

THE USE OF HOME-GROWN TIMBER FOR THE MANUFACTURE OF MATCHES DURING THE EMERGENCY

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Previous to 1939 matches were imported to this country in large quantities and of various brands, but the home match-making industry was also supplied with logs and splints from abroad for the manufacture of matches. In fact, the cigar-, cigarette- and pipe-smokers could choose their own particular brand of match from almost as wide a selection as they could their cigars, cigarettes or tobacco.

Shortly after the beginning of the war the import of matches on a large scale ceased, as also did that of the raw material for the home industry. The problem then arose of meeting the needs of the home industry for raw material. Even for so small an article of commerce as a match the timber used must have quite a number of special virtues. The following qualities in the timber are desirable. It should be of a texture and hardness to fit it for passing through the veneering machine; it should not be so brittle as to break in the user's hand; it must be capable of absorbing a certain amount of inflammable liquid, and it should not continue to glow after being extinguished. Comparatively few timbers possess all these important qualities, but generally speaking most Poplars do, and among the Poplars the Aspen excels.

Experiments were tried with home-grown tree species, and four of them were found fairly satisfactory, namely Poplar, Scots Pine, Lime and Horse Chestnut, the first two named species being almost equal to the imported material if selected from the proper type of tree. Unfortunately supplies of Poplar were limited, and ultimately the industry had to rely almost solely on selected Scots Pine.

The Scots Pine best suited for the manufacture of matches is that grown on well-drained, moderately fertile soil, on an area not exposed to severe or constant wind-pressure. The stands require to be grown closely in their young stages and pruned as soon as dead branches appear. Thinning out of irregular or badly shaped stems should take place at suitable intervals in order to procure trees as symmetrical as possible in the final stand, with a maximum branch-free height and a minimum of concealed dead knots. It is considered that trees from 50 to 75 years old produce the best match splints, as the wood of older trees is liable to be too brittle.

One small stand of Poplar (*Populus robusta*), about 30 years old, grown at Dundrum, Co. Tipperary, produced excellent match splints. This stand was planted with trees 12 feet apart, with a 75 per cent. admixture of *Thuia gigantea*. Another useful poplar stand near Middleton, in Co. Cork, provided a high volume of suitable timber per unit of area.

Lime and Horse Chestnut were wasteful owing to the fluted and irregularly shaped butt-ends, only a small percentage of the stem being usable, but otherwise the qualities of their timbers render them satisfactory for matchwood. Most of the trees used had, of course, not been grown in dense stands under proper satisfactory silvicultural conditions.

Trial lots of Sitka and Norway Spruces were supplied, but the timber was reported to be unsatisfactory, mainly due to the number of small, hard, dead knots met with during conversion. Butt lengths were used for this experiment, and it is possible that if second length cuts, about six to eight feet from the butt, had been tried the result might have been better, as less small dead knots would have been encountered.

When the importation of logs and splints for the manufacture of matches ceased, efforts were at first directed towards securing from the native woods stocks of Poplar and Lime, Scots Pine being in more

pressing demand for other more important emergency uses, such as building work. After a short period, however, it was found that supplies of Poplar and Lime, both on private estates and in the State Forests were extremely limited, and Scots Pine came more and more into use. Ultimately it was found necessary to give the match-making industry some priority in securing suitable material from the available Scots Pine stands, and in the long run every stand in the State Forests and many in private ownership were combed to provide the timber necessary to keep the industry in being.

It may not be out of place to give some idea of the type of trees suited for this purpose. The average Scots Pine in demand gives a butt length log varying from 10 to 16 feet, with a mean mid-quarter girth of 8 to 20 inches. The maximum under-bark diameter of the log that the veneering machine handles is about 27 inches, and the minimum diameter which would not be too wasteful to manufacture is approximately 9 inches. This high minimum diameter is due to the fact that the machines leaves an unveneered core of from 3 to 4 inches diameter, which cannot be converted.

The average match is a very small scantling, a cubic foot of timber containing approximately 96,000 match splints, but, in view of the amount of waste due to knots, branch whorls and other defects, only a small proportion of the log is suitable for first-class match splints.

The manufacture of matches from the round log is a tedious and lengthy process, difficult to explain, but the following are a few of the important stages through which the timber passes from the log intake to the match-box.

(1) The round logs are hauled from the dumping ground on a conveyor and are run under a pendulum cross-cut saw and cut into the required lengths, which are approximately 17 to 25 inches long to suit the particular cutting machine.

(2) The billets so cut are trimmed by axe and adze to remove the bark and any irregular projections and to make them roughly cylindrical for the cutting machine.

(3) The prepared billets are then placed in a revolving headstock and are turned against a fixed, keen-edged knife, from which the timber runs out in sheets approximately one-tenth of an inch thick. This continues until the billet is reduced to a core with a diameter of from 3 to 4 inches.

(4) These sheets or strips of timber, which resemble pieces of plywood, are collected as they pass out from the veneering machine. Knotty and other defective portions are discarded and the approved, selected portions pass on to a vertical cutting machine to be cut up into match splints.

(5) The freshly-cut match splints are soaked in water, dried and then passed through a sanding apparatus.

(6) The finished splints are then fixed vertically in a broad revolving endless belt which moves in such a way that the splints are first dipped into an inflammable liquid and later into the prepared chemical solution which forms the striking head.

(7) The finished matches are now removed on a drying conveyor to the packing department, where they are filled into boxes. The boxes then pass through a number of labelling and packing processes before they are finally made up into the cartons ready for distribution to the town and country retailers.

Thus in the course of a month or less a match from a tree that once played its part in adorning the shores of Lough Corrib or the Glens of Wicklow may be used in its native habitat in the form of a "Friendly" or "Safety" match to light the pipe, cigarette or dinner-fire of a woodman engaged in the task of replanting the land with a new generation of conifers or hardwoods to meet the national requirements of matches and many other commodities at some future date.