

We consider the system of fire-breaks at present existing as altogether inadequate. The danger from fire is not merely from the flame running along the ground, but from that which is carried high in the air, together with sparks and burning material. When the furious winds of New Zealand are considered, the distance which sparks, &c., can travel is very great indeed. Even be the day calm, the fire itself, through heating the surrounding air, will cause a strong draught and consequent carriage of burning material. An adequate fire-break must not only stop a ground-fire, but must arrest all flying burning material. The most effective break of this kind would be a belt of some tall tree that would not catch fire. The wider such a belt, the greater the security. But it must be remembered that no belt or wall of any kind can make a plantation absolutely secure, since a fire may originate in its interior. As for the position of the belts, those on the summit of a ridge are the most efficacious, while those at the bottom of a gully are worthless. The position of belts obliquely to the prevailing wind, as now being adopted, is a change for the better.

Regarding the fire-breaks for the future, we recommend one or other of the species of poplar to be planted in belts. Such a belt on the outside of the plantation might be 2 chains in width, and outside this again a ploughed belt 1 chain wide.

Narrower belts of poplar can be formed inside the plantation and along the sides of roads. As the poplars grow, the ground beneath will gradually be covered with a layer of leaves, which, if dry, become a source of danger from ground-fires. We therefore recommend that experiments should be made with other fire-resisting trees and shrubs, especially such as can be established beneath the poplar. It might be possible to succeed with that great fire-resister the New Zealand fuchsia (*Fuchsia excorticata*) simply by sowing its seeds beneath the trees. The wineberry (*Aristotelia racemosa*), so easily raised from scattering seed, might also be tried. Another safeguard would be to cut down the outermost row of poplars, so that there would arise an outer belt of poplar-suckers.

It might seem at first thought that these belts as recommended would occupy altogether too great an area. Poplar timber is, however, of considerable value, as shown in the next paragraph, and the belts would serve a double purpose.

Coming, then, to the value of poplar timber, Maw writes* concerning the Black Italian poplar: "The wood is soft, white, and tough, and does not easily fracture. It is more nearly fireproof than any other timber, and for this reason is valuable for floor-boards." Clements states† that the cotton-wood (*P. deltoides*) is used for wood pulp, packing-boxes, or locally for timber. Pinchot,‡ referring to the last-named tree, writes that it is used for wood pulp, wagon-bodies, and boxwood material. Maw§ states that Black and Black Italian poplar if near a good market fetch 8d. to 1s. 3d. a cubic foot, but ordinarily 6d. to 9d. Elwes and Pritchard|| state a certain stand of Black Italian poplar, which had been planted forty-eight years, realized £3 each standing when felled to clear the ground. They remark: "It seems certain that no other trees could be planted that would do so well in so short a time." As for Lombardy poplar, the evidence of Mr. Cuddie proves that its wood is satisfactory for butter-boxes. Also, we have in our exhibits a fine sample of the timber cut in Marlborough, together with a butter-box which seems well suited for its purpose.

It would probably be advantageous to plant the poplar fire-breaks in advance of the general planting of pines, &c. The effect of shelter on certain trees is remarkable. This may be well seen in the case of the Oregon pines planted inside a shelter-belt of *Pinus radiata* at the prison camp, Kaingaroa

* "The Practice of Forestry," 1909, p. 367.

† "Minnesota Trees and Shrubs," 1912, p. 57.

‡ Silvical leaflet 25 of U.S. Department of Agriculture, 1908, p. 1.

§ *Loc. cit.*, p. 328.

|| "Experiments on Trees at Colesborne," Quart. Journ. of Forestry, vol. 6, p. 86, 1912.