

Article 2. Purpose

The purpose and object of the Society is to foster entomological accomplishment among its members and to promote the welfare of all of the State of Tennessee through the encouragement of: (1) the preparation, reading, and/or publication of papers, (2) association and free discussion among all members, (3) the dissemination of entomological information to the general public, and (4) cooperative efforts in statewide insect surveys.

Article 3. Membership

Section 1. Original Members: Any person designated at the organizational meeting of the Society to occupy the status of "Member" shall be considered as and be a Charter Member. Thereafter, the organizational membership shall have no authority to name or appoint members of the Society.

Section 2. Membership: Membership shall be open to all persons interested in Entomology.

Section 3. Sustaining Membership: Sustaining Membership is open to commercial or industrial organizations upon meeting approval and requirements of the Board of Directors.

Section 4. Honorary Membership: Honorary Members may be selected from time to time by a majority vote of the Board of Directors.

Section 5. Student Membership: Student Membership is open to students enrolled in any education institution and meeting the requirements of the Board of Directors.

Section 6. Procedure to Obtain Membership: Any person desiring to become a member of the Society shall do so by application and payment of dues to the Treasurer. After approval of the majority of the Board of Directors, said applicant shall become a duly constituted member.

Section 7. Members in Good Standing: A member who is current in payment of dues.

Article 4. Membership Rights

Section 1. Voting: Each member in good standing shall be entitled to one vote at any regular or special meeting or by mail. Voting by proxy shall not be allowed.

Section 2. Privileges: All members in good standing shall have equal privileges in the presentation of papers and discussions at meetings.

Article 5. Membership Certificates

Section 1. Certificates: The Board of Directors shall decide upon what evidence of membership each member in good standing shall be entitled to receive.

Section 2. Transfer: Evidence of membership in the Society will not be transferable or assignable.

Article 6. Dues

Section 1. Annual Dues: The amount of the annual dues for membership in the Society will be established by the Board of Directors from time to time. The use or uses of dues collected shall also be determined by the Board.

Section 2. Time of Payment: The Board of Directors shall set such times during each year as it deems advisable for the payment of annual dues by members. Generally, annual dues shall be paid during registration at the annual meetings. However, a member may mail dues to the Treasurer of the Society if the member cannot attend a given annual meeting. If a member fails to pay dues two (2) years in a row, such member shall be dropped from the rolls.

Section 3. Honorary Members: There shall be no dues required for Honorary Members or others specially designated by the Board of Directors.

Article 7. Meetings of the Society

Section 1. Annual Meetings: The Society shall hold annual meetings at such times and places as may be designated by the Board of Directors and specified in the notice thereof, for the election of officers and any other business as may be properly brought before the meeting.

Section 2. Registration Fee: A registration fee, in the amount to be determined by the Board of Directors, shall be paid at each annual meeting by all members and non-members who attend. The Board of Directors will determine the use of these fees.

Section 3. Special Meetings: Special meetings of the Society shall be held at any time and place as specified in the notice thereof whenever called by the President or any two (2) or more members of the Board of Directors.

Section 4. Notice: Notice of all meetings of the Society, annual or special, stating time, place, and agenda shall be mailed to each member by the President, Secretary, Treasurer, or Directors calling the meeting not less than seven (7) days prior to the meeting.

Article 8. Officers

Section 1. Officers: The officers of the Society shall consist of a President, President-elect, Secretary, Treasurer, Editor, and Historian, all of whom, except the President, shall be elected by and from the membership by a majority vote of members or by mail. The first President of the Society shall be elected by and from the membership at the organizational meeting for a term extending to the beginning of the first annual meeting. Thenceforth, the President-Elect shall automatically accede to the office of President at each annual meeting, or when the President is unable or unwilling to act for any reason. Nominees for each elective office of the Society shall be selected by a nominating committee of three (3) members appointed at the annual meeting by the President. Nominations may also be presented from the floor. The President and President-Elect shall hold office from the date of election at the annual meeting until the election of their successors at the next annual meeting, and shall not be eligible for re-election to the same office for a successive term. The Secretary, Treasurer, and Editor shall hold office from the date of election at the annual meeting until the election of a successor at the third following annual meeting and shall be eligible for re-election. The Historian shall hold office from the date of election at the annual meeting until the election of a successor at the fifth following annual meeting and shall be eligible for re-election. No member shall occupy more than one office at any one time.

Section 2. Duties and Powers of the President: The President shall be the Chief Executive Officer of the Society and shall preside at all meetings of the Society and the Board of Directors, have and exercise general and active management of the Society, execute and enforce all orders and resolutions and regulations duly adopted by the Board of Directors, execute all contracts in the name of the Society, and perform such other duties as assigned by the Board of Directors.

Section 3. Duties and Powers of the President-Elect: In the absence of the President, or in the case of failure to act, the President-Elect shall have all the powers of the President and shall perform such other duties as shall be imposed by the Board of Directors from time to time.

Section 4. Duties and Powers of the Secretary: The Secretary shall attend and keep the minutes of all meetings of the Board of Directors and the Society, shall have charge of the records and seal of the Society, and shall, in general, perform all the duties incident to the office of Secretary of the Society.

Section 5. Duties and Powers of the Treasurer: The Treasurer shall keep full and accurate accounts of the books of the Society and shall deposit all monies and the valuable properties and effects in the name of and to the credit of the Society in such depository or depositories as may be designated by the Board of Directors. The Treasurer shall disperse funds as may be ordered by the Board, getting proper receipts for such disbursements; and shall render to the Board of Directors whenever required by it, an accounting of all transactions as Treasurer. During each annual meeting, the Treasurer shall give a report on the annual financial condition of the Society. The Treasurer shall, in general, perform all the duties incident to the office of Treasurer of the Society.

Section 6. Duties and Powers of the Editor: The Editor shall be a member of the Board of Directors and Chairman of the Publication and Editorial Committee and be responsible for editing and publishing such publications as directed by the Board of Directors and passed by the majority of the voting membership at a called meeting.

Section 7. Duties and Powers of the Historian: The Historian shall maintain and be responsible for keeping a complete and accurate history of the activities of the Society from year to year.

Section 8. Vacancies in Office: Any vacancy in the office of President-Elect, Secretary, Treasurer, Editor, or Historian, however occasioned, may be filled, pending the election of a successor by the Society, by a majority vote of the remaining Directors. Should an office be filled by vote of the Board of Directors, the person so elected shall not become the officer upon the next annual meeting unless elected as such by the Society according to the procedures set forth for the election of officers of the Society in Article 8, Section 1, of this Constitution.

Article 9. Board of Directors

Section 1. Makeup and Responsibilities: The Board of Directors shall consist of the immediate past-President, the President, President-Elect, Secretary, Treasurer, Editor, and Historian of the Society and two members-at-large. The members-at-large shall be elected at the Annual Meeting of the Society and shall serve a term of one year. Any three (3) Directors shall constitute a quorum for the transaction of business. All properties, property rights, objects and purposes of the Society shall be managed, promoted, and regulated generally by the Board of Directors.

Section 2. Installation and Term of Office: The members of the Board of Directors shall be installed after their election as officers of the Society as set forth in Article 8, Section 1, of this Constitution, at the annual meeting of the Society, or at any adjourned meeting, or at any special meeting called for that purpose. All installed Directors shall serve for a term corresponding to

that of the office in the Society to which each was elected by the members and thereafter until their successors are elected, accept office, and are installed.

Section 3. Annual Meetings: The Board of Directors shall meet immediately after the adjournment of the annual meeting of the members for the transaction of such business as may come before the Board. No notice of such meeting shall be required, and should a majority of the newly-elected Directors fail to be present, those present may adjourn, without further notice to a specified future time.

Section 4. Other Meetings: The Board of Directors shall not be required by this Constitution to hold regular meetings but may, by resolution or otherwise, establish such order of meetings as it deems desirable. Special meetings of the Board shall be held at any time at such places as may be specified in the notice thereof, whenever called by the President or any two (2) or more Directors.

Section 5. Notice: Notice of all meetings of the Board of Directors, other than the annual meeting, starting time, place, and agenda for which the meeting was called, shall be given to each Director by the President or Directors calling the meeting not less than three (3) days prior to the meeting.

Section 6. Vacancies in Board of Directors: Any vacancy in the office of any Director, however occasioned, may be filled, pending the election of a successor by the Society, by a majority vote of the remaining Directors.

Article 10. Miscellaneous Provisions

Section 1. All checks and drafts shall be signed in such manner as the Board of Directors may from time to time determine.

Section 2. At all duly constituted meetings of the Society or Board of Directors of the Society, 10% of the eligible members, or 3 Directors, respectively, present shall constitute a quorum for the transaction of any business presented at such meetings.

Section 3. All notices required to be given by this Constitution relative to any regular or special meeting of the Society or the Board of Directors may be waived by the Directors or members entitled to such notice, either before or on the date of the meeting and shall be deemed equivalent thereto. Attendance at any meeting of the Society of the Board of Directors shall be deemed a waiver of notice thereof.

Section 4. General Prohibitions: Notwithstanding any provision of this Constitution and By-Laws which might be susceptible to a contrary construction. A. No part of the activities of the

Society shall consist of carrying on propaganda, or otherwise attempting to influence legislation.
B. This Society shall not participate in, or intervene in, (including the publishing or distribution of statements), any political campaign on behalf of a candidate for public office.

Article 11. Amendments

Section 1. This Constitution may be altered or amended or By-Laws adopted by a majority vote of the quorum present at any annual or special meeting of the Society membership, provided that notice of such proposed amendment or By-Laws shall have been given to the membership prior to the meeting.

1. Dates ('90,) ('91) refer to last meeting attendance or last dues payment ($5.00).

2. H = Honorary Member

August 27, 1991
T.E.S.
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