Suggestions for Manuscripts

Manuscripts intended for publication should be submitted in duplicate (original and one carbon), typewritten in double or triple space, with ample margins, on white bond paper (8 1/2 by 11 inches); pages should be numbered consecutively. Fragmentary sheets and slips pinned or pasted on are not acceptable. Footnotes should be numbered consecutively and inserted in the manuscript immediately below the citation, separated from text by lines; they should be used only where necessary. Correct names and references are the responsibility of the author and should be checked for accuracy.

Illustrations should be drawn to allow for one-half or one-third reduction to page size (4 1/2 × 7 inches). Maps and sketches drawn to scale should have the scale plainly indicated. A complete list of figure legends and a duplicate print of each plate of figures are required to be submitted with the manuscript.

Tables and graphs should be used only where necessary, and omitted if essentially the same information is given in the paper. Graphs and figures should be drawn in India ink on white paper, tracing cloth, or light blue cross-hatched paper.

Proof should be corrected as soon as received and returned to the editor with an abstract on forms provided. Additional costs to the Society for author's corrections in proof may be charged to the author. An order for reprints should be placed with the editor when proofs are returned. Fifty copies of reprints will be supplied by the Society to each author under certain circumstances.

Examination of articles in this issue will help to conform to the style of presentation desired.
11, JANUARY 1965

The 709th meeting of the Hawaiian Entomological Society was called to order by President Mitchell at 2:00 p. m. in Agee Hall, Hawaiian Sugar Planters' Assn. (HSPA) Experiment Station, Honolulu.


Ronald Mau, Harry Kaya, and Mutsuo Miyatake were elected unanimously to membership in the Society.

Drs. Blair Bartlett and Stanley Bailey, visiting professors in Entomology at the University of Hawaii, spoke about their visit here. A movie, "The Sentinels of Agriculture", prepared by the Bureau of Entomology and Plant Quarantine, California State Department of Agriculture, was shown.

NOTES AND EXHIBITIONS

**Rubus rogersi** Linton: N. L. H. Krauss reported on this wild blackberry, identified by the Royal Botanic Gardens, Kew, England, and native to England and Ireland. It has invaded the forest around Kokee, Kauai and has become a major pest. Specimens were collected at Kalalau Lookout, Kokee, 4,000 ft, 10, March 1963. The wild blackberry at Olinda, Maui previously was identified as *Rubus lucidus* Rydberg, a southeastern United States species (P. H. E. S., 18 (1)8: 11-12, 1962). One or two additional species of introduced wild *Rubus* may occur on Hawaii.

**Hypothenemus pubescens** Hopkins: N. L. H. Krauss exhibited this immigrant scolytid, a new pest record for the island of Hawaii, which was recovered from Bermuda grass on the Kona Coast of Hawaii by Carl Gaddis, 16, December 1964. *H. pubescens* was reported for the first time in the state from Maui and Molokai during November, 1964 and from Oahu on 7, December 1964.

**Mosquito survey of some islands of the Central Pacific:**
Capt. R. T. Holway reported the results of mosquito surveys on many islands of the Central Pacific during October and November, 1965. Mosquitoes were not found on Howland, Baker, or any of the seven Phoenix Islands surveyed. There is little chance that mosquitoes could become established on these islands. Fresh water collections capable of supporting mosquito larvae were found only on Canton, Gardner, and Sidney Islands and the small number and exposed position of these potential breeding sites would simplify eradication.

Line Islands: No mosquitoes were found on Jarvis which is very arid and lacking in suitable breeding sites. *Culex quinquefasciatus* Say was found on Christmas, Washington, and Palmyra and was abundant on the latter two. The absence of *Aedes* on these islands needs confirmation by wet season surveys. Conditions appear ideal on Washington and Palmyra for *Aedes* breeding in coconut shells, containers, tree holes, and pandanus leaf axils. The plantation manager on Washington stated that he obtained a few adults of the predaceous mosquito (presumably *Toxorhynchites*) several years ago from the Bureau of Mosquito Control, Honolulu and released them. None have been seen since.

8, FEBRUARY 1965

The 710th meeting of the Hawaiian Entomological Society was called to order by President Mitchell at 2:00 p.m. in Agee Hall.


Visitors: Dr. C. S. Holling, Carleton Phillips and Robert Park.

Dr. Blair Bartlett was elected unanimously to membership in the Society.

Dr. Mitchell announced that the motions, given below, made by Dr. L. W. Quate at the January 11 meeting for discussion and action at this meeting will have to be delayed until the March meeting due to constitutional technicalities. The voting will be held at the April meeting. The motion to amend, as required by our constitution, was mimeographed and distributed to those present for discussion at the next meeting.

**Motion I.** "It is moved that the original and 3 copies of minutes for each Hawaiian Entomological Society Meeting be prepared by the Secretary; the copies would be circulated to the members at each meeting and after their examination the minutes would be approved as written or as corrected; the minutes would not be read aloud at each meeting by the Secretary". This action would necessitate a constitutional amendment and, if passed, require a rewording of Article 10 (a). Article 10 (a) presently reads: "Reading and approval of minutes". If the motion is approv-
ed, Article 10 (a) would read; “Approval of minutes”.

**Motion II:** “It is moved that announcements, members present and other information contained in the Minutes of the Hawaiian Entomological Society not be published in the ‘Proceedings of the Hawaiian Entomological Society’.

**Motion III.** “It is moved that the information presented as ‘Notes and Exhibitions’ at each meeting of the Hawaiian Entomological Society not be published as such in the Proceedings of the Hawaiian Entomological Society. It is further moved that a section for the ‘Proceedings’ be devoted to the publication of a new section, ‘Research Notes’, and members desiring publication of material presented under ‘Notes and Exhibitions’ must prepare typescript and submit it to the Editor for publication in the Research Notes section.

Dr. Mitchell announced that Dr. Frederick G. Holdaway of the University of Minnesota, St. Paul, Minnesota, formerly Chairman of the University of Hawai’i’s Entomology Department, passed away on January 1, 1965.

Dr. C. S. Holling presented an interesting talk on animal community ecology, “Insect-Prey-Predator-Relationship” with emphasis on the Systems Analysis Approach whereby an amazing accuracy of ecological events can be predicted by feeding various information into computer systems.

**Notes and Exhibitions**

**Culex pipiens quinquefasciatus** Say: Dr. Hardy reported capturing one female of *Culex pipiens quinquefasciatus* Say at Paliku, Haleakala Crater, 6,300 ft, on 30, January 1965. This was taken sweeping vegetation in the wet portion of the crater. He also reported collecting another specimen by sweeping at Keanakolu, Hawaii, 5,200 ft, in October, 1965. It is not known however, whether *Culex* mosquitoes actually are breeding at these elevations. C. J. Davis reported that during his many years of working at Kilauea, Hawaii, he had picked *Culex* adults often in the National Park.

**Phorocantha semipunctata** Fabricius, **new to the state:** Dr. Hardy displayed a cerambycid beetle which is apparently new to the state. This was collected in an office near Pier 36 and was still alive when it was brought to the University during the latter part of December. The beetle was determined by Dr. J. L. Gressitt.

**Aphis nerii** Boyer de Fonscolombe, **first record in Hawaii:** Dr. Beardsley reported that on 3, February he, Mitchell, and Ganesalingam found the oleander aphid, *Aphis nerii*, heavily infesting leaves on new shoots of oleander bushes, *Nerium oleander*, planted around a Hawaiian Electric Company transformer installation at Campbell Industrial Park, Barber’s Point, Oahu. *A. nerii* is recognized easily in the field by its distinctive color; the body being bright yellow with black cornicles and
cauda. In addition to oleander, the known hosts outside of Hawaii include various species of Asclepiadaceae (milkweeds, crownflower, etc.), Convolvulus, and Solanum. The oleander aphid is distributed widely in temperate and tropical areas of the world and is known to occur in Europe, Asia, Africa, North and South America, New Zealand, and various Pacific Islands, including Guam. See Essig (1956 Insects of Micronesia 6 (2): 27) for an illustration of this aphid.

The oleander aphid colonies found at Barber’s Point were parasitized heavily by the braconid wasp, Lysiphlebus testaceipes (Cresson); the mummiﬁed parasitized aphids were dark red. Numerous adults and larvae of the coccinellid beetle, Coelophora inaequalis (Fabricius), were preying upon the aphids.

**Neopinnaspis harperi** McKenzie, a new record for Hawaii:
Dr. Beardsley reported that recently he identiﬁed slide-mounted specimens from Oahu as *N. harperi*, a bark-infesting armored scale insect described from California (1949, McKenzie, Calif. Dept. Agric. Bull., 38 (3): 124, Fig. 1). All specimens were collected on Puu Kohahuanui Trail, Oahu, 2,500 ft, on 1, September 1953 on bark of Gouldia terminalis by Mrs. M. A. Kohn.

**Nezara viridula** (L.): Y. Takushi reported that the southern green stink bug damaged Chinese cabbage in September 1964 at the Laumilo Experimental Farm, Kamuela, Hawaii. The 2,650 ft elevation is the highest recorded in the state for this insect. Presented by Dr. W. C. Mitchell.

**Camponotus maculatus** (Fabr.) nesting in rolls of tape coat:
M. V. King of the Hawaiian Telephone Company, reported the carpenter ant making nests in rolls of “tape coat”, an asphaltum coated fabric used in making splices in lead-sheathed coaxial cables. The nest material was not of the tape coat, but of similar material, the source unknown. Also, he reported considerable damage from subterranean termites eating through the jacket of polyethylene cables allowing water to enter and short out the circuits. Presented by Dr. W. C. Mitchell.

**Mezira membranacea** (Fabr.): A series of aradid bugs were collected by Mr. G. Santo from bark of Ohia trees on 29, December 1964, at Kapoho, Hawaii. This may be the same species collected from Ft. Shafter, in April 1963. The specimens were sent to Dr. R. Usinger for identiﬁcation. It is the ﬁrst record for the Island of Hawaii. Presented by Dr. W. C. Mitchell.

The 711th meeting of the Hawaiian Entomological Society was called to order by President Mitchell at 2:00 p.m. in Agee Hall.

Members present: Arthur, Balock, Beardsley, Bess, Bianchi, Chong, Davidson, Davis, Delfinado, Fujimoto, Ganesalingam, Gressitt, Gubler,

Dr. Mitchell called for a discussion of the three motions presented by Dr. Quate at the January meeting which will be voted on at the April 12 meeting. Several members expressed their opinions on the proposed changes.

Dr. Peter F. Mattingly of the British Museum gave an interesting talk with slides on the “Culex fatigans problem in the Rangoon area of Burma”.

**NOTES AND EXHIBITIONS**

**Orthorhinus klugi** Boheman, new to Hawaii: C. J. Davis reported this weevil from live terminal branches of *Acacia koaia* at Kawaihale Uka, Mt. Kohala, in January and February. According to Dr. E. Zimmerman, *O. klugi* is an Australian pest species new to Hawaii. In Australia, weevils of this genus are known to attack *Acacia*, grape vines, citrus and many other orchard and forest trees. Larvae of this weevil have not been found in *Acacia koaia* and there were no signs of the weevil in other native trees and shrubs in the area. Presented by C. J. Davis.

**Enarmonia sp.:** This native tortricid caused considerable mortality to terminal twigs of the rare koa-like tree *Acacia koaia* at Kawaihale Uka, Kohala Mountains. Active work of this twig borer was observed on young trees 4–5 ft tall. On older trees, from 50 to 75% of the terminal growth was killed. *Enarmonia* is an example of a native insect that occasionally causes considerable damage to its native host and has been recorded from both *Acacia koa* and *A. koaia*. Presented by C. J. Davis.

**Xylosandrus compactus** Eichhoff: The 18th host of the coffee twig borer, *X. compactus* was recorded in a recent survey by Dr. Mitchell, University of Hawaii and C. J. Davis, Hawaii Department of Agriculture. The new host, *Prosopis* sp., commonly known as kiawe or algaroba, was recorded near the old Coast Geodetic Station, Barbers Point. In addition to *X. compactus*, two other scolytids, *Stephanoderes farinosa* and *Hypothenemus* sp. were also present. Presented by C. J. Davis.

**Hypurus bertrandii** Perris: This *Portulaca* leaf mining weevil was found damaging leaves of *Batis maritima* (pickle weed) on 3, March at Barber’s Point by Davis and Mitchell. This is a new host record for *Hypurus* which was recorded only from *Portulaca* on the major islands of the Hawaiian group. Presented by C. J. Davis.

**Nipponorthezia guadalcanalia** Morrison: Dr. Beardsley reported
collecting about one dozen adults of this ensign scale insect (Family Ortheziidae) from leaf litter collected at about 1,500 ft on Mt. Tantalus, Round Top, near Honolulu. This is a new insect record for the Hawaiian Islands, and the second ortheziid discovered here in the past two years, bringing the known ortheziid fauna of Hawaii to 3 species. N. guadalcanalia was described in 1952, from a unique specimen collected on Guadalcanal, Solomon Islands, in 1944 (U.S. Dept. of Agriculture [USDA], Tech. Bull. 1052: 73, 1952). It is known also from the Micronesian Islands of Palau, Yap, Truk, and Kusiai (Beardsley, INSECTS OF MICRONESIA, Homoptera: Coccoidea, in press). All Micronesian specimens I have seen were taken in Berlese funnel extractions from leaf litter, etc., often with hypogaecic mealybugs such as Geococcus coffeeae Green. This suggests that N. guadalcanalia is probably a root-infesting species. Determination made by Dr. Beardsley.

**Epitritus wheeleri** Dosinthrope: Dr. Beardsley exhibited specimens of this rarely collected, tiny, hypogaecic ant with elongated forceps-like mandibles. These were taken from Berlese funnel extractions from the same leaf litter which yielded the above ortheziid scale insect. Determination by J. W. Beardsley.

**Carpophilus oculatus** Murray: Inspector G. Snyder intercepted two adult nitidulid specimens, determined as *Carpophilus oculatus* Murray by W. A. Connell of the U.S. National Museum (USNM), in unidentified seeds collected by a passenger from various localities on Oahu on 2, April 1964. This constitutes a new insect record for the state. L. R. Gillogly (INSECTS OF Micronesia, 16 (4): 157) lists the recorded hosts of this nitidulid as rotten breadfruit, fruit of larger ginger, *Pithecellobium dulce*, and ripe head of Pandanus fruit. He lists the distribution as the Society Islands, Mariana Islands, Caroline Islands and Marshall Islands. Presented by E. Shiroma.

**Protalabrella brasiliensis** (Baker): Several specimens of this cicadellid were collected by sweeping weeds during a survey of the Hickam-Fort Kam area on 20, October 1964, by inspectors D. Girard, F. Kato, and myself. This cicadellid is apparently now widespread. It was first reported by Dr. Joyce when he recovered a single specimen in a light trap at the Public Health Service Quarantine Station in September, 1960. Subsequently, in July, 1961 and January, 1962, Dr. Joyce recovered more specimens by sweeping grass and weeds and in a light trap in the same area. The last report on this cicadellid was made by James Kim in July 1962 when he reported finding it damaging *Lippia* in the Makiki area. Determined by J. P. Kramer, USNM. Presented by E. Shiroma.

**Sphenophorus venatus vestitus** (Chitt.): A number of specimens of the lawn billbug were collected in grass at the Mililani Memorial Garden, Waipahu, Oahu. They had been killed by the fungus *Beauveria bassiana* (Bals.) Vuill. This fungus has many hosts and in favorable environments can be highly pathogenic. The fungus was identified by I. M. Hall, University of California, Riverside. Presented by Dr. Mitchell.
The 712th meeting of the Hawaiian Entomological Society was called to order by President Mitchell at 2:00 p.m. in Agee Hall.


President Mitchell appointed T. Suman and E. Yoshioka to count the ballots on the motions presented by Dr. Quate for action at this meeting. Motion I did not pass by the required 2/3 majority; motions II & III were defeated also.

President Mitchell called for creating a motion for a "wish award" of $10.00 to be presented to the best entomological exhibit at the Science Fair held in March. The motion was made by Dr. Pemberton, seconded by Thistle, and carried unanimously. A committee composed of W. Hart, H. Kamasaki and W. Voss made a selection of two to share this award. One was an exhibit on honey bees and the other on ants.

Dr. T. W. Fisher of the Department of Biological Control, University of California, Riverside, California, gave an interesting talk on the biological control of pest land mollusks and also exhibited a mechanical insect collector called "D-Vac".

Notes and Exhibitions

_Tillus notatus_ Klug _a new record for Maui_: F. A. Bianchi reported the collection of one specimen of this oriental clerid on an orange tree at Kula, Maui, at about 3500 ft, 19, February 1965. This species was first found on Oahu by Amy Suehiro early in 1939 (Proc. Haw. Ent. Soc. 10: 356).

_Pachylister caffer_ Erichson and _Hister nomas_ Erichson, _new records for the state_: Miss Mabel Chong exhibited several specimens of each of these two histerids collected by N. L. H. Krauss on 12, February 1965, in cow dung on Parker Ranch, Hawaii. It is believed that these constitute new records for Hawaii. Dr. H. Wenzel, of the Chicago Natural History Museum, made the determinations, noting that both species are of African origin. There is no record of their introduction to Hawaii, but these horn fly predators probably became established from shipments Krauss made from Umtali, S. Rhodesia and from coastal Kenya in 1957.

_Onthophagus sagittarius_ (Fabricius) _a new insect record for Molokai_: Miss Chong exhibited two adults of this dung beetle collected by P. Y. Nakagawa on Molokai in August 1964. Several specimens of this beetle were captured also in light traps operated by the Hawaiian
Sugar Planters’ Assn. (HSPA) Experiment Station at Ewa and Kunia, Oahu in November-December, of 1964. Previously it was collected only in Manoa Valley, Oahu, July, 1964. There is no record of its introduction to Hawaii.

**Sarcophagula occidua** (Fabricius) **new record for outer islands:** Dr. C. R. Joyce reported that this recent immigrant sarcophagid fly now appears to be well established on Kauai, Maui, Molokai, and Hawaii. He obtained large numbers in fly traps operated on Molokai on 16, December, Maui on 18, December and on Kauai on 20, December 1963. On 17-20, November 1964 the species was taken in fly traps operated at Hilo, Kona, and Kawaihae on Hawaii. *S. occidua*, commonly found breeding in dog excrement, was first taken on Oahu in September, 1961. *Proc. Haw. Ent. Soc.* 17 (1): 20–21. It was not recorded previously from the outer islands.

**Dysmicoccus boninsis** (Kawana) **on buffalo grass:** Dr. Beardsley reported that during March he examined a heavy infestation of mealybugs (which later proved to be the gray sugar cane mealybug, *D. boninsis*) on buffalo grass, *Stenotaphrum secundatum*, in a lawn in the Waialae-Kahala area of Honolulu. This mealybug is rarely found on anything other than sugar cane, and its presence on buffalo grass, therefore, is worthy of note. Beardsley also has taken *D. boninsis* on native bunch grass, *Eragrostis variabilis* on Oahu. The material from buffalo grass was heavily parasitized by an encyrtid wasp, *Aphycus terryi* Fullaway.

**Peridroma saucia** (Hübner) **larvae infected with wilt disease:** Dr. Beardsley reported that on March 5th he noted numerous larvae of the variegated cutworm, *P. saucia* (Hübner), in a dead or moribund condition on foliage of various weeds, particularly *Amaranthus* sp. and *Malva parviflora*, along the lower Kula road at about 2,000 ft on Maui. Specimens of diseased larvae were collected and submitted to the Division of Invertebrate Pathology, University of California, Berkeley. The disease organism subsequently was diagnosed as a nuclear polyhedrosis virus. Apparently, this is the first record of a polyhedrosis disease of *P. saucia* in Hawaii.

**Anomis flava** (Fabricius) **on ornamental hibiscus:** Dr. Beardsley reported that during the past month he collected several larvae of this noctuid moth on leaves of ornamental Hibiscus and Hau (*Hibiscus tiliaceus*) in the Honolulu area. Identity of the larvae was confirmed by rearing to adulthood. These are the first local host records for *A. flava* a recently arrived immigrant. Elsewhere this species is known as a pest of cotton and okra as well as Hibiscus.

**Gonicera (Tritoconicera) hawaiiensis** Colyer (Phoridae) **a new record for island of Hawaii.** Dr. D. E. Hardy exhibited one specimen collected at Honokane Nui Valley, Kohala Mountains, on July 13, 1964, in native forest debris by G. E. Haas.
Phoracantha semipunctata (F.): A live adult specimen of this cerambycid was intercepted by R. Bergman on 4, November 1964 on various cut flowers in the mail at Kailua, Oahu destined for the mainland. It was reported by Dr. Hardy at the February, 1965 meeting. This cerambycid may be established on Oahu, judging from the two widely separated collection points (the other, Pier 36 area in Honolulu). Determination was made by G. B. Vogt of the USNM. Dr. Hardy reports that a specimen was also collected in Wahiawa by a university student in November, 1964. Presented by E. S. Shiroma.

Dermestes carnivorus F.: An adult specimen of this dermestid beetle was picked up by G. Sadoyama at the Customs inspection area, Honolulu International Airport on October 11, 1964. This may be a new insect record for the state. This dermestid, indigenous to America, occurs in North and South America, Europe and India. It has been found primarily on hides (H. E. Hinton, A Monograph of the Beetles Associated with Stored Products, 1: 287, 1963). Determined by J. M. Kingsolver, USNM. Presented by E. S. Shiroma.

Danaus plexippus (L.): Over 600 monarch butterfly adults were collected, reared and examined for shipment to Minneapolis, Minnesota, on March 7, 1965. Three albino monarchs, 1 male and 2 females were reared from larvae collected on Oahu. None were observed in the field. Larvae were heavily parasitized (89.2%) by the tachinid fly, Achaetoneura archippivora (Wied.). A single specimen of the chalcid wasp Brachymeria obscurata (Walker) was reared from the larvae. Presented by Dr. W. C. Mitchell.

Philaenus leucophthalmus (Linn.): This Cercopid was collected on Klamath weed, Hypericum perforatum at 7200 ft on the slopes of Mt. Hualalai, North Kona, Hawaii. This insect was first collected in the Volcano House area in January, 1944 and since then has spread around the island to Hualalai.

10, MAY 1965

The 713th meeting of the Hawaiian Entomological Society was called to order by President Mitchell at 2:00 p.m. in Agee Hall.


Amaroong Dipapal and Vikram Presad were unanimously elected to membership in the Society.

C. J. Davis announced that beginning May 24, Sand Island will be sprayed at dawn by aircraft with 7.5% malathion solution per acre for the control of Schistocerca vaga Scudder. The plan calls for a total of 5 aerial applications over a 10-week period. So far this grasshopper has been con-
tained only on Sand Island. Ground spraying was only partially successful.

Second prizes were awarded to two entomology entries in this year's Hawaii Science Fair.

Dr. Freeman McEwen, Cornell University, who spent a year at the University of Hawaii doing research on "Transmission of Plant Diseases by Insects" gave a short farewell speech.

Notes and Exhibitions

Phlegetonia delatrix (Guenée): Dr. Beardsley reported that he had received this determination from Dr. E. L. Todd, USNM, for specimens of a noctuid moth collected at the University of Hawaii and elsewhere on Oahu, at light, beginning last September. This is the species exhibited previously as an unidentified new immigrant. P. delatrix apparently is widespread in the Asiatic and Pacific tropics, and was recorded from India, Ceylon, Burma, Singapore, Indonesia, New Guinea, Australia (Queensland), New Hebrides, Fiji, and Samoa. A redescription and figure can be found in Hampson, 1912, Cat. Lepidoptera Phalaenidae 11: 82-83, Fig. 30. The caterpillar is described briefly but no host plant records are given. In addition to numerous Oahu specimens, one specimen was collected in a light trap at Hilo, Hawaii, March, 1965.

Spodoptera litura (Fabricius) confirmed in Hawaii: Dr. Beardsley reported on this noctuid moth which he collected at Pearl and Hermes Reef, in the Leeward Hawaiian Islands, September, 1964. It was identified by Dr. E. L. Todd, USNM. It is commonly called the tobacco cutworm, Egyptian cotton moth, etc. The species is widespread and has been reported from North Africa and southern Europe, throughout southeast Asia, and from practically all tropical and subtropical islands of the Pacific. It is unknown from the Western Hemisphere or the main Hawaiian Islands. About a dozen adult specimens of S. litura were collected at Pearl and Hermes Reef. Most of these were taken at light on Southeast Island and a few were taken during daylight on North Island. This is the first confirmed collection of S. litura in the Hawaiian Archipelago. However, there is evidence that this species probably has been present on Pearl and Hermes Reef, and possibly other of the leeward islands for many years. A single poor specimen, determined as "Prodenia litura (Fabricius)?" by O. H. Swezey, was collected at Pearl and Hermes Reef by the Tanager Expedition in 1923; and there is an earlier, unconfirmed record from Midway. A recently published record of a "Prodenia sp." from Kure Island (Butler, 1963, Proc. 18 (2): 241) very possibly involved S. litura. S. litura is a serious agricultural pest in many areas. The gregarious caterpillars are known to feed upon a wide variety of plants, including such crops as cotton, taro, tomato, tobacco, banana, beans, cabbage, corn, and sweet potatoes. Since this species is widespread, it is surprising that it has not become established yet in the main Hawaiian Islands. S. litura
should be considered a potential threat to agriculture here and possibly parts of the mainland, as adults conceivably could come into Honolulu as “hitchhikers” on military aircraft from Kure or Midway.

**Anomis flava** (Fabricius): Dr. Beardsley reported on this noctuid moth, determined by Dr. Todd, USNM, collected on Oahu. The species was reported several times during the past year as “*Cosmophila flava* (Fabricius)”. On Oahu, adults were collected in light traps at several localities and were reared from caterpillars found feeding on cultivated *Hibiscus* and hau. It is a pest of cotton in Africa.

**Cosymbia serrulata** (Packard), new host records: Dr. Beardsley reported that during March, he reared several adults of this recently discovered immigrant geometrid moth from caterpillars found feeding in flowers of *Acacia farnesiana* and *Leucaena glauca* at Ewa, Oahu. The caterpillars were small loopers about 1/2 in. long when fully fed, and ranged from yellow-brown to green.

**Phorancantha semipunctata** Fabr.: The two specimens of *Phorancantha* at the Department of Entomology, University of Hawaii, are identical with specimens of *P. semipunctata* Fabr. in the Bishop Museum collection. One Bishop specimen is from Uruguay, the rest are from Australia. The species is native to Australia and is established in New Zealand, Argentina, and South Africa. A living specimen, the fourth reported on Oahu, was collected by V. Dutro of Kalihi Valley on 6. VIII. 65. It was exhibited by G.A. Samuelson at the 11 October 1965 meeting. The species causes considerable damage to sickly trees and freshly cut timber of many species of *Eucalyptus*, including *E. globulus*, *robusta* and *crebra*, common introductions in Hawaii. The species apparently does not attack dried timber. Froggatt (1923) cites hymenopterous parasites of *Phoracantha recurva*, an allied eucalyptus-attacking species; they are *Iphiaulax rubriceps* Frogg., *I. phoracanthae* Frogg. and *I. morleyi* Frogg. Most of the above information was taken from Duffy who described the egg, mature larva, pupa, hosts, economic importance, etc. of *Phoracantha semipunctata*. (Duffy, 1953, *Monograph of the Immature Stages of British and Imported Timber Beetles (Cerambycidae)*, British Museum of Natural History; and Froggatt, 1923, *Forest Insects of Australia*, Sydney. Presented by Miss Setsuko Nakata for Gressitt and Samuelson.

**Gynaikothrips ficorum** Marchal: During the latter part of March, 1965, Dr. W. C. Mitchell and C. J. Davis observed a banyan tree in Kailua, Kona, Hawaii, which had recovered from a previous heavy infestation of Cuban-laurel thrips, *G. ficorum*. They found numerous ants, *Anoplolepis longipes*, a possible predator of the Cuban-laurel thrips, on the trunk, branches and twigs of this banyan. Another banyan, located on the shady side of a laundry building on the same property had a moderate to heavy infestation of thrips, but not ants. In order to test our hypothesis of ant predation, we prepared banyan bouquets infested by thrips and placed...
these on the trunk of the banyan to determine the possible predatory activity of this ant. Neither of two observations, one in late afternoon and one the following morning, revealed predatory activity by A. longipes. The anthocorid Montandoniola moraguesi (Puton) has not been released on Hawaii and there was no evidence of this or other predators on the other infested Kailua banyan. In the absence of actual observations of predation, we suspect that the aggressive A. longipes may have prevented G. Jicorum from infesting the new growth and, possibly, repelled some of its local enemies. Presented by Davis.

Montandoniola moraguesi (Puton) new record for Maui: This anthocorid was recovered at Baldwin High School, Wailuku, Maui from infested banyan material sent in by Nobuo Miyahira. There is no record of release of this anthocorid on Maui. Presented by Mabel Chong for Harry Nakao.

Gonocephalum seriatum (Boisd.): Considerable damage to Acacia melonoxylon seedlings was reported by D. Fullaway, Waimea State Nursery. Approximately 75\% of the seedlings in four seedling beds 4 ft × 300 ft were damaged. Seedlings were severed two to three inches off the ground with damage confined mostly to terminal shoots and branches. Although this ground beetle has been reported damaging potato seedlings and ilima flowers, this is the first record of damage to Acacia. Presented by Miss Chong for Nakao.

Isodontia harrisi Fern. a new record for Maui: This American wasp has been known on Oahu since 1930, but is normally very scarce. It was reported by F. A. Bianchi causing considerable trouble on Maui by building nests in the nozzles of overhead sprinklers in cane fields. Several nests extracted from nozzles at Kahului and Lahaina were provisioned with nymphs and adults of the grasshopper Conocephalus saltator (Saussure). Presented by Bianchi.

Kurtomathrips morrilli Moulton a new record for Maui: F. A. Bianchi reported finding this immigrant thrips on its usual host plant, Pluchea odorata, near Kanaha Pond, Maui, on April 26. The species has been recorded only from Oahu. Normally, it is predominantly wingless in both sexes, but on Maui an unusually large proportion of the population was winged.

Nesiomiris sp: According to Zimmerman (Insects of Hawaii 3: 217, 1948), this native genus of Miridae is represented by only one described species, N. hawaiiensis Kirkaldy and probably is confined to Hawaii. F. A. Bianchi reported finding a probable new species abundant on Reynoldsia sandwicensis Gray, a few miles south of Ulupalakua Ranch, Maui, on 31 April. The leaves of several trees examined were densely punctured and appeared to be severely discolored by the feeding of all stages of the insect.

Anthrax distigma Wied. a new insect record for the island of
Hawaii: Benjamin Hu and G. Fukumura collected a specimen of this bombyliid fly on vanda flowers at Hilo on April 30, 1965. This constitutes a new insect record for the island of Hawaii. This bombyliid has been reported from Oahu (Insects of Hawaii 10: 321), Kauai (Proc. 17 (3): 325), Molokai (Proc.* 18 (3): 338), and Maui, (Proc. 19 (1): 26). Presented by E. S. Shiroma.

Summary of insect conditions: Dr. C. E. Pemberton noted that he recently received a copy of the Division of Plant Industry's Summary of Insect Conditions for 1963–1964, which summarizes all of the major pests reported during the past two years. He found this report to be very informative covering the field thoroughly, and recommended it as a very useful reference.

JUNE 14, 1965

The 714th meeting of the Hawaiian Entomological Society was called to order by President Mitchell at 2:00 p.m. in Agee Hall.


Richard Kobayashi was unanimously elected to membership in the Society.

Carl Gaddis of the Plant Pest Control Division, USDA, gave an interesting talk on programs being carried out by his Division with emphasis on “Survey and Detection”. Most interesting was the “Cooperative Survey Agreement” which will be inaugurated in Hawaii by the State of Hawaii Department of Agriculture and in cooperation with the University of Hawaii’s Hawaii Agriculture Experiment Station and the University Extension Service.

Notes and Exhibitions

Plusia californica (Speyer)?: Dr. Beardsley exhibited a noctuid moth which he tentatively identified as this species. The specimen was reared from a caterpillar brought in by Harry Kaya. The caterpillar was found in a head of romaine lettuce, presumably of West Coast origin, which Kaya purchased in a Honolulu market. According to Essig, (Insects of Western North America, p. 687,) Plusia (=Autographa) californica, known as the alfalfa looper, is a general feeder “responsible for serious damage to alfalfa and to other forage crops as well as cereals, truck crops, flowers, weeds, fruit, ornamental and forest trees, and shrubs”. It apparently is distributed throughout much of western North America. The alfalfa looper apparently is not established in Hawaii, but this finding indicates one way which this and similar new pest species might enter Hawaii.

Amphorophora vaccinii Mason, a new island record for Maui:

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Dr. Beardsley reported that on May 25 he found this aphid heavily infesting a clump of a native Vaccinium sp. at 10,000 ft near the University of Hawaii Observatory on Haleakala, Maui. This appears to be a new island record for A. vaccinii, which was recorded previously only from the Mauna Loa Truck Trail, 6,500 ft on Hawaii, by C. J. Davis in 1946.

**Monograph on the Corn Earworm Complex**: Dr. Beardsley called attention to the recent publication of a monograph entitled “The Corn Earworm Complex”, by Dr. D. F. Hardwick of the Canada Department of Agriculture (Mem. Ent. Soc. Canada No. 40, 1965). In this monograph Dr. Hardwick has proposed a new genus, Helicoverpa, for the corn earworm and its allies, and has described several new species, including 3 from the Hawaiian Islands. This brings the total described Hawaiian fauna to 5 species, 4 are presumably endemic. The Hawaiian species include H. zeae (Boddie), the introduced corn earworm; H. hawaiiensis (Quaintance and Brues) which occurs on most of the main Hawaiian Islands; H. pallida Hardwick, known only from Necker and Nihoa Islands; H. confusa Hardwick, a species once apparently common on the main islands, but now largely or entirely replaced by the immigrant H. zeae; and H. minuta Hardwick, known only from a single collection from Lisianski Island. Dr. Hardwick’s paper is an extremely thorough piece of work including detailed descriptions of immature stages as well as adults, distribution records, etc. This work undoubtedly will prove of value to future workers who deal with the corn earworm complex.

**Vrilleta convexa** Lec.: F. A. Bianchi stated that he had determined as this species a series of anobiid beetles caught in the HSPA light trap at Ewa, Oahu. Of 15 specimens in the series, the first was caught in April 1959, 8 in 1961, 4 in 1962, and 2 in July 1963. At the September meeting, F. A. Bianchi reported that the Bureau of Insect Identification, USDA, had informed him that the beetles are not Vrilleta and not a North American species, but are near the North American genus Oligomerodes as determined by Dr. R. White.

**Eupelmus cushmani** (Crawford): F. A. Bianchi exhibited an egg case of Tenodera angustipennis collected by him at Hanamauai, Kauai, on June 3. Many of the eggs had been parasitized by the Eupelmid wasp Eupelmus cushmani (Crawford) and some had died in situ before they could emerge. The only previous record of this host-parasite relationship is that by P. W. Weber, 1957, Proc. Haw. Ent. Soc. 16 (2): 194.

**Chrysolina sp. probably quadrigemina**: Harry Nakao stated that two shipments, totaling 3,000 of this chrysomelid were received from Robert Hawkes, USDA, Albany, California and released June 8 on Mt. Hualalai for Klamath weed control. The gall midge, Zeuxidipsiosis giardi Keiffer released in February of this year was found established at release points on Mt. Hualalai. The gall midges were received from Dr. Bruce Given, Dept. of Scientific and Industrial Research (DSIR), New
Zealand.

**Achatina fulica** Bowdich: Ernest Yoshioka of Hilo reported finding one live 3-in African snail in Waiakea Kai on 10, June 1965. No other snails were picked up in subsequent surveys. Presented by Harry Nakao.

**Vietnam malaria cases resistant to anti-malarial drugs:** Capt. Holway reported that three recent cases of malaria from Marines in Vietnam were found resistant to anti-malarial drugs. The existence of strains of *falciparum* malaria resistant to all of the synthetic drugs was first reported from Columbia in 1961 and has been reported since from Brazil, Cambodia, Thailand, Malaya and South Vietnam. A detailed report was published on three cases of apparent refactoriness to chloroquine, pyrimethamine, and quinine in strains of *Plasmodium falciparum* from Vietnam. These occurred in Army personnel during 1964.

**Zootermopsis angusticollis** (Hagen): On 26, February 1965, employees of Theo. H. Davies at Hilo, Hawaii, collected 6 dealated adults of this dampwood termite among Douglas fir lumber shipped to Hilo from Honolulu. The lumber was from Crescent City, California. It is not known if this termite has become established in the state. Dr. T. E. Snyder of the USNM who identified this species, states that Hawaii is the 21st state into which this termite has been transported. He recommended immediate fumigation whenever they are found. This termite attacks poles, pilings, bridge timber, and other structures near water. It occurs on the West Coast from British Columbia to Mexico (1962, Metcalf & Flint, *Destructful and Useful Insects*, p. 902). Specimens exhibited. Presented by E. S. Shiroma.

**Gonocephalum adpressiforme** Kaszab: Mr. K. Dorward, P.P.C., USDA, sent the following note: “According to Dr. T. J. Spilman, Federal Taxonomist in the Tenebrionidae, *Gonocephalum seriatum* is now a synonym for *Gonocephalum adpressiforme* Kaszab.” Presented by E. S. Shiroma.

12, JULY 1966

The 715th meeting of the Hawaiian Entomological Society was called to order by President Mitchell at 2:00 p.m. in Agee Hall.


Dr. H. A. Bess announced that Dr. Frances Weesner Lechleitner has prepared a manuscript recently entitled “Handbook of Termites of the United States,” which is to be published by the National Pest Control Association. Dr. Lechleitner also has received a contract with Academic
Press for “Treatise on the Biology of Termites”, to cover the termites on a world-wide scale. It will be a multi-author work and is to be completed in 2 years. Dr. Lechleitner is recognized as perhaps the best informed person on termite biology. For many years, she was Dr. S. F. Light’s assistant at the University of California and published a great deal of work under her maiden name, Frances W. Weesner.

Dr. J. L. Gressitt and J. Shoup of the Bishop Museum presented a very informative talk with slides on their field work in Antarctica.

**Notes and Exhibitions**

**Coptotermes vastator** Light: Dr. Bess reported that this new subterranean termite was found recently on Oahu established in Kaimuki along Harding Avenue. They sent Dr. Lechleitner several containers of termites and one of these contained a large number of alates collected by Don Lewis in Honolulu on July 1, 1963. Dr. Lechleitner stated that it agreed rather closely with the description of *C. vastator* and was definitely not *C. formosanus*. She suggested that specimens be sent to Dr. Krishna at the American Museum of Natural History for identification. This was done and the identification of *C. vastator* confirmed. However, he requested that we collect more imagos and soldiers from the same site for examination. Subsequently, the identification was also confirmed by Dr. Snyder and was reported at the December 15 meeting of the Society. Dr. Lechleitner made the following comments: “This collection includes a large number of alates. These specimens are smaller than those of *C. formosanus*, the fore-wing being 9.5 mm long. The veins in the wing membrane (median and cubitus) are marked only by rows of minute hairs, and no costal band is present. The ocelli are large, almost round, and almost touching the eye. There are clearly defined crescentic antennal spots just anterior to the ocelli. These specimens agree with the description of *Coptotermes vastator* Light, a common species in the Philippines.”

**Fungus growth on beetles**: Dr. Gressitt stated that he noted an unusual growth of fungi or lichen associated with mites on beetles collected from New Guinea. He asked the membership present for information of fungus growth on beetles.

**Micronesica, a new journal**: Dr. C. M. Yoshimoto exhibited a new journal entitled “Micronesica, Journal of the College of Guam”. The journal contains articles on the subjects of Anthropology, Botany, and Zoology. Dr. B. C. Stone is editor.

**Schistocerca vaga** Scudder: F. A. Bianchi and J. T. Kajiwara reported that a live female specimen of this grasshopper was picked up at the Barber's Point Naval Air Station by J. McCormick on 2, July 1965. This is the first record of it being found outside of Sand Island. State entomologists are conducting surveys of the area, but so far results are
negative. Kajiwara reported that an article about this grasshopper with a picture will soon appear in the Naval Air Station paper.

**Kalotermes immigrans** Snyder: J. T. Kajiwara reported that a rare case of *Kalotermes immigrans*, a lowland tree termite, infestation was observed at the home of Y. Hironaka in Honolulu.

**Sphenophorus venatus vestitus** (Chitt.): F. A. Bianchi reported finding this weevil infesting two adjacent Tifton grass lawns in Hilo, in an area far from the original infestation reported by state entomologists.

**Mycetaspis personata** (Comstock) a new record for the state: Dr. D. J. Williams of the USNM recently determined as this species a specimen of scale insect which was intercepted by D. Nigro, 9 February 1961 on a “ti” leaf (*C. terminalis*) originating from Hawaii. According to Ferris (1941 ATLAS OF SCALE INSECTS OF NORTH AMERICA, Series III: 372), this scale was originally recorded from Cuba, but also occurs in the West Indies, Mexico, British Guiana, Brazil, England, Puerto Rico, Jamaica and Panama. He believes this species to be of Neotropical origin and perhaps actually South American. The hosts are numerous, including various species of *Tillandsia, Sabal, Anacardium, Jasminum, Areca, Citrus, Ficus, Musa*, and *Mangifera*. Presented by E. S. Shiroma.

Ozaki noted heavy adult population of insects around shrubbery located throughout the island. Larval feeding on the growing tips were apparent. Especially abundant were adults of the acridid grasshopper *Aiolopus tamalus* (F.), the lygaeid *Nysius vinitor* Bergroth, and noctuids *Prodenia litura* (F.), *Amuna octo* Guen., and *Achaea janata* (L.). Larvae of *Prodenia litura* (F.) and *Achaea janata* (L.) were abundant and doing much damage to cultivated vegetables as well as wild shrubbery.

9, AUGUST 1965

The 716th meeting of the Hawaiian Entomological Society was called to order by President Mitchell at 2:00 p.m. in Agee Hall.

Members present: Beardsley, Bess, Chanthawanich, Clagg, DipapaL Gaddis, Gressitt, Hardy, Huang, Joyce, Kajiwara, Komatsu, Lewis, Look, Mitchell, Miyatake, Nagatomi, Nakao, Namba, Nishida, Pemberton, Prasad, Quate, Samuelson, Shajahan, Shiroma, Steiner, Suehiro, Sugerman, Suman, Tenorio, Van Zwaluwenburg, and Woolford.

Visitors: Mahmood Amwar, L. Darrel Hale, Dr. A. LaPlante, Ramesh Saxena, Toshi Takata, and Jo Ann Tenorio.

Election of new members: Carlton Lewis and Sueo Nakahara were unanimously elected to membership in the Society.

President Mitchell also read a letter from Celso Garcia Martell, formerly a graduate student at the University of Hawaii now at the National Agricultural Post-graduate College at Chapingo, Mexico, expressing sympathy on the death of Dr. David T. Fullway.

Program: Dr. H. A. Bess presented a very interesting talk with color slides on his entomological work in Fiji, Australia and the Philippines with emphasis on biological control.

**Notes and Exhibitions**

**New Publications:** Dr. Bess exhibited two publications which he thought might interest members. They were “Fernald Club Yearbook, January 1965”, which was dedicated to Honorary Member R. H. Van Zwaluwenburg, and “My Weapons Had Wings” by Hubert W. Simmonds of Fiji who writes about his entomological views.

**Fungi on free living insects:** Dr. J. L. Gressitt presented further comments on the recently discovered phenomenon of plants growing on the backs of large weevils in moss forest at high altitudes in New Guinea. Fungi, algae, lichens and liverworts have been found growing on several species of large weevils. This probably represents the first record of lichens and liverworts growing on insects, and the first record of algae growing on living terrestrial insects. Records for fungi other than members of the family Laboulbeniaceae, and certain other fungi, growing on insects are very scarce and mostly known from termites and ants. Numerous oribatid mites were living in the fungi on the backs of the beetles. Psocids may
have also been feeding on the plants.

**Tuberolachnus salignus** (Gmelin) a new record for Maui: Dr. Beardsley exhibited specimens of this large aphid which he collected at 7,000 ft elevation in Haleakala Crater, Maui, 23, July 1965, on *Osteomeles anthyllidifolia*. This is a new island record for *T. salignus*, which has been known here previously only from the island of Hawaii. *Osteomeles*, a native shrub of the family Rosaceae, is the only known host in Hawaii, although the aphid has been recorded from willow, and several other hosts elsewhere.

**Cryptophlebia ombrodelta** (Lower) a new host record: Harry Nakao reported that adults of a lepidopterous borer, *Cryptophlebia ombrodelta* (Lower), were recovered from terminal stems and seed pods of indigo, *Indigo suffruticos*a, collected from Oahu, Hawaii and Kauai. The stems were severely damaged causing dieback of the terminal shoots.

**Linognathus vituli** L. a new state record: Harry Nakao reported that this long-nosed cattle louse was found infesting young calves at Kipu Ranch, Kauai in June, 1965. This sucking louse probably has been in Hawaii a long time but its presence has never been recorded before.

**Schistocerca vaga** Scudder aerial eradication: Carl Gaddis reported that the fifth and final scheduled aerial application was applied at Sand Island on 30, July 1965 under the Cooperative State-Federal *S. vaga* Aerial Eradication attempt. The final two applications were of 12 ounces of malathion per acre. The fourth application was applied July 1 and only three adult females and one third instar nymph were discovered between then and the 30 July application. Surveys made on the island after the fifth application have been negative. If additional specimens are found, the applications may be continued on a find and treat basis.

**Culex pipiens quinquefasciatus** Say: Dr. Hardy reported that he found this mosquito breeding in a small ground pool in the forest above Paauilo, Hawaii, 3,200 ft, on 7, August 1965.

*13, SEPTEMBER 1965*

The 717th meeting of the Hawaiian Entomological Society was called to order by President Mitchell at 2:00 p.m. in Agee Hall.


Mahmood Amwar, Darrel Hale, and Dr. A. A. LaPlante were elected to membership in the Society.

Dr. Nixon Wilson presented a very interesting talk with slides on his trip to Indonesia.
Nematodes: Howard Woolford exhibited what he believed to be two different nematodes which he collected in Kaimuki.

Phlegetonia delatrix Guenee, new to Kauai: On 15, VII, 65, the comparatively new immigrant noctuid moth, *P. delatrix* was collected by S. Au who reported large numbers of adults on *Vitex trifolia* plants along the shoreline at Mana, Kauai. This constitutes a new island record for this pest. Presented by Miss Chong.

Spalangia endius Walker established on Oahu: The pteromalid, *S. endius*, introduced from Riverside, California in October, 1964 to aid in the control of the house fly, *Musca domestica* L., is now established in Ewa, Oahu. Specimens reared from house fly puparia collected 28. IV. 65 were determined by D. D. Burks, USNM. Presented by Miss Chong.

Oribatid mites associated with fungi on beetles: Dr. J. L. Gressitt reported that Dr. J. Aoki, of the National Science Museum in Tokyo, Japan, stated that the mites on the plants on the New Guinea weevils represent a new family of oribatid mites. Presented by Dr. Wilson.

Plagiohammus spinipennis Thomson: Dr. K. Harley, Commonwealth Scientific and Industrial Research Organization (CSIRO), Australia, presently assigned to lantana insect infestations on the Island of Hawaii, reported finding 5 adult *Plagiohammus* at Kukui Paddock at night in VIII. 65. This is the first record of field adults in the state. Presented by C. J. Davis.

Uroplata girardi Pic.: The lantana leaf mining hispid, *U. girardi*, was recovered for the first time on Mt. Tantalus, 13, IX. 65 by M. Hironaka. This confirms an earlier finding by University students reported by Dr. Beardsley. Considerable mining and feeding damage was observed and adults were present. *Uroplata* was introduced from Brazil in 1961, and is well established in Lawai Valley, Kauai. Presented by C. J. Davis.

Otiorhynchus cribricollis (Gyll.) cribate weevil new to Maui: C. J. Davis reported for Nobuo Miyahira that *O. cribricollis* is now established on Maui. Damage by this weevil, reported by commercial flower grower James Yokoyama in Upper Kula (4,000 ft), to chrysanthemum leaves, flower buds, and blossoms were confirmed by N. Miyahara. About 40% of the flower buds were damaged. Identification was confirmed by Miss Chong. This is the first record of this pest on Maui. Up to this time, it was known only from Kamuela, Hawaii where it was discovered in VI, 60 (PROC. HAW. ENT. SOC. 18 (1): 24, 189).

Notes on Malaria in the Republic of Vietnam: A survey of the malaria situation for Marine units in the I Corps area of Vietnam was conducted in July. All but a few of the 50 cases which had occurred up to the end of August were personnel who had been on outpost or patrol.
duty in foothills from 5–10 miles inland from the low coastal region. This agrees with the estimate of the U.S. Overseas Mission malaria eradication staff that the civilian rate in the coastal zone is very low, approximately 5 per 100,000 per year. Night biting collections at a Marine outpost on hill 225 about 5 miles west of the Hue-Phu Bai area produced 6 *Anopheles aconitus* and 5 *A. maculatus*. No *A. minimus* or *Jeyporiensis candidiensis* were taken. These are reportedly the primary vectors in the foothill and central plateau regions of Vietnam. *A. minimus* is found almost exclusively in dwellings and is strongly anthropophilic. Only *vagus*, *philippinensis* and *sinensis* were taken in the coastal area. These are not considered important vectors in Vietnam. However, *sinensis* may be involved sometimes since a malaria eradication program collapsed, primarily because of Vietcong activity, but there is also some suspicion that increasing exogenous malaria may be a factor. Control programs were limited to household residual spraying with DDT. Military experience indicates that most of the malaria cases were exogenous. *Anopheles aconitus* and *maculatus* are found as frequently outdoors as in dwellings and attack man freely, especially when cattle are absent. Recommendations were made for evaluation of low-volume aerial spraying in the unforested areas as a control method. *Anopheles balabancensis* is reported as an important vector in the dense forests of mountainous areas. Presented by Capt. R. T. Holway.

**Araeocorynus cumingi** Jekel new to the Island of Hawaii: State inspectors G. Fukumura and S. Matayoshi intercepted several adults of this anthribid in a shipment of *Mucuna* sp. seeds, believed to be from the Island of Hawaii, in mail destined for California on 25, VIII, 1965. Presented by E. S. Shiroma.

**Neopinnaspis harperi** McK. a new host record: Sueo Nakahara, USDA, Seattle, Washington, reports that a specimen of this scale was intercepted on avocado (*Persea* sp.) fruit in ship's stores from Hawaii (probably Oahu) on 13, VI. 63, at Seattle. This is the second report of this scale in Hawaii and also constitutes a new host record. Dr. Beardsley first reported this scale at the II. 65 meeting as being collected on *Gouldia terminalis*. Determined by R. F. Wilkey, State of California Department of Agriculture. Presented by E. S. Shiroma.

**Cryptoblabes aliena** Swezey: A heavy infestation of this Phycitid moth larva was found in experimental sweet corn plots at the Waimanalo Experiment Station on Oahu. The larvae had spun fine silken tunnels, plainly evident in the tassels, and were feeding on pollen in the tassels. Although the larvae were abundant they did not appear to reduce pollination of the sweet corn. This moth was first reported by Dr. Swezey in 1905 and damage to sweet corn was reported by Swezey in 1906. The planting at Waimanalo was also heavily infested with corn leaf hoppers, *Peregrinus maidis*. Presented by W. C. Mitchell.
The 718th meeting of the Hawaiian Entomological Society was called to order by President Mitchell at 2:00 p.m. in Agee Hall.

Members present: Ashlock, Beardsley, Bianchi, Chong, Clagg, Davis, Funasaki, Gressitt, Harris, Holzapfel, Joyce, Kajiwara, Komatsu, LaPlante, Look, Maa, Mitchell, Miyatake, Nagatomi, Nakao, Nakata, Namba, Prasad, Samuelson, Sargent, Shahjahan, Shiroma, Steffan, Steiner, Suehiro, Sugerman, Woolford, and Yoshimoto.

Visitors: M. Fitzsimons and S. Sirivanakaran.

President Mitchell announced the following committee appointments:
Nominations Committee: F. A. Bianchi (Chairman), N. Wilson, H. Nakao, J. W. Beardsley, and L. F. Steiner. This committee will nominate candidates for next year’s officers and will report at the November meeting.

Editorial Committee: W. A. Steffan (Editor), E. H. Bryan, Jr., A. A. LaPlante, M. Tamashiro, and C. J. Davis.

Jack Fujii, Ed Macion, and David Sargent of University of Hawaii staff were unanimously elected to membership in the Society.

Dr. Ryoji Namba of the University of Hawaii presented a very interesting illustrated talk on his Entomological work in Thailand.

Notes and Exhibitions

Locusta danica Linn.: Hundreds of these large grasshoppers were seen on Kwajalein during 23–27, VII. and 1, VIII. to 3, IX. During the day they spread over the peripheral lawns of the island, but at night they concentrated in dense clumps of Scaevola, Messerschmidia, Ipomoea, and other vegetation growing along the beaches. Since Kwajalein is the last stop for many military and civilian flights coming to Honolulu, this insect conceivably could be introduced to Hawaii. Presented by F. A. Bianchi.

Prodenia litura (Fabr.): Caterpillars of this widespread noctuid were equally abundant on Kwajalein during the periods mentioned above. They were feeding on Ipomoea pes-caprae and other wild littoral plants, but in some gardens they seriously injured spider lily, Pancratium littoral Jacq., feeding chiefly on the blossoms. A large percentage of the caterpillars in wild vegetation bore, usually on or near the head, one to five eggs of a large unidentified tachinid which was observed ovipositing on them several times. Presented by Bianchi.

Oechalia schellenbergii (Guérin-Méneville): This pentatomid was conspicuous on Kwajalein during 23–27, VII; it had become scarce by 29, VIII. Adult and nymphs of various instars were observed several times feeding on eggs and young caterpillars of Spodoptera mauritia on various grasses and plants, and on the eggs and caterpillars of Uletheisapulchelloides Hamp. on bushes of Messerschmidia argentea (L.F.). Once an
An adult was seen feeding on a half-grown larva of *Prodenia litura* on a leaf of beach morning glory. Presented by Bianchi.

**Anthrax distigma** Wiedemann: On 5, X. an adult of this bombyliid fly was observed resting on a sunlit wall at Mapulehu, Molokai, not far from where Dr. Beardsley reported a pupal exuvium protruding from a wasp’s mud nest on 26, VI. 64. (1964, Proc. 18 (3): 338). Presented by Bianchi.

**Aphis spiraecola** Patch a new state record: Dr. Beardsley reported that he had received this determination recently from Miss L. Russell, USDA, Washington, D.C. for specimens which he had collected in Haleakala Crater, Maui, at 7,000 ft on the native rosaceous plant *Osteomeles anthyllidifolia*, during VII. 65. *A. spiraecola* is widely distributed on the continental U.S. where it is known as the spirea aphid (ESA accepted common name) or the green citrus aphid. This species apparently has a wide host range. It is commonly taken on plants such as citrus, apple, *Spiraea*, guava, wild plum, and a variety of herbaceous weeds and woody trees and shrubs. It was reported as a pest of citrus in Florida.

**Metaphycus stanleyi** Compere: In the course of study on Hawaiian Encyrtidae, Dr. Beardsley discovered that this beneficial parasite is now well established on Oahu, and apparently has been present for several years. *M. stanleyi* is a primary parasite of certain soft scale insects including *Coccus hesperidum* (L.), *Saissetia coffeae* (Walker) and *S. oleae*. It originally was introduced into California from South Africa in 1937 by the University of California Citrus Experiment Station at Riverside. It became well established in California, and was said by Flanders (Hilgardia 13 (7): 418 footnote) to control effectively soft brown scale and black scale under certain conditions. According to records of the Hawaii Department of Agriculture, *M. stanleyi* was introduced purposely here from California in 1945. Although there are no previous reports of the establishment of this parasite in Hawaii, there are specimens, reared from parasitized scales, in the University of Hawaii collection which date from 1951. Locally, *M. stanleyi* has been reared from *Coccus viridis* Green and *C. elongatus* as well as *C. hesperidum* and *S. coffeae*. Specimens were submitted to Professor Compere at Riverside who wrote, “I am unable to distinguish between the specimens from Hawaii reared from *S. hemisphaerica* and *Metaphycus stanleyi* in our collection.”

**Charips brassicae** (Ashmead) a new state record: Dr. Beardsley exhibited specimens of this charipine cynipid which he collected in Haleakala Crater, Maui in 1962 and 1965. This is a new insect record for the State. The specimens were determined by Dr. C. M. Yoshimoto. *C. brassicae* is widely distributed in the continental United States. The type host was the aphid *Brevicoryne brassicae* (L.), but the entire subfamily is believed to be hyperparasitic. This is the first known representative of the subfamily Charipinae to become established in Hawaii. Specimens
collected in Haleakala during VII. 65 were reared from the aphid *Macrosiphum granarium* taken on grass at 7,000 ft near Paliku Cabin. Also reared from this collection of aphids were the braconid primary parasite *Aphidius obscuripes* Ashmead (the first definite host record for this species in Hawaii) and the pteromalid hyperparasite *Pachyneuron siphonophorae* (Ashmead). *Aphidius obscuripes*, is presumed to be the host of the two species of hyperparasites, *C. brassicae* and *P. siphonophorae*.

**Coptosoma xanthogramma** (White) new to the state: On 30, IX. 65, a single specimen of a plataspid bug, apparently identical to specimens determined by Dr. J. Herring at the USNM, was taken in an ultra-violet light trap, at the University of Hawaii campus, Honolulu. This is apparently another recently established immigrant, and the first record of the family Plataspidae in the Hawaiian Islands. Numerous species of *Coptosoma* and related genera occur in tropical Asia and on eastern Pacific islands. *C. xanthogramma* has been taken by USDA Plant Quarantine personnel on aircraft from the Philippine Islands several times during recent years. Presented by Dr. Beardsley.

**Microlarinus lypriformis** (Wollaston): The introduced puncture vine stem weevil, *M. lypriformis*, has killed all puncture vine plants observed at the Puunene photographic station on Maui. Prior to the release of the stem weevil last X. 64, puncture vine, *Tribulus cistoides* was growing luxuriantly at the Puunene Station. The destruction of the Puunene *Tribulus* community has not been as rapid as on Oahu and Kauai, possibly due to rich soil and more frequent rainfall. The stem weevil has travelled without assistance to Lahaina, where it was found established in puncture vine. This is approximately 10 miles from the nearest release point. Presented by C. J. Davis.

**Cupressobium maui** Bradley: This is a species of *Cupressobium* described by Dr. G. A.. Bradley in the *Canadian Entomologist*, 97 (6): 668-70. It was collected ex Cryptomeria japonica at Mahinahina Koa grove, Maui, Hawaii in V. 64 by Nobuo Miyahira and N. Cheatham. Presented by C. J. Davis.

**Schistocerca vaga** Scudder: The sixth aerial application for the Sand Island grasshopper was made on 1 September. Following intensive surveys, two surviving adults, both females, were found during the month. Further aerial applications will be made only if there is a noticeable buildup of grasshopper populations on the island.

8 NOVEMBER 1965
Van Zwaluwenburg.

Visitors: S. Harley, S. Sirinavakaran, and J. Tenorio.

President Mitchell announced that Dr. Paul Mueller, Nobel Prize winner and research scientist who did the initial toxicological work with DDT passed away on 17, October 1965. President Mitchell also announced the recent death of J. Everett Bussart, president of the Entomological Society of America, and affiliated with the Velsicol Chemical Corporation. A motion was made instructing the secretary to send a note of sympathy to Mrs. Bussart. Carl Gaddis announced that Kelvin Dorward, Chief Staff Officer, Survey and Detection Operations, USDA, A.R.S., P.P.C., passed away on 1 September, 1965, of a heart attack.

Presentation of Papers:

"Hypogaecic mealy bugs of the Hawaiian Islands" (Homoptera: Pseudococcidae). By John W. Beardsley.

"Toxicity of Several Insecticides to the Southern Green Stink Bug, Nezara viridula L." By Satoru Miyazaki and Dr. Martin Sherman.


L. F. Steiner presented a very interesting talk with slides on his recent trip to Germany, Greece, and Egypt in conjunction with the International Atomic Energy Agency conference on "Advances in Insect Population Control by the Sterile-Male Technique" held in Vienna, Austria this past summer.

Notes and Exhibitions

Doius meridianus Matsushita: Dr. Beardsley exhibited a specimen of this cerambycid, taken in a light trap at the University of Hawaii campus in Manoa Valley, Honolulu, on 5, XI, 65. This is believed to be the second record of D. meridianus in Hawaii. The species was first recorded in 1952 by E. C. Zimmerman from two specimens collected at Alewa Heights, Oahu, in VII and VIII, 51. The beetle is an immigrant known to occur in Formosa and the Ryukyu Islands.

Pselaphanca apicata (Fairmaire): This is the correct name for the species recorded last year as "Pselaphanca sp., possibly lateritia Fairmaire" (Proc. 19 (1): 18). A specimen from Oahu sent to the USDA for determination was identified as P. apicata by Dr. R. H. Arnett, according to a recent letter from Dr. W. H. Anderson. The original record of the oedemerid beetle in VI, 64, was based upon three specimens, but a long series, taken mostly from light trap catches of the Hawaii Department of Public Health, is now at hand. Presented by Dr. Beardsley.

New Caddis-fly on Oahu: Dr. Beardsley exhibited specimens of an as yet unidentified caddis-fly (Order Trichoptera) belonging to the family
Hydropsychidae*. This appears to be the second species of the order Trichoptera established in the state; the other being the minute *Oxyethira maya* Denning which was found first in 1940. The new immigrant is a much larger species with a wing span of about 15 mm. To date four specimens of the new caddis-fly have been recovered. All were found in material from light traps operated by the Hawaii Department of Public Health on Oahu. The exact locality on Oahu where the specimens originated is unknown. Three specimens were taken from material collected on 15, X, and one from collections dated 22, X.

**Thyanta accerra** (McAtee) a newly established immigrant: Dr. Beardsley exhibited specimens of this pentatomid stink bug, apparently a newly established immigrant. The specimens were determined by Dr. Ashlock of the Bishop Museum. *T. accerra*, which has sometimes been considered a subspecies of *T. pallidovirens* (Stål), is a North American form which occurs over much of continental U.S. east of the Rocky Mountains, from Texas to Canada (Ruckes, 1957, *Am. Mus. Novitates* No. 1824). It is occasionally a pest of crops such as beans, corn, sorghum, and tomatoes. Specimens of the new stink bug were brought to Dr. Beardsley’s attention by M. Shahjahan, who has been studying parasitism on *Nezara viridula* by the tachinid fly *Trichopoda pennipes*. Shahjahan collected several adults and nymphs of *T. accerra* on yard-long beans at the Ewa Plantation Village, about 3/4 mile south of the Ewa Plantation Company mill on Oahu, 23 and 27, X. Additional specimens were collected on beans and eggplant at the same locality by Dr. Beardsley and Dr. Mitchell on 1, XI. The new bug appears to be well established in this particular area, but at present is less abundant than *Nezara viridula*. Two of the adult *T. accerra* specimens bore eggs of *Trichopoda* but to date there is no evidence that the parasite can complete its development on this host.

**Microlarinus lypriformis** Woll. a new record for Molokai: F. A. Bianchi reported that on 25, X, he found larvae and pupae of this weevil in stems of puncture vine (*Tribulus* sp.) at Kawela, Molokai, but neither adults nor immature forms anywhere else on the island.

**Zootermops angusticollis** (Hagen): On 29, X, 65, Dr. D. E. Hardy reported that some Douglas fir wood, infested by a large species of termite *Zootermops angusticollis* (Hagen) was brought to him for identification by a representative of the Honolulu Sash and Door Company, located near the old airport terminal. Investigation by Hawaii Department of Agriculture personnel disclosed that the infested lumber was stored at the firm’s lumber yard and consisted of six bundles of rough fir which arrived in Honolulu on the barge Florence, Voyage 55, 20 October 1965, from Newport, Oregon. Additional termites were found. The infested lumber was fumigated on 1 November with 3 lbs of vikane® per 1,000 cubic ft for 48 hours. A check after treatment

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*Subsequently determined as *Cheumatopsyche analis* Banks by Dr. D.W. Denning.
indicated that the treatment was effective. *Z. angusticollis*, known as the common damp wood termite, occurs from Victoria, British Columbia to the Mexican Border and south probably to the San Pedro Mártir Mountains in Lower California and to Santa Margarita and Guadalupe Islands. This termite was previously discovered in Hilo, Hawaii about a year ago and prompt eradication measures were taken. These measures were apparently successful as there have been no further reports of this termite. Presented by C. J. Davis.

**Microlarinus lypriformis** (Woll.): The puncture vine stem weevil, *M. lypriformis* was reported at Sandy Beach, Oahu ex *Tribulus cistoides* by J. Kajiwara. Infested stems and emergence holes were observed on 6, X, 65 and the scarcity of emergence holes suggested that the weevils reached this locality within the past 60 days. Sandy Beach is approximately 25 miles from the nearest release point (Barber's Point). Presented by C. J. Davis.

**Phoracantha semipunctata** Fabr. *recently discovered immigrant*: During October, two additional specimens of this recently discovered immigrant cerambycid were picked up in Honolulu. One specimen was found in Queens Hospital by a cleaning lady on 11, X and the other at the air freight warehouse at the Hickam Air Force Base on 28, X by Robert Ing. This cerambycid apparently is well established on Oahu. Presented by E. S. Shiroma.

**Chrysobotris octocola** LeC. *a new record for island of Hawaii*: A specimen of this buprestid beetle was picked up at Waimea, on Hawaii, on 13, X, 65, by A. Kawanishi and B. Hu of Hilo. This buprestid was first reported by Mr. Ford (Proc. 17 (3): 321) in VI, 60, from the Waianae coastal area of Oahu. Presented by E. S. Shiroma.

**Dacus dorsalis** Hendel: Males of the oriental fruit fly were observed in large numbers on blossoms of the Cannon Ball Tree, *Couroupita guianensis* Aubl. (Lecytidaceae-Brazil nut family) and on the blossoms of a small herbaceous plant *Viriesia heliconioides* at Foster Botanic Garden, Honolulu, 24, X, 65. The males were walking over the surface of the flower petals and appeared to be lapping or sponging the surface. Presented by W. C. Mitchell.

**Pheidole megacephala** (Fabr.): This ant is well known for its earthen turrets or crater-like structures, formed especially after rains, around the central opening to the nest. Earthen tunnels leading into a home in Aeia were in an area where drainage from the eaves moistened the ground. The ants apparently had built the turret and tunnel 5-in along the foundation of the home for protection from the rain. Presented by W. C. Mitchell.

The 720th meeting of the Hawaiian Entomological Society was called
to order by President Mitchell at 2:00 p.m. in Agee Hall.


Visitors: W. Barrett, R. D. Hughes, K. Kaneshiro, J. Murphy, and J. Tenorio.

Nysius Committee: Dr. Beardsley, chairman, reported that in essence the problem has been solved since the koronograph installation was moved from Haleakala, Maui to Maunaloa on Hawaii where there is little interference.


“The susceptibility of Cactoblastis cactorum (Berg) to Bacillus thuringiensis var. thuringiensis Berliner (Lepidoptera: Phycitidae)” by Shuchshiang Huang and Minoru Tamashiro.

Presidential address: “History of Entomology at the University of Hawaii” by Dr. W. C. Mitchell.

Notes and Exhibitions

Phoracantha semipunctata Fabr.: G. A. Samuelson of the Bishop Museum reported that he caught another specimen of this cerambycid
recently at light at his home in Kalihi.

**Schistocerca vaga** Scudder: B. B. Sugerman reported that a specimen of this grasshopper was picked up in an automobile at the Kapalama Military Reservation recently.

**Hypera punctata** (Fabr.) *a new state record*: F. A. Bianchi exhibited one specimen of this curculionid, the clover leaf weevil, which was caught in a light trap at Ewa, Oahu, during the week of 22-29, XI. The species is new to the state but well known in North America, although of European or Siberian origin (Essig, 1926 *Insects of Western North America*, pp. 496-97). Both the adults and larvae hide in the daytime, emerging only at night to feed on leaves and tender stems of clover, alfalfa, beans, Jerusalem artichoke and other host plants.

**Schreckensteinia festaliella** Hübner: C. J. Davis exhibited Riker mounts showing blackberry leaf damage at Kokee, Kauai caused by the introduced heliodinid, *S. festaliella*. This blackberry insect was introduced from Santa Barbara, California in 1963 and is now successfully established at Kokee, Kauai and Olinda, Maui. Also active on blackberry foliage was the greenhouse thrips, *Heliothrips haemorrhoidalis*.

**Plants on beetles in New Guinea**: Dr. Gressitt reported the following plants were found on the beetles: lichens, liverworts (both new on insects), algae (new on land insects), fungi, and diatoms; and animals living in these plants were oribatid mites, rotifers, and nematodes.

**Agriphila (formerly Crambus) vulgivagella** (Clemens): Miss Setsuko Nakata reported that J. B. Snead, Medical Officer of the Department of Health, Christchurch, New Zealand, sent a specimen of a pyralid moth to the Bishop Museum found alive on a C-135 USAF aircraft which arrived in Christchurch from Hickam Air Force Base 22, IX, 65. The only stop-over point en route was at Pago Pago, Samoa. This aircraft was sprayed by the flight crew with a Cooper’s aerosol spray, the type conforming with World Health Organization’s Formula G. 1152, and kept sealed for five minutes. When the moth was noted resting on some luggage the aircraft was resprayed and kept sealed for a further five minutes before it was allowed to be opened. This insect was still alive when it was taken to the Canterbury Museum where it could not be identified positively. The specimen was sent subsequently to Dr. E. G. Munroe, a pyralid specialist at the Canada Dept. of Agriculture, and he responded as follows: “It turns out that this is a male of *Agriphila* (formerly *Crambus*) *vulgivagella* (Clemens), a common North American grass moth widely distributed across the continent. Needless to say this is a surprising identification considering the history of the specimen, but I do not think there is any likelihood of error. So far as I know, this species has not been reported from New Zealand, Pago Pago, or from Hawaii. However, in North America it is a very abundant sod-feeding species, and it is not impossible that it has become established in the neighborhood of airports in one or more of
those places without yet having been detected. The alternative is to sup-
pose that this specimen survived not only fumigation in Christchurch but
also previous fumigation in Hawaii. Probably the airports concerned
should be checked for colonies of this species. The moths are fairly easily
disturbed in the grass in the daytime and also come freely to light in
the evening”.

**Culex quinquefasciatus** Say.: George Komatsu, Hawaii Dept. of
Public Health, reports that this mosquito was found breeding on Hawaii
at the Pohakuloa Nene Farm of the Fish and Game Division, Dept. of
Land and Natural Resources, in early November by A. F. Lee, nene
propagation specialist. The mosquito larvae were found breeding in a
concrete pool. Further survey by M. Kobatake, supervising sanitary
inspector, Mosquito Control Branch, Public Health Dept., disclosed ad-
ditional *Culex* breeding in a tub adjacent to the nene pens and also in a
nene field watering trough. Both egg rafts and larvae were collected.

The Pohakuloa Nene Farm is about 6,500 ft, the highest elevation at
which actual breeding of this species has been confirmed by the Mosquito
Control Branch. Lee disclosed that he first noticed mosquitoes breed-
ing at this site about five years ago. Reported for Komatsu by E. S.
Shiroma.

**Mezira membranacea** (Fabr.): A specimen of this aradid was pick-
ed up by Benjamin Hu, Plant Quarantine Division, USDA, 9, IX, 65,
at a papaya packing shed in Hilo. This is the second record of this
aradid from the Big Island (Hawaii).

**Nysius terrestris** Usinger a new host record: Benjamin Hu also
intercepted adults and nymphs of this lygaeid bug on *Araucaria excelsa* trees
from Pahoa, Hawaii, for export to California on 9, IX, 65. This con-
stitutes a new host record for this lygaeid. A malathion dip treatment has
been recommended to eliminate this bug for mainland destinations. Re-
ported by E. S. Shiroma.

**Thyanta accerra** (McAtee): E. S. Shiroma exhibited several nymphs
and adults of this recently reported immigrant stink bug. They were
collected 22, XI, 65, by sweeping weeds and tomato plants at the Hickam-
Ft, Kamehameha area, Oahu. Subsequent surveys on 23, 24, and 29,
XI, revealed that the infestation was moderate, covering both sides of a
dirt road (about 100 yards) in a patch of *Acacia farnesiana* plants located
between the Hickam runway, the Hickam Skeet Range, and the G.S.A.
warehouses. This is the second locality record for this stink bug in the
state, the first being the Ewa Plantation area. Determined by P. D.
Ashlock.
NEW IMMIGRANT RECORDS FOR THE YEAR 1965

Species marked with an asterisk (*) were reported from the Hawaiian Islands for the first time during 1965 on the dates recorded in the text. Species not so marked were reported previously under incorrect or incomplete determinations. Species marked with a dagger (†) are considered doubtfully established. New species considered to be endemic to the Hawaiian Islands are not included.

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