THE FOOD PLANTS OF SCALE INSECTS (COCCIDÆ).

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Introduction.—It is not pretended that the following summary is complete; to make it so would involve a much more elaborate search through the scattered literature than the writer has now opportunity for; and even then, a few months would inevitably bring new records, and make it incomplete again. It is, however, hoped that the summary will be of service, as bringing together the great majority of the records, and indicating to the horticulturist what scale insects he may expect to find on any given plant or group of plants. While it can not be regarded as valid negative evidence, it presents a large mass of facts which are of great importance from several points of view. Two practical points may be emphasized—one, the unexpected number of coccids found on many of the cultivated trees and shrubs; and the other, the frequency with which species dangerous to fruit trees will occur on ornamental plants, which may be carried from place to place and be the means of disseminating the scales.

In preparing the summary, it has been found in many cases necessary to correct the names of the plants given by writers on Coccida. It is much to be desired that entomologists should be more careful to correctly cite the names of plants they have occasion to mention.

A card catalogue of host plants of Coccida is in preparation, and may be seen at the United States Department of Agriculture. It may be possible some day to complete it and publish a second and complete edition of the present essay. Such a second edition would be much larger than the present, for not only would it contain all the scattered records of the past, but very numerous additions, which will be found in Green's forthcoming monograph of the Coccida of Ceylon, and other works projected or in preparation.

It must of course be understood that the plants given as the hosts of Coccidaæ have been in very many cases so infested only since they came into cultivation. It would be very desirable to distinguish in every case between the endogenetic and exogenetic coccids on a plant; and also between those exogenetic in a state of nature, and those only so in cultivation. But to do this would require more information than we at present possess.

The abbreviations used will be understood by all coccidologists; but it may be mentioned that "Sign. Essai" is Signoret's "Essai sur les Cochenilles," "Const., 2d Cornell Rep." is Comstock's 1883 report as entomologist of Cornell University Experiment Station, "Tr. N. Z. Inst." is the Transactions of the New Zealand Institute, and "Scale Ins. N. Z." is Maskell's work on the Scale Insects of New Zealand.

RANUNCULACEÆ.

Dactylopius destructor Comstock (= ciri Riss) has been found on the garden Peonia. (Howard, Bull. 5, Div. Ent., U. S. Dept Agrie., p. 17.) Sasaki records Diaphis patelliformis from P. montana.

DILLENIACEÆ.

A small order of tropical and Australian trees and shrubs. Hibbertia, much the largest genus, contains a number of species cultivated in greenhouses.

H. linearis, Robert Brown, and H. virgata, Robert Brown, both natives of Australia, are the food plants of Dactylopius hibbertiae, Maskell. This is a dark purple mealy bug, resting on a cushion of yellow cotton.¹

MAGNOLIACEÆ.

Trees of Asia and North America, with some representatives in South America. In Australia and New Zealand the order is represented only by a few species of Drimys: D. colorata, Raoul, in New Zealand, supports Mytilaspis drimidis, Maskell, and Inglisia patella, Maskell. Comstock quotes Maskell as to Mytilaspis cordulinidis, Maskell, being also found on Drimys. Two species of the genus, at least, occur in cultivation.

Coquillett records the exogenetic Aspidiotus nervii, Bouché, on the North American Magnolia florula, Linnaeus (grandiflora, Linnaeus).

Lecanium tulipifera, Cook, which is very likely the same as the undescribed Coccus liviodendri of the last century, infests Liriodendron tulipifera, Linnaeus.

The Asiatic Magnoliaceae certainly should be searched for Coccids.

ANONACEÆ.

A large order of tropical trees, several being valuable for their fruit. The Sweet Sop, Anona squamosa, Linnaeus, is a native of tropical America, and in Jamaica is infested by Lecanium hemispheiricum, Targioni-Tozzetti, and Dactylopius virgatus, Cockerell. It has also been taken for the sake of its fruit to India, where it becomes a food plant of Tachardia lacca, Kerr² and the unrecognizable Coccus trichodes, Ander-

¹ Tr. N. Z. Inst., XXIV, p. 32.
² Watt, Diet. Éc. Prod. India.
son. The Sour Sop, *Anona muricata* Linnæus, is a small tree, native of the West Indies; on it are found *Lecanium hemisphaericum*, Targioni-Tozzetti, and *Ceroplastes demanulatus*, Cockerell. *Anonackerimolia*, Miller (syn. *tripetala*), is also neotropical, but in Fiji it supports *Lecanium chirimalia*, Maskell, which, however, is now considered a synonym of the wide-spread *L. longicorne*.

The lancewood of Jamaica (Bocagea) is the host plant of *Ceroplastes jamaicensis*, White.

**MENISPERMACEÆ.**

A large order of tropical climbing plants, *Tinospora* (olim *Menispernum*) *cordifolia* is recorded as supporting the unrecognizable *Coccus oogonies*, Anderson, in India.

**BERBERIDEÆ.**

The palearctic *Berberis vulgaris* is the food plant of *Lecanium berberidis*, Schrank.

**CRUCIFERÆ.**


**CISTINEÆ.**

*Lecaniodiaspis sardoa*, Targioni-Tozzetti, is found upon *Cistus*.

**VIOLACEÆ.**

Cultivated violets in Jamaica are infested by *Dactylopius virgatus*, Cockerell, and *Orthoezia insignis*, Douglas. In New Zealand *Melicytus ramiflorus*, Forster, produces *Chionaspis dysoxyli*, Maskell; and *Hymenanthera cressifolia*, Hooker, is the food of *Ctenochiton hymenanthera*, Maskell: *Diaspis santali*, Maskell, occurs on *Melicytus*.

**PITTOSPORÆ.**

*Pittosporum* is a comparatively large genus of small trees and shrubs, with often fragrant flowers. Maskell records *Fiorinia aselia*, Maskell, on the New Zealand *P. tessifolium*, Gaertner; and *Eriococcus paradossis*, Maskell, and *Parratoria pittospori*, Maskell, on the Australian *P. unifolium*, Ventenat. He also records from *Pittosporum*, species not stated, *Ctenochiton perforatus*, Maskell, *C. visidis*, Maskell, and *Dactylopius flavus*, Maskell. In cultivation in this country the species of *Pittosporum* seem rather subject to the attacks of exogenetic coccids; Coquillett mentions *Teegra parishii*, Maskell, and *Lecanium hesperidum*, Linnæus.

*Bursaria* consists apparently of only two species, one in Australia, the other in the Philippine Islands. The former, *B. spinosa*, is infested by *Eriococcus eucalypti*, Maskell, and *E. tepperi*, Maskell.
CARYOPHYLLEÆ.

In Europe Stellaria holostea supports, in common with various other low plants, Orthezia aurita, Linnaeus.¹

TAMARISCINEÆ.

A small order, best known by the Old World genus Tamarix, common in cultivation. T. gallica of Mount Sinai and other localities produces the Gossyparia maurus, Hardwick. In cultivation, I have found the tamarisk free from coccids, but Coquillett records Icerya purchasi, Maskell, exogenetically upon it.

Fouquieria splendens, one of the most curious native plants of New Mexico and northern Mexico, commonly used for hedges, is rarely found infested by Dactylopius townsendi, Cockerell.

HYPERICINEÆ.

The unrecognizable Coccus hypericonis, Gmelin, is recorded from the European Hypericum perforatum.

GUTTIFERÆ.

A large order of tropical trees and shrubs, mostly American and Asiatic. Clausia alba, Jacquin, is attacked by Icerya montserratensis, Riley and Howard, in Trinidad. Manoea americana, Linnaeus, is cultivated in the Sandwich Islands, and there infested by Pulvinaria mammæa, Maskell, which, however, may be exogenetic. At any rate, no such Pulvinaria has been found on the mamee in the West Indies.

TERNSTROEMIACEÆ.

Another fairly large order, well known from the camellia and tea plant, both now referred to the genus Camellia. Schima crenata is cited as a food plant of Tachardia lacca, Kerr. The common camellia, C. japonica, a native of Japan and China, is much attacked by scale insects in cultivation. The list is Aspidiotus spinosus, Comstock, A. rapax, Comstock, A. degeneratus, Leonardi, Fiorinia fioriniae var. camelliae, Comstock, Parlatoria pergandei, Comstock, var. camelliae, Comstock, Pulvinaria camellicola, Signoret, Lecanium hesperidum, Linnaeus, L. olea, Bernard, L. hemisphæricum, Targioni Tozzetti. Chermes camelliae of Boisdruval can not now be identified; it can not well be what Signoret called Aspidiotus camelliae, which is A. rapax. Boisdruval’s insect was also found on the tea plant. Aspidiotus duplex, Cockerell, was found by Mr. Ehrhorn on camellia from Japan, at a Japanese nursery in San Francisco. Ceroplastes ceriferus, Anderson, was found by Mr. Craw on

camellia from Japan, and sent to me by Mr. Ehrhorn. The tea plant, *Camellia theifera*, also produces several coccids. Maskell reports from it *Cerojlastes ceriferus*, Anderson, and in America Comstock records *Cerojlastes floridensis*, Comstock. Mr. E. C. Cotes has published a useful account of the insects which attack the tea plant in India; the coccids he gives as follows: *Chionaspis thew*, Maskell, *Aspidiotus flares- cens*, Green (syn. *A. thew*, Maskell), *A. transparens*, Green, *Lecanum coffea*, Nietner. Green has recorded that *Lecanum viride*, Green, is occasionally found upon tea. According to Green in a letter to the writer, also, his *Aspidiotus flarescens* is a *Diaspis*, and therefore not identical with *Aspidiotus thew*, Maskell, which is a valid species. *Parlatori athe*, Cockerell, occurs on the tea plant in Japan.

**DIPTEROCARPEÆ.**

An order of tropical trees. Two species of *Shorea* are infested by *Tachardia lacea*, Kerr, in India.

**MALVACEÆ.**

A world-wide order, made familiar by such plants as cotton and *Hibiscus*. *Plagianthus* and *Hoheria* are antipodean genera; the former supports *Chenochiton depressus*, Maskell, the latter, *Eriococcus hoheria*, Maskell, *Fiorinia strieta*, Maskell, and *Chionaspis dysoryzi*, Maskell. The species of the latter genus is *H. populaea*, A. Cunningham (syn. *angustifolia*, Raoul). The Indian *Kydia calycina*, Roxburgh, is one of the food plants of *Tachardia lacea*, Kerr. The forms of *Abutilon* in cultivation offer exogenetic coccids; thus Lounsbury reports *Orthoezia insignis*, Douglas, Coquillett *Lecanum oler*, Bernard, and Gillette and Baker give a record of *Lecanum hesperidum*, Linnaeus. In England, Newstead found *Lecanum minimum*, Newstead. *Malva- riscus* also is infested by *Orthoezia insignis*, Douglas; while in Mexico *M. arboricans*, Cavanilles, and *M. acerifolius*, Presl, support *Cerojlastes ceriferus*, Anderson (syn. or var. *dugesii*). The latter insect was found by Professor Townsend at Cuautla, Mexico, on *Hibiscus*.

The various varieties of cultivated *Hibiscus* are decidedly subject to coccid attacks. In the West Indies they suffer especially from *Lecanum depressum*, Targioni-Tozzetti; but also from *Chionaspis minor*, Maskell, of which there is a curious variety having the habit of burrowing under the epidermis; this was found by Mr. Barber in Antigua. The ordinary form of *C. minor* is sometimes excessively abundant on the plants. *Aspidiotus articulatus*, Morgan, occurred on an *Hibiscus* labeled *H. purpureus forma semiplena*; I am not clear whether this was *H. pur- pureus*, Forster, which is not cited in Nicholson's Dictionary of Gardening, or *H. syriacus*, Linnaeus forma *purpureus* Hortorum. According to Riley, *Asterolecanum pustulans*, Cockerell, is found on *Hibiscus* in

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1 Ind. Mus. Notes, 1895.
Florida. In Tampico, Mexico, Townsend found a variety of Conchaspis angraci, Cockerell, on Hibiscus. There are, in addition, several quite problematical species reported from the same genus of plants: Pulvinaria centri, Bouche, Lecanium bromeliar, Coccus erion, Anderson, and C. trichodes, Anderson. The last two are from *H. rosa-sinensis*. *H. (Abelmoschus) esculentus*, Linnæus, is a food plant of Diaspis amygdali. The unidentified *Coccus oogenes*, Anderson, lives on *Thelespis* (olim Hibiscus) populaea, Linnæus. In Jamaica the cotton (*Gossypium barbadense*) grown about the town of Kingston becomes infested by *Dactylopis virgatus*, Cockerell, *Chionaspis minor*, Maskell, and *Diaspis amygdali*, Tryon. In China, on cotton, is the unrecognized *Diaspis* or rather *Chionaspis gossypi*, Fitch.

Professor C. H. T. Townsend wrote me from Brownsville, Texas, April 8, 1895:

I mail you herewith some scales I found on cotton the other day. They are all I have. Could find no more. It is the first scale I have ever found on cotton.

The material was very scanty, but with little doubt belonged to *Lecanium imbricatum*, Cockerell. Professor Townsend had the following note on the fresh specimens:

Liver-colored, very convex, oblong, with a broken longitudinal carina. Scale transversely and rather irregularly ribbed on sides. The broken keel shows a whiter surface than the rest. Length of large scale, 1½ mm.; width, 3 mm.; height 2 mm. or slightly over. Smallest scale is 1½ mm. long.

**STERCULIACEÆ.**

A large order of tropical herbs and trees. The Indian *Eríolóma hookeriánâ*, Wight and Arnot, is a food plant of *Tachardia laca*, Kerr. Comstock records *Lecanium oleæ*, Bernard, from *"Brachætou,"* meaning perhaps *Brachycéiton*. Sasaki reports *Diaspis patelliförmis*, Sasaki, from *Sterculia platanifolia*.

**TILIACEÆ.**

A cosmopolitan order of over three hundred species. *Greviâ excelsa*, Vahl (syn. *rotthii*), a native of the oriental and Ethiopian tropics, exhibited some exogenetic Ceroplastes floridensis when cultivated in Jamaica. *Triumfetia rhomboidea*, Jacquin, also in Jamaica, nourished some *Ceroplastes ceriferus*, Anderson.1


1 Amer. Nat., 1895, p. 731.
rum) have occurred on the same, recorded by Signoret as *T. platyphylla*. Signoret also gives *M. linearis* as from *T. sylvestris* and *L. tilia* from *T. communis*, which is, I suppose, *T. vulgaris*, Hayne.

_Apicipa* _tibourbon_, Aublet, a native of Guiana and Venezuela, exhibits a few *Aspidiotus personatus*, Comstock, and *A. articulatus*, Morgan, when cultivated in Jamaica.


**ZYGOPHYLLEÆ.**

A small and diverse order of herbs, shrubs, and trees. In Jamaica *Daecylopius virgatus*, Cockerell, is found upon *Tribulus cistoides*. The *Larrea divaricata* or *mexicana* of the arid region of North America exhibits in Arizona *Tachardia larrea*, Comstock, and in the Mesilla Valley of New Mexico *Icerya rileyi*, Cockerell, and *Daecylopius townsendi* var. _steelii_, Cockerell. It is curious that I have never been able to find _T. larrea_ in New Mexico, though the _Larrea_ is so abundant.

In Jamaica the beautiful lignum-vita tree (*Guaiacum officinale*) is a food plant of *Ceroplastes cypripelliformis*, Comstock, _C. floridensis_, Comstock, _C. depressus_, Cockerell, *Icerya rosar_, Riley and Howard (under the bark), *Lecanium oleae*, Bernard (rarely), *Aspidiotus aurantii*, Maskell, and a *Lecanium* heretofore presumed to be _tessellatum_ but probably distinct.

**GERANIACEÆ.**

Cultivated *Pelargoniums* are especially liable to the attacks of *Diaspis amygdali*, Tryon, but may also be infested by *Pseudoparlatoria ostreata_. Lounsbury reports *Orthexia insignis*, Douglas, on *Pelargonium*, as also on *Oxalis_. Comstock records *Orthexia americana*, Walker, from _Impatiens_.

**RUTACEÆ.**

A large order of shrubs and trees, most numerous in South Africa and Australia, best known by the orange.

The African genus *Diosma* has been found attacked by the exogenous *Aspidiotus rapax*, Comstock, or _camellia_, Signoret.¹ *Diosma crenata_ is reported as supporting the problematical *Coccus diosmatis*, Modeer; this plant, however, is not a *Diosma*, but a *Barosma*, _B. crenulata_, Linnaeus. The New Zealand *Melicope ternata*, Forster, furnishes _Eriochiton spinosus_, Maskell. The hop tree, *Ptelea trifoliata*, Linnaeus, is cited by Comstock as one of the various food plants of *Mytilaspis pomorum*, Bouché. *Murraya exotica*, when cultivated in Jamaica, is infested by

¹ Maskell, Tr. N. Z. Inst., XXVII, p. 39.
Aspidiotus articulatus, Morgan, and Mytilaspis citricola, Packard. The Indian Ferovia elephantum, Correa, is a food plant of Tachardia lutea, Kerr.

The Coccidie of Citrus trees are about to be treated in full by Mr. Hubbard, but a list of the species may be here given:

(1) Chionaspis citri, Comstock. On lime (Amer. Nat., 1895, p. 728); on mandarin orange (Maskell, Tr. N. Z. Inst., XXV, p. 211.) Well known as a pest of Citrus trees in this country and some of the West Indian islands.

(2) Chionaspis lutea, Cockerell. On orange leaves, Tokyo, Japan (Takahashi). Allied to C. aspidistra and C. braziliensis.

(3) Howardia bicolor, Comstock. On orange stem from Tahiti, found by Mr. Craw in his quarantine work; sent by Mr. Ehrhorn.

(4) Parlatoria pergandei, Comstock. Well known in the south, and west to Matamoras, Mexico (Townsend).

(5) Parlatoria zizyphus, Lucas. Found on lemons.

(6) Mytilaspis citricola, Packard (fulva, Targioni-Tozzetti, flavescens, Targioni-Tozzetti). Perhaps the most widely spread and common of orange coccids. I am indebted to Mr. Hubbard for calling my attention to the identity of M. flavescens with M. fulva.

(7) Mytilaspis gloverii, Packard. Frequent in the South, extending also to Tampico and Matamoras, Mexico (Townsend). Mr. Takahashi has found on orange at Tokyo, Japan, a form which seems to me to be only a rather broad variety of gloverii.

(8) Aspidiolus ficus, Ashmead. Common on Citrus trees in the warm parts of America.

(9) Aspidiotus santiformis, Cockerell. On Citrus in Victoria and Monterey, Mexico (Townsend).

(10) Aspidiotus articulatus, Morgan. On Citrus trees in the West Indies.

(11) Aspidiotus pluger, Cockerell. Found by Mr. Craw on orange trees from Japan.

(12) Aspidiotus albopunctatus, Cockerell. Found by Mr. Craw on orange seedlings from Japan. Hardly different from A. pernesius.

(13) Aspidiotus auranti, Maskell. A well-known orange pest, especially in California. It has a variety citrinus, Coquillett.

(11) Aspidiotus nerii var. limonii, Signoret. On lemons in the south of Europe. Specimens of nerii are often found on lemons exposed for sale in this country, but probably of European origin.

(15) Aspidiotus vapar, Comstock. Recorded from orange by Coquillett, as also A. convexus.

(16) Aspidiotus longispinus, Morgan. Maskell reports this on China orange from the Sandwich Islands. (Tr. N. Z. Inst., XXVII, p. 58.)

(17) Aspidiotus cydonia, Comstock. According to Maskell, this is found on orange in Samoa.

(18) Pseudococcia teeta, Maskell. On Citrus, etc., in Australia.

(19) Pseudococcia auranti, Cockerell. On orange, Tokyo, Japan (Takahashi).

(20) Lecanium puncatum, Cockerell. On Citrus medica var. acida in Grenada.

(21) Lecanium olea, Bernard. The well-known black scale. L. citri, Inzenga, appears to be the same.

(22) Lecanium hesparidum, Linnaeus. Also a common species on Citrus trees, though not everywhere.

(23) Lecanium longum, Douglas. Maskell reports this from Citrus.

(24) Lecanium hemisphericum, Targioni-Tozzetti. Affects Citrus trees as well as many other plants. Coquillett records the variety hibernaculorum, Boisduval.

(25) Cerylophyes ciripectiformis, Comstock.

(26) Cerylophyes floridensis, Comstock. This and the last are reported by Comstock.

(27) Orthezia insignis, Douglas. On orange, see Amer. Nat., 1895, p. 727. Also on lime.
(28) *Phenacoccus guever*, Coquillett. Found by Professor Townsend in Mexico, on lime in San Luis Potosi, and on orange in Guadalajara.

(29) *Phenacoccus barberi*, Cockerell. On orange, etc., representing *guever* in some of the West Indian islands. It may be only a form of *guever*.


(32) *Dactylolus costavirus*, Maskell. On *Citrus* in Sandwich Islands. (Tr. N. Z. Inst., XXVII, p. 65.) A letter from Mr. J. Marsden, quoted by Mr. Crau in Pacific Rural Press, December 8, 1894, p. 358, probably refers to the same insect; but it is the restated that Mr. Maskell identified it as *D. abizzia*, while Doctor Riley said it was *Rhizoecoccus* (misprinted *Riggococcus*).

(33) *Icerya purchasi*, Maskell. Too well known as a pest of *Citrus* trees.

(34) *Icerya*, sp. On orange, Tokyo, Japan (Takahashi). Presumably new, but I have only seen immature examples.

(35) *Coccus diacoptes*, Anderson, is a problematical species found on *Citrus aurantium* (syn. *sinensis*).

(36) *Diaspis collei* in Spain.

**SIMARUBEÆ.**

The curious spiny shrub or small tree, *Holacanthus emoryi*, Gray, is in Arizona the food plant of *Diaspis townesi*, Cockerell. Bentham and Hooker cite the plant as from New Mexico, but it does not appear to occur in that Territory. It was described from Mexico.

**BURSERACEÆ.**


**MELIAEÆ.**


The so-called China tree, *Melia azedarach*, a native of the Himalayan region, is commonly cultivated in the United States, especially in the arid region. It is almost free from the attacks of insects in this country, but more than once it has been found infested by *Aspidiotus nerii*, Bouché.

**AQUIFOLIACEÆ.**

A small order, best known by the holly. This shrub has long been known as a food plant of *Lecanion hesperidum*, Linnaeus, to which Coquillett, from his Californian experience, adds *L. oliv*, Bernard, and

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1 Genera Plantarum 1, p. 310.
Aspidiotus rapax, Comstock. In Europe, Aspidiotus hederae, Vallois, is recorded from holly. The American ink berry or gall berry (Ilex glabra (Linnaeus), Gray) is a plant of the same genus as the holly, but its berries are black instead of red. It has been found supporting Ceroplastes floridensis, Comstock, and Rhizococcus quercus, more properly Eriococcus quercus, Comstock.

Celastrineae.

One genus of this large order, Euonymus, has often been noticed as infested by coccids. The European E. latifolius is affected by Chionaspis euonymyi, Comstock, while E. japonicus, a native of China and Japan, has been found to support the doubtless exogenetic Aspidiotus rapax, Comstock. Maskell records a case of Diaspis santali, Maskell, usurping the place of A. rapax, Comstock, on Euonymus. From cultivated species of the genus, not specifically identified, Coquillett reports Lecanium oleae, Bernard, and L. hesperidum, Linnaeus. Riley records Pulvinaria innumeralis, Rathvon, and I have cited a Pulvinaria believed to be a variety of P. simulans, Cockerell.1 There is, besides, a Pulvinaria euonymyi, Goureuau, in Europe.

Celastrus ceriferus is known as a food plant of Ceroplastes ceriferus, Anderson. This plant is not in the Index Kewensis, and the specific name, cited by Signoret, is doubtless erroneous.2

Rhamnææ.

Two species of Zizyphus, in India, afford Tachardia laccæ, Kerr. Parlatoria zizyphus, Lucas, was described from Z. pinachristi (rect. spinachristi?). The Californian Rhamnus croceus is infested, according to Coquillett, by Lecanium oleae, Bernard, L. hesperidum, Linnaeus, and Aspidiotus rapax, Comstock. Rhamnus alaternus of the Mediterranean region supports Dactylonius alaterni, Signoret. Signoret reports Tachardia laccæ, Kerr, from Rhamnus jujuba, but the plant intended is doubtless Zizyphus jujuba. Mr. Broadway found Asterolecanium pastulans, Cockerell, injuring Z. jujuba in Grenada. Coquillett records Lecanium hibernaculorum, Boisduval, from the Californian Ceanothus divaricatus, Nuttall.

Ameloidaceæ.

Riley records Pulvinaria innumeralis, Rathvon, from the cultivated Ampelopsis viteæ, the more correct name of which is Vitis inconstans. The Coccidæ of the grapevine are as follows:

(1) Margarodes vitis (vitium, Giard). In Chile.
(2) Dactylonius vitis, Niedieikski. In Europe, and a species, perhaps the same, in Chile.

1 Can. Ent., 1855, p. 259.
2 Signoret, Essai; Maskell, Tr. N. Z. Inst., XXV, p. 216.
Another Cockerell, native (1) Kerr. Another Cockerell, (2)


(9) *Leccanium* sp. Some forms of *Eulecanium*, not yet sufficiently studied, have been found; Cockerell, Trans. Amer. Ent. Soc., 1893, p. 52; Maskell, Tr. N. Z. Inst., XXIV, p. 22.


(16) *Coccus microgenes*, Anderson, is a problematical species from *Vitis vinifera*.

There should also be added to the *Vitis* coccids a new species, *Chionaspis vitis*, Green, found by Mr. E. E. Green in Ceylon.

**SAPINDACEÆ.**


The box elder, *Acer negundo* aceroides, or more properly *Acer negundo*, is attacked by *Pulvinaria innumeralbilis*, Rathvon, *Leccanium (Eulecanium)* sp., and *Aspidiotus uncinus*, Putnam. The *Leccanium* is a species similar to *L. quercefer*, Fitch, but it has not been sufficiently studied. The following species of *Acer* are recorded as host plants of coccids, in addition to the box elder:


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(3) Acer saccharinum, Linnæus (syn. dasyacarpon), North America. Riley records Pulvinaria innumerabilis, Rathvon; Coquillett Lecanium olea, Bernard, and L. hesperidum, Linnæus, these latter in California.


In addition to the above, Aspidiotus aegyptius, Putnam, is a well-known maple species, while Comstock reports Aspidiotus nerii, Bouché, and Coquillett, A. raure, Comstock. Mr. W. G. Johnson's A. comstocki is from sugar maple. From Sycamore, Marshall reports Mytilaspis pomonum, Bouché, Riley Pulvinaria innumerabilis, Rathvon, and Coquillett, Lecanium olea, Bernard. It is not certain, however, which of these records really refer to A. pseudoplatanus, and which to Platanus occidentalis.

Dodonaea is a large genus of trees and shrubs found in Australia for the most part. D. bursariifolia, F. Mueller, supports Pulvinaria dodonaeae, Maskell. The bladder nut, Staphylea, is given by Comstock as a food plant of Aspidiotus aegyptius, Putnam, and Mytilaspis pomonum, Bouché. This shrub, placed both by Bentham and Hooker and Gray in Sapindaceae, appears in the recent check list of the Botanical Club under a distinct order, Staphyleaceae. At the same time the maples are separated under Aceraceae, and the horse chestnuts under Hippocastanaceae, doubtless following Engler and Praynt, which I have not had an opportunity to consult.

ANACARDIACEÆ.

A large order of trees and shrubs. Rhus succedanea produces Eurycerus pe-la. Mundt reports Pulvinaria innumerabilis, Rathvon, from Rhus toxicodendron (or radicans); Riley cites the same insect from sumac. Coquillett cites Lecanium olea, Bernard, and L. hesperidum, Linnæus, from Rhus integrifolia in California.

The mastic tree, Pistacia lentiscus, Linnæus, of the Mediterranean region, supports Aspidiotus lentiscæi, Signoret. The mango, Mangifera indica, Linnæus, is a native of the oriental region, but is now abundant in the western tropics. In the east it is infested by Lecanium mangiferæ, Green, and Tachardia tavaea, Kerr; in the Sandwich Islands, according to Maskell, by Aspidiotus longispinis, Morgan. At Brisbane, Australia, again on Maskell's authority, there is found upon it Ceroplastes rubens, Maskell. In the West Indies, it is a host of Deutylopus longifiliis, Comstock (more correctly longispinis). Ceroplastes floridensis, Comstock, Lecanium mangiferæ, Green, L. olea, Bernard, L. ¹

hesperidum, Linnaeus, Vinsonia stellifera, Westwood, Aspidiotus mangiferae, Cockerell, A. destructor, Signoret (syn. falax, Cockerell), A. articulatus, Morgan, and A. personatus, Comstock. Thus, in all, thirteen coccids are recorded from the mango.

Aspidiotus articulatus, Morgan, and A. personatus, Comstock, are found on the West Indian Anacardium occidentale, Linnaeus. Schinus molle, in Mexico, supports the beautiful green Lecanium schini, Cockerell, but in California Coquillett found on it L. okei, Bernard, and L. hesperidum Linnaeus. Ceroplastes albolineatus, Cockerell, is recorded from Schinus.

Aspidiotus nerii, Boucê, is reported by Maskell, exogenetically of course, on the New Zealand Corynocarpus laevigata.

The Mexican Llaveia axinus, Llave, is found on Spondias myrobalanus. The Otahite apple, Spondias dulcis, supports Lecanium mangiferae, Green, in Jamaica.

**LEGUMINOSÆ.**

Poliaspis excocarpi, Maskell, occurs on Ochlobium trilobatum.¹ Daviesia is a large Australian genus; on D. corymbosa are found Chionaspis nitida, Maskell, and Palmarina tecta, Maskell. Dilbrynia has about a dozen species, exclusively Australian; on D. juniperina, Lodgiges, occurs Lecanium pingue, Maskell; on an undetermined species, Poliaspis excocarpi, Maskell. Bossiva is another Australian genus; Maskell cites Aspidiotus bossiae, Maskell (should be bossiae), from B. procumbens. The specific name of this plant is not in the Index Kewensis.

In Europe Lecanium genistae is found on Genista anglica, and Aspidiotus genister, Signoret, on Cytisus scoparius (syn. Genista scoparia). Newstead² records Mytilaspis pomorum, Boucê, on Cytisus scoparius in Guernsey, and on C. rubigenus on the Peak of Tenerife, at 7,000–8,000 feet. Lecanium distinguendum, Douglas, occurs on C. scoparius in Guernsey, as reported by Mr. Laff. Maskell records Lcerya purchasi, Maskell, exogenetically upon gorse, Ulex. Eriococcus insignis, Newstead, is found on Ulex.³ Douglas has described a Mytilaspis ulicis, but it is apparently a variety of M. pomorum.

Aspidiotus nerii, Boucê, was noticed by Comstock exogenetically upon clover, Trifolium. There are two clover mealy bugs, Daedalopus areca, Maskell, and D. trifolii, Forbes, both at roots of red clover, Trifolium pratense, but on opposite sides of the world.⁴ Dalea or Parosela formosa is in the Mesilla Valley, New Mexico, the food plant of Ceroplastodes daleae, Cockerell.

According to Comstock, Mytilaspis pomorum, Boucê, has been found upon Amorpha. The problematical Coccus microogenes, Anderson, was

¹ Maskell, Tr. N. Z. Inst., XXVII. p. 52.
³ Ent. Mo. Mag., 1891, p. 165.
⁴ Insect Life, VII, p. 171; Tr. N. Z. Inst., XXV, p. 231.

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recorded from *Galega prostrata*, but the plant is now called *Tephrosia purpurea*.


In New Mexico the native *Robinia neomexicana* is infested by *Lecanion quadrijasutium*, Cockerell. *Robinia nitris* is recorded as supporting *Coccus erion*, Anderson, in India.

*Lecanion vesitarie*, Signoret, was found by Signoret on *Wisteria chinensis* (syn. *sincensis*). This was in France, but the plant is a native of China.

Some species of *Sesbania* is supposed to be the food plant of *Tachardia fulgens*, Cockerell, in Arizona. *Astrolecanium fimbriatum*, Fonscolombe, occurs, in Europe, on *Coronilla glauca*, a native of the Mediterranean region. *Oncocinia dalbergioïdes*, Bentham, the only species of its genus, is in India a food plant of *Tachardia lacca*, Kerr. *Clitorea ternatea* in the West Indies is sometimes infested by *Orthizea insignis*, Douglas.

*Kennedya rubicunda*, Ventenat, a native of Australia, supports *Aspidiotus kennedyi*, Boisduval; and in California, according to Coquillett, *A. auranti*, Maskell.

In the West Indies, *Aspidiotus personatus*, Comstock, *A. articulatus*, Morgan, and *Ceroplastes floridensis*, Comstock, occur upon *Erythrina* in cultivation. In India, *Erythrina indica*, Lambert, produces *Tachardia lacca*, Kerr, and *E. corallodendron*, Linnaeus, the problematical *Coccus erion*, Anderson. The first of these trees is a native of tropical Asia, but the other originated in the Western Hemisphere.

*Butea frondacea*, Roxburgh, and another species of the genus, produce *Tachardia lacca*, Kerr. The East Indian pigeon pea, *Cajanus indicus*, is decidedly subject to the attacks of coccids—in India *Eriochiton cajani*, Maskell, in the West Indies *Astrolecanium pastula*, Cockerell, and *Lecanion longula*, Douglas. *Tachardia lacca*, Kerr, is found, in India, on two species of *Dalbergia* and *Pterocarpus marsupium*. *Aspidiotus sophora*, Maskell, occurs on *Sophora tetraptera*. The honey locust, *Gleditschia triacanthos*, is given by Gillette and Baker as a food plant of *Patinaaria innumerabilis*, Rathvon, and Johnson records from it his *Aspidiotus forbesii*. *Aspidiotus ancyclus*, Putnam, has been found on the water locust, *G. monosperma*. On *Cassia fistula*, a native of tropical Asia, are found, in Jamaica, *Aspidiotus articulatus*, Morgan, and *A. personatus*, Comstock. *Ceratonia siliqua*, the only species of its genus, nourishes *Aspidiotus ceratoniae*, Signoret, and *Dactylopinus ceratoniae*, Signoret, in Europe, and *Tachardia lacca*, Kerr, in India. *Amberstia nobilis*, the only species of its genus, and a native of Bur-
mah, is, in the West Indies, quite liable to be infested by Icerya rosa, Riley and Howard.

**Prosopis juliflora** is infested, in Jamaica, by *Icerya rosa*, Riley and Howard, and *Dactylopius virgatus*, Cockerell. Its variety glandulose produces, in Arizona, *Aspidiotus prosopidis*, Cockerell, *Lecanium mirabile*, Cockerell, and *Lecaniodiaspis (Prosopophora) prosopidis*, Maskell. The same, in the Mesilla Valley of New Mexico, nourishes *Icerya rileyi*, Cockerell. The curious *Lecanium mirabile*, Cockerell, was supposed to be confined to Arizona, but on October 12, 1895, Professor C. H. T. Townsend found it on mesquite in Tularosa, New Mexico, where it is much attacked by a lepidopterous larva. Coquillett records *Icerya purchasi*, Maskell, from *Prosopis*, thus making the third *Icerya* found on this genus. *Tachardia lacca*, Kerr, is found on the Indian *Prosopis spicigera*, Linnaeus, and also on *Dickrostachys cinerea*, Wight and Arnott. The latter plant should, by the rule of priority, be called *Caullia cinerea*, the genus *Caullia* having one year priority, according to the dates given in *Index Kewensis*. There appears, however, to be some confusion, as *Dickrostachys* is in one place credited to Wight and Arnott, 1834, in another to De Candolle.

*Tachardia lacca*, Kerr, according to Signoret, occurs on *Mimosa cinerea*, and *M. corintha*. The former of these is a Brazilian species. The latter name is probably incorrect, as it is not in the Index Kewensis. In Mexico, *Lecanium imbricatum*, Cockerell, is found on *Mimosa*.

The Cocidae found on *Acacia* are numerous, namely:


(17) *Ceroplastes* nirens, Cockerell. Believed to occur on *Acacia*, but the species not determined.

(18) *Ceroplastes mimosa*, Signoret. Believed on *Minosa nitidica*, the correct name of which is *Acacia arabica*, Wilhelmiow. It is a native of Africa and Asia.


(38) *Aspidiotus acacia*, Morgan. On *Acacia pycnantha* in Tasmania.


On the Australian *Albizia lophantha*, Bentham, are found *Dactylopius albizia*, Maskell, and *D. acacia*, Maskell. *Tachardia laeva*, Kerr, occurs on the Indian *A. lucida*, Bentham, also on *Pithecolobium dulce*, Bentham, a native of tropical America.

**ROSACEÆ.**

fusca, Maskell. The *A. ostraciformis* was on peach from Isleworth, England, sent by Mr. George Manville Fenn. From the almond, *P. or A. communis*, Coquillett records *Lecanium olea*, Bernard, and *Aspidiotus perniciosus*, Comstock.

The coccids recorded from the species of *Prunus* proper are as follows:

(A) From the apricot, *P. armeniaca*.

(1) *Lecanium pruinatum*, Coquillett. Coquillett, Insect Life, III, p. 383. It has been questioned whether *L. armeniaca* is a distinct species from this.


(B) From the garden plum, *P. domestica*.


(2) *Lecanium juglandis*, Bouc'hé. Cockerell, Ent., 1891, pp. 332-336. *L. cariegatum*, also on plum, appears to be the same.


(6) *Mytilaspis pomorum* Bouc'hé. Maskell, Scale Ins. N. Z., p. 113; see also Country Gentleman, January 10, 1895, p. 27.


(C) From the bird cherry, *P. spinosa*.


(1) *Coccus padi*, Schrank. A species not now recognized.

(E) From the garden cherries, *P. cerasus*, etc.

(1) *Lecanium cerasifer*, Fitch. Comstock, 2d Cornell Rept., p. 130; Signoret, Essai.

On black cherry.


(3) *Aspidiotus viti*, Bouc'hé. Comstock, 2d Cornell Rept., p. 139.


(5) *A. aneylas*, Putnam, var. Cockerell, Can. Ent., 1895, p. 261. Mr. W. G. Johnson, having given this form careful study, is assured that it is not *A. aneylas*, but a new species closely allied, which he will describe, calling it *A. forbesi*.

(6) *Chionaspis furfurata*, Fitch. Recorded as *Aspidiotus cerasi*.

*For a discussion of the resemblances between *A. perniciosus* and *Aon. fusca*, see Maskell, Can. Ent., 1896, p. 14.*

(8) Aspidiotus (Diaspidius) patavinus, Berlese. On the bark.

(9) Mytilaspis pumorum, Bonché. Country Gentleman, January 10, 1895, p. 27.

(10) Lecanium pruni, Coquillett. Coquillett, Insect Life, III, p. 381.


(14) From the Japanese L. punicola, syn. pseudocerasus.


Maskell describes Chionespis prunicola, found on Japanese plum in the Sandwich Islands. Comstock reports Ceroplastes floridensis, Comstock, from Japan plum (Biotrites)—this generic name is not in Index Kewensis or Genera Plantarum. Aspidiotus juglandisregia, Comstock, is also recorded from Japan plum. Professor L. H. Bailey says: "The so-called Japan plum of the extreme south is the loquat." From Spiraea are recorded two endoergic forms, Icerya purchasi, Maskell, and Lecanium, apparently persici, Fabricius.

The following occur on Rubus:

(A) On the raspberries and blackberries.


The above have been noticed in America; the two following in Europe:


(B) On the bush lawyer. Rubus australis, in New Zealand.


On species of Rosa the following have been found:

(1) Icerya rosea, Riley and Howard. Riley and Howard, Insect Life; also Cockerell, Journ. Inst. Jamaica, 1892, p. 97.

(2) L. purchasi, Maskell. Maskell, Scale Ins. N. Z., p. 113; Comstock, 2d Cornell Rept., p. 110.

(3) L. montserratensis, Riley and Howard. At Colon. Insect Life, 1894, p. 327.

1 Tr. N. Z. Inst., XXVII, p. 19.
3 Coquillett, Rept. Dept. Agric. for 1888.


From *Pyrus* or *Mespilus germanica* are recorded *Phenacoccus mespili*, Geoffroy, by Signoret, and *Aspidiotus targarionii*, by Del Guercio. The last is really a *Parlatoria*.


**On Pyrus proper are:**

(1) On the apple, *P. malus*.


(6) *Mytilaspis pomorum*, Bonché. Signoret, Essai, and most authors.


(13) On the pear, *P. communis*.

(1) *Pulvinaria pyri*. Signoret, Essai; Comstock, 2d Cornell Rept., p. 140.


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From the hawthorn, Crataegus oxyacantha, are recorded Mytilaspis pomorum, Bouché, Aspidiotus oxyacantha, Signoret, Pulvinaria oxyacantha, Linnaeus, Lecananium hitubereculatum, Signoret, L. generense, Targioni Tozzetti, and the problematical L. vulgare, Forster.

On species of Phothina are found:

(A) On P. or Heteromeles arbutifolia, a Californian shrub, Lecanium olev, Bernard, L. hesperidum, Linnaeus, and L. hibernaeuctorum, Boisdouval. (Coquillett, Bull. 26, Div. Ent., U. S. Dept. Agric.) All are, of course, exogenetic.

(B) On P. or Eriobotrya japonica, the loquat of Japan, Ceroplastes vinsonii, Signoret (Signoret, Essai), Lecanium hesperidum, Linnaeus (Coquillett, Bull. 26, Div. Ent., U. S. Dept. Agric., p. 26), Aspidiotus rapax, Comstock (Coquillett, Bull. 26, Div. Ent., U. S. Dept. Agric., p. 25). One or two other species, recorded from "Japan plum" in the Southern United States, should perhaps be added.

On Coto7ieaster microphylla, a native of the Himalayan region, Maskell found in New Zealand Mytilaspis pomorum, Bouché. On Amealanchier canadensis is also found M. pomorum,1

SAXIFRAGACEÆ.

Signoret records Lecanium testudo, Curtis (= olev var.), from Brexia madagascariensis (syn. spinosa), a native of Madagascar. He also records L. hibernaeuctorum, Boisdouval, from Brexia. The genus Carpodactus is confined to New Zealand, with one species only, C. serratus. On it are found Aspidiotus carpodetic, Maskell, and Diaspis santali, Maskell. The Australian Callicoma serratifolia is attacked by the exogenetic Aspidiotus rapax, Comstock,2

The following occur on Ribes:

(A) On the gooseberry, R. grossularia.


(2) Lecanium rosarum, Snellen. Maskell, Tr. N. Z. Inst., XXIV, p. 22.


1 Country Gentleman, January 10, 1895, p. 27.

2 Olliff, Ent. Notes, Dept. Agric. N. S. W., September, 1892, p. 2.
**CRASSULACEÆ.**

_Bryophyllum calycinum_ has run wild extensively in Jamaica, and is there attacked by _Diaspis amygdali_, Tryon. _Coccus halophilus_, Hardy, which is doubtless really a _Ripersia_, was found on _Sedum roseum_ (syn. _Rhodiola rosea_).

**RHIZOPHORACEÆ.**

A comparatively small order of tropical trees and shrubs. _Ctenochiton rhizophora_, Maskell, occurs on _Rhizophora mangle_, the mangrove, in Queensland.¹

**COMBRETACEÆ.**

A rather large tropical order of trees and shrubs. In the West Indies there are found on _Terminalia catappa_ several coccids, namely, _Lecanium terminalia_, Cockerell, _L. olea_, Bernard, _L. begonie_, Douglas, and _Aspidiotus destructor_, Signoret, var. _fulva_, Cockerell.² Watt cites _Tachardia lacca_, Kerr, from _Terminalia tomentosa_. _Ceroplastes ceriferus_, Anderson, occurs on _T. arjuna_.³

**MYRTACEÆ.**

A very large order. On _Kunzea_ is found _Eriococcus araucaria_ var. _minor_, Maskell.⁴

On the Australasian genus _Leptospermum_ are numerous coccids, as follows:

(A) On _Leptospermum_, species not identified.

(1) _Fiorinia camelliae_, Comstock. Maskell, _Tr. N. Z. Inst._, XXV, p. 212.

¹Maskell, _Tr. N.Z. Inst._, XXVII, p. 55.
⁴Maskell, _Tr. N. Z. Inst._, XXVII, p. 64.
The Cecidomyiidae found on Eucalyptus are extremely numerous, including the extraordinary Australian gall-making genera.

(A) On Eucalyptus spp., species not identified.
- *Mytilaspis grisea*, Maskell.
- *Eriococcus coriaceus*, Maskell.
- *M. cordifoliiidis*, Maskell.
- *Chionaspis assimilis*, Maskell.
- *C. engenin*, Maskell.
- *Aspidiotus eucalypti*, Maskell.
- *A. subrubescens*, Maskell.
- *A. rosii*, Maskell.
- *Lecanium olearia*, Bernard.
(A) On A. annandii, Maskell.
  A. acacii, Morgan.
  A. rapar, Constock.
Spharococcus inflatipes, Maskell.

Tachardia melaleuca, Maskell.

Aspisarcus eucalypti, Newport.
Apiomorpha similis, Rübsamen.
A. karschi, Rübsamen.
A. cornifer, Rübsamen.
A. dippisformis, Froggatt.
A. sessilis, Froggatt.
A. vasaformis, Froggatt.
A. arnalis, Tepper.
A. ellipsoïdalis, Tepper, nomen
  nudum.
A. bacuerei, Froggatt.
A. citricola, Schrader, nomen
  nudum.
A. crisp, Fuller.
A. nas, Olliff ms., Fuller.
A. pumiformis, Froggatt.
A. rugosa, Froggatt.
A. thorntoni, Froggatt.
A. umbellata, Froggatt.

(B) On E. amygdalina, Labill.
Dactylipous eucalypti, Maskell.

(C) On E. capitellata, J. E. Smith.
  Aspidiotus extensus, Maskell.
  Apiomorpha pharetrata, Schrader.
  A. pilata, Schrader.

(D) On E. eugeniae, F. Mueller.
Mytilaspis forosa, Maskell.

(E) On E. eugeniea, J. E. Smith.
  Apiomorpha pharetrata, Schrader.

(F) On E. diversicolor, F. Mueller.
  Eriovoccus eucalypti, Maskell.

(G) On E. dumosa, A. Cunningham.
  Spharococcus eleanus, Maskell.

(H) On E. globulus, Labillardiére.
  Dactylipous lobatus, Maskell.
  Eriovoccus tepieri, Maskell.

(I) On E. goniocephala, F. Mueller.
  Eriovoccus paradoxa, Maskell.

(J) On E. gracilis, F. Mueller.
  Apiomorpha munita, Schrader.
  A. oricola, Schrader.

(K) On E. incrassata, Labillardiére.
  Apiomorpha strebhyloda, Tepper.
  A. oricoloides, Tepper.

(L) On E. karanstoma, Smith.
  Apiomorpha duplex, Schrader.
  A. minor, Froggatt.

Calostoma immutum, Maskell.

Monophlebus fuscus, Maskell.
Opisthoscelis globosa, Rübsamen.
O. gracilis, Schrader.
O. serrata, Froggatt.
O. verrucata, Froggatt.
O. mammularis, Froggatt.
O. fibularis, Froggatt.

Apiomorpha pedunculata, Fuller.
A. schraderi, Fuller, emend.
A. fletcheri, Fuller.
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(L) On A. oricola, Schrader.
A. pilata, Schrader.

(M) On E. leucocyylon, F. Mueller.
Apionomorpha munita, Schrader.
A. oricola, Schrader.

(N) On E. odorata, Behr.
Apionomorpha oricoloidea, Tepper, is cited from this doubtfully.

(O) On E. oleosa, F. Mueller.
Apionomorpha calyxina, Tepper.

(P) On E. orbifolia, F. Mueller.
Mytilaspis formosa, Maskell, is doubtfully cited from this.

(Q) On E. robusta, Smith.
Dactylopius cactorum, Maskell.
Opisthoscelis pisiformis, Froggatt.

(R) On E. rostrata, Schlecht.
Dactylopius cactorum, Maskell.

(S) On E. uncinata, Turez.
Apionomorpha subconica, Tepper.

(T) On E. virgata, Schlecht.
Apionomorpha conica, Labillardiere.
Eriococcus confusus, Maskell.

(U) On E. siderophloia, Bentham.
Cecnocichlon cactorum, Maskell.
Dactylopius cactorum, Maskell.

(V) On E. sieberiana, F. Mueller—virgata, Sieber.
Apionomorpha pharetra, Schrader.
A. pilata, Schrader.

(W) On E. piperita, Smith.
Apionomorpha pilata, Schrader.
A. variabilis, Froggatt.

(X) On E. melliodora, A. Cunningham.
Opisthoscelis pisiformis, Froggatt.

(Y) On E. resinifera, Smith.
Opisthoscelis pisiformis, Froggatt.

On Synnecaria laurifolia is found Fiorinia synnearpia, Maskell.1

On Metrosideiros robusta, A. Cunningham, a native of New Zealand, four species occur, namely: Mytilaspis metrosideri, Maskell, Eriococcus pallidus, Maskell, Lecanochiton minor, Maskell, and L. metrosideri, Maskell. The last-mentioned is also found on M. tomentosa, A. Richard.

The guava, Psidium guajava, supports many Coccidae. On a single guava tree in Kingston, Jamaica, I found Lecanium olea, Bernard, Palvinaria cupanii, Cockerell, Lecanium hemispharicum, Linnaeus, Vinsonia stellifera, Westwood, Aspidiotus articulatus, Morgan, A. personatus, Comstock, A. ficius, Ashmead, and Ceroplastes florideus, Comstock. Coquillett has also recorded L. olea, Bernard, from the guava. Signoret, in his Essai, records Ceroplastes virsonii, Signoret, C. psidii, Chavannes, and Aspidiotus destructor, Signoret. I have recorded,

1 Maskell, Tr. N. Z. Inst., XXV, p. 213.
in addition to the eight species above cited, *Pulcinaria pyriformis*, Cockerell,  1 *Dactylopius longifilis*, Comstock, 2 and *Aspidiotus rupax* Comstock.  2 Comstock has reported *Ceroplastes floridensis*, Comstock. Maskell cites *Pulcinaria psidi*, Maskell;  4 *Lecanium acuminatum*, Signoret;  5 *L. longum*, Douglas,  6 and *L. depressum*, Targioni-Tozzetti.  7 Finally, there is the unrecognizable *Coccus trichodes*, Anderson. Thus, all told, the gnava coccids number nineteen.

The common myrtle, *Myrtus communis*, is attacked by *Lecanium hesperidum*, Limnaeus,  8 *Ceroplastes cirropediformis*, Comstock,  9 *C. floridensis*, Comstock,  9 *Chionaspis myrti*, Boucne (Signoret, Essai), and *Parlatoria myrtus*, Maskell.  10 *Lecanium viticus*, Cockerell, is found on *Myrtus tweediei* (*Blepharocalyx tweediei*, Berg) in Brazil. *Coccus croudii*, Anderson, is reported from *Myrtus zeylanicus*, but the plant belongs properly to *Eugenia*.

*Eugenia* is a very large tropical genus. On it are found the following:


**MELASTOMACEÆ.**

*Miconia* is a very large neotropical genus. *Aspidiotus cyanophylli*, Signoret, is found on *M. magnifica* (syn. *Cyanophyllum magnificum*).

**LYTHRACEÆ.**


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1. Ibid., p. 219.
2. Ibid., p. 221.
3. Ibid., p. 220.
5. Comstock, 2d Cornell Rept., p. 140.
are found Ceroplastes floridensis, Comstock, Lecanium olea, Bernard, Aspidiotus punicus, Cockerell, A. articulatus, Morgan, and A. personatus, Comstock.

ONAGRACEÆ.

From Fuchsia, Coquillette reports Aspidiotus aurantii, Maskell, and A. vapae, Comstock, and Lounsberry, Orthexia insignis, Douglas. Mytilaspis lactea, Maskell, occurs on the New Zealand F. excorticata, Linnaeus.¹

PASSIFLORACEÆ.

Coquillette records Aspidiotus aurantii, Maskell, from passion flower, Diaspis amygdali, Tryon, has been found on the neotropical Carica papaya.

CACTACEÆ.

On Mamillaria (Cactus) have been found Diaspis calyptroides, Costa, and Dactylopia mamillaria, Bouché. These two also on Echinocactus (Signoret, Essai). Dactylopia virgata, Cockerell, has been found on an undetermined cactus.² Eriococcus coccineus, Cockerell, is from a cactus in a Nebraska greenhouse.

The following are reported from Opuntia:

(4) Diaspis cacti, Comstock. Found by Professor Touney in Arizona on O. fulgida and O. arborescens. In New Mexico on O. Engelmanni, Garden and Forest, 1895.

The Opuntia coccinellifera is more properly called Nopalea coccinellifera, Salm-Dyck. It is a native of Mexico.

FICOIDACEÆ.

On Mesembryanthemum is found Palmarinia wesembryantheimi, Vallot;³ P. biplicata, from M. acinaciformis, Linnaeus, is the same insect.

¹Maskell, Tr. N. Z. Inst., XXVII, p. 48.
UMBELLIFERÆ.

Concerning *Lecanium persicae*, Fabricius, accidentally occurring on an umbellifer. 1 *Chionaspis bilobis*, Newstead, is found on *Pituranthus scoparius* (syn. *Dorerra scoparia*), Cosson and Durand, in Algeria. 2 *Coccus pilosella*, Linnaeus, a species not now recognized, was said to be found on *Pimpinella* as well as *Hieracium*. *Coccus halophilus*, Hardy (believed to be a *Riparia*), occurred on *Ligusticum scoticum*. A *Dactylopius* was found by Mr. W. Fawcett on wild carrot at Cinchona, Jamaica, and transmitted to me by Professor Townsend, but the material was insufficient for determination.

ARALIACEÆ.


CORNACEÆ.

*Coryokia* is a genus of two species, confined to New Zealand. On *C. cotoneaster* are found, as reported by Maskell, *Solmphonora corokiae*, Maskell, *Aspidiotus corokiae*, Maskell, and *Inglisia inconspicua*, Maskell. 7

On *Cornus sanguinea* have been found *Lecanium corui*, Bouché, and *L. tarsale*, Signoret (Signoret, Essai); on *C. californicus* and other species, *Mytilaspis pomorum*, Bouché. Recently, Professor Harvey sent me *M. pomorum* on twigs of *Cornus* from Orono, Maine, with the remark

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1 Cockerell, Can. Ent., 1895, p. 256.
2 Newstead, Ent. Mo. Mag., 1895, p. 233.
3 Hemipt. Colo., p. 128.
4 Cockerell, Insect Life, V, p. 245.
5 Maskell, Scale Ins. N. Z., p. 113.
7 Newstead, Ent. Mo. Mag., 1895, p. 166.
8 Tr. N. Z. Inst., XXII, p. 142.
9 Ibid., XXIII, p. 2.
10 Ibid., XXIV, p. 20.
that it was abundant. Mr. C. F. Schaufuss sent *M. pomorum* on *Cornus alba, foliis cariicatis*, from Meissen, Saxony.¹

*Chionaaspis nyssae*, Comstock, was found in North Carolina on *Nyssa multiflora*, Wangerheim.

**CAPRIFOLIACEÆ.**

Signoret cites *Lichtensia viburni*, Signoret, and *Dactylopius viburni*, Signoret, from *Viburnum tinus*. From *Viburnum*, species not stated, Maskell records *Parlatoria myrtus*, Maskell,² and *Chionaaspis cugniae*, Maskell.³

*Coccus xylostei*, Schrank, a species not now recognized, was found on *Loniceria xylostea*, Linnaeus. Comstock reports *Mytilaspis pomorum*, Bouché, as found on *Loniceria*.

**RUBIACEÆ.**

A large order. *Aspidiotus articulatus*, Morgan, is found on *Portlandia grandiflora*, Linnaeus, in Jamaica.⁴ At Funduloya, Ceylon, Mr. E. E. Green found *Chionaaspis aspidistra*, Signoret, var. *massandrea*, on *Mussaenda frondosa*.

*Gardenia jasminoides*, Ellis (syn. *florida*, Linnaeus), although called Cape Jessamine, is a native of China. Comstock records *Lecanium olivae*, Bernard, upon it, and I have recorded *Pulvinaria cupanii*, Cockerell.²

In Jamaica, *Lecanium hemispharicum*, Linnaeus, is quite troublesome on *Ixora*.⁵

The species on coffee (*Coffee*) are as follows:


(2) *Lecanium viride*, Green. For full particulars about this insect see a pamphlet by Mr. E. E. Green, entitled *Observations on the Green-scale Bug in connection with the Cultivation of Coffee*, published in Ceylon, in 1886.


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¹ *Can. Ent.*, 1895, p. 259.
² *Tr. N. Z. Inst.*, XXIII, p. 12.
On Ceprosma, in New Zealand, Maskell finds:

Aspidiotus urii, Bouché.
Mytilaspis pyriformis, Maskell.
Chionaspis dubia, Maskell.
Fiorinia astellae, Maskell.

Ctenochiton perforatus, Maskell.
C. viridis, Maskell.
C. depressus, var. minor, Maskell.
Inglisia patella, Maskell.
Dactylopis glauca, Maskell.

Aspidiotus denticulatus, Targioni-Tozzetti, occurs on Rubia, but there seems to be some confusion as to whether the plant is R. perguria or R. tinctorum.

On Asperula cynanchica, Liméns, is found Lecanopsis rhizophila, Targioni-Tozzetti.

Maskell (Scale Ins. N. Z., p. 111) records Lecanium maculatum, Signoret, from "Bardaria," meaning, I suppose, "Bouvardia."

COMPOSITÆ.

Lounsbury reports Orthezia insiguis, Douglas, from Ageratum; also from Sterin. From Eupatorium are recorded Ceroplastes cirripediformis, Comstock, Orthezia americana, Walker, and O. insiguis, Douglas; the first two by Comstock, the other by Lounsbury.

Lecanium assimile, Newstead, was found, exogenetically, upon Grindelia. On Bigelovia in Colorado is found Pulcinaria bigelowi, Cockerell:¹ this same Pulcinaria was also sent to me by Doctor C. V. Riley, labeled as from Bigelovia in Los Angeles, California, (Div. Ent., 4757). Coquillett reports Aspidiotus auranti, Maskell, exogenetically on Solidago californica. Orthezia americana, Walker, and Icerya purchasi, Maskell, have occurred on Solidago, the former doubtlessly, the latter accidentally.

Two species of Olearia have furnished coccids: Eriochnon hispidus, Maskell, was found on the New Zealand O. haastii, J. D. Hooker; Tachardia melaleuca, Maskell, on O. axillaris (syn. Aster axillaris). Rhizococcus celtis, Maskell, was found on Celmisia.²

On Baccharis viminalis (rect. vimina, De Candolle) Coquillett found Lecanium olecr, Bernard. In Brazil, Ceroplastes abolineatus, Cockerell, and Lecanium baccharidis are found on Baccharis. The unrecognized Cococcus capensis was found on Metalasia muricata (syn. Guaphalium muricatum). Lecanium cassinia, Maskell, a species formerly confounded with L. olecr, is found on the New Zealand Cassinia leptophylla. On Parthenium incanum in New Mexico there occur Lecaniodiaspis yucca, Townsend, and Tachardia cornuta, Cockerell.³ Icerya purchasi, Maskell, has been noticed by Coquillett exogenetically upon Xanthium. Maskell found Dactylopis affinis, Maskell, on tubers of Dahlia.⁴

Coquillett records Aspidiotus auranti, Maskell, from Bidens. The cultivated Chrysanthemum is quite badly infested at times by Lecanium hemispharicum, Targioni-Tozzetti and Orthezia insiguis, Douglas.⁵ Cerop...

²Maskell, Scale Ins. N. Z., p. 111.
³Cockerell, Amer. Nat., 1895, p. 728.
⁴Tr. N. Z. Inst., XXVI, p. 90.

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plastes cistudiformis, Cockerell, was found on Chrysanthemum in Mexico. Cockerell reports Lecanum olear, Bernard, from Artemisia californica, Lessing. Ceroplastes artemesiae (sic), of Riley's Manuscript, found on Artemisia in Silver City, New Mexico, has never been described. The European C. artemisiae, Rossi, is not the same, but is considered identical with C. rusci.

On the New Zealand Brachyglossis repanda, Maskell, was found Fiorinia minima, Maskell, Ctenochiton flaccus, Maskell, and C. fusces, Maskell. Lounsbury records Orthezia insignis, Douglas, from Cineraria. Aspidiotus signoreti, Comstock (syn. Targionia nigra), was found on Cineraria maritima, more properly called Senecio cineraria. On burdock (Arctium) has been found Orthezia americana, Walker; Guerinia serrata, Fabricius, is from Serratula tinctoria. Coccus Phaseolus, Liuipus, is from roots of Hieracium pilosella. Coquillett found Lecanium olerace, Bernard, and Icerya purchasi, Maskell, exogenetically on Sonchus oleraceus.

GOODENOVIAEÆ.

On the Australian Goodenia ovata, J. E. Smith, has been found Icerya aegyptiaca, Douglas.

VACCINIACEÆ.

Chionaspis vaccinii, Bouche, is found on Vaccinium myrtillus in Switzerland. Two other coccids on the same plant are the Coccus myrtilli, of Kaltenbach, 1874, a species not known to Signoret, and Lecanum distinguendum of Douglas. R. Goethe has described a species as Lecanium vaccini-macrocarpum, found in the botanical garden at Karlsruhe. Professor J. B. Smith records an Aspidiotus, either A. ancyclus Putnam, or a very closely allied form, from cranberry.

ERICACEÆ.

Coquillett reports Aspidiotus nerii, Bouche, on Arbutus menziesii, Pursh. The unrecognized Coccus uva-ursi, Linnaeus, was from roots of Arctostaphylos uva-ursi (syn. Arbutus uva-ursi). Comstock has recorded Ceroplastes floridensis, Comstock, from Andromeda, and Lecanum olear, Bernard, from heath. In Europe Orthezia maruniensis, Douglas, is found on Erica arborea, Linnaeus, and Aspidiotus ericae, Boisduval, and Eriococcus ericae, Signoret, on E. mediterranea, Linnaeus. Maskell describes Duetylopus ericieola, Maskell, from Erica autumnalis; this name is not in the Index Kewensis, however. Eriococcus azaleae, Comstock, is from Azalea. Maskell has reported Aspidiotus rapax, Comstock (camellia), from Rhododendron.¹

¹ Cockerell, Zoe, 1893, p. 104.
² Maskell, Tr. N. Z. Inst., XXVI, p. 100.
³ Tr. N. Z. Inst., XXVII, p. 39.
EPACRIDEÆ.

*Asterolecanium styphelie*, Maskell, is recorded by Maskell from *Styphelia richei*¹ and *Monotoca elliptica*.² On the Australian Cyathodes acerosa are found *Poliaspis media* and *Eriococcus multispinus*.³ On *Lencopogon fraseri*, A. Cunningham, also a native of Australia, are *Poliaspis media*, Maskell, and *Asterolecanium epacridis*, Maskell.³ On *Epacris longifolia* is *Eriococcus multispinus*, Maskell, var. *lurigatus*.⁴ Is it not probable that the species found by Maskell on Australian Epacridae in New Zealand are really natives of Australia? If so, one or two apparent anomalies are removed.

PLUMBAGINEÆ.

At roots of *Statice armeria* (*Armeria vulgaris*) Newstead found his *Dactylopius radicum*.⁵ *Coccus halophilus*, Hardy, had much earlier been reported from the same plant. *Icerya purchasi*, Maskell, and *Ceroplastes plumbaginis*, Cockerell, have been found on *Plumbago*.

MYRSINEÆ.

*Aspidiotus myrsineae* was found on *Myrsine africana*, Linnaeus (syn. *retusa*). *Vinsonia stellifera*, Westwood, is recorded from *Ardisia polypephala*.⁶

SAPOTACEÆ.

On the star apple, *Chrysophyllum cainito*, are found *Dactylopius longispinus*, Targioni-Tozzetti (syn. *longifilis*), *Ceroplastes floridensis*, Comstock, *Leeuwinum olver*, Bernard, *Pulvinaria cupana*, Cockerell, *Aspidiotus articulatus*, Morgan, and *A. personatus*, Comstock.⁷ Comstock has reported *Chionaspis bielavis*, Comstock, from *Achras sapota*; and from the same plant I have recorded *Vinsonia stellifera*, Westwood.³ Hart³ reports *Aspidiotus destructor*, Signoret, and *Lecanium mangiferae*, Green, from *Bassia latifolia*, Roxburgh, an East Indian tree cultivated in Trinidad. It will be observed that the coccids are also East Indian species.

¹Tr. N. Z. Inst., XXIV, p. 25.
²Tr. N. Z. Inst., XXVII, p. 67.
³Maskell, Scale Ins. N. Z., p. 112.
⁴Maskell, Tr. N. Z. Inst., XXVII, p. 64.
⁵Ent. Mo. Mag., 1895, p. 236.
⁶Cockerell, Ent. Mo. Mag., 1893, p. 17.
⁷Insect Life, VI, p. 103, also 1893, p. 159.
⁸Insect Life, 1893, p. 159.
EBENACEÆ.

On persimmon (Diospyros) Diaspis amygdali, Tryon, has been found. Comstock records Chionaspis bieptervis. Comstock, from Diospyros ebenum, Koenig.

OLEACEÆ.

On Jasminum have been found:


Coquillett records Aspidiotus uerii, Bouché, from Syringa vulgaris. From lilac Maskell also reports Mytilaspis pomorum, Bouché.

The species found on Fraxinus are rather numerous, thus:


On the olive (Olea europæa, Linnaeus, with syn. or var. hispanica) are found:


On *Ligustrum lucidum* (syn. *japonicum*) are found *Lecanium oleae*, Bernard, and *Ericerus pala.*

### APOCYNACEÆ.

*Phenacoccus barbieri*, Cockerell, has been noticed on *Allamanda.*

Watt records *Tachardia lacca* from *Carissa carandas*, Linnaeus. *Aspidiotus personatus*, Comstock, and *A. articulatus*, Morgan, have been found on *Thevetia neriifolia*.


Maskell has reported *Chionaspis minor*, Maskell, from *Parsonia*.

The coccids of the oleander (*Nerium oleander*, Linnaeus) are:


10. *A. nerii*, Bouché. Signoret, Essai, and most other authors.

An *Aspidiotus*, apparently not separable from *auranti*, Maskell, is found on *Plumeria* in Kingston, Jamaica.

On *Trachelospermum* (or *Rhynchospermum*) *jasminoides* Gillette and Baker record *Lecanium hesperidium*, Linnaeus.

### ASCLEPIADACEÆ.

*Rhipesia terestris*, Newstead, was found on roots of *Stephanotis.*

*Aspidiotus personatus*, Comstock, and *Diaspis amygdali*, Tryon

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The food plants of scale insects—Cockerell.

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LOGANIACEÆ.

On the New Zealand Geniostoma ligustrifolium, Maskell found Ctenochiton elongatus, Maskell. Aspidiotus budeitæ, Signoret (rect. budeitæ), is variously reported by Signoret, Comstock, and Maskell from Buddleia globulosa and B. salicina. These two specific names must be erroneous, as they are not in the Index Kewensis; there is a globosa and a salicinae.

BORAGINACEÆ.

On heliotrope (Heliotropium) Lounsbury reports Orthezia insignis, Douglas, while I have recorded Chionaspis major, Cockerell. Pheneccoccus brunneitarsis, Signoret, is recorded by Signoret from Borago officinalis, Linnaeus. I have recorded Orthezia insignis, Douglas, from Myosotis.

CONVOLVULACEÆ.

The Old World Argyreia speciosa, when cultivated in Jamaica, is attacked by Diaspis anygida, Tryon (=lanatus). Lounsbury reports Orthesia insignis, Douglas, from Ipomea. Lecanium batatae, Cockerell, is found on roots of Ipomea batatas.

SOLANACEÆ.

The coccids of Solanum are:


1 Cockerell, Insect Life, V, p. 216.
3 Insect Life, V, p. 247.
Two species have been found on the tomato, *Lycopersicum lycopersicum* (*Solanum lycopersicum*, *Lycopersicum esculentum*). These are the unrecognizable *Coccus trichodes*, Anderson, and an undetermined *Dactylopius* on the roots. It is quite probable that the *Dactylopius* was *D. solani*, Cockerell.

The following have been recorded from red pepper (*Capsicum*):


The following are recorded from *Cestrum* (including *Habrothamnus*):


*Lecanium olla*, Bernard, is recorded\(^2\) from *Meyenia alba*, but there is no such name in Index Kewensis. Is it *Cestrum album*?\(^1\)

Lounsbury records *Orthezia insignis*, Douglas, from *Petunia*. *Aspidiotus articulatus*, Morgan, has been observed on *Brunfelsia americana*.\(^3\)

**SCROPHULARIACEÆ.**

*Dactylopius calceolaria* of Maskell occurs on *Calceolaria*. Maskell records *Poliaspis media*, Maskell, and *Lecanium hesperidum*, Linnaeus, from *Veronica*; Gillette and Baker\(^4\) cite *L. hesperidum*, Linnaeus, from *V. hendersonii*. *Coccus pilosella*, Linnaeus, a doubtful species, is found on *Melampyrum arvense*, Linnaeus, and *M. nemorosum*, Linnaeus.

**OROBRANCHACEÆ.**

*Dactylopius aphyllonis*, Cockerell, is from *Aphyllon fasciculatum*.\(^5\)

**BIGNONIACEÆ.**

On *Bignonia magnifica*, Bull, have occurred *Pulvinaria cupania*, Cockerell, *Aspidiotus articulatus*, Morgan, and *A. ficus*, Ashmead\(^6\).
THE FOOD PLANTS OF SCALE INSECTS—Cockerell.

Ceroplastes cistndiformis, Cockerell, has been found on Bignonia.1 Coquillett has reported Icerya purchasi, Maskell, from Tecoma. Dolichandraone rhedii, Seeman, is cited by Watt as a food plant of Tachardia laeae, Kerr.

ACANTHACEÆ.

Phenacoccus barberi. Cockerell, has been observed on Thunbergia grandiflora.2 Diaspis amygdali, Tryon (= lanatus), occurs on Acanthus.3 Eranthemum variagatum (this name not in Index Kewensis) is freely attacked by Lecanium hemisphaericum, Targioni-Tozzetti, while Orthezia insignis, Douglas, also occurs upon it.4 Lounsbury records Orthezia insignis, Douglas, from Vaucobinia (syn. Libonia), also from Peristrophe. From Hygrophila spinosa, T. Anderson, Newstead describes his Pulvinaria obscura and Dactylopis viridis. Orthezia prelonga, Douglas, occurs on Sanchezia.5

MYOPORACEÆ.

The following have been found on Myoporum (frequently misspelled Myosporum):

1 Icerya purchasi, Maskell. Coquillett, Rept. Dept. Agric. for 1888, p. 84.

VERBENACEÆ.

Lounsbury records Orthezia insignis, Douglas, from Lippia (syn. Aloysia); the same insect is also found on Lantana and Verbena. Tectona grandis is a food plant of Tachardia laeae, Kerr. Maskell reports Aspidiotus carpodeti, Maskell, from Vitex littoralis; he also records Diaspis santali, Maskell, from Vitex.6

LABIATÆ.

Colens, and according to Lounsbury especially C. verschoffeltii, is badly infested by Orthezia insignis, Douglas.7 Phenacoccus barberi, Cockerell, has occurred on Colens.8 Dactylopis lavandula, Signoret,

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1 Cockerell, Zoe, 1893, p. 104.
3 Cockerell, Journ. Inst. Jamaica, 1, p. 373.
7 Tr. N. Z. Inst., XXII, p. 135.
occurs on Lavandula stoechas, Linnaeus. From Mentha I have recorded Orthezia insignis, Douglas, and some juvenile Lecaniine. Eriococcus thymi, Schrank, is found on Thymus vulgaris.

From Salvia are known:

(1) Icerya purchasi, Maskell. Coquillett, Rept. Dept. Agric, for 1888.

From Rosmarinus officinalis comes Eriococcus rorismarinus, Fons-colombe (rect. rosmarini). Coquillett has reported Icerya purchasi, Maskell, from Rosmarinus and also from Nepeta.

PLANTAGINACEÆ.

Coquillett records Icerya purchasi, Maskell, from Plantago.

ILLECEBRACEÆ.

Coccus pilosellæ, Linnaeus, is recorded from roots of Herniaria.

AMARANTACEÆ.

Orthezia insignis, Douglas, is recorded by Lounsbury from Celosia and Alternanthera.

CHENOPODIACEÆ.

Olliff reports his Pulvinaria maskelli from Rhagodia hastata. Orthezia annæ, Cockerell, is recorded from Chenopodium. Signoretia atriplicis of Maskell was from an Atriplex, perhaps A. halimus, Linnaeus. It afterwards proved that this insect was not a Signoretia, but a Pulvinaria, being in fact identical with P. maskelli, Olliff. Olliff has recorded P. maskelli, Olliff, from A. cescaria, Hew, and A. nummularia, Lindley. The following six species are found on Atriplex canescens in New Mexico:

1. Dactylopius solani var. atriplicis, Cockerell.
2. Orthezia annæ, Cockerell.
3. Mytilaspis albus, Cockerell, var. concolor, Cockerell.
4. Lecaniodiaspis yuccæ var. rufescens.
5. Ceroplastes irregularis.


1 Insect Life, V, p. 247.
2 Rept. Dept. Agric, for 1888.
3 Agric. Gaz. of New South Wales, November, 1891, p. 667.
5 Tr. N. Z. Inst., XXIV, p. 24; XXVI, p. 77.
6 Agric. Gaz., N. S. W., November, 1891, p. 667; also 111, p. 178.
On greasewood (Sarcobatus vermiculatus) are found Lecaniodiaspis yuccae, Townsend, var. rufescens, Cockerell, and Orthocia annae, Cockerell.1

POLYGONACEÆ.

Coquillett has recorded Icerya purchasi, Maskell, from Polygonum. Ripertia rumicis, Maskell, was found at the roots of Rumex acetosella.2 Dactylopius arece, Maskell, has occurred on dock.3 Maskell4 records Fiorinia stricta, Maskell, Eriochiton spinosus, Maskell, and Colostoma zelandicum, Maskell, from Mühlenbeckia adpressa, but the species intended is doubtless M. adpressa; there is no M. adpressa.

ARISTOLOCHIACEÆ.

The unrecognizable Coccus asari, Schrank, is from Asarum europaeum, Linnaeus. Mr. Hart has sent me Lecanium hemispharicum, Targioni-Tozzetti, on Aristolochia from Trinidad.

PIPERACEÆ.

From Piper excelsum, Forster, Maskell4 records Ctenochiton piperis, Maskell, and Dactylopius glaucus, Maskell.

MYRISTICACEÆ.

On the nutmeg (Myristica fragrans) there has been found Vinsonia stellifera, Westwood.5

MONIMIACEÆ.

Fiorinia stricta, Maskell, occurs on Hedycarya. Atherosperma is a small genus, with a species in New Zealand, two in Australia, and one in Chile. On A. novaezelandiae, Hooker, Maskell records the following seven species:

1. Aspidiotus atherosperma, Maskell. 5. Inglesia patella, Maskell.
4. Ctenochiton viridis, Maskell.

(For the first six, see Scale Ins., N. Z., p. 111; for the seventh, Tr. N. Z. Inst., XXIII, p. 21.)

2 Maskell, Tr. N. Z. Inst., XXIV, p. 37.
3 Maskell, Tr. N. Z. Inst., XXV, p. 231.
4 Scale Ins., N. Z., p. 113.
LAURINACEÆ.

From the camphor tree (Cinnamomum camphora) Coquillett records *Aspidiotus aurantii*, Maskell. *Pulvinaria pyrifolia*, Cockerell, is found on cinnamon.¹ From *Persea borbonia* (syn. *carolinensis*) Comstock records *Aspidiotus persea*, Comstock, and *A. parlatorioides*, Comstock—the latter being really a *Pseudoparlatoria*. He also reports *Ceroplatites floridensis*, Comstock, from the same tree. From *Persea persea* I have recorded *Aspidiotus artemulatus*, Morgan, and *A. personatus*, Comstock.—He also reports *Ceroplatites jonensis*, Comstock, from the same tree. From *Persea persea* I have recorded *Aspidiotus artemulatus*, Morgan, and *A. personatus*, Comstock. *Lecanium lintneri*, Cockerell and Bennett, is found on sassafras. *Aspidiotus rapax*, Comstock, occurs on *Umbrellularia californica*. On *Laurus nobilis*, Linnaeus, of the Mediterranean region, are *Aonidia lauri*, Bouche, *Lecanium lauri*, Boisduval, and *Boisduvalia lauri*, as recorded by Signoret. Maskell records two other species from *L. nobilis*, namely, *Aspidiotus aurantii*, Maskell, and *Lecanium tessellatum*, Signoret.² He also reports *L. hesperidum*, Linnaeus, from laurel. *Dactylopius indicus*, Signoret, is from *Laurus indicus*, Linnaeus, but the plant is more properly called *Persea indica*.

PROTEACEÆ.

Coquillett has reported *Lecanium olea*, Bernard, from *Grevillea robusta*, A. Cunningham, a native of Australia. He records *Aspidiotus rapax*, Comstock, from *Leucadendron argenteum*, Robert Brown. From *Hakea* are known:


*Eriococcus multispinus*, Maskell, was found on the New Zealand *Knightia excelsa*, Robert Brown.

The following are from *Banksia*:


THYMELÆACEÆ.

Signoret cites *Aspidiotus caldesii*, Targioni-Tozetti, from *Daphne collina*; and *A. guindii* and *Rhizococcus guindii*, Signoret, from *D. guindum*. These plants are European, as well as the coccids.

²Insect Life, 1893, p. 160.
ELÆAGNACEÆ.

Mr. E. E. Green, in the prospectus of his work on the Coccidæ of Ceylon, describes Chionaspis elwagni from Elaeagnus latifolia in Ceylon. Chionaspis difficilis, Cockerell, and Mytilaspis crenii, Cockerell, are found on Elaeagnus in Japan.¹

LORANTHACEÆ.

For a note on the coccids peculiar to Loranthaceæ, see Cockerell.² Diaspis risi, Schrank, is from Viscum album. From Phoradendron comes Lecanium phoradendri, Cockerell. Mr. W. G. Johnson has sent me some Phoradendron flavescens from Palo Alto, California, on which are Lecanium olar, Bernard, and a form of Aspidiotus rapax, Comstock. On Dendrophthora cupressoides, Eichler, in Jamaica, have been found Pulvinaria dendrophthora, Cockerell, and Lecanium hemisphæricum, Targioni-Tozzetti.³

SANTALACEÆ.

From Santalum are known:


From Exocarpus cupressiformis, a native of Australia, Maskell records Poliaspis exocarpus, Maskell.

EUPHORBIACEÆ.

The unrecognizable Coccus oogenes, Anderson, was found on Euphorbia pilulifera (syn. hirta). Lecanium longulum, Douglas, and Icerya rosæ, Riley and Howard, have occurred on Euphorbia—the latter on a caetoid species.⁴ Coquillett records Aspidiotus aurantium, Maskell, and Lecanium oler, Bernard, from the castor-oil plant (Ricinus),—or castor bean, as he calls it. Aspidiotus rossi, Maskell, has been found on Ricinocarpus.⁵ The very doubtful Brachyscelis (2) beyeria, Tepper, is from Begeria opaca, F. Mueller, in Australia.⁶

⁵ Maskell, Tr. N. Z. Inst., XXIV, p. 12; XXIII, p. 7.
The following are found on box (*Buxus sempervirens*):


*Coccus oogenes*, Anderson, occurred upon *Phyllanthus emblica*, Linnaeus; *Llaveia arius*, Llave, was found on *Jatropha curcas*, Linnaeus; *Tachardia lacca*, Kerr, has been found on *Aleureis moluccana*. From *Croton* the following are known:


*Pseudoparlatoria ostreata*, Cockerell, is destructive to *Acalypha marginata*, Spreng. 1. *Dactylopius cirigatus*, Cockerell, occurs upon *Acalypha*. 2. *Ceroplastes albolineatus*, Cockerell, was found on *Excoecaria bicolor*, Hasskarl, a native of the Malay region, cultivated in Jamaica. 3.

**URTICACEÆ.**

The following are known from *Ulmus*:


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Comstock records *Mytilaspis pomorum*, Boucè, from *Planaea*. From hackberry (*Celtis*) the same author reports *M. pomorum*, Boucè, and *Aspidiotus aneclylus*, Putnam. From *Celtis occidentalis* are known *Pulvinaria innumeralbilis*, Rathvon and *Lecaniodiaspis celtidis*, Cockrell. *Tachardia lucca*, Kerr, is found on *Celtis tetrandra* (syn. *roxburghii*). Coquillett records *Icerya purchasi*, Maskell, from *Hulminus*. On the osage orange are found *Pulvinaria maclureae*, Fitch, and *Aspidiotus aneclylus*, Putnam, the latter on Comstock's authority. The *P. maclureae* is frequently called *P. innumeralbilis*, but see Cockrell. There is also on osage orange a species of *Eulacanium*.

The following are found on mulberry (*Morus*):

7. *D. pentayona*, Targioni-Tozzetti. *In Italy*.

On *Ficus* are found many species, as follows:

1. *Icerya purchasi*, Maskell. Recorded by Coquillett.

1 New variety *ulmi*. Female: Scale white, about 2½ mm. long, moderately broad, exuviae yellowish brown. Male: Scale very small, obscurely tricarinate, exuvium pale yellowish. Female brown: Five groups of ventral glands, median 18, cephalolaterals 15, candolaterals 16; median lobes contiguous, rounded at ends, obliquely truncate at sides, not notched. Second lobes much smaller, consisting of a larger notched portion, and beyond that a small separated portion, and between these a spine. Third lobes small and nearly obsolete. A spine lateral of each median lobe. A long spine-like plate lateral of third lobe, beyond which, at some little distance, is a notch, followed by a sort of rudimentary broad crenate fourth lobe, and beyond this a spine and then two very large spine-like plates, not branched, and still further a group of about five large spine-like plates. Anal orifice between posterior ends of cephalolateral groups of glands, round, slightly broader than long. Perhaps a distinct species.

*C. americana* differs by having the median lobes trilobed, though rather obscurely, and very large spine-like plates branched at tips; there are also more glands in the cephalolateral groups.

4 Science, August 11, 1893, p. 78.
(9) Leccanium depressum, Targioni-Tozzetti. On F. martiniensis (= laurifolia) and F. clastica (Signoret).
(11) L. hesperidum, Linnaeus. On F. macrophylla and on fig (Coquillett.) On F. clastica (Gillette and Baker).

Asterolecanium pustulans, Cockerell, occurs upon Castilla.1
Aspidiotus articulatus, Morgan, A. personalis, Comstock, and A. fiscus, Ashmead, are found upon Artocarpus incisa in Jamaica.2

Lounsbury records Orthezia insignis, Douglas, from Pilea.

PLATANACEÆ.

Phenacoccus platani, Signoret, is from Platanus orientalis, Linnaeus. Coquillett records Leccanium hibernaculorum, Boisduval, from P. racemosa, Nuttall.

JUGLANDACEÆ.

The following are known from Juglans:

(4) Mytilaspis juglandis, Bouché. Comstock, 2d Cornell Rept., p. 140. Hardly or not separable from M. pomorum.
(5) Aspidolus rapax, Comstock. On Juglans californica (Coquillett). Coquillett also reports A. convexus, from walnut.
(7) A. juglandis, Colvée. Described by Colvée in 1881; perhaps not distinct from the last.

1 Cockerell, Sci. Gossip, 1893, p. 78.
2 Cockerell, Insect Life, 1893, p. 159.
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*Lecanium caryae*, Fitch. was found on *Hicoria ovata* (*Carya alba*).

**MYRICACEÆ.**

*Ceroplastes myrice*, Linnaeus, is from the South African *Myrica quercifolia*, Linnaeus. Both plant and insect are doubtful species. Maskell reports *Ceroplastes ceriferus*, Anderson, and *Tachardia deco-vella*, Maskell, from *Myrica cerifera*, Linnaeus, a native of North America.¹

**FAGACEÆ.**

On the birches (*Betula*) are found:


My specimens are from *B. alba* at Chuchle, near Prague, collected by Mr. Karel Sule.


On the alders (*Alnus*) are:


On *Carpinus* are found:

1. *Salix cinerea*, Linnaeus. Signoret, Essai sur les Cochenilles. Said to be on *C. slovaca*, but no such name is in Index Kewensis.

*Lecanium quercitronis*, Fitch, occurs on ironwood.²

*Lecanium corysti*, Linnaeus, is from *Corylus avellana*: *L. corylifer*, Fitch, is also from the hazel. The two are perhaps identical.

The following are found on various oaks (*Quercus*):

4. *Icerya purchasi*, Maskell. A few on *Q. douglasii* (Coquillett).

¹ Tr. N. Z. Inst., XXV, pp. 216, 249.
² Cockerell, Can. Ent., 1895, p. 255.
PROCEEDINGS OF THE NATIONAL MUSEUM.


(20) *K. quercus*, Newstead. I have seen no description of this.

(21) *Physokermes hemicyphus*, Dalman. On *Q. robur*. Signoret, Essai sur les Cochenilles. This is now considered a synonym of *P. abietis*, Modder.


(29) *L. gigas*, Brunii. Supposed by Signoret to be a *Kermes*.


(39) *Aspidiotus (Aspidoderus) minimum*, Leonardi. On leaves of *Q. ilex*.

The following occur on the species of beech (*Fagus*):


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(2) *P. fugi*, Hardy, 1861 (as *Coccus*). British. Very doubtful. Walker has also named a *Coccus fugi*, "flava, elliptica, albofariosa; length, 2 lines." This is evidently something different.


**SALICINEÆ.**

On the willows (Salix) are found:

(1) *Pulvinaria salicis*, Bouche. Signoret, Essai; Comstock, 2d Cornell Rept., p. 110.


(4) *C. hordei*, Dalman. Signoret suggests that this may have been founded on *Leccium capreæ* male, and *Chionaspis salicis*.


(11) *A. rapæ*, Comstock. Comstock, 2d Cornell Rept., p. 110. See also Maskell, Scale Ins. N. Z., p. 111 (as *cavellii*).

(12) *Chionaspis salicis*, Linnaeus. On *S. viminalis* and *S. alba* (Signoret).
On the poplars and cottonwoods (Populus) are:


**CASUARINACEÆ.**

In the Australian region, where it is native, the genus *Casuarina* supports many Coccidae, as follows:

(A) On *C. subrosoa*. Native of Australia.
2. *On C. stricta (= quadriculris)*. Native of Australia.

(C) On *C. equisetifolia*. Native of Malaya and Pacific islands.

(D) On *Casuarina*, species uncertain.
Crocidocysta fregattii, Rübsamen. Rübsamen, Berl. Ent. Zeit., XXXIX (1894), p. 219. Maskell says this is a *Cylindrocoecus*.


In Jamaica I never could find any Coccidae on the cultivated *Casuarina*; but *Aspidiotus rapax*, Comstock, occurs on it in Antigua.¹

CONIFERÆ.

I. CUPRESSINEÉ.

Pulvinaria maskelli, Olliff, var. spinosior, Maskell, is found on *Frenela* or *Callitris robusta*.²

On *Thuja* (arbor-vita) are the following:


Comstock ³ reports *Diaspis carveli*, Targioni-Tozzetti, from " *Biola orientalis;" this should be *Thuja* (*Biota*) *orientalis*.

Maskell records *Icerya purchasi*, Maskell, from Cypress; and *Leachia zealandica*, Maskell, from *Cupressus dacyrioides*. This latter name is not in the Index Kewensis. *Dactylopinus ryani*, Coquillett, occurs on *Cupressus macrocarpa*.

The following are found on *Juniperus* (Juniper):


II. TAXE.E.

On the New Zealand *Phylococtus trichomanoides*, D. Don. Maskell records *Eriococcus phylococti*, Maskell,¹ and *Calostoma assimile*,

²Maskell, Tr. N. Z. Inst., XXVI, p. 78.
³Rept. Dept. Agric. for 1880, p. 311.
⁴Tr. N. Z. Inst., XXIV, p. 25.
Maskell.\(^1\) *Ctenochiton daerydii,* Maskell, occurs on the New Zealand *Dacrydium cupressinum.\(^2\)

**III. PODOCARPEI.**

On the New Zealand *Podocarpus totara,* G. Benn., Maskell records:


He also reports from *Podocarpus* sp. two Diaspinae, *Aspidiotus avrantii,* Maskell,\(^3\) and *Mytilaspis pullida,* Green, var.\(^4\)

**IV. ARAUCARIEI.**

The following have been found on *Araucaria:*


**V. ABIETINEI.**

The Coccidae of *Pinus* are:

2. *P. abietis,* Modier (Lecanium picea). Signoret, Essai. Newstead cites it only from *Abies.* (Ent. Mo. Mag., 1893, p. 209.)
7. *L. pini,* Hartig. On *P. laricio,* Poirier. Signoret, Essai. According to Mr. Sulc the *Fiorinia sulci,* Newstead, formerly confounded with *L. pini,* is a distinct species, but nevertheless a *Leucaspis.*
8. *Chionaspis pinijolii,* Fitch. On *P. monophylla,* etc. Comstock, 1880; Signoret, Essai sur les Cochenilles (as *Mytilaspis pinijolii*).

Coquillett\(^5\) records *Lecanium olea,* Bernard, from the cedar of Lebanon and from Indian cedar.

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\(^1\) Tr. N. Z. Inst., XXIII, p. 31.
\(^2\) Tr. N. Z. Inst., XXIV, p. 18.
\(^3\) Tr. N. Z. Inst., XXVII, p. 41.
\(^4\) Tr. N. Z. Inst., XXVII, p. 46.
On various firs and spruces are found:


**CYCADACEAE.**

The following are found on *Cycas*:


*C. revoluta* is a Japanese species; *C. media* is Australian.

Olliff1 refers to a coccid on *Macrozamia* attacked by *Thalpochares coccophaga*; but he alludes to the plant as a fern. Comstock2 records *Parlatoria proteus*. Curtis, from *Microzamia*, but I suppose *Macrozamia* was intended.

"Chermes" *dionis* was from *Dion* (more properly *Dioon*) edule, and from the same plant Comstock reports *Poliaspis cycadis*. Comstock.

*Dactylopis zamia*, Lucas, is from *Zamia spiralis*.3 *Diaspis zamia*, Morgan, was found on *Zamia*.4

**ORTHIDACEAE.**

In the Gardeners' Chronicle5 will be found an account of eighteen species of Coecidiae living on orchids. The following have been recorded

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1. Agric. Gaz. X. S. W., November, 1891, p. 668.
2. 2d Cornell Rept., p. 114.
5. May 6, 1893, p. 518.
from orchids, genus not stated: *Aspidiotus epidendri*, Bouche, A. veri, Bouché, and *Dactylorhiza glauca*, Maskell;¹ *Lecanium hemispharicum*, Targioni-Tozzetti, and *Aspidiotus ficus*, Ashmead;² *Aspidiotus biformis*, Cockerell,³ and *Chionaspis braziliensis*, Signoret.⁴

The genera of orchids on which coccids have been found, and their coccids, are as follows:

(A) *Stelis*, Swartz.


(B) *Dendrobiium*, Swartz.

(1) *Aulacaspis boisduvalii*, Signoret. Maskell, Tr. N. Z. Inst., XXVII, p. 44 (as *Diaspis*).


(C) *Phais*, Lour.


(D) *Eucria*, Lindley.


(E) *Epidendrum*, Linnaeus.

(1) *Aspidiotus epidendri*. Signoret, Essai sur les Cochenilles. On *E. baharri*, Lindley (a Mexican species), and others.

(2) "*Lecanium* epidendri*, Bouché. Signoret, Essai. On *E. ciliare* (syn. *eupsidatum*). This is probably identical with *Asterolecanium oncidii*, Cockerell.


(F) *Cattleya*, Lindley.

(1) *Aulacaspis boisduvali*, Signoret. Maskell, Tr. N. Z. Inst., XXVII, p. 44 (as *Diaspis*).


(3) *Lecanium pseudhesperidum*, Cockerell. In a greenhouse at Ottawa, Canada.

(G) *Broughtonia*, Robert Brown.


(H) *Cymbidium*, Swartz.

(1) *Aulacaspis cymbidii*, Bouché. On *C. pendulum*, an East Indian species. Signoret, Essai (as *Diaspis*).


(I) *Stanhopea*, Forster.


(J) *Odontoglossum*, Humboldt, Boupland and Kunth.


(K) *Rodriguezia*, Ruiz and Pavon.


1 Maskell, Scale Ins. N. Z., p. 113.
2 Cockerell, Insect Life, VI, p. 103.
4 Maskell, Tr. N. Z. Inst., XXV, p. 211.
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(C) Oncidium, Swartz.


(M) Brassia, Robert Brown.


(N) Vanu, Robert Brown.


(0) Angracum, Thou.


(P) Selenipedium, H. G. Reichenbach.


SCITAMINACEAE.

Curcuma longa, Linnaeus, a native of tropical Asia, has been recorded as a food plant of Aspidiotus ficus, Ashmead.1 Calathea vittata (syn. Maranta vittata) is the food plant of Asterolecanium aureum.

On Musa are found:


From Heliconia bihai, Linnaeus, a native of South America, is recorded Pinaspis panduni, Comstock.2 Comstock2 records Aulacaspis boisduvalii, Signoret, from Ravenala madagascariensis.

BROMELIACEAE.

The pineapple, Ananas ananas (Linnaeus) = sativus, a native of tropical America, is not rarely attacked by Diaspis bromelii, Kerner, which is really an Aulacaspis. In Jamaica there is found upon it a small

2d Cornell Rept., p. 86.
mealy bug, *Daectylopus brevipes*. A different mealy bug, *D. bromeliarum*, Bouché, also occurs on pineapple; full particulars of it are given by Signoret, who received it from Zanzibar. There is also a problematical *Lecanium bromeliarum* on pineapple, said to resemble *L. hesperidum*, Linnaeus, very much.

*Aspidiotus vriesia*, Signoret, is from *Tillandsia (Vriesia) splendens*.

**IRIDACEÆ.**

*Lecanium patersonia*, Maskell, is from *Patersonia glabrata*, Robert Brown, a native of Australia.

**AMARYLLIDACEÆ.**

*Lecanium olea*, Bernard, and *L. hesperidum*, Linnaeus, have been found on *Hippeastrum equestre*, Herbert, a native of Mexico. *Daectylopus liliacearum*, Bouché, occurs on *Crinum*; it is also found on *Amaryllis*. *Lecanium assimile*, Newstead, var. *amaryllidis*, is from *Amaryllis*. *Daectylopus liliacearum*, Bouché, is found on *Pancratium*. *D. simplex*, Cockerell, is from *Hyomeaealliscaricbea (Pancratiumcaricbea)*. *Asterolecanium aureum* was found by Mr. Hart on *Hippeastrum* in cultivation in Trinidad.

*Gymnococcus agarium* (Douglas) was found on *Agave*. *Aspidiotus boreygi*, Cockerell, is from *Agaveringida*. Coquillett reports *Aspidiotus nerii*, Bouché, from *Agave americana*.

**DIOSCOREACEÆ.**

*Aspidiotus hartii*, Cockerell, occurs on yam.

**LILIACEÆ.**

Following is a list of the genera infested, with their coccids:

(A) *Smilax*, Linnaeus.


(B) *Rhipogonum*, Forster.


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1 Cockerell, Ent., 1893, p. 267.
2 Signoret, Essai sur les Cochenilles.
3 Maskell, Tr. N. Z. Inst., XXVII, p. 58.
5 Signoret, Essai sur les Cochenilles.
7 Cockerell, Ent., 1893, p. 267.
10 Cockerell, Psyche Supp., 1895, p. 7.
The following are all on *P. tenax*, Forster, the New Zealand flax:


(1) *Asparagus*, Linnaeus.


(2) *L. asparagi*, Giard, name only, 1893. On *A. horrida* in Algeria.

(3) *Disaspis asparagi*, Giard, name only, 1893. On *A. horrida* in Algeria.

(E) *Aspidistra*, Kerr.


(F) *Phorium*, Forster.

The following are all on *P. tenax*, Forster, the New Zealand flax:


(2) *Dactylopius calceolaria*, Maskell. Maskell, Scale Ins. N. Z., p. 113; also Tr. N. Z. Inst., XXII. p. 149.


(6) *Aloe*, Linnaeus.


The plants are natives of South Africa.

(11) *Gasteria*, Duval.


(1) *Yucca*, Linnaeus.


(3) *Phenacoccus yuca*, Cockerell. Mexico and California.

(1) *Leucanidaspis yuca*, Townsend. New Mexico; Organ Mountains (Townsend).


(4) *Dracaena*, Linnaeus.


(K) *Cordylina*, Comptonson.

(1) *Leucanidaspis hemispharicam*, Targioni-Tozzetti. Signoret, Essai. Recorded from *Dracaena australis*, which is a *Cordylina*.

(2) *Dactylopius calceolaceus*, Maskell, Maskell, Tr. N. Z. Inst., XXVI. p. 89. On the New Zealand *C. australis*.


(L) *Astelia*, Banks and Solander.

The following are all on the New Zealand *A. cunninghamii*, Hooker:


(5) *Phenacoccus astelia*, Maskell. Maskell, Scale Ins. N. Z., p. 111 (as *Pseudococcus*).
JUNCACEÆ.

Maskell\(^1\) records \textit{Aspidiotus cladii}, Maskell, from \textit{Xerotes}, sp., and \textit{Chionaspis xerotidis}, Maskell, from \textit{Xerotes longifolia}. \textit{Aspidiotus rossi}, Maskell, is found on \textit{Xanthorrhoea},\(^2\) \textit{Signoretia luzula}, Dufour, is found on \textit{Lazula}.

PALMACEÆ.

The following are from various palms, genus not specified: \textit{Dactylopus longispinus}=\textit{longifilis},\(^3\) \textit{D. glauces},\(^4\) \textit{Asterolecanium urichi},\(^5\) \textit{Icerya montserratensis},\(^6\) \textit{Lecanium hesperidum} and \textit{L. hemisphericum},\(^7\) \textit{L. olea},\(^8\) \textit{Fiorinia cannellii},\(^9\) \textit{Pinnaspis pandani},\(^9\) \textit{Ischnaspis filiformis},\(^10\) \textit{Parlatoria proteus},\(^11\) \textit{Mytilaspis pallens} (apparently on a fan palm),\(^12\) \textit{Chionaspis minor}, \textit{Aspidiotus epidendri} and \textit{A.nierii},\(^4\) \textit{A. personatus},\(^3\) \textit{A. articulatus},\(^10\) \textit{A. palmarum},\(^7\) \textit{A. dictyospermi}.

The following genera have been recorded as supporting Coccoidea:

(A) \textit{Areca}, Linnaeus.


(2) \textit{Aspidiotus fiscus}, Ashmead. On \textit{A. catechu}. Cockerell, Insect Life, 1893, p. 159.


(B) \textit{Rhopalosilis}, H. Wendland and Drude.


(C) \textit{Horaea}, Beecari.


(D) \textit{Orodoxar}, Willdenow.


\(^{1}\)Tr. N. Z. Inst., XXVII.

\(^{2}\)Maskell, Tr. N. Z. Inst., XXV, p. 207.

\(^{3}\)Cockerell, Insect Life, VI, p. 103.

\(^{4}\)Maskell, Scale Ins., N. Z., p. 113.

\(^{5}\)Cockerell, Journ. Trinidad Club, 1894, p. 308.


\(^{7}\)Comstock, 2d Cornell Rept., p. 140.

\(^{8}\)Maskell, Tr. N. Z. Inst., XXV, p. 211.

\(^{9}\)Cockerell, Journ. Trinidad Club, 1894, p. 306.

\(^{10}\)Cockerell, Journ. Inst. Jamaica, 1892, p. 54.


\(^{12}\)Maskell, Tr. N. Z. Inst., XXII, p. 134.

\(^{13}\)Cockerell, Amer. Nat., 1895, p. 728.
(E) Caryota, Linnaeus.


(2) L. perforatum, Newstead.

(F) Nipa, Thunberg.

(1) Dactylopis nigra, Maskell. On N. fruticans, Thunberg, the only species, a native of the East Indies. Maskell, Tr. N. Z. Inst., XXV, p. 233.

(G) Phytalea, Ruiz and Pavon.


(H) Phavia, Linnaeus.

The following are from the date palm, P. dactylifera, Linnaeus, a native of North Africa and Arabia.


(2) Parlatoria viatrix, Cockerell.


(1) Sabal, Adams.


(2) A. destructor, Signoret. Cockerell, Journ. Inst. Jamaica, 1893, p. 255 (as merii var.).


(K) Chamaeops, Linnaeus.

(1) Aspidiotus chamaeops, Signoret (or chamaeopsidis). On "C. Australis," a name not in Index Kewensis. Signoret, Essai.


(3) A. dictyospermi, Morgan.

It may be added, that Gillette and Baker\(^1\) record A. dictyospermi from "Chamaeops elegans." What this is, I do not know.

(1) Livistona, Robert Brown.

(1) Fiorinia canellae, Comstock. Maskell, Tr. N. Z. Inst., XXIV, p. 16.

(M) Raphia, Beaucoups.


(N) Cirrus, Linnaeus.

The following are on the cocoanut, C. nucifera:


(2) D. coccoi, Maskell. Tr. N. Z. Inst., XXII, p. 149; and a variety, Maskell, Tr. N. Z. Inst., XXIV, p. 12. Fiji and Laccadive Islands.

(3) Cyecus erion, Anderson, 1787. A problematical species, perhaps a Dactylopis.


\(^1\) Hemip. Colo., p. 128.


(1) Latania, Commerson.

The following occur on Pandanæ:


(5) A. pandani, Signoret. On P. utilis, Bory, a native of Madagascar. Signoret, Essai sur les Cochenilles. (1)


AROIDÆ.

Coquillett\(^1\) records Lecanium hesperidum, Linnaeus, from the so-called Calla lily, Richardsonia africana. Coleus curvifolius (syn. esculentu) is a food plant of Dactylopius virgatus, Cockerell.\(^2\) Ceroplastes floridensis, Comstock, has been found on Anthurium lanceolatum.\(^3\) Mytilaspis carinatus, Cockerell, occurs on some Anthurium-like plant.\(^4\)

NAIADACEÆ.

The Coccus zosterae, Fabricius, on Zostera is surely no coccid!

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\(^3\) Cockerell, Insect Life, 1893, p. 159.

CYPERACEÆ.

Signoret records *Lecanium angustatum*. Signoret, and *Dactylopius cyperi*, Signoret, from *Cyperus papyrus*. *Aspidiotus cladii*, Maskell, is found on *Lepidomeria*, as well as on *Cladium*. *Mytilaspis cordylinidis* occurs on *Gahnia*. Orthezia cataphracta, Shaw, is found about the base of stems of *Curvex*.

GRAMINEÆ.

The following are from grass, genus not stated:

8. Rhizococcus queenslandicus, Comstock. 2d Cornell Rept., p. 139. It is really *Eriococcus*.

The following genera have coccid records:

(A) *Spartina*, Schönherr.


The following are from the sugar cane, *S. officinarum*:


Signoret records *Eriopeltis lichtensteinii*, Signoret, and *Westwoodia perissii*, Signoret.

(A) *Aira*, Linnaeus.

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The problematical Coccus chlovun, Anderson, is from Aira spicata, which, however, is not an Aira, but a Panicum or Trisetum.

(R) Coryneporus, Beauvois.

Ripersia corynepori, Signoret, is from the south European C. canescens.

(F) Danthonia, De Candolle.

Erionococcus danthoniae, Maskell, is from the New Zealand D. cunninghamii, J. D. Hooker. 1 Dactylipus calceolaria, Maskell, has been found on Danthonia. 2

(G) Poa, Linnaeus.

1) Eriopellis festacea, Fonscolombe. Signoret, Essai sur les Cochenilles. Recorded from P. purpurea, but this is really an Eluropus, either A. pubescens or A. levis.


(H) Eluropus, Trin. See above under Poa.


(1) Milium, Linnaeus.

Signoret records Aelerda subtenance and Antonina purparca, Signoret.

(J) Bromus, Linnaeus.

Signoret records Eriopellis festacea, Fonscolombe.

(K) Agropyrum, A. Gartner (or Agropyron).

Fairmauria bipartitlta, Signoret, is found on the European A. campestre. Godron and Grenier.

(L) Triticum, Linnaeus.

Porphyrophora radicum-graminis, Baerensprung, has been found on wheat. 3

(M) Andropogon, Linnaeus.

Mr. E. E. Green sends me a new species, Chionaspis graminis, Green, found on Andropogon (lemon grass).

(N) Bambusa, Schreber (bamboo).


(4) A. militaris, Boisduval. Signoret, Essai; Cockerell, Journ. Trinidad Club, 1894, p. 307. On B. distorta, but also on B. stricuia, which is a Dendrocalamus or Ozychranthera.


1 Maskell, Tr. N. Z. Inst., XVIII, p. 22.

2 Maskell, Scale Ins. N. Z., p. 112.

3 F. Löw, see Zool, Record for 1866.
The following are from ferns, genus not stated:

12. *C. rubens*, Maskell. Sent by Mr. Ehrhorn on fern from Honolulu. (Craw coll.)
13. *Parniaria* sp. On fern from Honolulu. (Craw, through Ehrhorn.)

The following genera have coccid records:

(A) *Platyccerium*.

The unrecognized *Lecaniurn platycerii*, Packard, was found on this, *L. aictr*, Bernard, occurs on *P. aleicorne*.

(B) *Pteris*.

2. *Lecaniurn filicum*, Boisduval. Signoret, Essai. This and the next are found on *P. quadricarinata* var. argyrea (syn. *P. argyrea*).
4. *Polypodium*.

5. *Pelloua*.

6. *Nephronepis*.

7. *Nephronepis*.

8. *Darallia*.


(1) Adiantum (maidenhair).
(3) Asplenum.
(2) Mytilaspis cordylinidis, Maskell. Comstock, 2d Cornell Rept., p. 139.
(K) Doodia.
(L) Cyathæa (tree ferns).

**MUSCI.**

*Dactylopius pow,* Maskell, occurs among moss at base of trees.¹
*Orthoziola vejdorskyi,* Sulc, is found under leaves and moss (Sulc).

¹Maskell. Tr. N. Z. Inst., XXIII, p. 23.

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