

TREE-PLANTING, 1899

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A DESCRIPTIVE CATALOGUE OF THE
BEST TREES TO PLANT IN CAPE COLONY,
WITH BRIEF INSTRUCTIONS FOR PLANTING.

BY

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FOREST TREE-PLANTING.

Preparation of the Ground.

In forming a plantation, the first and most important point to consider is the preparation of the ground. Unless this be carefully done the planting will certainly be a failure. It is useless to plant any trees until the scrub and indigenous vegetation have been eradicated. The simplest way to do this is of course to burn, plow, and cross-plow. This will cost about 30s. or £2 per acre, unless there are a good many roots to be got out. The plowing, except on sand, should be as deep as possible: and if one or two crops can be taken off the ground, it will be all the better for the planting afterwards.

In ground that cannot be plowed—hilly, stony, or full of roots—digging by hand must be resorted to. This is very expensive; but the cost may be reduced to £4 or £5 per acre by partial digging and throwing up the ground into ridges or mounds. When this is done, each sod as it is taken out with the spade is laid roots upwards on the adjoining ground. This kills both the vegetation in the sod and the ground covered by the inverted sod. Unless the ground wants draining, both the ridge and the hollow can be used for planting. If it does want draining, then only the ridges or mounds can be used. Mounds are best in marshy places, and then the higher they are made the better.

The same object, *i.e.*, the destruction of the indigenous vegetation, is obtained by digging shallow pits and throwing out the ground over the herbage around, the shallow pits being afterwards used for placing the young plants in. Shallow pitting with convict labour on the stony slopes of Table Mountain averages £4 per acre, spacing 4 ft. x 4 ft.

Higher up the mountain where the ground is too rocky even for shallow pits, the sods are simply turned over and seed sown on the inverted sod. Where the ground is both hard and dry, deep pits may be made, even up to a yard

cube of excavation. Such pits are very expensive and are only justifiable in special cases, such as for roadside trees where the first object sought is a rapid growth out of harm's way. In such a situation a pit of this size not only encourages root growth, but offers a valuable opportunity for manuring and improving the soil with road sweepings, old rubbish, &c. By the use of these big pits, trees may be successfully grown in countries where it is too dry for any trees to grow naturally. There the big pit of loose earth acts by inducing a rapid root-growth downwards to a depth where there is always sub-soil moisture. On this system watering is only required two or three times till the trees are established. Watering more than this is harmful, and tends to keep the roots at the surface and defeat the object of the big pit. Some years ago I planted over a million trees in yard cube pits. This was in a very dry hot country—Mysore, South India. And these trees came safely through the fearful famine years 1876-'77, when all the crops failed for want of rain, and even portions of the indigenous scrub died off. The big pit is a powerful aid to tree-planting; but in Cape Colony, where labour is costly, it can only be used in special situations such as avenues in towns where the extra tree-growth is worth the extra cost, or where the supply of water is limited.

Sowing.

In situ sowings of Wattle, Pine, or other seed should be put in with the first Autumn rains, or where there is a Summer rainfall, with the first good Spring rains. For sowing in the nursery, Spring is the best season, except in the case of certain succulent seeds such as Acorns, Walnuts, Chestnuts, &c., that do not keep well. These are best sown as soon as ripe. They should not be watered or encouraged to grow during the Winter. Those that do shoot can be protected from frost by a covering of fern, straw or other litter. Do not sow too deeply, either in the nursery or *in situ* (where the trees are to remain). All seeds require air to germinate; and if they are buried deep in the ground they will never come up. Heavy seed such as acorns should not be sown more than an inch below the

surface. Light seeds such as Gum seed should be barely covered with a thin sprinkling of sand; or, better still, with sand and sawdust mixed, and while germinating they should be closely shaded.

The quantity of seed that may be sown per acre for *in situ* sowings varies much. The rule in the large broadcast sowings of Cluster-pine on the Cape Flats is 40 lbs., or a good bushel to the acre. Where the conditions are less favourable than usual, 50 lbs. of seed to the acre is put in. For Saligna Wattle 20 lbs. of seed is usually enough, and where the seed and soil are good, and other conditions favourable, as little as 4 lbs. or 5 lbs. of seed to the acre is enough. No harm is done by sowing pines too thickly, but if sown too thinly the whole work must be done over again, or planting resorted to. Wattles, on the other hand, must not be sown too thickly as the bark on thin reedy stems is not worth stripping. It is almost always fallacious to take the average number of seeds to the pound and reckon that out in plants. Bad seed, birds, mice, drought, excessive rain, and often frost, have all to be provided for in varying degrees. Seed should not be wasted, but it is better to sow too much than too little. Too many young trees are a doubtful evil, and one that is easily met! Too few young trees—means, filling up with expensive planting or doing all the work over again.

Nurseries.

PREPARATION OF SOIL.—The special requirements of different trees will be found below, under the various trees described. Good garden soil should always be selected or prepared for a nursery, which is, in fact, a garden. Wood-ashes, burnt bones and well rotted compost are preferable to fresh dung. If dung be used, horse dung is better for heavy soils, cattle or sheep for light soils. If possible, store dung out of reach of heavy rain: 40 inches of rain will turn horse dung into fibre, only useful as a mulch. Use guano not at all, or cautiously: it is liable to produce too forced a growth and weak plants. The best manure of all for a nursery is the mud dug out of an unpaved stable. Backward plants may be brought forward by a dressing of this or by

watering with liquid manure, consisting of a few shovelfuls of dung thrown into a barrel of water. Liquid manure is also good for plants that have been too long in tins.

Pines and wattles require little or no manure: Gums a moderately good soil: Oaks and most leaf-shedders a better soil. Have a few beds specially prepared with a good dressing of lime or old mortar well broken up. Dig this in and reserve these beds for Walnuts and other trees that like lots of lime.

WATERING.—It is a common error to water a nursery too heavily. It should be kept moist but not wet. The appearance of moss and fungi is a sign of too much water being used: and when there is any suspicion of brackishness in the water watering must be kept down to the lowest quantity consistent with growth.

WEEDING.—The most economical plan for weeding and keeping the soil open is to set out the transplants in lines from 10 to 14 inches apart and run down the lines every two or three weeks with the Planet Jr. single wheel hand hoe. First transplants may be set 4 inches apart in the rows. The closer they are kept, without overcrowding, the cleaner and straighter will be their stems and the less the weeds.

SHADING.—All indigenous forest trees, the Camphor tree, and some others, do best under partial shade. Freshly sown seed, and freshly pricked out seedlings, should be completely shaded at first. One of the best methods of shading is the erection on posts of horizontal strips running N. and S., raised about 5 ft. above the tins or beds. This arrangement allows the morning and afternoon sun to enter, but stops off the hot noon-tide sun. These strips may be composed of planks, of bushes, or of roofing iron. The advantage of the latter is that it does not cause drip in rainy weather. For sown seeds light sacking or bush or grass laid on the ground is the best shade, but this must be carefully removed and examined *every day* and, as soon as the young seed peeps through the ground be replaced by higher shade. Unless the young seed can be carefully watched it is better not to incur the risk of shade laid on the ground.

SHUTTER.—This is of the first importance in a nursery, especially where there is any brack in soil or water. Screens may be used as temporary make-shifts and potting sheds where both frost and high winds are to be feared. No time however should be lost in running up the complete shade of trees and hedges as soon as possible.

"DAMPING OFF."—This is due to a fungus called *Phytophthora omnivora*, allied to the potato disease. The root and the stem are at first quite healthy, but the seedlings rot away at the ground level and fall over in patches.

Young Pines are most likely to be attacked before they are pricked out. Late summer sowings which are sometimes necessary, suffer most. The disease spreads rapidly and creates fearful havoc. It is intensified by damp, dull weather, over-watering, or over-shading. The remedies are :

- (1) Keep the plants as dry as possible.
- (2) Take off all shade.
- (3) Dig out the diseased patches at once and replace with clean dry sand. The diseased earth is full of spores: carry it away carefully to a distance from the nursery.
- (4) To be safe next year have the seed tins or seed beds in some new and distant spot. The old nursery will remain infected with spores, but it is only crowded succulent seedlings that are liable to be attacked. For a full account of this pest see Marshall Ward's "Timber and some of its Diseases."

GENERAL.—Good and valuable seed is sometimes wasted owing to slow germination being mistaken for badness of seed. Ordinary tree-seeds—Gums, Wattles, Pines—take from ten days to a month to germinate, according to season and other circumstances. But Ash, both American and European, Pencil-cedar and Junipers generally, Lime, and others which have little interest for planters here, lie in the ground for nearly a year, and sometimes longer before they germinate. The Ash in Europe lies for two years in the ground before germinating, and it is usual to store it in pits with moist sand during this period. I have sometimes put

Ash and Pencil-cedar in tubs mixed with sand and kept moist, and then sown in the nursery beds as soon as visible germination began. The tubs must of course be carefully watched for the first signs of germination. But the usual plan with these slow germinating seeds is to sow early in winter, about May, and then to maintain the beds for two springs. The Juniper and Ash that have had all the cold and wet of winter on them will germinate largely the first spring and practically completely by the second Spring. The germination of some obstinate seeds may be hastened by macerating them for a day in water at a temperature of 100° Fah. in imitation of their passage through the intestines of birds. Hard seeds such as Wattle should be treated with boiling water and soaked in warm water till soft. Gums are usually sown in spring and planted out the following winter or spring, but with a little care they may be kept in the nursery a year longer. To do this, they should be cut back if large, watered sparingly, and the tins frequently lifted to make sure that the roots do not grow through the drainage holes. Pines may remain from one to two years in the nursery. I prefer two-year Pines grown in poor soil to one year Pines grown in rich soil. In a forcing climate like that of Knysna two-year Pines are too large to plant with safety. In the Cape Peninsula hardy two-year Pines about six inches high are the best for planting. Bed plants succeed well in the Cape Peninsula. Almost everywhere else in South Africa the hot winds render tin plants necessary, and in very dry localities planting from small single tins or reeds or metal tubes is the only safe way of planting with most species.

Hakeas, hedge-plants and all the quick-growing trees remain from six months to a year in the nursery. Slow growing trees remain two or more years in the nursery. The leaf-shedding trees usually remain for several years in the nursery, as they are so easily planted out as large trees. Oaks from six to eight feet high remain from five to seven years in the nursery.

Whenever it is necessary to store or pack succulent seeds, such as Acorns, Camphor, Chestnut, Walnut, or Juniper, mix the seed with an equal bulk of moderately dry earth. The earth shakes down between the interstices of