

Phyllocladus glauca (Toatoa) and *P. alpinus* (Mountain Toatoa).—Kirk* suggests that the phyllochia (false leaves) of these two species probably contain large amounts of tannin, and in all probability the bark would prove of equal value to that of *P. trichomanoides* for tanning.

Liliaceous Plants.—Among these Colenso† (1868) mentions that the root of the *Phormium* was used by the Maoris to produce an ink. Skey‡ mentions the toi-bark as containing a large proportion of tannin. He may mean toi (*Cordyline indivisa*) or giant cabbage-tree.

Lichens.—With regard to the dyes extracted in Europe from lichens, Edge§ (1914) states that from cudbear were formerly made dyes in considerable quantity in Scotland, generally by the aid of ammonia and air, on *Lecanora tartarea* and *Urceolaria calcaria*. *Evernia prunastri*, *Umbilicaria vellea*, *U. pustulata*, *Parmelia perlata*, *Lecanora pallescens*, and some other lichens of less commercial value also give a purple colour by this method. The dyestuffs made by these British lichens are not equal to that of Roccellae (orchil of Sweden). In the case of the crottles, which are still largely used for dyeing browns in the homespuns of Harris, Lewis, Donegal, Shetland, &c., the dyestuff appears to be ready formed in the plant, and to be obtained by simple extraction. The best known are *Parmelia saxatilis* or black-crottle and *P. omphalodes*, while others are *P. caperata* or stone-crottle, *P. ceratophylla* or dark-crottle, *P. parietina*, and a few species of *Sticta*, especially *S. pulmonaria* or hazel-crottle. These lichens undergo no preparation, being gathered in July or August, when they are richest in colouring-matter, and simply dried in the sun. They dye without addition to the bath, and do not form lakes. Fine shades of brown are obtained fast to acids and alkalis, but less fast to light than a mixture of metachrome brown B and metachrome orange 3R, although in fading an agreeable tone is maintained. Hooker|| (1867) states that *Parmelia caperata* occurs on trees in the North and Middle Islands of New Zealand; *P. saxatilis*, North and Middle Islands, on trap rocks, Otago; *P. parietina*, North and Middle Islands, common rock, wood, and bones; *P. perlata*, common on trees, North and Middle Islands; *Lecanora tartarea*, probably common throughout both Islands. The genera *Sticta* and *Umbilicaria* occur in New Zealand, but not the above species.

* "New Zealand Timbers, Bark, and Secondary Forest Products." Parliamentary Report by T. Kirk, Chief Conservator of State Forests. C.-3B.
 † Trans. N.Z. Inst., Vol. 1, 2nd ed. ‡ Twenty-ninth Col. Lab. Report.
 § Journ. Soc. Dyers and Colourists, Vol. 30. Abst. in J.S.C., Vol. 33, 1914.
 || "Handbook of New Zealand Flora."