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A New Zealand Phytochemical Register—Part I.

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Summary

A phytochemical register of New Zealand species is compiled and compounds obtained from each source cross-indexed according to chemical types.

INTRODUCTION

THE chemistry of the New Zealand native plants has been reviewed by Gardner (1923, 1924), Briggs (1947), and Murray (1949, 1950). As the bulk of the work in this field has been carried out since the publication of these reviews it appeared that a bibliography of the more recent work, but including the earlier work for the sake of completeness, would be of value. No attempt has been made to review the chemistry or to draw relationships between the botanical classification and the type of compound found. Rather, the compilation is intended as a register only which may facilitate the further investigation of New Zealand species.

In the register an attempt has been made to include all papers which reveal the isolation of compounds from the native plants, and where such compounds are new, papers dealing with their constitution and synthesis have been included. Compounds which have been incompletely characterized or whose structures are not completely elucidated have been listed in order to draw attention to some of the uncompleted problems which exist. References to the detection only of compounds or classes of compound (see Cain, Scannell and Cambie, 1961; Cain, La Roche and Cambie, 1962; Cambie, Cain and La Roche, 1961a, b and c) have been omitted. In scope the register covers all native species except the Gymnosperms and Lichenes. It is hoped to include work done on these groups in a further paper.

The first section of the paper lists botanical species and the compounds which have been isolated from them. The order of species and botanical authority follow that of Allan (1961). The authors of the original papers have been held respon-

sible for adequate botanical classification of their material, names have merely been modified to conform with modern terminology. All references are given in the appropriate places in this section. The Maori names are those given by Andersen (1926), and where the Maori name is unknown the generally accepted colloquial name is included.

In the second section the compounds isolated have been cross-indexed according to chemical type following the order given by Karrer (1958).

ACKNOWLEDGMENTS

The authors are greatly indebted to Dr R. C. Cooper, Auckland Institute and Museum, for checking all botanical and Maori names. Dr R. E. Corbett, University of Otago, and Dr W. E. Harvey, Victoria University of Wellington, kindly provided details of research from their laboratories.

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- CAIN, B. F., SCANNELL, S., CAMBIE, R. C., 1961. *N.Z. J. Sci.*, 4: 3.
- CAIN, B. F., LA ROCHE, S., CAMBIE, R. C., 1962. *N.Z. J. Sci.*, 5: 537.
- CAMBIE, R. C., CAIN, B. F., LA ROCHE, S., 1961a. *N.Z. J. Sci.*, 4: 604.
- 1961b. *N.Z. J. Sci.*, 4: 707.
- 1961c. *N.Z. J. Sci.*, 4: 731.
- GARDNER, R., 1923. *N.Z. J. Sci. Tech.*, 6: 147.
- 1924. *N.Z. J. Sci. Tech.*, 7: 220.
- KARRER, W., 1958. *Konstitution und Vorkommen der organischen Pflanzenstoffe*. Birkhauser Verlag, Basle.
- MURRAY, J., 1949. *J.N.Z. Inst. Chem.*, 13: 128.
- 1950. *J.N.Z. Inst. Chem.*, 14: 44.

Section I

DICOTYLEDONES

WINTERACEAE

Pseudowintera colorata Dandy ("Horopito").

ESSENTIAL OIL: (+)- α -pinene, (—)- β -pinene, (+)- α -thujene, myrcene, (+)-limonene, dipentene, (+)- β -phellandrene, α -terpinene, γ -terpinene, terpinolene, p-cymene, (+)-aromadendrene, eugenol, humulene, tricosane, pentacosane, alcohols $C_{10}H_{18}O$, $C_8H_{14}O$, and $C_{10}H_{20}O$, carbonyl compound $C_{10}H_{14}O$, an ester, hexenyl n-valerate, (—)- α -gurjunene, (—)- β -elemene, (+)- α -santalene, (—)-calamenene, (—)-cyclocolorenone (sesquiterpene ketone).

Findlay, H. F., 1926. *N.Z. J. Sci. Tech.*, 8: 107.

Melville, J., Levi, A. A., 1932. *J. Soc. chem. Ind. Lond.*, 51: 210T.

Melville, J., 1933. *J. Amer. chem. Soc.*, 55: 2462, 3288.

Corbett, R. E., Grant, P. K., 1958. *J. Sci. Food Agric.*, 9: 733.

Corbett, R. E., Speden, R. N., 1958. *J. chem. Soc.*: 3710.

Corbett, R. E., 1962. *J. Sci. Food Agric.*, 13: 158.

Büchi, G., Loewenthal, H. J. E., 1962. *Proc. Chem. Soc.*: 280.

BARK: (—)-cyclocolorenone, (+)- α -santalene.

Corbett, R. E., Lewis, M. F. Person. Comm.

LAURACEAE

Beilschmiedia tawa Kirk ("Tawa").

WOOD: β -sitosterol.

Harvey, W. E. Person. Comm.

MONIMIACEAE

Hedycarya arborea J. R. et G. Forst. ("Porokaiwhiri").

LEAVES: Unidentified alkaloid (0.02%).

White, E. P. Person. Comm.

Laurelia novae-zelandiae A. Cunn. ("Pukatea").

BARK: Alkaloids pukateine, laureline, laurepukine.

Colenso, W., 1868. *Trans. N.Z. Inst.*, 1: 51.

Aston, B. C., 1901. *Ann. Rept., N.Z. Dept. Agric.*, 248.

Goldie, W. H., 1904. *Trans. N.Z. Inst.*, 38: 118.

Aston, B. C., 1909. *Aust. Assoc. Adv. Sci.*, 12: 121.

Malcolm, J., 1909. *Aust. Assoc. Adv. Sci.*, 12: 128.

Aston, B. C., 1910. *J. chem. Soc.*, 97: 1381.

Girardet, A., 1931. *Helv. Chim. Acta*, 14: 504.

Girardet, A., 1931. *J. chem. Soc.*: 2630.

Barger, G., Girardet, A., 1931. *Helv. Chim. Acta*, 14: 481.

Barger, G., Schlittler, E., 1932. *Helv. Chim. Acta*, 15: 381.

Schlittler, E., 1932. *Helv. Chim. Acta*, 15: 394.

Fogg, W. S., 1935. *J. Pharm. Exp. Therap.*, 54: 167.

PIPERACEAE

Macropiper excelsum Miq. ("Kawakawa").

ESSENTIAL OIL: (+)- α -pinene, unidentified terpenes, two unidentified ketones, unidentified alcohols, unidentified ester b.p. 111°, methyl n-hexyl acetate, aromadendrene, (—)-cadinene as a mixture of isomers, unidentified sesquiterpenes, myristicin, elemicin, azulene, palmitic acid, nonyl alcohol (?).—

Briggs, L. H., 1941: *J. Soc. chem. Ind. Lond.*, 60: 210.

Leonard, J. H., 1959. *Thesis, Univ. N.Z.*

AIZOACEAE

Tetragonia tetragonioides Kuntze (*T. expansa* Murr.) ("Kokihi").

LEAVES: Saponins, tetragonin (yeast growth regulator).

Greshoff, M., 1909. *Roy. Bot. Gard., Kew, Bull. Misc. Inform.*, 10: 397.

Schiffer, A. P., Kovacs, A., 1959. *Nature*, 183: 988.

ONAGRACEAE

Fuchsia excorticata Linn. f. ("Kotukutuku").

BARK: Tannins.—

Aston, B. C., 1917. *N.Z. J. Agric.*, 15: 117.

Aston, B. C., 1918. *N.Z. J. Agric.*, 17: 136.

THYMELAEACEAE

Pimelea prostrata Willd. or *Pimelea lyallii* Hook. f. ("Pinatoro").

BARK: Toxic resin. —

Aston, B. C., 1900. *Ann. Rept. N.Z. Dept. Agric.*, 8: 127.

Aston, B. C., 1923. *N.Z. J. Agric.*, 26: 149.

Kirk, T. W., 1900. *N.Z. J. Agric.*, *Leaflet for Farmers*, No. 55—for identification of plant.

WHOLE PLANT: Tumour-inhibiting agent (also found in *P. prostrata* var. *repens*).

Cain, B. F. Person. Comm.

Pimelea tomentosa Druce.

WHOLE PLANT: Toxic principle, tumour-inhibiting agent.

Cain, B. F. Person. Comm.

PROTEACEAE

Knightia excelsa R.Br. ("Rewarewa").

BARK: Tannins. —

Aston, B. C., 1918. *N.Z. J. Agric.*, 16: 358.

CORIARIACEAE

Coriaria arborea Lindsay; (*C. sarmentosa* Forst. f.) ("Tutu").

LEAVES: Tutin (C₁₅H₁₈O₆). —

Skey, W., 1869. *Trans. N.Z. Inst.*, 2: 153.

Skey, W., 1869. *Pharm. J.*, 3: 565.

Hughes, H. G., 1869. *Pharm. J.*, 3: 282, 302.

Hughes, H. G., 1870. *Trans. N.Z. Inst.*, 3, 237.

Easterfield, T. H., Aston, B. C., 1900. *Trans. N.Z. Inst.*, 33: 345.

Easterfield, T. H., Aston, B. C., 1900, 1901. *Rept. N.Z. Dept. Agric.*, *Chem. Div.*

Easterfield, T. H., Aston, B. C., 1901. *J. Chem. Soc.*, 79: 120.

Fitchett, F., 1908. *Trans. N.Z. Inst.*, 41: 286.

Fitchett, F., Malcolm, J., 1909. *Quart. J. Exp. Physiology*, 41: 286.

Ford, W. W., 1910. *J. Pharmacol. and Therapeutics*, 2: 73.

Malcolm, J., 1913. *Trans. N.Z. Inst.*, 46: 248.

Malcolm, J., 1919. *Trans. N.Z. Inst.*, 51: 1.

Kinoshita, K., 1931. *J. chem. Soc. Japan*, 52: 171.

Swanson, E. E., 1940. *J. Amer. Pharm. Assoc.*, 29: 2.

Slater, S. N., 1943. *J. chem. Soc.*: 50, 143.

Benstead, J., Brewerton, H. V., Fletcher, J. R., Martin-Smith, M., Slater, S. N., Wilson, A. T., 1952. *J. chem. Soc.*: 1042.

Fletcher, J. R., Hall, R. B., Richards, E. L., Slater, S. N., Watson, C. C., 1954. *J. chem. Soc.*: 1953.

Browne, G. F., Johns, R. B., Markham, K. R., 1961. *J. chem. Soc.*: 3000.

Johns, R. B., Markham, K. R., 1961. *J. chem. Soc.*: 3006.

POISONOUS HONEY from:

Palmer-Jones, T., 1947. *N.Z. J. Sci. Tech.*, 29A: 107, 121.

Sutherland, M. D., Palmer-Jones, T., 1947. *N.Z. J. Sci. Tech.*, 29A: 114, 129.

Palmer-Jones, T., White, E. P., 1949: *N.Z. J. Sci. Tech.*, 31A(2): 46.

WHOLE PLANT: Tannins. —

Skey, W., 1869. *Trans. N.Z. Inst.*, 2: 153.

Aston, B. C., 1917. *N.Z. J. Agric.*, 15: 118.

Aston, B. C., 1918. *N.Z. J. Agric.*, 16: 358.

Coriaria lurida Kirk

WHOLE PLANT: Tutin, gallic acid, acetic acid, succinic acid, quercetin. —

Easterfield, T. H., Aston, B. C., 1900. *Trans. N.Z. Inst.*, 33: 345.

Easterfield, T. H., Aston, B. C., 1900, 1901. *Rept. N.Z. Dept. Agric., Chem. Div.*

Easterfield, T. H., Aston, B. C., 1901. *J. chem. Soc.*, 79: 120.

SEEDS: Tutin, linoleic acid (?). —

Easterfield, T. H., Aston, B. C., 1901. *J. chem. Soc.*, 79: 120.

Coriaria angustissima Hook. f.

WHOLE PLANT: Tutin, unidentified acid m.p. 130°. —

Easterfield, T. H., Aston, B. C., 1900. *Trans. N.Z. Inst.*, 33: 345.

Easterfield, T. H., Aston, B. C., 1900, 1901. *Rept. N.Z. Dept. Agric., Chem. Div.*

Easterfield, T. H., Aston, B. C., 1901. *J. chem. Soc.*, 79: 120.

PITTOSPORACEAE

Pittosporum tenuifolium Gaertn. ("Kohuhu").

ESSENTIAL OIL: (+)- α -pinene, (+)- β -pinene, myrcene, β -terpinene, dipentene, (+)-limonene, terpinolene, (—)-bornyl acetate, unidentified terpene aldehyde, unidentified sesquiterpene, bicyclic sesquiterpene, tricyclic sesquiterpene, unidentified sesquiterpene alcohols, unidentified diterpenes, guaiazulene, paraffin m.p. 62°. —

Calder, A. J., Carter, C. L., 1949. *J. Soc. chem. Ind. Lond.*, 68: 355.

Pittosporum huttonianum Kirk

LEAVES: Saponin pittosporum. —

Klein, G., 1932. "*Handbuch der Pflanzenanalyse*," Springer, Vienna, Vol. III, p. 1135.

Pittosporum crassifolium A. Cunn. ("Karo").

LEAVES: Saponin pittosporum. —

Klein, G., 1932. "*Handbuch der Pflanzenanalyse*," Springer, Vienna, Vol. III, p. 1135.

Pittosporum cornifolium A. Cunn. ("Tawhirikaro").

LEAVES: Saponin pittosporum. —

Klein, G., 1932. "*Handbuch der Pflanzenanalyse*," Springer, Vienna, Vol. III, p. 1135.

Pittosporum eugenioides A. Cunn. ("Tarata").

ESSENTIAL OIL: n-nonane, sabinene, limonene, sesquiterpenes, saturated alde-

hyde b.p. 186–188°, unidentified terpene alcohol, β -pinene glycol m.p. 75–77°, p-menthan-3, 4-diol m.p. 77°, glycol m.p. 78°, liquid diterpenes, esters, paraffins m.p. 44.5°, 56°, 63° ($C_{21}H_{44}$). —

Carter, C. L., Heazlewood, W. V., 1949. *J. Soc. chem. Ind. Lond.*, 68: 34.

LEAVES: Saponin pittosporum. —

Klein, G., 1932. "Handbuch der Pflanzenanalyse," Springer, Vienna, Vol. III, p. 1135.

PASSIFLORACEAE

Tetraphathaea tetrandra Cheesem. ("Kohia").

SEED OIL: Glycerides, unidentified colouring matter. —

Brooker, S. G., 1957. *Trans. roy. Soc. N.Z.*, 84: 935.

MYRTACEAE

Leptospermum scoparium J. R. et G. Forst. ("Manuka").

ESSENTIAL OIL: α -pinene, eudesmene, aromadendrene, citronellal, citronellol, citral, geraniol, cineole, citronellol and geraniol as acetic, isovaleric, and cinnamic acid esters, azulene, leptospermone. —

Atkinson, 1870. *Pharm. J.*, 4: 15, 369.

Gardner, R., 1924. *J. Soc. chem. Ind. Lond.*, 43: 34T.

Gardner, R., 1925. *J. Soc. chem. Ind. Lond.*, 44: 528T.

Short, W. F., 1926. *J. Soc. chem. Ind. Lond.*, 45: 96T.

Briggs, L. H., Penfold, A. R., Short, W. F., 1938. *J. chem. Soc.*: 1193.

Briggs, L. H., Hassall, C. H., Short, W. F., 1945. *J. chem. Soc.*: 706.

Murin, B., Riedle, W., Risse, K. H., Scheublen, M., 1959. *Chem. Ber.*, 92: 2033.

BARK: Betulic acid, oleanolic acid, ursolic acid acetate, taxifolin, leucocyanidin, leucocyanin, ellagic acid, 3, 3', 4-tri-O-methyl ellagic acid, 3, 3'-di-O-methyl ellagic acid, wax esters, $C_{29}H_{59}COOR$, ($R = C_{18}H_{37}, C_{20}H_{41}, C_{22}H_{45}, C_{24}H_{49}, C_{26}H_{53}, C_{28}H_{57}$); alcohols (even numbered saturated straight chain alcohols C_{18} – C_{28}), esters of p-coumaric acid $HO.C_6H_4CH:CH-COOR$ ($R = C_{18}H_{37}, C_{20}H_{41}, C_{22}H_{45}, C_{24}H_{49}, C_{26}H_{53}, C_{28}H_{57}$), β -sitosterol.

Corbett, R. E., McDowall, M. A., 1958. *J. chem. Soc.*: 3715.

Corbett, R. E., McDowall, M. A., Wyllie, S. G., Person. Comm.

Cain, B. F., Person. comm.

MANNA: (+)-mannitol. —

Cambie, R. C., Seelye, R. N., 1959. *N.Z. J. Sci.*, 2: 498.

Leptospermum ericoides A. Rich. ("Kanuka").

ESSENTIAL OIL: (+)- α -pinene, (+)- β -pinene, 1,8-cineole, dipentene, β -terpinene, linalool, (+)- α -terpineol, (+)-aromadendrene, terpene alcohol b.p. 95°_{5mm.}, sesquiterpene b.p. 111°_{5mm.}, new sesquiterpene alcohol, compound ($C_{15}H_{26}O$) m.p. 95°, $\alpha\beta$ -unsaturated carbonyl compound, citral, leptospermone.

Short, W. F., Johnson, D., 1923. *Aust. Assoc. Adv. Sci.*, 16: 220.

Short, W. F., 1926. *J. Soc. chem. Ind. Lond.*, 45: 96T.

Corbett, R. E., Gibson, M. G. C., 1959. *J. Sci. Food Agric.*, 10: 198.

BARK: Betulic acid, ursolic acid acetate, new triterpene acid ($C_{30}H_{48}O_4$). —

Corbett, R. E., McGraw, E. H., 1959. *J. Sci. Food Agric.*, 16: 29.

Metrosideros kermadecensis W. R. B. Oliver (*M. villosa* Kirk)

ESSENTIAL OIL. Sesquiterpene b.p. 131–135°, sesquiterpene esters, sesquiterpene alcohols. —

Gardner, R., 1931. *J. Soc. chem. Ind. Lond.*, 50: 141T.

Metrosideros excelsa Gaertn. (“Pohutukawa”).

ESSENTIAL OIL: Sesquiterpene b.p. 131–135°, sesquiterpene esters, sesquiterpene alcohols. —

Gardner, R., 1931. *J. Soc. chem. Ind. Lond.*, 50: 141T.

FLOWERS: Betulic acid, ursolic acid, gallic acid, methyl gallate, ellagic acid. —

Cambie, R. C., Seelye, R. N., 1961. *N.Z. J. Sci.*, 4: 189.

Metrosideros robusta A. Cunn. (“Rata”).

ESSENTIAL OIL: Terpenes and terpene alcohols, α -pinene (?), β -pinene (?), limonenes, dipentene, sesquiterpene b.p. 131–135°, sesquiterpene alcohol. —

Gardner, R., 1931. *J. Soc. chem. Ind. Lond.*, 50, 141T.

BARK: Tannins. —

Skey, W., 1873. *Ann. Rept. Colonial Mus.*, 8: 24.

Aston, B. C., 1918. *N.Z. J. Agric.*, 16: 358; 17: 136. (1917; 15: 121?*)

Metrosideros umbellata Cav.

ESSENTIAL OIL: (+)- α -pinene, (—) and (\pm)- β -pinene, myrcene, (+)-limonene, dipentene, (\pm)- α -terpineol, (+)-myrtenyl acetate, geranyl acetate, (+)-aromadendrene, (+)-cadinene, terpene ester, sesquiterpene alcohol b.p. 112–116°_{3mm.}, (—)-metrosiderene. —

Gardner, R., 1928. *N.Z. J. Sci. Tech.*, 61: 47.

Gardner, R., 1931. *J. Soc. chem. Ind. Lond.*, 50: 141T.

Corbett, R. E., Hanger, W. G., 1953. *J. Sci. Food Agric.*, 4: 508.

Corbett, R. E., Hanger, W. G., 1954. *J. chem. Soc.*: 1179.

BARK: Tannins. —

Aston, B. C., 1918. *N.Z. J. Agric.*, 17: 136.

HEARTWOOD: Arjunolic acid, tannins. —

Corbett, R. E., Bailey, M. R. Person. Comm.

Metrosideros parkinsonii Buchan.

ESSENTIAL OIL: Sesquiterpene b.p. 131–135°, sesquiterpene alcohol. —

Gardner, R., 1931. *J. Soc. chem. Ind. Lond.*, 50: 141T.

Metrosideros fulgens Druce (*M. florida* of Cheeseman). (“Aka-kura”, “aka-tawhiwhi”).

ESSENTIAL OIL. Sesquiterpene b.p. 131–135°, (—)-cadinene or isomer, (—)-aromadendrene. —

Gardner, R., 1931. *J. Soc. chem. Ind. Lond.*, 50: 141T.

Birch, A. J., 1953. *J. chem. Soc.*: 715.

BARK: Tannins. —

Aston, B. C., 1917. *N.Z. J. Agric.*, 15: 121. (?*)

* It is not clear which species of *Metrosideros* has been examined in this paper.

Metrosideros perforata A. Rich. (*M. scandens* of Cheeseman). ("Aka-toro-toro").

ESSENTIAL OIL: Terpenes and terpene alcohols, α -pinene (?), β -pinene (?), limonenes, dipentene, sesquiterpene b.p. 131–135°, sesquiterpene alcohol. — Gardner, R., 1931. *J. Soc. chem. Ind. Lond.*, 50: 141T.

Metrosideros diffusa Smith

ESSENTIAL OIL. Sesquiterpene b.p. 131–135°, sesquiterpene alcohol. — Gardner, R., 1931. *J. Soc. chem. Ind. Lond.*, 50: 141T.

Metrosideros colensoi Hook. f.

ESSENTIAL OIL: Sesquiterpene b.p. 131–135°, sesquiterpene alcohol. — Gardner, R., 1931. *J. Soc. chem. Ind. Lond.*, 50: 141T.

Eugenia maire A. Cunn. ("Mairetawake").

TRUNK BARK: Tannins, 3,3',4-tri-O-methylellagic acid, 3,3'-di-O-methyl ellagic acid, ellagic acid, β -sitosterol, betulic acid. —

Aston, B. C., 1917. *N.Z. J. Agric.*, 15: 117.

Aston, B. C., 1918. *N.Z. J. Agric.*, 16: 358.

Briggs, L. H., Cambie, R. C., Lowry, J. B., Seelye, R. N., 1961. *J. chem. Soc.*: 642.

Briggs, L. H., Cambie, R. C., 1961. *J. chem. Soc.*: 4684.

Cain, B. F. Person. Comm.

TRUNK WOOD: 3,3',4-tri-O-methylellagic acid, 3,3'-di-O-methyl ellagic acid, ellagic acid. —

Briggs, L. H., Cambie, R. C., Lowry, J. B., Seelye, R. N., 1961. *J. chem. Soc.*: 642.

Cain, B. F. Person. Comm.

LEAVES: Betulic acid, oleanolic acid. —

Briggs, L. H., Cambie, R. C., 1961. *J. chem. Soc.*: 4684.

Lophomyrtus bullata Burret ("Ramarama").

ESSENTIAL OIL: Bullatenone (2,3-dihydro-2,2-dimethyl-3-oxo-5-methylfuran), unidentified phenols. —

Brandt, C. W., Taylor, W. I., Thomas, B. R., 1954. *J. chem. Soc.*: 3245.

Parker, W., Raphael, R. A., Wilkinson, D. J., 1958. *J. chem. Soc.*: 3871.

ELAEOCARPACEAE

Elaeocarpus dentatus Vahl. ("Hinau").

BARK: Tannins. —

Key, W., 1873. *Ann. Rept. Colonial Mus.*, 8: 24.

Kirk, T., 1889. *Forest Flora of New Zealand*. Govt. Printer, Wellington.

Aston, B. C., 1917. *N.Z. J. Agric.*, 15: 117.

Aston, B. C., 1918. *N.Z. J. Agric.*, 16: 358; 17: 136.

WOOD: β -sitosterol, ellagic acid, tannins. —

Austin, C. J., Harvey, W. E. Person. Comm.

Elaeocarpus hookerianus Raoul ("Pokaka").

BARK: Tannins. —

Key, W., 1886. *Ann. Rept. Colonial Mus.*, 20: 56.

Kirk, T., 1889. *Forest Flora of New Zealand*. Govt. Printer, Wellington.

Aston, B. C., 1917. *N.Z. J. Agric.*, 15: 117.

Aston, B. C., 1918. *N.Z. J. Agric.*, 16: 358.

Aristotelia serrata W. R. B. Oliver ("Makomako").

BARK: Tannins, β -sitosterol, β -sitosteryl D-glucoside, ellagic acid. —

Aston, B. C., 1918. *N.Z. J. Agric.*, 16: 358.

Cambie, R. C., 1959. *N.Z. J. Sci.*, 2: 257.

CUNONIACEAE

Weinmannia silvicola A. Cunn. ("Towai", "tawhero").

BARK: Tannins. —

Aston, B. C., 1917. *N.Z. J. Agric.*, 15: 120.

Weinmannia racemosa Linn. f. ("Kamahi").

BARK: Tannins, tannic acid, catechuic acid, unidentified gum. —

Colenso, W., 1868. *Trans. N.Z. Inst.*, 1: 49.

Skey, W., 1868. *Trans. N.Z. Inst.*, 1: 28.

Aston, B. C., 1918. *N.Z. J. Agric.*, 15: 120.

Aston, B. C., 1918. *N.Z. J. Agric.*, 16: 358; 17: 136.

ESCALLONIACEAE

Quintinia serrata A. Cunn. ("Tawheowheo").

BARK: Tannins, astilbin (dihydroquercetin-3-rhamnoside). —

Aston, B. C., 1918. *N.Z. J. Agric.*, 16: 358.

Cambie, R. C., 1959. *J. chem. Soc.*: 848.

Ixerba brexioides A. Cunn. ("Tawari").

BARK: Tannins. —

Aston, B. C., 1918. *N.Z. J. Agric.*, 16: 358.

PAPILIONACEAE

Sophora tetraptera J. Mill. ("Kowhai").

SEEDS: α -matrine, methylcytisine, sophochrysin. —

Briggs, L. H., Taylor, W. S., 1938. *J. chem. Soc.*: 1206.

Briggs, L. H., Russell, W. E., 1942. *J. chem. Soc.*: 507.

Sophora microphylla Ait.

SEEDS: α -matrine, methylcytisine, cytisine, sophochrysin, unidentified base. —

Briggs, L. H., Ricketts, J., 1937. *J. chem. Soc.*: 1795.

Briggs, L. H., Mangan, J. L., 1948. *J. chem. Soc.*: 1889.

BARK: α -matrine, methylcytisine, cytisine, sophochrysin, unidentified base. —

Briggs, L. H., Cambie, R. C., Holdgate, R. H., Seelye, R. N., 1960. *J. chem. Soc.*: 1955.

FLOWERS: α -matrine, methylcytisine, cytisine, sophochrysin, anagyrine, unidentified base, diosmin —

Briggs, L. H., Cambie, R. C., Holdgate, R. H., Seelye, R. N., 1960. *J. chem. Soc.*: 1955.

FAGACEAE

Nothofagus menziesii Oerst. ("Silver-beech").

BARK: Tannins. —

Aston, B. C., 1918. *N.Z. J. Agric.*, 16: 358.

Nothofagus fusca Oerst. ("Red-beech").

BARK: Tannins. —

Aston, B. C., 1917. *N.Z. J. Agric.*, 15: 117.

Aston, B. C., 1918. *N.Z. J. Agric.*, 16: 358; 17: 136.

Nothofagus solandri Oerst. ("Black-beech").

BARK: Tannins. —

Aston, B. C., 1917. *N.Z. J. Agric.*, 15: 117.

Aston, B. C., 1918. *N.Z. J. Agric.*, 16: 358; 17: 136.

Nothofagus cliffortioides Oerst. ("Mountain beech").

BARK: Tannins. —

Skey, W., 1873. *Ann. Rept. Colonial Mus.*, 8: 24.

Aston, B. C., 1917. *N.Z. J. Agric.*, 15: 177.

Aston, B. C., 1921. *N.Z. J. Agric.*, 22: 100.

URTICACEAE

Urtica ferox Forst. f. ("Ongaonga").

HAIR FLUID: Acetylcholine. —

Pilgrim, R. L. C., 1959. *Proc. roy. Soc. B.*, 151: 48.

CORYNOCARPACEAE

Corynocarpus laevigatus J. R. et G. Forst. ("Karakā").

BERRIES: Karakin [1,4,6-tris-(β -nitropropionyl)-D-glucopyranose], man-
nose, sucrose, glucose, stearic acid, oleic acid. —

Skey, W., 1869. *Trans. N.Z. Inst.*, 2: 155.

Skey, W., 1871. *Trans. N.Z. Inst.*, 4: 316.

Skey, W., 1871. *Chem. News*, 27: 190.

Aston, B. C., Easterfield, T. H., 1901. *Trans. N.Z. Inst.*, 34: 495.

Aston, B. C., Easterfield, T. H., 1903. *Proc. chem. Soc.*, 19: 191.

Easterfield, T. H., 1902. *Aust. Assoc. Adv. Sci.*, 9: 159.

Carrie, M. S., 1934. *J. Soc. chem. Ind. Lond.*, 53: 288T.

Aston, B. C., 1935. *N.Z. J. Agric.*, 51: 45.

Carter, C. L., 1943. *J. Soc. chem. Ind., Lond.*, 62: 238T.

Carter, C. L., 1951. *J. Sci. Food Agric.*, 2: 54.

Carter, C. L., McChesney, W. J., 1949. *Nature*, 164: 575.

RHAMNACEAE

Pomaderris kumeraho A. Cunn. (*P. elliptica* of Cheeseman) ("Kumarahou").

LEAVES: Quercetin, kaempferol, glycosides of quercetin and kaempferol, myricyl acetate, saponins, ellagic acid, certain O-methyl ethers of ellagic acid, leucocyanidin, leucodelphinidin. —

Cain, B. F., Cambie, R. C., 1959. *N.Z. J. Sci.*, 2: 240.

Cain, B. F. Person. Comm.

RUTACEAE

Phebalium nudum Hook. ("Mairehau").

ESSENTIAL OIL: Citronellol, citral, camphene, limonene, terpinyl acetate, sesquiterpenes and sesquiterpene alcohols, acetic acid, isovaleric acid, cinnamic acid, unidentified phenol. —

Radcliffe, C. B., Short, W. F., 1928. *J. Soc. chem. Ind., Lond.*, 47: 324T.

BARK: D.-citronellal, geranial, neral, acetic acid, isovaleric acid, palmitic acid, cinnamic acid, isoeugenol, β -sitosterol, α -terpineol probably as isovalerate, furoquinoline alkaloids dictamnine, γ -fagarine, evolitrine, skimmianine, kokusaginine, 9-hydroxy-4-methoxy-furano (3,2-g) benzopyran-7-one, ellagic acid, phebalin (C₂₀H₁₈O₄, m.p. 175–176.5°), phebalarin (C₁₅H₁₈O₆, m.p. 125–126°), compound A (C₂₃H₄₄O, m.p. 81.5–82°), compound B (C₁₃H₂₆O, m.p. 94°), unidentified phenols. —

Briggs, L. H., Cambie, R. C., 1958. *Tetrahedron*, 2: 256.

WOOD: Citral, ellagic acid, dictamnine, skimmianine, kokusaginine, unidentified alkaloid. —

Cambie, R. C., 1959. *N.Z. J. Sci.*, 2: 254.

Melicope ternata J. R. et G. Forst. ("Wharangi").

ESSENTIAL OIL: Limonene, dipentene, aldehydes, esters, cinnamic acid, sesquiterpenes, sesquiterpene alcohols. —

Radcliffe, C. B., 1929. *Trans. N.Z. Inst.*, 60: 251.

BARK: Flavonols meliternatin, meliternin, ternatin, wharangin; xanthoxyletin. —

Briggs, L. H., Locker, R. H., 1949. *J. chem. Soc.*: 2157, 2162.

Briggs, L. H., Locker, R. H., 1950. *J. chem. Soc.*: 864.

Briggs, L. H., Locker, R. H., 1951. *J. chem. Soc.*: 3131, 3136.

Melicope ternata J. R. et G. Forst. var. *mantelli* Buch.

BARK: Meliternatin, meliternin, ternatin, wharangin, xanthoxyletin, cinnamic acid. —

Cambie, R. C., 1960. *J. chem. Soc.*: 2376.

Melicope simplex A. Cunn. ("Poataniwha").

BARK: Flavonols meliternatin, ternatin, melisimplexin, melisimplin; evodionol, alloevodionol-7-methyl ether. —

Briggs, L. H., Locker, R. H., 1950. *J. chem. Soc.*: 2376, 2379.

Briggs, L. H., Locker, R. H., 1951. *J. chem. Soc.*: 3131.

MELIACEAE

Dysoxylum spectabile Hook. f. ("Kohekohe").

HEARTWOOD: (+)-catechin, β -sitosterol, tannins. —

Cambie, R. C., 1959. *J. chem. Soc.*: 468.

BARK: Ketone m.p. 89–90°, tannins. —

Cambie, R. C., 1959. *J. chem. Soc.*: 468.

SEED OIL: Glycerides, fatty acids. —

Brooker, S. G., 1960. *Trans. roy. soc. N.Z.*, 88: 157.

SAPINDACEAE

Alectryon excelsus Gaertn. ("Titoki").

LEAVES: Quebrachitol [(—)-inositol methyl ether]. —
Plouvier, V., 1949. *Compt. rend.*, 228: 86.

BARK: Tannins. —

Aston, B. C., 1918. *N.Z. J. Agric.*, 16: 358.

SEED OIL: Glycerides, acids. —

Colenso, W., 1868. *Trans. N.Z. Inst.*, 1: 51.

Brooker, S. G., 1957. *Trans. roy. soc. N.Z.*, 84: 935.

Dodonaea viscosa Jacquin. ("Akeake").

LEAVES: Hydrogen cyanide. —

Finnemore, H., Cox, C. B., 1929. *J. Proc. roy. soc., N.S.W.*, 63: 172.

ARALIACEAE

Neopanax simplex Allan ("Haumakoroa").

ESSENTIAL OIL: (—)- α -pinene, (—)- β -pinene, myrcene, dipentene (?), (—)-aromadendrene, α -camphorene, γ -camphorene, unidentified terpenes, sesquiterpenes, and sesquiterpene alcohols, paraffin wax containing tricosane, pentacosane, heptacosane, nonacosane, hentriacontane and higher members. —

Murray, J., Stanley, B. G., 1952. *J. appl. Chem.*, 2: 5.

UMBELLIFERAE

Centella uniflora Nannf. (*Hydrocotyle asiatica* of J. D. Hooker)

WHOLE PLANT: Asiaticoside (asiatic acid monogluco-dirhamnoside). —

Brontems, J. E., 1941. *Bull. sci. Pharmacol.*, 49: 186.

Simonsen, J., Ross, W. C. J., 1957. *The Terpenes*, Cambridge Univ. Press, Vol. V, pp. 58-67.

OLEACEAE

Gymnelaea cunninghamii L. Johnson ("Maire").

HEARTSHAKES: Isoolivil. —

Briggs, L. H., Frieberg, A. G., 1937. *J. chem. Soc.*: 271.

Hearon, W., MacGregor, W., 1955. *Chem. Rev.*, 55: 957.

Traverso, G., 1958. *Gazz. chim. Ital.*, 88: 851.

Traverso, G., 1959. *Gazz. chim. Ital.*, 89: 1810.

APOCYNACEAE

Parsonsia capsularis R. Br. ("Akakiore").

STEMS AND LEAVES: Alkaloid (0.06%). —

White, E. P. Person. Comm.

RUBIACEAE

Coprosma acerosa A. Cunn.

BARK: Anthraquinone pigments lucidin, anthragallol-2-methyl ether and glycoside (?), anthragallol-1,2-dimethyl ether and glycoside (?), rubiadin (?) and glycoside (?) rubiadin-1-methyl ether, 1, 6-dihydroxy-2-methylanthraquinone, 3-hydroxy-2-methylanthraquinone (?), unidentified anthraquinones. —

- Briggs, L. H., Thomas, B. R., 1949. *J. chem. Soc.*: 1246.
Briggs, L. H., Nicholls, G. A., 1953. *J. chem. Soc.*: 3068.
Joshi, B. S., Parkash, N., Venkataraman, K., 1954. *Curr. Sci.*, 23: 330.
Joshi, B. S., Parkash, N., Venkataraman, K., 1955. *J. Sci. Industr. Res. India*: 14B: 87.

Coprosma liniifolia Hook. f.

BARK: Anthragallol-1,3-dimethyl ether, anthragallol-2-methyl ether, anthragallol-2-methyl ether primveroside. —

Beachen, J. F., 1952. *Thesis, Univ. N.Z.*

Coprosma propinqua A. Cunn. (“Mingi”).

ROOT BARK: Asperuloside, scopoletin, glucose, rhamnose. —

Steggles, A. W., 1962. *Thesis, Univ. Auckland.*

Coprosma foetidissima J. R. et G. Forst.

LEAVES: Methane thiol. —

Sutherland, M. D., 1947. *N.Z. J. Sci. Tech.*, 29B: 94.

BARK: Rutin, unidentified anthraquinones, kaempferol glycosides. —

Brooker, E. G., 1959. *J. chem. Soc.*: 470.

Cain, B. F. Person. Comm.

Coprosma rubra Petrie

BARK: Rubiadin-1-methyl ether. —

Briggs, L. H., 1947. *Proc. roy. soc. N.S.W.*, 80: 151.

Coprosma rotundifolia A. Cunn. (“Round-leaved coprosma”).

ROOT BARK: Rubiadin-1-methyl ether, rubiadin, lucidin, scopoletin, glucose. —

Steggles, A. W., 1962. *Thesis, Univ. Auckland.*

Coprosma tenuicaulis Hook. f. (“Hukihuki”).

BARK: Rubiadin-1-methyl ether, rubiadin, 1,2-dihydroxy-6(or 7)-methyl anthraquinone, scopoletin, sucrose, glucose, rhamnose.

Rutledge, P. S., 1961. *Thesis, Univ. Auckland.*

Coprosma areolata Cheesem.

BARK: Rubiadin-1-methyl ether, copareolatin. —

Briggs, L. H., Craw, M. R., Dacre, J. C., 1948. *J. chem. Soc.*: 568.

Briggs, L. H., Dacre, J. C., Nicholls, G. A., 1948. *J. chem. Soc.*: 990.

Coprosma rhamnoides A. Cunn.

ROOT BARK: Rutin, anthragallol-1, 2-dimethyl ether, rubiadin-1-methyl ether. —

Briggs, L. H., Taylor, A. R., 1955. *J. chem. Soc.*: 3298.

Coprosma arborea Kirk (“Mamangi”).

BARK: Asperuloside, sucrose. —

Nicholls, G. A., 1948. *Thesis, Univ. N.Z.*

Briggs, L. H., Nicholls, G. A., 1954. *J. chem. Soc.*: 3940.

Briggs, L. H., Cain, B. F., 1954. *J. chem. Soc.*: 4182.

Grimshaw, J., 1961. *Chem. and Ind.*: 403.

Coprosma tenuifolia Cheesem.

BARK: Asperuloside, sucrose. —

Nicholls, G. A., 1948. *Thesis, Univ. N.Z.*

Briggs, L. H., Nicholls, G. A., 1954. *J. chem. Soc.*: 3940.

Coprosma australis Robinson ("Kanono").

STEM BARK: Asperuloside, morindin, morindone, rubiadin-1-methyl ether, 1, 6-dihydroxy-2-methyl anthraquinone, rubiadin, copareolatin-1(or 5), 6-dimethyl ether. —

Aston, B. C., 1917. *N.Z. J. Agric.*, 15: 117.

Aston, B. C., 1918. *N.Z. J. Agric.*, 16: 358.

Denz, F. A., 1933. *Thesis, Vict. Univ. Coll.*

Briggs, L. H., Dacre, J. C., 1948. *J. chem. Soc.*: 564.

Briggs, L. H., Nicholls, G. A., Patterson, R. M. L., 1952. *J. chem. Soc.*: 1718.

ROOT BARK: Morindin, morindone, rubiadin-1-methyl ether. —

Briggs, L. H., Dacre, J. C., 1948. *J. chem. Soc.*: 564.

Thompson, R. H., 1957. *Naturally Occurring Quinones*, Butterworth Sci. Publications, Lond. pp. 206–209.

Balakrishna, S., Seshadri, T. R., Venkataramani, B., 1960. *J. Sci. industr. Res. India*, 19B: 433.

Le Quesne, P., 1961. *Thesis, Univ. N.Z.*

Coprosma robusta Raoul ("Karamu").

LEAVES: Asperuloside. —

Hérissey, H., 1933. *J. pharm. Chim.*, 17: 553 and references therein.

BARK: Asperuloside. —

Briggs, L. H., Nicholls, G. A., 1954. *J. chem. Soc.*: 3940.

HEARTWOOD: Rubiadin-1-methyl ether, rubiadin, scopoletin. —

Steggles, A. W., 1961. *Thesis, Univ. Auckland.*

Coprosma repens A. Rich. ("Taupata").

LEAVES: Asperuloside. —

Hérissey, H., 1933. *J. pharm. Chim.*, 17: 553 and references therein.

BARK: Asperuloside. —

Briggs, L. H., Nicholls, G. A., 1954. *J. chem. Soc.*: 3940.

Coprosma lucida J. R. et G. Forst. ("Karamu").

LEAVES: Asperuloside. —

Hérissey, H., 1933. *J. pharm. Chim.*, 17: 553 and references therein.

BARK. Asperuloside, anthragallol, anthragallol-2-methyl ether, anthragallol-1, 2-dimethyl ether, 1, 6-dihydroxy-2-methyl-anthraquinone, rubiadin, 3-hydroxy-2-methylantraquinone, lucidin. —

Briggs, L. H., Nicholls, G. A., 1949. *J. chem. Soc.*: 1241.

Briggs, L. H., Nicholls, G. A., 1953. *J. chem. Soc.*: 3068.

Briggs, L. H., Nicholls, G. A., 1954. *J. chem. Soc.*: 3940.

COMPOSITAE

Olearia paniculata Druce ("Akiraho").

ESSENTIAL OIL: (—)- β -pinene, limonene (?), unidentified terpenes, aromadendrene, (+)- γ -curcumene, (\pm)- α -curcumene, olearyloxide (C₂₀H₃₄O, m.p. 99°). —

McClellan, D. H., Slater, S. N., 1945. *J. Soc. chem. Ind. Lond.*, 64: 28T.

Corbett, R. E., Jamieson, G. A., Murray, J. Person. Comm.

Olearia ilicifolia Hook. f. ("Hakeke").

ESSENTIAL OIL: Unidentified terpenes and sesquiterpenes, paraffin hydrocarbons, paraffin alcohol. —

Murray, J., 1949. *J. N.Z. Inst. Chem.*, 13: 128.

Senecio kirkii Kirk ("Kohurangi").

BARK AND LEAVES: Alkaloid senkirkine, m.p. 197–198°. —

Briggs, L. H., Mangan, J. L., Russell, W. E., 1948. *J. chem. Soc.*: 1891.

Brachyglottis repanda J. R. et G. Forst. ("Rangiora").

BARK: Aromatic gum. —

Skey, W., 1868. *Trans. N.Z. Inst.*, 1: 76.

LEAVES: Unidentified alkaloid. —

Briggs, L. H., 1947. *Proc. roy. soc. N.S.W.*, 80: 151.

GENTIANACEAE

Gentiana corymbifera Kirk

ROOTS: Xanthone glucoside corymbiferin. —

——— 1941. *73rd Ann. Rept. Dom. Lab.*: 13.

Ross, D. J., 1950. *N.Z. J. Sci. Tech.*, 32B: (3) 39.

SOLANACEAE

Solanum aviculare Forst. f. ("Poroporo").

GREEN FRUIT: Alkaloids solasonine, solamargine. —

Levi, A. A., 1930. *J. Soc. chem. Ind. Lond.*, 49: 395T.

Bell, R. C., Briggs, L. H., 1942. *J. chem. Soc.*: 1.

Briggs, L. H., Newbold, R. P., Stace, N. E., 1942. *J. chem. Soc.*: 3 and references therein.

McKenna, J., 1953. *Quart. Rev.*, 7: 231.

Prelog, V., Jeger, O., 1953. *The Chemistry of Solanum Veratrum Alkaloids in The Alkaloids*, Academic Press Inc., New York, Vol. III, p. 248.

Briggs, L. H., Cambie, R. C., 1958. *J. chem. Soc.*: 1422.

Briggs, L. H., Cambie, R. C., Hoare, J. L., 1961. *J. chem. Soc.*: 4645.

Fieser, L. F., Fieser, M., 1959. *Steroids*, Reinhold Publishing Corp., New York, pp. 853-857.

Sato, Y., Ikekawa, N., 1961. *J. org. Chem.*, 26: 1945.

RIPE FRUIT: Sucrose. —

Levi, A. A., 1930. *J. Soc. chem. Ind. Lond.*, 49: 395T.

LEAVES: Tannins, solasonine, solamargine. —

Levi, A. A., 1930. *J. Soc. chem. Ind. Lond.*, 49: 395T.

Kuhn, R., Löw, I., Trischman, H., 1955. *Chem. Ber.*, 88: 289.

WOOD: Tannins. —

Levi, A. A., 1930. *J. Soc. chem. Ind. Lond.*, 49: 395T.

Solanum laciniatum Ait.

GREEN FRUIT: Solasonine. —

Briggs, L. H., Cambie, R. C., 1958. *J. chem. Soc.*: 1422.

Solanum nodiflorum Jacquin

GREEN FRUIT: Solasonine. —

Briggs, L. H., Cambie, R. C., 1958. *J. chem. Soc.*: 1422.LEAVES: Solasonine, ϵ -solanigrine.Schreiber, K., 1958. *Planta Medica*, 4: 435.

SCROPHULARIACEAE

Hebe salicifolia Pennell. ("Koromiko").

LEAVES: Tannins. —

Gardner, R., 1924. *N.Z. J. Sci. Tech.*, 7: 220.

MYOPORACEAE

Myoporum laetum Forst. f. ("Ngaio").ESSENTIAL OIL: Mixture of paraffins ($C_{32-34}H_{66-70}$, m.p. 63°), ngaione. —McDowall, F. H., 1923. *Aust. Assoc. Adv. Sci.*, 16: 229.McDowall, F. H., 1925. *J. chem. Soc.*, 127: 2200.McDowall, F. H., 1927. *J. chem. Soc.*, 130: 731.McDowall, F. H., 1928. *J. chem. Soc.*, 131: 1324.McDowall, F. H., 1928. *Perfum. and Essential Oil Rec.*, 19: 221.Chibnal, A. C., Piper, S. H., Pollard, A., Sahai, P. N., Williams, E. F., 1934. *Biochem. J.*, 28: 2189.Brandt, C. W., Ross, D. J., 1949. *J. chem. Soc.*: 2778.Birch, A. J., Massy-Westrop, R. A., Wright, S. E., 1953. *Aust. J. Chem.*, 6: 385.Kubota, T., Matsuura, T., 1953. *Bull. chem. Soc. Japan*, 31: 491.Birch, A. J., Massy-Westrop, R. A., Wright, S. E., Kubota, T., Matsuura, T., Sutherland, M. D., 1954. *Chem. and Ind.*: 902.Kubota, T., 1958. *Tetrahedron*, 4: 68.Kubota, T., Matsuura, T., 1958. *J. chem. Soc.*: 3667.

BARK: 0.05% yield of mixture of three unidentified alkaloids. —

Cain, B. F. Person. Comm.

VERBENACEAE

Vitex lucens Kirk ("Puriri").WOOD: Vitexin, saponaretin (isovitexin), β -sitosterol. —Perkin, A. G., 1898. *J. chem. Soc.*, 73: 1019.Perkin, A. G., 1900. *J. chem. Soc.*, 77: 416.Barger, G., 1906. *J. chem. Soc.*, 89: 1210.Peteri, E., 1939. *J. chem. Soc.*: 1635.Nakaoki, T., 1944. *J. pharm. Soc. Japan*, 64: 57.Sharma, V. N., 1955. *J. Sci. industr. Res. India*, 14B: 267.Geissman, T. A., Jurd, L., 1955. *Arch. Biochem. Biophys.*, 56: 259.Fiedler, U., 1955. *Arzneimittel-Forsch.* 5: 609; 1956: *Chem. Abs.*, 50: 2761.Geissman, T. A., Kranen-Fiedler, U., 1956. *Naturwiss.*, 43: 226.Rao, C. B., Venkataraman, V., 1956. *Curr. Sci.*, 25: 328.Jurd, L., Geissman, T. A., Seikel, M. K., 1957. *Arch. Biochem. Biophys.*, 67: 284; 71: 17.

- Evans, W. H., McGookin, A., Jurd, L., Robertson, A., Williamson, W. R. N., 1957. *J. chem. Soc.*: 3510.
 Robertson, A., Williamson, W. R. N., 1957. *J. chem. Soc.*: 5018.
 Briggs, L. H., Cambie, R. C., 1958. *Tetrahedron*, 3: 269.
 Whalley, W. B., 1958. *Chem. and Ind.*: 361.
 Cambie, R. C., 1959. *Chem. and Ind.*: 87.
 Seikel, M. K., Holder, D. J., Birzgalis, R., 1959. *Arch. Biochem. Biophys.*, 85: 272.
 Hörhammer, L., Wagner, H., Nieschlag, H., Wildi, G., 1959. *Arch. Pharm.*, 292: 380; 1960: *Chem. Abs.*, 54: 5010.
 Bate-Smith, E. C., Swain, T., 1960. *Chem. and Ind.*: 1132.
 Williamson, W. R. N., 1961. *Chem. and Ind.*: 1168.

SAPWOOD: Vitexin, isovitexin. —

Cambie, R. C., 1959. *N.Z. J. Sci.*, 2: 230.

BARK: Vitexin, isovitexin, ceryl alcohol, β -sitosterol, unidentified flavonoids. —
 Cambie, R. C., 1959. *N.Z. J. Sci.*, 2: 230.

LEAVES: Pentatriacontane, stearic acid, β -carotene, p-hydroxybenzoic acid, unidentified flavonoids. —

Cambie, R. C., 1950. *N.Z. J. Sci.*, 2: 230.

MONOCOTYLEDONES

LILIACEAE

Cordyline australis Hook. f. (*Dracaena australis* Forst. f.). ("Cabbage Tree").

WHOLE PLANT: Smilagenin. —

Marker, R. E., Wagner, R. B., Ulshafer, P. R., Wittbecker, E. L., Goldsmith, D. P. J., Ruof, C. H., 1943. *J. Amer. chem. Soc.*, 65: 1199.

SEED OIL. Glycerides, linoleic acid. —

Earl, F. R., Melvin, E. H., Mason, L. H., Van Etten, C. H., Wolff, I. A., Jones, Q., 1959. *J. Amer. Oil Chem. Soc.*, 36: 304.

Brooker, S. G., 1960. *Chem. and Ind.*: 1326.

Phormium tenax J. R. et G. Forst. ("Harakeke").

LEAVES AND FIBRES: Tannins, pentosans, pectin, bitter principle, aldobionic acid, calcium salt of aldobionic acid. —

Church, A. H., 1873. *Trans. N.Z. Inst.*, 6: 260.

Hector, J., 1889. *Phormium tenax as a fibrous plant*, Govt. Printer, Wellington, 2nd Edition.

Aitken, P. W., 1927. *N.Z. J. Sci. Tech.*, 9: 226.

Brandt, C. W., 1937. *N.Z. J. Sci. Tech.*, 18: 613.

McIlroy, R. J., 1944. *N.Z. J. Sci. Tech.*, 26B: 161.

McIlroy, R. J., Holmes, G. S., Mauger, R. P., 1945. *J. chem. Soc.*: 796.

LYCOPSIDA

LYCOPODIACEAE

*Lycopodium cernuum** L.

WHOLE PLANT: Cernuine (L32, C₁₆H₂₆ON₂), base (L33), nicotine. —
 Marion, L., Manske, R. H. F., 1948. *Can. J. Res.*, 26B: 1.

Lycopodium deuterodensum* Herter (**L. densum** Labill.)

WHOLE PLANT: Lycopodine, base (L34), base (L35). —

Manske, R. H. F., 1953. *Can. J. Chem.*, 31: 894.

Lycopodium fastigiatum* R. Br. [**L. clavatum** L. (?)]

WHOLE PLANT: Lycopodine, base (L13), base (L18), base (L19), nicotine, clavatine, clavatoxine, 7 different alkaloids. —

Achmatowicz, O., Uzieblo, W., 1938. *Roczniki Chem.*, 18: 88.

Marion, L., Manske, R. H. F., 1944. *Can. J. Res.*, 22B: 137.

Burnell, R. H., Mootoo, B. S., 1961. *Can. J. Chem.*, 39B: 1090.

FILICOPSIDA

PTERIDACEAE

Paesia scaberula Kuhn ("Hard Fern").

ESSENTIAL OIL: Heptacosane, sesquiterpenes. —

Briggs, L. H., Sutherland, M. D., 1947. *Nature*, 160: 333.

Pteridium aquilinum Kuhn var. **esculentum** Kuhn ("Bracken").

LEAVES: Astragalinal (kaempferol-3-glucoside), isoquercitrin, rutin, 2 unknown flavonoids. —

Nakabayashi, T., 1955. *Vitamins*, 8: 410; *Chem. Abs.*, 49: 14826.

ASPLENIACEAE

Asplenium lamprophyllum Carse

STALKS: Methyl salicylate. —

Briggs, L. H., Taylor, W. I., 1947. *Trans. roy. soc. N.Z.*, 76: 597.

Asplenium trichomanes L.

LEAVES: N-acetyl ornithine. —

Virtanen, A. I., Linko, P., 1955. *Acta Chem. Scand.*, 9: 531.

Section II

HYDROCARBONS

| | |
|--|---|
| Nonane: | <i>Pittosporum eugenioides</i> (Pittosporaceae) |
| Tricosane: | <i>Neopanax simplex</i> (Araliaceae) |
| | <i>Pseudowintera colorata</i> (Winteraceae) |
| Pentacosane: | <i>Pseudowintera colorata</i> (Winteraceae) |
| | <i>Neopanax simplex</i> (Araliaceae) |
| Heptacosane: | <i>Neopanax simplex</i> (Araliaceae) |
| | <i>Paesia scaberula</i> (Pteridaceae) |
| Nonacosane: | <i>Neopanax simplex</i> (Araliaceae) |
| Hentriacontane: | <i>Neopanax simplex</i> (Araliaceae) |
| Pentatriacontane: | <i>Vitex lucens</i> (Verbenaceae) |
| Paraffin C ₂₁ H ₄₄ , m.p. 63°: | <i>Pittosporum eugenioides</i> (Pittosporaceae) |
| Paraffin, m.p. 44.5°: | <i>Pittosporum eugenioides</i> (Pittosporaceae) |
| Paraffin, m.p. 62°: | <i>Pittosporum tenuifolium</i> (Pittosporaceae) |

* Species found other than in New Zealand. It is not known with certainty if the work carried out on these species would necessarily yield the same result on samples collected in New Zealand.

| | |
|---|---|
| Mixture of paraffins C ₃₂₋₃₄ H ₆₆₋₇₀ , m.p. 63°: | <i>Myoporum laetum</i> (Myoporaceae) |
| Paraffins, unidentified: | <i>Olearia ilicifolia</i> (Compositae) |
| Myrcene: | <i>Pseudowintera colorata</i> (Winteraceae) |
| | <i>Pittosporum tenuifolium</i> (Pittosporaceae) |
| | <i>Neopanax simplex</i> (Araliaceae) |
| | <i>Metrosideros umbellata</i> (Myrtaceae) |
| p-Cymene: | <i>Pseudowintera colorata</i> (Winteraceae) |
| α-Terpinene: | <i>Pseudowintera colorata</i> (Winteraceae) |
| γ-Terpinene: | <i>Pseudowintera colorata</i> (Winteraceae) |
| β-Phellandrene: | <i>Pseudowintera colorata</i> (Winteraceae) |
| β-Terpinene: | <i>Pittosporum tenuifolium</i> (Pittosporaceae) |
| | <i>Leptospermum ericoides</i> (Myrtaceae) |
| Terpinolene: | <i>Pseudowintera colorata</i> (Winteraceae) |
| | <i>Pittosporum tenuifolium</i> (Pittosporaceae) |
| Limonene: | <i>Pittosporum tenuifolium</i> , <i>P. eugenioides</i> (Pittosporaceae) |
| | <i>Pseudowintera colorata</i> (Winteraceae) |
| | <i>Metrosideros umbellata</i> , <i>M. robusta</i> , <i>M. perforata</i> (Myrtaceae) |
| | <i>Phebalium nudum</i> , <i>Melicope ternata</i> (Rutaceae) |
| | <i>Olearia paniculata</i> (Compositae) |
| Dipentene: | <i>Metrosideros umbellata</i> , <i>M. perforata</i> , <i>M. robusta</i> , <i>Leptospermum ericoides</i> (Myrtaceae) |
| | <i>Pseudowintera colorata</i> (Winteraceae) |
| | <i>Pittosporum tenuifolium</i> (Pittosporaceae) |
| | <i>Melicope ternata</i> (Rutaceae) |
| | <i>Neopanax simplex</i> (Araliaceae). |
| α-Thujene: | <i>Pseudowintera colorata</i> (Winteraceae) |
| Sabinene: | <i>Pittosporum eugenioides</i> (Pittosporaceae) |
| α-Pinene: | <i>Pittosporum tenuifolium</i> (Pittosporaceae) |
| | <i>Neopanax simplex</i> (Araliaceae) |
| | <i>Pseudowintera colorata</i> (Winteraceae) |
| | <i>Metrosideros umbellata</i> , <i>M. perforata</i> , <i>M. robusta</i> , <i>Leptospermum ericoides</i> , <i>L. scoparium</i> (Myrtaceae) |
| | <i>Micropiper excelsum</i> (Piperaceae) |
| β-pinene: | <i>Pseudowintera colorata</i> (Winteraceae) |
| | <i>Neopanax simplex</i> (Araliaceae) |
| | <i>Pittosporum tenuifolium</i> , <i>P. eugenioides</i> (Pittosporaceae) |
| | <i>Metrosideros umbellata</i> , <i>M. robusta</i> , <i>M. perforata</i> , <i>Leptospermum ericoides</i> (Myrtaceae) |
| | <i>Olearia paniculata</i> (Compositae) |
| Camphene: | <i>Phebalium nudum</i> (Rutaceae). |

ALCOHOLS AND PHENOLS

| | |
|--------------------------------------|---|
| Methyl alcohol (as salicylic ester): | <i>Asplenium lamprophyllum</i> (Aspleniaceae) |
| Nonyl alcohol: | <i>Macropiper excelsum</i> (Piperaceae) |

| | |
|---|---|
| Ceryl alcohol (Hexacosanol) : | <i>Vitex lucens</i> (Verbenaceae) |
| Myricyl alcohol (as acetic ester) : | <i>Pomaderris kumeraho</i> (Rhamnaceae) |
| Paraffin alcohol, unidentified : | <i>Olearia ilicifolia</i> (Compositae) |
| Alcohol, C ₁₈ H ₃₇ OH : | <i>Leptospermum scoparium</i> (Myrtaceae) |
| Alcohol, C ₂₀ H ₄₁ OH : | <i>Leptospermum scoparium</i> (Myrtaceae) |
| Alcohol, C ₂₂ H ₄₅ OH : | <i>Leptospermum scoparium</i> (Myrtaceae) |
| Alcohol, C ₂₄ H ₄₉ OH : | <i>Leptospermum scoparium</i> (Myrtaceae) |
| Alcohol, C ₂₆ H ₅₃ OH : | <i>Leptospermum scoparium</i> (Myrtaceae) |
| Alcohol, C ₂₈ H ₅₇ OH : | <i>Leptospermum scoparium</i> (Myrtaceae) |
| Methyl hexyl alcohol (as acetic ester) : | <i>Macropiper excelsum</i> (Piperaceae) |
| Hexenyl alcohol (as valeric ester) : | <i>Pseudowintera colorata</i> (Winteraceae) |
| Citronellol : | <i>Leptospermum scoparium</i> (Myrtaceae) |
| | <i>Phebalium nudum</i> (Rutaceae) |
| Geraniol : | <i>Metrosideros umbellata</i> , <i>Leptospermum scoparium</i> (Myrtaceae) |
| Linalool : | <i>Leptospermum ericoides</i> (Myrtaceae) |
| Glycol, m.p. 78° : | <i>Pittosporum eugenioides</i> (Pittosporaceae) |
| Mannitol : | <i>Leptospermum scoparium</i> (Myrtaceae) |
| Quebrachitol : | <i>Alectryon excelsum</i> (Sapindaceae) |
| Terpineol : | <i>Leptospermum ericoides</i> , <i>Metrosideros umbellata</i> (Myrtaceae) |
| | <i>Phebalium nudum</i> (Rutaceae) |
| Borneol (as acetic ester) : | <i>Pittosporum tenuifolium</i> (Pittosporaceae) |
| Myrtenol (as acetic ester) : | <i>Metrosideros umbellata</i> (Myrtaceae) |
| p-Menthane—3,4-diol : | <i>Pittosporum eugenioides</i> (Pittosporaceae) |
| β-Pinene glycol : | <i>Pittosporum eugenioides</i> (Pittosporaceae) |
| Alcohol C ₈ H ₁₄ O : | <i>Pseudowintera colorata</i> (Winteraceae) |
| Alcohol C ₁₀ H ₁₈ O : | <i>Pseudowintera colorata</i> (Winteraceae) |
| Alcohol C ₁₀ H ₂₀ O : | <i>Pseudowintera colorata</i> (Winteraceae) |
| Alcohols, unidentified : | <i>Macropiper excelsum</i> (Piperaceae) |
| | <i>Olearia paniculata</i> (Compositae) |
| Phenols, unidentified : | <i>Lophomyrtus bullata</i> (Myrtaceae) |
| | <i>Phebalium nudum</i> (Rutaceae) |
| Eugenol : | <i>Pseudowintera colorata</i> (Winteraceae) |
| Isoeugenol : | <i>Phebalium nudum</i> (Rutaceae) |
| Elemicin : | <i>Macropiper excelsum</i> (Piperaceae) |
| Myristicin : | <i>Macropiper excelsum</i> (Piperaceae) |

ALDEHYDES

| | |
|------------------------------------|---|
| Citronellal : | <i>Leptospermum scoparium</i> (Myrtaceae) |
| | <i>Phebalium nudum</i> (Rutaceae) |
| Citral : | <i>Leptospermum scoparium</i> , <i>L. ericoides</i> (Myrtaceae) |
| | <i>Phebalium nudum</i> (Rutaceae) |
| Neral : | <i>Phebalium nudum</i> (Rutaceae) |
| Geranial : | <i>Phebalium nudum</i> (Rutaceae) |
| Saturated aldehyde b.p. 186–188° : | <i>Pittosporum eugenioides</i> (Pittosporaceae) |
| αβ-unsaturated carbonyl compound : | <i>Leptospermum scoparium</i> (Myrtaceae) |
| Aldehydes, unidentified : | <i>Melicope ternata</i> (Rutaceae) |

KETONES

- Leptospermone: *Leptospermum scoparium* (Myrtaceae)
 Ketone m.p. 89–90°: *Dysoxylum spectabile* (Meliaceae)
 Ketone C₁₀H₁₄O: *Pseudowintera colorata* (Winteraceae)
 Ketone, unidentified: *Macropiper excelsum* (Piperaceae)
 1,8 Cineole: *Leptospermum ericoides*, *L. scoparium*
 (Myrtaceae)
 Oxo compound, C₂₃H₄₄O, m.p.
 81.5–82°: *Phebalium nudum* (Rutaceae)

CARBOHYDRATES

- Glucose: *Corynocarpus laevigatus* (Corynocarpaceae),
Coprosma propinqua, *C. rotundifolia*, *C. tenuicaulis* (Rubiaceae).
 Mannose: *Corynocarpus laevigatus* (Corynocarpaceae)
 Rhamnose: *Coprosma propinqua*, *C. tenuicaulis*
 (Rubiaceae)
 Primverose: *Coprosma linariifolia* (Rubiaceae)
 Sucrose: *Solanum aviculare* (Solanaceae)
Corynocarpus laevigatus (Corynocarpaceae)
Coprosma arborea, *C. tenuicaulis*, *C. tenuifolia* (Rubiaceae)
 D-gluco-pyranose (as β-nitro-propionyl ester): *Corynocarpus laevigatus* (Corynocarpaceae)
 Pectin: *Phormium tenax* (Liliaceae)
 Aldobionic acid: *Phormium tenax* (Liliaceae)
 Pentosans: *Phormium tenax* (Liliaceae)

CARBOXYLIC ACIDS

- Acetic acid: *Metrosideros umbellata*, *Leptospermum scoparium* (Myrtaceae)
Coriaria lurida (Coriariaceae)
Macropiper excelsum (Piperaceae)
Phebalium nudum (Rutaceae)
 Valeric acid (as n-hexenyl ester): *Pseudowintera colorata* (Winteraceae)
 Iso-valeric acid: *Leptospermum scoparium* (Myrtaceae)
Phebalium nudum (Rutaceae)
 Palmitic acid: *Macropiper excelsum* (Piperaceae)
Phebalium nudum (Rutaceae)
 Stearic acid: *Vitex lucens* (Verbenaceae)
Corynocarpus laevigatus (Corynocarpaceae)
 Acid C₃₀H₆₀O₂: *Leptospermum scoparium* (Myrtaceae)
 Oleic acid: *Corynocarpus laevigatus* (Corynocarpaceae)
 Linoleic acid: *Coriaria lurida* (Coriariaceae)
Cordyline australis (Liliaceae)
 Succinic acid: *Coriaria lurida* (Coriariaceae)
 Salicylic acid (as methyl ester): *Asplenium lamprophyllum* (Aspleniaceae)
 p-Hydroxybenzoic acid: *Vitex lucens* (Verbenaceae).
 Gallic acid: *Metrosideros excelsa* (Myrtaceae)
Coriaria lurida (Coriariaceae)

- Cinnamic acid: *Leptospermum scoparium* (Myrtaceae)
Phebalium nudum, *Melicope ternata*, *M. ternata*, var. *mantelli* (Rutaceae)
- p-Coumaric acid: *Leptospermum scoparium* (Myrtaceae)
- Unidentified acid, m.p. 130°: *Coriaria angustissima* (Coriariaceae)
- β -Nitropropionic acid (as D-glucopyranose ester): *Corynocarpus laevigatus* (Corynocarpaceae)

LACTONES

- Asperuloside: *Coprosma arborea*, *C. repens*, *C. lucida*, *C. propinqua*, *C. rotundifolia*, *C. tenuifolia*, *C. australis*, *C. robusta* (Rutaceae).
- Ellagic acid: *Eugenia maire*, *Leptospermum scoparium*, *Metrosideros excelsa* (Myrtaceae)
Phebalium nudum (Rutaceae)
Pomaderris kumeraho (Rhamnaceae)
Aristolelia serrata, *Elaeocarpus dentatus* (Elaeocarpaceae)
- 3, 3'-Di-O-methyl ellagic acid: *Leptospermum scoparium*, *Eugenia maire* (Myrtaceae)
- 3, 3', 4-Tri-O-methyl ellagic acid: *Leptospermum scoparium*, *Eugenia maire* (Myrtaceae)
- O-Methyl ethers of ellagic acid: *Pomaderris kumeraho* (Rhamnaceae)
- Scopoletin: *Coprosma propinqua*, *C. rotundifolia*, *C. robusta*, *C. tenuicaulis* (Rubiaceae)
- Tutin: *Coriaria sp.* (Coriariaceae)

LIGNANS

- Iso-olivil: *Gymnelaea cunninghamii* (Oleaceae)

ANTHRAQUINONES

- Anthragallol: *Coprosma lucida* (Rubiaceae)
- Anthragallol-2-methyl ether: *Coprosma lucida*, *C. acerosa*, *C. linariifolia* (Rubiaceae)
- Anthragallol-1, 2-dimethyl ether: *Coprosma lucida*, *C. acerosa*, *C. rhamnoides* (Rubiaceae)
- Anthragallol-1, 3-dimethyl ether: *Coprosma linariifolia* (Rubiaceae)
- 3-Hydroxy-2-methyl anthraquinone (?): *Coprosma lucida*, *C. acerosa* (Rubiaceae)
- Rubiadin: *Coprosma lucida*, *C. acerosa*, *C. australis*, *C. rotundifolia*, *C. robusta*, *C. tenuicaulis* (Rubiaceae)
- Rubiadin-1-methyl ether: *Coprosma areolata*, *C. australis*, *C. acerosa*, *C. rhamnoides*, *C. rubra*, *C. rotundifolia*, *C. robusta*, *C. tenuicaulis* (Rubiaceae)
- 1, 6-Dihydroxy-2-methyl anthraquinone (Soranjidiol): *Coprosma acerosa*, *C. australis*, *C. lucida* (Rubiaceae)
- 1, 2-Dihydroxy 6 (or 7) methyl anthraquinone: *Coprosma tenuicaulis* (Rubiaceae)
- Morindone: *Coprosma australis* (Rubiaceae)
- Morindin (Glucoside [probably primveroside] of morindone): *Coprosma australis* (Rubiaceae)

| | |
|---|---|
| Copareolatin (originally areolatin): | <i>Coprosma aerolata</i> (Rubiaceae) |
| Copareolatin-1 (or 5)-6-dimethyl ether: | <i>Coprosma australis</i> (Rubiaceae) |
| Lucidin: | <i>Coprosma lucida</i> , <i>C. acerosa</i> , <i>C. rotundifolia</i> (Rubiaceae) |
| Anthraquinones, unidentified: | <i>Coprosma foetidissima</i> , <i>C. acerosa</i> (Rubiaceae) |

 α -PYRONE DERIVATIVES

| | |
|----------------|---|
| Xanthoxyletin: | <i>Melicope ternata</i> , <i>M. ternata</i> var. <i>mantelli</i> (Rutaceae) |
|----------------|---|

 γ -PYRONE DERIVATIVES

| | |
|--|---|
| 2,3-Dihydro-3-methyl-6-phenyl- γ -pyrone: | <i>Myrtus bullata</i> (Myrtaceae) |
| Vitexin: | <i>Vitex lucens</i> (Verbenaceae) |
| Isovitexin (Saponaretin): | <i>Vitex lucens</i> (Verbenaceae) |
| Kaempferol: | <i>Pomaderris kumeraho</i> (Rhamnaceae) <i>Coprosma foetidissima</i> (Rubiaceae) |
| Astralagin (3-glucoside of kaempferol): | <i>Pomaderris kumeraho</i> (Rhamnaceae) <i>Pteridium aquilinum</i> (Pteridaceae) |
| Quercetin: | <i>Pomaderris kumeraho</i> (Rhamnaceae) <i>Coriaria lurida</i> (Coriariaceae) |
| Isoquercitrin: | <i>Pteridium aquilinum</i> (Pteridaceae) |
| Rutin: | <i>Coprosma rhamnoides</i> , <i>C. foetidissima</i> (Rubiaceae) <i>Pteridium aquilinum</i> (Pteridaceae) |
| Ternatin: | <i>Melicope ternata</i> , <i>M. ternata</i> var. <i>mantelli</i> , <i>M. simplex</i> (Rutaceae) |
| Wharangin: | <i>Melicope ternata</i> , <i>M. ternata</i> var. <i>mantelli</i> (Rutaceae) |
| Melissimplin: | <i>Melicope simplex</i> (Rutaceae) |
| Melissimplexin: | <i>Melicope simplex</i> (Rutaceae) |
| Meliternin: | <i>Melicope ternata</i> , <i>M. ternata</i> var. <i>mantelli</i> (Rutaceae) |
| Meliternatin: | <i>Melicope ternata</i> , <i>M. ternata</i> var. <i>mantelli</i> , <i>M. simplex</i> (Rutaceae) |
| Taxifolin: | <i>Leptospermum scoparium</i> (Myrtaceae) |
| Astilbin: | <i>Quintinnia serrata</i> (Escalloniaceae) |
| Diosmin: | <i>Sephora microphylla</i> (Papilionaceae) |
| Flavonoids, unidentified: | <i>Vitex lucens</i> (Verbenaceae) <i>Pteridium aquilinum</i> (Pteridaceae) |
| Corymbiferin: | <i>Gentiana corymbifera</i> (Gentianaceae) |

PYRAN DERIVATIVES

| | |
|---|--|
| Evodionol: | <i>Melicope simplex</i> (Rutaceae) |
| Allo-evodionol-7-methyl ether: | <i>Melicope simplex</i> (Rutaceae) |
| Leucocyanin: | <i>Leptospermum scoparium</i> (Myrtaceae) |
| Leucodelphinidin: | <i>Pomaderris kumeraho</i> (Rhamnaceae) |
| Leucocyanidin: | <i>Leptospermum scoparium</i> (Myrtaceae) <i>Pomaderris kumeraho</i> (Rhamnaceae) |
| 9-Hydroxy-4-methoxyfurano-(3, 2, g)-benzopyran-7-one: | <i>Phebalium nudum</i> (Rutaceae) |

FLAVANS, ISOFLAVANS

- Catechuic acid: *Weinmannia racemosa* (Cunoniaceae)
 Catechin: *Dysoxylum spectabile* (Meliaceae)

FURAN DERIVATIVES

- Ngaione: *Myoporium laetum* (Myoporaceae)
 Bullatenone: *Lophomyrtus bullata* (Myrtaceae)

CAROTENOIDS

- β -Carotene: *Vitex lucens* (Verbenaceae)

- TERPENES, UNIDENTIFIED (see also hydrocarbons and alcohols)
 Terpenes, unidentified: *Neopanax simplex* (Araliaceae)

Metrosideros robusta, *M. perforata*
 (Myrtaceae)

Olearia paniculata, *O. ilicifolia* (Compositae)

Macropiper excelsum (Piperaceae)

- Terpene alcohol, b.p. 95°_{5mm.}: *Leptospermum ericoides*, *Metrosideros umbellata* (Myrtaceae)

- Terpene alcohol, unidentified: *Metrosideros umbellata*, *M. perforata*
 (Myrtaceae)

Pittosporum eugenioides (Pittosporaceae)

- Terpene aldehyde, unidentified: *Pittosporum tenuifolium* (Pittosporaceae)

SESQUITERPENES

- γ -Curcumene: *Olearia paniculata* (Compositae)
 ar-Curcumene: *Olearia paniculata* (Compositae)
 β -Elemene: *Pseudowintera colorata* (Winteraceae)
 Cadinene: *Macropiper excelsum* (Piperaceae)
Metrosideros umbellata, *M. fulgens*
 (Myrtaceae)

- Metrosiderene: *Metrosideros umbellata* (Myrtaceae)

- Calamenene: *Pseudowintera colorata* (Winteraceae)

- Gurjunene: *Pseudowintera colorata* (Winteraceae)

- Santalene: *Pseudowintera colorata* (Winteraceae)

- Aromadendrene: *Pseudowintera colorata* (Winteraceae)

Macropiper excelsum (Piperaceae)
Leptospermum scoparium, *L. ericoides*, *Metrosideros fulgens*, *M. umbellata* (Myrtaceae)

Neopanax simplex (Araliaceae)

Olearia paniculata (Compositae)

- Eudesmene: *Leptospermum scoparium* (Myrtaceae)

- Humulene: *Pseudowintera colorata* (Winteraceae)

- Azulene: *Leptospermum scoparium* (Myrtaceae)

Macropiper excelsum (Piperaceae)

- Guaiazulene: *Pittosporum tenuifolium* (Pittosporaceae).

- Sesquiterpene b.p. 110°_{5mm.}: *Leptospermum ericoides* (Myrtaceae)

- Sesquiterpene b.p. 131–135°: *Metrosideros kermadecensis*, *M. perforata*, *M. robusta*, *M. colensoi*, *M. fulgens*, *M. excelsa*, *M. parkinsonii*, *M. diffusa*
 (Myrtaceae)

- Sesquiterpenes, unidentified: *Macropiper excelsum* (Piperaceae)
Paesia scaberula (Pteridaceae)
Melicope ternata (Rutaceae)
Pittosporum tenuifolium, *P. eugenioides*
(Pittosporaceae)
Phebalium nudum (Rutaceae)
Olearia ilicifolia (Compositae)
Neopanax simplex (Araliaceae)
- Sesquiterpene alcohol, b.p. 112–
6°_{3mm}.
Sesquiterpene alcohols, unidenti-
fied: *Metrosideros umbellata* (Myrtaceae)
Neopanax simplex (Araliaceae)
Metrosideros diffusa, *M. perforata*, *M. excelsa*,
M. parkinsonii, *M. colensoi*, *M. kermadec-*
ensis, *M. robusta*, *Leptospermum ericoides*
(Myrtaceae)
Melicope ternata, *Phebalium nudum*
(Rutaceae)
Pittosporum tenuifolium (Pittosporaceae)
Pseudowintera colorata (Winteraceae)
- Cyclocolorenone:

DITERPENES

- α -Camphorene: *Neopanax simplex* (Araliaceae)
 γ -Camphorene: *Neopanax simplex* (Araliaceae)
Olearyl oxide, m.p. 99°: *Olearia paniculata* (Compositae)
Diterpenes, unidentified: *Pittosporum tenuifolium*, *P. eugenioides*
(Pittosporaceae)

TRITERPENES

- Oleanolic acid: *Leptospermum scoparium*, *L. ericoides*, *Eugenia*
maire (Myrtaceae)
Arjunolic acid: *Metrosideros umbellata* (Myrtaceae)
Ursolic acid: *Metrosideros excelsa* (Myrtaceae)
Ursolic acid acetate: *Leptospermum scoparium*, *L. ericoides*, *Metro-*
sideros excelsa (Myrtaceae).
Asiaticoside: *Centella uniflora* (Umbelliferae)
Betulic acid: *Leptospermum scoparium*, *L. ericoides*, *Metro-*
sideros excelsa, *Eugenia maire* (Myrtaceae)
Triterpene acid C₃₀H₄₈O₄: *Leptospermum ericoides* (Myrtaceae)

STEROLS

- β -Sitosterol: *Beilschmiedia tawa* (Lauraceae)
Leptospermum scoparium, *Eugenia maire*
(Myrtaceae)
Aristolelia serrata, *Elaeocarpus dentatus*
(Elaeocarpaceae)
Phebalium nudum (Rutaceae)
Dysoxylum spectabile (Meliaceae)
Vitex lucens (Verbenaceae)
 β -Sitosterol (as D-glucoside): *Aristolelia serrata* (Elaeocarpaceae)

STEROIDAL SAPOGENINS

- Smilagenin: *Cordyline australis* (Liliaceae)

SULPHUR COMPOUNDS

Methyl mercaptan: *Coprosma foetidissima* (Rubiaceae)

CYANIDES

Hydrogen cyanide: *Dodonaea viscosa* (Sapindaceae)

AMINO ACIDS

N-Acetyl ornithine: *Asplenium trichomanes* (Aspleniaceae)

AMINES

Acetylcholine: *Urtica ferox* (Urticaceae)

FATTY OILS AND WAXES

Wax esters: *Leptospermum scoparium* (Myrtaceae)

Glycerides: *Tetrapathaea tetranda* (Passifloraceae)

Alectryon excelsum (Sapindaceae)

Dysoxylum spectabile (Meliaceae)

Cordyline australis (Liliaceae)

ALKALOIDS

Pukateine: *Laurelia novae-zelandiae* (Monimiaceae)

Laureline: *Laurelia novae-zelandiae* (Monimiaceae)

Laurepukine: *Laurelia novae-zelandiae* (Monimiaceae)

Dictamnine: *Phebalium nudum* (Rutaceae)

Skimmianine: *Phebalium nudum* (Rutaceae)

Kokusaginine: *Phebalium nudum* (Rutaceae)

γ -Fagarine: *Phebalium nudum* (Rutaceae)

Evolitrine: *Phebalium nudum* (Rutaceae)

α -Matrine: *Sophora tetraptera*, *S. microphylla*
(Papilionaceae)

Sophochryesine: *Sophora tetraptera*, *S. microphylla*
(Papilionaceae)

Cytisine: *Sophora microphylla* (Papilionaceae)

Methylcytisine: *Sophora tetraptera*, *S. microphylla*
(Papilionaceae)

Anagryrine: *Sophora microphylla* (Papilionaceae)

Solasonine: *Solanum aviculare*, *S. laciniatum*, *S. nodiflorum*
(Solanaceae)

Solamargine: *Solanum aviculare* (Solanaceae)

Senkirkine m.p. 197-198°: *Senecio kirkii* (Compositae)

Nicotine: *Lycopodium fastigiatum*, *L. cernuum*
(Lycopodiaceae)

Clavatine: *Lycopodium fastigiatum* (Lycopodiaceae)

Clavatoxine: *Lycopodium fastigiatum* (Lycopodiaceae)

Cernuine: *Lycopodium cernuum* (Lycopodiaceae)

Lycopodine: *Lycopodium deuterodensum*, *L. fastigiatum*
(Lycopodiaceae)

Alkaloids, unidentified:

Hedycarya arborea (Monimiaceae)
Sophora microphylla (Papilionaceae)
Phebalium nudum (Rutaceae)
Coriaria sp. (Coriariaceae)
Parsonia capsularis (Apocyanaceae)
Brachyglottis repanda (Compositae)
Lycopodium fastigiatum (Lycopodiaceae)
Myoporum laetum (Myoporaceae)

Tannins:

Metrosideros robusta, *M. umbellata*, *M. fulgens*,
Eugenia maire (Myrtaceae)
Solanum aviculare (Solanaceae)
Hebe salicifolia (Scrophulariaceae)
Nothofagus cliffortioides, *N. solandri*, *N. fusca*,
N. menziesii (Fagaceae)
Elaeocarpus dentatus, *E. hookerianus*, *Aristo-*
telia serrata (Elaeocarpaceae)
Weinmannia silvicola, *W. racemosa*
 (Cunoniaceae)
Dysoxylum spectabile (Meliaceae)
Alectryon excelsus (Sapindaceae)
Metrosideros robusta, *M. umbellata*, *M.*
scandens, *Eugenia maire* (Myrtaceae)
Quintinnia serrata, *Ixerba brexioides*
 (Escalloniaceae)
Coriaria sp. (Coriariaceae)
Knightia excelsa (Proteaceae)
Fuchsia excorticata (Onagraceae)
Phormium tenax (Liliaceae)
Tetragonia tetragonoides
Pittosporum sp. (Pittosporaceae)
Pomaderris kumeraho (Rhamnaceae)

Saponins:

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