

PROCEEDINGS
of the **HAWAIIAN**
ENTOMOLOGICAL
SOCIETY

VOL. 24 NO. 1
September 15, 1982

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Editor: Hawaiian Entomological Society
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PROCEEDINGS
of the
Hawaiian Entomological Society

VOL. 24, NO. 1

FOR THE YEAR 1979

SEPTEMBER 15, 1982

The following minutes and notes were recorded for the year 1979. Manuscripts appearing later in this issue were submitted in later years (editor).

JANUARY

The 877th meeting of the Hawaiian Entomological society was called to order by President Franklin Chang at 2:10 p.m., January 8, 1979, in the Conference Room of the Bishop Museum.

Members present: Bess, Bianchi, Brennan, Chang, Evenhuis, Goff, Hardy, Harris, Higa, Howarth, Joyce, Kunishi, Lai, Look, Manning, Megens, Myles, Miyake, Montgomery, Nagamine, Nakahara, Pinter, Radovsky, Samuelson, Sanidad, Sengbusch, Shiroma, Su, Uchida, Wong.

Visitors: John T. Medler, June A. Medler, D. Muruanda, A. Nagatomi, L. Rodriguez, S. Su.

Common Names Committee: Stan Higa presented a list of 27 proposed new common names for approval by the society. The list was approved as amended.

Unfinished Business: Lee Goff gave a report on the current status of the proposed reorganization of the tick research program at the Rocky Mountain Laboratory. Reorganization is scheduled for February, 1979, and no additional action by HES is recommended at this time.

NOTES AND EXHIBITIONS

Lynxacarus radovskyi Tenorio: (Acarina: Astigmata: Listrophoridae) On October 11, 1978 Mr. Burt Akita of the DOH, Vector Control Hawaii Branch, brought in mites for identification. The mites were brushed off a cat from the Waiakea Homestead area in Hilo. This mite was identified as *L. radovskyi* by Dr. Frank H. Haramoto. Owner of the cat was complaining that a rash had developed on their children. No connection, however, was noted between the rash and the occurrence of *L. radovskyi*. Thus far *L. radovskyi* has only been recorded from the islands of Kauai and Oahu (Tenorio, 1974. J. Med. Ent. 11(5):599-604; and Radovsky and Tenorio, 1975. Proc. Hawaii. Entomol. Soc. XXII(1):16). Thus this collection constitutes a new island locality record. **Jack K. Fujii.**

Thereva nebulosa Kröber: A single specimen of Therevidae from Oahu which keys out to *Thereva nebulosa* Kröber (a California species) was found in the Bishop Museum collection. It carries the labels "Oahu, Koebele," "364," and has the pupal exuvium on the same pin as the adult. Based on the single specimen and the fact that it has Koebele's labels, it seems most probable that this fly was introduced but never released in Hawaii; however, it may be an interception or a capture. **Neal L. Evenhuis.**

Leucopis obscura Haliday: This reports the first recovery of *Leucopis obscura*,

an Eurasian pine aphid predator (Diptera: Chamaemyiidae), on Kauai. One female was reared by V. Tanimoto from pine sprigs infested with *Pineus pini* (Macquart) collected from Lihue, Kauai on December 18, 1978 by D. Sugawa. *L. obscura* was last released in that location in early August, 1978. This species has already become established on Maui and Molokai. Identification was made by V. Tanimoto. **V. Tanimoto and P. Lai.**

Parabemisia myricae (Kuwana): The Japanese bayberry whitefly was collected during the early 1900's (presumably before 1913) in Oloa, Hawaii from coffee by W.H. Johnson. It was first reported as a new state record as *Parabemisia* sp. at the September 14, 1964 meeting (1965. Proc. Hawaii. Entomol. Soc. XIX(1):29) by E. Shiroma from an interception from Hawaii during the previous April. It was recently identified as *Parabemisia myricae* by L. Russell, Systematic Entomology Laboratory, USDA, SEA, retired. S. Nakahara, USDA, APHIS, writes that in addition to the April interception, this species has been intercepted 6 times on *Gardenia* sp. or *G. jasminoides* at Honolulu. The earliest interception at Honolulu is dated March 16, 1954. He also states that this species has been collected from Japan, Taiwan, and Malaya on *Diospyros*, *Elaeocarpus*, *Rhododendron*, *Quercus*, *Machilus*, *Ficus*, *Morus*, *Myrica*, *Maesa*, *Psidium*, *Prunus*, *Gardenia*, *Citrus*, *Salix*, *Thea*, and *Euphoria*. **L. Nakahara.**

New Island Records, reported by **L. Nakahara:**

Callopietria sp.: Light damage by the fern caterpillar was observed on potted fern (*Nephrolepis* sp.) at Kaunakakai, Molokai. Larvae were collected by L. Nakahara on November 29, 1978. Identification was made by S. Higa. This is a new island record. The moth also occurs on Oahu (1971), Hawaii (1973), Kauai (1976), and Lanai (1978).

Melormenis antillarum Kirkaldy: A light infestation of this West Indian flatid was observed on hibiscus at Kaunakakai, Molokai on November 29, 1978 by L. Nakahara. Identification was made by S. Higa. This is a new island record. This species has previously been reported from Hawaii (1967), Oahu (1970), and Maui (1978).

Atherigona reversura Villeneuve: Several adults of this bermuda grass shoot borer were swept from a bermuda grass lawn at Kaunakakai, Molokai on November 29, 1978 by L. Nakahara. No apparent damage was observed. Identification was made by S. Higa. This is a new island record. This fly also occurs on Oahu (1974), Kauai (1974), and Maui (1975).

Agraulis vanillae L.: A light infestation of larvae and adults of the passionvine butterfly was observed on yellow passion fruit at Kaunapali Harbor, Lanai on December 14, 1978. Collection and identification were made by G. Taniguchi, M. Tamashiro, J. Yates, and S. Kahoolahalaha. No adults were detected in Lanai City. This recent immigrant also occurs on Oahu (January 1977), Maui (February 1978), and Kauai (June 1978). This is a new island record. **G. Taniguchi.**

New Host Records reported by **L. Nakahara:**

Orchamoplatus mammaeferus (Quaintance & Baker): Light infestations of all stages of the croton whitefly were observed on *Ficus* sp. at Kaimuki, Oahu on September 29, 1978 by P.Y. Lai. Moderate infestations of all stages were observed on litchi (*Litchi chinensis*) at Wilhelmina Rise (Honolulu), Oahu on October 2, 1978 by K. Teramoto and L. Nakahara. Light infestations (all stages) of this recent immigrant were also observed on *Ochrusia nakaiana* and *Harpullia hillii*, botanic specimens at Foster Botanic Gardens (Honolulu), Oahu on October 13,

1978 by L. Nakahara. In addition, light infestations of all stages were observed on *Eugenia malaccensis* (mountain apple) and *Psidium cattleianum* (strawberry guava) at Nuuanu, Oahu on October 23, 1979 by K. Teramoto. Specimens of all stages were also collected on *Macadamia integrifolia* at Pawaa, Oahu on December 1, 1978 by L. Nakahara. All identifications were made by S. Higa. All are new host records.

Leptynoptera sulfurea Crawford: Moderate infestations of the kamani psyllid were observed on a related species, *Calophyllum vitiense*, at Foster Botanic Gardens (Honolulu) on October 13, 1978 by L. Nakahara. Identification was made by S. Higa. This is a new Hawaii host record. This new immigrant was first reported by Beardsley in the Honolulu airport area (Proc. Hawaii. Entomol. Soc. XXIII(2):181).

Meghimatium bilineatum (Benson): A light to moderate infestation of this slug was observed under potted dendrobium at Waiakea, Hawaii during an October 1978 survey. Individuals were apparently feeding on the exposed dendrobium roots. This species is normally associated with wet forest conditions. Identification was made by R. Munkittrick, USDA, Aphis, San Francisco and confirmed by Y. Kondo and C. Christensen, B.P. Bishop Museum. Although an immigrant, it has been in Hawaii for many years and is listed by E. Caum (1928), Checklist of Hawaiian Land and Fresh Water Mollusca, Bishop Museum Bull. 56, as *Tebenophorus (Philomycus) bilineatus* (Benson). Higa, Mau, Nakahara.

Achatina fulica (Bowdich): Light to moderate infestations of the giant African snail were observed in four adjoining residential seaside lots (2 acres) at Kaunakakai and two adjacent homesteads (1 acre) at Hoolehua, Molokai in November 1978. In addition, a single 4-inch long specimen was recently reported from Pukoo (East Molokai) and there was one unconfirmed report of infestations in Halawa Valley. Infestations were first discovered on Molokai in 1963 at Kalau-papa and Maunaloa. A single snail had been reported from Maunaloa at that time. Recent surveys show *A. fulica* to be in low numbers but well dispersed in Maunaloa. L. Nakahara.

Helix aspersa Müller: Increasing numbers of the brown garden snail have been collected from infested sites at Waimea, Hawaii during the past several months. Snails are "hand-picked" from infested areas (after baiting) by Hawaii Department of Agriculture personnel in an effort to maintain snail population at low levels and to minimize the dispersal of this vegetable, fruit and ornamental pest. Earlier attempts to eradicate *H. aspersa* from the Waimea area (and the State) were reduced to a containment program in May 1978. Recent increases in the number of collected snails are believed to be partially attributed to the unavailability of two spray chemicals that were used in the initial control program as well as to the wet conditions that have prevailed during the latter half of this year resulting in increased snail activity. During the first half of 1978 a total of 158 snails (21% dead) were collected. Between July through October, 920 snails ranging from 5-31+mm. in diameter were hand collected. Of these, only six per cent of the snails were found dead. Over 8,000 snails have been collected to date from infested sites in Waimea since its discovery in October 1976. L. Nakahara.

Vespula pensylvanica (Saussure): A nest of this groundnesting wasp, the western yellow jacket, was confirmed on December 3, 1978 in the Honouliuli Forest Reserve (Waianae Range) at 1300' elevation between Schofield and Kunia, Oahu by R. Mizuta, F. Loquiao, P. Partil, G. Taniguchi, and L. Nakahara. Twenty

one of 28 Boy Scouts were reportedly stung two weeks earlier after inadvertently disturbing the nest while hiking. The nest was situated at the top of a ridge and contained more than a dozen entrances. The primary entrance was 3½ inches long and 1½ inches wide. Entrances to the nest covered an area of approximately 12 sq. ft. On December 11, 1978 a second survey was conducted by G. Komatsu, V. Tanimoto, and L. Nakahara. The nest was approximately 30 inches long, 28 inches wide, 12-15 inches deep (at its deepest point), and was composed of 11-13 tiers. The hive was shaped like an irregular, right triangle when viewed from the top. The nest is believed to be (1) the first nest to be discovered on Oahu, (2) the first nest to be recovered at such a low elevation in Hawaii, and (3) the largest nest uncovered to date in the state. **L. Nakahara.**

Program: Dr. Franklin Chang, University of Hawaii, spoke on the fruit fly eradication program in Taiwan.

FEBRUARY

The 878th meeting of the Hawaiian Entomological Society was called to order by President Franklin Chang at 2:00 p.m. February 12, 1979 in the Conference Room of the Bishop Museum.

Members Present: Arita, Beardsley, Bianchi, Brennan, Chang, Chun, Culliney, Goff, Hardy, Haramoto, Harris, Heu, Howarth, Joyce, Kunishi, Lauret, Look, Montgomery, Nagamine, Samuelson, Sembel, Su, Tenorio, Tsuda.

Visitors: Clyde Kidani, David Marsden.

Membership Committee: Barry Brennan announced that a call for nominees for honorary membership has been included in the annual treasurer's report. Jack Beardsley proposed that a provision be added to the constitution to allow dropping an honorary member who can not be contacted or whose whereabouts are unknown.

Editorial Committee: Franklin Chang announced the appointment of Ray Joyce as new editor of the Proceedings. Jack Beardsley pointed out that the Society receives a stipend from the university library based on exchanges. If the Proceedings do not appear regularly, these exchanges may be halted and the stipend terminated.

Unfinished Business: Frank Howarth read a draft of a letter from the liaison committee concerning the Tri-fly Eradication Program. Jack Beardsley moved that copies of this draft be circulated to the membership for comments. The letter would then be presented to the Society for consideration. This motion was seconded (Bianchi) and passed. Frank Haramoto pointed out that the call for reaction to this project had been called for several months ago, and that responses had already been filed.

New Business: Lee Goff read a memo from Frank Radovsky suggesting that the Society's membership list be made available to the University Press to allow for mailing of publication announcements to members. This was put in the form of a motion which passed unanimously.

NOTES AND EXHIBITIONS

Elasmolomus v-album (Stål): Five specimens of a lygaeid bug new to the state of Hawaii were taken from light trap collections from Hickam Air Force Base and Barber's Point Naval Air Station, Oahu, during the last several months. The

first specimen was collected on Oct. 4, 1978. Specimens were determined by Dr. Jon Herring of the USDA Insect Identification Laboratory as *Elasmolomus v-album* (Stål). He stated that it is native to the Philippine islands and southwest Pacific. Barber (1958, *Insects of Micronesia* Vol. 7, No. 4) treated this species under the name *Aphanus v-album* (Stål) and recorded it from Palau, Yap, Truk and Ponape as well as Java, Solomon Islands and the Philippines. No information is available on its biology. **J.W. Beardsley.**

***Peritrechus saskatchewanensis* Barber:** Six specimens of a second lygaeid bug new to Hawaii were taken from light trap material from Hickam Air Force Base, beginning on Nov. 27, 1978. These were determined by Dr. Jon Herring as *Peritrechus saskatchewanensis* Barber (Barber, 1918. *Jour. N.Y. Entomol. Soc.* 26:60-61). Dr. Herring reported that this species occurs in Western North America in Canada, Washington, Oregon and California. No information is available on its biology. **J.W. Beardsley.**

***Scotinophara tarsalis* (Vollenhoven):** Two specimens of a pentatomid bug new to Hawaii were found in the collection of a student in general entomology at the University of Hawaii, Mr. T. Suyeoka. These specimens, which are labeled "Hawaii, Oahu, Waialae Nui Ridge, 2-XII-1978", were determined by Dr. J.L. Herring as *Scotinophara tarsalis* (Vollenhoven). *S. tarsalis* is known from the Philippines, Taiwan, and the southwest Pacific. It belongs to the subfamily Podopinae, the members of which feed on grasses. Several species of the genus *Scotinophara* have been reported as pests of rice (see Dammerman, 1929, *Agricultural Zoology of the Malay Archipelago*, p. 220). *S. tarsalis* has been reported to occur on sugarcane in Taiwan (Box, 1953, *List of Sugar Cane Insects*, Commonwealth Institute of Entomology, London) although there is no indication that it is a serious pest of that crop. No other specimens of this bug have yet been found here, although Mr. Suyeoka steadfastly maintains that he did in fact collect them on Oahu. **J.W. Beardsley.**

Bugs of the family Pleidae: Several specimens of a small aquatic bug belonging to the family Pleidae have been taken from light trap materials from Hickam Air Force Base, Oahu, beginning on Oct. 20, 1978. This family has not previously been represented in the Hawaiian fauna. Dr. Jon Herring of the USDA Systematic Entomology Laboratory, in letter dated January 4, 1979, stated that the taxonomy of this small family is "in a state of utter chaos," due to recent splitting of the old genus *Plea*, and he is, at present, unable to place our species. The Pleidae are closely related to the Notonectidae; and are called pigmy back swimmers (Merritt and Cummins, 1978, *Aquatic Insects of North America*, p. 128). According to Miller (1971, *The Biology of the Heteroptera*, p. 165), members of this family occur "principally in the still waters of ponds and lakes where they live among aquatic vegetation. They swim on the back and propel themselves by the posterior legs . . ." Females insert their eggs into plant tissue. Merritt and Cummins state that pleids are carnivorous, especially on microcrustacea. The body form is smaller and more convex than that of typical notonectids, and the group is unusual in that the head and thorax are partially fused. Pleids are found in all the major zoogeographic realms except the Ethiopian. **J.W. Beardsley.**

***Rhantus gutticollis* (Say):** Another newly discovered aquatic insect in Hawaii is the dytiscid beetle, *Rhantus gutticollis* (Say). Three specimens of this species, determined by Dr. P.J. Spangler at the U.S. National Museum, were collected by Mr. G.K. Sano, a student in general entomology at the University of Hawaii,

in a small pond at Kula, Maui, on November 1, 1978. According to Leech and Chandler (in Usinger et al, 1956, Aquatic Insects of California), *R. gutticollis* occurs in the southwestern U.S. and Mexico. It is similar in form to the native Hawaiian *Rhantus pacificus* (Boisduval) but is slightly larger, and distinctly paler. **J.W. Beardsley.**

Uloma sp., possibly *bonzica* Marsuel: Two specimens of a tenebrionid beetle new to the Hawaiian fauna were collected at Waimanalo, Oahu, on November 24, 1978, by L. Ho, a student in general entomology at the University of Hawaii. The beetles were found under the bark of a dead tree. The identification was made by Dr. T.J. Spilman of the USDA Insect Identification Laboratory on the basis of a single female specimen which was submitted. *Uloma* is a large genus with many species distributed throughout the Orient, Southeast Asia and Pacific Islands. Dr. Spilman has indicated that males are required for positive identification. *U. bonzica* is a Japanese species. **J.W. Beardsley.**

Odontofroggattia gajimaru Ishii: At the September 1977 meeting of this Society, I reported an *Epichrysomalla* sp. (Family Torymidae) which had been collected in association with fruit of the Chinese banyan, *Ficus retusa*, on Oahu, as a new state record. During December, 1978, I received a letter from Dr. Z. Bouček of the British Museum (Natural History) London, stating that he had re-examined the specimens upon which he had based his earlier determination of *Epichrysomalla*, and had now decided that "it is *Odontofroggattia* very probably *gajimaru* Ishii, described from the Ryukyus." Dr. Carl Yoshimoto, chalcid specialist at the Canada Department of Agriculture in Ottawa, has also examined specimens of this wasp and has stated in a recent letter that "I agree that it is *O. gajimaru* Ishii." **J.W. Beardsley.**

Graptostethus sp.: In a recent paper (Annals Entomol. Soc. America 71:854-858, November, 1978), the Australian hemipterist Alex Slater has synonymized the name *Graptostethus manillensis* (Stål) with *G. servus* (Fabricius), based on a study of the type specimens. However, he states that specimens from Hawaii and the Philippines, identified by R.L. Usinger as *G. manillensis*, represent another species and that he "cannot definitely place these specimens in a described species at present although they are very similar to *G. diffusus* Walker, differing primarily in having orange rather than pale yellow markings ventrally on the thoracic pleura." It appears therefore that the species present in Hawaii should, for the present, be listed as *Graptostethus* sp. rather than *G. manillensis*. **J.W. Beardsley.**

Telostylus lineolatus (Wiedemann): This (Neriidae) is apparently a new family record for Hawaii. One female specimen of *Telostylus lineolatus* (Wiedemann) was discovered in a student collection labeled "Foster Garden, Cacti Patch, Honolulu, 10-X1-78 (M.P. Tan)." The species is known to be widely distributed over Indonesia and S.E. Asia; Australia, Bismarck and Solomon Islands; Ceylon, Christmas and the Line Islands. The larvae have been recorded living under decaying bark of papaya trees. It is evidently a scavenger. Identification was made by Geo. Steyskal, USNM. **D. Elmo Hardy.**

Program: Reports on the National E.S.A. Meetings in Houston were given by Jack Beardsley, Barry Brennan, Elmo Hardy, and Ernest Harris.

MARCH

The 879th meeting of the Hawaiian Entomological Society was called to

order by President Franklin Chang at 2:00 p.m., March 12, 1979, in the Conference Room of the Bishop Museum.

Members Present: Arakaki, Beardsley, Bianchi, Brennan, Chang, Chun, Conant, Goff, Gressitt, Haramoto, Hardy, Harris, Higa, Howarth, Joyce, Look, Marsden, Megens, Nakahara, Samuelson, Sembel, Shroyer, Sugerman, Takara, Tanimoto.

Membership Committee: Barry Brennan proposed David Marsden and Tuti Hadi for membership in the Society. This was seconded and passed unanimously.

Unfinished Business: Frank Howarth presented the revised letter from the liaison committee concerning the Tri-fly Eradication Program. This letter is to be sent to the entire membership for their approval or disapproval, based on the majority of responses to the secretary by the April meeting.

Jack Beardsley reported that the proposed check-list of Hawaiian insects financed by the Amy Suehiro Memorial fund had been held in abeyance pending completion of Vol. 9 of *Insects of Hawaii*. This volume is now completed and Dr. Beardsley wished to know if the Society was still interested in completion of the check-list, pending available funds. Franklin Chang moved that the check-list be continued under Dr. Beardsley's guidance (seconded by Bianchi). The motion was passed unanimously. Dr. Chang moved that a letter be drafted by Dr. Beardsley encouraging Dr. Zimmerman to continue work on the *Insects of Hawaii* series, especially the Coleoptera volumes. The motion was passed.

Editorial Committee: Ray Joyce presented a list of format suggestions for contributors to the Notes and Exhibitions section of the Proceedings. It will be distributed to the membership.

Presentation of Papers: D. Elmo Hardy presented the paper "The Ecology of Endemic Hawaiian *Scaptomyza (Exalloscaptomyza)* (Diptera: Drosophilidae) in Relation to the Morning Glory, *Ipomoea* sp." by W.H. Ibara.

Stan Higa presented the paper "Introductions for Biological Control in Hawaii - 1977 and 1978" by H.K. Nakao, G.Y. Funasaki, S.Y. Higa nad P.Y. Lai.

NOTES AND EXHIBITIONS

Drosophila (Phloridosa) floricola Sturtevant: This new immigrant (Diptera, Drosophilidae) species now occurs in abundance in squash (*Cucurbita pepo* L.) blossoms in a home garden in lower Manoa. They were first seen early in February and have probably not been established more than 6 months. This is a flower breeding species, its life cycle is adapted to that of the flower. The eggs are laid inside the flower during the daytime and the larvae develop in the rotting flower after it drops to the ground. The life cycle and association with the plant is apparently similar to the endemic group of *Scaptomyza (Exalloscaptomyza)* which are associated with morning glory (*Ipomoea*) over the islands. Specimens have been compared with materials in the U.S. National Museum collection by Dr. W.N. Mathis and confirmed to be *Drosophila (Phloridosa) floricola* Sturtevant, 1942, Univ. Tex. Publ. 4213:42. This is a neotropical species which has been recorded from southern California and Arizona, and probably was introduced into Hawaii in cut flowers. **D. Elmo Hardy.**

Liriomyza approximata (Hendel): A single female specimen of thir agromyzidae was collected at Waiamea Canyon, Kokee, Kauai, Dec. 3, 1976 by Chris Thompson. George Steyskal, USDA, A.R.S. determined it as *Liriomyza approximata* (Hendel) 1920, Arch. f. Naturgesch. (1918) Abt. A. 84(7):135 (Dizygo-

myza). This is a Palaearctic species widespread over central and northern Europe. It has been reported mining the leaves of *Daphne mezereum*. D. Elmo Hardy.

Trithyreus ? sp. (Schizomidae: Schizomida): During the last few weeks we have been studying a limestone solution cave which recently opened up under a collapsed sinkhole in the quarry on the University of Hawaii Manoa Campus. We have been rushed in making a biological survey since the University wishes to fill in the sinkhole as soon as possible. Most of the animals found to date are the expected introduced tramp arthropods, but one animal is worthy of note. It is a schizomid, order Schizomida, and represents a new order in the Hawaiian fauna. The Schizomida are a poorly known group of arachnids related to the whip scorpions. There are about 100 spp known most of which are tropical. The Quarry Cave species has not yet been determined but appears to belong to the widespread genus *Trithyreus*. The species most plausibly is introduced, since schizomids are poorly represented in the native fauna of oceanic islands. The adults are relatively large for the order, about 7 mm body length.

So far we have captured about 20 specimens in the cave, all of them along a single 10 m section of passage on a soil and rocky slope caused by the collapse of part of the roof. The individuals were either moving about on the slope or hiding beneath rocks when captured.

On 7 March 1979 a female with 6 young closely hugging her abdomen was found in an earthen cell attached to the under side of a flat rock. The cell was irregularly oval and approximately 1.5 x 1 cm, and resembled the brood chamber of *Trithyreus pentapeltis* (Cook) described by Rowland (1972, Entomol. News 83:69-74). The 1.7 mm long young were arranged parallel to the female abdomen with their heads oriented anteriorly.

A male and female have been kept alive in the laboratory for the past 2-3 weeks. Both have apparently eaten live subterranean termite workers, *Coptotermes formosanus* Shiraki, but actual capture of feeding has not yet been observed. F.G. Howarth and S.L. Montgomery.

Liriomyza trifolii (Burgess): Following inquiries by Dr. R. Mau of a leafminer exhibiting unusual resistance to chemical sprays on chrysanthemums on the Big Island, specimens were sent to the USDA, SEA, Systematic Entomology Laboratory for identification. Another sample from chrysanthemums on Oahu was also sent. Both were identified as *L. trifolii*, a leafminer new to the state, by G. Steyskal. Collections were made on April 19, 1978 at Hawaii Kai, Oahu by L. Nakahara and on January 15, 1979 at Panaewa, Hawaii by R. Mau. In addition, a review of previously collected samples by S. Higa, DOA Taxonomist, showed *L. trifolii* recovered from Molokai by L. Nakahara on July 27, 1978 on watermelon. Samples have also been reared from alfalfa. *L. sativae* Blanchard was the predominant species in the watermelon and alfalfa samples.

Adults and larval mining characteristics are similar to those of *L. sativae*, a leafminer commonly found on many vegetable and ornamental crops in Hawaii. Adults are distinguishable from *L. sativae* by the generally paler coloration, with both vertical bristles on yellow ground, and by the mat greyish mesonotum. *L. trifolii* is recorded from 47 genera of plants in 10 families. Besides chrysanthemums, *L. trifolii* attacks many other hosts such as melon, cucumber, squash, beans, onion, pepper, tomato, and eggplant that are also infested by *L. sativae*. Elsewhere, 16-21 days are required for development from egg to adult stage.

Economic damage, as in *L. sativae*, is caused by large populations of the larval stage destroying leaves and affecting the growth of plants. According to K.A.

Spencer (*Agromyzidae (Diptera) of Economic Importance; 1973*), “. . . evidence from Florida indicates that the most favored host family is the Compositae. In Florida and farther north in Maryland and other adjoining states, *L. trifolii* is considered a serious pest in *Chrysanthemum* nurseries.” Serious outbreaks have also occurred on onion in Venezuela. Distribution includes United States (Florida, Delaware, District of Columbia, Iowa, New Jersey, Ohio, Pennsylvania), Canada (Ontario), Bahamas (Eleuthera), Barbados, Guyana, and Venezuela. L.M. Nakahara.

Acalles sp.: Specimens of a curculionid weevil, apparently a previously unreported immigrant, were determined by Dr. D.R. Whitehead, USDA Systematic Entomology Laboratory, as *Acalles* sp. Four specimens of this weevil are known; the first collected in the Makiki area of Honolulu on Nov. 19, 1969 by John Kjargaard. A second specimen was taken at Kahuluu, Oahu on Nov. 11, 1977 by D. Okamoto. Two other specimens were collected from a dead tree at Waimanalo, Oahu in November 1978 by L. Ho. *Acalles* is a large genus of weevils which includes a number of endemic Hawaiian species. However, the latter are rare insects known only from native forest habitats, whereas the present species is assumed to be a recent immigrant. J.W. Beardsley.

Sibinia sp.: Dr. Whitehead also determined as *Sibinia* sp., specimens of another curculionid weevil which appears to be new to the Hawaiian fauna. This very small weevil (ca. 1.5 mm in length) is represented by three specimens, the first taken May 21, 1976 at Barber's Point Naval Station, Ewa, Oahu by J.W. Beardsley, while sweeping weedy vegetation. The other specimens were taken from light trap collections from the same general area, Nov. 20, 1976 and Nov. 15, 1977. Nothing else is known concerning the habits of this weevil. J.W. Beardsley.

Triops longicaudatus: Stan Higa exhibited a freshwater branchiopod (Crustacea) collected on March 7, 1979 at Nanakuli, Oahu from a rain water ditch by L. Kahale, Hawaii Dept. of Agriculture. Stan Higa.

Program: Larry Nakahara, Hawaii Dept. of Agriculture, spoke on ground-nesting wasps in Hawaii.

APRIL

The 880th meeting of the Hawaiian Entomological Society was called to order by President Franklin Chang at 2:00 p.m., April 9, 1979 in the Conference Room of the Bishop Museum.

Members Present: Arakaki, Bianchi, Chang, Goff, Hardy, Higa, Howarth, Joyce, Look, Marsden, Megens, Rodriguez, Samuelson, Shiroma, Tamashiro.

Visitors: Wan Yao Su.

Unfinished Business: Franklin Chang read a copy of the letter to Dr. Zimmerman commending him on his work and encouraging him to continue with the Insects of Hawaii series.

Lee Goff reported on the results of the vote on the letter concerning the Trifly Eradication Program. 88% of the votes were in favor of sending the letter to Dr. Haramoto. A statement was incorporated into the letter stating the results of the vote and that this letter was the official position of the Hawaiian Entomological Society.

Fred Bianchi and Ray Joyce reported on the Science Fair. The Society's award, a \$25 savings bond, went to Dawn Y. Shinsato for her project "The Con-

trol of *Blattella germanica* with household products.”

New Business: Lee Goff read a request for information concerning activities of R.C.L. Perkins from Anita Manning, Bishop Museum Registrar.

NOTES AND EXHIBITIONS

Nipponorthezia guadacanalina Morrison: Adults of this Homoptera (Ortheziidae) were collected by Thomas D. Arkle, Jr. on Dec. 6, 1978. The specimens were found on the roots of *Alpinia purpurata* which were intercepted during predeparture baggage inspection at Honolulu International Airport. The origin of the host could only be determined as the island of Oahu and, probably, the Kalihi district. This orthezid, *N. guadacanalina*, was first reported from Hawaii by Beardsley in March of 1965 (Proc. Hawaii. Entomol. Soc. XIX(2):125). This identification was made by S. Nakahara, USDA, APHIS, PPQ, Beltsville, MD., and constitutes the first host record. **R. Kunishi.**

Coptotermes formosanus Shiraki: The heart wood of a live gun powder tree, *Trema orientalis* (L.) Bl. (Ulmaceae: Elm Family) was found infested by *C. formosanus* at the University of Hawaii Hilo campus. The tree was felled on 9 March, 1979. This constitutes a new host record for the Formosan subterranean termite. **J. Fujii and K. Kanegawa.**

Syrphidae, Name Change: *Syritta aenigmatopatria* Hardy (1964, Insects of Hawaii, Vol. 11:409) = new synonym of *S. hackeri* Klocker, 1924, Mem. Qd Mus. 8:59. Described from Brisbane, Australia and recorded from Java. This synonym was brought to my attention by Dr. J.R. Vockeroth, Biosystematics Research Institute, Ottawa, Canada. **D. Elmo Hardy.**

R.C.L. Perkins and Fauna Hawaiiensis: Bishop Museum Registrar, Anita Manning, is researching the Museum's involvement in the work of the Sandwich Islands Joint Committee, 1890-1913. The thrust of Ms. Manning's research is the Bishop Museum's contribution, the influence of the project on the Museum, the attitudes of the Museum's founder, first director, and Trustees. Also of interest is the contribution made by island residents who aided Perkins during his field work (1892-1902). Islanders credited with helping Perkins include Francis Gay, "Mrs. Greenwell and her sons," Valdemar Knudsen, Otto Meyer, George C. Munro, Brother Matthias Newell (St. Louis College), and Aubrey Robinson. Additionally, Perkins married Zoe Atkinson, daughter of A.T. Atkinson, in Hawaii in 1902. Ms. Manning would appreciate hearing of any sources of information. She is especially interested in reading letters, diaries, etc., in private hands. **Ms. Anita Manning, P.O. Box 6037, Honolulu, Hawaii 96818, or Ph. 847-3511.**

Program: Franklin Chang, University of Hawaii, spoke on "Some aspects of silk moth production in Taiwan."

MAY

The 881st meeting of the Hawaiian Entomological Society was called to order by President Franklin Chang at 2:05 p.m., May 14, 1979, in the Conference room of the Bishop Museum.

Members Present: Arakaki, Arita, Beardsley, Bianchi, Brennan, Chang, Evenhuis, Goff, Haramoto, Hardy, Heu, Higa, Howarth, Kunishi, Look, Marsden, Megens, Mitchell, Montgomery, Myles, Pinter, Radovsky, Samuelson, Sember, Shiroma, Steffan, Su, Tanimoto, Tenorio, Vargas.

Visitors Present: Stephen Saul, Russell Stradtman.

Membership Committee: Barry Brennan proposed Sabina Swift for membership in the society. Seconded and passed unanimously.

Old Business: Jack Beardsley reported that funds from the Amy Suehiro Memorial Fund may have been expended in publication of type catalogues for the Bishop Museum Entomology Dept. and therefore no longer available for the proposed check-list of Hawaiian insects.

Frank Radovsky suggested the Society consider selling, either to museums or book dealers, duplicate library material which the Society received from HSPA. This material is currently stored in boxes at Bishop Museum.

Frank Chang read a letter from Science Fair winner, Dawn Shinsato, thanking the Society for her award, and a letter from Dr. Zimmerman responding to the Society's letter urging him to continue with the Insects of Hawaii series.

NOTES AND EXHIBITIONS

Rhizoecus caladii Green: During Dec. 1978 Mr. Shin Matayoshi State Department of Agriculture, Hilo, collected specimens of a mealybug on roots of *Diffenbachia* in Hilo. Subsequently, specimens were submitted to me for identification by Mr. Stan Higa, D.O.A. systematic entomologist. I determined the material as a *Rhizoecus* species, possibly *caladii* Green, but without authentic specimens for comparison, was not able to provide a more definite identification. Coccid specialists at the USDA Insect Identification Laboratory examined specimens at my request, but as their collection lacked authentic specimens of *caladii*, they also were unable to make a positive determination. I then sent a slide of the mealybug to Dr. Douglas Williams, coccid specialist with the Commonwealth Institute of Entomology in London. Dr. Williams kindly compared my specimens with Green's type material of *caladii*, and concluded that he could find no differences between them. *R. caladii* was described from specimens from Surinam (Northern Southern America) (Green, 1933, *Stylops* 2:53). The type host is *Caladadium bicolor*. It is also recorded from roots of coffee, and Williams, in his letter to me, states that the British Museum collection contains specimens from "many grass species." This is a new state records. **J.W. Beardsley.**

Tetrastichus coccinellae Kurdjumov: Several dozen specimens of a species of gregarious internal parasite were reared from pupae of the seven spotted lady-beetle, *Coccinella septempunctata* L., collected at Waimanalo, Oahu on *Amaranthus* foliage on April 10, 1979, by Mr. Luis Rodriguez, a UH graduate student in entomology. Specimens were tentatively identified by me as *Tetrastichus coccinellae*, a well-known Palearctic eulophid parasite of coccinellid larvae. The determination was subsequently confirmed by Dr. Carl Yoshimoto, Canada Agriculture Research Division, Ottawa. This is a new state record.

T. coccinellae has been reported to attack other species of Coccinellidae in the subfamilies Coccinellinae and Chilocorinae, as well as *C. septempunctata*, in Europe (Hodek, 1973, *Biology of the Coccinellidae*, p. 207). Hodek (loc. cit.) states that "there is general agreement that parasites of the genus *Tetrastichus*, similarly to *Homolotylus*, considerably limit the population increase of aphidophagous and coccidophagous coccinellids." It remains to be determined what adverse impact this non-beneficial parasite will have on *C. septempunctata*, one of our more successful aphid predators, and also on other coccinellid species as well. **J.W. Beardsley.**

***Ephestia albicostalis* Walker:**¹ *Ephestia albicostalis* Walker, 1863, (type locality Sarawak) is a recent immigrant Phycitine pyralid. Between 27.IX.1978 and 19.IV.1979 I captured 22 and 7 at my porch light in Kalihi Valley, Honolulu, Oahu, at 120 m above sea level. Specimens were sent to Dr. Klaus Sattler at the British Museum (NH). He and Mr. M. Shaffer made the determination. The British Museum (NH) has specimens from many western Pacific localities, including India, Ceylon, Thailand, Sabah, Philippines, Taiwan, Sulawesi, Australia, Fiji, Tahiti, and Marquesas. In addition I have found one undermined in the Bishop Museum Collection from Samoa. No information on its biology is available at the present time. **F.G. Howarth.**

Program: Dr. Stephen Saul, University of Hawaii, spoke on "Genetic control of fruit flies in Hawaii: Myth or reality?"

JUNE

The 882nd meeting of the Hawaiian Entomological Society was called to order by President Franklin Chang at 2:10 p.m., June 18, 1979, in the Conference room of the Bishop Museum.

Members Present: Arakaki, Chang, Culliney, Evenhuis, Goff, Hardy, Higa, Joyce, Krauss, Lauret, Look, Manning, Marsden, Samuelson, Steffan.

Visitors Present: Russell Strandtmann.

Common Names Committee: Stan Higa reported that the common names list had been finalized, but not yet entered on computer cards.

Editorial Committee: Ray Joyce reported that 23(1) of the Proceedings is ready for distribution and the Index to Vol. 22 is in proof.

NOTES AND EXHIBITIONS

***Rhizobius circularis* Sharp:** After examining representative specimens from Hawaii (i.e., from the Bishop Museum and Hawaii Department of Agriculture collections), R.D. Pope, Coccinellid specialist, British Museum (Natural History), has come to the conclusion that the black lady beetle, *Rhizobius ventralis* (Erichson, introduced into Hawaii some years ago, is a misnomer. It should be instead, *Rhizobius circularis* Sharp. In a letter from Mr. Pope, he states that, "I have prepared a paper clarifying the identities of the species known as *Rhizobius ventralis* and hope it will be published fairly early in 1980 — Koebele's import to Hawaii was a misidentification. **Stan Higa.**

New Immigrant Longhorned Grasshopper:² One large female specimen of this tettigoniidae was collected in the Manoa home of B. Komatsu by her grandson, P. Kuromoto on May 7, 1979. Attempts to identify this insect, probably a tropical forest species, through local entomological resources have not been successful. The possibility of sending this insect out of the State for identification is pending the location of a specialist. This is the only specimen collected to date in spite of surveys conducted in the Manoa area soon after the discovery of this unusual exotic insect. **S. Higa.**

¹Name subsequently changed to *Assara albicostalis*, see note presented at July meeting.

²Later identified as *Pristonotus* sp. *tuberosa* (Stål) by J. Marshall of the British Museum Nat. History.

Scatopse notata (Linn.): This constitutes a new record for this Scatopsidae species from the state. Two female specimens were collected at Pier 32, light trap, Honolulu, April 1979 (J.W. Beardsley). Identification was made by Dr. Edwin F. Cook, University of Minnesota. This species is widespread over the Nearctic, Neotropical and Palaearctic Regions. **D. Elmo Hardy.**

Manana Island Ectoparasites: Trapping of mice, *Mus musculus*, on Manana Island on 28.V.1979, has revealed the continued presence of the Plague Flea, *Xenopsylla cheopis* (Rothschild, 1903). This flea was previously reported from Manana Island by Tomich et al. (1968). Occurrence of this flea on mice is unusual as rats are the normal hosts for the species.

On the same trip specimens of the Tropical Fowl Mite, *Ornithonyssus bursa* (Berlese, 1888) (Macronyssidae), were recovered from nest material of the sooty tern, *Sterna fuscata*.

Specimens of larval and adult ticks were recovered from nest material of Wedge-tailed Shearwaters, *Puffinus pacificus*, and Sooty Terns, *Sterna fuscata*. Specimens have been tentatively identified as *Ornithodoros* sp. (*capensis* group). **M.L. Goff, H. Megens, R.W. Strandtmann and W.A. Steffan.**

Syringophilidae Mites: Examination of birds for ectoparasites in connection with the study of avian malaria on the island of Hawaii has revealed mites of the family Syringophilidae in the quills of birds: the Japanese White-eye (*Zosterops japonica*), Palila (*Psittirostra bailleui*), Amakihi (*Loxops virens*) and Elepaio (*Chasiempis sandwichensis*). Specimens have been tentatively assigned to the genus *Syringophiloidus* Kethley, 1970, and species determinations are pending. There is a high probability that the species from the endemic birds will be underscribed as no samples have been taken from endemic Hawaiian birds and of the 122 species of Syringophilidae, only 8 have been reported from more than 1 host species. These are the 1st records for this family from a white-eye in Hawaii. **M. Lee Goff.**

Program: Dr. Wallace Steffan, Bishop Museum, spoke on: "Techniques of Numerical Taxonomy Applied to a Biosystematic Study of *Toxorhynchites*."

JULY

The 883rd meeting of the Hawaiian Entomological Society was called to order by President-Elect Frank Howarth at 2:00 p.m., on July 9, 1979 in the Conference Room of the Bishop Museum.

Members Present: Arakaki, Evenhuis, Goff, Howarth, Joyce, Manning, Megens, Ota, Steffan, Sugerma, Uchida.

Visitors: Russell Strandtmann.

Editorial Committee: Ray Joyce reported that Vol. 23:2 with 13 papers was closed for publication. The new edition of the AIBS Manual was exhibited and members were urged to use it as an aid for the preparation of papers.

Announcements: It was announced that Asher Ota was elected to the Executive Committee of the Pacific Branch of ESA. The next branch meeting will be held in Boise, Idaho.

Presentation of Papers: Ray Joyce announced receipt of the paper: "Evaluation of corn earworm damage and incidence of blacktip in corn grown in Hawaii and its significance to pest management" by R. Vargas and T. Nishida.

NOTES AND EXHIBITIONS

Toxorhynchites amboinensis (Doleschall): June 30, 1979, at Kahaluu, Oahu, a 30-gallon garbage can, containing about 25 gallons of water and numerous *Philodendron* slips, was emptied and all mosquitoes and other invertebrates were examined. The water had a high concentration of organic material. An unusually large number of *T. amboinensis* larvae were noted, including seventeen 4th instars, four 3rd instars, and one 2nd instar larvae and 24 eggs. One adult female was flying over the container as it was being emptied. Only two 3rd instar *Aedes albopictus* (Skuse) were in the container. Numerous psychodid larvae and the *Toxorhynchites* larvae were observed feeding on both the psychodid larvae and newly emerged psychodids. In this case, *T. amboinensis* certainly seemed to be controlling *Aedes albopictus*. **W.A. Steffan.**

Tropisternus salsamentus Fall: A single adult specimen of this new hydrophilid was taken alive in a swimming pool in Aina Haina, Oahu on Mar. 21, 1979. This is an extension of its distribution on Oahu. *T. salsamentus* was first taken on Maui in July of 1968 (P.H.E.S. 23(3):325) and was later detected in light trap catches on Oahu. The species is found breeding in saline lagoons along the coast of the southern half of California. **C.R. Joyce.**

Rhantus gutticollis (Say): Two specimens of this dytiscid beetle were found alive in a swimming pool in Aina Haina, Oahu on May 24, 1979. The species was first reported as taken from a pond in Kula, Maui on Nov. 1, 1978 (Proc. H.E.S.24(1):5). Its distribution includes the southwestern portion of the U.S. and Mexico. **C.R. Joyce.**

Wallacea albiseta de Meijere: A specimen of this stratiomyid fly was recently taken at light in a home in Aina Haina, Oahu, indicating that the species must be well established and widely dispersed on Oahu. It was first collected on Oahu, Waahila ridge, by Frank Howarth Dec. 3, 1973 (Proc. H.E.S. 22(1):4). Other specimens have turned up in Bishop Museum collections from Dillingham Air Force Base and St. Louis heights trail. **C.R. Joyce.**

Assara albicostalis Walker, 1863: In response to my inquiry, Dr. Klaus Sattler, British Museum (NH), has supplied the following additional information on the newly established phycitine pyralid reported at the May 1979 meeting as *Ephestia albicostalis*. *A. albicostalis* was described in *List Specimens Lepid. Insects Colln Br. Mus.* 27:80. The species was then erroneously listed as a synonym of *Etiella zinckenella* (Tr.) by Hampson, 1896, *Fauna Br. India*, Moths 4:74 [See Whalley, P.E.S., 1973, The genus *Etiella* Zeller (Lepid.: Pyralidae): A Zoogeographic and taxonomic study. Bull. Br. Mus. (NH) Entomology 28(1):5]. According to data labels on specimens in the BM(NH) collection, *A. albicostalis* has been reared from Cocoa in Sabah and the fruits of *Shorea bracteolata* in Malaysia. In *A host list of the insects of Thailand* 1965:65 (published by the Thai Dept. Agric. and U.S. Operations Mission to Thailand) a *Cateremna* sp. nr. *albicostalis* (Wlk.) was bred from caterpillars boring in the fruits of mango. The genus *Cateremna* is currently considered to be a synonym of *Assara*, and a specimen on which this specimen is based is in the BM(NH) collection and agrees with *A. albicostalis*. **F.G. Howarth and Klau Sattler.**

Program: Mr. Neal Evenhuis, Bishop Museum, spoke on Pollination ecology of Bombyliidae."

AUGUST

The 884th meeting of the Hawaiian Entomological Society was called to order by President Franklin Chang at 2:00 p.m., in the Conference Room of the Bishop Museum, 13 August, 1979.

Members Present: Bianchi, Chang, Evenhuis, Goff, Ikeda, Joyce, Look, Marsden, Megens, Tenorio.

Visitors: Russell Standtmann.

Editorial Committee: Ray Joyce exhibited a list of suggestions for preparing papers for publication along with a list of reference helpful for paper preparation.

New Business: James Ikeda presented several tour packages to the members for the International Congress of Entomology to be held in Kyoto, Japan in 1980.

Franklin Chang announced that 7 entomologists from the Republic of China would be visiting from 9-12 Sept. Wallace Mitchell, who is in charge of the arrangements for the group, suggested that in lieu of a regular Sept. meeting a special program be set up for exchange of ideas with these visitors and HES members on Wednesday 12 Sept.

Ray Joyce noted that January 1980 marks the 75th anniversary of HES and suggested that some plans should be made to celebrate this event.

NOTES AND EXHIBITIONS

Mites from Hawaiian Crow: Through the courtesy of Hawaii Fish and Game Division, I was able to process a juvenile Hawaiian Crow, *Corvus tropicus*, for ectoparasites. This specimen had been found dead on the Palani Ranch, Hawaii Island, by J.G. Giffin on June 20, 1978 and had been frozen in a plastic bag by Fish and Game Division personnel. Only feather mites of the superfamily Analgoidea were recovered from the specimen. Quills were examined for Syringophilidae, but with negative results. Feather mites were identified to genus by Dr. W.T. Atyeo, University of Georgia. Gabucinidae: *Gabucinia* prob. *delibatus* (Robin, 1877); Analgidae: *Mesalgoides* sp. (Gaud & Atyeo, 1967 — genus): Analginae — many ♂♂ & ♀♀, no identification possible at this time. These records are the first records of feather mites from the Hawaiian Crow, which has a currently estimated total population of between 25 to 40 individuals. This is also the first record of the genus *Mesalgoides* from Hawaii. **M. Lee Goff.**

Name Corrections in Diptera: Correction of species name in Vol. 23(1):4. The horn fly, *Haematobia irritans* (Linn.), was given as "*H. serrata* Desvoidy." This is a synonym of *irritans*. The determination was attributed to me but I did not supply the name "*serrata*," this dates to ancient Hawaiian literature. This name has not been used since ca. 1920.

Stratiomyidae: Correction of name for the *Odontomyia* established on Oahu. This was earlier identified by Dr. M.T. James as *regisgeorgii* (Proc. Hawaii Entomol. Soc. XXIII(2):160). Dr. James has now decided that this is *O. ochropa* Thomson (1869, in K. svenska fregatten Eugenicus resa, Zool., Dipt.:456., described from Manila) from the Philippines, Thailand, Singapore and Java. **D. Elmo Hardy.**

Agraulis vanillae (L.): This adventive Heliconiidae has spread to the island of Kauai, and its caterpillars are commonly seen feeding on *Passiflora foetida* Linn. at the lower elevations of the island. Recently adults of *Agraulis* from the lowlands were released in the forested highlands of Kokee, at elevations of approxi-

mately 4,000 ft. The purpose of the releases was to promote the establishment of *Agraulis* on *Passiflora mollissima*, commonly known as the Banana Poka, a prolific vine which is well along the way to eliminate the extant forest of Kokee. The purpose has not been attained.

Fred Bianchi reports that Dr. Charles Riotte and he had stayed in Kokee from mid-June to mid-July and in that time had not seen a single *Agraulis* butterfly laying eggs on the Banana Poka nor a single *Agraulis* caterpillar feeding on the plant in the open. The Heliconiid, however, appears to be securely established and is fairly abundant on *Passiflora manicata* Pers., an infertile redflowered horticultural variety which was planted in Kokee about 15 years ago and has not spread beyond the small area of its original planting.

Bianchi also reports finding three small parasitized caterpillars and one parasitized egg of *Agraulis* on *P. manicata*. A braconid which appeared to be *Hyposoter exiguae* (Viereck), was involved with the caterpillars, and a minute undetermined hymenopteron emerged from the egg through a ragged hole and was found as a naked pupa next to the egg case. **F. Bianchi.**

Program: Fred Bianchi spoke on "*Migdolus morrettesii* in Brazil."

SEPTEMBER

The 885th meeting of the Hawaiian Entomological Society was called to order by President Franklin Chang at 2:00 p.m., 17 September, 1979, in the Conference Room of the Bishop Museum.

Members Present: Arakaki, Brennan, Bianchi, Chang, Culliney, Evenhuis, Goff, Haramoto, Harris, Higa, Howarth, Ikeda, Joyce, Kunishi, Look, Megens, Mitchell, Ota, Staffan, Stein.

Visitors: Dan Gerling, Eric Jang, J.T. Medler, Denise M. Miyahara.

Reports of Officers and Committees: Franklin Chang announced the members of the Nominating Committee as follows: Frank Haramoto (Chairman), Asher Ota, and JoAnn Tenorio.

NOTES AND EXHIBITIONS

Icerya purchasi Maskell: The cottony cushion scale was found infesting a young small ironwood tree, *Casuarina equisetifolia* L., on Tern Island, French Frigate Shoals. The tree was planted in front of the double garage adjacent to the main building. This is a new record of this insect species from Tern Island. **W.C. Mitchell** for **Derral Herbst**.

Anthrax sp.: Specimens of *Anthrax* (Bombyliidae) found throughout the major islands in the Hawaiian chain since their introduction around 1955 were previously identified as *Anthrax distigma* Wiedemann (Hardy, 1960, in *Insects of Hawaii* Vol. 10, p. 321). Subsequent comparison of the Hawaiian specimens with the type series of *Anthrax distigma* in the Leiden Museum (descriptions of the Leiden specimens kindly provided by Dr. P.J. van Helsdingen) showed the Hawaiian specimens to be an undescribed species belonging to the *Anthrax distigma* complex. This species complex is found throughout the Pacific and consists of a number of very similar appearing taxa. The specimens appearing closest to the Hawaiian specimens have been found in China. **Neal L. Evenhuis.**

Cydia sp. nr. **falsifalcella** (Walsingham): On March 5, 1979, larvae of a tortricid moth were observed boring into both live and dead stem tissue of the

Hawaiian vetch, *Vicia menziesii* (Fabaceae). The collection was made on the east flank of Mauna Loa on Keauhou Ranch at 1741 m elevation. This observation was particularly important because in 1978 this rare legume, now located only on the Keauhou Ranch and within the Kilauea Forest Reserve between 1550 and 1750 m elevation, became the first listed endangered plant species of the Hawaiian Islands under the Endangered Species Act of 1973.

Adult moths emerged from *V. menziesii* on 27 March and were identified by Dr. F.G. Howarth as *Cydia* nr. *falsifalcella* (Walsingham). Dr. Howarth indicated that the specimens may be a diminutive form of *C. falsifalcella*. The *Vicia* infestation conforms to the endemic *Cydia* host pattern of only attacking legumes. This tortricid was originally described as *Adenoneura falsifalcellum* by Walsingham in 1907. Type specimens were collected by R.C.L. Perkins in 1896 at Olaa (elev. 610 m) on the island of Hawaii, but nothing at that time was known about the biology or host plant. If *C. falsifalcella* is host specific, Perkins' collection at the type locality may indicate a wider distribution and more variable habitat for this endangered plant species around the turn of the century.

E.C. Zimmerman states that *C. falsifalcella* is similar in external appearance to and was confused with *C. parapteryx* (Meyrick) until the latter was described in 1932. The life history data recorded for *C. falsifalcella* by Perkins and Swezey apply to *C. parapteryx*. J.D. Stein.

Program: Wallace Mitchell and Asher Ota presented their impressions of the IX International Congress of Plant Protection.

OCTOBER

The 886th meeting of the Hawaiian Entomological Society was called to order by President Franklin Chang at 2:00 p.m., 15 October, 1979, in the Conference Room of the Bishop Museum.

Members Present: Bianchi, Chang, Goff, Haramoto, Higa, Howarth, Joyce, Look, Marsden, Megens, Mitchell, Rodriguez, Sherman, Steffan, Sugerman, Yoshioka.

Visitors: Dan Gerling, Clyde Kidani, Denise Miyahara.

Nomination Committee: Frank Haramoto announced the slate of candidates for 1980 as follows: President elect — M. Lee Goff and Ron Mau. Secretary — David Marsden and Darwin Yoshioka. Treasurer — Ken Kaneshiro and Po-Yung Lai. Advisor — Ernest Harris and Toshiyuki Nishida. As there were no nominations from the floor, the slate was accepted as presented.

Membership Committee: Frank Haramoto nominated Stephen Saul for membership in the Society. He was elected unanimously.

New Business: Frank Chang announced that a set of proposed changes to the society's constitution had been drafted by the executive committee. Copies of the affected passages and the proposed changes will be circulated to the local membership prior to the November meeting.

NOTES AND EXHIBITIONS

Leucophaea maderae (Fabricius): Two adult specimens of *L. maderae*, Madeira cockroach, were collected by Mr. Harry Toki, manager of the Hawaii Guava Cooperative Association, in Hilo on September 21, 1979. The cockroaches were collected from empty guava boxes in the packing house. This is the first time

that I have observed this species in the wild. **J.K. Fujii.**

Mites from stem galls: Mr. Ken Baker, Hawaii Field Research Center, Hawaii, forwarded several stem galls from Lama, *Diospyros ferrea*, collected in Hawaii Volcanoes National Park. Examination of these galls revealed 3 species of mites. The eriophyid, *Aceria swezeyi* (Keifer), was present in large numbers and was the cause of the galls. This species was originally described from *Maba sandwichensis* on Oahu by Keifer (1940). The original description indicates this species caused leaf-galls, but Krauss (1963) (Proc. Hawaii Entomol. Soc. 15(2):219) reported this species forming stemgalls on Lama in the North Kona Area. Also present were 2 predatory species: the cheyletid, *Cheletogenes ornatus* (Canestrini & Fanzago, 1876) and the phytoseiid, *Phytoseius Hawaiiensis* Prasad, 1968. *Cheletogenes ornatus* has been previously reported from *Ficus* sp. on Oahu by Chilson (1959, Proc. Hawaii Entomol. Soc. 17(1):24). *Phytoseius hawaiiensis* has been reported from all the main Hawaiian Islands. **M. Lee Goff.**

Nephaspis amnicola Wingo: A new coccinellid was released on Oahu for the control of the spiraling whitefly, *Aleurodicus dispersus* Russell. The initial release of about 100 adults was made at the Walker Estate in Nuuanu by Hawaii Department of Agriculture personnel on October 12, 1979 following the Board of Agriculture approval to release this predator. The coccinellid was introduced by Exploratory Entomologist R. Burkhart, from Honduras and Trinidad in May and July 1979.

Identification of the beetle was made by R.D. Gordon, Systematic Entomology Laboratory (USDA), Beltsville, Maryland. According to Dr. Gordon, in his "Review of the genus *Nephaspis* Casey . . ." all species of *Nephaspis* are restricted to the Western Hemisphere. Presently, there are 4 described species in the group of which *N. amnicola* is the only species found north of Panama. In the U.S. it has been recorded from Orlando, Florida and Boone, Iowa. Little is known of the biology of the group except that the genus apparently is restricted to feeding on members of the family Aleyrodidae.

Description: Small, pubescent, generally resembling *Scymnus*. Length ranges from 1.25-1.50 mm. Color generally piceous to black. Females are unicolorous while males are bicolorous with greater part of pronotum yellow.

Reference: Gordon, R.D. 1972. "A Review of the Genus *Nephaspis* Casey and a Comparison with the Genus *Clitostethus* Weise (Coleoptera: Coccinellidae)," Separata Da Revista De Agricultura, Vol. XLVII N. 3-4, Piracicaba, Est. S. Paulo, Brazil. **Stan Higa.**

Coptotermes formosanus (Shiraki): The subterranean termite has become a problem in greenhouses or shade houses rearing leather leaf ferns. The nurseries utilize wood chips as a media for plant propagation. Keeping the chips wet for optimum growth of the leather leaf fern encourages the development of the subterranean termite. A grower in the Kaneohe area had a large population of the subterranean termites in the media but there was no conclusive evidence the termites were damaging the rhizomes. **W.C. Mitchell.**

Liriomyza huidobrensis (Blanchard) and **Liriomyza sativae** Blanchard: Two of Hawaii's most common species of agromyzid leaf miners in vegetable crops now have approved ESA common names (Common Names of Insects and Related Organisms, 1978 Revision, Entomol. Soc. of America, Special Publication 78-1, D.W.S. Sutherland et al). The common names are Pea Leafminer for *L. huidobrensis* and Vegetable Leafminer for *L. sativae*. **W.C. Mitchell.**

Program: Dr. Gerling, Dept. of Zoology, Tel Aviv University, spoke on "Biological studies with carpenter bees."

NOVEMBER

The 887th meeting of the Hawaiian Entomological Society was called to order by President Franklin Chang at 2:00 p.m., 19 November, 1979, in the Conference Room of the Bishop Museum.

Members Present: Chang, Evenhuis, Goff, Higa, Howarth, Joyce, Look, Montgomery, Radovsky, Riotte, Samuelson, Sengbusch, Shroyer, Steffan, Tsuda.

Visitors: J.E.M.H. van Bronswijk, N.F. Hadley, M. Wooster.

Finance Committee: For the Committee Dick Tsuda reported changes in page charges and subscription rates as follows:

1. *Members* — Page charges to increase from \$12 to \$18/page for the first 10 pages. Additional pages, \$25/page. Effective with Vol. 23(3).
2. *Non-members* — Page charges to increase from \$12 to \$25/page. Effective with Vol. 23(3).
3. *Subscribers* — Subscription cost to increase from \$7 to \$10/copy starting with Vol. 23(2).

These changes were deemed necessary by the Finance Committee, with the approval of the Execution Committee due to the increased cost of printing and mailing of the Proceedings. A 25% discount is available on all available backfile numbers up to Vol. 22(3). At present, 12 numbers of the Proceedings are out of print.

Old Business: Franklin Chang presented the series of changes to the constitution to the members for their comments and approval. The changes were ratified as amended by a majority vote of members present.

NOTES AND EXHIBITIONS

Mice ectoparasites from Kahoolawe: Through the courtesy of the U.S. Navy, 3rd Fleet, Pearl Harbor, personnel from the Bishop Museum and EPMU-6 were able to collect specimens of rodents on the island of Kahoolawe. These collections were made on 8 & 9 November, 1979, at 2 localities: Hakioawa and Smuggler's Cove. The only rodent collected at either locality was the common House mouse, *Mus musculus*. The mice were abundant at both localities and were active during daylight hours. At Smuggler's Cove, mice were particularly active, moving into rooms occupied by collectors to forage in the afternoon.

A total of 29 mice were collected and processed for ectoparasites. The Oriental Rat Flea, *Xenopsylla cheopis* (Rothschild), was recovered from all of the mice collected at Smuggler's Cove and 2 of the 8 collected at Hakioawa. Lack of fleas on mice at Hakioawa may be attributed to the activities of the ants in the area. Mice left in snap-traps longer than 20 min. were almost completely consumed by ants. In mice collected as soon as captured from 2 to 20 fleas were recovered per individual with a mean of 9 fleas per mouse.

Mites recovered from mice were the Tropical Rat Mite, *Ornithonyssus bacoti* (Hirst), the laelapine, *Androlaelaps hermaphrodita* (Berlese), and the fur mites, *Afrolistophorus musculus* (Wilson and Lawrence), *Myobia musculi* (Schrank), *Myocoptes musculus* (Koch), and *Radfordia affinis* (Poppe).

These records constitute the first records of these species from the island of Kahoolawe. The record of *X. cheopis* is unusual in that this species usually parasitizes rats. A similar situation was reported (June, 1979) for this species infesting mice from Manana Island by Goff et al. **M. Lee Goff, C. Sengbusch, and M. Wooster.**

Kauaiian spp.: Two new species of the Hawaiian geometrid genus *Kauaiina* were recently described by me in Entomologische Zeitschrift 89:219-224. One was collected in the Alakai Swamp on Kauai, the location which already in Meyrick's time produced *Kauaiina ioxantha*. This new species, *Kauaiina alakaii*, varies in color from dark wine-red to clay-brown and has a wingspread of 33-37 mm. The Alakai Swamp is in an altitude of 1200 m. The other new species was collected on the island of Molokai at 1290 m above Puu Kolekole. *Kauaiina molokaiensis* is dark wine-red in the males and clay-brown in the females. It has a wingspread of 31 mm in the male and 36 mm in the female. Collector of both new species was S.L. Montgomery, University of Hawaii, Honolulu, Hawaii. Types are in the Bishop Museum. **J.C.E. Riotte.**

Program: Dr. Neil Hadley, Dept. of Zoology, Arizona State University, spoke on "Water regulation in insects."

DECEMBER

The annual dinner meeting, constituting the 888th meeting of the Hawaiian Entomological Society, was held at the Ranch House, 5156 Kalaniana'ole Highway, on December 10, 1979, beginning at 6:00 p.m. Dr. Wallace Mitchell served as Master of Ceremonies for the occasion.

Members present: Arita, Bess, Brennan, Chang, Evenhuis, Goff, Haramoto, Hardy, Harris, Heu, Howarth, Joyce, Kanegawa, Kritzer, Look, Maui, Mitchell, Montgomery, Myles, Nagamine, Nishida, Ota, Radovsky, Rice, Riotte, Sakamura, Saul, Sherman, Sugerman, Tanimoto, Vargas, Yoshida, Yoshioka.

In addition to the 33 members, 23 wives and other guests were in attendance and were introduced. Following the dinner, Franklin Chang recognized the officers who had served during 1979. Frank Haramoto announced the officers who had been elected for 1980 as follows:

President-elect	Ronald Mau
Secretary	Darwin Yoshioka
Treasurer	Kenneth Kaneshiro
Advisor	Toshiyuki Nishida

Franklin Chang gave his presidential address entitled "Insects, Poisons and Medicine: the Other 1%." After the awarding of door prizes, the meeting was adjourned at 9:15 p.m.

NEW IMMIGRANT RECORDS FOR THE YEAR 1979

The following species were reported in the Hawaiian Islands for the first time during 1979, or earlier, on the dates reported in the text. Species marked with an asterisk may be considered as doubtfully established as records are based on single collections.

CHANCE IMMIGRANTS

	Page
<i>Elasmolomus v-album</i> (Stål) (Hemiptera: Lygaeidae)	4
<i>Peritrechus saskatchewanensis</i> Barber (Homoptera: Lygaeidae)	5
<i>Scotinophara tarsalis</i> (Vollenhoven) (Hemiptera: Pentatomidae)	5
<i>Pleidae</i> , Gen. & sp. ? (Hemiptera)	5
<i>Rhantus gutticollis</i> (Say) (Coleoptera: Dytiscidae)	5
* <i>Uloma</i> sp. poss. <i>Bonzica</i> Marseul (Coleoptera: Tenebrionidae)	6
<i>Telostylus lineolatus</i> (Wiedemann) (Diptera: Neriidae)	6
<i>Drosophila</i> (<i>Phloridosa</i>) <i>floricola</i> Sturtevant (Diptera: Drosophilidae)	7
* <i>Liriomyza approximata</i> (Hendel) (Diptera: Agromyzidae)	7
<i>Trithyreus</i> ? sp. (Schizomidae: Schizomida) (Arachnid)	8
<i>Liriomyza trifolii</i> Burgess (Diptera: Agromyzidae)	8
<i>Acalles</i> sp. (Coleoptera: Curculionidae)	9
<i>Sibinia</i> sp. (Coleoptera: Curculionidae)	9
<i>Rhizococcus caladii</i> Green (Homoptera: Pseudococcidae)	11
<i>Tetrastichus coccinellae</i> Kurdjumov (Hymenoptera: Eulophidae)	11
<i>Assara albicostalis</i> Walker (Lepidoptera: Pyralidae)	12, 14
* <i>Pristonotus</i> sp. ? prob. <i>tuberosa</i> (Stål) (Orthoptera: Tettigoniidae)	12
<i>Scatopse notata</i> (L.) (Diptera: Scatopsidae)	13
<i>Syringophiloidus</i> sp. (Acari: Syringophilidae)	13

NAME CHANGES AND CORRECTIONS NOTED IN 1979

Previous name	Changed to	*Reason	Page
<i>Lynxacarus</i> sp.	<i>Lynxacarus radovskyi</i> Tenorio	ND	1
<i>Parabemisia</i> sp.	<i>P. myricae</i> (Kuwana)	D	2
<i>Epichrysomalla</i> sp.	<i>Odontofroggattia gajimaru</i> Ishii	CD	6
<i>Graptostethus manillensis</i> (Stål)	<i>Graptostethus</i> sp. ?	MI	6
<i>Syrirta aenigmatopatria</i> Hardy	<i>S. hackeri</i> Klocker	S	10
<i>Rhizobius ventralis</i> (Erichson)	<i>R. circularis</i> Sharp	MI	12

*ND = newly described
MI = mis-determined

D = determined
S = synonym

CD = corrected det.
CC = correct combination

Previous name	Changed to	*Reason	Page
<i>Odontomyia regisgeorgii</i> Macquart	O. ochropa Thomson	MI	15
<i>Anthrax distigma</i> Wiedemann	Anthrax sp.	MI	16
<i>Trichogramma confusum</i> Vigianni	T. chilonis Ishii	S	123
<i>Ephestia albicostalis</i> Walker	Assara albicostalis Walker	CC	12, 14

BENEFICIAL INSECTS PURPOSELY INTRODUCED
AND FOUND ESTABLISHED

	Page
Nephaspis amnicola Wingo (Coleoptera: Coccinellidae)	18

*ND = newly described
MI = mis-determined

D = determined
S = synonym

CD = corrected det.
CC = correct combination

OFFICERS AND COMMITTEES FOR 1979

ELECTED OFFICERS

<i>President</i>	Franklin Chang
<i>President-Elect</i>	Frank Howarth
<i>Secretary</i>	Lee Goff
<i>Treasurer</i>	Barry Brennan
<i>Advisor</i>	D. Elmo Hardy
<i>Advisor (Past President)</i>	James Ikeda

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<i>Editorial</i>	C.R. Joyce, Editor G.A. Samuelson, Co-Editor E.J. Harris, Asher K. Ota Minoru Tamashiro, JoAnn Tenorio
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<i>Science Fair</i>	Fred Bianchi, Chairman C.R. Joyce
<i>Liaison Committee</i>	Frank Howarth, Chairman Ken Kaneshiro, Steve Montgomery
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OBITUARIES

DR. IRWIN MAYER NEWELL, 1916-1979

Irwin Mayer Newell, for more than 25 years a member of the staff and faculty, Agriculture and Science, Univ. of California, Riverside, died July 12, 1979. "Irv", as known to his friends and colleagues, was born September 15, 1916, Coeur D' Alene, Idaho. He received a B.S. degree in zoology in 1939 and an M.S. in entomology in 1941 from the State College of Washington. Later at Yale University he was granted a M.S. degree in zoology (1942) and a Ph.D. (1945). He was an instructor in zoology at the Univ. of Oregon from September 1946 to December 1948, and served as an associate entomologist at the Univ. of Hawaii from January 1, 1949 to December 31, 1953 in the Department of Entomology.

From 1954 to his death he served with distinction as a staff member of the Univ. of California at Riverside. He was a recognized scholar with exceptional talents, receiving numerous grants and honors and contributing many scholarly papers, especially in the field of acarology. Irv, however, continued his interest in Hawaiian entomology. He maintained his active membership in the Society for 30 years after joining in 1949. He contributed three valued papers, as senior author, to the Proc. Hawaiian Entomol. Soc. on fruit fly research in Hawaii. In addition he submitted three papers to the Proc. on his first love, the Acari. His wife, Fern, daughter, Diane, and son, Kermit, survive him.

Henry A. Bess, Emeritus Prof., Dept. of Entom., Univ. of Hawaii

DR. DAVID D. BONNET, 1914-1979

Dr. David D. Bonnet, a medical entomologist who made major contributions in the field of mosquito control in Hawaii and the Pacific died July 12, 1979 of lymphosarcoma at the age of 64. His career involved 37 years, mostly with the Territorial Department of Health as Chief of Mosquito Control, and later with the U.S. Public Health Service as a commissioned officer in the Scientist category. He retired in 1978 to his home in Hawaii in the grade of Scientist Director.

David was born in Worcester, Massachusetts in 1914 and is survived by his wife, Florence and two sons David and Charles. His career involved much travel to exotice places, accompanied and encouraged by his devoted family.

Dr. Bonnet pursued his undergraduate training at John Hopkins and Harvard University, receiving a B.S. degree in 1937. Continuing graduate work at Harvard gained for him a M.A. degree in 1939 and the Ph.D. in 1941. Intervening summers were spent in research work at Woods Hole Oceanographic Institute in Woods Hole, Massachusetts.

He arrived in the Hawaiian Islands in September, 1941, to continue marine research as an Instructor in the Department of Zoology of the University of Hawaii. In 1943 he joined the U.S. Public Health Service to assist in the control of the dengue fever epidemic in Hawaii. He became involved in the entomological phases of mosquito control. In this capacity he carried out flight range studies on *Aedes albopictus* (Skuse), field studies on special breeding sites of *Aedes aegypti* (L.) and *A. albopictus* and tests on infectivity of these mosquitoes. He also conducted experiments on the transmission of filariasis by Hawaiian mosquitoes.

After World War II he continued his career as Director of the Bureau of Mosquito Control of the Department of Health of the Territory of Hawaii. Although mosquito-borne diseases were his chief concern, he foresaw the need for a more comprehensive program by the health department involving other insect and other arthropod-borne diseases. This eventually culminated in a full fledged Bureau of Vector Control with Mosquito Control as only one aspect.

He noted that most disease vectors arrived in Hawaii from other areas without their disease. Many vector borne diseases are, however, present in the western and southern Pacific. He thus saw the danger of foreign invaders and constantly stressed the importance of quarantine measures to keep out foreign diseases and their vectors.

During and after World War II, and under epidemic conditions, chemical control was the popular method of choice. With the development of resistance problems and environmental concerns, David's interests turned more to biological control as the solution. He recognized the importance of educating the public, and promoted the use of natural means of control such as altering the environment, eliminating breeding sites, and importing and encouraging the action of parasites and predators. David along with Dr. Stephen Hu did pioneer work on importing, rearing, and releasing *Toxorhynchites* cannibal mosquitoes to control Hawaii's *Aedes*. He observed and monitored the gradual disappearance of *A. aegypti*, the dreaded yellow fever mosquito, from Oahu and some other of the major Hawaiian Islands.

Dr. Bonnet was elected to membership in the Hawaiian Entomological Society in 1945. He soon became an active participant in the affairs of the Society, serving as Vice President in 1946 and President for the year 1947. He also served a stint on the executive committee. A total of 17 "notes" presented at monthly meetings of the Society appeared in the Proceedings. Most were on various aspects of medical entomology and vector control in Hawaii. Four papers which indicate his specialty are as follows:

- Bonnet, David D. 1947. The Distribution of Mosquito Breeding by Type of Container in Honolulu, T.H. Proc. Hawaiian Entomol. Soc. XIII(1:43-49).
- ____ 1948. Certain Aspects of Medical Entomology in Hawaii (Presidential address). Proc. Hawaiian Entomol. Soc. 13(2):225-233.
- ____ 1950. The Hybridization of *Aedes aegypti* and *Aedes albopictus* in Hawaii. Proc. Hawaiian Entomol. Soc. 14(1):35-39.
- Bonnet, David D. and Stephen M.K. Hu. 1951. The Introduction of *Toxorhynchites brevipalpis* Theobald into the Territory of Hawaii. Proc. Hawaiian Entomol. Soc. 14(2):237-242.

In 1953 Dr. Bonnet decided to broaden his horizons and serve other places in the Pacific area. This started with a job in Tahiti on a joint filariasis control program of the University of California, Los Angeles, and the Institut de Recherches Medicales de l'Océanie Française. Here he worked on the ecology and control of *A. polynesiensis* Marks, a filariasis vector in the South Pacific. He pointed out the importance of tree hole breeding in the epidemiology of the disease and introduced a simple, cheap, effective method of controlling this source of mosquito breeding by growing ferns in the tree holes.

By the summer of 1956, David again got the urge to move on, with a 6 month trip by sailing vessel, the "Varua", the Robinson expedition, through the islands

of the South Pacific. In addition to mosquito collecting, he made observations on the periodicity of filariasis in relation to migrations of the Polynesians in the Pacific. He enjoyed talking about and showing pictures of this expedition.

In 1958 his commission in the U.S.P.H.S. was reactivated and he accepted a U.S. A.I.D. assignment as advisor to the National Malaria Eradication program in Djakarta, Indonesia, and was Deputy Chief Malariologist on the program until 1962. He then became A.I.D. representative on the staff of the Malaria Eradication Training Center in Manila, P.I. and served there until 1964. He helped in staffing the Malaria Eradication Training Center in Manila jointly sponsored by W.H.O., A.I.D. and the Philippine government.

The years 1964 to 1969 found Dr. Bonnet on the mainland U.S. at the Communicable Disease Center, U.S.P.H.S., in Atlanta, Georgia. Here he served as training officer for the *Aedes aegypti* eradication program and for the Malaria eradication program.

In 1969 he was transferred back home to Honolulu, Hawaii and was assigned to the Honolulu Quarantine Station, C.D.C., U.S.P.H.S. where he served as consultant to the station in the field of vector control and sanitation. He was involved in the inspection of ships and planes for rodents, and/or insects of medical importance, advised on controls, reviewed quarantine procedures at military bases, and offered advice and recommendations.

In 1973 he was given a temporary disability retirement with a diagnosis of lymphosarcoma. He underwent several sessions of chemotherapy. His friends and co-workers remember his valiant fight against the disease. He remained ever hopeful. In 1976 he recovered sufficiently to return to duty, taking an assignment with the Office of Health, Malaria Section, A.I.D., Department of State, Washington, D.C. Here he provided consultation and evaluation connected with malaria and vector control programs.

He retired to his home in Lanakai, Oahu, Hi. in 1978. We trust that his contributions and experiences in the Pacific may serve to stimulate and encourage others to continue the struggle to know more about vector borne diseases and to control and/or eradicate them from the Pacific area. A David D. Bonnet Memorial Fund has been set up at the Berniece P. Bishop Museum to support further studies on mosquito-borne diseases and Polynesian migrations.

Charles R. Joyce, Scientist Director, Retired, U.S. Public Health Service