

- (3.) Where possible, assisted regeneration is effected by cutting the parent tree down and allowing a large portion of the cone-bearing tree-head to remain on the ground. In such places a perfectly dense pine forest becomes quickly established.
- (4.) Homesteads of workmen were noticed here and there throughout the pine forests, and quite a large area is now devoted to the profitable cultivation of *Secale sativa*, which is used for breadmaking.

WILLOW-GROWING.

One important phase of forestry that up to the present has received little attention by the State is willow-growing; and, realizing the scope for improvement in this direction, investigations were made in England from a specialist, Mr. W. Paulgrove Ellmore; and with your approval a series of experiments will be conducted with several species of the *Salix* family, eminently suitable for manufacturing cricket-bats, baskets, &c., binding banks of rivers and watercourses, sewage-farms, &c. There can be no doubt that by judicious management willow-culture will return speedy and profitable returns, particularly if the selection of varieties is carefully undertaken. Generally, commercially valuable willows are expected to thrive and become profitable under extremely moist and even water-logged conditions, but this belief is erroneous.

Regarding the economic value of willows for basketmaking Mr. Ellmore says, "Willows to pay handsomely must under all circumstances be pure to their kind, because there is three weeks' difference between sap-rising in the earliest and latest varieties, and for buffing purposes the colour must be uniform, and a guarantee should be obtained with cuttings that they are true to name."

French people are large growers of excellent canes, but the value of this produce is usually discounted by the inclusion of inferior kinds in the bundles. In Germany and Belgium, where the soil less suitable for the higher grade of willows is utilized for the industry and the best species is not cultivated, an inferior material is produced.

Salix triandra (white or buff) is used extensively for high-class basketmaking, whilst *S. viminalis* constitutes one of the cheaper species. Very vigorous canes are produced by the former willow, one plant of which not infrequently stools out twenty or more rods annually nearly 6 ft. in length. For sewage-farms *Salix hippophaefolia*, a willow with great absorbent powers, is strongly recommended. The *Salix alba* (var. *caerulea*) is now looked upon by makers of high-class cricket-bats as being of most value for the work, and discussions on the subject with several gentlemen intimately connected with the industry have convinced me of the coming dearth in the supply of willow-wood and the advisability of making at least some small provision for this anticipated shortage by forming white-willow stands and small experimental stooling-plots in each district where State tree-planting is in progress. The demand for peeled willows in England also shows a rising tendency, and the present value for the rods averages about £26 per ton.

FOREST-FIRE PREVENTION.

In no place visited was such adequate provision against the prevention and spread of fire in artificially-raised plantations noticed as in New Zealand, although in America of late years a tremendous amount of labour is being directed upon the judicious conservation of natural forests, and in many cases the sawmillers themselves have realized the absolute necessity of co-operating with the Government in order to eliminate the irresponsibility among smaller holders to maintain the efficiency of the excellent fire-prevention scheme organized. Mr. Campbell mentioned that some 50,000 dollars was expended in the present year in fire-fighting alone in Canada. Specially educated men are engaged to patrol over forest areas, and, in addition, on the more-elevated positions here and there tall lookout towers are constructed. From these towers one is able to locate the outbreak of fire, and by telephonic communication quickly direct the combined energies of the forest workmen where required. Regarding the native forest Fire Patrol Force in British Columbia Chief Forester Macmillan says, "The fire-protection staff for 1913 totalled in midsummer about 320 men, an increase of 50 per cent. over the total of 212 for 1912. . . . The total cost of the patrol alone was about 190,000 dollars." The remarkable activity of the recently formed St. Maurice Fire Protection Association may be gauged from the fact that during its initial year, 1912, about 525 miles of trails and portages were cut and cleared, and three lookout stations established with telephonic connection with the existing telephone-lines along the railway and between the settlements. The fire-protective work is carried out under the following general heads, for which special appropriations are set aside out of the funds of the association:—

- (1.) Appointment and placing of district chiefs by the manager, who shall have jurisdiction over the fire rangers within their districts, and the organization and administration of all protective work and fire-fighting.
- (2.) The installation and maintenance of telephone-lines.
- (3.) The compilation of suitable maps of each district to facilitate fire-fighting therein, showing location of tools, roads, trails, streams, lookouts, telephone-lines, and ownership, and the distribution of uniform copies thereof to all agents of the association.
- (4.) Placing of fire rangers on definite routes to cover largest area efficiently.
- (5.) The distribution of fire-fighting apparatus.
- (6.) Construction of lookout-stations for the early apprehension of fire.
- (7.) Building trails.
- (8.) Perfecting organization and establishing systematic reports.