

growth studies on several thousand trees in the mixed hardwood-softwood type in Ontario, Quebec and New Brunswick, and I find that in the shade of the over-topping hardwoods it requires about 30 years to make a spruce tree 1 inch in diameter; the average 4-inch tree is 60 years old; the average 8-inch tree is 120 years old, and the average 12-inch spruce tree is 160 years old. This is in nature's forest undirected by man. Human intelligence by the proper manipulation of conditions in the forest could reduce the time required to make a merchantable tree. That is the function of a forester. By planting the trees in old fields he could shorten the period to a much greater extent.

Now, with regard to the growth of the forest itself. Such studies as have been made are not encouraging. It has been found, for example, on areas in the mixed softwood-hardwood type, that have been cut-over several times, spruce wood is accumulating at a much slower rate than it has been cut. In some cases as much spruce has been cut in the past 40 years as it took nature 250 years to produce. In other words, the annual growth in the past 40 years has been only one sixth as great as the harvest.

It has been stated that if a single spruce tree 8 inches in diameter died on the average acre each year, the loss in wood volume thus ensuing would offset the average annual growth on certain cut-over pulpwood lands in Quebec. The Provincial Forester of Ontario estimates that the annual growth on the average acre of white pine forest in that Province has been only 15 board feet per year for the past 100 years. This is the yield in board feet of a log 10 inches in diameter and 10 feet long according to the Doyle rule used for scaling logs in Ontario. He also estimates the annual cut of pine to be about one third greater than the annual growth. In fact the Government of Ontario paid back into the treasury \$900,000 from the revenues derived from the forests on the assumption that at least that value of material had been taken from the forest capital stock and did not therefore in reality represent current revenue. The published reports indicate that certain pulpwood companies in Quebec have been doing a similar thing for the past few years, a transaction that can be interpreted as an acknowledgement that they are cutting their forests faster than they are growing. It

will be seen, then, that such data as we have on the rate of growth in our forests indicate that the annual toll taken by the logging operations, by fire, disease and wind far exceeds the annual accretion of wood by the natural processes of growth.

Intelligent Effort Needed

Briefly, our forest conditions present this problem: Shall we accept for our lumbering and pulpwood industries the wood of constantly decreasing quality which nature unguided produces when the equilibrium in the forest has been upset by fire, disease or logging operation or shall we exert intelligent effort to maintain our pine, spruce and other valuable forests and thus supply the forest industries with wood of incomparable quality particularly adapted to their needs?

It is both a challenge to human intelligence, a necessity from a business standpoint, and the part of patriotism to keep the natural forest areas continuously productive in terms of commercially valuable trees—trees whose products annually increase the wealth of the country by nearly a half billion dollars.

Peonies



"More beautiful than the rose—many of them are sweetly scented—enormous in size and beautiful in coloring—the Peony is the flower of flowers."

The magnificent Peony should be in every Canadian garden. There is no flower which combines such hardiness—such vigor in growth and such freedom of disease and insects. There is no other plant which gives flowers of such size—such delicacy of texture—such varied colors and shades—and such sweetness all combined.

McDONALD'S PEONIES cover a very extensive list of varieties and sorts.

Here are some Peonies de Luxe:

Marie Jacquin (Verdier); (Syn. Bridesmaid); (Kelway); Waterlily (Barr); Distinct and beautiful. Semi-double type. Mid-season. Color, lovely rose-white, fading to lilac-white; wide incurved petals filled with yellow stamens like a water-lily. Rich fragrance. Each \$1.00; 3 for \$2.50

Therese (Dessert 1904); Rose type. Mid-season. An exceptionally attractive flower of glossy flesh, lightly shaded pink in the centre. Very large, compact rose type, later developing a high crown. Therese is one of the most desirable varieties in cultivation, and is the object of admiration wherever shown. A strong, vigorous grower, and a free bloomer. Perfect in every respect. Each \$6.00; 3 for \$15.00

LaMartine (Lemoine 1908); compact globular rose type. Mid-season. Large, fine flowers with broad imbricated petals of great durability. Color, rosy-carmine bordered silvery-white. Exceedingly fragrant. Strong, erect grower. A very beautiful variety. Each \$7.50; 3 for \$18.75

LeCygne (Lemoine 1907); Large globular, semi-rose type. Mid-season. An extremely rare variety which connoisseurs agree is the finest white peony in cultivation. Flower is pure snowy-white throughout. Its round compact type of bloom makes it easily distinguishable from all others. Deliciously fragrant. Scored 9.9 out of possible 10 in American Peony Society's voting contest on the newer varieties. Distinct and very beautiful. Rare. Each \$20.00

Raoul Dessert (Dessert 1910); Rose type. Late mid-season. Extremely large compact blooms. Color, clear mauve shaded carmine-pink and tinted silvery white. Very attractive. Extra. Each \$15.00

Solange (Lemoine 1907); Rose type. Mid-season. Outer petals delicate lilac-white, deepening toward the centre, with crimson shading, very beautiful. Strong erect grower. Each \$10.00

Sarah Bernhardt (Lemoine 1906); Flat, compact, semi-rose type. Mauve-rose tipped silver. Fragrant. Tall, free bloomer. Each \$4.00; 3 for \$10.00

Laura Dessert (Dessert 1913); Rose type. Early. Lovely large full flowers. Guard petals creamy white. Centre lively canary yellow. A superb variety. Each \$15.00

Marcelle Dessert (Dessert); Crown type. Mid-season. Immense, compact, high crown. Milk-white, minutely splashed with lilac; centre flecked crimson. Exceedingly fragrant. Extra fine. Each \$5.00; 3 for \$12.50

Madame Jules Dessert (Dessert 1909); Rose type. Mid-season. Very large imbricated flat flower of beautiful form and exquisite coloring. White shaded flesh and straw-yellow, showing golden stamens. Extra fine. Each \$7.50; 3 for \$18.75

Tourangelle (Dessert 1910); Rose type. Late mid-season. Large, flat flower of exquisite and delicate coloring. Flesh tinged rose and salmon. Very attractive. One of the very best. Each \$7.50; 3 for \$18.75

Send for a copy of McDonald's 1922 Seed Book. This is a beautifully illustrated compendium of all growing things—invaluable to the man who cares to raise plants, vegetables or flowers. ASK FOR IT.

Kenneth M'Donald & Sons Limited
Seeds Ottawa, Can.
 66 Market Sq.