

STUDIES OF THE COCCOIDEA.

3. THE GENERA CHENTRASPIS, CLAVASPIS, LINDINGASPIS AND MORGANELLA IN QUEENSLAND.

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SUMMARY.

The genera *Chentraspis*, *Clavaspis* and *Morganella* are represented in Queensland by the genotype only, while *Lindingaspis* is represented by three species. Each of these except two species of *Lindingaspis* is widely distributed. *Clavaspis herculeana* (Doane and Hadden), *M. longispina* (Morgan) and *L. rossi* (Maskell) are recorded from a variety of hosts and are of minor economic importance.

INTRODUCTION.

The taxonomic study of the Coccoidea in Queensland has enabled the determination of the distribution and host range of many of the species. Identifications have been made in the genera *Chentraspis*, *Clavaspis*, *Lindingaspis* and *Morganella*, and these species are dealt with below. The records given represent localities and hosts of Queensland material in the collection of this Department. Hosts are repeated only for different localities; likewise localities are repeated only for different hosts. Unless acknowledgement is given, the records are from collections made by the author. Relevant synonymy and literature references are listed for both the genera and species. Type locality and host records are also listed and for each species notes are given on the more outstanding structural features, host relationships and economic importance.

Genus **CHENTRASPIS** Leonardi.

1897—*Chentraspis* Leonardi: *Revista di Patologia Vegetale*: 6: p. 111.

Genotype.—*Aspidiotus unilobis* Maskell.

When this genus was established Leonardi included two species in it, viz. *Aspidiotus unilobis* Maskell and *A. extensus* Maskell. The latter, however, was removed by MacGillivray (1921, p. 392) and made the genotype of *Neoleonardia*. The genus *Chentraspis* remains monotypic and in distribution is confined to Australia.

Chentraspis unilobis (Maskell).

(Figs. 1-3.)

Synonymy.—

1894: *Aspidiotus unilobis* Maskell: Transactions of the New Zealand Institute: 27: p. 40.

1897: *Chentraspis unilobis* (Maskell): Leonardi: Revista di Patalogia Vegetale: 6: p. 111.

1897: *Aspidiotus (Chentraspis) unilobis* Maskell: Cockerell: United States Department of Agriculture: Technical Series No. 6: p. 27.

Type locality and host.—New South Wales: Blue Mountains on *Acacia* sp.

Other records.—*Melaleuca leucadendra* L. (sens. lat.), Brisbane, Jan. 1900 (H. Tryon), also Carbrook, Nov. 1949, Redland Bay, Jan. 1950, Woodstock, July 1950, and Ayr, Feb. 1953 (W. A. Smith). *Callistemon salignus* (Sm.) DC., Brookfield, Feb. 1947. *Callistemon viminalis* (Soland. ex Gaertn.) G. Don ex Loud., Brisbane, Apr. 1949.

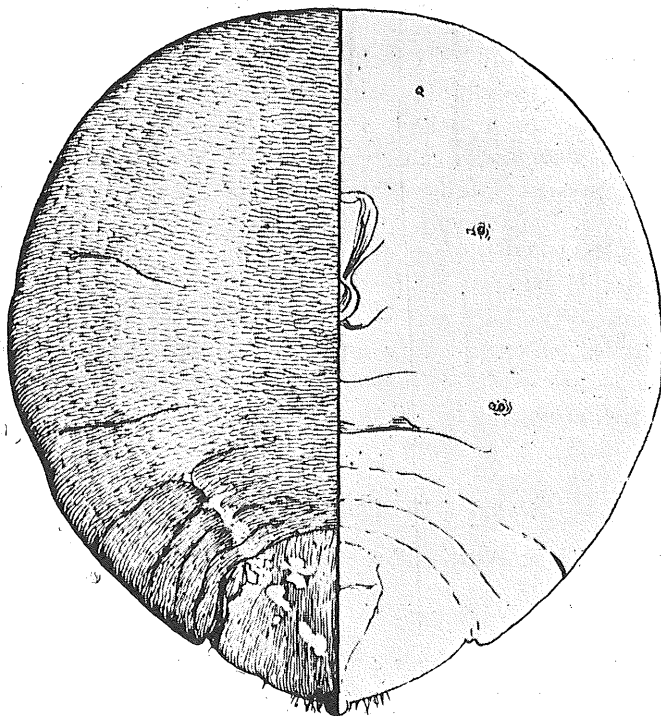


Fig. 1.

Chentraspis unilobis. Outline of body, showing dorsal and ventral surfaces.

[After Ferris.]

This species has been redescribed in detail by Morrison and Morrison (1922). The female scale is white, though usually dirty white, with yellow or orange coloured pellicles. The distinguishing microscopic feature of the adult female is the presence of the median lobes only, which are completely fused (Fig. 2).

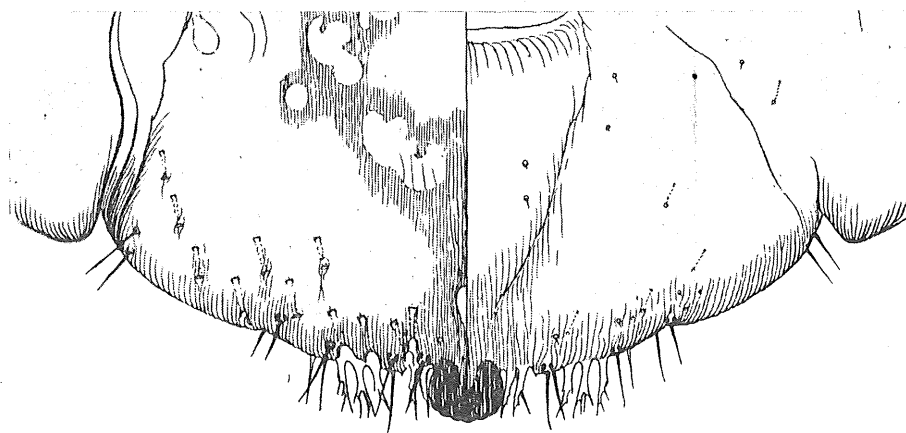


Fig. 2.

Chentraspis unilobis. Enlargement of pygidium, showing dorsal and ventral surfaces.

[After Ferris.]

The host genera, *Melaleuca* and *Callistemon*, are closely related in the family Myrtaceae, and the regular collection of the insect on these plants casts doubt on the host record of the type specimen. The hosts are widely distributed in Queensland, and probably, when further collections of the insect are made, its distribution will be equally wide. Incidentally, specimens have been examined on *Melaleuca leucadendra* from Koolpinyah, Northern Territory.

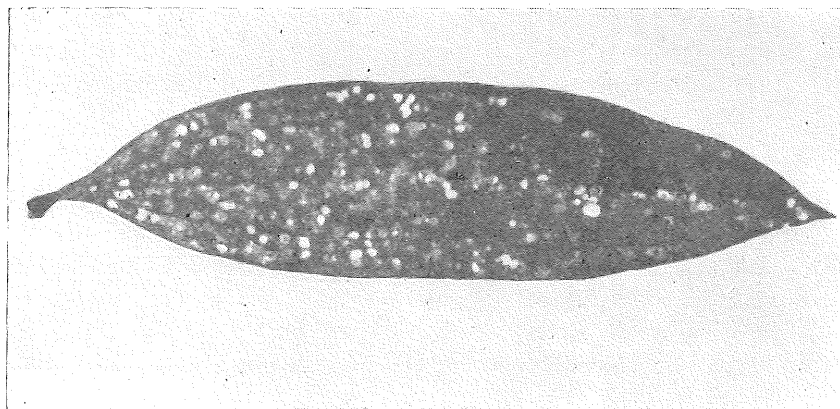


Fig. 3.

Chentraspis unilobis. Scales on leaf of *Melaleuca leucadendra*.

The insect occurs on foliage and twigs but normally not in dense populations (Fig. 3), and the health of infested trees is not affected.

Genus **CLAVASPIS** MacGillivray.

1921—*Clavaspis* MacGillivray: The Coccidae: p. 391.

Genotype.—*Aspidiotus subsimilis anonae* Houser.

=*Aspidiotus herculeanus* Doane and Hadden.

The genus *Clavaspis* as established by MacGillivray contained two species, viz. *C. anonae* (Houser) and *C. herculeana* (Doane and Hadden), the former from Florida and Cuba and the latter from the Society Islands. These have been determined as synonyms and 10 other species from North America have been added (Ferris 1938a and 1942, pp. 31-2, and 1954). Only the genotype is known to occur in Queensland.

Clavaspis herculeana (Doane & Hadden).

(Figs. 4-6.)

Synonymy.—

1909: *Aspidiotus herculeanus* Doane and Hadden: The Canadian Entomologist: 41: p. 298.

1918: *Aspidiotus subsimilis* var. *anonae* Houser: Annals of the Entomological Society of America: 11: p. 163.

1921: *Clavaspis herculeana* (Doane and Hadden): MacGillivray: The Coccidae: p. 441.

1921: *Clavaspis anonae* (Houser): MacGillivray: The Coccidae: p. 441.

1941: *Clavaspis herculeana* (Hadden): Ferris: Microentomology: 6: p. 44.

Type locality.—Society Islands.

Other records.—*Erythrina* sp., Queensland, prior 1900 (H. Tryon). *Eriobotrya japonica* (Thunb.) Lindl., Pinalba, Apr. 1912 (H. Tryon). *Cedrela toona* Roxb. var. *australis* (F. Muell.) C. DC., Imbil, Jan. 1938. *Cajanus cajan* (L.) Millsp., and *Ficus carica* L., Ipswich, May, 1944 (J. P. Kahler). *Ficus carica* L., Sunnybank, Aug. 1944. *Carica papaya* L., Rochedale, Apr. 1950.

This insect is listed overseas from Florida, Cuba, Peru, Texas, Panama and Mauritius (Ferris 1942).

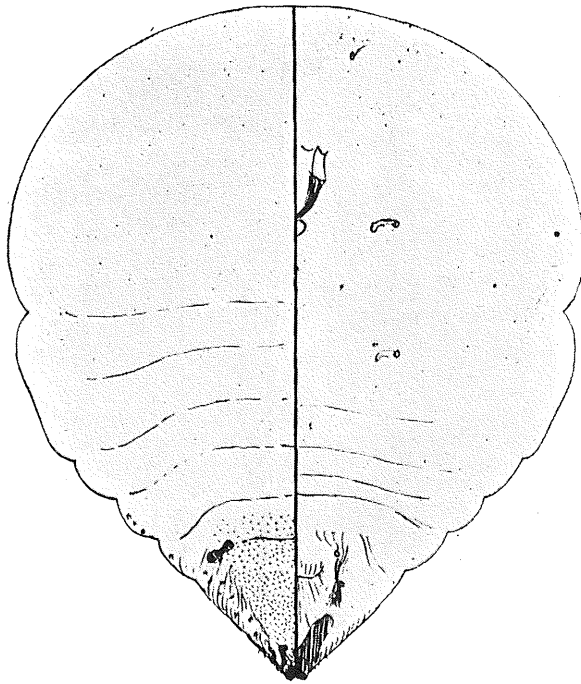


Fig. 4.

Clavaspis herculeana. Outline of body.

[After Ferris.]

The female scale is dark grey and the pellicles are greyish black. The distinguishing microscopic features of the adult female are the presence of median lobes only and a pair of large clubbed paraphyses (Fig. 5).

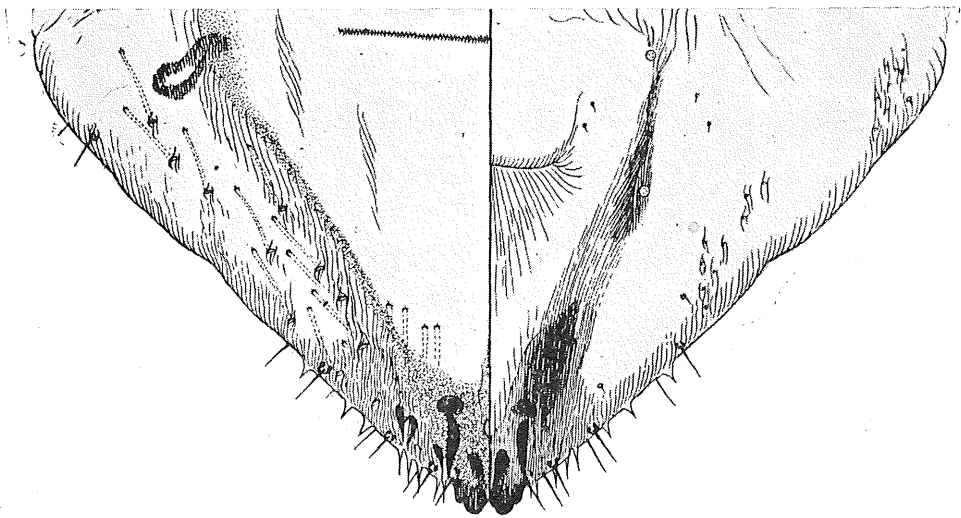


Fig. 5.

Clavaspis herculeana. Enlargement of pygidium.

[After Ferris.]

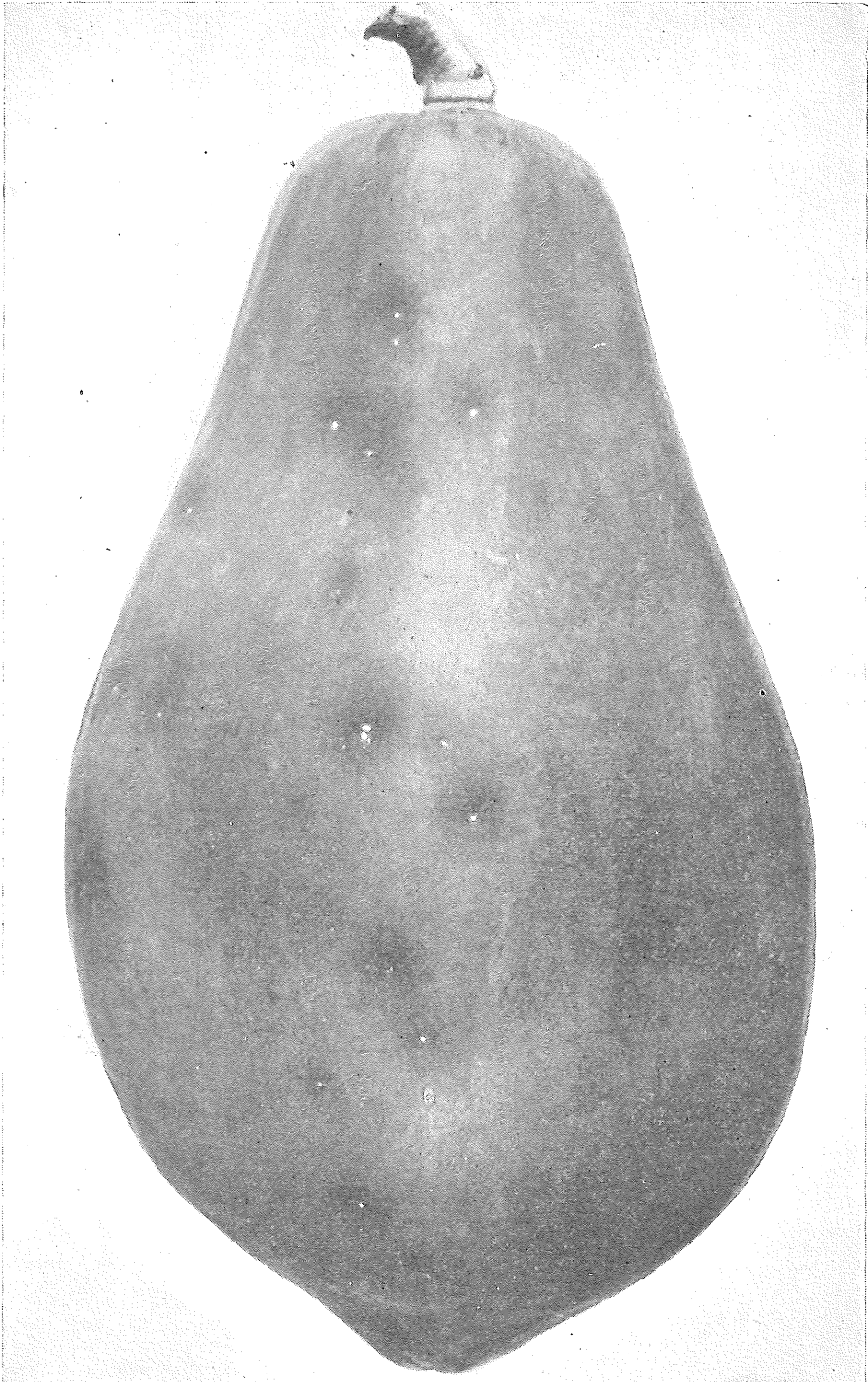


Fig. 6.

Clavaspis herculeana. Scales on papaw fruit.

The variety and distribution of the host species suggest that the insect is more widely spread than is indicated by the present records.

The insects normally are in sparse populations but infestations on the cultivated fig and papaw fruit (Fig. 6) are evidence of pest potential.

Genus **LINDINGASPIS** MacGillivray.

1921—*Lindingaspis* MacGillivray: The Coccidae: p. 388.

Genotype.—*Melanaspis samoana* Lindinger.

The genus as established by MacGillivray contained only the genotype. A number of species have since been added, and McKenzie (1950), when reviewing the species referable to it, retained 16 names as valid. These show the genus to be widely distributed. Eight of the species were described from Pacific countries, six from Indian Ocean regions and two from Atlantic regions. All three species described from Australia occur in Queensland.

Lindingaspis neorossi McKenzie.

(Figs. 7-9.)

1950—*Lindingaspis neorossi* McKenzie: Microentomology: 15: p. 102.

Type locality.—New South Wales: Sydney.

Other record.—*Xanthorrhoea* sp., Mount Morgan, Aug. 1954 (T. Passlow).

The colour of the female scale is brownish black. Three small plate projections anterior to the third lobe distinguish the adult females (Fig. 8). The insects were crowded along the extremely long linear leaves of the host, and although adult females were normally circular, the narrowness of the leaves imposed an oval shape on many individuals.

Lindingaspis rossi (Maskell).

(Figs. 10-12.)

Synonymy.—

1890: *Aspidiotus rossi* Maskell: Transactions of the New Zealand Institute: 23: p. 3.

1897: *Aspidiotus (Chrysomphalus) rossi* Maskell: Cockerell: United States Department of Agriculture: Technical Series No. 6: p. 27.

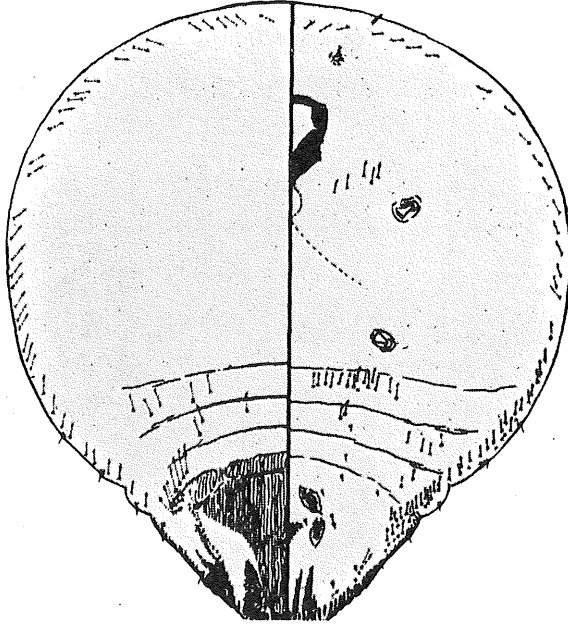


Fig. 7.

Lindingaspis neorossi. Outline of body.

[After McKenzie.]

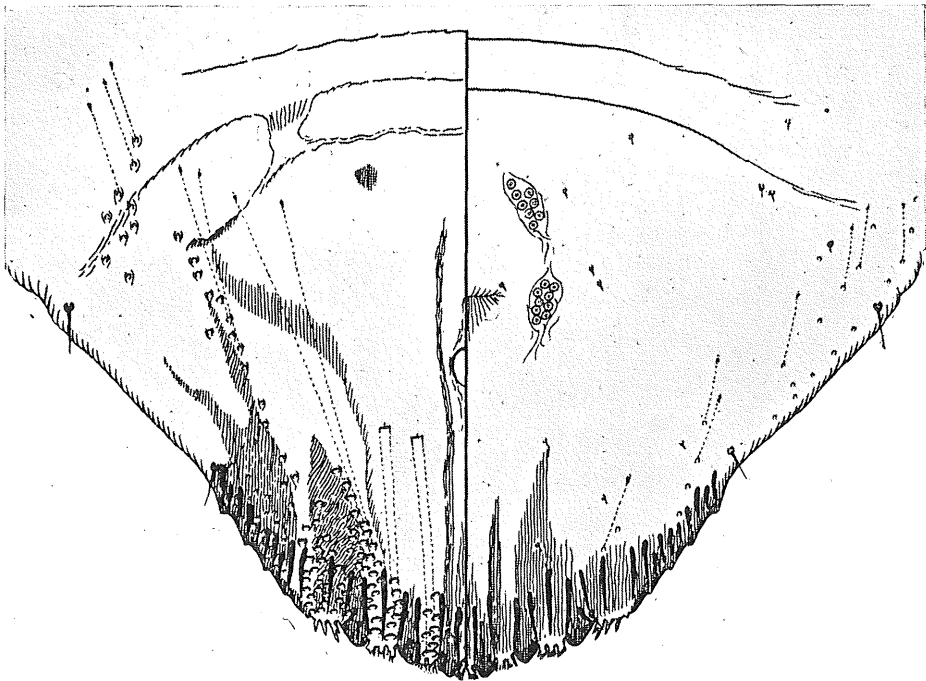


Fig. 8.

Lindingaspis neorossi. Enlargement of pygidium.

[After McKenzie.]

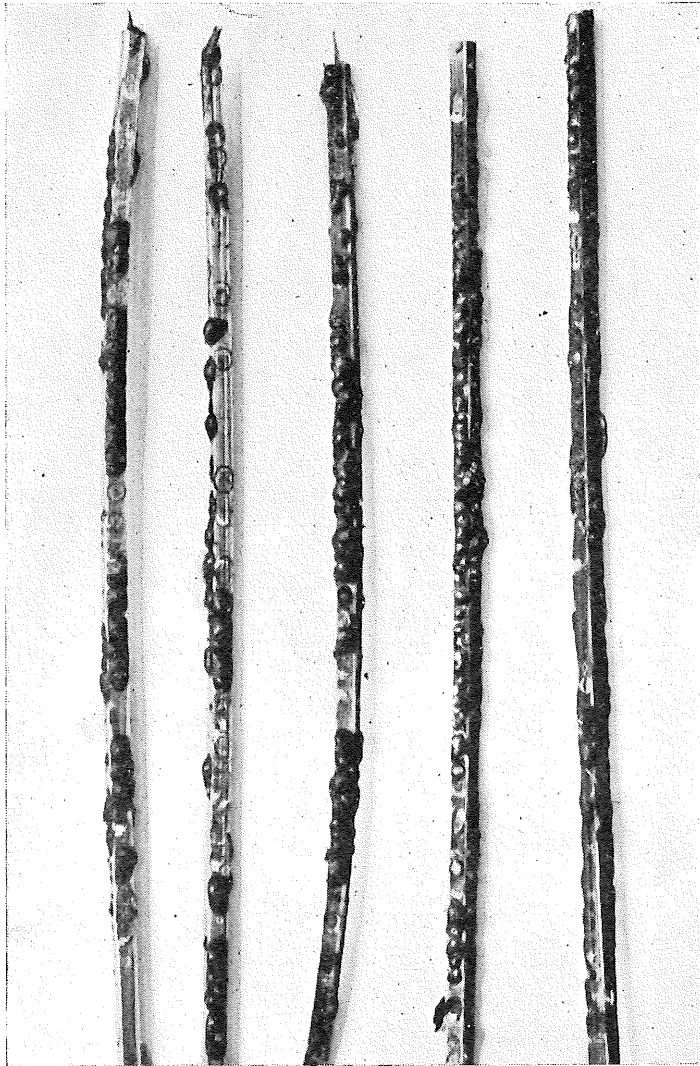


Fig. 9.

Lindingaspis neorossi. Scales on *Xanthorrhoea* sp.

1898: *Chrysomphalus rossi* (Maskell): Leonardi: *Revista di Patologia Vegetale*: 7: p. 202.

1938: *Lindingaspis rossi* (Maskell): Ferris: *Atlas of the Scale Insects of North America*: Second Series No. 246.

Type locality and host.—The type material was stated to be “very common about Adelaide, Melbourne and Sydney (Australia) on almost every kind of plant.”

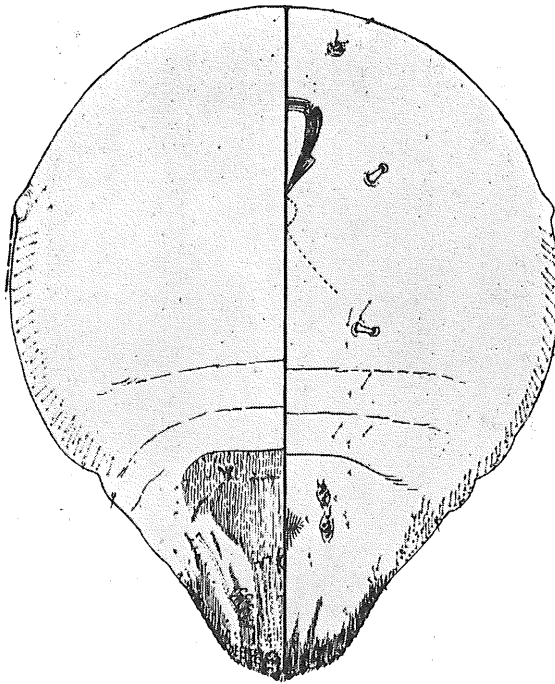


Fig. 10.
Lindingaspis rossi. Outline of body.

[After McKenzie.]

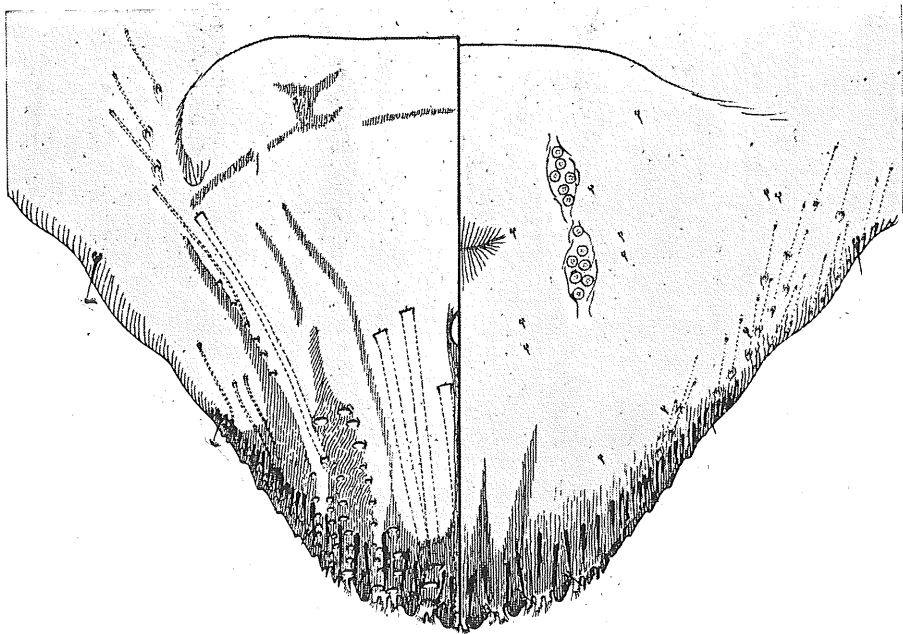


Fig. 11.
Lindingaspis rossi. Enlargement of pygidium.

[After McKenzie.]

Other records.—A palm, Brisbane, Nov. 1899 (H. Tryon). *Tristania suaveolens* (Gaertn.) Sm., Rosewood, Nov. 1900 (H. Tryon). *Olea europaea* L., Blackall Ra., Sept. 1901 (H. Tryon), and Sunnybank, Mar. 1948. Cultivated plants, Enoggera, 1905 (H. Tryon). *Acacia cunninghamii* Hook., Enoggera, Nov. 1910, and Sunnybank Aug. 1914 (H. Tryon), also Moggill, May 1950, and Ormiston, Aug. 1950, and Ayr, Nov. 1953 (W. A. Smith). *Nerium oleander* L., Brisbane, Sept. 1915 (H. Tryon), also Pittsworth, Nov. 1950 (A. W. S. May), Gatton, Feb. 1953 (R. B. Wells), and Charleville, Sept. 1954. *Araucaria cunninghamii* D. Don, Brisbane, Sept. 1946, also Goodnight Scrub, Aug. 1939, and Imbil, Aug. 1942, also Ayr, Nov. 1953 (W. A. Smith). *Melaleuca leucadendra* L. (sens. lat.) Redland Bay, Aug., 1937, and Ormiston, Aug. 1950, also Ayr, Apr. 1951 (W. A. Smith). *Acacia penninervis* Sieb. ex DC., Mt. Gravatt, Oct. 1939 (W. A. Smith). *Eucalyptus resinifera* Sm., Samford, Dec. 1939. *Persea americana* Mill., Yarwun, Feb., 1940. *Eucalyptus siderophloia* Benth., North Aramara, May 1940. *Pinus taeda* L., Beerwah and Glasshouse Mt., Aug. 1940. *Dendrobium kingianum* Bidw., Brisbane, Apr. 1941. *Owenia venosa* F. Muell., Imbil, Aug. 1942. *Xanthorrhoea* sp., Brisbane, Mar. 1943, and Beerwah, May 1944. *Podocarpus elatus* R. Br. ex Mirbel, Brisbane, Mar. 1943. *Leptospermum citratum* Chall., Penf. and Cheel., Beerwah, May 1944. *Hedera helix* L., Brisbane, Apr. 1946, also Toowoomba, Nov. 1950 (A. W. S. May). *Mangifera indica* L., Brisbane, May 1946. *Callistemon salignus* (Sm.) DC., Brookfield, Feb. 1947. *Diploglottis australis* (G. Don) Radlk., Yarraman, July 1947. *Alstonia constricta* F. Muell., Yarraman, Aug. 1947. *Cupaniopsis anacardioides* (A. Rich.) Radlk., Yarraman, Aug. 1947, and Brisbane, May 1949. *Macadamia ternifolia* F. Muell., Nambour, Sept. 1947, Gayndah, Oct. 1947, Tamborine Mt., Apr. 1948, Brisbane, Sept. 1949, Dagon, Sept. 1950, and Sunnybank, Feb. 1952. *Banksia integrifolia* L.f., Tugun, Aug. 1947. *Erémocitrus glauca* (Lindl.) Swingle, Biloela, Oct. 1947. *Acacia fimbriata* A. Cunn. ex G. Don, Brisbane, Jan. 1947. *Buckinghamia celsissima* F. Muell., Brisbane, 1947. *Alectryon connatus* (F. Muell. ex Benth.) Radlk., Imbil, 1947. *Croton acronychioides*, F. Muell., Yarraman, July 1947. *Mallotus philippinensis* (Lamk.) Muell. Arg., Yarraman, Nov. 1947. *Tristania conferta* R.Br., Brisbane, Feb. 1948. *Eugenia coolminiana* C. Moore, Tamborine Mt., Mar. 1948. *Stenocarpus sinuatus* Endl., Tamborine, Mar. 1948. *Araucaria hunsteini* K. Schum., Tolga, Apr. 1948 (W. A. Smith). *Camellia japonica* L., Brisbane, Jan. 1948. *Cleistanthus cunninghamii* Muell. Arg., Brisbane, Feb. 1948. *Araucaria bidwillii* Hook., Imbil, Feb. 1937 and Brisbane, Apr. 1948. *Pleiococca wilcoxiana* F. Muell., Yarraman, Aug. 1948. *Callistemon viminalis* (Soland. ex Gaertn.) G. Don ex Loud., Brisbane, Apr., 1949, also Charlwood, Oct., 1953. *Araucaria excelsa* R.Br., Coolangatta, June 1949. *Loranthus alyxifolius* F. Muell. ex Benth. Yarraman, Sept. 1949. *Callicoma serratifolia* Andr., Springbrook, Jan. 1950. *Lomandra longifolia* Labill., Ipswich, Nov. 1952 (A. W. S. May). *Bologhia lucida* Endl., Yarraman, Mar., 1952, also Toowoomba, Sept. 1952 (A. W. S. May). *Celastrus bilocularis* F. Muell., Yarraman, Mar. 1952. *Dysoxylum* sp., Imbil, Apr. 1953. *Hovea longifolia* R.Br., Moggill, Sept. 1953. *Acacia*

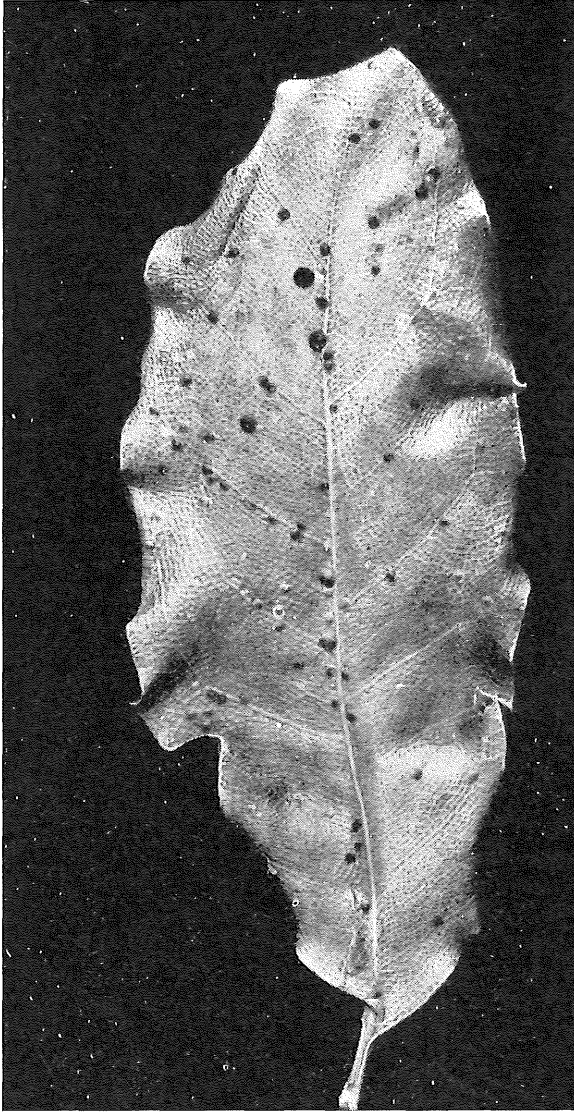


Fig. 12.

Lindingspis rossi. Scales on *Macadamia ternifolia*.

aulacocarpa A. Cunn. ex Benth., Kenmore, Oct. 1953. *Capparis mitchellii* Lindl., Inglewood, Oct. 1954. *Pandanus pedunculatus* R.Br., Tugun, May, 1953. *Euonymus* sp., Stanthorpe, Aug. 1953. (A. W. S. May).

This species has been recorded from a variety of plants in other Australian States and is now known to occur in most countries bordering the Pacific and Indian Oceans. Several authorities have redescribed it, the latest being McKenzie (1950).

The female scale is flat and circular in shape and varies in colour from pale slaty-grey through dark-brown to black. These features are usually sufficient identification. However, the adult females are characterised by a fimbriate plate anterior to the third lobe (Fig. 11). The insects normally occur in sparse populations on the leaves of the hosts, more particularly on the upper surface (Fig. 12). While this species is one of the commonest in Queensland, parasites normally prevent it from becoming a troublesome pest.

***Lindingaspis victoriae* (Cockerell).**

(Figs. 13-15.)

Synonymy.—

1899: *Chrysomphalus rossi* var. *victoriae* Cockerell: The Victorian Naturalist: 16: p. 8.

1950: *Lindingaspis victoriae* (Cockerell): McKenzie: Microentomology: 15: p. 107.

Type locality and host.—Victoria: Bacchus Marsh on *Eucalyptus globulus*.

Other records.—*Acacia penninervis* Sieb. ex DC., and *Eucalyptus* sp., Brisbane, Sept. 1915 (H. Tryon).

The present records apparently are the only ones in addition to that of the type material. The distance between the two localities suggests that the species is probably widely distributed, but perhaps in small populations. The female scale of this species is brownish-black. Adult females are distinguished by the reduced and branched plate anterior to the third lobe (Fig. 14).

The insects occur on both leaves and twigs, apparently in sparse populations.

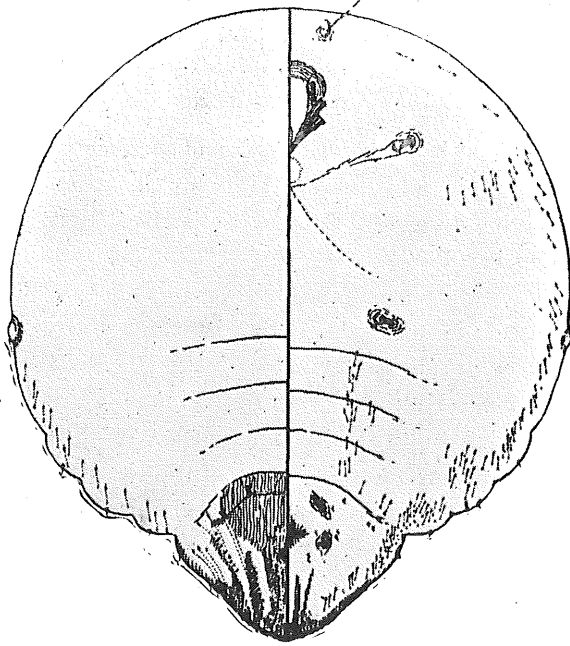


Fig. 13.

Lindingspis victoriae. Outline of body.

[After McKenzie.]

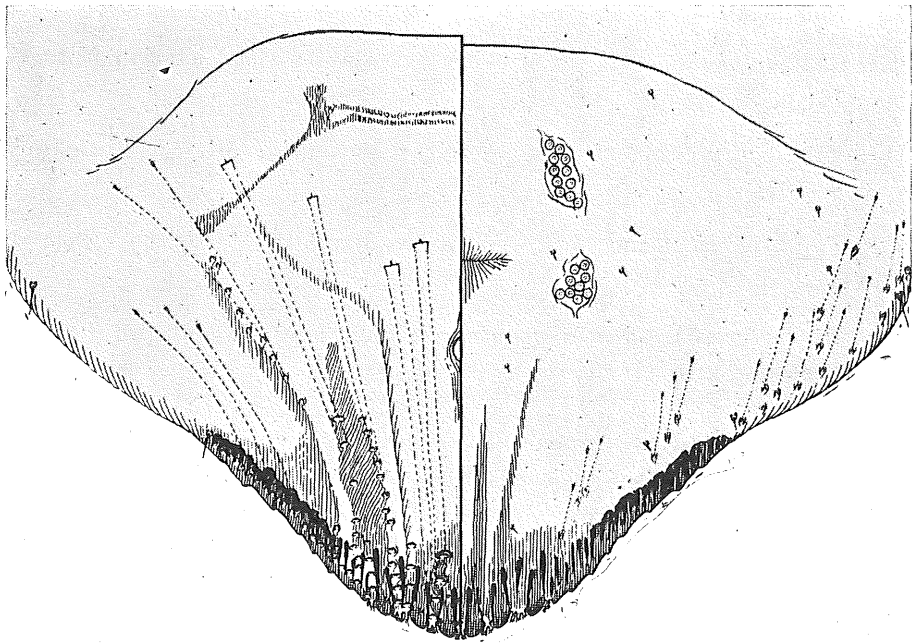


Fig. 14.

Lindingspis victoriae. Enlargement of pygidium.

[After McKenzie.]



Fig. 15.

Lindingspis victoriae. Scales on twigs of *Eucalyptus* sp.

Genus **MORGANELLA** Cockerell.

1897—*Aspidiotus (Morganella) Cockerell*: United States Department of Agriculture: Technical Series No. 6: p. 22.

1921—*Morganella* Cockerell: MacGillivray: The Coccidae: p. 389.

Genotype.—*Aspidiotus (Morganella) maskelli* Cockerell
= *Aspidiotus longispinus* Morgan.

When Cockerell established *Morganella* as a subgenus he listed two species, namely *maskelli* and *longispina*. In the same year Maskell described *ornatus* as a variety of *longispinus*. These three names have since been regarded as referring to the same insect (Ferris 1938b). Consequently the genus contains one species which occurs in Queensland.

Morganella longispina (Morgan).

(Figs. 16-18.)

1889: *Aspidiotus longispinus* Morgan: Entomological Monthly Magazine: 25: p. 352.

1897: *Aspidiotus longispinus* var. *ornatus* Maskell: Transactions of the New Zealand Institute: 30: p. 225.

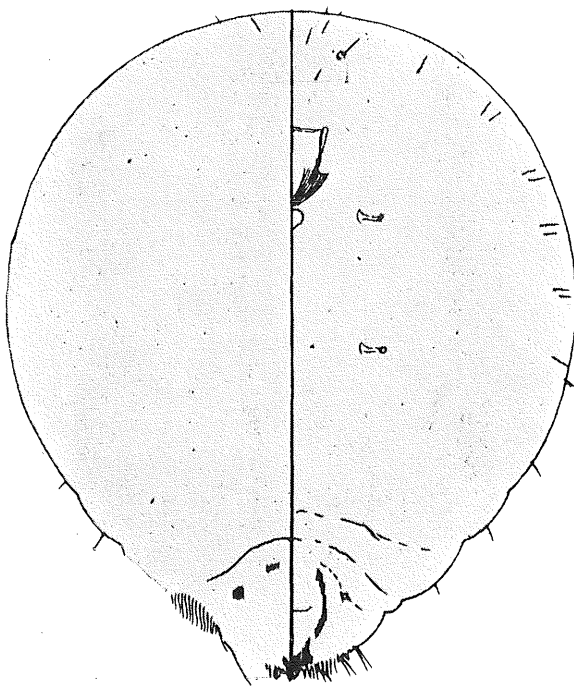


Fig. 16.

Morganella longispina. Outline of adult female.

[After Ferris.]

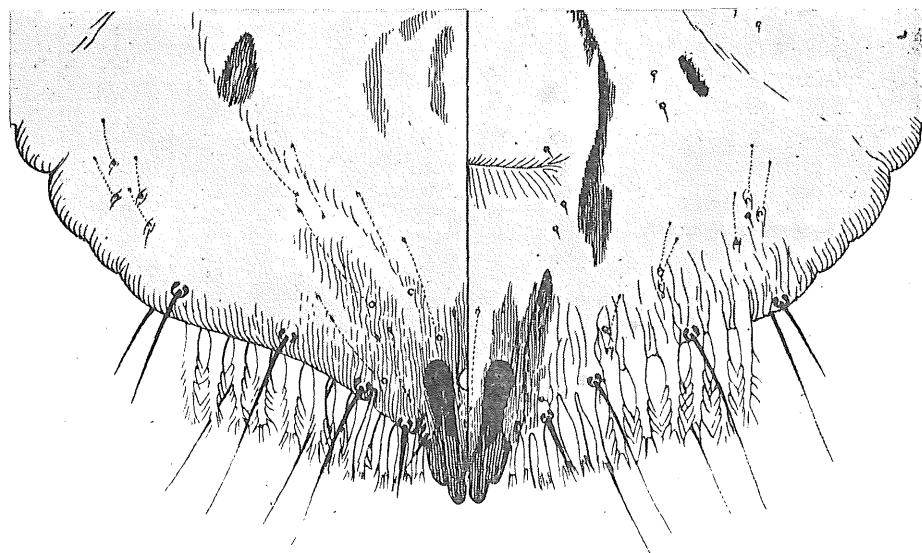


Fig. 17.

Morganella longispina. Enlargement of pygidium.

[After Ferris.]

- 1897: *Aspidiotus (Morganella) maskelli* Cockerell: United States Department of Agriculture: Technical Series No. 6: p. 22.
- 1897: *Aspidiotus (Morganella) longispinus* Morgan: Cockerell: United States Department of Agriculture: Technical Series No. 6: p. 24.
- 1897: *Hemiberlesia longispina* (Morgan): Leonardi: Revista di Patologia Vegetale: 6: p. 120.
- 1921: *Morganella longispina* (Morgan): MacGillivray: The Coccidae: p. 426.

Type locality and host.—Demarara, Sandwich Is., on *Cupania sapida*.

Other records.—*Ligustrum sinense* Lour., Brisbane, Aug. 1914 (H. Tyron). *Ficus carica* L., Brisbane, Apr. 1933, and Sunnybank, Mar. 1934. *Cedrela toona* Roxb. var. *australis* (F. Muell.) C.D.C., Imbil, May 1934. *Carica papaya* L., Cleveland, July 1940. *Macadamia ternifolia* F. Muell., Amamoor, Aug. 1941. *Nerium oleander* L., Brisbane, Jan. 1945. *Ficus macrophylla* Desf., Brisbane, June 1947. *Alectryon connatus* (F. Muell. ex Benth.) Radk., Yarraman, Aug. 1947.

This species is known to occur also in South Africa, Brazil, Algeria, Mauritius, Ceylon, New Zealand, Hawaii, and West Indies.

The scale is light to dark grey in colour, and fairly convex. Like *Chentraspis* and *Clavaspis* the adult female has only the median pair of lobes but the accompanying large plates enable ready recognition (Fig. 17).

Occurrence is normally on the twigs of the host plants. The insects sometimes are in dense populations (Fig. 18) and their presence on the cultivated fig has warranted control measures.

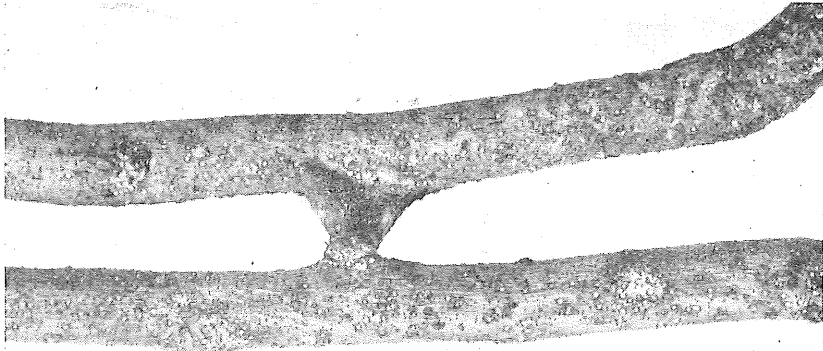


Fig. 18.

Morganella longispina. Scales on *Cedrela toona* var. *australis*.

ACKNOWLEDGEMENTS.

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