

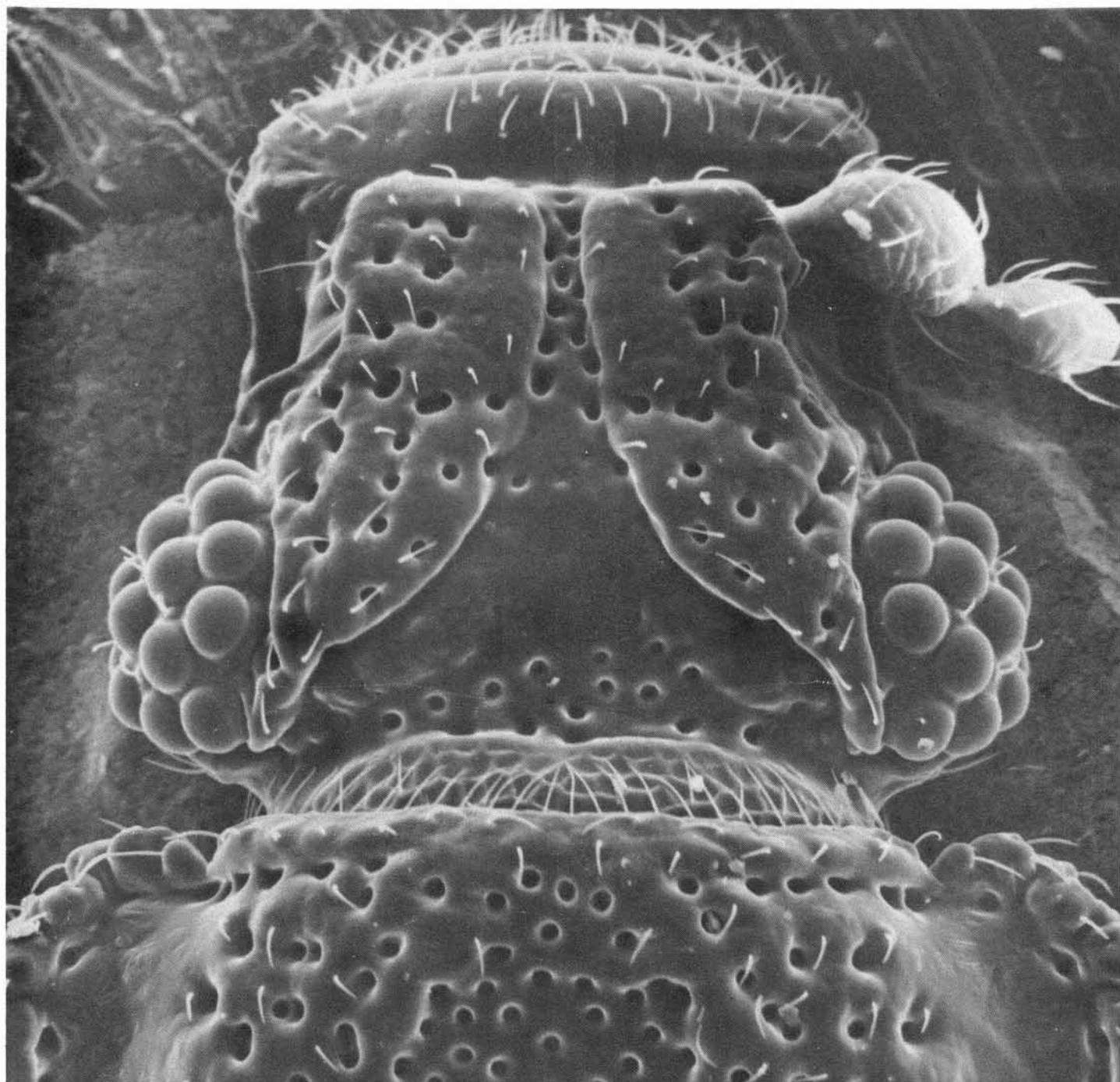
# CALIFORNIA

# PLANT PEST AND DISEASE REPORT

PUBLISHED MONTHLY BY THE DEPARTMENT OF FOOD AND AGRICULTURE  
DIVISION OF PLANT INDUSTRY • DR. CHARLES S. PAPP AND T. E. TIDWELL, EDITORS

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A scanning electron micro photograph of head and anterior portion of prothorax of a grain infesting beetle, *Dienerella flum* Aubé (Coleoptera—Lathridiidae) magnified 520 times. Note the delicate details of the sculpture of this cosmopolitan species, details which are characteristic for the species and necessary to be seen to achieve complete identification. (Photo by Dr. F. G. Andrews)

## SCANNING ELECTRON MICROSCOPE An Invaluable Tool for Insect Identification

F. G. Andrews

The scanning electron microscope (SEM) is now a standard piece of equipment in most college science departments and entomological museums. Its impact on the study of the external morphology of arthropods has been immense. Fifteen to twenty percent of all papers dealing with arthropod taxonomy use characters best viewed with an SEM and commonly only viewable with an SEM because of the smallness of the structure. The normal dissecting microscope is only capable of

resolving structure at a maximum of 100 to 150 magnifications, while the SEM has a functional range of 10 to 50,000 magnifications.

The cover insect Dienerella filum, a cosmopolitan grain pest of minute size (1.3-1.4mm), was condensed with three undescribed naturally occurring California species until the SEM provided high magnification pictures proving their separate identities.

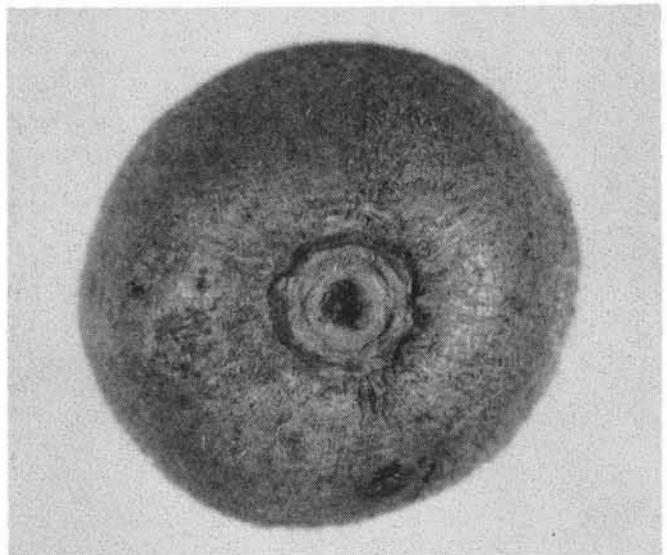
## KIWI STEM END ROT

D. C. Opgenorth

In recent weeks, several kiwifruit (Actinidia chinensis) samples have been submitted to the CDFA Plant Pathology Laboratory for diagnosis. The fruit typically exhibits a softening of the stem end with the skin shriveled and depressed as in Figure 1. When the fruit is cut lengthwise, the rotted stem end is soft, watery, and a lighter green than the firm areas of the fruit. Several fungi and bacteria have been isolated from the various samples submitted, but pathogenicity tests have not yet been completed.

Our laboratory is interested in obtaining additional fruit rot samples from as many sources as possible for the isolation of organisms which may be causing the damage. Results of the isolation tests will be sent back to the counties which submit the samples. The more kiwifruit samples we have to work with, the greater the chance of determining the exact cause of the damage, and the extent to which this disease or disorder is

causing problems. When submitting samples, please send fruit in all stages of decline as well as one or two firm fruit. Each fruit should be individually wrapped in paper and the entire sample packed in a cardboard box.



Kiwifruit with typical shriveled appearance and softening of the stem end.

## EFFECTIVE CHEMICAL CONTROL OF FIRE BLIGHT AND BROWN ROT

D. C. Opgenorth

Even the best horticultural practices and most resistant varieties do not provide acceptable levels of control for some perennial disease problems. Thus, we have sought answers for control through the application of bactericidal or fungicidal chemicals. In many cases, such as fire blight of apples and pears and brown rot of stone fruits, chemical controls which were originally very successful have lost their efficacy after several years of use.

This scenario has been repeated time and again as new chemical materials have come into use, because disease-inciting organisms can mutate and become resistant to chemical controls. When growers depend completely on one chemical, such as streptomycin for control of fire blight or benomyl for control of brown rot, the chance that resistance will develop is greatly increased. By using sprays again and again, adequate control

may be realized initially, but selection of resistant disease organisms from a random population soon occurs. Then other chemicals of reduced efficacy or with some undesirable characteristics may have to be used.

Since our laboratory receives samples for diagnosis of fire blight and brown rot, I have collected data to determine if the pathogens isolated in 1981 were resistant to the generally accepted chemical controls. To test the fire blight pathogen (*Erwinia amylovora*), the diagnostic Miller-Schroth medium was used with 0, 2, 5, and 10 ppm streptomycin incorporated in it. To test the brown rot pathogen, (*Monolinia fructicola*), a selective medium developed by Ogawa and Manji, containing 0, 2, 5, 10, or 20 ppm benomyl, was employed. The results are shown in Tables 1 and 2.

It is evident that streptomycin could not provide adequate control for several of the *Erwinia amylovora* isolates (Table 1), so an alternative material for streptomycin should be used. In some cases, Bordeaux can be applied while the trees are still in dormancy or just before the blossom period. If populations of resistant bacteria are low, one early application of Bordeaux could help to suppress rapid build up of resistant bacterial strains.

None of the brown rot isolates were resistant to greater than 10 ppm of benomyl, although some did grow well at 5 ppm (Table 2). Resistance to benomyl has been reported for *M. fructicola*, but 1981 was not a year that was particularly favorable for the disease. A good alternative material for brown rot control is Funginex. This chemical gives very good control, but is about half as

<i>E. amylovora</i>	Amount of Streptomycin in PPM			
	Isolate	0	2	5
1643 Quince	+++ <sup>a/</sup>	+++	+++	++
1769A Quince	+++	+++	+++	+++
2006 Apple	+++	+++	++	-
1796B Quince	+++	+++	+++	++
2378 Pear	+++	++	+	+
1539 Apple	+++	+	+	-
1356 Pear	+++	+++	+++	+++

<sup>a/</sup> Three subisolates were taken from an individual colony of the original culture and restreaked on the selective media. If all three subcultures grew, the rating was +++. Two of the three were +++, and one of three was +. A minus rating indicates no growth in any culture.

Table 1. Growth of *Erwinia amylovora* on Miller-Schroth Medium (4)

persistant as Benlate and, therefore, must be applied twice as often.

M. fructicola Isolate	Amount of Benlate in PPM			
	0	2	5	10
1	+++ <sup>b/</sup>	++ <sup>c/</sup>	--- <sup>d/</sup>	---
2	+++	+++	+++	---
3	+++	+++	+ <sup>e/</sup>	---
6	+++	+++	+	---
8	+++	+++	---	---
9	+++	+++	+	---
11	+++	+++	---	---
12	+++	CONTAMINATION	---	---
20	+++	CONTAMINATION	---	---
21	+++	---	---	---
22	+++	+++	---	---
51	+++	+++	+++	---
54	+++	++	+	---
55	+++	+++	---	---
57	+++	+++	---	---
58	+++	+++	+	---
59	+++	+++	---	---
60	+++	---	---	---
64	+++	---	---	---

<sup>a/</sup>Plating method and media available from Ogawa and Manji at U.C. Davis.

<sup>b/</sup>Good growth, heavily sporulating streak.

<sup>c/</sup>Fair growth, lightly sporulating streak.

<sup>d/</sup>No growth, no recognizable growth on the media.

<sup>e/</sup>Poor growth, broken lightly sporulating streak.

Table 2. Growth of *Monilinia fructicola* on Selective Medium With 0, 2, 5, and 10 ppm Benlate Added<sup>a/</sup>

While effective chemical control of plant disease is possible, it must not be used indiscriminately. Overuse and increased rates of application only serve to select plant pathogens which have increased degrees of resistance to the specific chemical used. A more discrete use of

chemicals along with efficacy monitoring should provide better disease control with much less material.

Since our culturing techniques have been worked out in the 1981 season, the CDFA Laboratory is now in a favorable position to do more testing this season. We will welcome fire blight and brown rot samples, not as a diagnostic exercise but to provide valuable information on future chemical control. When submitting samples from problem orchards, please give the disease history and chemical control used in previous years. Such information will help to develop better concepts of the dynamic disease situation occurring in California orchards. With this background, it may be possible to predict disease trends and suggest alternative means of control.

#### REFERENCES

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## PEST RATING LIST

### Insects, Miscellaneous Arthropods and Mollusks

Part I: Arranged in alphabetical order by scientific names.

- |   |   |
|---|---|
| Abgrallaspis cyanophylli (C)<br>cyanophyllum scale    | Anastrepha ludens (A)<br>Mexican fruit fly                  |
| Abgrallaspis degeneratus (C)<br>degenerate scale      | Anastrepha suspensa (A)<br>Caribbean fruit fly              |
| Abgrallaspis howardi (B)<br>Howard scale              | Anastrepha mombinpraeoptans (A)<br>West Indian fruit fly    |
| Abgrallaspis palmae (A)<br>tropical palm scale        | Anelaphus inermis (Q)<br>a longhorned beetle                |
| Abgrallaspis townsendi (Q)<br>Townsend scale          | Anthonomus eugenii (C)<br>pepper weevil                     |
| Acalymma vittata (Q)<br>striped cucumber beetle       | Anthonomus grandis (A)<br>boll weevil                       |
| Acarapis dorsalis (C)<br>an external bee mite         | Anthonomus signatus (Q)<br>strawberry weevil                |
| Acarapis woodi (A)<br>acarine mite                    | Anthrenus verbasci (C)<br>varied carpet beetle              |
| Achatina fulica (A)<br>giant African snail            | Antonina graminis (B)<br>Rhodesgrass scale                  |
| Acheta domesticus (C)<br>house cricket                | Aonidia lauri (Q)<br>laurel scale                           |
| Acrobasis juglandis (A)<br>pecan leaf casebearer      | Aonidiella aurantii (B)<br>California red scale             |
| Acrolepia assectella (Q)<br>leek moth                 | Aonidiella citrina (B)<br>yellow scale                      |
| Aculodes teucarii (C)<br>an eriophyid mite            | Aonidiella orientalis (Q)<br>oriental scale                 |
| Acutaspis albopicta (A)<br>albopicta scale            | Aphis fabae (C)<br>bean aphid                               |
| Acutaspis tingi (A)<br>Ting scale                     | Apion longirostre (C)<br>hollyhock weevil                   |
| Adelphocoris rapidus (Q)<br>rapid plant bug           | Apteronia crenulella (B)<br>garden bagworm                  |
| Adoretus sinicus (Q)<br>Chinese rose beetle           | Areacerus fasciculatus (Q)<br>coffee bean weevil            |
| Agasphaerops nigra (C)<br>lily weevil                 | Araecorynus cumingi (Q)<br>Maunaloa bean beetle             |
| Agrilus ruficollis (Q)<br>rednecked cane borer        | Archips argyrospilus (C)<br>fruittree leafroller            |
| Alabama argillacea (Q)<br>cotton leafworm             | Arion ater (C)<br>a slug                                    |
| Alebra albostriella (C)<br>Norway maple leafhopper    | Asemum striatum (Q)<br>a longhorned beetle                  |
| Aleurocanthus spiniferus (Q)<br>orange spiny whitefly | Asiphum pseudobyrsus (B)<br>a poplar aphid                  |
| Aleurocanthus woglumi (A)<br>citrus blackfly          | Aspidiotus destructor (A)<br>coconut scale                  |
| Aleurocerus spp. (Q)<br>whiteflies                    | Aspidiotus excisus (Q)<br>an armored scale                  |
| Aleurodicus dispersus (Q)<br>spiraling whitefly       | Aspidiotus nerii (C)<br>oleander scale                      |
| Aleurothrixus floccosus (A)<br>woolly whitefly        | Aspidiotus spinosus (C)<br>spinose scale                    |
| Aleurotrachelus jelinekii (B)<br>viburnum whitefly    | Asterolecanium arabidis (B)<br>pitmaking pittosporum scale  |
| Anagasta kuehniella (C)<br>Mediterranean flour moth   | Asterolecanium epidendri (A)<br>orchid asterolecanium scale |

- Asterolecanium inlabefactum* (Q)  
 a pitmaking scale  
*Asterolecanium pustulans* (Q)  
 pustule scale  
*Atomoscelis seriatus* (C)  
 cotton flea hopper
- Blissus insularis* (C)  
 southern chinch bug  
*Blissus leucopterus* (Q)  
 chinch bug  
*Bostrychoplites cornutus* (Q)  
 a false powderpost beetle  
*Brachycolus asparagi* (Q)  
 an asparagus aphid  
*Brevipalpus lewisi* (C)  
 citrus flat mite  
*Brevipalpus obovatus* (C)  
 privet mite  
*Bruchophagus platyptera* (C)  
 clover seed chalcid  
*Bruchophagus roddi* (C)  
 alfalfa seed chalcid  
*Bruchus brachialis* (C)  
 vetch bruchid
- Cadra cautella* (C)  
 almond moth  
*Cadra figulilella* (C)  
 raisin moth  
*Caliothrips marginipennis* (C)  
 a thrips  
*Callosobruchus maculatus* (C)  
 cowpea weevil  
*Camnula pellucida* (C)  
 clearwinged grasshopper  
*Camponotus abdominalis floridanus* (Q)  
 Florida carpenter ant  
*Camponotus abdominalis transvectus* (Q)  
 a carpenter ant  
*Cardiocondyla wroughtoni bimaculata* (C)  
 an ant  
*Cardiocondyla wroughtoni hawaiiensis* (C)  
 an ant  
*Cardiocondyla nuda minutior* (C)  
 an ant  
*Caryedon serratus* (C)  
 groundnut seed beetle  
*Cataenococcus olivaceus* (B)  
 yucca mealybug  
*Cathartus quadricollis* (Q)  
 squarenecked grain beetle  
*Celama sorghiella* (Q)  
 sorghum webworm  
*Ceratitidis capitata* (A)  
 Mediterranean fruit fly  
*Ceroplastes ceriferus* (A)  
 Indian wax scale  
*Ceroplastes cirripediformis* (C)  
 barnacle scale  
*Ceroplastes floridensis* (Q)  
 Florida wax scale  
*Ceroplastes rubens* (A)  
 red wax scale  
*Ceroplastes rusci* (Q)  
 fig wax scale
- Ceroplastes sinensis* (B)  
 Chinese wax scale  
*Cerotoma trifurcata* (Q)  
 bean leaf beetle  
*Ceutorhynchus assimilis* (C)  
 cabbage seedpod weevil  
*Ceutorhynchus rapae* (C)  
 cabbage curculio  
*Chalcodermus aeneus* (Q)  
 cowpea curculio  
*Chelisoche morio* (C)  
 black earwig  
*Chelymorpha cassidea* (B)  
 argus tortoise beetle  
*Chilo loftini* (B)  
 a crambid moth  
*Chilo plejadellus* (Q)  
 rice stalk borer  
*Chilo suppressalis* (Q)  
 Asiatic rice borer  
*Chionaspis americana* (B)  
 elm scurfy scale  
*Chionaspis furfura* (A)  
 scurfy scale  
*Chionaspis heterophyllae* (Q)  
 pine scale  
*Chionaspis pinifoliae* (C)  
 pine needle scale  
*Chlorochroa ligata* (C)  
 conchuela  
*Chlorochroa sayi* (C)  
 Say stink bug  
*Chorizococcus brevicurris* (C)  
 shortlegged mealybug  
*Chrysobothris mali* (C)  
 Pacific flatheaded borer  
*Clastoptera arizonana* (C)  
 a spittlebug  
*Clavaspis covilleae* (C)  
 Covillea scale  
*Clavaspis disclusa* (C)  
 discluse scale  
*Clavaspis herculeana* (A)  
 herculeana scale  
*Clavaspis ulmi* (C)  
 an armored scale  
*Cnephasia longana* (C)  
 omnivorous leaf-tier  
*Coccus longulus* (C)  
 long soft scale  
*Coccus hesperidum* (C)  
 brown soft scale  
*Coccus pseudoheperidum* (C)  
 orchid soft scale  
*Coccus pseudomagnoliarum* (C)  
 citricola scale  
*Coccus viridis* (Q)  
 green scale  
*Cochlicella ventrosa* (C)  
 a snail  
*Coleophora spissicornis* (C)  
 clover casebearer  
*Comstockiella sabilis* (B)  
 palmetto scale  
*Conoderus falli* (B)  
 southern potato wireworm

- Conotrachelus dimidiatus* (Q)  
     a weevil  
*Conotrachelus juglandis* (A)  
     butternut curculio  
*Conotrachelus nenuphar* (A)  
     plum curculio  
*Conotrachelus perseae* (Q)  
     a weevil  
*Conotrachelus retentus* (A)  
     black walnut curculio  
*Contarinia johnsoni* (Q)  
     grape blossom midge  
*Contarinia sorghicola* (C)  
     sorghum midge  
*Coptotermes formosanus* (Q)  
     Formosan subterranean termite  
*Crioceris duodecimpunctata* (C)  
     spotted asparagus beetle  
*Crisicoccus azaleae* (B)  
     azalea mealybug  
*Crisicoccus pini* (C)  
     Kuwana pine mealybug  
*Cryptotermes brevis* (Q)  
     a powderpost termite  
*Curculio caryae* (C)  
     pecan weevil  
*Cylas formicarius elegantulus* (A)  
     sweetpotato weevil  
*Cynaesus angustus* (C)  
     larger black flour beetle
- Dacus cucurbitae* (A)  
     melon fly  
*Dacus dorsalis* (A)  
     Oriental fruit fly  
*Dacus oleae* (A)  
     olive fruit fly  
*Dacus tryoni* (A)  
     Queensland fruit fly  
*Dasyneura balsamica* (B)  
     balsam fir gall midge  
*Dasyneura leguminicola* (Q)  
     clover seed midge  
*Dendroctonus valens* (C)  
     red turpentine beetle  
*Dendrothrips ornatus* (B)  
     privet thrips  
*Desmia funeralis* (C)  
     grape leafroller  
*Dialeurodes chittendeni* (Q)  
     rhododendron whitefly  
*Dialeurodes citri* (C)  
     citrus whitefly  
*Dialeurodes citrifolii* (A)  
     cloudy wing whitefly  
*Dialeurodes kirkaldyi* (Q)  
     Kirkaldy's whitefly  
*Diaphania hyalinata* (A)  
     melonworm  
*Diaphania nitidalis* (A)  
     pickleworm  
*Diaspidiotus ancyclus* (C)  
     Putnam scale  
*Diaspidiotus liquidambaris* (B)  
     sweet gum scale
- Diaspis bromeliae* (C)  
     pineapple scale  
*Diastrophus radicum* (Q)  
     raspberry root gall wasp  
*Diatraea crambidoides* (A)  
     southern cornstalk borer  
*Diatraea grandiosella* (A)  
     southwestern corn borer  
*Diatraea saccharalis* (A)  
     sugarcane borer  
*Dichomeris marginella* (Q)  
     juniper webworm  
*Dinaspis aculeata* (A)  
     an armored scale  
*Dinoderus brevis* (C)  
     a false powderpost beetle  
*Diorymerellus laevimargo* (C)  
     orchid weevil  
*Doru lineare* (C)  
     linear earwig  
*Dynaspidiotus britannicus* (B)  
     holly scale  
*Dynatopechus aureopilosus* (Q)  
     a weevil  
*Dysdercus suturellus* (& ssp.) (Q)  
     cotton stainer
- Elasmopalpus lignosellus* (C)  
     lesser cornstalk borer  
*Eleodes suturalis* (Q)  
     a false wireworm  
*Epicaerus cognatus* (Q)  
     a weevil  
*Epidiaspis leperii* (C)  
     Italian pear scale  
*Epilachna borealis* (Q)  
     squash beetle  
*Epilachna varivestis* (A)  
     Mexican bean beetle  
*Epitimerus pyri* (C)  
     pear rust mite  
*Epitrix cucumeris* (Q)  
     potato flea beetle  
*Eriococcus azaleae* (B)  
     azalea bark scale  
*Eriococcus borealis* (C)  
     willow bark scale  
*Eriococcus pittospori* (B)  
     pittosporum eriococcin scale  
*Eriophyes cynodontiensis* (C)  
     bermudagrass mite  
*Eriophyes tulipae* (C)  
     wheat curl mite  
*Estigmene acrea* (C)  
     saltmarsh caterpillar  
*Eurycotis floridana* (Q)  
     Florida stinking roach  
*Eurytoma orchidearum* (C)  
     cattleya fly  
*Eurytoma tumoris* (C)  
     a pine gall wasp  
*Eutetranychus banksi* (B)  
     Texas citrus mite  
*Eutheola humilis rugiceps* (Q)  
     sugarcane beetle

- Ferrisia virgata* (B)  
 striped mealybug  
*Fiorinia theae* (A)  
 tea scale  
*Furcaspis biformis* (A)  
 red orchid scale
- Genaparlatoria pseudaspidiotus* (A)  
 vanda orchid scale  
*Gerstaeckeria nobilis* (A)  
 a weevil  
*Gnorimoschema gudmannella* (Q)  
 pepper flower bud moth  
*Gnorimoschema ocellatella* (Q)  
 a sugarbeet crown borer  
*Gonodonta pyrgo* (Q)  
 a citrus fruitpiercing moth  
*Graphognathus* spp. (A)  
 whitefringed beetles  
*Grapholitha molesta* (C)  
 oriental fruit moth  
*Graptoblatta motulata* (Q)  
 a cockroach  
*Grylloides sigillatus* (C)  
 decorated cricket  
*Gymnaspis aechmeae* (A)  
 aechmea scale  
*Gynaikothrips ficorum* (C)  
 Cuban laurel thrips
- Halticus bracteatus* (Q)  
 garden fleahopper  
*Haplothrips clarisetis* (C)  
 a thrips  
*Harmolita grandis* (C)  
 wheat strawworm  
*Harrisina americana* (Q)  
 grapeleaf skeletonizer  
*Harrisina billians* (B)  
 western grapeleaf skeletonizer  
*Heliiothis stombleri* (C)  
 Stombler moth  
*Heliiothis zea* (C)  
 corn earworm  
*Heilipus lauri* (A)  
 a weevil  
*Helix aperta* (C)  
 green burrowing snail  
*Helix pomatia* (A)  
 a snail  
*Hepialus* sp. (Q)  
 a ghost moth  
*Heterococcus pulverarius* (B)  
 bluegrass mealybug  
*Homadula anisocentra* (B)  
 mimosa webworm  
*Homotoma ficus* (B)  
 a fig psyllid  
*Howardia biclavis* (A)  
 mining scale  
*Hylastinus obscurus* (B)  
 clover root borer  
*Hylemya platura* (C)  
 seedcorn maggot
- Hypera brunneipennis* (C)  
 Egyptian alfalfa weevil  
*Hypera nigrirostris* (C)  
 lesser clover leaf weevil  
*Hypera postica* (C)  
 alfalfa weevil  
*Hypothenemus eruditus* (Q)  
 a bark beetle  
*Hysteroneura setariae* (C)  
 rusty plum aphid  
*Hysterosia* sp. (Q)  
 a phaloniid moth
- Inopis rubriceps* (B)  
 Australian sod fly  
*Ischnaspis longirostris* (A)  
 black thread scale  
*Keiferia peniculo* (B)  
 eggplant pinworm  
*Kilifia acuminatus* (A)  
 acuminate scale
- Lampides boeticus* (Q)  
 bean butterfly  
*Languria mozardi* (C)  
 clover stem borer  
*Laspeyresia caryana* (A)  
 hickory shuckworm  
*Laspeyresia splendana* (A)  
 chestnut moth  
*Lecanium corni* (C)  
 European fruit lecanium  
*Lecanium fletcheri* (C)  
 Fletcher scale  
*Lecanium kunoensis* (B)  
 Kuno scale  
*Lecanium nigrofasciatum* (Q)  
 terrapin scale  
*Lecanium prunastri* (Q)  
 globose scale  
*Lepidosaphes beckii* (B)  
 purple scale  
*Lepidosaphes camelliae* (B)  
 camellia scale  
*Lepidosaphes destefanii* (B)  
 De Stephan scale  
*Lepidosaphes gloverii* (B)  
 Glover scale  
*Lepidosaphes machili* (C)  
 cymbidium scale  
*Lepidosaphes maskelli* (B)  
 Maskell scale  
*Lepidosaphes mcgregori* (Q)  
 an armored scale  
*Lepidosaphes noxia* (Q)  
 noxious scale  
*Lepidosaphes tokionis* (Q)  
 croton scale  
*Lepidosaphes yanagicola* (Q)  
 Yanagicola scale  
*Leptinotarsa decemlineata* (A)  
 Colorado potato beetle  
*Leucaspis portaeaeureae* (C)  
 podocarpus leucaspis scale

- Leucinodes orbonalis* (Q)  
 eggplant fruit borer  
*Liothrips oleae* (Q)  
 olive thrips  
*Liriomyza huldsbrensis* (C)  
 pea leafminer  
*Lissorhoptrus oryzophilus* (B)  
 rice water weevil  
*Lopholeucaspis cockerelli* (A)  
 Cockerell scale  
*Luperodes brunneus* (Q)  
 corn silk beetle  
*Lygaeus rubicollis* (C)  
 a Lygaeid bug  
*Lymantria dispar* (A)  
 Gypsy moth  
  
*Macroductylus subspinosus* (Q)  
 rose chafer  
*Macrosiphum luteum* (Q)  
 an orchid aphid  
*Maladera castanea* (Q)  
 Asiatic garden beetle  
*Mamestra brassicae* (Q)  
 cabbage moth  
*Maruca testulalis* (Q)  
 bean pod borer  
*Mayetiola destructor* (C)  
 Hessian fly  
*Megastigmus pistaciae* (B)  
 pistachio seed chalcid  
*Melanagromyza splendida* (C)  
 a leafminer fly  
*Melanaspis bromeliae* (C)  
 a pineapple scale  
*Melanaspis obscura* (A)  
 obscure scale  
*Melanoplus devastator* (C)  
 devastating grasshopper  
*Melittia cucurbitae* (Q)  
 squash vine borer  
*Meromyza americana* (C)  
 wheat stem maggot  
*Meromyza pratorum* (C)  
 a grass stem maggot  
*Minthea rugicollis* (Q)  
 a powderpost beetle  
*Mirificarma formosella* (C)  
 European clover leaftier  
*Monarthropalpus buxi* (C)  
 boxwood leafminer  
*Morganella longispina* (Q)  
 plumose scale  
*Murgantia histrionica* (C)  
 harlequin bug  
*Musca autumnalis* (B)  
 face fly  
*Mycetaspis personatus* (Q)  
 masked scale  
*Mycetaspis sphaerioides* (A)  
 an armored scale  
*Myocalandra elongata* (Q)  
 a weevil  
*Myzus hemerocallis* (C)  
 day lily aphid  
  
*Myzus persicae* (C)  
 green peach aphid  
*Myzus scoliopi* (C)  
 a lily aphid  
  
*Neoblattella fratercula* (Q)  
 a cockroach  
*Neodryocoetes* sp. (Q)  
 a bark beetle  
*Neophyllaphis araucariae* (C)  
 an araucaria aphid  
*Neopinnaspis harperi* (B)  
 Harper scale  
*Neostylopyga rhombifolia* (C)  
 harlequin cockroach  
*Nepticula juglandifoliella* (C)  
 walnut leafminer  
*Nepytia phantasmaria* (C)  
 a phantom hemlock looper  
*Nezara viridula* (Q)  
 southern green stink bug  
*Nilotaspis halli* (A)  
 Hall scale  
*Nygmia phaeorrhoea* (A)  
 browntail moth  
*Nysius raphanus* (C)  
 a false chinch bug  
  
*Oebalus pugnax* (Q)  
 rice stink bug  
*Oligonychus aceris* (C)  
 maple red spider mite  
*Ophiomyia phaseoli* (Q)  
 bean fly  
*Orchamoplatus mammaeferus* (Q)  
 croton whitefly  
*Oryzaephilus surinamensis* (C)  
 sawtoothed grain beetle  
*Ostrinia nubilalis* (A)  
 European corn borer  
*Ostrinia penitalis* (C)  
 lotus borer  
*Otala lactea* (C)  
 milk snail  
*Otiorhynchus sulcatus* (C)  
 black vine weevil  
*Oulema melanopus* (A)  
 cereal leaf beetle  
*Oxypleurites carinatus* (C)  
 horsechestnut rust mite  
  
*Pachynematus extensicornis* (B)  
 grass sawfly  
*Pachynematus sporax* (C)  
 wheat sawfly  
*Pachyphylla* spp. (Q)  
 psyllids  
*Palmicultor palmarum* (Q)  
 palm mealybug  
*Panaphis juglandis* (C)  
 duskyveined walnut aphid  
*Pantomorus cervinus* (C)  
 Fuller rose beetle  
*Panchlora nivea* (C)  
 Cuban cockroach

- Papaipema nebris* (Q)  
 stalk borer  
*Papilio cresphontes* (C)  
 orangedog  
*Paraleyrodes naranjæ* (Q)  
 crustywaxed whitefly  
*Paralobesia viteana* (Q)  
 grape berry moth  
*Paramyelois transitella* (C)  
 navel orangeworm  
*Paratrechina longicornis* (B)  
 crazy ant  
*Paratrechina melanderi arenivaga* (C)  
 an ant  
*Paratrechina parvula* (Q)  
 an ant  
*Paratrechina vividula* (Q)  
 an ant  
*Parlatoria camelliae* (C)  
 camellia parlatoria scale  
*Parlatoria crotonis* (Q)  
 croton parlatoria scale  
*Parlatoria oleae* (B)  
 olive scale  
*Parlatoria pergandii* (B)  
 chaff scale  
*Parlatoria pittospori* (B)  
 pittosporum diaspidid  
*Parlatoria proteus* (A)  
 sansevieria scale  
*Parlatoria theae* (A)  
 tea parlatoria scale  
*Parlatoria vandae* (A)  
 vanda parlatoria scale  
*Parlatoria zizyphus* (Q)  
 black parlatoria scale  
*Pactinophora gossypiella* (A)  
 pink bollworm  
*Pegomya betae* (C)  
 spinach leafminer  
*Pemphigus bursarius* (C)  
 a lettuce root aphid  
*Pentalonia nigronervosa* (C)  
 banana aphid  
*Periplaneta fuliginosa* (B)  
 smokybrown cockroach  
*Periploca nigra* (C)  
 juniper twig girdler  
*Petrobia latens* (C)  
 brown wheat mite  
*Pheidole megacephala* (Q)  
 bigheaded ant  
*Phenacoccus aceris* (A)  
 apple mealybug  
*Phyllocoptes davisii* (C)  
 rhododendron rust mite  
*Phyllophaga congrua* (Q)  
 a May beetle  
*Phyllophaga* spp. (Q) (except *errans*-C)  
 May beetles  
*Phyllotreta albionica* (C)  
 a flea beetle  
*Physokermes piceae* (C)  
 spruce bud scale  
*Phytomyza crassiseta* (C)  
 veronica leafminer  
*Phytomyza ilicicola* complex (B)  
 native holly leafminer  
*Phytomyza ilicis* (A)  
 holly leafminer  
*Phytomyza vomitoriae* (C)  
 a holly leafminer  
*Phytoptus insidiosus* (C)  
 peach mosaic vector mite  
*Pieris rapae* (C)  
 imported cabbageworm  
*Pinnaspis aspidistrae* (C)  
 fern scale  
*Pinnaspis buxi* (Q)  
 boxwood scale  
*Pinnaspis strachani* (A)  
 lesser snow scale  
*Pissodes nemorensis* (Q)  
 deodar weevil  
*Plagiolepis alluaudi* (C)  
 an ant  
*Planococcus citri* (C)  
 citrus mealybug  
*Planococcus lilacinus* (Q)  
 a mealybug  
*Plathypena scabra* (Q)  
 green cloverworm  
*Plodia interpunctella* (C)  
 Indian meal moth  
*Pollinia pollini* (B)  
 olive pollinia scale  
*Popillia japonica* (A)  
 Japanese beetle  
*Prays oleellus* (Q)  
 olive tine  
*Protopulvinaria mangiferae* (Q)  
 mango shield scale  
*Protopulvinaria pyriformis* (B)  
 pyriform scale  
*Pseudantonina arundinariae* (A)  
 arundinaria mealybug  
*Pseudaonidia duplex* (Q)  
 camphor scale  
*Pseudaonidia paeoniae* (Q)  
 peony scale  
*Pseudaulacaspis cockerelli* (A)  
 magnolia white scale  
*Pseudaulacaspis pentagona* (Q)  
 white peach scale  
*Pseudococcus comstocki* (A)  
 Comstock mealybug  
*Pseudococcus calceolariae* (C)  
 citrophilus mealybug  
*Pseudococcus importatus* (A)  
 imported mealybug  
*Pseudococcus microcirculus* (B)  
 orchid mealybug  
*Pseudoparlatoria parlatorioides* (A)  
 false parlatoria scale  
*Psila rosae* (B)  
 carrot rust fly  
*Psylla pyricola* (C)  
 pear psylla

- Psylla fatsiae* (C)  
 aralia psyllid  
*Pulvinaria citricola* (Q)  
 a pulvinaria scale  
*Pulvinaria phaiae* (C)  
 a pulvinaria scale  
*Pulvinaria psidii* (A)  
 green shield scale  
*Pulvinaria urbicola* (Q)  
 urban pulvinaria scale  
*Pyrhalta luteola* (C)  
 elm leaf beetle
- Quadraspidiotus forbesi* (C)  
 Forbes scale  
*Quadraspidiotus ostreaeformis* (Q)  
 European fruit scale
- Rhagoletis boycei* (A)  
 a walnut husk fly  
*Rhagoletis cerasi* (A)  
 European cherry fruit fly  
*Rhagoletis cingulata* (A)  
 eastern cherry fruit fly  
*Rhagoletis completa* (C)  
 walnut husk fly  
*Rhagoletis fausta* (A)  
 black cherry fruit fly  
*Rhagoletis indifferens* (A)  
 western cherry fruit fly  
*Rhagoletis juglandis* (A)  
 a walnut husk fly  
*Rhagoletis mendax* (A)  
 blueberry maggot  
*Rhagoletis pomonella* (A)  
 apple maggot  
*Rhagoletis suavis* (A)  
 walnut husk maggot  
*Rhizotrogus majalis* (A)  
 European chafer  
*Rhopalosiphum poae* (B)  
 a grass aphid  
*Rhyacionia buoliana* (A)  
 European pine shoot moth  
*Rhyacionia frustrana* (B)  
 Nantucket pine tip moth  
*Rumina decollata* (B)  
 decollate snail
- Saccharicoccus sacchari* (Q)  
 pink sugarcane mealybug  
*Saissetia coffeae* (C)  
 hemispherical scale  
*Saissetia oleae* (C)  
 Mediterranean black scale  
*Sannina uroceriformis* (A)  
 persimmon borer  
*Sanninoidea exitiosa* "graefi" (C)  
 western peachtree borer  
*Schizaphis graminum* (C)  
 greenbug  
*Schizura concinna* (C)  
 redhumped caterpillar  
*Scolytus multistriatus* (C)  
 smaller European elm bark beetle
- Scolytus rugulosus* (C)  
 shothole borer  
*Scotinophara lurida* (Q)  
 rice pentatomid  
*Selenaspidus articulatus* (A)  
 rufous scale  
*Selenothrips rubrocinctus* (Q)  
 redbanded thrips  
*Sesamia cretica* (Q) (C)  
 durra stalk borer  
*Siteroptes graminum* (B)  
 a grass mite  
*Sitodiplosis mosellana* (Q)  
 wheat midge  
*Sitona cylindricollis* (C)  
 sweetclover weevil  
*Sitona lineata* (C)  
 pea leaf weevil  
*Sitophilus granarius* (C)  
 granary weevil  
*Sitophilus oryzae* (C)  
 rice weevil  
*Sogatodes orizicola* (Q)  
 rice delphacid  
*Solenopsis geminata* (Q)  
 fire ant  
*Solenopsis invicta* (A)  
 red imported fire ant  
*Solenopsis richteri* (A)  
 black imported fire ant  
*Sphenophorus maidis* (Q)  
 maize billbug  
*Sphenophorus venatus vetitus* (C)  
 hunting billbug  
*Spodoptera littoralis* (Q)  
 Egyptian cottonworm  
*Spodoptera mauritia* (Q)  
 lawn armyworm  
*Spilococcus juniperi* (C)  
 juniper mealybug  
*Steneotarsonemus ananas* (B)  
 a tarsonemid mite  
*Stenoma algidella* (Q)  
 a moth  
*Stenoma catenifer* (Q)  
 avocado seed moth  
*Stilpnotia salicis* (B)  
 satin moth  
*Strymon melinus* (C)  
 cotton square borer  
*Succinea luteola* (C)  
 a snail  
*Succinea ovalis* (C)  
 a snail  
*Synanthedon exitiosa* (C)  
 peachtree borer
- Technomyrmex albipes* (Q)  
 an ant  
*Taniva albolineana* (C)  
 spruce needleminer  
*Tapinoma melancocephalum* (Q)  
 blackheaded ant  
*Tapinoma sessile* (C)  
 odorous house ant

Tenebrio molitor (C) yellow mealworm	Trionymus diminutus (C) phormium mealybug
Tenebrio obscurus (C) dark mealworm	Trisetacus pseudotsugae (C) Douglas fir bud mite
Tetramorium guineense (C) an ant	Trogoderma glabrum (C) a dermestid beetle
Tetramorium pacificum (C) an ant	Trogoderma granarium (A) khapra beetle
Tetranychus evansi (B) a spider mite	Trogoderma ornatum (C) a dermestid beetle
Tetranychus merganser (C) a privet spider mite	Trogoderma simplex (C) a dermestid beetle
Tetranychus cinnabarinus (C) carmine spider mite	Trogoderma sternale (C) a dermestid beetle
Tetranychus urticae (C) twospotted spider mite	Trogoderma variabile (C) a dermestid beetle
Texanonus gladius (C) a leafhopper	Tuckerella pavoniformis (Q) a tuckerellid mite
Theba pisana (A) white garden snail	Unaspis citri (Q) citrus snow scale
Thrips tabaci (C) onion thrips	Unaspis euonymi (B) euonymous scale
Thrips angusticeps (Q) cabbage thrips	Vasates quadripedes (A) maple bladdergall mite
Thyridopteryx ephemeraeformis (A) bagworm	Velataspis dentata (A) dentate scale
Tinocallis caryaefoliae (C) black pecan aphid	Veronicella floridana (Q) a slug
Tipula paludosa (Q) European crane fly	Vesiculaphis caricis (C) an azalea aphid
Toumeyella liriodendri (A) tuliptree scale	Wasmannia auropunctata (Q) little fire ant
Toxoptera citricida (Q) brown citrus aphid	Zabrotes subfasciatus (C) a bean weevil
Tranes internatus (Q) a weevil	Zonosemata electa (Q) pepper maggot
Trialeurodes floridensis (Q) avocado whitefly	Zygotogramma exclamationis (Q) sunflower beetle
Tribolium castaneum (C) red flour beetle	
Tribolium confusum (C) confused flour beetle	
Trichoscapa membranifera (D) an ant	

COMING SOON ! ! !

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Full-color, pictorial field keys to the common and economically significant whiteflies and scale insects of California are to be released in the very near future. The keys are now in the hands of the State Printer and should be published within the month.

These color keys are along the same lines as the now familiar and useful "Color-Photo Key to Caterpillar Pests of California Field and Vegetable Crops" by Kirby Brown and Ray Bingham. There will be five separate keys for the field recognition of: (1) whitefly and scale insect families; (2) whitefly species; (3) mealybug species; (4) soft scale species; and (5) armored scale species. Each key contains the pictorial key; plus, brief notes on the importance and distribution of each family or species, and except for the family key, each presents a useful cross-referenced key to the species, based on their hosts.

The keys were produced for the Environmental Monitoring and Pest Management Unit by Ray Gill of the Entomology Laboratory (Analysis and Identification Unit).

# HIGHLIGHTS

## Insects

GYPSY MOTH (Lymantria dispar). -(A)-See additional note on page \_\_\_ of this issue. - 22 collections. In parenthesis, the name of the state is indicated if the origin of the specimen was positively traced. Information is arranged by counties:

San Diego County: January 6 by C. Stead in San Diego, dead egg mass, larva and pupa on chain link fencing (New Jersey); on the 13th by A. Sixtus and C. Kennedy, egg mass alive on patio furniture (Massachusetts); on the 18th dead specimen (stage not recorded) found by S. R. Mosse on patio furniture in Rancho Bernardo (-?-) (all dets. by R. Somerby).

Orange County: February 5, M. Bennett found dead larva and pupa on the walls of a birdhouse in Mission Viejo (New York); on the 18th, B. Darker collected egg masses, larva and pupa, all dead, on a barbecue in Newport Beach (Connecticut) (all dets. by R. Somerby).

Los Angeles County: January 14, Beverly Hills, M. Cochrane found dead larval and pupal specimens on a metal lawn table (Maine); on the 13th, he found live egg masses in Long Beach on a wooden dog house (New Hampshire); on 18th, while Mr. Papilli was investigating a pile of oak firewood and some outdoor furniture in Pomona, he found live egg masses (Connecticut) (all dets. by R. Somerby). On the 21st, M. Cochrane spotted live and dead egg masses, larvae and pupae in Beverly Hills on wooden picnic table and benches (New York) (det. by T. Eichlin).

Santa Barbara County: Four collections in Montecito. January 25, live egg mass found on bark of oak by A. Stein; February 16, live larva found on oak by T. Eichlin and L. Bronson; February 27,

egg mass and part of female pupal skin found on the underside of a lateral branch of an oak about 15 feet above ground, and one female pupal skin under ivy on the lower trunk of a small oak tree about 3 feet above ground, collected by T. Eichlin and John Moore; on the same day, Rosemary A. Stefani found live egg mass and one live first instar larva (also one first instar cast skin!) on the stem of Pyracantha (dets. by T. Eichlin).

Riverside County: See special note in "Miscellaneous News" in this issue.

San Bernardino County: February 16, Wright and Lampman found egg masses (condition and location not reported) on a dog house and picnic table (New York) (det. by R. Somerby).

Contra Costa County: January 11, Danville, live egg mass found on patio table by W. Kean (Connecticut). Orinda, January 28, W. Kean found another egg mass on a planter box (Connecticut) (det. by R. Somerby).

Alameda County: Castro Valley, (no collection date, received by lab February 8) John Gouvaia found a dead egg mass and larva on a picnic table (New Hampshire) (det. by R. Somerby).

Kern County: January 25, Jack Sampson found a dead egg mass on outdoor furnishings in Bakersfield (New Jersey) (det. by T. Eichlin).

Tulare County: Visalia, February 9, Jim Gilley located dead egg mass and some dead larvae on household and garden items (Connecticut) (det. by T. Eichlin).

Solano County: February 2, Vallejo, live and dead egg masses, larvae and pupae

found by Mr. De Hoop on outdoor picnic table and benches (Connecticut) (det. by R. Somerby).

Yolo County: Davis, February 1, T. Roberts located an egg mass on outdoor goods. Some with fluid, possible viable (Connecticut) (det. by R. Somerby).

A MOTH (Acrolophus sp.). -(Q)-January 25, Mr. Vinopal and Shimoda found live larvae of this tineid moth in Van Nuys on Bromeliads from Florida. January 27, La Mesa, Mike Dorsey collected live larvae on Tillandsia from Mexico (dets. by T. Eichlin).

MEXICAN FRUIT FLY (Anastrepha ludens). -(A)-San Diego County, Pacific Beach, January 26. Belinda Moss found one specimen in a McPhail Trap placed in a grapefruit tree. Blue dye present in head capsule (det. by K. Corwin).

ORIENTAL FRUIT FLY (Dacus dorsalis). -(A)-Los Angeles County, Redondo Beach, January 19. Durt Flores found one male specimen in a Jackson Trap placed in an orange tree. Trap last checked on January 11. Thoracic musculature and abdominal contents not dessicated (det. by K. Corwin).

BIGHEADED ANT (Pheidole megacephala). -(Q)-Oxnard, January 15, H. Hixson found live adults on the following plants from Hawaii: Anthurium, Spathophyllum, orchids and ferns. -Same day at Willow Creek, P. Holzberger collected live adult specimens on Alpinia purpurata, also from Hawaii. Some 40 adults per stem counted. -Lodi, February 18, T. Watkins picked up live adult specimens on Red Ginger (Zingiber officinale) imported from Hawaii (all dets. by M. Wasbauer).

AN ANT (Paratrechina fulva). -(Q)-El Cajon, January 21, adult specimens found alive by T. Smith on Ficus decora shipped from Florida (det. by M. Wasbauer).

LITTLE FIRE ANT (Wasmannia auropunctata). -(Q)-El Cajon, January 21, T. Smith

collected live adult specimens on Ficus decora shipped from Florida (det. by M. Wasbauer).

BLACKHEADED ANT (Tapinoma melanocephalum). -(Q)-Escondido, January 27, R. Vasquez and S. Desserich observed a large number of adults on the leaves, trunk and bark of Dracaena marginata recently shipped from Hawaii (det. by M. Wasbauer).

CLICK BEETLE (Elateridae sp.) -(Q)-In La Mesa on January 21, Mike Dorsey found live larva in soil with a Bromeliad plant transported from Florida (det. by F. G. Andrews). -Another click beetle belonging to the genus Aeolus (probably melillus) found on February 22 by Kellam in Gardena, feeding on the roots of Ficus benjamina; shipped from Florida (det. by F. G. Andrews and A. R. Hardy).

A SCARAB (Apogonia sp.). -(Q)-Anaheim, February 4, Frank Reyes found a dead adult specimen in a metal can with powdered Strychnine originating from India (det. by F. G. Andrews and A. R. Hardy).

A BRUCHID BEETLE (Bruchidius trifolii). -(Q)-A dead adult specimen found by Peterson in a Trifolium seed shipment (from Egypt?) in the laboratory of the Agronomy Department of the University of California, Davis (det. by T. N. Seeno, confirmed by J. M. Kingsolver, USDA).

A BUG (Paromius longulus, or near). -(Q)-Van Nuys, February 2, N. Kellam counted one adult per leaf on Bromeliads and Dracaena sanderana; hosts recently shipped from Florida (det. by A. R. Hardy).

RED IMPORTED FIRE ANT (Solenopsis invicta). -(A)-L. A. International Airport, January 30, Sulentic spotted shipments of various palms from Florida, and found a series of live adult specimens (some 8 per root) of this ant. -February 2, Van Nuys, N. Kellam found live adults on Bromeliads and Dracaena from Florida (dets. by M. Wasbauer).

GREEN SHIELD SCALE (Pulvinaria psidii).  
 -(A)-Oxnard, January 29, M. Hixson found nymphs and adult specimens on Ginger cut flowers shipped from Hawaii. -Modesto, January 25, T. Watkins found also live nymphs on Hawaiian cut flowers. -January 27, Oxnard, M. Hixson again observed live nymphs and adults on Ginger cut flowers of Hawaiian origin; on the same day, R. Vasquez and S. Desserich observed an average of one egg, nymph, and adult per leaf of Ficus benjamina in Escondido, hosts shipped recently from Florida. -Lodi, February 4, S. Hudson found live adult specimens on leaves of Ficus benjamina of Florida origin. -On the same host again, on February 8, S. Desserich and G. Bertrano found all stages of this scale in Escondido and reporting that the host originally came from Florida. -Manteca, February 11, S. K. Barnes collected specimens on red ginger cut flowers from Hawaii. -February 12, Vista, in a nursery, A. Mariscal found live eggs on Ficus benjamina recently shipped from Hawaii (all dets. by R. Gill).

MAGNOLIA WHITE SCALE (Pseudaulacaspis cockerelli). -(A)-Panorama City, January 15, Miller and Cornett counted 15 nymphs and adults per leaf of Aracea palm of Florida origin. -On the 21st, Miller found an average of 15 adults per leaf of Chrysalidocarpus lutescens, a recent arrival from Florida. -January 25, Juli Jensen in Sacramento registering some 6 adults per leaf of a Piper sp., supposedly from Fiji. -February 1, Panorama City, again on Aracea palm, Cornett and Miller found an average of two adults per leaf. -Orland, February 10, W. R. Duckworth found live adult specimens on Cocos nucifera with husk shipped from Hawaii (all dets. by R. Gill).

FLORIDA WAX SCALE (Ceroplastes floridensis). -(Q)-February 4, Walnut (L. A. County), C. Olson found an average of one adult per stem of Ficus benjamina from Florida (det. by R. Gill).

### Weeds

TANSY RAGWORT (Senecio jacobaea)--(B) - Glenn County, Ord Bend, January 18. John Tolley found a shipment of seeds labeled Ladino Clover and submitted two lots to the Seed Lab to check for seeds of noxious weeds. The samples contained 1,816 tansy ragwort seeds per pound which is, according to the identifier, an unusually high infestation (detection by Barbara Hass).

DIFFUSED KNAPWEED (Centaurea diffusa)--(A) - Five collections; all finds on beehives. Kings County, Kettleman City, three collections; January 24, (1). and February 2, (2). Hives moved from Bakersfield. Shasta County (January 11), no location given on hives en route from Washington State to Redding. Merced County, Delhi, January 22, hives from Washington destined to Merced (detection by D. Barbe).

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The new edition of INDEX OF PLANT VIRUS DISEASES IN CALIFORNIA, by D. Mayhew is now available. This new edition contains approximately 10-15% new information. It is a booklet of 5-1/2 x 8-1/2" page size, 49 pages. A delightful illustration on the cover depicting Peony ring spot virus in Paeonia is made by Muffet Rose Wilkerson. Copies are free for the asking. Write to Dr. D. Mayhew, Laboratory Services - 340, 1220 N Street, Sacramento, California 95814.

## Miscellaneous News

PEST RATING LISTS - In past years, we have received numerous calls from our readers concerning the rating of certain insects. During those years, several insects have been "reclassified;" those changes were announced in memorandums which may or may not have been recorded on the copies of the lists in the hands of our readers. This fact makes it proper to present a more complete and up-to-date list of those ratings. This list will be published as space permits in the present publication (CPPDR). In this issue you will find the first half of the list of insects, miscellaneous arthropods and snails arranged in alphabetical order by their scientific names (see p. 21). In the March issue you will have the second half arranged by common and scientific names. It is planned that when all the lists are published individually, a separate publication will be produced which will contain the complete lists for our readers convenience.

ABOUT THE FIRST ISSUE - We received quite a few encouraging comments. The change of format and the immediate availability of information in the publication surprised many. The senior editor is solely responsible for a few typographical errors which could have been corrected, of course (but were neglected when called to the printer). The mailing was somewhat late too, since the production of these few pages took more time than was previously anticipated. All efforts have been made to avoid these problems, as much as possible, in the future.

MORE TRAVEL AWARDS GRANTED - Two more county inspector/biologists have been able to obtain specialized IPM information, thanks to the Department's IPM Training Assistance Program. Susan Cohen, Monterey County; and Paul Larsen, Santa Cruz County, were awarded travel money to attend the annual meeting of the Entomological Society of America, held in San Diego, November 29 to December 3.

Both Susan and Paul were enthusiastic about attending. As Paul described it, "...this is an excellent way to gain a wide exposure to the most current entomological information. Obtaining current information is an important step in encouraging Integrated Pest Management." The IPM Training Assistant Program provides travel money for county inspector/biologists to attend various IPM training meetings in California. Any full-time permanent county inspector/biologist interested in applying for an award should contact Kathy Burnett at 1220 N Street, Room A-328, Sacramento, California 95814, (916) 322-2395.

AN ETHUSIASTIC RECEPTION - There is no other CDFA program as popular as the mobil educational exhibit of the Integrated Pest Management Unit which began in 1981. From May 25 to December 3, over 121,000 persons viewed the trailer during the 122 days that it was open at 60 different locations. Local news media (TV, radio, and newspapers) had favorable comments and broad support. More than 272,000 pamphlets (information about many aspects of insect and disease pests) were picked up by visitors. Written public comments were collected, of which 98 percent were positive, with some comments like "fantastic," "filling a need," "well done," "very informative," and "best exhibit at fair." All persons involved in creating and managing this unique exhibit deserve our attention and congratulations.

BEEET YELLOW STUNT - Compounding the problem with the lettuce crop, in Imperial County, is a virus disease resembling beet yellow stunt which is aphid transmitted. Recent confirmation was made by Dr. Dennis Mayhew. Symptoms in lettuce include yellowing of the leaves, severe stunting, necrosis of older leaves, and phloem necrosis in the root crown. Dr. Robert Flock, Entomologist with the office of the Imperial County

Agricultural Commissioner, reports a dramatic increase in aphid populations, which may account for the sudden appearance of aphid transmitted diseases.

GYPSY MOTH EGG MASSES - ...and all in one spot; alive! The place is Indio, Riverside County. Richard Schaffer made a frightening discovery on February 1, while doing some quarantine inspection at 44-896 Sherwood Drive. The owner brought some yard furniture from Pennsylvania (date not reported) which were speckled with those egg masses. All specimens were collected and submitted to the lab (identification confirmed by R. Somerby) and as many as 12 of them were found positively viable. Richard, the Idioans (and for sure we do) congratulate you for the discovery because you surely saved us from many unforeseen problems.

YOU NEVER KNOW WHAT YOU GOT - A nematode sample came in with the morning mail to the nema lab from Contra Costa County (collected January 27) sent by Mr. Frank Brueato, from a cut flower nursery. Host: roses. Under normal conditions it takes only a few days to process the sample and make the necessary identifications, but the "Rose of Contra Costa" produced something hard to ignore. When Adam Weiner and Janet Vasquez attempted to examine the sample, they found a mind-twisting conglomeration of nematodes

of all shapes and sizes and ages. What they discovered, in the preliminary screening, was that this sample contains only 13 different species of plant parasitic nematodes. Those may be listed as follows:

Meloidogyne sp, larvae;  
Heteroderidae, larva;  
Xiphinema sp, larvae, a species with a long tail;  
Paratylenchus sp, which could be a FIRST record for Contra Costa County;  
Hemicriconemoides sp;  
Hemicyclophora sp;  
Criconemella sp, two species recognizable;  
Pratylenchus thornei;  
Pratylenchus sp (another species)  
Tylenchorhynchus clarus;  
Merlinius brevidens; and  
Paratylenchus sp.

After several days and "worn out eyeballs," Adam requested a resampling to further identify two of the species. The new sample may well have some additional surprises for the lab. He promised us when he knows "what he got," he will share the excitement with our readers. Probably in the April issue (what year? He did not tell me). And someone said "thar ain't no worms" in those rose plantings!

### New Publication

LARGE WHITE BUTTERFLY: THE BIOLOGY, BIOCHEMISTRY AND PHYSIOLOGY OF PIERIS BRASSICAE (LINNAEUS), by John Feltwell. 1981. Dr. W. Junk; BV Publishers; The Hague, Boston, London (P. O. Box 13713, 2501 ES The Hague, The Netherlands). I-XXVI, 535 pp (6 x 9-1/2") with 10 black and white plates and several sample graphs, hard cover (ISBN: 90-6193-128-8). Price: \$98 (No, this is not a typographical error!).

This book is Volume 18 of Junk's "Series Entomologica" and is a compilation of data from about 8,000 references on all aspects of biology, morphology, host plants, and distribution of the cabbage butterfly (Pieris brassicae). The author, citing some 4,000 references (the major ones), summarizes them and refers to each and every reference in his text, chapter by chapter. In the preparation of the manuscript, Dr. Feltwell required

nearly 4,000 library hours spent in 50 different libraries in seven countries. The result is a valuable compilation, especially so for the beginning entomologist. It provides for a ready source to a wide selection of related scientific information extracted from the world's literature. For such a common and economically important species, it is very useful to have the enormous body of previously published data brought up-to-date and digested; thus, providing a departure point for future studies involving the cabbage butterfly.

Here following is a list of the major headings (18 in all) to familiarize the reader with the scope of this book: Nomenclature; Distribution; Life History; Food Plants; Breeding; Development; Morphology and Anatomy; Physiology; Hormones; Biochemistry; Migration; Senses; Economic Importance; Parasite Control; Pathogenic Control; Predators; Chemical Control; Integrated Control.

To have this book in your library would certainly be an asset. The publisher should consider printing more copies and significantly lowering the price, so the book could be made available to libraries with moderate to small purchasing budgets. Even considering the current inflation, \$98 is an outrageous price for this book.

#### THE AGRICULTURAL BOOK SERVICE

A new service has been brought to our attention that we felt you should be aware of. It is the Agricultural Book Service and here is how it works. The company is a mail order firm that specializes in agricultural, horticultural,

entomology, plant pathology, veterinary, soil, etc., books. They are a sort of clearing house of over 4,000 such titles from over 300 publishers worldwide. Besides the typical commercial publishers like Academic Press and John Wiley, they also distribute all U. S., Canadian, Australian, New Zealand, and South African government books in agriculture. All books are sold at retail or less, with a monthly letter sent free that describes major publisher's complete agriculture and biology titles, and offers discounts from 10 to 30 percent on those titles.

The company also produces an annual catalog that lists most of the 4,000+ books by subject category. The fee to join the service is nominal and is for a life-time membership. This entitles you to receive the catalog each year and the monthly announcements. If you wish to receive the monthly announcements only, you can be placed on their mailing list free by writing to the company.

The nice thing about this service is that it is not your typical "book of the month" system. They sell only the books that you order, and there is absolutely no minimum quantity to buy. Best of all is their return policy. All books they sell can be returned for full refund within 30 days. They do not want you to be stuck with a book that is not what you thought it was. Other neat things that this company does are discounts to 4-H clubs, quantity discounts, and acceptance of government purchase orders. They also wholesale books to companies that wish to sell good books to their clients. For more information, write to AG-HO Service Company, 306 North Alamo Drive, Vacaville, CA 95688.

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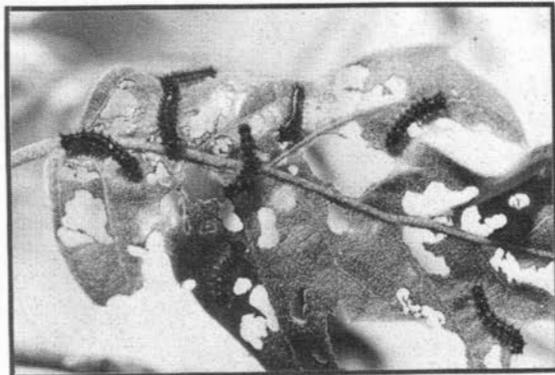
OPPOSITE PAGE. - Here is a photo of the Gypsy moth poster developed by Lynda Heath of our IPM Staff. The poster will be used both in our Urban IPM Trailer Exhibit and in booths which we display at fairs, nurseries, conferences and other locations. Our exhibits discuss pests and pest management for the homeowner, as well as the grower.

A slide-sound presentation on Gypsy moth has also been developed and will be shown in the Trailer.



DEFOLIATED FOREST IN SUMMER

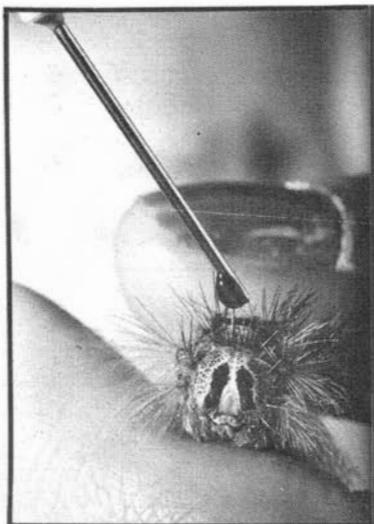
# GYPSY MOTH



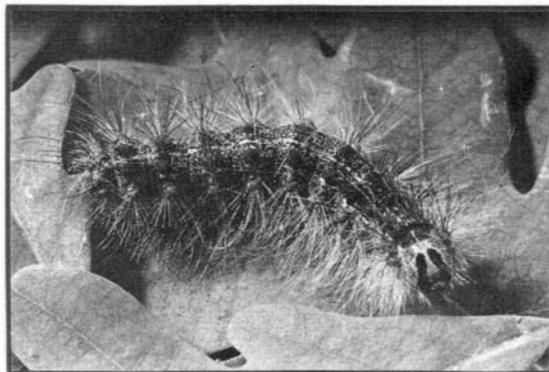
2<sup>nd</sup> INSTAR LARVAE FEEDING



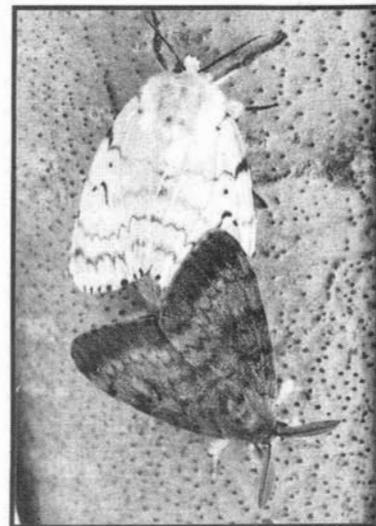
4<sup>th</sup> INSTAR LARVAE FEEDING



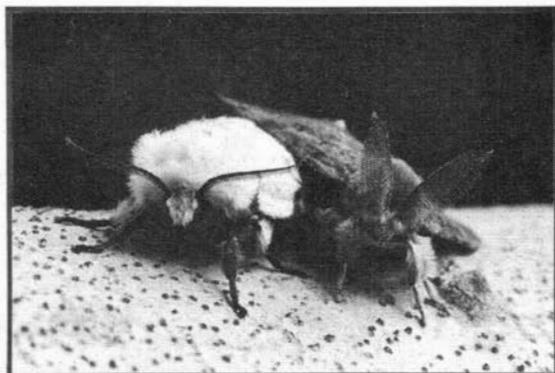
TEST APPLICATION  
ON GYPSY MOTH LARVA



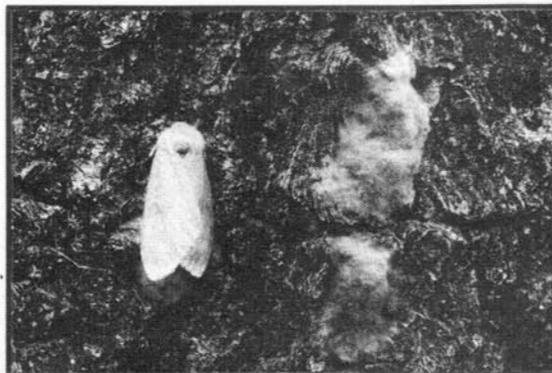
6<sup>th</sup> INSTAR LARVA



MALE (DARK) AND  
FEMALE - MATING



MATING PAIR - SIDE VIEW



FEMALE WITH EGG MASSES

## Reorganization in Plant Industry

On the recommendation of the Pest Response Task Force there are several managerial changes, effective February 1, in the organization of our Division. In order to have direct access to names of persons responsible for management of certain problems, these changes are summarized for the convenience of our readers as follows:

### Responsibilities of Deputy Directors:

Jerry Scribner, Deputy Director of Administration, Medfly Project, Measurement Standards, and Inspection Services.

Hans Van Nes, Deputy Director of Animal Industry, Plant Industry, Pest Management, and Legislation.

Marc Faye, Deputy Director of Fairs and Expositions, Marketing, and Long Range Planning.

Rex Magee is the new Assistant Director of Plant Industry. Don Dilley, Principal Staff Entomologist; Dr. Alex French, Principal Staff Plant Pathologist; and Lew Davis, Principal Staff Biologist are assigned additional duties as Program Supervisors for Entomology, Plant Pathology-Nematology, and Botany and Seed Laboratories, respectively.

Bob Roberson, Chief, Control and Eradication.

The commodity treatment function (Bill Routhier and Don Fiskaali) is transferred from Exclusion and Detection to the Emergency and Special Projects.

George Buxton (formerly Program Supervisor, Entomology) is transferred as Program Supervisor, Interior Quarantine; Frank Stegmiller is transferred from Interior Quarantine as Program Supervisor, Emergency and Special Projects.

All transfers are administrative transfers; no practicing professionals (scientific staff) are involved, i.e., persons responsible for identifications remain the same.

Any additional changes which may occur in February will be announced in the next issue of CPPDR.

A LAST MINUTE ITEM: As of March first, Laboratory Services is no more! Be not dismayed when you call us and the secretary answers, "Analysis and Identification." Hey, that's us now! Confusion will no doubt reign for awhile at both ends of the line, and don't be surprised if you hear, "Hello, Laboratory Serv..., oops, I mean, Analysis and Identification, can I help you?" The phone number, (916) 445-4521, will of course remain the same - and so will the voices at this end of the line, according to our analysis and identification of the situation.

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DEPARTMENT OF FOOD AND AGRICULTURE  
Division of Plant Industry  
Laboratory Services — Room 340  
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