

STUDIES OF THE COCCOIDEA. 14. THE GENERA
ASPIDIOTUS, DIASPIDIOTUS AND HEMIBERLESIA
IN QUEENSLAND

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SUMMARY

In Queensland the genus *Aspidiotus* is represented by three species and *Diaspidiotus* and *Hemiberlesia* are each represented by two species.

A. hederae (Vall.), *H. lataniae* (Sign.) and *H. rapax* (Comst.) are extremely widely distributed on a great variety of hosts. *A. queenslandicus* Brimb. and *D. loranthi* (Laing) are native species.

None of the species in these three genera is of major direct concern to economic crops. *H. lataniae*, however, has in recent years become of some economic importance by the appearance of odd individuals on avocado fruit consigned to certain interstate markets.

INTRODUCTION

The genera *Aspidiotus*, *Diaspidiotus* and *Hemiberlesia* are closely related. Some of the species are amongst the most cosmopolitan of the scale insects. These also have an extensive distribution and host range in Queensland. This is shown in the following records, which are given as a continuation of the pattern of the previous part of these studies (Brimblecombe 1962).

Genus ASPIDIOTUS Bouché

Synonymy:

- 1833: *Aspidiotus* Bouché; Naturgeschichte der Schädlichen und Nützlichen Garteninsekten, Berlin, p. 52.
1897: *Aspidiotus* (*Cryptophyllaspis*) Cockerell; United States Department of Agriculture, Division of Entomology, Technical Series No. 6, p. 14.
1898: *Aspidiotus* (*Evaspidiotus*) Leonardi; Rivista di Patologia Vegetale, 6: p. 210.
1921: *Cryptophyllaspis* Cockerell; MacGillivray; The Coccidae, p. 390.
1937: *Evaspidiotus* Leonardi; Ferris; Microentomology, 6: p. 37.

Generic type.—*Aspidiotus nerii* Bouché = *Chermes hederæ* Vallot.

The genus *Aspidiotus* was the second to be named in the family Diaspididae, and is the basis of the tribe Aspidiotini. As originally used by Bouché the genus included four species, more being soon added by this and other authors. During the next quarter of a century three other Aspidiotine genera were named, each containing only the generic type. The remainder of the many new species described in this period were all placed in *Aspidiotus*. A few more genera were named late in last century and early in the present century. These, however, were considered by Fernald (1903) to be synonyms of *Aspidiotus*, which thus became the reservoir of most of the Aspidiotine species. Practically all of the numerous species described in this group over the next quarter of a century were also thrown into it, and as stated by Ferris (1941) more than 525 species have at one time or another been referred to it.

MacGillivray (1921) realized the complex state of this genus and reinstated as valid genera most of the generic and subgeneric names previously established, and added many more. Some subsequent authorities were wary of this wholesale splitting but most of the generic placings used by MacGillivray are still accepted. On this basis the genus *Aspidiotus* was critically reviewed by Ferris (1941), who clearly defined it and delineated the species then validly referable to it. Under that presentation the genus contains a mere fraction of the species which had earlier been assigned to it but comprises a clearly definable, compact and uniform group of species.

All of the Australian Aspidiotine species described at various times by several authors, particularly Maskell, Froggatt and Green, were placed in the genus *Aspidiotus*. Of these, all so far critically revised have been referred to other genera. Two introduced species—*A. destructor* Sign. and *A. hederæ* (Vall.)—occur in Queensland. A native species, *A. queenslandicus* Brimb., has recently been added.

Names used in the genus Aspidiotus.—The following names for which definite generic assignment is possible have at one time or another been used in Australian literature or recorded from Australia:—

- 1889: *acaciae* Morgan = *Neomorgania eucalypti* (Maskell).
- 1914: *alatus* Froggatt, referred to *Neoleonardia*.
- 1877: *ancylus* (Putnam), referred to *Diaspidiotus*.
- 1879: *aurantii* Maskell, referred to *Aonidiella*.
- 1931: *australiensis* Kuwana and Muramatsu, referred to *Octaspidiotus*.
- 1915: *bidens* Green, referred to *Monaonidiella*.
- 1892: *bossiae* Maskell, referred to *Remotaspidiotus*.
- 1869: *caldesii* Targioni-Tozzetti = *Aspidiotus hederæ* (Vallot).
- 1867: *camelliae* Boisduval = *Hemiberlesia rapax* (Comstock).
- 1894: *casuarinae* Maskell, referred to *Pseudaonidia*.
- 1915: *cedri* Green, referred to *Pygidiaspis*.
- 1895: *ceratus* Maskell, referred to *Monaonidiella*.
- 1908: *chenopodii* Marlatt, referred to *Remotaspidiotus*.

- 1914: *cingulatus* Froggatt, referred to *Pseudaonidia*.
1869: *citricola* Packard = *Lepidosaphes beckii* Newman (Diaspidini).
1901: *claviger* Cockerell, referred to *Duplaspidiotus*.
1881: *coccineus* Gennadius = *Aonidiella aurantii* (Maskell).
1914: *confusus* Froggatt = *Aspidiotus hederæ* (Vallot).
1914: *coralinus* Froggatt, referred to *Remotaspidotus*.
1869: *cyanophylli* Signoret, referred to *Abgrallaspis*.
1881: *cydoniæ* Comstock = *Hemiberlesia lataniæ* (Signoret).
1929: *delicatulus* Laing, referred to *Leonardia*.
1869: *destructor* Signoret, retained in *Aspidiotus*.
1889: *dictyospermi* Morgan, referred to *Chrysomphalus*.
1927: *dryandrae* Fuller, referred to *Pseudaonidia*.
1888: *eucalypti* Maskell, referred to *Neomorgania*.
1896: *eucalypti* var. *comatus* Maskell = *Pseudotargionia comatus* (Maskell).
1895: *extensus* Maskell, referred to *Neoleonardia*.
1880: *ficus* (Ashmead), referred to *Chrysomphalus*.
1893: *fimbriatus* Maskell, referred to *Megaspidiotus*.
1892: *fodiens* Maskell, referred to *Chrysomphalus*.
1895: *fusca* (Maskell) = *Quadraspidotus perniciosus* (Comstock).
1869: *gloverii* (Packard) = *Lepidosaphes gloverii* (Packard) (Diaspidini).
1896: *hakea* Maskell, referred to *Phaulaspis*.
1895: *hartii* Cockerell, referred to *Aspidiella*.
1829: *hederæ* (Vallot), retained in *Aspidiotus*.
1909: *herculeana* Hadden, referred to *Clavaspis*.
1908: *junctiloba* Marlatt = *Neomorgania eucalypti* (Maskell).
1914: *junctilobius* Froggatt = *Neomorgania eucalypti* (Maskell).
1869: *lataniæ* Signoret, referred to *Hemiberlesia*.
1889: *longispinus* Morgan, referred to *Morganella*.
1929: *loranthi* Laing, referred to *Diaspidiotus*.
1897: *maskelli* Cockerell = *Morganella longispina* (Morgan).
1916: *miniatae* Green = *Chrysomphalus rubribullatus* (Froggatt).
1833: *nerii* Bouché = *Aspidiotus hederæ* (Vall.).
1894: *orientalis* Newstead, referred to *Aonidiella*.
1896: *osbeckiæ* Green = *Aonidiella orientalis* (Newstead).
1881: *perniciosus* Comstock, referred to *Quadraspidotus*.
1897: *perniciosus* var. *eucalypti* Fuller = *Chrysomphalus rubribullatus* (Froggatt).
1959: *queenslandicus* Brimblecombe, retained in *Aspidiotus*.
1881: *rapax* Comstock, referred to *Hemiberlesia*.
1892: *rossi* Maskell, referred to *Lindingaspis*.
1899: *rossi* var. *victoriæ* Cockerell = *Lindingaspis victoriæ* (Cockerell).
1914: *rubribullatus* Froggatt, referred to *Chrysomphalus*.
1916: *subcuticularis* Laing, referred to *Clavaspis*.
1904: *subfervens* Green, referred to *Clavaspis*.
1892: *subrubescens* Maskell, referred to *Octaspidotus*.

- 1905: *subrubescens* var. *corticoides* Green = *Octaspidiotus subrubescens* (Maskell).
1915: *tasmaniae* Green = *Aspidiotus hederæ* (Vallot).
1898: *transparens* var. *simillimus* Cockerell = *Aspidiotus hederæ* (Vallot).
1929: *tuberculatus* Laing, referred to *Alioides* (Diaspidini).
1896: *trilobitiformis* Green, referred to *Pseudaonidia*.
1895: *unilobis* Maskell, referred to *Chentraspis*.
1896: *virescens* Maskell = *Megaspidiotus fimbriatus* (Maskell).

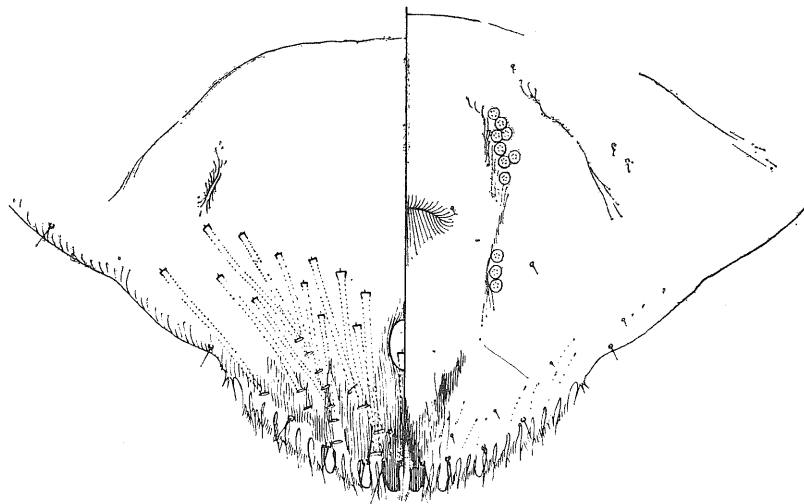


Figure 1.—*Aspidiotus destructor*: pygidium of adult female (after Ferris).

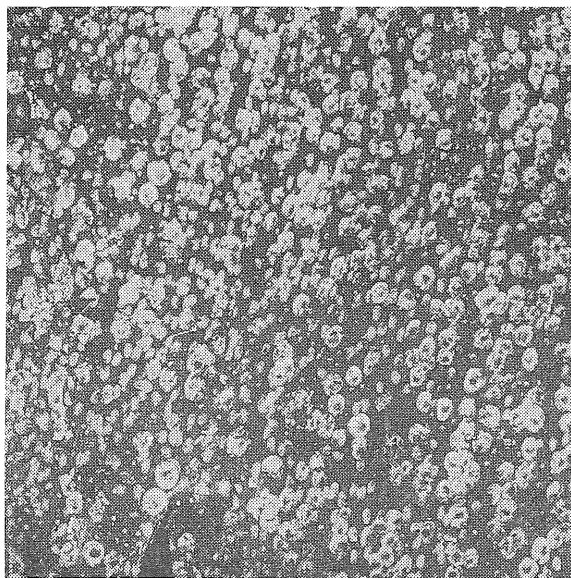


Figure 2.—*Aspidiotus destructor*: heavy infestation of scales on a banana leaf.

Aspidiotus destructor* SignoretSynonymy.*

1869: *Aspidiotus destructor* Signoret; Annales de la Société Entomologique de France, (4) 9: p. 120.

1890: *Aspidiotus transparens* Green; Insect Pests of the Tea Plant, p. 20.

1896: *Aspidiotus lataniae* Signoret: Green; The Coccidae of Ceylon Part 1, p. 49 (Misidentification).

Type locality and host.—Reunion Is., on “cocotiers”.

Although the misidentification of Green (1896) was soon corrected by that author (1899), other authors continued the error for more than 20 years. Identifications made as *A. lataniae* in the early part of this century therefore could be in error. One record under this name was made by Tryon (1903) but the specimens are now proved to be other than *A. destructor*, which is rare in Queensland. The present records are the first published of its occurrence in this State.

Hosts and distribution.—*Carica papaya* L., Clifton Beach, August, 1963 (G. W. Saunders). *Musa acuminata* Colla, Bowen, 1962 (F. W. Blackford); Cairns, Oct. 1954 (W. A. Smith); North Queensland, Mar. 1948. *Strelitzia reginae* Banks, Townsville, Feb. 1961.

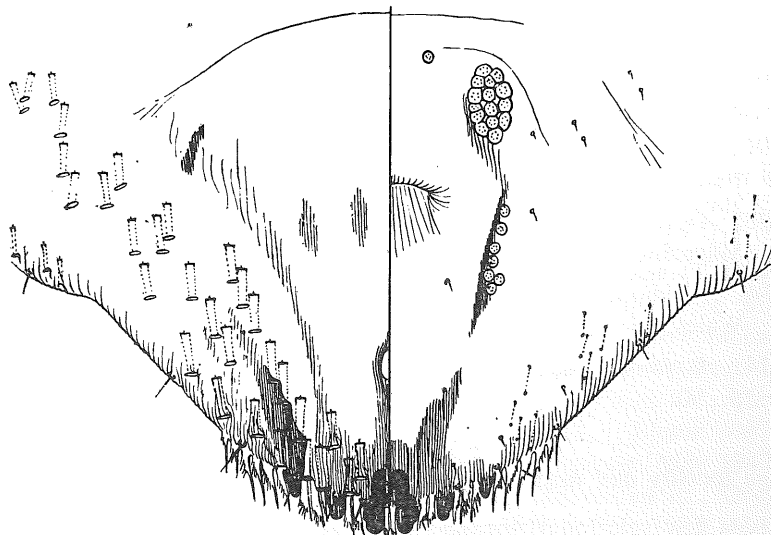
***Aspidiotus hederæ* (Vallot)**

Figure 3.—*Aspidiotus hederæ*: pygidium of adult female (after Ferris).



Figure 4.—*Aspidiotus hederae*: infestation of scales on banana fruit.

Synonymy:

- 1829: *Chermes hederae* Vallot; Mémoires de l'Académie des Sciences de Dijon, p. 30.
- 1833: *Aspidiotus nerii* Bouché; Naturgeschichte der Schädlichen and Nützlichen Garteninsekten, p. 52.
- 1869: *Aspidiotus caldesii* Targioni-Tozzetti; Atti della Società Italiana di Scienze Naturali, 11: p. 737.
- 1897: *Aspidiotus (Evaspidiotus) hederae* (Vallot): Leonardi; Rivista di Patologia Vegetale, 6: p. 210.
- 1898: *Aspidiotus transparens* var. *simillimus* Cockerell; Annals and Magazine of Natural History, (7) 2: p. 27.
- 1914: *Aspidiotus confusus* Froggatt; Agricultural Gazette of New South Wales, 25: p. 136.
- 1914: *Aspidiotus tasmaniae* Green; Bulletin of Entomological Research 6: p. 50.

Type locality and host.—Europe, on various plants.

Only a few selected synonyms have been quoted; a full list was given by Ferris (1941) when the genus was fully revised.

The rather extreme variation shown by this species has largely been responsible for the long list of synonyms to which most world authorities have contributed.

The many series of specimens recorded in Queensland also show extensive morphological variation. Detailed biological investigations are required to determine whether more than one species is involved.

This species is common in most countries of the world on a wide variety of hosts but rarely is it of sufficient economic importance to warrant the investigation of control measures. Similarly in Queensland it is recorded from most parts of the State over a wide range of climatic conditions. The host range is large but only in isolated instances have populations been large enough to cause concern.

Hosts and distribution.—*Acacia aulacocarpa* A. Cunn. ex Benth., Redcliffe, Jan. 1940. *Acacia cunninghamii* Hook., Glasshouse Mts., May 1941; Jimna, June 1944; Ormiston, Aug. 1950. *Acacia harpophylla* F. Muell. ex Benth., Brigalow, July 1938. *Acacia* sp. Howard, Oct. 1953. *Acronychia baueri* Schott, Tamborine Mt., Jan. 1954. *Aegiceras corniculatum* (L.) Blanca, Currumbin, Jan. 1957. *Akania lucens* (F. Muell.) Airy-Shaw, Tamborine Mt., Jan. 1954. *Alectryon connatus* (F. Muell. ex Benth.) Radlk., Maroochydore, 1940. *Alectryon coriaceus* (Benth.) Radlk., Coolangatta, Jan. 1955. *Amyema congener* (Sieb. ex Schult.) Van Tiegh., Jondaryan, Aug. 1959 (R. P. Kleinschmidt), *Amyema ferruginiflora* (Fitzg.) Danser, North Aramara, May 1940. *Amyema pendula* (Spreng.) Van Tiegh., Barakula, Sept. 1939. *Asparagus racemosus* Willd., Tamborine Mt., Mar. 1948. *Atalaya hemiglaucula* (F. Muell.) F. Muell. ex Benth., Chinchilla, Mar. 1940; Mt. Isa, May 1945. *Baloghia lucida* Endl., Toowoomba, Sept. 1950 (A.W.S. May). *Bowenia serrulata* (André) Chamberlain, Byfield, May 1947. *Coelobogyne ilicifolia* J.Sm., Imbil, Feb. 1955. *Callitris glauca* R.Br., Nudley, Apr. 1945. *Canthium coprosmoides* F. Muell., Tamborine Mt., Jan. 1954. *Capparis lucida* (DC.) R.Br. ex Benth., Bowen, Aug. 1951 (W. A. Smith). *Capparis nobilis* (Endl.) F. Muell. ex Benth., Yarraman, Apr. 1947. *Capparis* sp., Warwick, June 1947. *Carissa ovata* R.Br., Bell, Aug. 1947. *Cayratia acris* (F. Muell.) Domin, Toowoomba, Feb. 1951 (A. W. S. May). *Casearia multinervosa* Sleumer & White Yarraman, Sept. 1948. *Casuarina glauca* Sieb., Cleveland, Oct. 1940. *Cedrela toona* Roxb. var. *australis* (F. Muell.) C.DC., Imbil, June 1917 (H. Tryon). *Celastrus* sp., Tamborine Mt., Jan. 1954. *Chlorophytum sapense* (L.), Brisbane, 1940. *Cinnamomum camphorae* (L.) Neds. & Eberm., Tamborine Mt., Mar. 1948. *Citrus limon* (L.) Burm.f., Dirranbandi, Aug. 1948; Toowoomba, 1940; Yuleba, May 1951. *Citrus sinensis* Osbeck, Bowenville, 1940; Port Douglas, 1899-1900* (H. Tryon); Yuleba, May 1951. *Citrus* sp., Palen Ck., May 1951; Roma, 1918-19* (H. Tryon). *Codiaeum variegatum* (L.) Blume var. *pictum* Muell. Arg., Brisbane, June 1947. *Croton tiglium* L., Yarraman, May 1947. *Cycas media* R.Br., Mt. Elliott, July 1951 (W. A. Smith). *Dioscorea* sp., Queensland, prior 1925 (H. Tryon). *Diospyros kaki* L.f., Redland Bay, Feb. 1900 (H. Tryon). *Diploglottis australe* (G. Don) Radlk., Yarraman, Sept. 1948. *Dodonea triquetra*

Andr., Tugun, Aug. 1957. *Dysoxylum* sp., Imbil, Apr. 1953. *Endiandra pubens* Meissn., Tamborine Mt., May 1950. *Eremophila mitchellii* Benth., Chinchilla, Mar. 1940. *Eriostemon queenslandicus* C. T. White, Coolum, June 1955. *Evodia micrococca* F. Muell., Petrie, Mar. 1947. *Evodia* sp., Tamborine Mt., June 1947. *Flindersia australis* R.Br., Imbil, Jan. 1943; Ipswich, July 1953 (L. Pedley). *Flindersia bennettiana* F. Muell. ex Benth., Coolangatta, May 1953. *Flindersia xanthoxyla* (A. Cunn. ex Benth.) Domin, Yarraman, July 1947. *Geijera parviflora* Lindl., Biloela, Oct. 1955; Brigalow, July 1938; Drillham, Apr. 1953 (J. Mann); Mt. Larcom, Nov. 1944; Texas, Oct. 1954; Thangool, July 1944. *Geijera salicifolia* Schott, Rosewood, Mar. 1900 (H. Tryon); Thangool, July 1944. *Gladiolus* sp., Brisbane, Sept. 1940. *Grevillea robusta* A. Cunn. ex R.Br., Brisbane, Oct. 1949. *Guioa semiglauc* (F. Muell.) Radlk., Tamborine Mt., Jan. 1954. *Harpullia pendula* Planch. ex F. Muell., Yarraman, Sept. 1948. *Lantana camara* L., Bauple, Feb. 1944. *Lonicera japonica* Thunb., Brisbane, Aug. 1951. *Macadamia ternifolia* F. Muell., Amamoor, Oct. 1948; Nambour, Sept. 1947; Sunnybank, Feb. 1952. *Macadamia integrifolia* Maid. & Betche, Brisbane, Feb. 1935; Brookfield, Nov. 1945; Nambour, Sept. 1947. *Macrozamia moorei* Muell., Emerald, Aug. 1961. *Mallotus claoxyloides* (F. Muell.) Muell. Arg., Yarraman, May 1947. *Malus sylvestris* Mill., Brisbane, 1900-01* (H. Tryon). *Melaleuca viridiflora* Gaertn., Ayr, June 1955 (G. W. Saunders). *Microcitrus australis* (Planch.) Swingle, Yarraman, Aug. 1927. *Microcitrus australasica* (F. Muell.) Swingle, Tamborine Mt., Jan. 1954. *Myoporum deserti* A. Cunn. ex Benth., Laidley, 1899 (H. Tryon). *Nandina domestica* Thunb., Brisbane, July 1952. *Nerium oleander* L., Brisbane, Jan. 1940; Coolangatta, Jan. 1950; Pittsworth, Jan. 1950. *Owenia venosa* F. Muell., Yarraman, July, 1947. *Pennantia cunninghamii* Miers, Tamborine Mt., May 1950. *Persea americana* Mill., Tamborine Mt., Sept. 1951. *Persoonia cornifolia* A. Cunn. ex R.Br., Glasshouse Mts., May 1944. *Phrygilanthus bidwillii* (Benth.) Eichl., Bribie Is., Sept. 1956. *Pleiogynium cerasiferum* (F. Muell.) Domin, Ayr, Oct. 1950 (W. A. Smith); Brisbane, Sept. 1954. *Plumeria rubra* L., Brisbane, Apr. 1953. *Podocarpus elatus* R.Br. ex Mirbel, Brisbane, Mar. 1943. *Prunus avium* L., Pialba, 1911-12* (H. Tryon). *Psidium guajava* L., Burrum, 1900-01* (H. Tryon). *Pyrus communis* L., Pialba, 1911-12* (H. Tryon). *Randia fitzalanii* (F. Muell.) F. Muell. ex Benth., Mt. Elliott, July 1951 (W. A. Smith). *Rhodosphaera rhodanthema* (F. Muell. ex Benth.) Engl., Yarraman, June 1948. *Santalum lanceolatum* R.Br., Charleville, Oct. 1954; Eulo, Oct. 1954. *Siphonodon australe* Benth., Yarraman, Sept. 1948. *Smilax australis* R.Br., Tamborine Mt., Aug. 1950. *Stenocarpus sinuatus* Endl., Tamborine Mt., Mar. 1948. *Tristania conferta* R.Br., Brisbane, May 1912 (H. Tryon); Pomona, Apr. 1950; Redland Bay, Sept. 1941; Rocklea, Sept. 1915 (H. Tryon); Tamborine Mt., Jan. 1954. *Tristania suaveolens* (Gaertn.) Sm., Atherton, Apr. 1941; Rosewood, Mar. 1900; Sunnybank, Aug. 1914 (H. Tryon). *Wilkiea huegeliana* (Tul.) A.DC., Tamborine Mt., Jan. 1954.

* Records taken from the Annual Reports of the Queensland Department of Agriculture and Stock for the years mentioned.

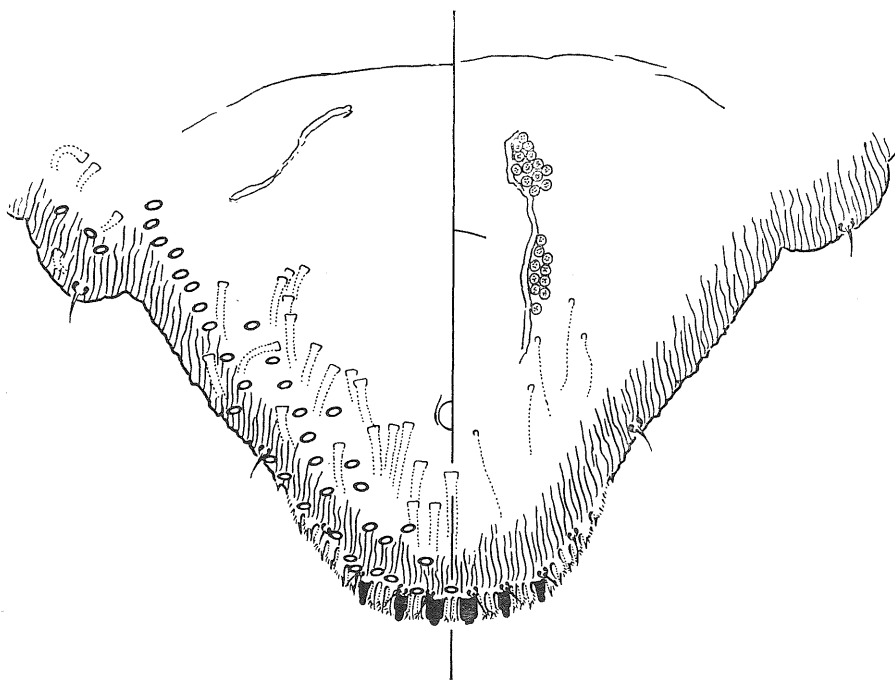
Aspidiotus queenslandicus Brimblecombe

Figure 5.—*Aspidiotus queenslandicus*: pygidium of adult female.

1959: *Aspidiotus queenslandicus* Brimblecombe; Queensland Journal of Agricultural Science 16: p. 121.

Type locality and host.—Queensland; Beenleigh, on *Acronychia laevis* Forst.

This species is known from the type material only which was taken in a remnant stand of rain-forest in May 1956.

Genus **DIASPIDIOTUS** Berlese

Synonymy:

1896: *Diaspidiotus* Berlese, Rivista di Patologia Vegetale, 6: p. 350.

1897: *Aspidiotus* (*Diaspidiotus*) Berlese and Leonardi; Leonardi; Rivista di Patologia Vegetale, 6: p. 210.

Generic type.—*Diaspis ancylus* Putnam.

The genus *Diaspidiotus* was an early separation from the parent genus *Aspidiotus* but for a considerable period most new species were crowded into *Aspidiotus*. Few species were placed in *Diaspidiotus* but in recent years the number has increased, although the genus may still be regarded as small. Most of the species it contains have been described from North America and Europe.

An Australian species, *Aspidiotus loranthi* Laing, was transferred to *Diaspidiotus* recently (Brimblecombe 1958) and a new species has been assigned to it. The former and an introduced species occur in Queensland.

Names used in the genus Diaspidiotus.—

1877: *ancylus* (Putnam), retained in *Diaspidiotus*.

1897: *perniciosus* var. *eucalypti* (Fuller) = *Chrysomphalus rubribullatus* (Froggatt).

1869: *lataniae* (Signoret), referred to *Hemiberlesia*.

1929: *loranthi* (Laing), retained in *Diaspidiotus*.

Diaspidiotus ancylus (Putnam)

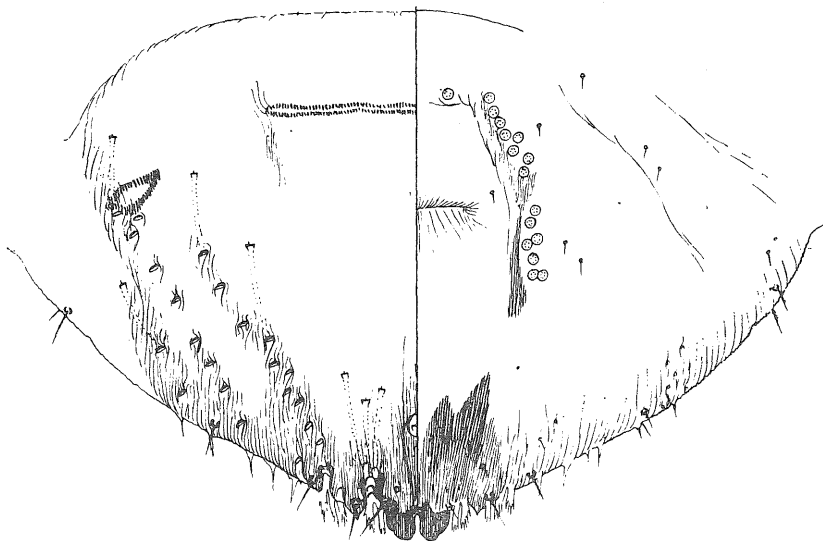


Figure 6.—*Diaspidiotus ancylus*: pygidium of adult female (after Ferris).

Synonymy:

1877: *Diaspis ancylus* Putnam; Transactions of the Iowa State Horticultural Society, 12: p. 321.

1880: *Aspidiotus ancylus* (Putnam): Putnam; Proceedings of the Davenport Academy of Science, 2: p. 346.

1897: *Aspidiotus* (*Diaspidiotus*) *ancylus* (Putnam): Cockerell; United States Department of Agriculture, Division of Entomology, Technical Series 6: p. 20.

1921: *Diaspidiotus ancylus* (Putnam): MacGillivray; The Coccidae, p. 411.

Type locality and host.—Iowa; Davenport, on *Acer dasycarpum*.

A complete list of synonyms of this species has been given by McKenzie (1956). The insect is known from a variety of hosts in several of the States of the United States of America, where it is regarded as a pest on various deciduous fruit trees. It is also known from Europe. The present Queensland record is the first for Australia.

Host and locality.—*Carya illinoensis* (Wagenh.) K. Koch, Amamoor, Aug. 1947.

***Diaspidiotus loranthi* (Laing)**

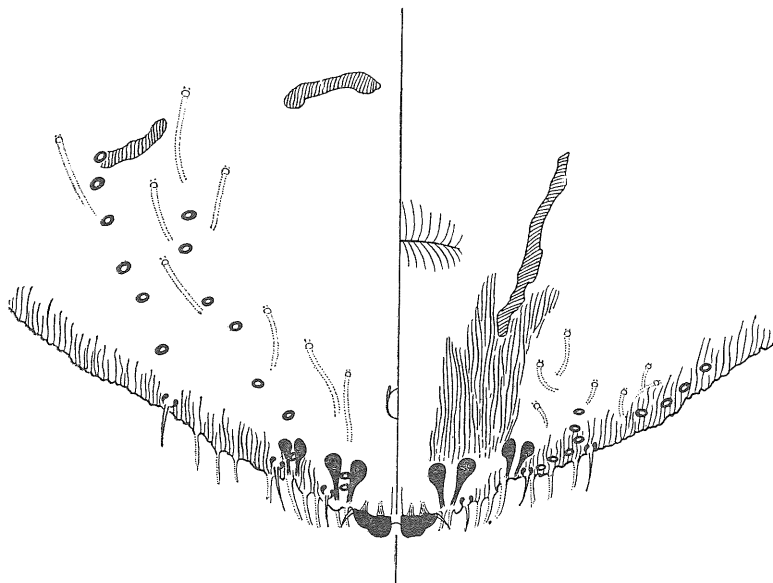


Figure 7.—*Diaspidiotus loranthi*: pygidium of adult female.

Synonymy:

1929: *Aspidiotus loranthi* Laing; Bulletin of Entomological Research 20: p. 21.

1958: *Diaspidiotus loranthi* (Laing): Brimblecombe; Queensland Journal of Agricultural Science, 15: p. 59.

Type locality and host.—Victoria; Eltham, on *Loranthus pendulus*.

This insect is known to occur in several localities in Victoria, New South Wales and Queensland (Brimblecombe 1958). Further records from Queensland are from a variety of hosts in the south-eastern region.

Hosts and distribution.—*Amyema pendula* (Sieb. ex Spreng.) Van Tiegh., Forest Hill, Sept. 1938. *Cedrela toona* Roxb. var. *australis* (F. Muell.) C.D.C., Imbil, July 1939. *Dendrophthoe falcata* (L.f.) Ettingsh., Moggill, Sept. 1953. *Ficus carica* L., Sunnybank, Sept. 1939. *Jacksonia scoparia* R.Br., Fletcher, Oct. 1948 (E. Sutton).

HEMIBERLESIA Cockerell*Synonymy:*

- 1896: *Aspidites* Berlese and Leonardi; *Rivista di Patologia Vegetale*, 4: p. 349 (preoccupied).
- 1897: *Aspidiotus* (*Hemiberlesia*) Cockerell; United States Department of Agriculture, Division of Entomology, Technical Series 6: p. 9.
- 1921: *Marlattaspis* MacGillivray; *The Coccidae*, p. 387.
- 1921: *Hemiberlesia* Cockerell; MacGillivray; *The Coccidae*, p. 391.
- 1934: *Hemiberlesiana* Thiem and Gernick; *Arbeiten über morphologische und taxonomische aus Berlin—Dahlem*, 1.

Generic type.—*Aspidiotus rapax* Comstock.

The genus *Hemiberlesia* was an early division from the parent genus *Aspidiotus*, a short time after *Diaspidiotus*, with which it has close affinity. The genus is generally accepted and many species at various times have been referred to it. Those now recognized as validly contained in it are mostly described from North America and Europe. Two introduced species are the only representatives of the genus in Queensland.

Names used in the genus Hemiberlesia.—

- 1867: *camelliae* (Boisduval) = *Hemiberlesia rapax* (Comstock).
- 1869: *cyanophylli* (Signoret), referred to *Abgrallaspis*.
- 1869: *lataniae* (Signoret), retained in *Hemiberlesia*.
- 1889: *longispina* (Morgan), referred to *Morganella*.
- 1897: *maskelli* (Cockerell) = *Morganella longispina* (Morgan).
- 1881: *rapax* (Comstock), retained in *Hemiberlesia*.

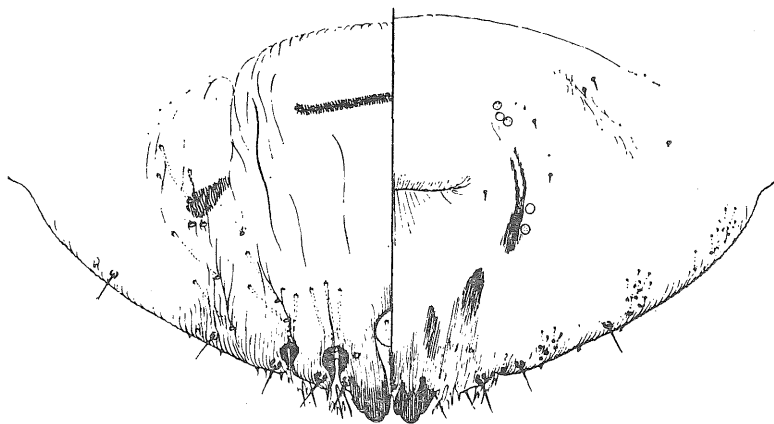
***Hemiberlesia lataniae* (Signoret)**

Figure 8.—*Hemiberlesia lataniae*: pygidium of adult female (after Ferris).

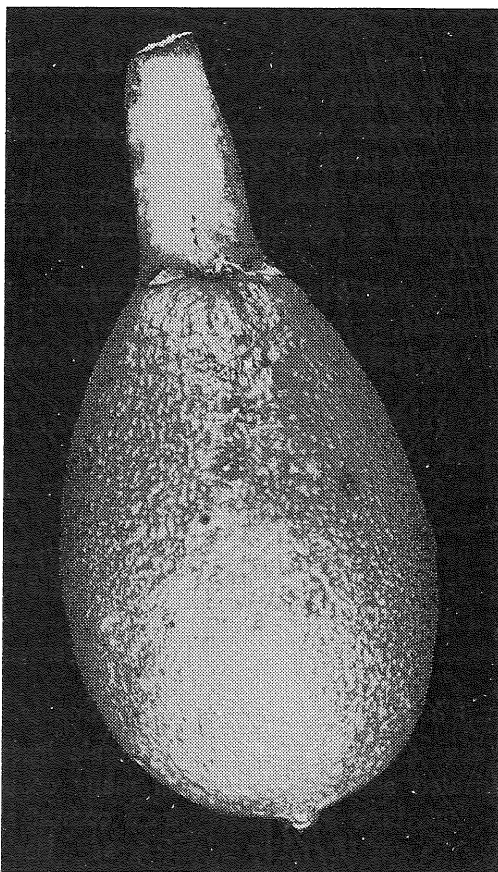


Figure 9.—*Hemiberlesia lataniae*: light infestation of scales on young avocado fruit.

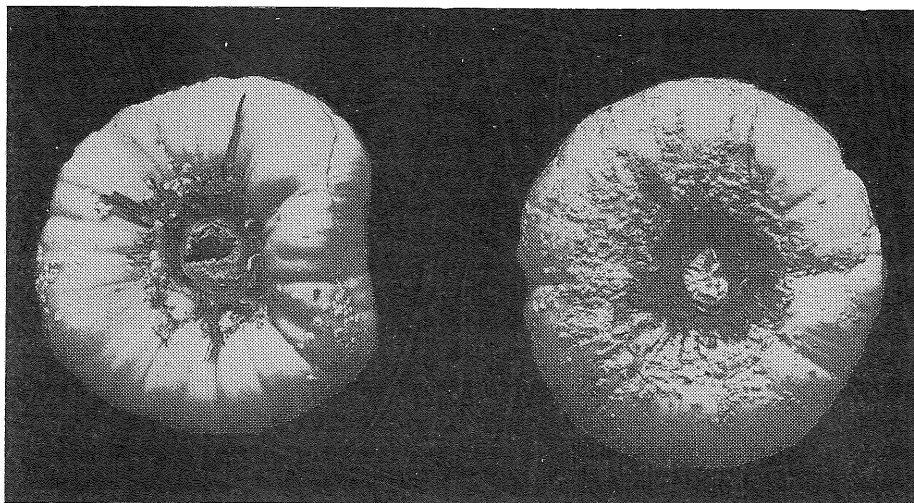


Figure 10.—*Hemiberlesia lataniae*: infestation of scales on stored gladiolus corms.

Synonymy:

- 1869: *Aspidiotus lataniae* Signoret: *Annales de la Société Entomologique de France* (4) 9: p. 124.
- 1881: *Aspidiotus cydoniae* Comstock; Report of the United States Department of Agriculture 1880: p. 295.
- 1897: *Aspidiotus (Hemiberlesia) cydoniae* Comstock: Cockerell; United States Department of Agriculture, Division of Entomology, Technical Series 6: p. 21.
- 1898: *Aspidiotus (Evaspidiotus) cydoniae* Comstock: Leonardi, *Rivista di Patologia Vegetale*, 7: p. 44.
- 1897: *Aspidiotus implicatus* Maskell; *Entomologist's Monthly Magazine*, 33: p. 226.
- 1900: *Aspidiotus (Hemiberlesia) lataniae* Signoret: Hempel; *Rivista do Museu Paulista*, 4: p. 502.
- 1900: *Aspidiotus (Evaspidiotus) lataniae* Signoret: Leonardi; *Rivista di Patologia Vegetale*, 7: p. 69.
- 1921: *Diaspidiotus lataniae* (Signoret): MacGillivray; *The Coccidae*, p. 412.
- 1921: *Marlattaspis implicatus* (Maskell): MacGillivray; *The Coccidae*, pp. 387 and 406.
- 1937: *Hemiberlesia lataniae* (Signoret): Ferris; *Microentomology*, 2: p. 55.

Type locality and host.—Serres on *Latania barbonica*.

This insect is now one of the commonest scale insects, occurring on a wide variety of cultivated and other plants in many countries of the world. In Queensland, collections have been mainly from coastal and subcoastal areas but a few records are known from dry inland areas. Early records from this State were under the name *Aspidiotus cydoniae*.

The insects occur mostly on the stems and small branches of annuals and shrubs but the species is not of noticeable direct concern to the host plants. Tendencies to increase in population are curbed by natural agencies.

In recent years scattered light infestations on avocado trees have resulted in the occurrence of a few normally unnoticeable individuals on some of the avocado fruit. Detection of these by the careful inspection given to Queensland fruit on arrival in Victoria has led to some rejections of consignments to southern markets. In this way the insect has assumed some economic concern to Queensland growers. Chemical control of the meagre infestations on the trees cannot be expected to solve the problem unless some outstanding specific material is found.

Hosts and distribution.—*Acacia cunninghamii* Hook., Brisbane, Feb. 1947. *Acacia decurrens* Willd., Pechey, Mar. 1936. *Acacia harpophylla* F. Muell. ex Benth., Roma, Aug. 1957. *Archontophoenix cunninghamiana* (Wendl.) Wendl. & Drude, Tamborine Mt., Mar. 1948. *Amaranthus viridis* L., Mossman, Jan. 1957 (G. W. Saunders). *Amyema pendula* (Sieb. ex Spreng.) Van Tiegh., Ormiston, Aug. 1950. *Amyema* sp., Wongabel, Apr. 1941. *Asparagus racemosus*

Willd., Toowong, June 1941. *Austromyrtus dulcis* (C. T. White) L. S. Smith, Tugun, Mar. 1957. *Brassaia actinophylla* Endl., Nambour, Oct. 1959 (W. A. Smith). *Carya illinoensis* (Wangenh.) K. Koch, Gayndah. *Cajanus cajan* (L.) Millsp., Ipswich, Feb. 1944. *Carica papaya* L., Brisbane, Mar. 1935. *Cassia artemesioides* Gaud., Kenmore, July 1957 (R. P. Kleinschmidt). *Cassinia quinquefaria* R.Br., Amberley, Sept. 1957. *Castanospermum australe* A. Cunn. & Fraser ex Hook., Brisbane, 1901 (H. Tryon). *Cedrela toona* Roxb. var. *australis* (F. Muell.) C.D.C., Atherton, Jan. 1959. (G. W. Saunders); Gympie, 1917 (H. Tryon). *Chrysanthemum indicum* L., Brisbane, June 1954; Toowong, May 1947. *Cinnamomum camphorae* (L.) Neds. & Eberm., Tamborine Mt., Mar. 1948. *Citrus limon* (L.) Burm.f., Cardwell, Oct. 1901 (H. Tryon). *Citrus sinensis* Osbeck, Cardwell, 1902-03*; Port Douglas, Feb. 1899 (H. Tryon). *Coleonema* sp., Brisbane, 1901 (H. Tryon). *Cupressus arizonica* Greene, Brisbane, Mar. 1960. *Cydonia oblonga* Mill., Brisbane, Feb. 1937. *Eranthemum pulchellum* Andr., Toowong, Aug. 1947. *Denhamia pittosporoidea* F. Muell., Coolangatta, Jan. 1955. *Ehretia membranifolia* R.Br., Ayr, Apr. 1953 (W. A. Smith). *Endiandra palmerstoni* (F. M. Bail.) White & Francis, Gadgarra, Apr. 1941. *Ephedra* sp., Brisbane, June 1946. *Eremocitrus glauca* (Lindl.) Swingle, Biloela, Oct. 1947; Marmor, Oct. 1955. *Eucalyptus crebra* F. Muell., Barakula, Sept. 1939. *Eucalyptus pilularis* Sm., Redland Bay, Sept. 1943. *Ficus carica* L., Blackall, Mar. 1963; Gayndah, Dec. 1947; Sunnybank, Oct. 1941. *Gerbera jamesoni* Bolus, Ayr, Apr. 1951 (W. A. Smith). *Gladiolus* sp., Brisbane, June 1949. *Grevillea robusta* A. Cunn., Nanango, Jan. 1944. *Helmholtzia glaberrima* F. Caruel, Brisbane, Sept. 1960. *Hibiscus rosa-sinensis* L., Brisbane, May 1947. *Hibiscus* sp., Brisbane, May 1897 (H. Tryon). *Hydriastele wendlandiana* (F. Muell.) Wendl. & Drude, McNade, May 1957. *Hypericum calycinum* L., Southport, Sept. 1956. *Jacksonia scoparia* R.Br., Toowong, Feb. 1947. *Jasminum lineare* R.Br., Ayr, Mar. 1953. *Juglans regia* L., Gatton, Mar. 1937. *Lantana camara* L., Brisbane, Feb. 1940. *Lagerstroemia indica* L., Brisbane, Mar. 1961. *Leptospermum scoparium* Forst., Tugun, Jan. 1950. *Livistona australis* (R.Br.) Mart., Rockhampton, Oct. 1955 (T. Passlow). *Lobularia maritima* (L.) Desv., Toowong, June 1947. *Macadamia integrifolia* Maid. & Betche, Toowong, Aug. 1941. *Macadamia tetraphylla* L. Johnson, Nambour, Feb. 1963 (J. J. Davis). *Macadamia* sp., Gayndah, Sept. 1947. *Malus sylvestris* Mill., Brisbane, 1900-01* (H. Tryon). *Mangifera indica* L., Ayr, Sept. 1951 (W. A. Smith). *Melia azederach* L., Gatton, Dec. 1947. *Musa acuminata* Colla, Brisbane, Apr. 1926 (J. L. Froggatt); Clump Pt., May 1948 (W. A. Smith); Home Hill, July 1930; South Brisbane, Apr. 1926 (W. A. T. Summerville); Tully, May 1948 (W. A. Smith). *Musa banksii* F. Muell., Cairns, Oct. 1925; Innisfail, May 1926 (J. L. Froggatt). *Nerium oleander* L., Brisbane, Mar. 1945; Coolangatta, Jan. 1955; Pittsworth, Nov. 1950; Toowong, Dec. 1947. *Olea europaeae* L., Koah, Apr. 1961 (G. W. Saunders). *Owenia venosa* F. Muell., Imbil, May 1955. *Parkinsonia aculeata* L., Ayr, June 1955 (G. W. Saunders). *Persea americana* Mill., Brisbane, Jan. 1951; Glasshouse Mts., June 1961; Mareeba, June 1958 (G. W. Saunders); Ormiston, June 1958; Sunnybank, Sept. 1953; Tamborine Mt., Apr.

1950. *Persoonia cornifolia* A. Cunn. ex R.Br., Coolangatta, July 1956. *Petalostigma pubescens* Domin, Ayr, Feb. 1953 (W. A. Smith). *Phrygilanthus bidwillii* (Benth.) Eichl., Bribie Is., Sept. 1956. *Pleiogynium cerasiferum* (F. Muell.) Domin, Ayr, Oct. 1951 (W. A. Smith); Toowong, Sept. 1954. *Prunus avium* L., Pialba, Apr. 1912 (H. Tryon). *Prunus persica* (L.) Batsch., Pialba, Apr. 1912 (H. Tryon). *Pyrus communis* L., Pialba, Apr. 1912 (H. Tryon). *Randia fitzalani* (F. Muell.) F. Muell. ex Benth., Mt. Elliott, July 1951 (W. A. Smith). *Rhodomyrtus psidioides* (G. Don) Benth., Cleveland, Sept. 1954. *Salix babylonica* L., Kenmore, Mar. 1955 (R. P. Kleinschmidt). *Salix caprea* L., Brisbane, Jan. 1958 (W. A. McDougall). *Thuja orientalis* L., Redcliffe, Dec. 1944. *Solanum sodomaeum* L., Ormiston, Sept. 1950. *Tristania conferta* R.Br., Brisbane, 1900 (H. Tryon). *Tristania suaveolens* (Gaertn.) Sm., Brisbane, Oct. 1899 (H. Tryon). *Verbena hybrida* Voss., Toowong, Sept. 1947. *Vitis vinifera* L., Aspley, July 1954; Charters Towers, Oct. 1955; Ipswich, Mar. 1916 (H. Tryon); Kingaroy, Jan. 1944; Lindum, Aug. 1949; Manly, July 1951; Myrtle-town, Aug. 1953; Noosa, Sept. 1946; Nudgee, July 1951; St. Helena Is., Dec. 1923; Southport, Apr. 1916 (H. Tryon). *Wikstroemia indica* (L.) C. A. Mey, Brisbane, Apr. 1955.

Hemiberlesia rapax (Comstock)

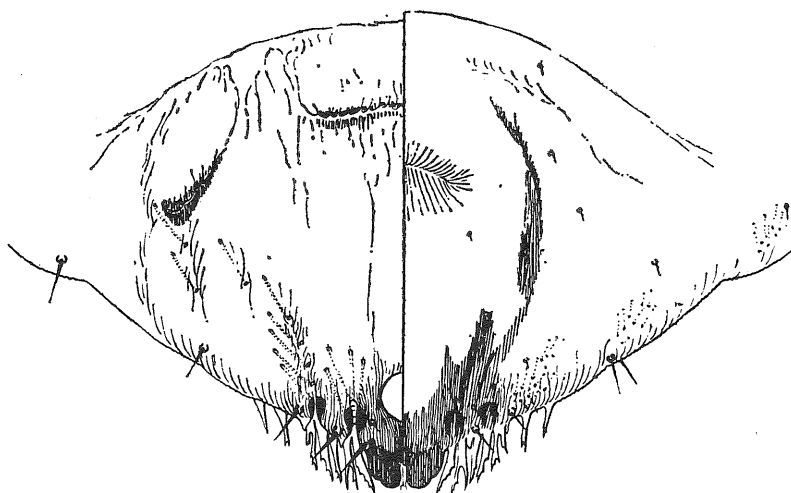


Figure 11.—*Hemiberlesia rapax*: pygidium of adult female (after Ferris).

Synonymy:

- 1881: *Aspidiotus rapax* Comstock; United States Department of Agriculture Report 1880: p. 307.
 1897: *Aspidiotus (Hemiberlesia) rapax* Comstock: Cockerell; United States Department of Agriculture, Division of Entomology, Technical Series 6: p. 9.
 1897: *Hemiberlesia camelliae* (Boisduval): Leonardi; Rivista di Patologia Vegetale, 6: p. 124.

1938: *Hemiberlesia rapax* (Comstock): Ferris; Atlas of the Scale Insects of North America, Series 2, No. 244.

Type localities and hosts.—California and Florida, on various trees and shrubs.

All of the material both old and recently collected in Queensland agrees with *H. rapax* Comstock as currently understood. This insect, however, has at times been considered to be the same as *Aspidiotus camelliae* (Boisduval) as recorded by Signoret (1869), which has been regarded as validating the name *Kermes camelliae* Boisduval. Whether this is a synonym or not could require deliberation by the International Committee of Zoological Nomenclature. Most of the early determinations of material in Queensland were under the name of *Aspidiotus camelliae*.

This species is common on a wide variety of cultivated plants and on them it has spread to many parts of the world. In some countries it is regarded as being of economic importance, more particularly on ornamental plants. In Queensland it is widely distributed on a great variety of host plants, both native and introduced, and is common in rain-forest areas as well as in those with a dry climate.

Hosts and distribution.—*Acacia linifolia* (Vent.) Willd., Brisbane, Aug. 1914 (H. Tryon). *Acacia* sp., Stanthorpe, 1911 (H. Tryon). *Archontophoenix cunninghamiana* (Wendl.) Wendl. & Drude, Tamborine Mt., May 1948. *Austromyrtus bidwillii* (Benth.) Burret, Beenleigh, May 1956. *Brachychiton discolor* F. Muell., Yarraman, July 1947. *Cedrela toona* Roxb. var. *australis* (F. Muell.) C.D.C., Tamborine Mt., Mar. 1948. *Celastrus bilocularis* F. Muell., Yarraman, July 1947. *Cinnamomum camphorae* (L.) Neds & Eberm., Brisbane, 1904-05* (H. Tryon). *Dendrobium bigibbum* Lindl. var. *phalenopsis* (Fitzg.) F. M. Bail., Brisbane, June 1950. *Diospyros pentamera* (Woolls & F. Muell.), Yarraman, July 1947. *Eriobotrya japonica* (Thunb.) Lindl., Brisbane, 1902-03*, Pialba, 1911-12* (H. Tryon). *Eugenia brachyandra* Maid. & Betche, Tamborine Mt., May 1950. *Ficus carica* L., Brisbane, 1910-11*, Pialba, 1911-12* (H. Tryon). *Ficus macrophylla* Desf., Brisbane, Nov. 1947. *Hypericum moserianum* André, Kenmore, June 1955 (R. P. Kleinschmidt). *Malus sylvestris* Mill., Coomera, 1897-98*, Tamborine Mt., 1897-98* (H. Tryon). *Musa acuminata* Colla, Dayboro, Dec. 1963. *Nerium oleander* L., Pittsworth, Nov. 1950 (A. W. S. May). *Persea americana* Mill., Bundaberg, Jan. 1950. *Planchonella australis* (R.Br.) Pierre, Tamborine Mt., Nov. 1953. *Plumeria* sp., Gladstone, May 1900 (H. Tryon). *Psidium guajava* L., Brisbane, 1896-97* (H. Tryon). *Pyrus communis* L., Brisbane, 1900, North Kolan, 1911-12*, Toowoomba, 1902-03*, Westbrook, Sept. 1911 (H. Tryon). *Salix babylonica* L., Kenmore, Mar. 1955 (R. P. Kleinschmidt). *Sechium edule* Sw., Brisbane, 1895-96* (H. Tryon). *Stenocarpus sinuatus* Endl., Tamborine Mt., Mar. 1948. *Tristania conferta* R.Br., Ashgrove, Aug. 1950; Tamborine Mt., Mar. 1948. *Vitis vinifera* L., Kilcoy, 1908-09* (H. Tryon).

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ADDENDUM

Information received from the Commonwealth Institute of Entomology, London, since this paper was submitted for publication shows that the species name *Aspidiotus hederæ* was not published by Vallot (1829) and that *Aspidiotus nerii* Bouché is the valid name for the species.

ERRATA

“STUDIES OF THE COCCOIDEA. 14. THE GENERA ASPIDIOTUS, DIASPIDIOTUS AND HEMIBERLESIA IN QUEENSLAND.” (Vol. 25:39-56).

The first reference on page 56 should read—

BRIMBLECOMBE, A. R. (1962).—Studies of the Coccoidea. 7. New designations of some Australian Diaspididae. *Qd J. Agric. Sci.* 15:59-94.
