Hydnaceae of New Zealand

Part II.—The Genus *Odontia*

By G. H. CUNNINGHAM

Abstract

Odontia is treated as the seventh genus of the family Hydnaceae present in New Zealand. Twenty-five species are recognized. A detailed description of each is given, accompanied by notes on distribution, hosts and comparative features. A diagnostic key to species is appended and all are illustrated with original line drawings of transverse sections and photographs of selected species.

Fourteen new species are described, descriptions being accompanied by formal Latin diagnoses. Species previously named and redescribed in detail are *O. archeri* (Berk.) Wakef., *O. arguta* (Fr.) Quel., *O. barba-jovis* (With.) Fr., *O. bicolor* (A. & Sw.) Bres., *O. calcarea* (Cke. & Mass.) G. H. Cunn., *O. crustosa* (Pers.) Quel., *O. fimbriata* Pers. ex Fr., *O. hydnoides* (Cke. & Mass.) Hoehn., *O. lyndoniae* Reid, *O. scopinella* (Berk.) Cke. and *O. subfascicularia* (Wakef.) G. H. Cunn.

Of these *O. arguta, O. barba-jovis, O. bicolor, O. crustosa, O. fimbriata* and *O. hydnoides* are found in Europe, Great Britain and North America, *O. arguta* extending also to Australia and *O. fimbriata* to Samoa; *O. archeri* is recorded from North America, Cuba, Ceylon and Australia; and *O. calcarea, O. lyndoniae, O. scopinella* and *O. subfascicularia* were named from Australian collections.

INTRODUCTION

As delimited herein *Odontia* contains those resupinate species of the family which bear cystidia. It is a heterogenous genus containing several groups of related species, inclusion of species depending upon interpretation of what are termed cystidia. About 80 species have been described; but the number is uncertain owing to the various interpretations of generic features employed by various authors. The genus contains the largest number of species of those included in the family, found in New Zealand. Features of value in specific delimitation are defined below.

HYMENOPHORE. Fructifications are effused upon the substratum, usually forming plane areas from the surface of which arise the spines. Most are coloured white or cream, shading through alutaceous to light tints of brown. Few are noteworthy because of marked features of surface colouring or configuration. Many extend as an even sheet over the substratum, save for the spines, others are deeply areolately creviced, as in *O. calcarea* and *O. subscopinella.* In *O. nothofagi* the surface is ferruginous with ferruginous spines, and plants possess a roughly orbicular outline.

Most species are annual, with one layer of context tissue; in *O. stratosa* and *O. tessellata* fructifications consist of several well defined layers indicating several periods of growth.

Margins in most species are somewhat similar, thinning out and becoming fibrillose and in colour white or pallid cream. In *O. tessellata* the margin is abrupt and cliff-like, thick and dark in colour.

CONTEXT. In most species the context is composed of an intermediate layer of intertwined or upright hyphae arising from a basal layer of mainly parallel hyphae either well developed or reduced to a few repent hyphae. Hyphae may be naked, the common condition, or encrusted with calcium crystals; and may enclose masses of crystals so that tissues appear cretaceous, as in *O. calcarea, O. crustosa* and *O. stratosa.*

An intermediate layer is wanting in *O. flexibilis, O. fragilis, O. hydnoides* and *O. subfasciculariа,* the hymenial layer arising directly from the basal layer which in *O. hydnoides* is compacted into a pseudoparenchyma. The context of most species is membranous with soft flaccid tissue sectioned readily with a razor. Seven species possess a ceraceous context; *O. nothofagi* is coriaceous and *O. calcarea, O. columellifera, O. fimbriata* and *O. stratosa* are cretaceous because of masses of embedded calcium crystals.

All species examined possess a monomitic hyphal system, composed of generative hyphae alone. Hyphae are usually hyaline, seldom coloured brown, freely branched and septate. Clamp connexions are present in all species present in New Zealand save *O. hydnoides.*

SPINES. Most spines are small, seldom exceeding 0.25 mm tall, and in shape conical or dome-shaped with apices usually penicillate with tufts of projecting encrusted hyphae. In some species spines are well developed, usually discrete, range in length from 1 to 4 mm, and are usually aculeate or subulate. Largest are those of *O. nothofagi,* in which spines attain a length of 10 mm. Spines usually show a structure similar to the context tissues lying between them. The axis is composed of parallel hyphae from which arise the palisade hymenial layer often associated with various ancillary organs. In some species the spine axis is almost filled with encrusted or naked cystidia. Apices are usually tufted, either with fascicles of projecting encrusted hyphae or of projecting apices of cystidia.

HYMENIAL LAYER. This consists of a palisade of basidia and paraphyses often associated with ancillary organs such as cystidia or paraphysate hyphae.

Basidia are commonly subclavate, clavate in a few species, and bear two to four spores on brief terminal sterigmata. They seldom exhibit any noteworthy feature save in point of size. Paraphyses resemble basidia in shape, differing only in being shorter, slightly narrower, and sterile.

Spores are useful aids in specific diagnosis. In shape they may be elliptical, obovate, oval, subglobose, globose, suballantoid or allantoid. Largest are those of *O. lyndoniae* (7–10 x 5·5–6·5μ), smallest those of *O. oleifera* (2·5–3 x 2–2·5μ). Spores are smooth in all species save *O. verruculosa,* in which walls are finely somewhat sparsely verruculose.

ANCILLARY ORGANS. Four types of cystidia are present in different species of the genus. In one section, of which examples are *O. calcarea* and *O. crustosa,* and which contains the greatest number of species, cystidia are composed of bundles of hyphae which traverse axes of spines and form tufts at their apices. Exposed walls are encrusted with calcium crystals and, on this account, these fascicled hyphae are loosely termed cystidia though bearing slight resemblance to cystidia of such species as *O. hydnoides.* Crystals of *O. verruculosa* are fused into sheaths which enclose the hyphae of axes of spines; and in *O. columellifera, O. lutea* and *O. subfasciculariа* crystals and hyphae become compacted into solid columns which occupy spine axes and sometimes project from spine apices.

In a second section cystidia are fusiform with walls encrusted and pedicels naked, typical of the pedicellate section of *Peniophora.* They form the greater part of the spines of *O. fimbriata* and *O. hydnoides* and also occupy most of the hymenial layer. Cystidia of *O. nothofagi* are arranged at right angles to spine axes. In *O. tessellata* crystals form large aggregates upon the upper part of otherwise naked cylindrical cystidia; and in *O. arguta* cystidia are small and spathulate, arise in great numbers from walls of hyphae of the context as well as from terminal ends of paraphysate hyphae.

A third section contains species in which cystidia are long, cylindric-flexuous and occupy the greater part of spine axes. They are encrusted for the greater part of their length with projecting apices usually naked. *O. archeri, O. lyndoniae, O. novaezealandiae* and *O. oblongospora* are representative members.

O. barba-jovis bears naked cystidia which occupy spine axes, project for about half their length, and have walls thickened basally but becoming progressively thinner towards the apices. A second species of this last section, *O. oleifera,* bears naked cystidia which traverse spines and have ends turned at right angles to penetrate the hymenial layer. They contain globules which are highly refractive under a microscope.

SEPTOCYSTIDIA. In *O. hydnoides* numerous septocystidia project from spine apices. They are heavily encrusted and 3–5 septate.

VESICLES. The context of *O. bicolor* bears numerous vesicles which stain readily in aniline blue and are therefore conspicuous in sections. Each consists of a small globose vesicle enclosed in a much larger depressed-globose one. Vesicles of *O. vesiculosa* are much smaller, subglobose or pyriform in shape, and confined to hyphae of the intermediate layer in the base of spines.

GLOEOCYSTIDIA. Clavate in *O. calcarea,* gloeocystidia are capitate in *O. capitata.* In both they are abundant and conspicuous as contents stain with aniline blue. In *O. subscopinella* they are flexuous-cylindrical, rare and scattered and confined to the hymenial layer.

7. **Odontia** Persoon ex Gray, Natural Arrangements of British Plants, *1,* 651, 1821.
(*Odontia* Pers., Obs. Myc., *1,* 88, 1796.)
Dacryobolus Fr., Summa Veg. Scand., 404, 1849.
Grandiniella Karst., Hedw., *34,* 8, 1895.
Kneiffiella Underw., Bull. Torrey Bot. Club, *24,* 205, 1897.
Neokneiffia Sacc., Tab. Com. Gen. Fung., 11, 1898.
Pycnodon Underw., Bull. Torrey Bot. Club, *25,* 431, 1898.
Etheirodon Banker, Bull, Torrey Bot. Club, *29,* 441, 1902.
Hydnopsis Rea, Brit., Basid., 650, 1922.

Hymenophore annual or perennial, resupinate, effused, bearing spines which may be subulate, conical or tuberculate, with apices naked or bearing fascicles of encrusting cystidia. Context membranous, ceraceous or cretaceous, composed of an intermediate layer of intertwined hyphae (which may be absent) and a basal layer of parallel hyphae; hyphal system monomitic; generative hyphae with walls hyaline, seldom coloured, naked or encrusted, branched, septate, with or without clamp connexions. Cystidia either in the form of encrusted hyphae arranged in fascicles at apices of spines, fusiform and encrusted, cylindrical and encrusted, or cylindrical and naked; gloeocystidia and vesicles present in a few species. Hymenial layer composed of basidia, paraphyses and sometimes paraphysate hyphae. Basidia subclavate or clavate, bearing 2–4 spores on erect sterigmata. Spores globose, subglobose, obovate, oval, elliptical, suballantoid or allantoid, walls hyaline, verruculose or smooth.

TYPE SPECIES. *Odontia fimbriata* Pers. ex Fr.

DISTRIBUTION. World-wide.

KEY TO SPECIES

1. Cystidia either in the form of projecting hyphae crowded into fascicles forming penicillate apices of the spines with calcium crystals attached to some or all of the exposed surfaces, or hyphae becoming cemented by masses of crystals into a central column in spine axes; spines usually small, conical or tuberculate, less than 0.5 mm tall with fascicles of encrusted hyphae between.
2. Gloeocystidia present.
3. Gloeocystidia clavate, 24–35 x 7–9μ; spores elliptical, 6–6.5 x 3–3.5μ; producing a pocket rot — 1. *O. calcarea* (C. & M.) G. H. Cunn.

3. Gloeocystidia flexuous-cylindrical, 65–80 x 5–6μ; spores broadly elliptical, 5–6 x 3.5–4.5μ; producing a white rot ....
3. Gloeocystidia cylindrical with capitate apices, 30–50 x 5–6μ, with apices inflated to 12 μ; spores broadly elliptical, 5–6 x 4–4.5μ
2. Gloeocystidia absent.
3. Vesicles present in the context, subglobose or pyriform, with long pedicels, 6–9μ diameter; spores elliptical, 5–5.5 x 3–3.5μ .....
3. Vesicles absent.
4. Hyphae of fascicles at apices of spines remaining distinct.
5. Paraphysate hyphae present and usually abundant.
6. Paraphysate hyphae cylindrical, some slightly expanded at apices.
7. Spores broadly elliptical, 5–6 x 3.5–4.5μ; walls of context hyphae to 1μ thick, naked and glassy ....
7. Spores allantoid, 5–6 x 1–1.5μ walls of context hyphae to 0.5μ thick, naked and glassy .....
6. Paraphysate hyphae fusiform, some inflated and slightly capitate, many encrusted; spores elliptical, 4.5–6 x 2.5–3.5μ; walls of context hyphae 0.2μ thick, encrusted ....
5. Paraphysate hyphae absent.
6. Spores smooth.
7. Spores elliptical, 5–5.5 x 3–3.5μ; hyphae of context encrusted and embedding masses of crystals, arranged in two to five layers ....
7. Spores allantoid, 5–6 x 1–1.5μ; hyphae of context naked and not embedding crystals, arranged in one layer .....
6. Spores verruculose, obovate, 4–5.5 x 3–3.5μ; hyphae of context enclosed in sheaths of fused crystals, sheaths 8–10μ diameter ....
4. Hyphae of fascicles embedded in crystals fused into columns projecting to 60μ.
5. Hymenial surface alutaceous to fuscous; spores allantoid, 4–5 x 1.5–2μ ....
5. Hymenial surface chrome yellow; spores elliptical, 5–6 x 2.5–3μ
5. Hymenial surface alutaceous or tan; spores elliptical, 5–6 x 2.5–3μ
1. Cystidia differing from those of the penicillate section because of size, shape, and/or arrangement.
2. Cystidia wholly or in part encrusted with hyaline crystals.

2. *O. subscopinella* G. H. Cunn.

3. *O. capitata* G. H. Cunn.

4. *O. vesiculosa* G. H. Cunn.

2. *O. subscopinella* G. H. Cunn.

5. *O. scopinella* (Berk.) Cke.

6. *O. crustosa* (Pers.) Quel.

7. *O. stratosa* G. H. Cunn.

5. *O. scopinella* (Berk.) Cke.

8. *O. verruculosa* G. H. Cunn.

9. *O. subfasciculatia* (Wakef.) G. H. Cunn.

10. *O. lutea* G. H. Cunn.

11. *O. columellifera* G. H. Cunn.

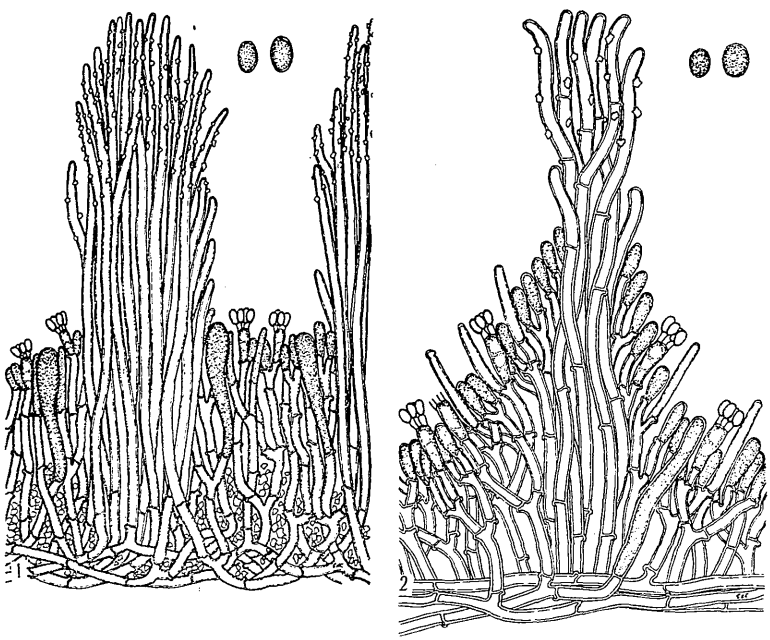
3. Cystidia fusiform.
   4. Septocystidia present, cylindrical, 40–70 x 8–12μ; cystidia 16–55 x 8–16μ; spores allantoid, 3–3.5 x 1–1.25μ; hyphae without clamp connexions ..... 12. *O. hydnoides* (C. & M.) Hoehn.
   4. Septocystidia absent; clamp connexions present.
      5. Spines to 0.5 mm tall, cream; cystidia 24–55 x 6–10μ; spores elliptical, 5–6 x 3.5–4μ ..... 13. *O. fimbriata* Pers. ex Fr.
      5. Spines 6–10 mm long, ferruginous; cystidia 40–65 x 10–18μ; spores allantoid, 5–6.5 x 1.5–2μ ..... 14. *O. nothofagi* G. H. Cunn.
3. Cystidia subulate or cylindrical, 24–50 x 5–7μ; spores allantoid, 4–5 x 1.5–2μ; spines small hemispheric domes upon a tessellated surface ..... 15. *O. tessellata* G. H. Cunn.
3. Cystidia spathulate, 10–22 x 2–3μ, distal half bearing crystals; spores globose or subglobose, 4.5–6 x 4–4.5μ ..... 16. *O. arguta* (Fr.) Quel.
3. Cystidia (or paraphysate hyphae) capitate, 6–12μ diameter at apices which are encrusted with stellate crystals; context containing double vesicles 16–26μ diameter; spores obovate, 4.5–5.5 x 3.5–4μ ..... 17. *O. bicolor* (A. & Sw.) Bres.
3. Cystidia cylindrical, arising in the base and traversing spines in bundles, usually projecting part of their length.
   4. Intermediate layer of context well developed.
      5. Context hyphae coated with gelatinous granules; spores suballantoid, 5–6 x 2.5–3μ ..... 18. *O. archeri* (Berk.) Wakef.
      5. Context hyphae naked.
         6. Spines 2–5 mm long, cream; spores oblong, 4.5–5.5 x 2.5–3μ; basidia 12–18 x 4.5–5μ ..... 19. *O. oblongospora* G. H. Cunn.
         6. Spines 0.5–2 mm long, pallid, reddish-brown; spores subglobose, oblong or obovate, 7–10 x 5.5–6.5μ; basidia 30–42 x 8–9μ ..... 20. *O. lyndoniae* Reid
         6. Spines 80–150μ long, white; spores elliptical, 7–9 x 4.5–6μ; basidia 24–30 x 5–6.5μ ..... 21. *O. novae-zealandiae* G. H. Cunn.
   4. Intermediate layer of context absent.
      5. Spines 3–5 mm long, pliant, honey-yellow; spores subglobose, 5–6 x 4–5μ ..... 22. *O. flexibilis* G. H. Cunn.
      5. Spines 1–2.5 mm long, fragile, reddish-brown; spores suballantoid, 3.5–4 x 1.5–2μ ..... 23. *O. fragilis* G. H. Cunn.
2. Cystidia naked.
   3. Walls thickened at base, becoming progressively thinner towards apices, traversing spines in bundles and projecting at spine apices; spores oval or subglobose, 4–5 x 3–3.5μ ..... 24. *O. barba-jovis* (With.) Fr.

3. Walls of equal thickness throughout, hyphae filled with refractive oily contents; spores subglobose or obovate, 2.5–3 x 2–2.5μ ..... 25. *O. oleifera* G. H. Cunn.

1. **Odontia calcarea** (Cooke & Massee) nov. comb. Pl. 10, fig. 2; Text-fig. 1.

Hydnum calcareum Cke. & Mass., Grev., *21*, 38, 1892.
Irpex calcareus (Cke. & Mass.) Wakef., Kew Bull. Misc. Inf., 367, 1915.

Hymenophore annual or biennial, cretaceous, brittle, adnate, effused forming linear areas 2–5 x 1–2 cm which merge to form broad linear areas to 15 x 5 cm; hymenial surface alutaceous, at length shallowly areolately creviced; margin thinning out, cream, fibrillose, adnate. Spines conical, 90–160μ tall, bearing fascicles of hyphae projecting 60–70μ, and with fascicles arising from plane surfaces of the hymenium between spines, hyphae of fascicles usually scantily encrusted. Context white, 125–300μ thick, intermediate layer a close palisade of upright hyphae, naked or crystal coated and usually embedding crystals, sometimes in 2–3 zones of similar structure, basal layer a narrow layer of parallel hyphae embedding masses of crystals; generative hyphae 2–4μ diameter, walls 0.2μ thick, hyaline, with small clamp connexions. Gloeocystidia arising from the subhymenium, some projecting to 15μ, clavate, 24–40 x 7–9μ, apices rounded, a few apiculate, appearing in scattered groups. Hymenial layer to 35μ deep, a close palisade of basidia, paraphyses and gloeocystidia. Basidia subclavate, many cylindrical, 12–18 x 4–4.5μ, 4-spored; sterigmata slender, erect, to 5μ long. Paraphyses subclavate, many cylindrical, 10–15 x 3.5–4μ. Spores elliptical or some flattened slightly on one side, apiculate, 6–6.5 x 3–3.5μ, walls smooth, hyaline, 0.1μ thick.



TEXT-FIG. 1.—*Odontia calcarea* (C. & M.) G. H. Cunn. × 500; spores × 1,000. Section through a young specimen before spines have developed, showing fascicles which later crown spine apices, and clavate gloeocystidia.

TEXT-FIG. 2.—*Odontia subscopinella* G. H. Cunn. × 500; spores × 1,000. A small spine showing tuft of cystidia at apex and, on right, a flexuous cylindrical gloeocystidium.

Original.

TYPE LOCALITY. Kurrumburra, Victoria.

DISTRIBUTION. Australia, New Zealand.

HABITAT. Effused on bark or decorticated wood of dead branches, associated with a pocket rot.

Agathis australis Salisb.

Auckland: Oratia, September 1948, D. W. McKenzie; Castaway Valley, Great King Island, 400ft, January 1952, E. E. Chamberlain.

Aristotelia serrata (Forst. f.) Oliver

Auckland: Dome Valley, Warkworth, October 1950, J. M. Dingley.

Beilschmiedia tarairi (A. Cunn.) Benth. & Hook. f.

Auckland: Kaiwaka, May 1949, J. M. Dingley.

Callitris cupressiformis Vent.

Auckland: Huia, October 1953, J. M. Dingley.

Cupressus macrocarpa Hartw.

Auckland: Huka Falls, 1,200ft, December 1955, G. H. C.; Walker's Bush, Henderson, November 1956, P. J. Brook.

Wellington: Lake Papaetonga, 50ft, May 1956, G. H. C.

Dysoxylum spectabile (Forst. f.) Hook. f.

Auckland: Clevedon, August 1947, J. M. Dingley; Huia, February 1954, J. M. Dingley; Mt. Taupiri, 700ft, November 1954, J. M. Dingley.

Edwardsia tetraptera (Mill.) Oliver

Auckland: University Grounds, September 1948, D. W. McKenzie.

Knightia excelsa R.Br.

Auckland: Purewa Bush, April 1953, D. W. McKenzie.

Leptospermum ericoides A. Rich.

Auckland: Awhitu Central, April 1946, G. H. C.; Parahaki, Whangarei, May 1949, J. M. Dingley; Glen Esk Valley, Piha, May 1951, J. M. Dingley; Great King Island, January 1952, E. E. Chamberlain.

Leptospermum scoparium Forst.

Auckland: Little Barrier Island, November 1947, J. M. Dingley; Konini Road, Waitakeres, 900ft, July 1949, J. M. Dingley; Raglan, March 1951, J. M. Dingley.

Metrosideros scandens Sol.

Wellington: Lake Papaetonga, 50ft, May 1956, G. H. C.

Metrosideros tomentosa A. Rich.

Auckland: Whitianga, Coromandel Peninsula, 300ft, November 1947, E. E. Chamberlain.

Muehlenbeckia australis (Forst. f.) Meissn.

Auckland: Hatepe, Lake Taupo, 1,400ft, March 1953, J. M. Dingley.

Nothopanax arboreum (Forst. f.) Seem.

Auckland: Mamaku Forest, 2,000ft, December 1953, G. H. C.; Cornwallis, 60ft, January 1955, J. D. Atkinson.

Podocarpus dacrydioides A. Rich.

Auckland: Huia, 100ft, July 1953, J. M. Dingley.

Podocarpus totara Don

Auckland: Kauri Park, Northcote, September 1951, J. M. Dingley.

Rhopalostylis sapida (Sol.) Wendl. & Drude

Auckland: Huia, 100ft, July 1953, J. M. Dingley.

Suttonia australis A. Rich.

Auckland: Rangitoto Island, July 1950, J. M. Dingley; Waiomo Valley, Thames, August 1954, J. M. Dingley.

Vitex lucens Kirk

Auckland: Glen Esk Valley, Piha, 900ft, March 1956, J. M. Dingley.

Weinmannia racemosa L.f.

Wellington: National Park Station, 3,500ft, January 1954, S. D. Baker.

Readily identified by the prominent, deeply staining, clavate gloeocystidia present in the hymenial layer. Even when masses of crystals are present somewhat obscuring the context, these bodies may be seen quite readily. They are usually arranged in groups in the hymenial layer, sometimes dispersed, but are always present. Other differential features are the brittle cretaceous context with alutaceous creviced surface, and in young plants, frequent fascicles of hyphae which not only grow from spine apices, but are even more abundant between spines, arising from superficial layers of the context and projecting 120–160μ. Another noteworthy feature is that the fungus is associated with a pocket rot in the host, cavities being small and numerous but nevertheless conspicuous. This is the only species examined associated with such a condition.

2. ***Odontia subscopinella** sp. nov. Text-fig. 2.

Hymenophorum annuum, membranaceum, adnatum, effusum; superficies cremea vel sulphurea, alte areolate rimosa. Spinae conicae, 150–200μ longae, apicibus cristatis incrustatis cystidiis. Hyphae generatoriae 4–5μ diam., parietibus 0.5–1μ crassis, hyalinis, nudis, nodulosis Gloeocystidia rara et sparsa, flexuo-cylindrata, aliquot moniliformia, ad 80 x 6μ. Basidia subclavata, 20–24 x 5–5.5μ. Hyphae paraphysatae ad 20μ eminentes, cylindratae, aliquot apicibus leviter expansis, nudis vel incrustatis. Sporae ovales vel late ellipticae, 5–6 x 3.5–4μ, parietibus levibus.

Hymenophore annual or biennial, membranous, adnate but tending to lift; effused forming linear areas 7–22 x 3–6 cm; hymenial surface cream or sulphur yellow, at length coarsely and deeply areolately creviced; margin thinning out, fibrillose, adnate, concolorous, or white. Spines conical, 150–200μ tall, commonly less, tufted apically with fascicles of hyphae, walls of which are usually scantily encrusted. Context white, to 260μ deep, of 3–5 layers each composed of a dense subhymenium and a scanty layer of intermediate tissue with hyphae mainly erect, basal layer of a few repent hyphae; generative hyphae 4–5μ diameter, walls 0.5–1μ thick, hyaline, naked, glassy, with clamp connexions. Gloeocystidia embedded in the context, seldom penetrating the hymenium, rare and scattered, often wanting, flexuous-cylindrical, sometimes moniliform, 65–80 x 5–6μ, contents staining deeply. Hymenial layer to 30μ deep, a dense palisade of basidia, paraphyses and paraphysate hyphae. Basidia subclavate, 20–24 x 5–5.5μ, 4-spored; sterigmata erect, slender, to 4μ long. Paraphyses subclavate, 10–15 x 4.5–5μ. Paraphysate hyphae abundant, projecting to 20μ, cylindrical, some with slightly expanded apices, naked or partly encrusted. Spores oval or broadly elliptical, 5–6 x 3.5–4μ, walls smooth, hyaline, 0.1μ thick.

DISTRIBUTION. New Zealand.

HABITAT. Effused on bark and decorticated dead wood of branches and stems.

Beilschmiedia tawa (A. Cunn.) Hook. f. & Benth.

Auckland: Te Whaiti, 1,200ft, June 1951, J. M. Dingley; Waitomo, January 1953, J. D. Atkinson; Lake Rotoehu, 1,200ft, September 1954, October 1955, G. H. C.

Wellington: Pohangina Reserve, 200ft, September 1953, G. H. C.

Brachyglottis repanda Forst.

Auckland: Waiomo Valley, Thames, June 1950, J. M. Dingley.

Coprosma australis (A. Rich.) Robinson

Wellington: Pohangina Valley, 200ft, September 1953, G. H. C.

Coprosma foetidissima Forst.

Westland: Pukekura, November 1954, J. M. Dingley.

Otago: Ryan's Creek, Stewart Island, February 1954, J. M. Dingley.

Griselinia lucida Forst. f.

Taranaki: Mt. Egmont, 2,700ft, February 1952, G. H. C.

Hawke's Bay: Ahimanawa Ranges, 2,500ft, November 1955, J. M. Dingley.

Hedycarya arborea Forst.

Westland: Weheka, 600ft, November 1954, J. M. Dingley.

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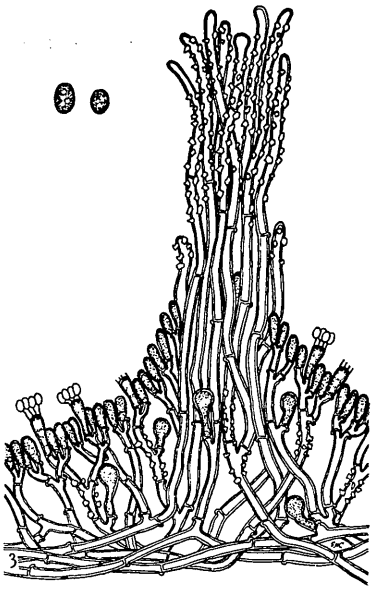
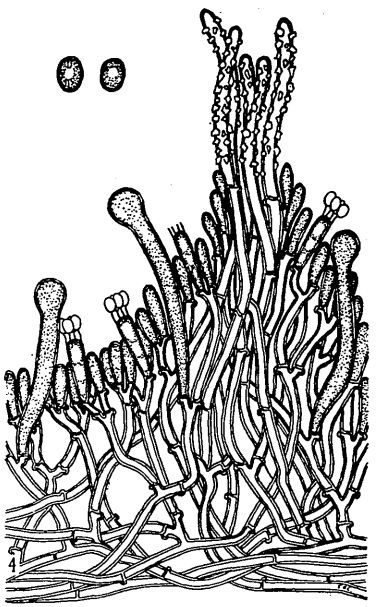
* Latin descriptions were kindly prepared by Miss Beryl Hooton, Librarian of Plant Diseases Division.





TEXT-FIG. 3.—*Odontia vesiculosa* G. H. Cunn. × 500; spores × 1,000. Showing apex of spine with tuft of cystidia, and numerous vesicles in context.

TEXT-FIG. 4.—*Odontia capitata* G. H. Cunn. × 500; spores × 1,000. Showing apex of spine with tuft of cystidia and the capitate gloeocystidia.

Original.

Leptospermum ericoides A. Rich.

Auckland: Hatepe, Lake Taupo, 1,300ft, March 1953, J. M. Dingley, *type collection,* P.D.D. herbarium, No. 17992; Swanson, April 1954, J. M. Dingley.

Leptospermum scoparium Forst.

Auckland: Cutty Grass road, Waitakeres, 900ft, August 1955, J. M. Dingley.

Melicytus ramiflorus Forst.

Auckland: Kauaeranga Valley, Thames, August 1954, S. D. Baker; Whitianga Road, Coromandel Peninsula, 1,200ft, August 1954, J. M. Dingley; Lake Waikaremoana, 1,400ft, November 1955, J. M. Dingley; Huia, 150ft, January 1956, E. E. Chamberlain.

Muehlenbeckia australis (Forst. f.) Meissn.

Canterbury: Peel Forest, April 1957, S. D. & P. J. Brook.

Nothofagus fusca (Hook. f.) Oerst.

Auckland: Lake Waikaremoana, 1,300ft, November 1955, J. M. Dingley.

Nothofagus menziesii (Hook. f.) Oerst.

Wellington: Silica Springs, Mt. Ruapehu, 3,000ft, January 1954, S. D. Baker; Kaimanawa Ranges, 2,800ft, April 1955, J. M. Dingley.

Nelson: Staircase Creek, Reefton, 2,000ft, November 1952, S. D. Baker.

Otago: Alton Valley, Tuatapere, 400ft, February 1954, J. M. Dingley.

Podocarpus dacrydioides A. Rich.

Auckland: Hillcrest, Northcote, May 1949, E. E. Chamberlain.

Podocarpus ferrugineus Don
Auckland: Camel's Back, Coromandel Peninsula, 900ft, October 1954, J. M. Dingley.

Pseudowintera colorata (Raoul) Dandy
Wellington: Mt. Hauhangatahi, 2,500ft, January 1954, S. D. Baker.
Taranaki: Mt. Egmont, 3,000ft, January 1953, J. M. Dingley.
Hawke's Bay: Ahimanawa Ranges, 2,500ft, November 1955, J. M. Dingley.
Nelson: Murchson, 500ft, April 1946, S. D. & P. J. Brook.
Westland: Okarito, April 1955, J. M. Dingley.
Canterbury: Peel Forest, April 1957, S. D. & P. J. Brook.
Otago: Alton Valley, Tuatapere, 400ft, February 1954, J. M. Dingley; Horse Shoe Bay, Stewart Island, February 1954, J. M. Dingley.

Rhipogonum scandens Forst.
Auckland: Lake Rotoehu, 1,200ft, June 1951, J. M. Dingley.
Wellington: Bruce's Reserve, Hunterville, 400ft, September 1953, G. H. C.; Pohangina Reserve, 200ft, September 1953, G. H. C.
Westland: Harihari, November 1954, J. M. Dingley.

Schefflera digitata Forst.
Westland: Weheka, 600ft, April 1955, J. M. Dingley.

Suttonia australis A. Rich.
Auckland: Mountain Road, Waitakeres, 700ft, March 1954, J. M. Dingley.

Weinmannia racemosa L.f.
Taranaki: Mt. Egmont, 3,000ft, March 1951, J. M. Dingley.
Westland: Rimu, November 1954, J. M. Dingley.

Separated from other species of the section by the conspicuous, thick-walled, glassy, naked context hyphae, flexuous-cylindrical gloeocystidia and oval or broadly elliptical small spores. Context tissues may be zoned with two or three layers, but more usually are composed of a densely compacted almost pseudoparenchymatous subhymenium and a loose layer of scanty hyphae with thick walls. Crystals are usually present between hyphae of the subhymenium and encrust some or all hyphae of fascicles and paraphysate hyphae, but are seldom present in the region of the glassy hyphae of the intermediate layer. Gloeocystidia are usually embedded in the context tissues; they are scanty, seldom more than one or two being present in any section, and are often absent from sections. Contents stain deeply. In macrofeatures the species is close to *O. scopinella;* it may be separated by the broadly elliptical spores, context hyphae of greater diameter and with thicker walls, and presence of scattered gloeosystidia.

3. **Odontia capitata** sp. nov. Text-fig. 4.

Hymenophorum annuum vel biennale, membranaceum, adnatum, effusum; superficies pallide alutacea, non rimosa. Spinae conicae, 60–150μ longae, apicibus cristis hypharum crystallis tectarum, concolores. Hyphae generatoriae 3–4μ diam., parietibus 0.25μ crassis, hyalinis, nudis, nodulosis. Basidia subclavata, 22–26 x 4–5μ. Gloeocystidia cylindrata, apicibus 8–12μ inflatis, 30–50 x 5–6μ. Sporae ellipticae vel ovales, 5–6 x 4–4.5μ, parietibus levibus.

Hymenophore annual or biennial, membranous, adnate, effused forming irregular linear areas 5–8 x 2–3 cm; hymenial surface pallid alutaceous, not creviced; margin narrow, thinning out, white, fibrillose or pruinose, adnate. Spines crowded, conical, 60–150μ tall, apices bearing tufts of 5–9 projecting encrusted hyphae. Context white, 60–150μ deep, intermediate layer of intertwined loosely arranged hyphae mainly upright and more dense in the subhymenium, basal layer of a few repent hyphae; generative hyphae 3–4μ diameter, walls 0.25μ thick, hyaline, naked or encrusted in the subhymenium, with clamp connexions. Gloeocystidia scattered or crowded in groups in hymenium and spines, projecting for half their length, cylindrical with inflated apices, 30–50 x 5–6μ, apices 8–12μ diameter. Hymenial layer to 30μ deep, a close palisade of basidia, paraphyses and gloeocystidia. Basidia subclavate, 22–26 x 4–5μ, 4-spored; sterigmata erect, slender, to 4μ long. Paraphyses subclavate, 18–22 x 3.5–4μ. Spores elliptic-oval, 5–6 x 4–4.5μ, some subglobose when 5 x 4μ, walls smooth, hyaline, 0.1μ thick.

DISTRIBUTION. New Zealand.

HABITAT. Effused on bark of dead branches.

Carpodetus serratus Forst.

Auckland: Moumoukai Valley, Hunua Range, 800ft, January 1951, J. M. Dingley, *type collection,* P.D.D. herbarium, No. 17828.

Coprosma australis (A. Rich.) Robinson

Auckland: Moumoukai Hill Road, Hunua Range, 900ft, May 1949, J. M. Dingley; Piha, coast, July 1955, J. M. Dingley.

Coriaria ruscifolia L.

Westland: Douglas Rock Track, Copland Valley, 3,000ft, February 1947, G. H. C.

Weinmannia racemosa L.f.

Wellington: Ohakune, 2,000ft, December 1953, J. M. Dingley.

Identified readily by the conspicuous projecting gloeocystidia, broadly oval spores and non-creviced, alutaceous hymenial surface. Gloeocystidia project for about half their length, have apices inflated 8–12μ, and contents stain deeply with aniline blue. As they are always present they afford a ready diagnostic feature.

4. **Odontia vesiculosa** sp. nov. Text-fig. 3.

Hymenophorum annuum vel biennale, membranaceum, adnatum, effusum; superficies alutacea, non rimosa. Spinae 0.5–1.5 mm longae, subulatae, cristis hypharum crystallis tectarum. Hyphae generatoriae 3–5μ diam., parietibus 0.5–1μ crassis, hyalinis, nudis, nodulosis. Basidia subclavata, 14–18 x 4–4.5μ. Vesiculae subglobosae vel pyriformes, 6–9μ diam. Sporae ellipticae, 5–5.5 x 3–3.5μ, parietibus levibus.

Hymenophore annual or biennial, membranous, adnate, effused forming irregular linear areas to 20 x 3 cm; hymenial surface alutaceous, tan when old, not creviced; margin thinning out, concolorous, fibrillose, sometimes forming broad sterile areas 2–3 mm wide, adnate. Spines subulate, crowded, 0.5–1.5 mm long, sometimes bifid near apices, bearing tufts of encrusted hyphae. Context white, 120–150μ deep, sometimes zoned, intermediate layer of intertwined mainly erect hyphae, more dense in the subhymenium, most naked, a few bearing scattered crystals, basal layer of a few repent hyphae; generative hyphae 3–5μ diameter, walls 0.5–1μ thick, glassy, hyaline, with clamp connexions. Vesicles present in the context, subglobose or pyriform, 6–9μ diameter, carried on short lateral branches, contents staining deeply. Hymenial layer to 30μ deep, a close palisade of basidia, paraphyses and paraphysate hyphae. Basidia subclavate, 14–18 x 4–4.5μ, 2–4-spored; sterigmata slender, slightly arcuate, to 5μ long. Paraphyses clavate, 10–14 x 4–4.5μ. Paraphysate hyphae scattered in the hymenium and spines, cylindrical, projecting to 20μ, some encrusted, apices inflated to 6μ. Spores elliptical, a few flattened on one side, 5–5.5 x 3–3.5μ, walls smooth, hyaline, 0.1μ thick.

DISTRIBUTION. New Zealand.

HABITAT. Effused on bark or decorticated dead branches and stems.

Beilschmiedia tawa (A. Cunn.) Hook. f. & Benth.

Auckland: Lake Rotoehu, 1,200ft, September 1954, G. H. C.

Coprosma brunnea (Kirk) Ckn.

Westland: Copland Track, 4,000ft, February 1947, G. H. C.

Fuchsia excorticata L.f.

Otago: Half Moon Bay, Stewart Island, February 1954, J. M. Dingley.

Griselinia lucida Forst. f.

Wellington: Oturere River, Mt. Tongariro, 3,500ft, December 1946, G. H. C.

Leptospermum scoparium Forst.

Auckland: Titirangi, Waitakeres, 800ft, November 1948, J. M. Dingley.

Leucopogon fasciculatus (Forst. f.) A. Rich.

Auckland: Mt. Te Aroha, 1,000ft, April 1954, J. M. Dingley.

Libocedrus bidwillii Hook. f.

Wellington: Waikato River, Kaimanawa Ranges, 2,800ft, December 1955, G. H. C.

Nothofagus menziesii (Hook. f.) Oerst.

Otago: Alton Valley, Tuatapere, 600ft, February 1954, J. M. Dingley, *type collection,* P.D.D. herbarium, No. 18112.

Paratrophis microphylla (Raoul) Ckn.
Auckland: Anawhata Road, Waitakeres, 900ft, May 1954, J. M. Dingley.
Schefflera digitata Forst.
Westland: Glacier Road, Waiho, 600ft, December 1946, J. M. Dingley.
Weinmannia racemosa L.f.
Westland: Glacier Road, Waiho, 600ft, November 1946, J. M. Dingley.

Specific features are the deeply staining vesicles which arise from short lateral branches of context hyphae, paraphysate hyphae with inflated naked apices, glassy rather thick-walled usually naked context hyphae and small elliptical spores. A few collections show two or three layers, indicating that plants may become biennial. Spores vary somewhat in diameter and shape; most are broadly elliptical with rounded sides, some slightly flattened on one side, and in two collections are narrower, 4.5–5 x 2.5–3μ.

5. **Odontia scopinella** (Berkeley) Cooke, Grevillea, *20*, 3, 1891. Text-fig. 5.

Hydnum scopinellum Berk., Fl. N.Z., *2*, 181, 1855.

Hymenophore annual, membranous, adnate, effused forming linear areas to 25 x 4 cm; hymenial surface cream to pallid alutaceous, not creviced; margin thinning out, arachnoid, white, adnate. Spines crowded, conical, 40–105μ tall, with apices bearing tufts of hyphae some scantily encrusted. Context white, 60–120μ deep, intermediate layer of loosely arranged upright hyphae densely branched in the subhymenium, basal layer of a few repent hyphae; generative hyphae 3.5–4μ diameter, walls 0.5μ thick, hyaline, naked, with clamp connexions. Hymenial layer to 30μ deep, a close palisade of basidia, paraphyses and paraphysate hyphae. Basidia subclavate, 8–12 x 3.5–4μ, 2–4-spored; sterigmata erect, slender, to 4μ long. Paraphyses subclavate, 8–10 x 3–3.5μ. Paraphysate hyphae scanty, projecting to 8μ, cylindrical, a few slightly capitate. Spores allantoid, 5–6 x 1–1.5μ, walls smooth, hyaline, 0.1μ thick.

Type Locality. New Zealand.

Distribution. Australia, New Zealand.

Habitat. Effused on decorticated dead wood.

Dacrydium cupressinum Sol.
Otago: Stewart Island, February 1954, J. M. Dingley.

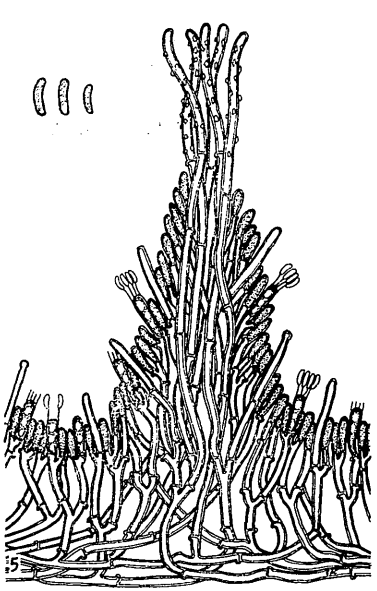
Our collection matches the type in Kew herbarium, ex "New Zealand, Colenso" which is attached to a decorticated fragment of conifer wood. It agrees also with a specimen filed under the cover ex "New South Wales, Moruya, W. N. Cheesman, 1914." The species differs from the closely related *O. subscopinella* in the allantoid spores, smaller basidia, absence of gloeocystidia, non-creviced surface of the hymenium, and narrower context hyphae with thinner walls. Both possess the same type of glassy, naked, relatively thick-walled context hyphae, small spines bearing fascicles of hyphae most of which are encrusted, and the dense subhymenium.

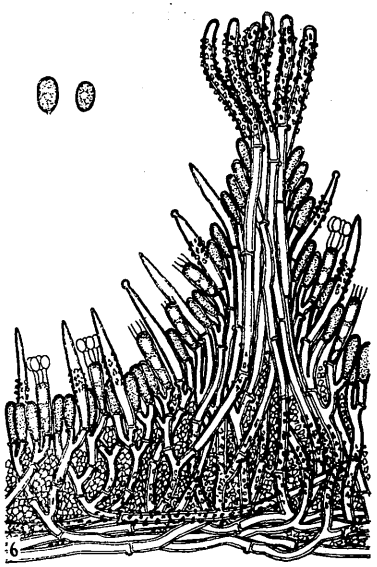
6. **Odontia crustosa** (Persoon ex Fries) Quelet, Flore mycologique de la France, 436, 1888. Text-fig. 6.

Hydnum crustosum Pers. (Syn. Meth. Fung., 561, 1801) ex Fries, Syst. Myc., *1*, 419, 1821.

Grandinia crustosa (Pers.) Fr., Epicrisis, 528, 1838.

Hymenophore annual, membranous-cretaceous, adnate, at first appearing as numerous orbicular or linear colonies 2–20 mm across, soon merging to form linear areas to 20 x 3 cm; hymenial surface cream, becoming pallid alutaceous, soon deeply areolately creviced; margin thinning out, concolorous or white, adnate, pruinose or fibrillose. Spines crowded, dome shaped with tufts of encrusted hyphae at apices, 60–150μ tall, or as frequently in the form of cylindrical fascicles arising from the plane hymenial surface, with exterior hyphae encrusted. Context white, 90–200μ deep, intermediate layer of intertwined hyphae mainly upright and more densely compacted in the subhymenial region, basal layer usually well developed, a dense layer of compact parallel hyphae; generative hyphae 3–3.5μ diameter, walls 0.2μ thick, hyaline, naked or a few bearing crystals, with clamp connexions. Hymenial layer to 30μ deep, a close palisade of basidia, paraphyses and paraphysate hyphae. Basidia subclavate, 20–25 x 4.5–5μ, 4-spored; sterigmata slender, erect, to 5μ long. Paraphyses subclavate, 18–22 x 4–4.5μ. Paraphysate hyphae fusiform or cylindrical, some with capitate apices, projecting to 30μ, many encrusted. Spores elliptical, 4.5–6 x 2.5–3.5μ, slightly flattened on one side, laterally apiculate, walls smooth, hyaline, 0.1μ thick.





TEXT-FIG. 5.—*Odontia scopinella* (Berk.) Cke. × 500; spores × 1,000. Showing apex of spine with tuft of cystidia and the paraphysate hyphae.
TEXT-FIG. 6.—*Odontia crustosa* (Pers.) Quel. × 500; spores × 1,000. Showing apex of spine with tuft of cystidia and abundant fusiform and capitate paraphysate hyphae.
Original.

TYPE LOCALITY. Europe.
DISTRIBUTION. Europe, Great Britain, North America, New Zealand.
HABITAT. Effused on bark or decorticated dead twigs and branches.

Alectryon excelsum Gaertn.
Wellington: Upper Pohangina Valley, 500ft, May 1956, G. H. C.

Aristotelia fruticosa Hook. f.
Taranaki: Mt. Egmont, 4,000ft, January 1953, J. M. Dingley.

Brachyglottis repanda Forst.
Auckland: Piha, April 1953, J. M. Dingley; Mt. Te Aroha, 650ft, May 1952, G. H. C.

Coprosma australis (A. Rich.) Robinson
Auckland: Mamaku Forest, 1,800ft, September 1954, G. H. C.
Taranaki: Mt. Egmont, 2,750ft, January 1953, G. H. C.

Coprosma foetidissima Forst.
Taranaki: Mt. Egmont, 2,900ft, February 1952, G. H. C.

Coprosma tenuifolia Cheesem.
Wellington: Kaimanawa Ranges, 2,800ft, April 1955, J. M. Dingley.

Griselinia littoralis Raoul
Taranaki: Mt. Egmont, 2,500ft, January 1953, J. M. Dingley.

Ixerba brexioides A. Cunn.
Auckland: Kaimai Range, 1,500ft, July 1950, J. M. Dingley.

Macropiper excelsum (Forst. f.) Miq.
Auckland: Taupiri Mt., 500ft, November 1954, J. M. Dingley.
Wellington: Pohangina Reserve, 200ft, September 1953, G. H. C.
Melicytus ramiflorus Forst.
Auckland: Mt. Karioi, Raglan, March 1951, J. M. Dingley; Lake Rotoehu, 1,200ft, June 1951, J. M. Dingley; Lake Okataina, 1,400ft, June 1957, G. H. C.
Meryta sinclairii (Hook. f.) Seem.
Auckland: South-west Island, Three Kings, January 1952, E. E. Chamberlain.
Nothopanax arboreum (Forst. f.) Seem.
Taranaki: Mt. Egmont, 3,000ft, February 1952, G. H. C.
Wellington: Silica Springs, Mt. Ruapehu, 3,000ft, January 1954, S. D. Baker.
Pseudowintera colorata (Raoul) Dandy
Taranaki: Mt. Egmont, 3,000ft, March 1951, February 1952, G. H. C.
Westland: Karangarua Valley, November 1954, J. M. Dingley.
Otago: Alton Stream, Tuatapere, 600ft, April 1957, S. D. & P. J. Brook.
Rhipogonum scandens Forst.
Auckland: Te Aroha, 600ft, May 1952, G. H. C.
Rubus australis Forst.
Auckland: Lake Rotoehu, 1,200ft, September 1954, G. H. C.
Westland: Pukekura, November 1954, J. M. Dingley.

Collections listed agree with specimens of *O. crustosa* examined in Kew herbarium. The species may be identified, among those with spines bearing tufts of encrusted hyphae at their apices, by the usually naked context hyphae, frequent fascicles arising from plane portions of the hymenium, presence of paraphysate hyphae, and small broadly elliptical spores. Paraphysate hyphae may be fusiform, the usual condition, or apices may be inflated slightly, both conditions being present in the same section. They may be naked or bear irregular crystals on stems and sometimes apices. Context hyphae are usually naked, though a few in the upper part may be crystal coated, and usually embed masses of crystals. The hymenial surface is deeply and finely areolately creviced, and usually alutaceous in colour, though young plants may be cream or pallid sulphur yellow. Spores are commonly 4·5–6 x 2·5–3·5μ, but in a few collections measure 6–7 x 3–3·5μ. Similar variations were noted in European collections examined in Kew herbarium.

O. crustosa and *O. subscopinella* show a general resemblance to one another. The latter differs in possessing gloeocystidia, in greater diameter of generative hyphae and more scantily developed paraphysate hyphae of different shape.

7. **Odontia stratosa** sp. nov. Text-fig. 7.

Hymenophorum annuum vel biennale, membranaceo-cretaceum, adnatum, effusum; superficies alba ad cremeam, non rimosa. Spinae petasicae, 60–150μ longae, concolores, fasciculis hypharum crystallis tectarum ex apicibus eminentibus. Contextus 2–5 stratis. Hyphae generatoriae 3–4μ diam., parietibus 0.25μ crassis, hyalinis. crystallis tectis, nodulosis. Basidia subclavata, 16–22 x 5–6.5μ. Sporae ellipticae, 5–5.5 x 3–3.5μ, parietibus levibus.

Hymenophore annual or biennial, membranous-cretaceous, adnate, effused forming irregularly linear areas 5–25 x 2–4 cm; hymenial surface white to cream, seldom pallid alutaceous, not creviced; margin thinning out, fibrillose, white, adnate. Spines at first appearing as tufts of hyphae arranged in fascicles, 80–120 x 16–30μ, becoming dome shaped when 60–150μ tall with apices bearing tufts of encrusted hyphae. Context white, to 300μ thick, often zoned with 2–5 layers of densely packed and loosely arranged hyphae, intermediate layer of upright compacted hyphae embedding masses of crystals, most encrusted, becoming pseudoparenchymatous, basal layer a narrow zone of mainly parallel compact hyphae naked or encrusted and usually embedding masses of crystals; generative hyphae 3–4μ diameter, walls 0.25μ thick, hyaline, usually encrusted, with clamp connexions. Hymenial layer to 30μ deep, a dense palisade of basidia and paraphyses. Basidia subclavate, 16–22 x 5–6.5μ, 2–4-spored; sterigmata arcuate, stout below, to 6μ long. Paraphyses subclavate, 8–12 x 5.5–6μ. Spores elliptical, often slightly flattened on one side, apiculate, 5–5.5 x 3–3.5μ, walls smooth, hyaline, 0.1μ thick.

DISTRIBUTION. New Zealand.

HABITAT. Effused on bark and decorticated wood of dead branches and stems.

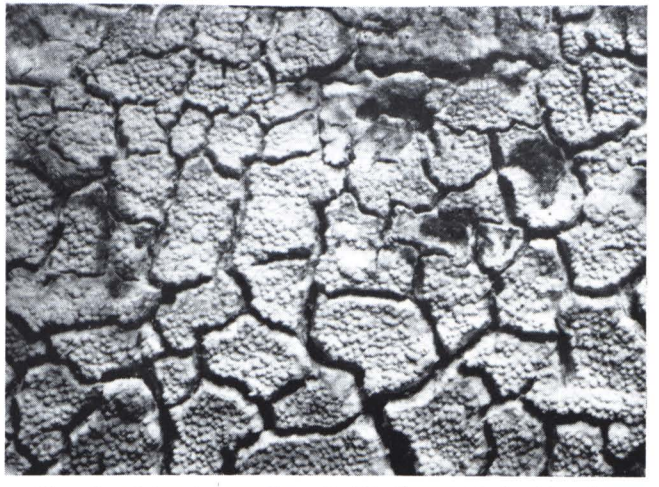


FIG. 1—*Odontia tessellata* G. H. Cunn. × 1. Showing coarsely tessellated surface and small dome-shaped spines.
Photos S. A. Rumsey.

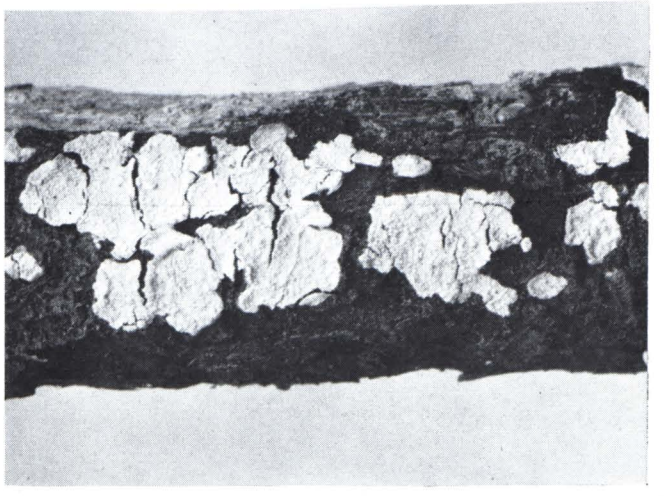


FIG. 2—*Odontia calcarea* (C. & M.) G. H. Cunn. × 1. Showing small colonies and minute spines.

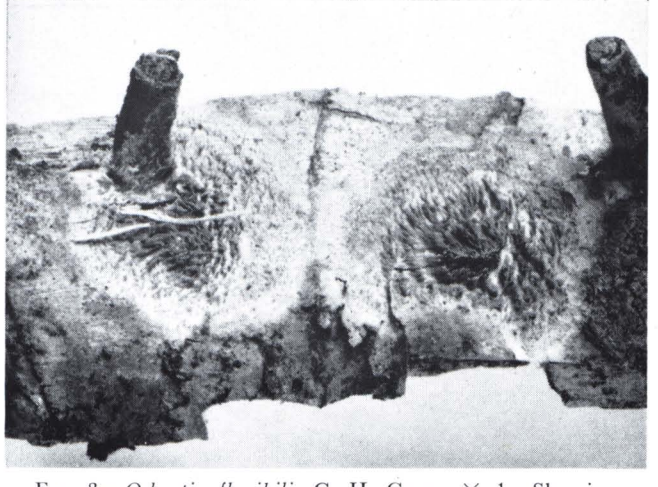


FIG. 3—*Odontia flexibilis* G. H. Cunn. × 1. Showing long spines arising from orbicular hymenophore.
S. N. Beatus, Photo.

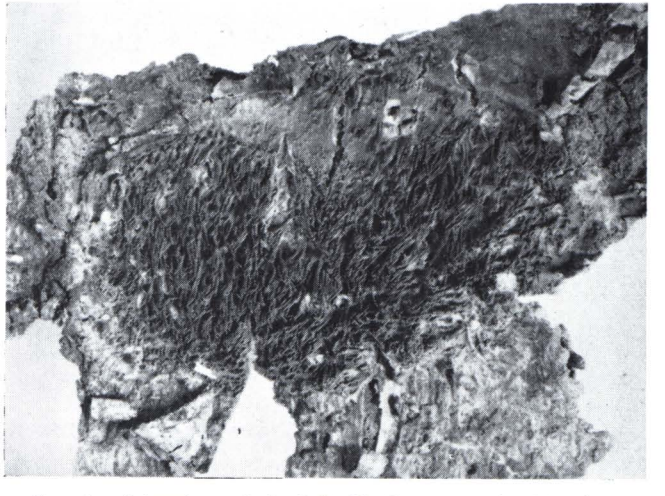
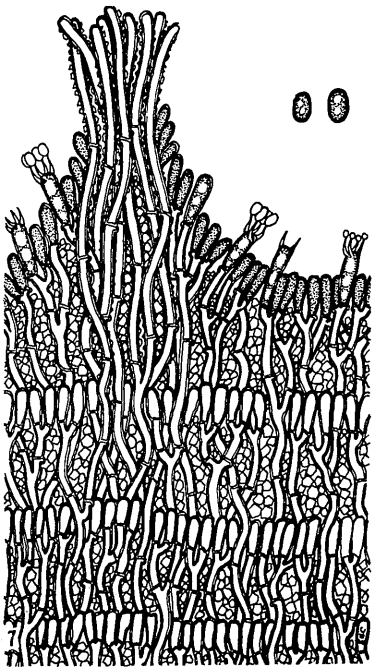
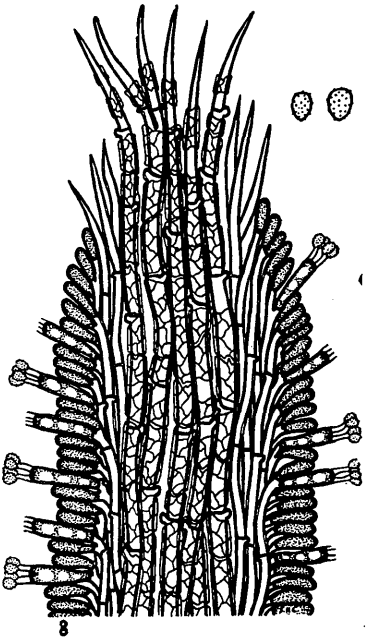


FIG. 4—*Odontia nothofagi* G. H. Cunn. × ½. Showing irregularly orbicular colony and long brown spines.
Photos S. A. Rumsey.





TEXT-FIG. 7.—*Odontia stratosa* G. H. Cunn. × 500; spores × 1,000. Showing apex of spine with tuft of cystidia and zoned context containing masses of crystals.

TEXT-FIG. 8.—*Odontia verruculosa* G. H. Cunn. × 500; spores × 1,000. Showing cystidia in axis of spine ensheathed with crystals, acuminate naked apices and verruculose spores. *Original.*

Coprosma tenuifolia Cheesem.
Wellington: Kaimanawa Ranges, 2,600ft, April 1955, J. M. Dingley.
Dacrydium cupressinum Sol.
Westland: Harihari, November 1954, J. M. Dingley.
Fuchsia excorticata L.f.
Wellington: Pohangina River, 800ft, January 1955, G. H. C.
Griselinia littoralis Raoul
Taranaki: Mt. Egmont, 3,000ft, March 1951, J. M. Dingley.
Hedycarya arborea Forst.
Auckland: Blue Lake, Rotorua, 1,400ft, June 1951, J. M. Dingley.
Leptospermum ericoides A. Rich.
Auckland: Little Barrier Island, November 1947, J. M. Dingley.
Leptospermum scoparium Forst.
Auckland: Cutty Grass Road, Waitakeres, 900ft, August 1955, J. M. Dingley.
Macropiper excelsum (Forst. f.) Miq.
Wellington: Lake Papaetonga, 50ft, May 1956, G. H. C., *type collection,* P.D.D. herbarium, No. 18076.
Melicytus ramiflorus Forst.
Auckland: Paparata, October 1946, G. H. C.; Kaimai Ranges, 1,500ft, July 1950, J. M. Dingley; Huia, November 1952, J. M. Dingley; Waiomo Valley, Thames,

August 1954, S. D. Baker; Whitianga Road, Coromandel Peninsula, 500ft, October 1954, J. M. Dingley.

Wellington: Ashhurst Reserve, 200ft, September 1952, G. H. C.; Lake Papaetonga, 50ft, September 1953, August 1954, G. H. C.

Metrosideros excelsa Sol. ex Gaertn.

Auckland: Piha, July 1955, J. M. Dingley.

Nothopanax colensoi (Hook. f.) Seem.

Auckland: Lake Rotoehu, 1,200ft., June 1957, G. H. C.

Parsonsia heterophylla A. Cunn.

Wellington: Blyth Track, Ohakune, 2,500ft, June 1954, S. D. Baker.

Plectomentha baylisiana Oliver

Auckland: Great King Island, January 1952, E. E. Chamberlain; same locality, December 1955, P. J. Brook.

Podocarpus dacrydioides A. Rich.

Auckland: Hillcrest, Northcote, May 1949, E. E. Chamberlain.

Podocarpus hallii Kirk

Wellington: Mt. Tongariro, 2,500ft, January 1955, G. H. C.

Podocarpus totara Don

Canterbury: Peel Forest, April 1947, S. D. & P. J. Brook.

Pseudowintera colorata (Raoul) Dandy

Otago: Otautau, April 1957, S. D. & P. J. Brook.

Vitex lucens Kirk

Auckland: Piha, July 1955, J. M. Dingley.

Separated from other species of this section by the pallid alutaceous, non-creviced surface, minute dome-shaped spines tufted with bundles of short encrusted hyphae, zoned context, elliptical spores and absence of ancillary organs. Zones in the context consist of layers of densely compacted upright hyphae with scanty parallel hyphae between. Masses of crystals are packed between hyphae which are also encrusted with them. Hyphae of fascicles may be heavily encrusted, bear a few crystals scattered irregularly, or be naked. In young plants, before spines have developed, fascicles project 80–120μ and consist of 30–50 hyphae with the outermost encrusted. Appreciable variations in some of these features occur in different collections. Specimens with one layer of context tissue are liable to confusion with *O. crustosa*. They may be separated by the broader basidia and absence of paraphysate hyphae.

8. **Odontia verruculosa** sp. nov. Text-fig. 8.

Hymenophorum annuum, membranaceum, adnatum, effusum; superficies alba, non rimosa. Spinae 0.5–1 mm longae, subulatae, apicibus cristis hypharum crystallis tectarum, concolores. Hyphae generatoriae 4–5μ diam., parietibus 0.1μ crassis, hyalinis, in vaginibus crystallorum conjunctorum, quae tubos 7–10μ diam. efficient, plane inclusae. Basidia subclavata, 16–22 x 4–5μ. Sporae obovatae, aliquot subglobosae, 4–5.5 x 3–3.5μ, parietibus subtiliter verruculosis.

Hymenophore annual, membranous, adnate, effused forming irregular areas 5–15 cm across; hymenial surface white, then cream or sulphur yellow, not creviced; margin thinning out, adnate, white, fibrillose or with fine white rhizomorphs. Spines subulate, 0.5–1 mm long, crowded, apices tufted with crystal-sheathed projecting hyphae terminating in acuminate points. Context white, to 180μ deep, intermediate layer composed of loosely intertwined hyphae sheathed in plate-like crystals, basal layer a compact layer of parallel hyphae, some sheathed; generative hyphae 4–5μ diameter (with sheaths 7–10μ), walls 0.1μ thick, some inflated below septa, hyaline, with clamp connexions. Hymenial layer to 40μ deep, a loose palisade of basidia and paraphyses. Basidia subclavate, 16–22 x 4–5μ, 4-spored; sterigmata erect, slender, to 5μ long. Paraphyses subclavate, 12–18 x 4–4.5μ. Spores obovate, some subglobose, 4–5.5 x 3–3.5 μ, apiculate, walls finely closely verruculose, hyaline, 0.1μ thick.

DISTRIBUTION. New Zealand.

HABITAT. Effused on bark and decorticated wood of dead branches.

Beilschmiedia tawa (A. Cunn.) Hook. f. & Benth.

Auckland: Lake Rotoehu, 1,200ft, June 1957, G. H. C., *type collection*, P.D.D. herbarium, No. 18106.

Dacrydium cupressinum Sol.

Westland: Pukekura, November 1954, J. M. Dingley.

Readily identified by the verruculose spores, hyphae sheathed in fused crystals, cream or sulphur yellow surface with discrete spines and small white rhizomorphs. Hyphae, save those of the hymenial layer, are sheathed in plate-like crystals cemented at their edges to form tubes. Those at apices of the spines are long-acuminate and partly sheathed. Spores are mostly obovate, finely verruculose and produced copiously.

9. **Odontia subfascicularia** (Wakefield) G. H. Cunningham, Proceedings of Linnean Society of New South Wales, 77, 294, 1953. Text-fig. 9.

Acia subfascicularia Wakef., Trans. Proc. Roy. Soc. S. Aus., 1955, 1930.

Hymenophore annual, ceraceous, adnate, effused forming irregular linear areas 5–15 x 2–5 cm; hymenial surface fuscous, becoming black, finally deeply irregularly creviced, sometimes curling away from the substratum at edges of crevices; margin thinning out, dingy brown, often vernicose, pruinose, adnate. Spines crowded, subulate or cylindrical, 100–300μ tall, often aggregated into clusters, apices lighter in colour, often glistening, naked or bearing fine tufts of hyphae. Context fuscous, glistening, 90–150μ thick, composed of densely compacted and cemented intertwined hyphae, not arranged in definite intermediate and basal layers, arranged vertically in spine axes; generative hyphae 3.5–4μ diameter, walls 0.2–0.5μ thick, hyaline, tinted fuscous below and in bases of spines, naked or coated with mucilage granules, with clamp connexions. Cystidia cemented into a solid column in spines, projecting to 60μ, arising in base of spines, composed of hyphae 3–4μ diameter, with fuscous-tinted walls, naked below, some projecting from solid apices, either naked or encrusted. Hymenial layer to 30μ deep, a dense palisade of basidia, paraphyses and paraphysate hyphae. Basidia subclavate, 12–18 x 4.5–5μ, 2–4-spored; sterigmata erect, slender, to 5μ long. Paraphyses subclavate, 8–14 x 4–4.5μ. Paraphysate hyphae cylindrical or tapering, projecting to 30μ, naked, scattered or crowded. Spores suballantoid, some allantoid, 4–5 x 1.5–2.5μ, walls smooth, hyaline, 0.1μ thick.

TYPE LOCALITY. Mt. Lofty, South Australia.

DISTRIBUTION. Australia, New Zealand.

HABITAT. Effused on bark and decorticated wood of dead stems and trunks.

Beilschmiedia tarairi (A. Cunn.) Benth. & Hook. f.

Auckland: Te Moehau, Coromandel Peninsula, 500ft, January 1947, J. M. Dingley; Buffalo Beach, Whitianga, November 1947, Mrs. E. E. Chamberlain.

Cordyline australis (Forst. f.) Hook. f.

Auckland: Upper Piha Valley, Waitakeres, 900ft, April 1948, J. M. Dingley.

Eucalyptus globulus Lab.

Wellington: Waverley, 400ft, December 1946, E. E. Chamberlain.

Nothofagus cliffortioides (Hook. f.) Oerst.

Nelson: Murchison, 500ft, April 1956, S. D. & P. J. Brook; Lake Rotoiti, 2,000ft, April 1956, S. D. & P. J. Brook.

Nothofagus fusca (Hook. f.) Oerst.

Nelson: Murchison, 500ft, April 1956, S. D. & P. J. Brook.

Westland: Orwell Creek, Ahaura, April 1955, J. M. Dingley.

Nothofagus menziesii (Hook. f.) Oerst.

Otago: Alton Valley, Tuatapere, 600ft., February, 1954, J. M. Dingley.

Nothopanax arboreum (Forst. f.) Seem.

Auckland: Purewa Bush, December 1948, August 1950, D. W. McKenzie.

Nothopanax colensoi (Hook. f.) Seem.

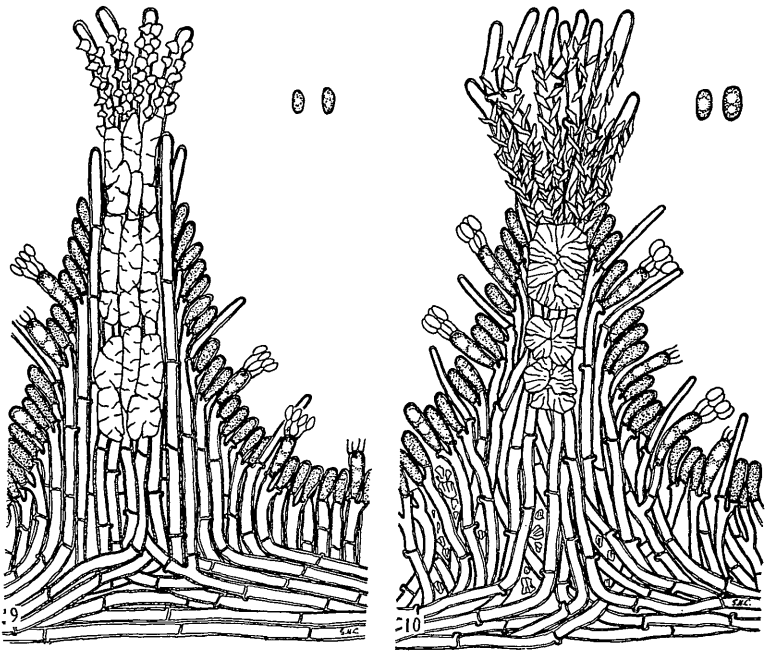
Taranaki: Mt. Egmont, 3,000ft, February 1952, G. H. C.

Weinmannia racemosa L.f.

Taranaki: Mt. Egmont, 2,500ft, January 1953, J. M. Dingley.

Otago: Lake Wilkie, Catlins, April 1957, S. D. & P. J. Brook.

Specimens listed match the type in Kew herbarium, ex "South Australia, Mt. Lofty, J. B. Cleland, May 1928, W", most differing in the darker colour of the surface which resembles that of *O. fusco-atra* (Fr.) Bres. Plants are somewhat ceraceous owing to the compact pseudoparenchymatous context which is composed of cemented parallel hyphae bearing mucilage granules. Spines are lighter in colour



TEXT-FIG. 9.—*Odontia subfasciculatia* (Wakef.) G. H. Cunn. × 500; spores × 1,000. Showing apex of spine bearing tuft of cystidia with crystals fused into a cylinder in spine axis.
TEXT-FIG. 10.—*Odontia lutea* G. H. Cunn. × 500; spores × 1,000. Showing apex of spine bearing tuft of cystidia which with crystals are fused into a cylinder in spine axis.
Original.

towards apices, because of the projecting columns of fused cystidia. The latter arise deeply in the context, beneath spines, as bundles of hyphae with fuscous-tinted walls. In the spines they become coated with crystals which fuse and form a solid column which projects above spine apices. Encrusted hyphae are present at apices of spines of many specimens, consequently the species is a member of the penicillate section of *Odontia*. Paraphysate hyphae are always present; scattered or crowded in loose clusters, they are cylindrical or slightly tapered, hyaline and naked. Surface colour ranges from dingy brown through fuscous to fuscous-black, plants often appearing varnished, especially at margins, owing to abundant mucilage which covers hyphae and even structures of the hymenial layer. Spores are mostly suballantoid, a few allantoid, and vary appreciably in length.

Two other species with solid columns of crystals occupying axes of spines are present in the Dominion, namely *O. columellifera* and *O. lutea*. Both may be separated by the different colour of the hymenial surface, different context structure, and larger spores of different shape.

10. **Odontia lutea** sp. nov. Text-fig. 10.

Hymenophorum annuum vel biennale, ceraceum, adnatum, effusum; superficies lutea, alte inaequaliter rimosa. Spinae 60–150μ longae, hemisphericae, apicibus cylindratis, nudis vel cristis hypharum crystallis tectarum, concolores. Hyphae generatoriae 3–3.5μ diam., parietibus 0.25μ crassis, hyalinis, nudis, nodulosis. Basidia subclavata, 16–24 x 5–6μ. Cystidia primo

separata, deinde in columellis quae ex apicibus spinarum eminent, conjuncta. Sporae ellipticae, 5–6 x 2.5–3μ, parietibus levibus.

Hymenophore annual or biennial, ceraceous, adnate, effused forming irregular areas 5–10 x 2–3 cm, sometimes extending to 30 x 10 cm; hymenial surface golden yellow when fresh, remaining so or becoming dingy though retaining colour in crevices, becoming deeply irregularly creviced exposing the substratum and tending to lift at edges of crevices; margin thinning out, fibrillose, white, adnate. Spines scattered or crowded, 60–150μ tall, dome-shaped with delicate white glistening apices which may be columnar or slightly penicillate with 2–7 projecting hyphae either naked or encrusted. Context chrome yellow, 0.2–1 mm thick, intermediate layer of mainly upright hyphae soon cemented into a pseudoparenchyma, basal layer a narrow zone of parallel hyphae soon collapsed and cemented; generative hyphae 3–3.5μ diameter, walls 0.25μ thick, hyaline, naked, with clamp connexions. Cystidia arising in the base of the spines, projecting to 90μ, or scarcely projecting, at first naked, when 5–6μ diameter with slightly inflated apices, septate, soon coated with rod-shaped crystals imbricately arranged, often fused into a solid column with hyphae at apices either emerging singly or in small tufts. Hymenial layer to 25μ deep, a dense palisade of basidia, paraphyses and paraphysate hyphae. Basidia subclavate, 16–24 x 5–6μ, 4-spored; sterigmata erect, slender, to 5μ long. Paraphyses subclavate, many cylindrical, 12–18 x 5–5.5μ. Paraphysate hyphae cylindrical with rounded apices, some fusiform or bluntly acuminate, projecting to 20μ. Spores elliptical, 5–6 x 2.5–3μ, apiculate, walls smooth, hyaline, 0.2μ thick.

DISTRIBUTION. Australia, New Zealand.

HABITAT. Effused on bark or more frequently decorticated wood of dead branches and trunks lying upon the forest floor.

Beilschmiedia tawa (A. Cunn.) Hook. f. & Benth.

Auckland: Claudelands Reserve, Hamilton, 100ft, October 1946, G. H. C.; Whakarewarewa, 1,200ft, June 1950, J. M. Dingley; Earthquake Flat, Rotorua, 2,000ft, September 1950, G. H. C.

Dysoxylum spectabile (Forst. f.) Hook. f.

Auckland: Mountain Road, Waitakeres, 700ft, March 1954, J. M. Dingley, *type collection*, P.D.D. herbarium, No. 17925.

Eucalyptus globulus Lab.

Wellington: Waverley, 400ft, December 1946, E. E. Chamberlain.

Metrosideros robusta A. Cunn.

Auckland: Mt. Te Aroha, 2,300ft, November 1946, G. H. C.; Waipoua Kauri Forest, April 1947, J. M. Dingley.

Nothofagus truncata (Hook. f.) Oerst.

Auckland: Lake Waikaraemoana, 3,000ft, September 1950, G. H. C.

Salix babylonica L.

Nelson: Appleby, April 1956, S. D. Brook.

Weinmannia racemosa L.f.

Auckland: Mamaku Forest, 2,000ft, December 1953, G. H. C.

Specific features are the golden yellow hymenial surface, fused cystidia, pseudoparenchymatous thick context and small elliptical spores. Cystidia at first are naked and arranged in small bundles in axes of the spines, some projecting in fascicles beyond their apices. At this stage they are scarcely differentiated from context hyphae save in position and slightly greater diameter, and inflated or acuminate apices. They soon become coated with rod-shaped crystals arranged imbricately, and either remain separate from one another, especially near apices, or become cemented by fused crystals into a solid column with apices either columnar or bearing tufts of two or three groups of cemented hyphae. Most collections are sterile, for basidia are formed at an early stage and soon collapse. The hymenial surface is readily destroyed by snails or insects so that it is usually possible to secure adequate sections through the hymenial layer only from protected areas in crevices or insect tunnels. Colour is produced by groups of acicular crystals aggregated into frondose tufts in context and hymenium and also upon the surface.

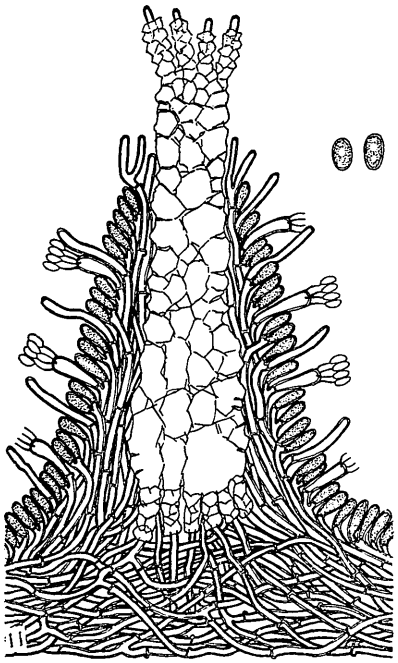
In its fused cystidia forming a column in spine axes the species resembles *O. columellifera* and *O. subfasciculuria*. From both it may be separated by the surface colour, larger diameter of generative hyphae and arrangement of context tissues.

11. **Odontia columellifera** sp. nov. Text-fig. 11.

Hymenophorum annuum, ceraceo-cretaceum, adnatum, effusum; superficies alutacea, non rimosa. Spinae conicae, 50–150μ longae, concolores, fasciculis hypharum incrustatarum apicibus, vel columellis crystallorum conjunctorum. Hyphae generatoriae 2–3μ diam., parietibus 0.5μ crassis, hyalinis, nudis, nodulosis. Basidia subclavata, 18–24 x 4.5–6μ. Sporae ellipticae, 4.5–6 x 2.5–3μ, parietibus levibus.

Hymenophore annual, ceraceous-cretaceous, adnate, effused forming irregular areas 7–11 x 2–5 cm; hymenial surface pallid tan or alutaceous, not creviced; margin thinning out, pallid tan, adnate, fibrillose. Spines crowded, conical, 50–150μ tall, bearing apically tufts of encrusted hyphae or as frequently columns of fused crystals embedding hyphae and projecting to 50μ. Context tan, 80–160μ deep, intermediate layer of densely intertwined hyphae, basal layer a narrow zone of parallel hyphae; generative hyphae 2–3μ diameter, walls 0.5μ thick, hyaline, naked, with clamp connexions. Cystidia either projecting as encrusted hyphae from spine apices, or cemented into a column of fused crystals enclosing hyphae, occupying axes of spines and projecting above spine apices. Hymenial layer to 30μ deep, a close palisade of basidia, paraphyses and paraphysate hyphae. Basidia subclavate, 18–24 x 4.5–6μ, 2–4-spored; sterigmata slightly arcuate, slender, to 6μ long. Paraphyses subclavate, 12–18 x 4–5μ. Paraphysate hyphae cylindrical, projecting to 20μ, 3–4μ diameter. Spores elliptical, 4.5–6 x 2.5–3μ, walls smooth, hyaline, 0.1μ thick.

DISTRIBUTION. New Zealand.



TEXT-FIG. 11.—*Odontia columellifera* G. H. Cunn. × 500; spores × 1,000. Showing apex of spine containing a cylinder of crystals with hyphae free at apex, and cylinder of fused crystals occupying the axis of the spine.

Original.

HABITAT. Effused on bark and decorticated wood of dead branches and stems.

Coprosma lucida Forst.

Auckland: Coromandel Peninsula, 1,000ft, October 1954, J. M. Dingley.

Knightia excelsa R.Br.

Auckland: Rangemore Track, Waitakeres, 900ft, July 1951, J. M. Dingley.

Leptospermum ericoides A. Rich.

Auckland: Huia, November 1945, G. H. C.

Leptospermum scoparium Forst.

Auckland: Huia, 200ft, January 1954, E. E. Chamberlain; Campbell's Bay, November 1955, E. E. Chamberlain, *type collection,* P.D.D. herbarium, No. 18099.

Metrosideros excelsa Sol.

Auckland: White's Stream, Piha, 200ft, January 1953, J. M. Dingley.

Pseudowintera colorata (Raoul) Dandy

Otago: Niagara, Catlins, April 1957, S. D. & P. J. Brook.

Weinmannia racemosa L.f.

Westland: Pukekura, November 1954, J. M. Dingley.

Cystidia may be represented either by tufts of encrusted hyphae projecting from apices of spines, or by columns of fused crystals and hyaline hyphae which may occupy axes of spines and project as glistening columns above spine apices.

From *O. subfasciculariа* the species is separated by the thinner hyphae and different arrangement of the context, elliptical spores and differently coloured hymenial surface with smaller spines. Both were compared with part of the type of *Hydnum fasciculare* Berk. & Curt. from South Carolina, kindly loaned by the Director of the Royal Botanic Gardens, Kew. Although they show a general resemblance to *H. fasciculare,* they differ in the presence of a solid column in the spines, different arrangement of context and in shape and arrangement of spines. Spores were not found in the type of *H. fasciculare.*

12. **Odontia hydnoides** (Cooke & Massee) Hoehnel, Sitzungsberichte K. Akademie de Wissenschaften, Wien, *118,* 817, 1909. Text-fig. 12.

Peniophora hydnoides Cke. & Mass., Grev., *16,* 77, 1888.
Odontia conspersa Bres., Accad. Sci. Lett. Rovereto, III, *3,* 100, 1897.
Peniophora crystallina H. & L., Sitz. Akad., Wiss., Wien, *116,* 828, 1907.

Hymenophore annual, ceraceous, adnate, effused forming numerous irregular colonies 5–30 mm long, sometimes merged into irregular linear areas 3–5 x 2 cm; hymenial surface white, remaining so on drying, not creviced; margin thinning out, white, adnate, fibrillose or pruinose. Spines conical, 90–130μ tall, crowded or scattered, bearing apically 1–3 large septocystidia and laterally numerous imbricately arranged fusiform cystidia. Context white, 50–70μ thick, intermediate layer wanting, basal layer of thick-walled cemented parallel hyphae from which the hymenium arises directly, becoming pseudoparenchymatous; generative hyphae 5–7μ diameter, walls 1–1.5μ thick, hyaline, naked, without clamp connexions. Cystidia crowded in the hymenium, projecting to 30μ, fusiform with long acuminate apices, 16–55 x 8–16μ, walls 1–3μ thick, finely encrusted. Septocystidia confined to apices of spines, projecting for about half their length, cylindrical or subulate, 40–70 x 8–12μ, 3–5 septate, sometimes inflated between septa, walls 1–2μ thick, finely encrusted. Hymenial layer to 20μ deep, a dense palisade of basidia, paraphyses and cystidia. Basidia subclavate, 12–16 x 3.5–4μ, 4-spored; sterigmata erect, delicate, to 3μ long. Paraphyses subclavate, 8–12 x 3–3.5μ. Spores allantoid, 3–3.5 x 1–1.25μ, walls smooth, hyaline, 0.1μ thick.

TYPE LOCALITY. Carlyle, Great Britain.

DISTRIBUTION. Great Britain, Europe, North America, New Zealand.

HABITAT. Effused on bark or decorticated wood of dead branches.

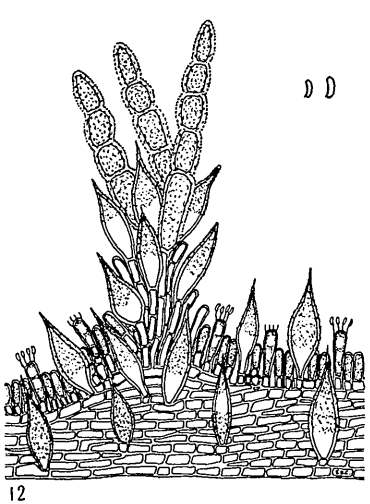
Coprosma australis (A. Rich.) Robinson

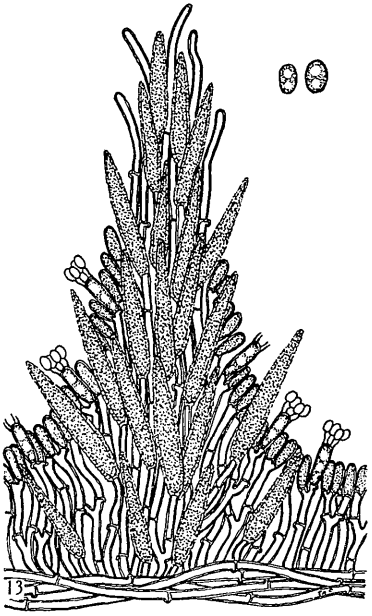
Auckland: Waiatarua, Waitakeres, 900ft, November 1948, J. M. Dingley; Lake Rotoehu, 1,200ft, December 1953, G. H. C.

Vitex lucens Kirk

Auckland: Huia, 100ft, January 1955, E. E. Chamberlain.

Readily recognized by the prominent encrusted, fusiform cystidia with long acuminate apices, crowded in hymenium and spines, large septocystidia projecting from spine apices, absence of an intermediate layer, and small allantoid spores. The context is composed of cemented parallel hyphae densely compacted into a pseudoparenchyma. From this the hymenium arises directly, as in *Peniophora rimosa* and its allies. Basidia are small and inconspicuous. Septocystidia are coated with crystals, appearing warted, 3–5 septate, and confined to the apical region of the spines, from which they project for about half their length.





TEXT-FIG. 12.—*Odontia hydnoides* (C. & M.) Hoehn. × 500; spores × 1,000. Showing septocystidia occupying apical portion of spine, numerous fusiform cystidia and pseudoparenchymatous basal layer.

TEXT-FIG. 13.—*Odontia fimbriata* Pers. ex Fr. × 500; spores × 1,000. Showing numerous cystidia projecting from spine.

Original.

13. **Odontia fimbriata** (Persoon) Fries, Epicrisis systematis Mycologici . . ., 529, 1838. Text-fig. 13.

Hydnum fimbriatum Pers. (Obs. Myc., *1*, 88, 1796), ex Fries, Syst. Myc., *1*, 421, 1821.
Sistotrema fimbriatum Pers., Syn. Meth. Fung., 553, 1801.
Hydnum ciliolatum Berk. & Curt., Jour. Bot. & Kew Misc., *1*, 235, 1849.
Odontia secernibilis Berk., Fl. Tas., *2*, 257, 1860.
Mycoleptodon fimbriatum (Pers.) B. & G., Bull. Soc. Myc. Fr., *30*, 276, 1914.
Gloiodon fimbriatum (Pers.) Donk, Ned. Bot. Verh., *1*, 79, 1930.

Hymenophore annual, membranous-cretaceous, adnate, effused forming irregular linear areas to 14 x 2 cm, with several irregular linear outlying islands; hymenial surface cream, or alutaceous, sometimes cinnamon, irregularly usually deeply areolately creviced; margin thinning out, arachnoid, white, adnate; spines irregular, angular with broad bases and penicillate apices, often laterally flattened, to 0.5 mm tall, separate or sometimes aggregated into tufts of 3–4

at the base, with apices free. Context 50–80μ deep, white, intermediate layer of intertwined hyphae, basal layer scanty, of parallel hyphae; generative hyphae 2.5–3μ diameter, walls 0.2μ thick, naked, hyaline, with clamp connexions, becoming pseudoparenchymatous. Cystidia crowded in spines and context, sometimes confined to spine apices, projecting to 20μ, fusiform or subulate, 24–55 x 6–10μ, coarsely encrusted. Hymenial layer to 25μ deep, a dense palisade of basidia and paraphyses associated with cystidia. Basidia subclavate, 12–15 x 5–6μ, 4-spored; sterigmata erect, slender, to 5μ long. Paraphyses clavate, 8–12 x 4.5–5μ. Spores elliptical, some suballantoid, 5–6 x 3.5–4μ, apiculate, walls smooth, hyaline, 0.1μ thick.

TYPE LOCALITY. Europe.

DISTRIBUTION. Europe, Great Britain, North America, Samoa, New Zealand.

HABITAT. Effused on bark or decorticated wood of dead branches.

Beilschmiedia tawa (A. Cunn.) Hook. f. & Benth.

Auckland: Whitianga Road, Coromandel Peninsula, 500ft, August 1954, J. M. Dingley; Lake Okataina, 1,500ft, September 1954, G. H. C.

Brachyglottis repanda Forst.

Auckland: Cascade Park, Waitakeres, 900ft, March 1950, J. M. Dingley.

Taranaki: Mt. Messenger, 600ft, August 1955, G. H. C.

Coprosma arborea Kirk

Auckland: Taupiri Mt., November 1954, J. M. Dingley.

Coprosma australis (A. Rich.) Robinson

Auckland: Lake Okataina, 1,400ft, June 1951, J. M. Dingley; Mountain Road, Waitakeres, 900ft, June 1955, J. M. Dingley.

Corynocarpus laevigata Forst.

Auckland: Te Hope, Coromandel Peninsula, January 1946, J. M. Dingley.

Dysoxylum spectabile (Forst. f.) Hook. f.

Auckland: Waiomo Valley, Thames, August 1954, S. D. Baker; Taupiri Mt., 900ft, November 1954, J. M. Dingley.

Edwardsia microphylla Salisb.

Wellington: Turangi, Lake Taupo, 1,300ft, October 1949, J. M. Dingley.

Fuchsia excorticata L.f.

Nelson: Maitai Valley, April 1956, S. D. Brook.

Hedycarya arborea Forst.

Auckland: Mountain Road, Waitakeres, 900ft, September 1950, J. M. Dingley.

Leptospermum ericoides A. Rich.

Auckland: Great King Island, January 1952, E. E. Chamberlain.

Litsaea calicaris (Sol.) Benth. & Hook. f.

Auckland: Woodhill, 200ft, July 1953, J. M. Dingley.

Macropiper excelsum (Forst. f.) Miq.

Auckland: White's Stream, Piha, January 1954, J. M. Dingley.

Melicytus ramiflorus Forst.

Auckland: White's Stream, Piha, April 1950, J. M. Dingley; Kauaeranga Valley, Thames, June 1950, J. M. Dingley; Lake Okataina, 1,400ft, June 1951, J. M. Dingley; Mt. Te Aroha, 1,500ft, September 1954, G. H. C.

Wellington: Mt. Pihanga, 2,500ft, October 1949, J. M. Dingley; Ruahine Ranges, 1,200ft, January 1956, G. H. C.

Myrtus pedunculata Hook. f.

Auckland: Woodhill, 100ft, July 1953, J. M. Dingley.

Muehlenbeckia australis (Forst. f.) Meissn.

Auckland: Kauaeranga Valley, Thames, June 1950, J. M. Dingley; Rangitoto Island, July 1950, J. M. Dingley.

Nothofagus menziesii (Hook. f.) Oerst.

Nelson: Murchison, April 1956, S. D. & P. J. Brook.

Nothopanax colensoi (Hook. f) Seem.

Westland: Waiho, 600ft, November 1946, J. M. Dingley.

Olearia furfuracea Hook. f.
Auckland: Rangitoto Island, August 1948, P. M. Ambler.
Olearia rani (A. Cunn.) Ckn.
Auckland: Rangitoto Island, May 1948, J. M. Dingley.
Populus alba L.
Auckland: Tauranga, coast, June 1948, M. Hodgkins.
Rhabdothamnus solandri A. Cunn.
Wellington: Woodville Reserve, 200ft, August 1955, G. H. C.
Suttonia australis A. Rich.
Auckland: Purewa Bush, August 1948, J. M. Dingley.

Identified readily by the small fusiform cystidia usually crowded in spines and context and small broadly elliptical spores. Some plants are slightly rhizomorphic, but the condition is not as well developed as in European plants examined in Kew herbarium. Appreciable variations were noted in different collections, in length and shape of cystidia, size and shape of spores, presence or absence of rhizomorphs and colour of the hymenial surface. None was sufficiently distinct to warrant separation.

Our collections agree with the type of *O. secernibilis* Berk., ex "Tasmania, W. Archer, Esq." which on the type sheet in Kew herbarium was by Banker referred to *O. fimbriata*. From typical forms of the latter *O. secernibilis* differs in absence of rhizomorphs, smaller cystidia and slightly larger spores, but is too close to be regarded as distinct, especially when so many variations have been found in the numerous specimens at hand. *Hydnum ciliolatum* Berk. & Curt., the type of which, ex "South Carolina, Ravenel" was examined in Kew herbarium, has the same microfeatures and is therefore regarded as a synonym.

14. **Odontia nothofagi** sp. nov. Pl. 10, fig. 4; Text-fig. 14.

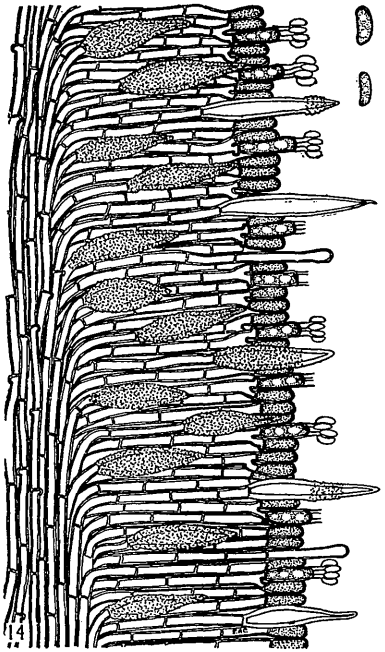
Hymenophorum annuum, coriaceum, adnatum, effusum; superficies ferruginea ad brunneam, deinde inaequaliter rimosa. Spinae 6–10 mm longae, subulatae, basim conjunctae, concolores. Hyphae generatoriae 4–6μ diam., parietibus 0.2μ crassis, hyalinis, nudis, nodulosis. Basidia subclavata, 12–16 x 3.5–4μ. Cystidia cylindrata, fusiformia vel ventricosa, 40–65 x 10–18μ, crystallis hyalinis tecta. Hyphae paraphysatae clavatae, ad 15μ eminentes. Sporae allantoides, 4–6.5 x 1.5–2μ, parietibus levibus.

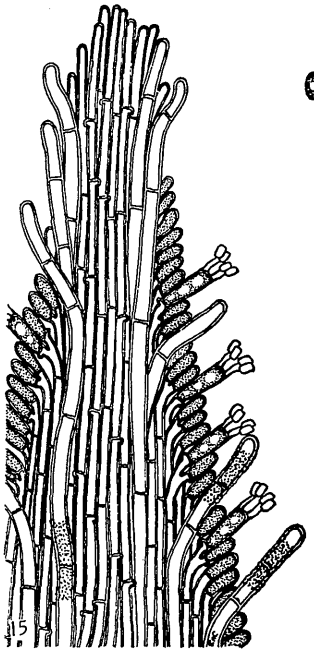
Hymenophore annual, coriaceous, adnate, effused forming irregularly oval or linear areas 7–10 x 3–7 cm; hymenial surface ferruginous to vandyke brown, when old greyish-brown, becoming irregularly creviced exposing the substratum; margin thinning out, fawn, coarsely fibrillose, adnate. Spines subulate, crowded, usually fused at the base, solitary at acuminate apices, 6–10 mm long, concolorous. Context cream, 0.5–3 mm thick, intermediate layer of loosely intertwined hyphae becoming pseudoparenchymatous, basal layer a broad or narrow zone of mainly parallel hyphae; generative hyphae 4–6μ diameter, walls 0.2μ thick, hyaline, naked, with clamp connexions. Cystidia crowded in the subhymenium in parallel series at right angles to spine axes, some projecting to 35μ, usually fusiform or ventricose, some cylindrical, 40–65 x 10–18μ, surface usually densely encrusted, walls sometimes tinted. Hymenial layer to 250μ deep, a dense palisade of basidia, paraphyses and paraphysate hyphae and a deep subhymenium containing masses of cystidia. Basidia subclavate, 12–16 x 3.5–4μ, 4-spored; sterigmata erect, slender, to 4μ long. Paraphyses cylindrical, 8–12 x 3–3.5μ. Paraphysate hyphae scanty or abundant, projecting to 15μ, clavate at apices. Spores allantoid, 4–6.5 x 1.5–2μ, walls smooth, hyaline, 0.1μ thick.

DISTRIBUTION. New Zealand.

HABITAT. Effused on bark or decorticated wood of dead trunks.

Nothofagus cliffortioides (Hook. f.) Oerst.
Nelson: Lake Rotoiti, 2,000ft, April 1956, S. D. & P. J. Brook.
Nothofagus fusca (Hook. f) Oerst
Nelson: Staircase Creek, Reefton, 2,000ft, November 1952, S. D. Baker; Marble Mountain, Maruia, April 1957, S. D. & P. J. Brook.
Westland: Orwell Creek, Ahaura, April 1955, J. M. Dingley.
Nothofagus menziesii (Hook. f.) Oerst.
Wellington: Mt. Ruapehu, 3,000ft, April 1947, J. M. Dingley.





TEXT-FIG. 14.—*Odontia nothofagi* G. H. Cunn. × 500; spores × 1,000. Portion of spine showing lateral arrangement of cystidia

TEXT-FIG. 15.—*Odontia oblongospora* G. H. Cunn. × 500; spores × 1,000. Apical portion of spine showing oblique arrangement of cystidia.

Original.

Otago: Woodlaw State Forest, November 1946, G. B. Rawlings, *type collection,* P.D.D. herbarium, No. 7281.

Superficially the species resembles *Hydnum sclerodontium* Mont. & Berk. from Java, possessing similar long spines arising from a conspicuous plane surface. It differs in microfeatures and different surface colour. The species also resembles *Odontia fusco-atra* (Fr.) Bres. possessing similar spores and arrangement of cystidia. It differs in the much larger spines, differently coloured hymenophore, and size and shape of cystidia. The latter vary appreciably in size and shape, degree of development of encrusting crystals, and extent to which they project. Plants possess an unpleasant odour, noticeable even after long keeping in the herbarium.

15. **Odontia tessellata** sp. nov. Pl. 10, fig. 1; Text-fig. 16.

Hymenophorum perenne, ceraceum, laxe adjunctum, effusum; superficies cremea ad pallide alutaceam, in tessellis rimosa. Spinae in hemisphericis verrucis, 0.2–0.5 mm longis, concoloribus. Hyphae generatoriae 2.5–3μ diam., parietibus 0.2μ crassis, hyalinis, nudis, nodulosis. Basidia subclavata, 12–16 x 3.5–4μ. Cystidia cylindrata, apicibus attenuatis, 24–50 x 5–7μ, parietibus nudis vel interdum crystallis raris, in contextu oblongo-elliptica, 12–18μ diam., crystallis tecta, longis nudis pediculis. Sporae allantoides, 4–5 x 1.5–2μ, parietibus levibus.

Hymenophore perennial, woody-ceraceous, loosely attached, effused forming linear areas to 20 x 9 cm; hymenial surface cream to pallid alutaceous, deeply creviced, broken into tessellated areas about 1 cm across; margin abrupt and cliff-like, concolorous, or reddish-brown,

loosely attached, lifting. Spines reduced to hemispheric warts which are evenly spaced, 0.2–0.5 mm tall. Context 2–2.5 mm thick, isabelline, zoned, zones delimited by cystidia and/or masses of crystals, each zone consisting of an intermediate layer of upright compact hyphae, basal layer of a few repent hyphae; generative hyphae 2.5–3μ diameter, walls 0.2μ thick, hyaline, naked, with clamp connexions. Cystidia crowded in the hymenium, when projecting to 25μ, cylindrical or more frequently attenuate towards apices, 24–50 x 5–7μ, walls naked or bearing a few crystals, sometimes capped; in the context appearing oblong-elliptical because of the coarsely encrusting crystals, 12–18μ diameter, pedicels long and naked. Hymenial layer to 20μ deep, a dense palisade of basidia, paraphyses and cystidia. Basidia subclavate, 12–16 x 3.5–4μ, 4-spored; sterigmata slender, erect, to 3μ long. Paraphyses subclavate, 8–12 x 3–3.5μ. Spores allantoid, 4–5 x 1.5–2μ, walls smooth, hyaline, 0.1μ thick.

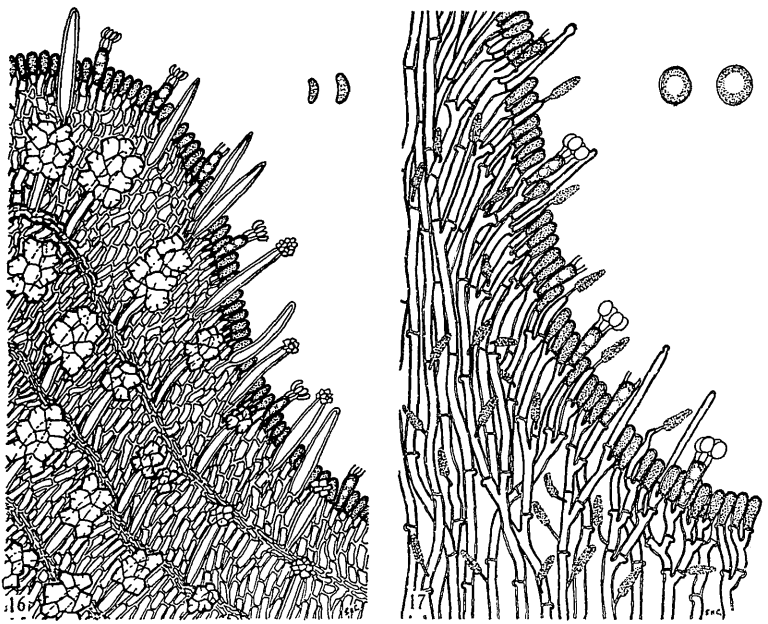
DISTRIBUTION. New Zealand.

HABITAT. Effused on bark or decorticated wood of dead stems.

Weinmannia racemosa L.f.

Otago: Ulva Islet, Stewart Island, February 1954, J. M. Dingley, *type collection*, P.D.D. herbarium, No. 18041.

Readily identified by the thick and tough context, perennial habit, peculiar surface, unusual cystidia and small allantoid spores. Spines are reduced to hemispheric warts or granules, evenly distributed over the surface. At an early stage the surface becomes tessellated, crevices penetrating so deeply that each cube is separated from its fellow. As the context is somewhat gelatinous, cubes tend to curl and lift at edges, increasing the tessellated appearance. The context is zoned with alternating layers of compact hyphae, pseudoparenchymatous beneath the current zone, and masses of cystidia sometimes accompanied by crystals. Cystidia



TEXT-FIG. 16.—*Odontia tessellata* G. H. Cunn. × 500; spores × 1,000. Portion of dome-shaped spine showing zoned context and embedded encrusted cystidia and the projecting naked cystidia.
TEXT-FIG. 17.—*Odontia arguta* (Fr.) Quel. × 500; spores × 1,000. Portion of spine showing numerous spathulate cystidia.

Original.

when young are cylindrical or fusiform and naked or capped with a few crystals; in older parts of the plant they are heavily encrusted on the apical portion, crystal masses extending to 18μ across with, below, the naked pedicels.

Superficially the species resembles a *Radulum;* it has been placed under *Odontia,* however, because of the presence of encrusted cystidia.

16. **Odontia arguta** (Fries) Quelet, Flore de mycologique de la France, 435, 1888. Text-fig. 17.

Hydnum argutum Fr., Syst. Myc., *1*, 424, 1821.
Hydnum filicicolum Berk., Fl. Tas., *2*, 256, 1860.

Hymenophore annual or biennial, membranous, fragile, adnate, effused forming irregularly linear areas to 25 x 3 cm; hymenial surface cream, becoming alutaceous and when old tan or wood colour with darker spines, not creviced, or when old irregularly so; margin thinning out, fibrillose, cream, adnate. Spines crowded, usually subulate, often dentate and flattened laterally, 0.5–5 mm long, apices acute, often branched, finely penicillate, bases often fused. Context isabelline, 0.2–1 mm thick, sometimes zoned, intermediate layer of intertwined mainly erect hyphae, mostly naked, more densely compacted in the subhymenium and becoming pseudoparenchymatous when old, basal layer a narrow zone of compact parallel naked hyphae; generative hyphae 3–4μ diameter, walls 0.25μ thick, hyaline, staining, with clamp connexions. Cystidia copiously developed, arising from hyphae of the context and spines, and as terminal ends of paraphysate hyphae, 10–22 x 2–3μ, stems solid, 0.5–1μ diameter, staining, apices encrusted for 6–12μ of their length. Hymenial layer to 30μ deep, a dense palisade of basidia, paraphyses, paraphysate hyphae and cystidia. Basidia subclavate, 12–18 x 5–6μ, 2–4-spored; sterigmata slender, arcuate, to 4μ long. Paraphyses subclavate, 10–15 x 4.5–5μ. Paraphysate hyphae scanty or abundant, cylindrical, projecting to 25μ, often with apices inflated. Spores globose when 4.5–5.5μ diameter, or more often subglobose or oval, 5–6 x 4–4.5μ, walls smooth, hyaline, 0.1μ thick.

TYPE LOCALITY. Europe.

DISTRIBUTION. Europe, Great Britain, North America, Australia, Tasmania, New Zealand.

HABITAT. Effused on bark or more usually decorticated wood of dead branches, trunks and sawn timber.

Agathis australis Salisb.
Auckland: Waipoua Kauri Forest, April 1947, J. M. Dingley.

Aristotelia serrata (Forst. f.) Oliver
Auckland: Kaimai Range, 1,500ft, July 1950, J. M. Dingley.

Beilschmiedia tawa (A. Cunn.) Hook. f. & Benth.
Auckland: Waitomo, 200ft, August 1946, G. H. C.; Blue Lake, Rotorua, 1,300ft, June 1951, J. M. Dingley.
Wellington: Weraroa, 50ft, July 1919, G. H. C.

Brachyglottis repanda Forst.
Auckland: Waiomo Valley, Thames, June 1950, J. M. Dingley.

Cupressus macrocarpa Hartw.
Auckland: Mt. Albert, 150ft, May 1949, D. W. McKenzie; Orewa, 100ft, August 1952, B. J. Hooton; Campbell's Bay, December 1953, E. E. Chamberlain.

Dacrydium cupressinum Sol.
Auckland: Mt Eden, 350ft, June 1946, G. H. C.; Mt. Albert, 150ft, August 1947, J. D. Atkinson.
Otago: Lake Wilkie, Catlins, April 1957, S. D. & P. J. Brook.

Edwardsia microphylla Salisb.
Auckland: Orakei Bush, September 1948, D. W. McKenzie.

Hoheria glabrata Sprague & Summerh.
Canterbury: Governor's Bush, Hermitage, 2,500ft, February 1947, G. T. S. Baylis.

Hoheria populnea A. Cunn.
Auckland: Mt. Eden, 350ft, November 1946, G. H. C.; Mountain Road, Waitakeres, 700ft, July 1950, J. M. Dingley.

Leptospermum ericoides A. Rich.

Auckland: Great King Island, January 1952, E. E. Chamberlain; Little Barrier Island, June 1956, F. J. Newhook.

Melicytus ramiflorus Forst.

Auckland: Muriwai Beach, May 1946, G. H. C.; Paparata, 400ft, October 1946, G. H. C.; Te Moehau, Coromandel Peninsula, 700ft, November 1947, J. M. Dingley; Earthquake Flat, Rotorua, 1,600ft, September 1950; G. H. C.; Waiomo Valley, Thames, October 1950, J. M. Dingley; Lake Okataina, 1,400ft, June 1951, J. M. Dingley; Mountain Road, Henderson, 700ft, June 1953, J. M. Dingley; Huia, 100ft, January 1954, Mrs. E. E. Chamberlain; Kauaeranga Valley, Thames, August 1954, J. M. Dingley; Anawhata Road, Waitakeres, 900ft, May 1955, J. M. Dingley; Rangemore Track, Waitakeres, 900ft, July 1955, J. M. Dingley; Lake Rotoehu, 1.200ft, October 1955, June 1957, G. H. C.; Waikaretu, 500ft, May 1956, Mrs. E. E. Chamberlain.

Otago: Taieri Mouth, 200ft, May 1952, G. T. S. Baylis.

Podocarpus spicatus R. Br.

Auckland: Te Whaiti, 1,000ft, June 1951, J. M. Dingley.

Podocarpus hallii Kirk

Taranaki: Mt. Egmont, 3,000ft, January 1953. J. M. Dingley.

Wellington: Oturere River, Mt. Tongariro, 3.000ft, December 1946, G. H. C.; Ketetahi Stream, Mt. Tongariro, 3,000ft, January 1947, G. H. C.

Podocarpus totara Don

Auckland: Kauaeranga Valley, Thames, August 1954, J. M. Dingley.

Salix fragilis L.

Wellington: Palmerston North, March 1951, E. M. Hay.

Odontia arguta may be recognized readily by the peculiar minute spathulate cystidia copiously developed from hyphae of the context and spines. They arise from short lateral branches from walls of the hyphae, or ends of paraphysate hyphae. Stems are seldom of a diameter greater than 1μ, solid, stain deeply with aniline blue, and each bears on the distal portion for a length of 6–12μ a sheath of fine crystals. New Zealand and Australian collections are usually thicker than European plants, spines in many reaching a length of 5 mm, whereas in European specimens they seldom exceed 2 mm. Spores are sometimes larger and more subglobose than in European plants, but as in the numerous specimens at hand all forms from typical European to extreme Australian forms are present it is evident such differences are without specific value. Walls of hyphae are usually naked and stain with aniline blue. Spines vary appreciably both in length and shape. Some are flattened laterally, most bear one or more branches, and in old plants may be fused at their bases. In three collections cystidia of the hymenial layer are twice as large as those of the context, but in other features are the same.

17. **Odontia bicolor** (Albertini & Schweinitz) Bresadola, Annales Mycologici, *1*, 87, 1903. Text-fig. 18.

Hydnum bicolor Alb. & Schw. (Consp. Fung., 270, 1805) ex Fries, Syst. Myc., *1*, 417, 1821.

Hydnum subtile Fr., Syst. Myc., *1*. 425. 1821.

Odontia subtilis (Fr.) Quel., Fl. Myc. Fr., 435, 1888.

Hydnum serratum Peck, N.Y. State Mus., Rept. *50*, 112, 1897.

Hymenophore annual or biennial, membranous, adnate but tending to lift in old specimens, forming irregular areas to 15 x 5 cm; hymenial surface cream, becoming alutaceous or pallid buff, at length deeply areolately creviced; margin thinning out, fibrillose, cream, adnate. Spines crowded, at first separate and conical or subulate, apices tufted with naked projecting hyphae, sometimes branched, 0.3–2 mm tall, becoming aggregated into groups separated by deep crevices. Context white, 50–300μ deep, intermediate layer of intertwined loosely arranged hyphae embedding numerous vesicles, more dense beneath the hymenium, basal layer a narrow zone of compact partly gelatinized hyphae; generative hyphae irregular, 3–4μ diameter, walls 0.2–0.5μ thick, hyaline, usually naked, with clamp connexions. Vesicles crowded in the context

and axes of spines, some projecting, composed of an inner globose vesicle within an outer depressed-globose one, 16–26μ diameter. Hymenial layer to 25μ deep, a dense palisade of basidia, paraphyses and paraphysate hyphae. Basidia clavate, 12–18 x 4.5–6μ, 4-spored; sterigmata arcuate, slender, to 5μ long. Paraphyses clavate, 6–9 x 4.5–6μ. Paraphysate hyphae (or cystidia) projecting, with inflated apices 5–7μ diameter, either naked or more often coated with acicular crystals grouped in a stellate pattern when 6–16μ across; sometimes also embedded in the context and substratum. Spores obovate, ovate or broadly elliptical, apiculate, some flattened on one side, 4.5–5.5 x 3.5–4μ, walls smooth, hyaline, 0.1μ thick.

TYPE LOCALITY. Germany.

DISTRIBUTION. Europe, Great Britain, North America, New Zealand.

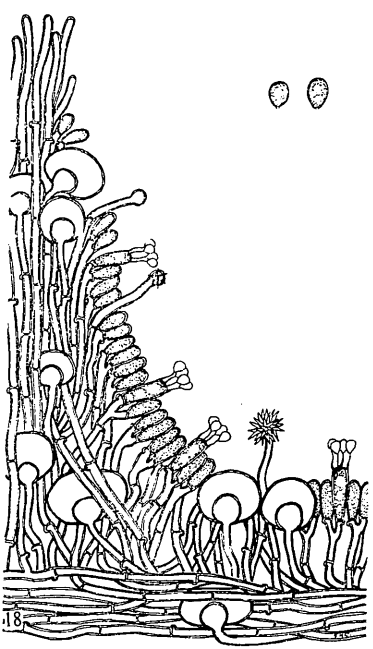
HABITAT. Effused on bark or more often decorticated wood of dead branches and stems.

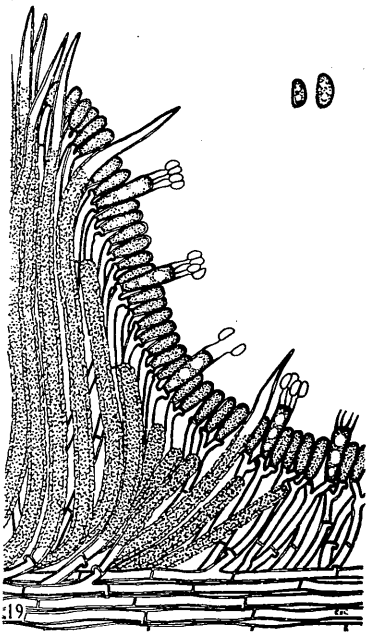
Agathis australis Salisb.

Auckland: Waipoua Kauri Forest, September 1949, J. M. Dingley.

Beilschmiedia tawa (A. Cunn.) Hook. f. & Benth.

Auckland: Waiotapu, 1,500ft, February 1927, G. H. C.; Kohukohunui Ridge, Hunua Range, 1,100ft, October 1946, J. M. Dingley; Little Huia, 200ft, February 1949, E. E. Chamberlain; Clevedon, 40ft, August 1949, J. M. Dingley; Te Whaiti, 1,200ft, June 1951, J. M. Dingley; Lake Rotoehu, 1,200ft, October 1956, G. H. C.





TEXT-FIG. 18.—*Odontia bicolor* (A. & Sw.) Bres. × 500; spores × 1,000. Portion of spine showing vesicles and capitate paraphysate hyphae some encrusted with stellately arranged crystals.

TEXT-FIG. 19.—*Odontia archeri* (Berk.) Wakef. × 500; spores × 1,000. Portion of spine showing embedded encrusted cystidia and naked acuminate projecting ends of same.

Original.

Cordyline australis (Forst. f.) Hook. f.
Auckland: Upper Piha Valley, Waitakeres, 900ft, April 1948, J. M. Dingley.
Coriaria ruscifolia L.
Auckland: Huia, 100ft, July 1947, J. M. Dingley.
Cupressus macrocarpa Hartw.
Auckland: Campbell's Bay, 150ft, November 1952, E. E. Chamberlain.
Dacrydium cupressinum Sol.
Auckland: Huia Filters, Waitakeres, 700ft, November 1948, J. M. Dingley; Mountain Road, Waitakeres. 900ft, July 1950, J. M. Dingley.
Edwardsia microphylla Salisb.
Auckland: Purewa Bush, May 1949, D. W. McKenzie.
Eucalyptus globulus Lab.
Wellington: Waverley, 400ft, December 1946, Mrs. E. E. Chamberlain.
Fuchsia excorticata L.f.
Auckland: Moumoukai Valley, Hunua Range, 900ft, October 1946, J. M. Dingley; Wairakei, March 1953, J. M. Dingley.
Hedycarya arborea Forst.
Auckland: Helena Bay, Whangarei, June 1948, J. M. Dingley; Upper Piha Valley, Waitakeres, 900ft, August 1953, J. M. Dingley.
Leptospermum ericoides A. Rich.
Auckland: Great King Island, January 1952, E. E. Chamberlain; Huia, 100ft, January 1956, E. E. Chamberlain.
Melicope ternata Forst.
Auckland: Kauaeranga Valley, Thames, June 1950, J. M. Dingley.
Pinus radiata Don
Auckland: Oratia, 100ft, September 1948, D. W. McKenzie; Mt. Albert, 150ft, July 1952, J. D. Atkinson.
Nelson: Appleby, 150ft, April 1956, S. D. Brook.
Pittosporum tenuifolium Banks & Sol.
Auckland: Upper Piha Valley, Waitakeres, 900ft, August 1949, J. M. Dingley.
Podocarpus dacrydioides A. Rich.
Auckland: Hillcrest, Northcote, 300ft, May 1949, E. E. Chamberlain; Moturoa, Bay of Islands, 80ft, May 1956, J. D. Atkinson.
Podocarpus spicatus R. Br.
Auckland: Te Whaiti, 1,500ft, June 1951, J. M. Dingley.
Pseudopanax crassifolium (Sol.) Koch
Auckland: Omahuta Forest, 750ft, June 1948, J. M. Dingley.
Rhopalostylis sapida (Sol.) Wendl. & Drude
Auckland: Upper Piha Valley, 900ft, April 1949, J. M. Dingley.
Suttonia salicina Hook. f.
Auckland: Simla Road, Waitakeres, 900ft, October 1947, J. M. Dingley.
Vitex lucens Kirk
Auckland: Purewa Bush, May 1949, D. W. McKenzie.

Among species with prominent spines *O. bicolor* may be recognized readily by the numerous vesicles in context and spines, and paraphysate hyphae bearing caps of acicular crystals. Vesicles are peculiar in that most are double, a small orbicular one developing within a larger depressed-globose vesicle. Paraphysate hyphae bear inflated apices, most being covered with a cap of acicular crystals arranged in a stellate pattern. They are usually termed cystidia because of the encrusting crystals present on apices, but in other features are typical of paraphysate hyphae. Both vesicles and paraphysate hyphae are abundant, and in sections may be seen readily as they stain with aniline blue. New Zealand collections are more robust than European plants examined in Kew herbarium. They possess larger spines and thicker context but in other features are identical.

18. **Odontia archeri** (Berkeley) Wakefield, Transactions of the Royal Society of South Australia, *54*, 157, 1930. Text-fig. 19.

Corticium archeri Berk., Fl. Tas., *2*, 260, 1860.
Kneiffia wrightii Berk. & Curt., Jour. Linn. Soc., *10*, 327, 1869.
Kneiffia chromoplumbea Berk. & Br., Jour. Linn. Soc., *14*, 62, 1873.
Corticium chrysocreas Berk. & Curt., Grev., *1*, 178, 1873.
Odontia wrightii (B. & C.) Burt, Ann. Missouri Bot. Gard., *13*, 270, 1926.

Hymenophore annual or biennial, membranous-ceraceous, adnate, at first forming orbicular colonies often around borer holes, 5–10 mm across, becoming aggregated into irregular areas to 9 x 3 cm, with outlying islands; hymenial surface at first bright ochre, lemon-yellow or reddish-brown, later reddish-brown or wood colour with yellowish margins, becoming deeply creviced; margin thinning out, at first pelliculose or sometimes rhizomorphic, then fibrillose, white or yellow, adnate. Spines at first granular, often radiately arranged or in lines, later crowded, cylindrical with rounded ends, or subulate with bluntly acute apices, not penicillate, 0.2–2.5 mm long, reddish-brown. Context wood brown, 90–300μ thick, in old specimens zoned with two or three layers, intermediate layer of closely intertwined mainly erect hyphae embedding cystidia and crystals, basal layer a well developed zone of mainly parallel hyphae compacted and partly gelatinized; generative hyphae 3–4μ diameter, walls 0.2μ thick, hyaline, naked, with clamp connexions. Cystidia crowded in axes of spines, projecting to 30μ when fusiform and naked or coated with coloured mucilage granules, 6–9μ diameter, when submerged cylindrical, 7–10μ diameter and finely encrusted throughout. Hymenial layer to 50μ deep, a close palisade of basidia, paraphyses and cystidia. Basidia subclavate, 18–24 x 5–6μ, 2–4-spored; sterigmata slender, erect, to 6μ long. Paraphyses subclavate, 12–18 x 4.5–5μ. Spores suballantoid, apiculate, 5–6 x 2.5–3μ, walls smooth, hyaline, 0.1μ thick.

TYPE LOCALITY. Tasmania.

DISTRIBUTION. North America, Cuba, Ceylon, Australia, Tasmania, New Zealand.

HABITAT. Effused on bark of dead branches and stems.

Beilschmiedia tawa (A. Cunn.) Hook. f. & Benth.

Auckland: Waipoua Kauri Forest, September 1949, J. M. Dingley; Otau, Hunua Range, April 1950, J. M. Dingley.

Dacrydium cupressinum Sol.

Otago: Alton Stream, Tuatapere, April 1957, S. D. & P. J. Brook.

Nothofagus cliffortioides (Hook. f.) Oerst.

Wellington: Kaimanawa Ranges, 1,600ft, April 1955, J. M. Dingley.

Nothofagus fusca (Hook. f.) Oerst.

Nelson: Marble Mountain, Maruia, April 1947, S. D. & P. J. Brook.

Nothopanax colensoi (Hook. f.) Seem.

Wellington: Blyth Track, Ohakune, 2,500ft, January 1954, S. D. Baker; Pohangina Reserve, 300ft, January 1954, G. H. C.

Taranaki: Mt. Egmont, 2,300ft, December 1947, G. H. C.

Specimens agree with South Australian collections examined in Kew herbarium, but differ from the type ex Tasmania in being thinner, brighter in colour, and with a more plentiful development of cystidia. The plant often develops around borer holes in bark, growing radiately outwards; rhizomorphs are often present, spines first forming along the surface of the strands. In colour the species varies appreciably. At first plants are bright ochre or yellowish, later they become reddish-brown or reddish-yellow as spines develop and in old specimens may lose most of the bright colour save from the margin. Cystidia are crowded in axes of spines, cylindrical with walls finely encrusted with crystals. Projecting apices are fusiform, naked and clothed with fine granules of mucilage which form a bright yellow solution in alcohol or a vinaceous solution in potassium hydroxide as does mucilage produced by *Grandinia australis*. This is the only feature in common to these two species, which cannot be confused in other particulars.

19. **Odontia oblongospora** sp. nov. Text-fig. 15.

Hymenophorum annuum, membranaceum, adnatum, effusum; superficies cremea, non rimosa, siccante alutacea. Spinae 2–3 mm longae, subulatae, concolores. Hyphae generatoriae 3–4μ diam., parietibus 0.25μ crassis, hyalinis, nudis, nodulosis. Basidia subclavata, 12–18 x

4.5–5μ. Cystidia cylindrata, 60–70 x 6–9μ, crystallis tecta. Sporae oblongae, 4.5–5.5 x 2.5–3μ, parietibus levibus.

Hymenophore annual, membranous, adnate, effused forming irregular areas 3–8 x 1.5–3 cm; hymenial surface cream when fresh, drying alutaceous or wood colour, not creviced; margin thinning out, arachnoid, white, adnate. Spines subulate, with long acuminate naked apices, sometimes flattened laterally with 2–3 apices, 2–3 mm long, not infrequently imbricate when to 5 mm long. Context cream, to 300μ thick, intermediate layer of loosely intertwined hyphae mainly erect, freely branched, and crowded in the subhymenium, arising from a few repent hyphae forming the basal layer; generative hyphae 3–4μ diameter, walls 0.25μ thick, hyaline, naked, with clamp connexions. Cystidia scattered, arising from lateral surfaces of spines, also some present in axes of spines, most projecting 30–50μ, 5–6μ diameter, walls thin, naked, septate, some towards the base of spines coarsely encrusted, when 70 x 9μ. Hymenial layer to 25μ deep, a close palisade of basidia, paraphyses and cystidia. Basidia subclavate, 12–18 x 4.5–5μ, 4-spored; sterigmata erect, slender, to 5μ long. Paraphyses subclavate, 8–14 x 4–4.5μ. Spores oblong with bluntly rounded ends, apiculate, 4.5–5.5 x 2.5–3μ, walls smooth, hyaline, 0.1μ thick.

DISTRIBUTION. New Zealand.

HABITAT. Effused on decayed decorticated wood.

Agathis australis Salisb.

Auckland: Waipoua Kauri Forest, September 1949, J. M. Dingley; Upper Piha Valley, Waitakeres, 900ft, August 1953, J. M. Dingley, *type collection*, P.D.D. herbarium, No. 17981.

Dacrydium cupressinum Sol.

Westland: Weheka, 600ft, November 1954, J. M. Dingley.

Metrosideros excelsa Sol.

Auckland: Hunua Range, 900ft, April 1946, J. M. Dingley; Cutty Grass Road, Waitakeres, 900ft, August 1947, J. M. Dingley; Upper Piha Valley, 900ft, August 1948, J. M. Dingley; Rangitoto Island, July 1950, J. M. Dingley.

Podocarpus ferrugineus Don

Westland: Orwell Creek, Ahaura, November 1954, J. M. Dingley.

Podocarpus hallii Kirk

Otago: Alton Valley, Tuatapere, 600ft, February 1954, J. M. Dingley.

Podocarpus totara Don

Auckland: Waipoua Kauri Forest, September 1949, J. M. Dingley.

Spines are long, acuminate, naked and resemble those of species of *Sarcodontia*. They bear cystidia, however, so that the species is a member of the genus *Odontia*. Cystidia are scattered over the spines, being more conspicuous and abundant towards their bases. On the upper part of the spines cystidia are naked, thin-walled and septate, in the base partly encrusted. Sometimes they are difficult to locate, but are usually abundant at spine apices. Embedded cystidia are partially encrusted in areas, not continuously as in *O. lyndoniae*. Spines are usually erect and crowded, though discrete; in three collections they are imbricated, partly cemented together, and about twice the length of those of the ordinary form. Spores are regularly oblong with bluntly rounded ends, a feature seen only in this species. They are produced copiously.

20. **Odontia lyndoniae** Reid, Kew Bulletin of Miscellaneous Information, 641, 1955. Text-fig. 20.

Hymenophore annual, membranous, adnate, effused forming irregular areas 5–15 x 3–5 cm; hymenial surface alutaceous, ochraceous to pallid buff, at length areolately creviced, tending to lift at margins of crevices and expose the substratum; margin thinning out, fibrillose, white, adnate. Spines either crowded or arranged in pulvinate scattered tufts, conical or subulate, 0.5–2 mm long, apices bluntly rounded and naked or tufted with 3–15 projecting cystidia. Context isabelline, 0.2–1 mm thick, intermediate layer of mainly erect hyphae more densely arranged in subhymenium and spines, basal layer of parallel hyphae; generative hyphae 4–5μ diameter, walls 0.5–1μ thick, hyaline, staining blue, naked, with clamp connexions. Cystidia confined to spines, forming a solid core of 5–20 or more, projecting to 60μ, arising from hyphae of the intermediate layer, cylindrical with rounded apices, 60–280 x 8–12μ, hyaline, occasionally septate, finely encrusted, often naked where projecting. Hymenial layer to 60μ

deep, a close palisade of basidia, paraphyses and cystidia. Basidia clavate, 30–42 x 8–9μ, 2–4-spored; sterigmata erect, slender, to 6μ long. Paraphyses subclavate or cylindrical, 25–32 x 6–7μ. Spores broadly elliptical or obovate when 7–10 x 5.5–6.5μ, or subglobose when 6–7.5 x 5.5–6μ, walls smooth, hyaline, 0.5μ thick.

TYPE LOCALITY. Victoria.

DISTRIBUTION. Australia, New Zealand.

HABITAT. Effused on bark or decorticated wood of dead branches and stems.

Beilschmiedia tarairi (A. Cunn.) Benth. & Hook. f.
Auckland: Smith's Bush, Takapuna, May 1952, S. D. Baker.

Beilschmiedia tawa (A. Cunn.) Hook. f. & Benth.
Auckland: Hunua Range, 900ft, April 1946, J. M. Dingley; Te Whaiti, 1,500ft, June 1950, J. M. Dingley; Lake Rotoehu, 1,200ft, June 1957, G. H. C.

Brachyglottis repanda Forst.
Auckland: Glen Esk Valley, Waitakeres, 900ft, May 1951, J. M. Dingley; Mt. Te Aroha, 1,000ft, May 1954, J. M. Dingley; Little Barrier Island, June 1956, F. J. Newhook.

Coprosma arborea Kirk
Auckland: Western Hills, Whangarei, 400ft, May 1949, J. M. Dingley.

Coprosma australis (A. Rich.) Robinson
Auckland: Anawhata Road, Waitakeres, 900ft, May 1954, J. M. Dingley.

Coprosma robusta Raoul
Auckland: Rangemore Track, Waitakeres, 750ft, July 1951, J. M. Dingley.

Cordyline australis (Forst. f.) Hook. f.
Auckland: University Grounds, July 1953, S. D. Baker.

Corynocarpus laevigata Forst.
Auckland: Piha, coast, July 1947, July 1955, J. M. Dingley.

Edwardsia tetraptera (Forst. f.) Oliver
Westland: Okarito, April 1955, J. M. Dingley.

Geniostoma ligustrifolium A. Cunn.
Auckland: Anawhata Road, Waitakeres, 900ft, May 1955, J. M. Dingley.

Hedycarya arborea Forst.
Auckland: Purewa Bush, April 1953, D. W. McKenzie.

Hoheria populnea A. Cunn.
Auckland: University Grounds, August 1948, J. M. Dingley; Titirangi, 800ft, May 1950, J. M. Dingley.

Melicytus ramiflorus Forst.
Auckland: Blue Lake, Rotorua, 1,400ft, June 1951, J. M. Dingley.

Myoporum laetum Forst.
Auckland: Bethell's Beach, March 1949, J. M. Dingley.

Myrtus bullata Sol.
Auckland: Lake Okataina, 1,400ft, June 1957, G. H. C.

Nothopanax arboreum (Forst. f.) Seem.
Auckland: Lake Rotoaira, 1,200ft, May 1952, G. H. C.

Parsonsia heterophylla A. Cunn.
Auckland: Blue Lake, Rotorua, 1,400ft, June 1951, J. M. Dingley.

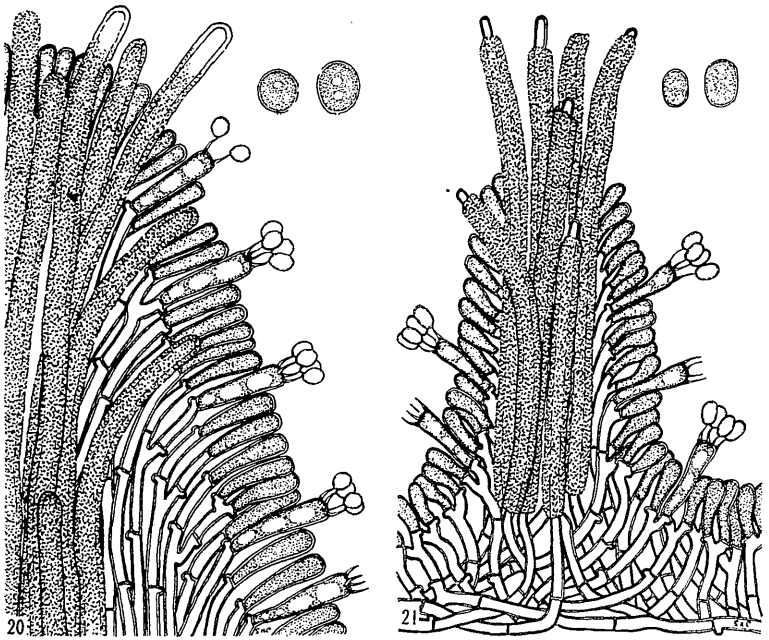
Pinus radiata Don
Auckland: Waikato Heads, October 1949, K. M. Harrow.

Pittosporum crassifolium A. Cunn.
Auckland: Upper Piha Valley, 900ft, September 1949, J. M. Dingley.

Podocarpus ferrugineus Don
Auckland: Otau, Hunua Range, 700ft, April 1950, J. M. Dingley.

Schefflera digitata Forst.
Canterbury: Peel Forest, April 1957, S. D. & P. J. Brook.

Senecio rotundifolius (Forst.) Hook. f.
Otago: Bragg's Bay, Stewart Island, February 1954, J. M. Dingley.



TEXT-FIG. 20.—*Odontia lyndoniae* Reid. × 500; spores × 1,000. Portion of spine showing embedded encrusted cylindrical cystidia.

TEXT-FIG. 21.—*Odontia novae-zealandiae* G. H. Cunn. × 500; spores × 1,000. Spine showing encrusted cystidia occupying axis and projecting apically.

Original.

Weinmannia racemosa L.f.

Westland: Weheka, 600ft, April 1955, J. M. Dingley.

Otago: Lake Wilkie, Catlins, April 1957, S. D. & P. J. Brook.

Specimens match the type in Kew herbarium, ex " Leongatha, Victoria, Mrs. E. Lyndon, June 1953 ", portion of which was kindly donated by Mr. Derek Reid. The species may be identified readily by the large, usually encrusted cystidia, large basidia, oblong or subglobose large spores and relatively thick-walled naked context hyphae which stain with aniline blue. Cystidia are cylindrical, usually encrusted with crystals and crowded in spines and context where spines are about to develop. They may project, when upper exposed portions are either naked or encrusted, or remain embedded when they are completely encrusted. Spores range in shape from broadly elliptical, though obovate to subglobose and are copiously developed. Basidia collapse when spores are about three-quarters grown. The hymenial surface may be even, with spines regularly spaced save for broad peripheral areas; or spongy with isolated cushions from which groups of spines develop. In colour it ranges from pallid alutaceous through shades of ochre to pallid buff, the last colour developing in spines of older specimens. The collection from *Pinus radiata* is without cystidia, a condition also recorded by Reid in an Australian collection upon this host.

21. **Odontia novae-zealandiae** sp. nov. Text-fig. 21.

Hymenophorum annuum, membranaceum, adnatum, effusum; superficies alba deinde cremea vel sordide alutacea, non rimosa. Spinae conicae, 80–150μ longae, apicibus cristis cystidiorum crystallis tectorum. Hyphae generatoriae 4–6μ diam., parietibus 0.2μ crassis, hyalinis, nudis, nodulosis. Basidia subclavata, 24–30 x 5–6.5μ. Cystidia in spinis, cylindrata, 50–85 x 8–12μ, parietibus crassis crystallis. Sporae late ellipticae vel obovatae, 7–9 x 4.5–6μ, parietibus levibus.

Hymenophore annual, membranous, adnate, effused forming numerous irregularly elliptical or orbicular areas 5–35 mm long, merging to form linear areas to 17 x 3 cm; hymenial surface white, then cream or dingy alutaceous, not creviced; margin thinning out, white, fibrillose, adnate. Spines crowded, irregularly conical, 80–150μ tall, apices white and tufted with 3–7 projecting cystidia. Context white, 50–120μ thick, intermediate layer of intertwined mainly upright hyphae arising from a well developed basal layer of parallel compact hyphae; generative hyphae 4–6μ diameter, walls 0.2μ thick, hyaline, naked, with clamp connexions. Cystidia confined to the spines, arising in their base, forming a central core, some projecting to 45μ, cylindrical, 50–85 x 8–12μ, coarsely encrusted, walls thickened to 4μ. Hymenial layer to 30μ deep, a close palisade of basidia and paraphyses. Basidia subclavate, 24–30 x 5–6.5μ, 4-spored; sterigmata erect, slender, to 6μ long. Paraphyses clavate, 16–20 x 5.5–6μ. Spores broadly elliptical or obovate, apiculate, 7–9 x 4.5–6μ, walls smooth, hyaline, 0.1μ thick.

DISTRIBUTION. New Zealand.

HABITAT. Effused on bark and decorticated wood of dead branches.

Beilschmiedia tawa (A. Cunn.) Hook. f. & Benth.

Auckland: Lake Rotoehu, 1,200ft, October 1955, G. H. C., *type collection*, P.D.D. herbarium, No. 17968.

Dacrydium cupressinum Sol.

Auckland: Hauhangaroa Range, Taupo, 2,250ft, March 1953, J. M. Dingley.

Edwardsia microphylla Salisb.

Auckland: Hatepe, Lake Taupo, 1,300ft, March 1953, J. M. Dingley.

Melicytus ramiflorus Forst.

Auckland: Mt. Tumahanga, 1,500ft, October 1930, M. Hodgkins.

Nothofagus menziesii (Hook. f.) Oerst.

Otago: Alton Valley, Tuatapere, 600ft, February 1954, J. M. Dingley.

Podocarpus hallii Kirk

Wellington: Ohakune, 2,500ft, December 1953, J. M. Dingley; Mt. Tongariro, 2,600ft, January 1955, G. H. C.

Podocarpus spicatus R. Br.

Hawke's Bay: Waipatiki Beach, November 1955, J. M. Dingley.

Podocarpus totara Don

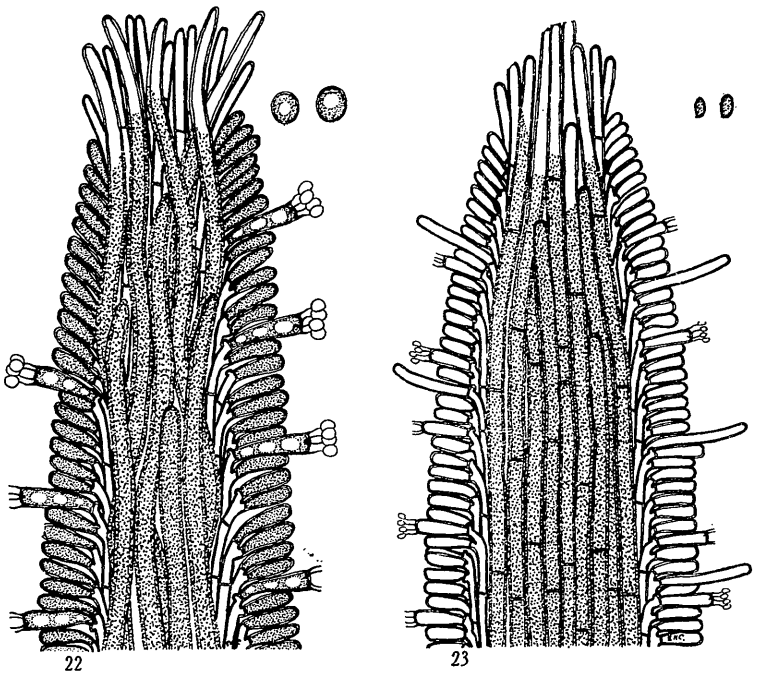
Auckland: Ngaitonga Range, 800ft, June 1948, J. M. Dingley.

Apices of spines appear penicillate under a lens because of the projecting, coarsely encrusted cystidia. These are stout and confined to the spines, forming the bulk of the spine axis. Spores are broadly elliptical or obovate and somewhat large.

22. **Odontia flexiblis** sp. nov. Pl. 10, Fig. 3; Text-fig. 22.

Hymenophorum annuum, ceraceum, adnatum, effusum; superficies cremea, non rimosa. Spinae 3–5 mm longae, aculeatae, brunneo-rubrae. Hyphae generatoriae 4–5μ diam., parietibus 0.2μ crassis, hyalinis, nudis, nodulosis. Basidia subclavata, 20–26 x 5–6μ. Cystidia cylindrata, 66–300 x 8–14μ, praeter apices spinarum, crystallis subtilibus tecta. Sporae subglobosae, 5–6 x 4–5μ, parietibus levibus.

Hymenophore annual, ceraceous, adnate, effused forming orbicular areas 2–4 cm diameter; hymenial surface cream with pallid reddish-brown spines, not creviced; margin thinning out, white, pelliculose-fibrillose, adnate. Spines aculeate, 3–5 mm long, crowded, honey yellow when fresh, drying pallid reddish-brown, apices acuminate, naked or bearing a few cystidia. Context white, to 350μ thick, ceraceous, composed of a basal layer of densely intertwined mainly parallel hyphae, intermediate layer wanting; generative hyphae 4–5μ diameter, walls 0.2μ thick, hyaline, naked, with clamp connexions. Cystidia crowded in the spines, projecting to 30μ from sides and apices, cylindrical, 66–300 x 8–14μ, delicately encrusted save at spine apices. Hymenial layer to 40μ deep, a dense palisade of basidia and paraphyses. Basidia subclavate, 20–26 x 5–6μ, 2–4-spored; sterigmata slender, arcuate, to 4μ long. Paraphyses subclavate, 14–18 x 4.5–5μ. Spores subglobose, a few oval, 5–6 x 4–5μ, walls smooth, hyaline, 0.1μ thick.



TEXT-FIG. 22.—*Odontia flexibilis* G. H. Cunn. × 500; spores × 1,000. Apical portion of spine showing embedded encrusted cystidia naked at apices.

TEXT-FIG. 23.—*Odontia fragilis* G. H. Cunn. × 500; spores × 1,000. Apical portion of spine showing embedded encrusted cystidia.

Original.

DISTRIBUTION. New Zealand.

HABITAT. Adnate on bark of dead stems.

Freycinetia banksii A. Cunn.

Wellington: Lake Papaetonga, 50ft, May 1956, G. H. C., *type collection,* P.D.D. herbarium, No. 17897.

A well marked species identified readily by the long and slender spines growing from an orbicular hymenophore, long delicate cystidia, subglobose spores and absence of an intermediate layer. Cystidia are crowded in the central region of spines and are thin-walled, soft and pliable, and encrusted for the greater part of their length with fine crystals, save for apices of those projecting above spine apices. An intermediate layer is absent, the hymenium arising directly from the well developed basal layer, a feature seen in sections taken from the region between spines.

23. **Odontia fragilis** sp. nov. Text-fig. 23.

Hymenophorum annuum, ceraceum, adnatum, effusum; superficies cremea, deinde alutacea, non rimosa. Spinae 1–2.5 mm longae, subulatae, fragiles, brunneo-rubrae. Hyphae generatoriae 3.5–4μ diam., parietibus 0.25μ crassis, hyalinis, nudis, nodulosis. Basidia subclavata, 14–18 x 4–4.5μ. Cystidia in fasciculis in spinis, 120–600 x 5–6μ, crystallis tecta. Sporae suballantoides, 3.5–4 x 1.5–2μ, parietibus levibus.

Hymenophore annual, ceraceous, adnate, effused forming irregular linear areas to 22 x 5 cm; hymenial surface cream, becoming alutaceous, scabrid with reddish-brown spines, not creviced; margin thinning out, pelliculose, cream, adnate. Spines crowded, subulate, apices acute, often adhering in small groups of 2–5, sometimes imbricate, brittle, 1–2.5 mm long, reddish-brown. Context white, 90–150μ deep, intermediate layer wanting, basal layer of parallel hyphae cemented into a dense zone soon collapsing and becoming pseudoparenchymatous; generative hyphae 3.5–4μ diameter, walls 0.25μ thick, hyaline, naked, with clamp connexions. Cystidia crowded in bundles in the spines, 120–600 x 5–6μ, coated with fine crystals throughout their length save at apices. Hymenial layer to 25μ deep, a dense palisade of basidia, paraphyses and paraphysate hyphae. Basidia subclavate, 14–18 x 4–4.5μ, 4-spored; sterigmata erect, slender, to 3μ long. Paraphyses cylindrical, 8–12 x 3–3.5μ. Paraphysate hyphae projecting to 30μ, scattered, confined to spines, 3–4μ diameter. Spores suballantoid, laterally apiculate, 3.5–4 x 1.5–2μ, walls smooth, hyaline, 0.1μ thick.

DISTRIBUTION. New Zealand.

HABITAT. Effused on bark or decorticated wood of dead branches.

Beilschmiedia tawa (A. Cunn.) Hook. f. & Benth.

Auckland: Cascade Park, Waitakeres, 750ft, April 1954, S. D. Baker, *type collection*, P.D.D. herbarium, No. 17916.

Wellington: Lake Papaetonga, 50ft, December 1957, G. H. C.

Hoheria populnea A. Cunn.

Auckland: Wood's Bay, Titirangi, March 1946, J. M. Dingley.

Suttonia australis A. Rich.

Auckland: Mountain Road, Waitakeres, 700ft, March 1954, J. M. Dingley.

Spores are minute, laterally apiculate, and walls stain sparingly. Cystidia are crowded in bundles filling axes of spines and are encrusted, save at apices, with fine crystals. They project from spine apices to form small tufts, which are often cemented into long acuminate extensions. The intermediate layer is wanting, the basal layer well developed and composed of parallel hyphae at first compacted into a dense zone, later collapsed and pseudoparenchymatous. Context and spines are ceraceous and so brittle that sections are difficult to prepare.

24. **Odontia barba-jovis** (Withering) Fries, Epicrisis systematis mycologici seu synopsis Hymenomycetum, 528, 1838. Text-fig. 24.

Hydnum barba-jovis With. (Brit. Pl. *3*, 337, 1792) ex Fries, Syst. Myc., *1*, 421, 1821.
Hydnum nyssa Berk. & Curt., Grev., *1*, 100, 1873.
Kneiffia irpicioides Karst., Bidr. Finl. Nat. Folk. 48, 368, 1889.

Hymenophore annual, membranous, loosely attached, effused forming irregular areas to 16 x 8 cm, with a few orbicular outlying islands; hymenial surface at first dingy white, remaining so or becoming tan, then tawny, not creviced; margin thinning out, fibrillose, white or tan, adnate. Spines crowded, subulate, 0.5–2.5 mm long, with penicillate apices, concolorous. Context white or tan, 90–180μ thick, intermediate layer of loosely intertwined mainly upright hyphae arising from a well developed basal layer of parallel hyphae; generative hyphae 2.5–3.5μ diameter, walls 0.25μ thick, hyaline, naked, with clamp connexions. Cystidia arising in the base of the context, crowded in axes of spines and projecting for 120μ, cylindrical, 80–400 x 5–7μ, walls to 1μ thick towards the base, tapering gradually to the thin rounded apices which are commonly naked but sometimes ensheathed with an irregular coat of mucilage, some cystidia arising in the subhymenium and projecting, then 30–60 x 5–7μ. Hymenial layer to 25μ deep, a loose palisade of basidia, paraphyses and cystidia. Basidia subclavate, 12–18 x 4.5–6μ, 4-spored; sterigmata upright, slender, to 4μ long. Paraphyses subclavate, 6–10 x 4–5.5μ. Spores oval or subglobose, 4–5 x 3–3.5μ, apiculate, walls smooth, hyaline, 0.1μ thick.

TYPE LOCALITY. Great Britain.

DISTRIBUTION. Great Britain, Europe, North America, New Zealand.

HABITAT. Effused on bark and decorticated wood of dead branches.

Agathis australis Salisb.

Auckland: Waipoua Kauri Forest, January 1955, J. M. Dingley.

Beilschmiedia tarairi (A. Cunn.) Benth. & Hook. f.

Auckland: Kawau Island, December 1947, J. D. Atkinson.

Dacrydium cupressinum Sol.

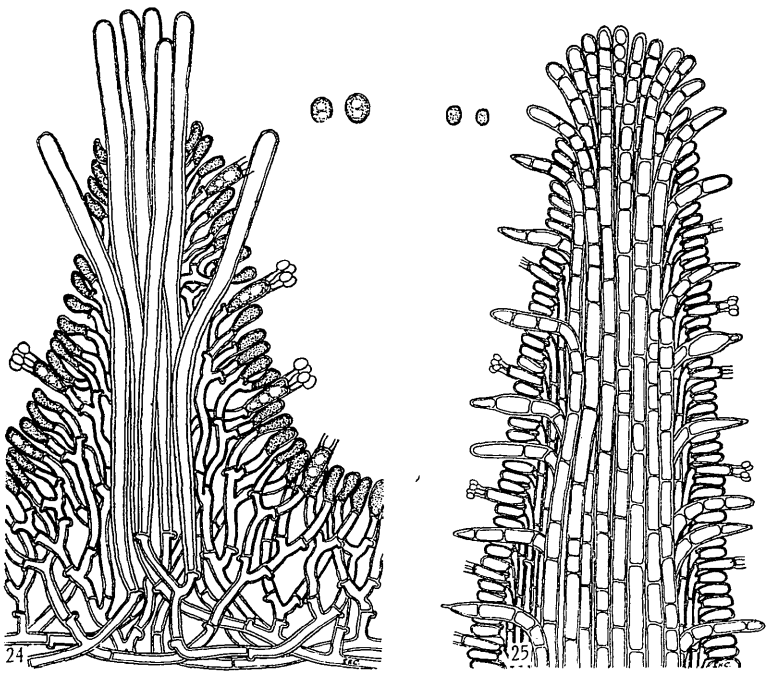
Otago: Stewart Island, February 1954, J. M. Dingley.

Olearia furfuracea (A. Rich.) Hook. f.
Auckland: Mt. Te Aroha, 700ft, June 1957, G. H. C.
Pinus radiata Don
Wellington: Waverley, 400ft, December 1946, Mrs. E. E. Chamberlain.
Weinmannia racemosa L.f.
Otago: Lake Wilkie, Catlins, April 1947, S. D. & P. J. Brook; Otautau, April 1957, S. D. & P. J. Brook.

Collections agree with authentic specimens of *O. barba-jovis* examined in Kew herbarium, save that some are more brightly coloured and spores are slightly smaller. The species may be identified by the conspicuous cystidia which arise in the base of the intermediate layer, traverse spines and project above them giving their apices a penicillate appearance. Cystidia also project laterally from spines and occur scattered in the context, lying between spines. Their walls are thickened at the base, becoming progressively thinner towards the rounded apices. Walls are naked and stain slightly in aniline blue.

25. **Odontia oleifera** sp. nov. Text-fig. 25.

Hymenophorum annuum, membranaceum, adnatum, effusum; superficies cremea vel alutacea, non rimosa. Spinae aculeatae, ad 4 mm longae, alutaceae vel pallide rubro-brunneae, apicibus nudis et acuminatis. Hyphae generatoriae 3.5–4μ diam., parietibus 0.25μ crassis,



TEXT-FIG. 24.—*Odontia barba-jovis* (With.) Fr. × 500; spores × 1,000. *Young spine showing* naked projecting cystidia.

TEXT-FIG. 25.—*Odontia oleifera* G. H. Cunn. Apical portion of spine showing naked cystidia containing oil globules with ends of cystidia projecting laterally.
Original.

hyalinis, nudis, nodulosis. Cystidia in axibus spinarum congregata, a latere eminentia, nuda, tam longa quam spinae, 5–6.5μ diam., parietibus 0.25–0.5μ crassis, guttis olei impletis. Basidia subclavata, 12–16 x 3.5–4μ. Sporae subglobosae, ovales vel obovatae, 2.5–3 x 2–2.5μ, parietibus levibus.

Hymenophore annual, membranous, adnate, effused forming irregular areas to 15 x 7 cm; hymenial surface cream or alutaceous, not creviced; margin thinning out, fibrillose, broad, white or cream. Spines aculeate, to 4 mm long, tan or pallid reddish-brown, apices naked and acuminate. Context cream, 150–230μ thick, intermediate layer of loosely intertwined hyphae embedding numerous crystals, basal layer well developed, of parallel hyphae; generative hyphae 3.5–4μ diameter, walls 0.25μ thick, hyaline, naked, with clamp connexions. Cystidia crowded in axes of spines and hymenial layer, projecting laterally, free ends acuminate or rounded, naked, 5–6.5μ diameter, walls 0.5μ thick, contents oily and refractive. Hymenial layer to 35μ deep, a dense palisade of basidia, paraphyses and cystidia. Basidia subclavate, 12–16 x 3.5–4μ, 4-spored; sterigmata erect, slender, to 4μ long. Paraphyses subclavate, 8–12 x 3–3.5μ. Spores oval, subglobose or obovate, apiculate, 2.5–3 x 2–2.5μ, walls smooth, hyaline, 0.1μ thick.

DISTRIBUTION. New Zealand.

HABITAT. Effused on bark and decorticated wood of dead branches.

Agathis australis Salisb.

Auckland: Waipoua Kauri Forest, April 1947, J. M. Dingley.

Beilschmiedia tawa (A. Cunn.) Hook. f. & Benth.

Auckland: Waiotapu, 1,500ft, June 1950, J. M. Dingley; Lake Okataina, 1,400ft, June 1951, J. M. Dingley; Lake Rotoiti, 1,200ft, June 1952, G. H. C.

Wellington: Weraroa, 50ft, May 1923, G. H. C.; Totara Reserve, Pohangina Valley, 250ft, May 1956, G. H. C., *type collection,* P.D.D. herbarium, No. 17901.

Dacrydium cupressinum Sol.

Auckland: Upper Piha Valley, Waitakeres, 900ft, June 1947, J. M. Dingley; Te Whaiti, 1,000ft, June 1951, J. M. Dingley.

Hedycarya arborea Forst.

Auckland: Mountain Road, Henderson, 700ft, July 1950, J. M. Dingley.

Nothopanax arboreum (Forst. f.) Seem.

Auckland: Moumoukai Valley, Hunua Range, 1,000ft, March 1954, J. M. Dingley.

Macrofeatures resemble those of *O. flexibilis,* from which the species may be separated by the different cystidia. These are naked, long and flexuous, with apices which project at right angles from walls of the spines as well as apically from spine apices, and contents are oily and highly refractive. Spores also differ, agreeing with those of *O. fragilis* in being the smallest of those present in species found in New Zealand.

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