of the Dutch elm disease fungus. Recommended propagation is by budding or grafting on Siberian elm understock.

'Fallgold' black ash (*Fraxinus nigra* Marsh.) is a seedless (staminate) selection of this native ash species. Black ash gives excellent performance throughout the Canadian prairies; the availability of a seedless cultivar with superior foliage and golden fall color adds new interest in the species. A seedless cultivar of green ash has also been recently introduced by Patmore Nursery Sales of Brandon, Manitoba. The 'Patmore' ash is a good replacement for the less hardy 'Marshall's Seedless' cultivar. Both 'Fallgold' and 'Patmore' ash are propagated by budding on green ash understocks.

'Morden Amorette' is a miniature rose introduction of the Parkland series bred by Dr. H.H. Marshall of the Morden Station. This cultivar combines quality of the floribunda roses with hardiness of the prairie rose. It readily propagates from softwood cuttings resulting in own-rooted plants free of objectionable suckering.

'Walker' caragana is a fine-leafed weeping peashrub (*Caragana arborescens* Lam.) suited to growing as an own-rooted ground cover or as small shrubs when grafted on a standard.

Further information regarding Morden introductions is contained in a recently issued bulletin, "Hardy Fruits and Ornamentals from Morden, Manitoba". Copies of this bulletin can be obtained by writing to the Agriculture Canada Research Station, P.O. Box 3001, Morden, Manitoba, R0G 1J0.

MODERATOR FLINT: Our next speaker needs no introduction to this group and he is going to tell us about a new *Pieris*.

PIERIS FLORIBUNDA AND ITS PROPAGATION

ALFRED J. FORDHAM

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Pieris floribunda 'Millstream', was selected from a seedling lot by H. Lincoln Foster of Falls Village, Connecticut. It forms a compact mound which produces an abundance of flowers each year even though the previous year's spent flower heads are not removed. The Arnold Arboretum is the registering authority for *Pieris*, so in 1963 Mr. Foster registered *P.f.* 'Millstream' and also provided an 8 inch layered plant. It has since developed into a compact plant about 18 inches tall and over 5 ft in diameter. It appears that 18 inches will be its ultimate height.

For observation and possible selection, seeds of *Pieris floribunda* 'Millstream' were sown and a seedling population comprising several hundred plants were raised. However, none showed improvement over the parent plant. *Pieris* seeds have no barriers to germination. When sown in late winter or early spring they will germinate and grow with the lengthening days.

Although other species in the genus *Pieris* root readily from cuttings, *P. floribunda* has been considered difficult or impossible to propagate by cuttings. While at the Arnold Arboretum, I undertook a program of experimental testing and the table which follows shows rooting that resulted from this effort. The cuttings were treated in a manner similar to that used for rhododendrons. They were wounded heavily on opposite sides at their bases and a rooting medium consisting of sphagnum peat moss and horticultural grade perlite in equal parts was used. Bottom heat of 75°F was maintained.

Plant	Time Taken	Treatment	Rooting Percentage	Evaluation of Roots
Pieris floribunda	27 March	.8% IBA w/ Thiram 15%	70	Excellent
P. floribunda	7 July	.8% IBA w/ benomyl at 10%	80	Excellent
P.F. 'Millstream'	14 December	.8% IBA w/ benomyl at 10%	73	Excellent
P.f. 'Millstream'	6 November	2,4,5 TP* at 5,000 ppm	83	Excellent
P.f. 'Millstream'	19 December	.8% IBA w/ thiram 15%	57	Excellent

The lot dated July 7th was placed under mist; all others were propagated under polyethylene plastic.
* 2,4,5 TP = 2,4,5-trichlorophenoxypropionic acid

VARIATION IN SEEDLINGS OF *PIERIS FLORIBUNDA*

Among *Pieris floribunda* seedlings one finds plants with widely varying characteristics. Leaves can differ in shape, size and autumn color while the plants may exhibit a diversity of growth habits. The upright terminal flower panicles vary in structure, size, shape and color of their flower buds. These features are prominent for 9 months of the year and therefore prime consideration should be given them when selections are made. Through the years Edmund and Wayne Mezitt of Weston Nurseries have made selections of such seedlings from nursery rows. Recently further selections were chosen and planted in an area set aside for the observation and evaluation of plants with possible horticultural merit.

HARDINESS OF *PIERIS FLORIBUNDA*

Pieris floribunda is presently undergoing trial in the University of Vermont's hardiness testing program, and during the

past 8 years has tolerated temperatures of −30°F at three different locations. Vegetatively propagated selections of *P. floribunda* should therefore make excellent additions in climates where many ornamental plants cannot survive the cold. Also, cultivars propagated from single clones would provide the uniformity that is so often desired in landscape design.

QUESTION BOX

The question box session was convened at 3:30 p.m. with Mr. Ben Davis II and Mr. Ralph Shugert serving as moderators.

MODERATOR SHUGERT: Have any useful fruiting (not just ornamental) cultivars of *Malus* been rooted?

PETE VERMEULEN: Yes, we rooted a number of cultivars several years ago and I believe these were reported in the *Proceedings*. We are not doing it now because we have quit growing the crabs. If the person who posed this question will search through the past literature and especially that of the *Proceedings* I am sure they will find quite a bit of information.

MODERATOR SHUGERT: Charlie Heuser, what compounds can be used for the promotion of adventitious buds on root cuttings?

CHARLIE HEUSER: The three most common materials used are kinetin, benzyl adenine, and 2-IP.

MODERATOR SHUGERT: When cuttings of some deciduous contoneasters are taken late in the season with the foliage still on and green, they root well and quickly under mist, but after hardening off they gradually drop all their leaves and never come back again. What takes place here?

PETE VERMEULEN: This sounds like a question of how they were handled after they were rooted. If they were kept in a warm greenhouse their dormant period would not have been satisfied. If, however, they were put in cold storage they would probably go through the winter and break normally in the spring.

MODERATOR SHUGERT: Are clematis cuttings made of soft, intermediate or harder growth; what is the best hormone, time of year, etc.? Bill Cunningham has reported on this and it is in the *Proceedings*.

RAY EVISON: In England we use juvenile tissue selecting the cuttings where the leaves have just fully formed and before the wood has started to harden up at all. You can use slightly harder wood, but then it takes longer to root and you don't get