ENTOMOLOGICAL NOTES.

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Fruit-piercing Moths.

These pests are generally distributed throughout the Territory, and may cause loss of large quantities of fruit, especially citrus—citrus, bananas, tomatoes and pawpaws being among the fruit recorded as being attacked by these moths.

The adult of *Othreis fullonica* L. is a large moth with the forewings dark brown on the upper surface, and the hindwings yellowish-red with black markings —the abdomen is the same general colour as the hindwings. The mouth-parts are prolonged into a tube with a sharp point, by means of which they puncture the skin of the fruit and suck up the juice. Rot and fermentation set in around the puncture and the fruit falls to the ground and becomes inedible.

The caterpillars vary in colour from jet black to rich brown with white tracery markings on the body. Characteristic markings on the sides of the grubs are two round whitish marks resembling "eyes" on each side of the fore portion of the body.

The moths fly at dusk, and can easily be seen on ripening fruit, when they can then be killed by "swatting".

Recently, at the Agricultural Demonstration Plantation, Keravat, situated on the Keravat River, about 30 miles from Rabaul, the grubs of this moth occurred in plague proportions on *Erythrina lithosperma*, and spread into *Erythrina variegata* and *Erythrina* (*Micropterux*) *poeppigiana*, stripping the trees bare of foliage. This was a serious matter, as these trees were used as permanent shade for cocoa, and, as a result of the loss of shade foliage, the cocoa trees were fully exposed to the sun. The laval period was not determined, but the pre-pupal and pupal period combined was fourteen days. Pupation occurred on the tree, two or more leaves being webbed together.

Erythrina spp. have previously been observed to be attacked by this pest in other parts of the Territory, often resulting in very serious defoliation. The indigenous species is evidently the natural host of these moths.

Another species of fruit-sucking moth also occurs in the Territory, *Othreis salamina*. In this species, the forewings have a greyish-white margin with the remainder velvety-green in colour. The habits are similar to the former species.

In view of the heavy defoliation of *Erythrina* spp. by these pests, its continued use as shade trees for cocoa and other crops will have to be carefully reviewed, owing to the risk of damage to the crop foliage due to exposure to the full sunlight.

Tobacco Pests.

The following insect pests have been bred from tobacco plants:—

Lepidoptera—

Noctuidae—

Prodenia litura F., on foliage.

Cirphis unipuncta Ham., damaging seedlings at ground level.

Plusia signata F., on foliage.

Pyralidae Psara hipponalis Wlk., stem borer.

Gelechiidae Phthorimaea heliopa L., stem borer.

The leaf-eating caterpillars, if present in numbers sufficient to cause economic damage, can be controlled by using derris dusts.

The stem-boring grubs usually occur in the seed-beds, or soon after the young plants have been set out in the field. Hilling the soil around the base of the plants will assist the development of new roots above the portion damaged by the pest.

Cutworm larvae, such as those of *Cirphis unipuncta,* usually shelter just under the surface of the soil during the day, coming out at dusk to feed. Wherever a plant is found damaged close to the ground, if the soil is turned over, the grubs will usually be found, and can then be destroyed before any further damage can be effected to other plants. Where this pest occurs in appreciable numbers, scattering of Paris green-bran bait is the most effective measure for combating it. This is made up in the following proportions:—

Bran or pollard	25 lb.
Paris green	1 lb.
Molasses	1 quart
Juice of 6 lemons or "moolies".	
Water sufficient to make the mass damp but crumbly.	

The bran and Paris green are thoroughly mixed, dry, and the water, in which the molasses and fruit juice have already been mixed, added slowly with thorough stirring. It is usually advisable to make up the amount required in the morning, and scatter along the rows of plants in the late afternoon.

Fruit Flies.

Another common source of loss of fruit is caused by the maggots of fruit flies infesting the pulp, causing it to rot and ferment. The flies lay the eggs just under the skin of the fruit, and the maggots penetrate all through the tissue.

The following species of *Trypetidae* have been collected or bred from infested fruit, or, in one case, from mines in foliage of a species of *Aralia*:—

Species.	Locality.	Host.
Dacus pectoralis Walk.	Manus	Collected
Dacus curvifer Walk.	Rabaul	Collected
Dacus frenchi Frogg.	Rabaul	*Artocarpus communis*
Dacus speculifer Walk.	Rabaul	Collected
Dacus ferrugineus var. *incisus,* Walk.	Huon Gulf	Collected on banana fruit
Dacus frauenfeldi Schin.	Rabaul	Mango, *Eugenia jambosa*
Dacus peculiaris Mall.	Rabaul	*Artocarpus communis*
Dacus obliquus Mall.	Rabaul	*Artocarpus communis*
Enoplopteron hieroglyphicum de Meij.	Huon Gulf	Collected
Hemilea araliae Mall.	Rabaul	Leaf miner in *Aralia* sp.
Nesthemara exul Curr.	New Ireland	Collected
Rioxa flava Edw.	Manus	Collected

The degree of infestation by these pests varies considerably in different years, even in two successive years.

Banana Pests.

The banana is an important item of diet with the natives, especially in the Gazelle Peninsula of New Britain, otherwise, apart from the local supply of a relatively small quantity of the ripe fruit for European consumption, there is no commercial aspect to be considered with this crop.

The following pests have been recorded in this Territory in connexion with this crop:—

Coleoptera—

Dynastidae Papuana laevipennis Arr. and *Papuana* spp.
Curculionidae Cosmopilites sordida Chev.
Lepidoptera Pyralidae Lamprosema octasema Meyr.

The *Dynastida* are small brownish-black beetles about ¾ inch in length. In dry weather, especially, they may bring about the destruction of many small suckers, when freshly planted out, by feeding into the growing point. They are much more serious than the banana weevil borer, *Cosmopilites sordida,* which is comparatively rare at low levels.

The fruit moth, *Lamprosema octasema,* lays its eggs on the young fruit just after the flower bracts lift, and the caterpillars feed on the surface tissue, leaving scabby patches, which, except in extreme cases, affect the appearance of the fruit, but do not affect its palatability.

An unidentified species of thrips is common in the flowers, but does not appear to do any damage.

"Nezara viridula smaragdula" F.

This *Pentatomid* bug breeds freely on cowpeas and rice, as well as other crops, and may be one of the pests causing "whitehead" of rice due to feeding on the ear when the grain is forming. The eggs are creamy-yellow in colour and are laid, usually, in a symetrically arranged mass in rows on the under-surface of the leaf; the number in any one mass shows considerable variation, but has totalled as many as 119.

The head capsule begins to show through the chorion in two and one-half to three days after oviposition, when the eggs are faintly pink in colour. The egg stage occupies four to six days, and the first instar nymphs remain as a cluster around the egg mass for about 48 hours before beginning to disperse.

The nymphal stages occupy 27 to 28 days, making a life-cycle of 31 to 34 days.