

- “ VIII, “ 191 and 192: “*Nysius delectus* White” = “*N. coenosulus* Stal”.
- “ IX, “ 43: “*Nysius delectus* White” = “*N. terrestris* Usinger”.
- “ IX, “ 95: “*Nysius delectus* White” = “*N. terrestris* Usinger”.
- “ IX, “ 97: “*Nysius delectus* White” = “*N. communis* Usinger”.
- “ IX, “ 139: “*Nysius coenosulus* Stal”, probably is *communis* Usinger”.
- “ IX, “ 206: “*Nysius* sp.” = “*Neseis oahuensis* Usinger”.
- “ IX, “ 357: “*Nysius*” n. spp. =  
 {“*Oceanides myopori* Usinger”.  
 }“*Neseis nitidus impressicollis* Usinger”.
- “ X, “ 189: “*Nysius coenosulus* Stal” is probably *N. delectus* White, as this species has been recorded from that locality, but can't be sure for the specimens have been mislaid.

### Notes on Food Habits of Lepidoptera in Samoa

BY O. H. SWEZEY  
 Experiment Station, H.S.P.A.

(Presented at the meeting of December 22, 1941)

While on a collecting trip in Samoa during June, July and August, 1940, with Mr. E. C. Zimmerman of the Bishop Museum, I gave special attention to the rearing of lepidopterous larvae, and thus determining so far as possible the feeding habits of as many species as I was able, being continually on the search for caterpillars in whatever locality explored by us. Many new records were obtained in this way, and also some new species were discovered, not all of which have as yet been determined and described. Besides those reared, much material was obtained by light trap, and many species obtained which were not represented in Samoan collections at Bishop Museum.

#### BUTTERFLIES

##### *Danaiida plexippus* (Linn.)

At Afiamalu, Upolu, 2200 ft. elevation, July 10, 10 eggs were found on the leaves of a small plant of *Asclepias curassavica*.

At Apia, on the peninsula, July 14, two half-grown caterpillars were observed on the same plant. (Not reared.) At Tutuila full-grown caterpillars were found on the same plant at Fagatoga, reservoir trail, Aug. 3, and on the Leone Road, Aug. 7.

**Hypolimnias errabunda** Hopkins

In the forest at Afiamalu, June 14, seven of the black spiny caterpillars were found on the leaves of a large-leaved shrub (*Cypholophus macrocephalus*). Four chrysalids were formed June 30 and the butterflies issued July 18. On June 30 at another location in the forest at Afiamalu, three more caterpillars were obtained on the same plant. Chrysalids were formed July 17, and the butterflies issued July 28.

**Euploea elutho bourkei** Poulton

One caterpillar was collected on leaf of *Ficus tinctoria* at Amouli, Tutuila, 400 ft. elevation, Aug. 2. Three tachinid maggots issued Aug. 7 which produced adult flies Aug. 20 (Not yet determined.) Another caterpillar was found on the same plant at seashore, Utulei, Tutuila, Aug. 21. This caterpillar was preserved as there was not time for rearing before departure on homeward trip.

**Precis villida villida** (Fab.)

Two caterpillars were found on sweet potato leaves at the Experimental Farm, Taputimu, Tutuila, Aug. 7 by Mr. Zimmerman. One caterpillar was preserved, and the other one reared, the chrysalis being formed Aug. 14 and the butterfly emerging Aug. 22. At Mr. Ben Gurr's vegetable garden at 700 ft. elevation, Moloata, Tutuila, Aug. 27, I observed the butterflies flying over a sweet potato patch, and a few caterpillars on the leaves.

The caterpillar and chrysalis were not described by Hopkins in "Insects of Samoa", hence, brief descriptions herewith. The full-grown caterpillar is about 40 mm. in length. Black, with minute white speckles all over; regularly covered with spiny tubercles, the two lateral rows above and below spiracles are pale brown at base; head hairy or with slender spines, two short tubercles on vertex; spiracles oval, black.

The chrysalis is 15 mm.; grayish brown, mottled with pinkish white specially on wing cases and two longitudinal rows on back, and a transverse ring about mid-dorsum of abdomen, also on terminal segments.

**Melanitis leda solandra** (Fab.)

Caterpillars were found quite common on sugar cane leaves at the Experimental Farm, Taputimu, Tutuila, Aug. 7. Two butterflies were reared Aug. 26. Caterpillars were found on *Miscanthus japonicus* at three places on Tutuila: near the hotel, Aug. 17; Breaker Point, Aug. 19; Fagatoga, near the power house, Aug. 25. Also a green chrysalis on leaf at latter place.

**Jamides argentina** (Prittw.)

Two butterflies were reared from larvae feeding in flowers of *Vigna marina* on the peninsula at Apia, Upolu, July 14. Eggs on buds and blossoms of the same plant were found at Utulei, Tutuila,

Aug. 17. The butterfly was observed about the plants at this place, also at Breaker Point, Aug. 19, and larvae were collected.

**Catochrysops lithargyrea pepe** Hopkins

This blue butterfly was reared from larva feeding in flowers of *Desmodium umbellatum* at the shore line Utulei, Tutuila, Aug. 17. The butterfly emerged Aug. 30.

**Skipper** (undetermined)

Larvae were found feeding in rolled tips of the new terminal leaves of young rattan palm plants, at Malololelei, Upolu, July 8, and at Tapatapao, Upolu, July 17, but not reared. At the latter place two *Apanteles operculinae polita* Fullaway were reared from the caterpillars.

SPHINGIDAE

**Herse convolvuli** (Linn.)

Larva on leaves of *Ipomoea pes-caprae* on the peninsula, Apia, Upolu, July 14 (Zimmerman). Not reared. Two caterpillars on *Ipomoea* sp. at 600 ft. elevation north side of Pago Pago harbor, Tutuila, Aug. 6. (Preserved.) One caterpillar on leaves of sweet potato at Ben Gurr's, Moloata, Tutuila, Aug. 27.

**Chromis erotus eras** (Boisd.)

Caterpillars were collected on leaves of *Morinda citrifolia* at Amouli, 400 ft. Tutuila, Aug. 2, and shoreline Utulei, Tutuila, Aug. 17. (Preserved, as not yet matured when we started for return to Honolulu.)

**Hippotion celerio** (Linn.)

Caterpillars collected on taro leaves at Tapatapao, Upolu, July 21. Five moths emerged Aug. 9-25. At Sinaele, Upolu, July 27, eggs were observed on taro leaves, and 10 small caterpillars; 2 large caterpillars collected from which moths matured Aug. 20-22. On Tutuila, a few small caterpillars were found on taro patches wherever visited: North side of Pago Pago harbor, 600 ft. el., Aug. 6 and 16; Fagatoga, 800 ft. el., Aug. 12 and 25; Fagatoga, 1000 ft. el., Aug. 28.

GEOMETRIDAE

**Thalassodes chloropis** Meyr.

One caterpillar collected on *Rhus taitensis* at Utulei, 800 ft. Tutuila, Aug. 18. Moth emerged Sept. 4.

**Cleora samoana** (Butler)

One caterpillar on *Eugenia* sp. (?) at Afiamalu, Upolu, June 14. The adult moth emerged July 8. For a moth which came to lights so abundantly, it is remarkable that I found the caterpillar but once.

## AGROTIDAE

**Heliothis assulta** Guenée

Two caterpillars were found at Tapatapao, Upolu, July 23, feeding on the green fruits in their husks, of *Physalis minima*, going from one to another, thus consuming a large number of fruits before getting their growth. The moths emerged Aug. 10 and 12. Full-grown caterpillar was 30 mm.; yellowish green, minutely chagreened on the surface like the caterpillar of *H. armigera*; head uniform light brownish or testaceous; cervical shield with lateral and transverse black markings; setae on body segments situated in conspicuous black, round dots; a yellowish patch above each spiracle, each with fuscous marking before and posterior to it; spiracles slightly oval, black; thoracic legs fuscous.

At Ben Gurr's garden above Moloata, Tutuila, Aug. 27, the caterpillars were very abundant, nearly every plant being affected in a small patch of tobacco. Daily handpicking was resorted to to save the crop. At the same garden an occasional green tomato was eaten into and spoiled.

**Prodenia litura** (Fab.)

The worst taro pest in Samoa. Always to be found in one stage or another in any taro patch visited on Upolu: Apia on ridge towards Mt. Vaea, June 2, hundreds of small larvae were found on a single taro leaf; Aliesa, June 4; Afiamalu, June 9, 22, July 2, all stages, sometimes three egg clusters per leaf, with two or three hundred eggs per cluster; Sinaele, July 27, caterpillars abundant, three small ones with *Euplectrus* pupae, the parasites issuing July 31, a species which differs from *platyhyphenae* in Hawaii. On Tutuila it was not found so abundant except in one place on the slope north side of Pago Pago harbor, Aug. 6, and Fagatogo, 1000 ft. Aug. 28.

A colony of *Prodenia* caterpillars was found on banana leaf at Afiamalu, Upolu, June 9, and another at Amouli, Tutuila, Aug. 2. At Blunt's Point, Tutuila, Aug. 17, a colony on *Mimosa pudica*. At Breaker Point, Tutuila, Aug. 19, several caterpillars on *Ipomoea pes-caprae*.

**Spodoptera mauritia** (Boisd.)

Caterpillars were abundant in lawn at the Afiamalu mountain house, Upolu, June 12. Egg clusters were very abundant on a small citrus tree. Thirty-two clusters were counted (mostly hatched), and there was no evidence of egg-parasites. One moth was reared, emerged July 7. At the U.S. Naval Station, Tutuila, Aug. 10, old hatched egg-clusters were common on leaves of young coconut trees on the golf course. At the same place, Aug. 15, the old hatched egg-clusters were so abundant on a small Royal palm that 160 of them were counted on a single leaf. They were similarly numerous on

other leaves, many of them showed that parasites (possibly *Tele-nomus*) had issued from them, but none were found containing parasites. Three fresh egg-clusters were found from which the caterpillars hatched in a few days. None parasitized.

***Cirphis unipuncta* (Haw.)**

One moth was reared from caterpillar found in grass lawn at Afiamalu, Upolu, June 13. The moth emerged July 16. This moth was not previously recorded in Samoa.

***Earias luteolaria* Hampson.**

At Fagatoga, 600 ft., Tutuila, Aug. 12, a caterpillar was found under loose bark of *Hibiscus tiliaceus* apparently searching for a secluded place for spinning its cocoon. In a tin box it made a tough dense cocoon from which the moth issued Aug. 26.

***Plusia chalcites* (Esp.)**

Three caterpillars collected from *Ipomoea pes-caprae* on the peninsula, Apia, Upolu, July 14 were all parasitized. July 17, 28 parasite larvae issued and formed white cocoons from which the adult parasites issued July 22. Identified by Mr. Fullaway as *Apan-teles expulsus* Turn. Caterpillars were common in Ben Gurr's garden above Moloata, Aug. 27. They were found on corn tassel, cucumber, squash, sweet potatoes, taro, tobacco and turnips.

***Othreis fullonia* (Clerck)**

Three large caterpillars were found on leaves of *Erythrina* on the peninsula at Apia, Upolu, June 2. A chrysalis was found in a rolled leaf at the same place, from which the moth emerged June 12. At Afiamalu, Upolu, June 14, a small caterpillar was found on *Erythrina* leaf. It was reared to maturity, spinning up for pupation July 4, and the moth emerged July 26. When collected the small caterpillar was black. After 10 days it had grown to a length of 1½ inches; was mostly black with scattered white dots and other white marks on posterior segments; three pairs of conspicuous white spots on first three abdominal segments, the 2nd and 3rd have a black spot on ventral edge which in turn has a ventral, orange, lunate border. The caterpillar has a habit of resting with the anterior portion humped up and the head doubled back to abdominal prolegs, of which there are 4 pairs, the anterior pair imperfect. The posterior end is also raised from the leaf on which it rests with only the three pairs of perfect legs. The posterior end had a large blunt dorsal tubercle, reddish at apex.

***Parallelia vitiensis* (Butler)**

A large caterpillar was found under loose bark of *Hibiscus tiliaceus*, apparently about to spin for pupation. Moth emerged July 1. Probably the caterpillar had fed on the foliage of the tree.

**Cosmophila flava flava** (Fab.)

One caterpillar collected on Hibiscus in garden at Casino Hotel, Apia, Upolu, June 3. Adult moth emerged June 18. One caterpillar on *Hibiscus tiliaceus* at Vaialua, Upolu, July 28. Moth emerged Aug. 16. One caterpillar on leaf of *Sida rhombifolia*, Afiamalu, Upolu, June 13. Moth emerged July 4.

**Rusicada vulpina** (Butler)

At Falefa Falls, Upolu, June 3, one prettily colored caterpillar was collected on *Hibiscus tiliaceus*. Caterpillar black with a light yellow longitudinal band a little to each side of dorsal line; head very pale brown. Moth emerged June 24.

**Tiridata samoana** (Butler)

Caterpillars were very abundant on an unidentified shrubby burrweed along roadsides at Tapatapao, Upolu, July 21. One moth was reared. An ophionid was reared from one caterpillar.

**Azazia rubricans** (Boisd.)

A large green caterpillar was found on *Vigna marina* on the peninsula, Apia, Upolu, July 13. Adult moth emerged July 21. One caterpillar was found on the same plant at Falepuga. From it twenty *Apanteles* cocoons were formed, and the parasites issued Aug. 5 (*Apanteles expulsus* Turn.). *A. rubricans* was not previously recorded in Samoa.

**Simplicia lautokiensis** Prout

Caterpillars were found among dried leaves on a felled tree at Utulei, 700 ft. Tutuila, Aug. 24. One moth emerged.

**Ophiuche ferriscitalis** (Walk.)

Several larvae were collected on leaves of *Commelina nudiflora* at Malololelei, Apia, June 13 and 18. Also at Afiamalu, Upolu, June 14. One moth was reared; several were swept from the plant. The caterpillar is slender, green, with 3 pairs of abdominal prolegs.

**Hyblaea sanguinea** Gaede

Three caterpillars were found in spun-together leaves of *Premna taitensis* at the shoreline, Falepuga, Upolu, July 28. Two of them pupated, and moths emerged Aug. 10.

## PYRALIDAE

## THYRIDINAE

**Brixia dialitha** Tams

One leafroller larva on *Macaranga*, Amouli, 400 ft. Tutuila, Aug. 2. Moth emerged Aug. 18.

## PHYCITINAE

**Homoeosoma ephestidiella** Hampson

The larvae feed in flower heads of *Ageratum conyzoides*. Were

found at Afiamalu, Upolu, June 14, 25 and July 3. Tapatapao, Upolu, July 21. Fagatoga, 300 ft., Tutuila, Aug. 28.

**Cryptoblabes proleucella** Hampson

Several larvae were found feeding on the sugar cane aleurodid, *Neomaskellia bergii* (Sign.), at Tapatapao, Upolu, July 16. The larvae were beneath a web which covered the aleurodid colony on which they fed. Five moths emerged July 29. Two larvae were found feeding similarly at Experimental Farm, Taputimu, Tutuila, Aug. 7. Two moths emerged Aug. 16 and 21.

**Hypsipyra swezeyi** Tams

Four plump whitish larvae were found in an old cacao pod in a plantation near Apia, Upolu, June 4. Moths emerged later and were spoiled. A little below Malololelei, Upolu, July 7, an old cacao pod had several larvae which had eaten all of the seeds. Two moths emerged July 17 and 18.

HYDROCAMPINAE

**Bradina acrospila** (Meyr.)

Leafroller caterpillars were common on a clump of *Wedelia biflora* by the shore at Falepuga, Upolu, July 28. Six moths emerged Aug. 1 to 5. Reared from the same plant at Breaker Point, Tutuila, Aug. 19. On the slope at north side of Pago Pago harbor, Tutuila, Aug. 6, larvae and pupae were found on the leaves of a green *Coleus* which was common. Four moths emerged Aug. 8 to 14; also two *Chalcis samoana* Fullaway Aug. 13 and 18 from pupae.

PYRAUSTINAE

**Hymenia recurvalis** (Fab.)

Larvae abundant on leaves of *Borreria ocimoides*, a weed in the garden of the Casino Hotel, Apia, Upolu, June 5.

**Ercta ornatalis** (Duponchel)

The small green larvae were found feeding on the under side of leaves of *Ipomoea pes-caprae*, eating off small spots, leaving the upper epidermis, on the peninsula at Apia, Upolu, July 13 and 14. Three moths emerged July 28 and 31. At Tapatapao, Upolu, July 21 and 23 moths were obtained from a large patch of *Ipomoea bonanox* vines, and from a sweet potato patch, and undoubtedly the larvae fed on these two plants also.

**Marasmia venilialis** (Walk.)

Larvae collected in rolled leaves of the grass *Paspalum conjugatum* at Afiamalu, Upolu, July 3. Moths emerged July 20 and 23. Two moths reared from same grass at Tapatapao, Upolu, July 16. One moth reared from corn leaf, Sinaele, Upolu, July 27. Reared from Job's tears, Pago Pago, Tutuila, Aug. 10; Utulei, Tutuila, Aug. 17.

**Marasmia trebiusalis** (Walk.)

The larvae were very abundant as leafrollers on the grass *Oplismenus compositus* in several places: Malololelei, Upolu, June 18; Afiamalu, Upolu, July 3; Tapatapao, Upolu, July 16. A few moths were reared. One parasite was bred: *Apanteles samoanus* Fullaway.

**Marasmia trapezalis** (Guen.)

Larvae of this leafroller were found on *Miscanthus japonicus* at Pago Pago, Tutuila, Aug. 13, and Fagatoga, Tutuila, Aug. 25. A few moths were reared. One parasite was bred: *Apanteles samoanus* Fullaway.

**Phostria oconnori** Tams

One larva was found feeding between spun-together leaves of a large bean vine (*Strongylodon lucidus*) at Afiamalu, Upolu, June 19. The moth emerged July 11. More larvae were found at Afiamalu, June 30, from which four moths were reared.

**Nacoleia diemenalis** (Guen.)

Larvae were found abundant, feeding between spun-together leaves of *Vigna marina* on the peninsula, Apia, Upolu, July 13. Three moths emerged July 26 to 28. This leafroller was also found at Pago Pago, Tutuila, Aug. 16; Utulei, Tutuila, Aug. 17; Breaker Point, Tutuila, Aug. 19. A small tachinid fly was bred from one larva. (Undetermined.)

**Nacoleia octasema** (Meyr.)

This is the well-known banana scab moth. The work of the larvae in banana bunches was commonly noted. Sometimes the green bananas are eaten into when small and ruined. On larger fruit, gnawing of the skin causes a scabby appearance, though the fruit may ripen for use. On account of the foul appearance of injured banana bunches, the fruits are cut off individually and sorted before packing for shipment. The banana is one of the chief exports of Western Samoa. A cargo of about 10,000 cases goes to New Zealand twice per month. The cases are about like orange boxes and the green bananas are solidly packed in layers, regularly arranged.

Larvae were obtained at Malololelei, Upolu, June 18, and moths emerged July 13. Three larvae were collected from green bananas at the Experimental Farm, Taputimu, Tutuila, Aug. 7, from which moths were reared Aug. 19 to 25.

**Nacoleia** sp.

Two moths were reared from larvae in spun-together leaves of *Strongylodon lucidus*, Afiamalu, Upolu, June 30.

**Sylepta sabinusalis** (Walk.)

The caterpillars were common as leafrollers on *Cypholophus macrocephalus* on the reservoir trail, 800 ft., above Fagatoga, Tutuila, Aug. 3; pupae also collected. Six moths were reared Aug. 11



to 21. The parasite *Echthromorpha samoana* Cushman issued from one pupa and one *Chelonus vitiensis* Turn. was bred. Moths were also reared from *Pipturus argenteus* (?) on Afono trail, Tutuila, Aug. 1; Reservoir trail, Fagatoga, Tutuila, Aug. 3; Fagasa trail, Tutuila, Aug. 4. A pupa was obtained on *Pipturus* at Blunt's Point, from which *Chalcis samoana* Fullaway issued.

**Sylepta derogata** (Fab.)

Two moths were reared from leafrollers on Hibiscus in Casino Hotel garden at Apia, Upolu, June 3. The moths emerged June 21 and 24. Larvae were found on *Hibiscus tiliaceus* leaves at Tapatapao, Upolu, July 19 and at Falepuga, Upolu, July 28, but not reared. The rolled leaves produced by larvae of this moth were observed occasionally on Tutuila, at Amouli, Aug. 2, Pago Pago, Aug. 6, Blunt's Point, Aug. 17, but none reared. In one leaf roll at Pago Pago was a leaf cutter bee's nest, from which a *Megachile scutellata tutuilae* Perkins and Cheesman issued later.

**Margaronia mysteris** (Meyr.)

One pupa found between webbed leaves of *Strongylodon lucidus* at Afiamalu, Upolu, June 9. It died just before emerging, but had sufficiently developed as to disclose its identity. One moth was reared from larva on unidentified host plant at Tapatapao, Upolu, July 20.

**Psara stultalis** (Walk.)

Larvae were common in webbed leaves of *Coleus* at Malololelei, Upolu, June 18. Eight moths emerged July 4 to 14.

PTEROPHORIDAE

**Platyptilia pusillidactyla** Walk.

The larvae feed in flower heads of lantana. They were found at Apia, Upolu, June 2 on the ridge leading to Mt. Vaea; Afiamalu, Upolu, June 30; Tapatapao, Upolu, July 21; Satapuala, Upolu, July 28. A few moths were reared. This moth had been introduced from Fiji, a few years previously, but it had not yet been ascertained that it had become established.

**Undetermined pterophorid**

Was reared from larvae feeding on the newest leaves of *Trema orientalis viridis* at Utulei, 700 ft. Tutuila, Aug. 18. Two moths emerged Aug. 26 and Sept. 1.

EUCOSMIDAE

**Spilonota holotephras** Meyr.

The larva feeds in the webbed-together terminal undeveloped leaves of guava. It is sufficiently common as to check the growth of the plant and prevent its thriving. Larvae and pupae were collected at Apia, Upolu, on the ridge leading to Mt. Vaea, June 2;

Apia, June 5; Afiamalu, Upolu, June 8; Satapuala, Upolu, July 28; Amanave, Tutuila, Aug. 7. A few moths were reared.

**Crociosema plebiana** Zeller

The larvae were found in buds and fruit of *Sida rhombifolia* at Afiamalu, Upolu, June 19.

**Bactra microtripta** Meyr.

Rearred from larvae in seeds of *Desmodium umbellatum*, Goat Island, Naval Station, Tutuila, Aug. 11. The seeds are infested while on the plant. Eight moths were reared.

**Argyroploce rhynchias** (Meyr.)

Larvae were found eating seeds in green pods on *Erythrina* at Afiamalu, Upolu, June 12 and 26. Three moths emerged July 6 to 31. This species was not previously recorded in Samoa.

GELECHIADAЕ

**Thiotricha oxyopis** Meyr.

The larvae live in slender, cylindrical, upright, portable cases about 5 mm. long, and feed on the surface of *Macaranga* leaves. They are mostly on the lower surface and may be so numerous as to nearly skeletonize the leaf. Pupation takes place within the case which remains attached to the leaf. These cases were found very numerous in several localities: Apia, Upolu, on the ridge leading to Mt. Vaea, June 2; Falepuga, Upolu, July 28; Fagatoga, Tutuila, Aug. 12; Utulei, Tutuila, Aug. 18; Mt. Pioa, 800 ft., Tutuila, Aug. 29. Several moths were reared. Also parasites: *Apanteles* (?).

**Thiotricha strophiacma** Meyr.

Larvae of this moth feed on the leaves of *Terminalia catappa*. They were found very numerous on leaves of a small tree at Falefa Falls, Upolu, June 3. Each larva feeds beneath a shield made by cutting out a roundish oval piece of the leaf which it moves from place to place, a larger shield being cut from time to time accommodating the growth of the larva. The ultimate shields are 11 by 8 mm. in size. About a score of moths were reared June 19 to 30. As indicating how abundant the larvae may be, at Afiamalu, Upolu, June 30, in two *Terminalia* leaves there were respectively 21 and 25 of the holes where shields had been cut out for use by the larvae.

**Thiotricha symphoracma** Meyr. (?)

Larvae of this moth were found very abundant on leaves of a small endemic palm (*Balaka* sp.) at Afiamalu, Upolu, June 9. Each larva was in a slender case projecting from a circular base of webbed frass beneath which feeding was done on the surface of the leaf. Thirty moths emerged June 22 to July 10. Practically wherever this palm was found, the work of these larvae was seen on the leaves: several places near Afiamalu, June 13, 27, 30; Tiavi, Upolu, July 9; Tapatapao, July 13, 20, 21.

## AGONOXENIDAE

**Agonoxena argaula** Meyr.

This moth is a coconut pest. The larvae feed singly on the lower side of the leaflet beneath a slight web, and produce short, narrow dead streaks where they have eaten off the under surface of the leaflet. These lie longitudinally and may be up to a half inch in length. There are many of them and with the aging of the leaflet the dead upper epidermis rots away so that the leaf has the appearance of being riddled with the slit-like holes. Only the newer leaves on the trees are free from these injuries, but the young larvae begin feeding on the new leaves soon after they are fully expanded. In every locality visited the coconut trees showed injury by these larvae. The cocoon is white, made on the surface of the leaf. It is broad, oval and flat, and often made on leaves of other plants and trees adjacent to or beneath coconut trees. A few moths were reared from various localities: Afiamalu, Upolu, June 30; Apia, Upolu, July 16; Amouli, Tutuila, Aug. 2; Pago Pago, Tutuila, Aug. 10 and 13.

A large endemic palm *Clinostigma oncorhyncha* is also injured by larvae of this moth. All of the older leaves showing the results of their activities. Moths were reared from material collected at Afiamalu, Upolu, June 12, 27. Their work was also seen at Tiavi, Upolu, June 21. Parasites were also reared (*Apanteles agonoxenae* Fullaway).

## COSMOPTERYGIDAE

**Cosmopteryx mimeticus** Meyr.

The larvae of this beautiful delicate little moth are leafminers in nut grass (*Cyperus rotundus*). They mine the tips of the leaves, working towards the base so far as necessary for their growth. Pupation takes place within the mine. Reared only from Aua, Tutuila, Aug. 29. The moth however was collected at several localities on Upolu.

**Cosmopteryx dulcivora** Meyr.

This delicate little moth is the midrib miner of sugar cane. The larva is slender, yellowish and bores for a considerable distance longitudinally in the midrib, often in a zigzag manner. The midrib is rendered useless and turns a reddish color. Affected leaves are conspicuous and were found in a number of localities: Tapatapao, Upolu, July 16-23; Pago Pago, Tutuila, Aug. 16; Aua, Tutuila, Aug. 29; Moloata, Tutuila, Aug. 27. Larvae and pupae were collected, and the moth reared. It was not recorded in "Insects of Samoa".

**Trissodoris honorariella** (Walsm.)

The *Pandanus* leafminer is recorded under this name in "Insects of Samoa". The very elongate whitish larvae mine in dead dry *Pandanus* leaves. When full grown, oval pieces are cut including

both upper and lower epidermis of the leaf and pupation takes place within the case made by the two pieces fastened together. The case is about 10 x 4 mm. It may be drawn into the mine between the layers of epidermis of the leaf, or fall and be caught amongst trash in the axils of leaves, or to the ground. At Tiavi, Upolu, June 21 and Afiamalu, Upolu, June 27, the larvae were found mining in green leaves. These were on the same trees where larvae were working in the dry leaves. Not sufficient specimens were reared to determine whether two different species are involved in the different feeding habits. When feeding in the dead leaf there is no evidence of the location of the mine other than the hole which is made for the case in which to pupate. Whereas, the larva eating in a green leaf makes a conspicuous blotch mine, and frass is extruded through holes in the dead epidermis, so that these dead spots on the leaf are well covered with frass, and thus conspicuous. The cases for pupation are made from the dead epidermis of the mine so that there is the oval hole through the leaf in the position of the mine. As many as 15 of these holes were counted in a single dead leaf. At Lake Lanutoo, Upolu, July 22, and Satapuala, Upolu, July 28; Leone, Tutuila, Aug. 7, and Tutuila, near Poyer School, Aug. 16, dry leaves were found with the characteristic holes, but there was no evidence of larvae having been working in green leaves. A chalcidoid pupa was found in one mine in green leaf at Afiamalu (it died) and several mines had exit holes where parasites had issued.

#### **Trissodoris** sp.

A much smaller species with wings mostly black was reared from a small pupal case among others collected near the Poyer School, Tutuila, Aug. 16.

#### **Trissodoris** sp.

At Fagatoga, 840 ft., Tutuila, Aug. 25 many *Freycinetia* leaves were found with mines (in green leaves only) similar to those in *Pandanus*, and it is no doubt a related species, but none was reared. The mines are longitudinal in the green leaves, and the holes cut in the mines for making the pupal cases were slightly smaller than those in *Pandanus* leaves, about 9 x 4 mm. In 12 leaves collected for examination, only one mine had a larva, which was 6 mm. long. Seven mines had exit holes of some parasite, probably chalcidoid. The same leaf mines were found in *Freycinetia* leaves at Moloata, 1000 ft., Tutuila, Aug. 27, and Mt. Pioa, 1000 ft., Tutuila, Aug. 29.

#### HELIODINIDAE

#### **Pachyrhabda amianta** Meyr.

Larvae of this moth are rather common on the fronds of *Asplenium nidus* in all places where the bird's nest fern is found: Falefa Falls, Upolu, June 3; Afiamalu, Upolu, July 4; Tapatapao, Upolu, July 13; Falepuga, Upolu, July 28; Amouli, Tutuila, Aug. 2; reser-

voir trail, Fagatoga, Tutuila, Aug. 3. The larva feeds beneath a circular disk of webbed-together sporangia about 8 mm. in diameter. Apparently they feed mainly on the sporangia. Often a dozen were found on a single frond, and always on fronds from which the sporangia had been eaten, or shed. Sixteen moths issued from material collected in various places. Seven *Apanteles hyblaeae* Wilk. and two *Mesochorus* sp. were also reared as parasites of the larvae.

**Pachyrhabda antinoma** Meyr.

Larvae were very numerous feeding on the spores of a fern (possibly *Polpodium polynesianum*) at Afiamalu, Upolu, June 11. They fed beneath slight webs. Cocoons were collected on the fronds and about a score of moths emerged June 30 to July 15. Two parasites issued also: *Tetrastichus* sp.

GLYPHIPTERYGIDAE

**Brenthia trimachaera** Meyr.

Numerous white spindle-shaped cocoons were found on leaves of *Trema orientalis viridis* (?) at Utulei, Tutuila, 700 ft., June 18, and 100 ft., June 21. From cocoons collected, 15 moths emerged Aug. 22 to 30. At Pago Pago, Tutuila, 600 ft., Aug. 22, the larvae were found feeding on the underside of the leaves of the same plant. They were feeding individually in scattered spots, and the cocoons were made away from the eaten area, and always on the underside of leaf.

**Brenthia catenata** Meyr.

Larvae and cocoons were abundant on leaves of a wild bean vine (possibly *Strongylodon lucidus*) on the Afono Trail above Aua, Tutuila, Aug. 1. The cocoons were white, spindle-shaped as in the previous species. From material collected, 10 moths were reared Aug. 6 to 14.

GRACILARIADAE

**Acrocercops homalacta** Meyr.

Leafminer in *Operculina turpethum*. Mines collected at Fagatoga, Tutuila, Aug. 3. Seven moths were reared Aug. 15 to 18. Also four parasites (*Apanteles operculinae* Fullaway). The mines were observed also at Fagasa Trail, Aug. 4, and Blunt's Point, Aug. 21. At Ben Gurr's garden, Moloata, Tutuila, Aug. 27, mines were abundant in sweet potato leaves. None reared, but moths were collected by sweeping.

**Acrocercops** sp.

Leafminers in *Hibiscus tiliaceus*, the blotch mine usually being located near the base of the leaf and often next to the midrib. It occurs practically everywhere that its host plant is found in Samoa. Material was collected and moths reared from the following: Tapatapao, Upolu, July 22; Sinaele, Upolu, July 27; Pago Pago, Tutu-

ila, Aug. 6; Blunt's Point, Tutuila, Aug. 17. From the latter place one parasite (*Tetrastichus* sp.) was reared. This *Acrocercops* is closely related to *homalacta*.

#### **Acrocercops** sp.

Another closely related species was reared from an unknown host. The mines are conspicuous by callus-like places where the larvae have lived during the latter part of their life. These are located on the lateral veins of the leaf, and often 3 or 4 pairs symmetrically arranged. Moths were reared from mines collected at Afiamalu, Upolu, July 3 and 8; Tapatapao, Upolu, July 19. A parasite was also reared from the latter place (*Tetrastichus* sp.).

#### **Acrocercops** sp.

A bean leafminer. It occurred abundantly in leaves of *Vigna marina* at Apia, Upolu, June 2 and July 13. A few moths were reared. The larvae are bright red and can be seen through the dead upper epidermis beneath which they feed and loosen so that it gives the appearance of a dead blotch. There may be several per leaf, so that the whole upper surface appears dead. Moths were also reared from mines in leaves of *Cassia occidentalis* at Apia, Upolu, July 13, the moths issuing July 17 to 23.

#### **Acrocercops** spp.

Several other species of leafminers, probably of this genus, were reared from undetermined host plants, and the species of the moths also are still undetermined.

### LYONETIADAE

#### **Decadarchis minuscula** (Walsm.)

Larvae feeding in old cacao pods near Apia, Upolu, June 4. Seven *Melittobiopsis ereunetiphila* Timb. issued from the same material. They probably had been parasitic on the *minuscula* larvae, as that is their habit in Hawaii, where they feed mostly on larvae of *Decadarchis flavistriata* (Walsm.).

#### **Decadarchis simulans** (Butl.)

Larvae and cocoons were very numerous under loose bark of a large log of an introduced leguminous tree resembling *Albizia moluccana*, at Tapatapao, Upolu, July 19. Several moths emerged. Although Meyrick in "Insects of Samoa", places this species in *Decadarchis*, it has the wing venation which he describes for his genus *Erechtias*.

### TINEIDAE

#### **Trachycentra calamias** Meyr.

At Afiamalu, Upolu, July 10, larvae of this moth were found feeding in the core of a coconut tree top which was damaged by the rhinoceros beetle. Some of the larvae were boring into the living

tissues of the mass of undeveloped leaves, free without cases. Other larvae were feeding in the mass of rotting tissues, and those which were apparently the older ones were in brown cases many of which were covered with fibers placed on longitudinally and overlapping like thatch. Pupation took place within these shaggy cases. Seventeen moths emerged July 20 to Aug. 14. Larval cases were also found in rotten banana stem at Malololelei, Upolu, June 18, and moths emerged July 23-31. At Afiamalu, June 27, one of the larval cases was found in the petiole of a dead banana leaf. At Tapatapao, Upolu, July 18, a larval case was found beneath bark of an *Erythrina* log. The moth emerged Aug. 25.

**Bedellia** sp.

At Tapatapao, Upolu, July 23, mines were found in sweet potato leaves, from which 6 moths were reared July 29 to Aug. 10. They were the same as were caught by sweeping on the sweet potato vines. The larvae had the characteristic habit of *Bedellia* larvae of migrating from mine to mine, or leaf to leaf, and the pupa is formed outside the mine among a few strands of web in a secluded place like a crumpled part of a leaf, or in axil of veins on the lower side of leaf. The larvae were different from those of the Hawaiian sweet potato leafminer, *Bedellia orchilella* Busck. Purplish brown, with lateral white spots on abdominal segments, 1, 2, 4, 5; long and narrow, about 5 mm. It was not found in any other locality. No *Bedellia* has been previously reported from Samoa.

SUMMARY OF FAMILIES

7 Butterflies	1 Agonoxenidae
3 Sphingidae	5 Cosmopterygidae
2 Geometridae	2 Heliodinidae
15 Agrotidae	2 Glyphipterygidae
18 Pyralidae	4 Gracilaridae
2 Pterophoridae	2 Lyonetiidae
4 Eucosmidae	2 Tineidae
3 Gelechiidae	
	<hr/> 72 Total species