common velvet bean caterpillar, *Thermesia gemmatilis* Hübner, completely defoliated the plants as they were maturing pods. Of a large sending of the caterpillars made to this laboratory on October 23, over half were dead upon receipt, being covered with a thick coating of whitish to pale greenish-blue fungus. The fungus infection had occurred before the caterpillars had been collected and shipped, however, for in the field they were also to be seen in large numbers dead and mummied on the stems of the plants; often as many as eight or ten on a single bush. The weather at the time was warm and humid, often with numerous sharp showers (and invariably with at least one) each day. To be sure, the disease epidemic had arrived too late to save the crop, but it was none the less effective in killing all the last instar caterpillars. The fungus has been identified by Miss Vera K. Charles as "*Botrytis rileyi*, now *Spicaria rileyi*. It is closely related to *Spicaria prasina* (Maub.) Saw., in which the spores are oval. Doctor Wolcott's material seems intermediate between these two forms." A similar question of the specific identity of the fungus attacking this host has also been noted in Florida.

A previously recorded instance in Puerto Rico of insect control by fungus disease is of the cottony cushion scale, *Icerya purchasi* Maskell, by another *Spicaria*, which Mr. E. West of the Florida Station stated was identical with what they called *Spicaria javanica*. Control was 100 per cent perfect in certain citrus groves well protected by hills and bamboo windbreaks, as at Pueblo Viejo in August 1923, so perfect indeed that the scale has never since been found there. Elsewhere the effectiveness of the fungus varied from almost perfect in some groves in pockets in the hills around Bayamon and those with dense windbreaks near the beach at Palo Seco, to zero on the coast, at Dorado, in a grove with only casuarinas for windbreak. Both of these epidemics emphasize the vital importance of ecological conditions in the effectiveness of fungus control.

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LITERATURE CITED

Petch, T. 1926. "Entomogeous Fungi, Additions and Corrections, ii." Trans. British Mycological Soc. 11(3–4):258–66, fig. 9. Cambridge, England, Dec.

Wolcott, G. N., and Francisco Sein. 1933. "A Year's Experience with the Cottony Cushion Scale in Puerto Rico." Jour. Dept. Agr. P. R. 17(3):199–221, pl. 4, ref. 11. San Juan, P.R., July.

A Tachinid Parasite of the Puerto Rican Changa

In June 1939, in the last week of collection at Belem, Pará, Brasil for shipment to Puerto Rico of the wasps *Larra americana* Saussure, which are parasitic on the changa, *Scapteriscus vicinus* Scudder, one changa (out of the hundreds that were being used for oviposition by *Larra* wasps in the laboratory) was found dead in its can, and beside it a large stout Dipterous puparium with two large black knobs. Eleven days later (in Puerto Rico), a sluggish yellow Tachinid fly with pink eyes emerged. This was later determined by Dr. D. G. Hall as *Euphasiopteryx australis* Townsend. One more changa in Belem and several *en route* were found thus parasitized, giving approximately an indicated parasitism of 0.5 per cent by these Tachinids at the beginning of the dry season, but no indication of their real parasitism, for the changas were kept in captivity at most only a week, or of what it might later become with the advance of the dry season. This is the first published record of a dipterous parasite of the Puerto Rican mole-cricket, although Dr. Townsend reports three puparia of an allied species reared from a cricket at College Station, Texas, and Mr. E. G. Smyth writes me that he has reared this or an allied species from a green katydid, *Neoconocephalus* sp., at Central Cartavio, Trujillo, Peru.

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A Coccinellid Introduced into California

Koebele (1893) reported that of all the scymnids found in Australia, *Scymnus flavifrons* Blackb. was one of the smallest and most common. It appeared to feed on various coccids. He found it "at Toowoomba, Queensland, upon orange infested with red and black scales; upon *Acacia* infested with an *Aspidiotus*, and on *A. eucalypti* Mask., upon eucalyptus; at Gosford, New South Wales, upon *Cyncarpia laurifolia* infested with *Aspidiotus cyncarpiae* Mask., and *Chionaspis eugeniae* Mask., near Sydney and at Mount Victoria, upon *Leptospermum laevigatum* F. v. Mueller, feeding here in very large numbers—both in larva and imago state—upon *Eriococcus leptospermi* Mask. It was always numerous at Parramatta, and from a lot of larvae and pupae saved from a small bush infested with *Lecanium cassiniae* Mask. parasites were bred from the larvae and most of the pupae were found infested with a small chalcid."

In 1931, *Scymnus flavifrons* was again introduced into California, being reared from black scale material sent by me from Sydney, New South Wales, to Professor H. S. Smith at the University of California Citrus Experiment Station, Riverside, California.

The adult female is black and about 1 mm in length. The appearance of the male is like that of the female except that the frons are yellowish brown.

The egg is unlike many coccinellid eggs in being almost flat. It is twice as long as wide. The chorion is finely punctate and pliable. The egg contents appear yellow or green through the chorion.

The newly hatched larvae are active and attack young scale and mealybugs. After they commence to feed, they become sluggish.

The general body color of the larva is dark gray. The nearly mature larva is marked by two longitudinal whitish stripes on the abdomen, extending back to the sixth segment and dividing the dorsum into three equal dark gray areas. In the mature larva the center area is distinctly purplish brown, and the spiracles are surrounded by waxy, white, smooth impressions.

The pupa is light yellow and hairy, with a semitransparent exoskeleton.

At temperatures between 75 and 80 degrees F., the life cycle is four to eight weeks. When development is rapid, the egg incubation period is six days, the larval period 15 days, and the pupal period seven days.

The species is not known to be established in California.

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LITERATURE CITED

Koebele, A. 1893. Studies of parasitic and predaceous insects in New Zealand, Australia and adjacent islands. U.S.D.A. [Report] 39 pp.

Male Scale Injurious to Olives

Although there is little recorded information with regard to the subject, it is generally considered that male coccids are practically of no importance so far as injury to plants is concerned. However, during the course of experimental work dealing with the life history and control of the olive scale, *Parlatoria oleae* (Colvee), on olives near Fresno, California, it has been observed that extensive damage is caused by the male scale.

Both male and female scales produce a black spot, roughly circular in outline, upon the surface of the fruit. These areas, with the scale as a center, vary from 1 to 4 mm. in diameter, and the discoloration extends well below the surface into the flesh. Olives thus affected are unfit for pickling and may or may not be pressed for oil, depending upon the variety involved

The sex ratio is markedly in favor of the males and mortality is quite low. In the case of this coccid the males are at least as distinctive as the females and may well be the more important sex in terms of damage to olive fruits.—12-6-39.

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Activities of the Adult White-Fringed Beetle in New Orleans and Vicinity from September 1938 to May 1939

The white-fringed beetle (*Pantamorus leucoloma* (Boh.)) was discovered in New Orleans, La., the latter part of 1937, by officials of the U. S. Department of Agriculture. Adults of this insect, which had previously been observed in other areas in the Gulf States, were reported by Young and App (1939) to be found in 1937 as late as December 18, in 1938 as late as December 7 in an infested area at Florala, Ala.

In the milder climate of New Orleans and vicinity the insect may be found throughout the winter in the adult stage, as evidenced by collections at intervals from September 1938 to February 1939. Table 1 shows the months in which adults, pupae, and larvae were collected in the field from September 1938 to May 1939. The purpose of the table is to present information as to when the different stages were found and not to indicate their relative abundance.

Adults collected and caged under natural weather conditions to serve as exemplary specimens laid viable eggs when fed on such natural host plants as goldenrod, bloodweed, and blackberry (Table 2). To illustrate, an adult collected February 1, 1939, lived 102 days after that date, or until May 14, and laid 652 eggs, some of which were viable under natural weather conditions, during the period February 10 to May 10. Because no pupae were found from the first of September, 1938, until the following April, among 78,157 larvae collected from the soil, it may be reasonably surmised that this adult emerged prior to September, and that its adult life span reached from at least September 1 until May 10, inclusive, or a period of 252 days. Another adult beetle collected February 2 lived 81 days after that date and laid 611 eggs during the period February 9 to April 7, representative lots of which showed a viability of 47.62 per cent under natural weather conditions. The probable minimum longevity of this adult was at least 236 days. A third adult collected February 14 lived 78 days after that date and laid 742 eggs during the period February 14 to April 27, representative lots of which had a viability of 55.22 per cent under natural weather conditions. Four other adults, collected January 26 and 31 and February 10 and 15, lived after the dates of collection 76, 20, 39, and 35 days, but laid no eggs.

Table 1.—Collections of white-fringed beetle adults, pupae, and larvae in New Orleans and vicinity from September 1938 to May 1939.

Month	Adults Collected*		Pupae Collected		Larvae Collected	
	Days	Number	Days	Number	Days	Number
September	13	400	0	0	20	7,310
October	8	156	0	0	18	10,974
November	8	31	0	0	18	14,717
December	9	13	0	0	16	14,165
January	10	11	0	0	23	16,684
February	6	6	0	0	19	7,846
March	—	—	0	0	13	6,461
April	—	—	10	48	25	6,835
May	17	58	26	529	26	7,449
Total	71	675	36	577	178	92,441

* No attempt was made to collect adults during March and April.

Table 2.—Longevity and egg-laying records of adult white-fringed beetles collected during the winter of 1938–39, New Orleans, La.

Date Collected	Longevity After Collection, Days	Egg-Laying Period	Number of Eggs Laid	Approximate Percentage of Eggs Hatched
Jan. 26	76	—	0	—
31	20	—	0	—
Feb. 1	102	Feb. 10–May 10	652	Some*
10	39	—	0	—
14	78	Feb. 14–Apr 21	742	55.22
15	35	—	0	—
21	81	Feb. 9–Apr. 7	611	47.62

* Exact percentage was not determined.

No effort was made to obtain records of oviposition under natural conditions by beetles collected prior to February 1, although it was observed that such beetles laid eggs readily in an unheated greenhouse during the latter part of December and in January.

In regard to the presence of pupae in the field during the fall, winter, and spring extensive soil sampling for larvae and possible pupae showed that during the period September to March 78,157 larvae were taken from the soil without the collection of a single pupa. In the spring the first pupa