HENRY A. SPENCER, of Spencer-Lemaire Industries Limited, Edmonton, Alberta, describes some of the background to the development of

Planting from the book

La plantation vue du livre. L'auteur présente une rétrospective du développement du livre des planteurs de Spencer-Lemaire — un ouvrage décrivant les méthodes de la production des semis.

What leads up to the development of a new container system? Here is part of the story in Alberta: the development of Book Planters.

About 1962, when strong demands for better reforestation methods were being heard in Alberta, John Walters had developed and publicized his container bullet and spring-loaded planting gun. Though suited to the coastal mountain regions of British Columbia, foresters in Alberta found that the roots of bullet-planted seedlings were too slow in growing out into the soil due to the drier conditions and shorter growing season.

Spencer-Lemaire Industries Limited was asked to develop an alternative system, starting with a light shell made in two halves and held together by an elastic band. Better root egress was expected and it was thought that the elastic would degrade soon after planting. Seedlings would be raised in the shells, held in plastic trays, in the greenhouse.

Practice proved otherwise. Assembly and handling were awkward, and the rubber did not degrade in the cool soil environment. However, seedlings in shells which survived attack by magpies (who must have thought the shells were bird's eggs!) proved the system would grow plants, but root growth into the surrounding soil was still poor.

Four different sizes of modified shells were then

tried with a 3/4-inch-diameter by 3 inch long split styrene tube being most successful. This was similar to, though larger than, the Ontario tube. The next few years saw commitment to these tubelings, considered to be the best available at the time, with most of the effort spent on smoothing out production and cost problems.

During this period, several container materials were tried, including two artificial growing media: urea-formaldehyde and phenol-formaldehyde open-cell foam, and cellulose acetate filter material. Both media grew healthy seedlings in the greenhouse, but survival was poor in the field. The hydrophylic growing media evidently drew water out of the soil. The water evaporated from the surface of the containers, effectively drying up the plant's water supply. A less predictable effect was the use of the filter material by field mice to line their nests.

The Canadian Forestry Service had followed and monitored all of the container types planted in Alberta. They recommended that since growth and survival of tubelings were unsatisfactory under field conditions in the Province, effort should be directed at the production of a container-grown, root-soil plug form of transplant. Several approaches have been followed, including the development of "peat-sausages" by the Research Council of Alberta.

Top: Ferdinand, Hillson and Tinus models (scale in inches).

Middle. Planters in plastic tray.

Bottom: Seedling plugs removed from planters. Note the vertical roots and lack of spiralling.

The BCFS/CFS Styroblock 2, a foamed polystyrene block with cavities for producing plug-type seedlings, was tried in Alberta in 1970; this system showed that plugs of root-held peat were easy to remove and transplant. However, there was still room for improvement. In particular spiralling of roots — common to all smooth-walled containers — occurred.

Spencer-Lemaire Industries set about to design a container that would include the benefits of other systems (e.g. a removable seedling with root plug, economy of space) and overcome shortcomings of others (e.g. small size, spiralling roots). A fold-up book of moulded sheet polystyrene, which opens either fully or part-way to expose a multiple of rectangular-shaped plugs, was evolved. Grooves were included in the design as it was thought they would reduce root spiralling; this was borne out in practice.

The first Book Planters had a simple tongue and groove separation between the cavities, and recesses and knobs to locate and hold the units together. This proved impractical and an overlap type seal was designed. Earlier models also had a spacing flap at the bottom but this provided a layer in which roots emerging from the drain hole could develop and matt together, making removal of individual plugs difficult. As a result of the successful use of a dry air space underneath the BCFS/CFS containers preventing root growth out of the containers, a large opening was incorporated into the bottom of each cavity in further modifications to the Book Planters. Root ends emerging from the opening wither and a more intensive vertical system develops within the soil.

Over 25 designs were tried before production of the latest models. Three sizes are produced to span the requirements of various planting conditions: the Ferdinand, Hillson and Tinus models of 3, 10 and 30 cubic inches respectively. CFS personnel had recommended a minimum rooting volume of 2.5 cubic inches and the Weyerhaeuser Company had used a container of over 30 cubic inches for transplanting in the state of Washington.

The latest Book Planters have aroused much interest in the USA and Canada and the Company has applied for patents. Tests are currently being made in many places, from Nova Scotia to New Mexico, and about 3 million seedlings were grown in Book Planters in Alberta this year. First outplanting commenced on a large scale early this August, at the rate of 11,000 a week at Hinton. Indeed, from now on there could be many a reforestation project which has been "from the Book".