

CANADIAN EXPLORER ROSES

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Editor's Note: Many rosarians here in the U. S. have been interested in and followed the progress of Dr. Svejda's breeding program up in Ottawa. There has been much progress and advancement since she started it in 1961 — even to the point where we will soon be able to purchase those hardy offspring. Bev Dobson in her Combined Rose List tells us that one nursery up in New Hampshire already has a listing for Martin Frobisher. There's a special excitement about the dedication of breeders and researchers like Dr. Svejda, our own Dr. Griffith Buck and others, including the amateur hybridizers. They will all continue to meet the challenge of the future, just as they have in the past. We're fortunate to be sharing some of it. Photographs are courtesy of Dr. Svejda.

Winter hardy and repeatedly flowering roses, developed from the present breeding program at Ottawa, were named in honor of Canadian explorers. The aim of the breeding program is the combination of winter hardiness with free and recurrent flowering, resistance to important diseases, including blackspot and mildew and ornamental features of flowers and shrubs. The improvement of winter hardiness is essential because the present garden roses can be grown in Canada without coverage only in relatively small regions of the Niagara Peninsula and the coast of British Columbia. In all other regions they need coverage to survive. At the Central Experimental Farm in Ottawa only the hardiest garden roses survive in spite of coverage.

Generally, hardy species and cultivars have a short flowering season. The freely and repeatedly flowering garden roses are not hardy. In 1961, at the beginning of this program, it was uncertain if hardy and recurrent flowering roses were available, and also, if hardiness could be combined with the recurrent flowering habit. Since hardiness depends, among other things, on arrested growth, while recurrent flowering depends on continuous growth, it was not known if the two features were reconcilable in one organism. It is still not understood how this is accomplished by the plant organism, but a scrutiny of the list in *Modern Roses* showed that several cultivars combined hardiness with recurrent bloom. Most of these were hybrids of *Rosa rugosa*. The fact that several cultivars had the desired features indicated that the search for hardy and repeatedly flowering roses would not be in vain. Still, the list of suitable parental material was very limited, and therefore, new parent roses would have to be obtained from crosses of distantly related species and cultivars. Two approaches were contemplated. The first involved diploid species and cultivars from *R. rugosa* and *R. chinensis*. The second, tetraploid species and cultivars, including garden roses.

The first plan was followed for eight years and then discarded in favor of the second. The reason for this was two-fold. The first hybrid generation obtained from *R. rugosa* and *R. chinensis* cultivars was sterile. This precluded intercrossing of the new hybrids. They could be used as pollen parents, but the crosses with *chinensis* yielded tender offspring which did not survive the Winter, and the crosses with *rugosa* yielded inferior offspring compared to the ones directly from *rugosa*. In the meantime, hardy seedlings with a desirable character combination had been obtained from tetraploid hybrids. Several of these originated from complex hybrids kindly sent to us by Robert Simonet of South Edmonton, Atla. Others originated from unreduced gametes of the usually sterile *Max Graf*, a hybrid of *R. rugosa* x *wichurainae*. Since the tetraploid seedlings from *Max Graf* had the same origin as *R. kordesii* Wulff, fertile offspring could be expected from these crosses. The offspring from open pollination of the Simonet hybrids could be used as pollen parents with *R. kordesii* and garden roses. The reciprocal crosses were sterile, but there was no serious problem with hybrid sterility as was the case with the *rugosa* x *chinensis* hybrids.

The breeding program with diploid roses yielded five new hybrid

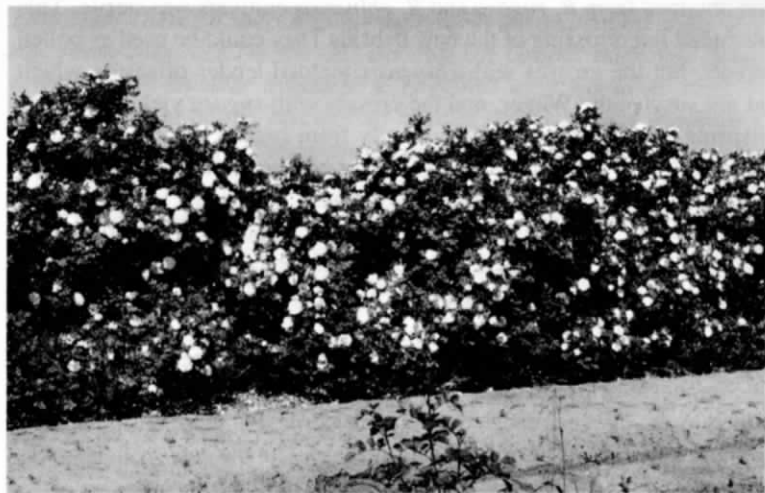
rugosas which were named in commemoration of the explorers: Martin Frobisher, Jens Munk, Henry Hudson, David Thompson and Charles Albanel. Four *rugosa x chinensis* hybrids were released as genetic stock and named *Bonavista*, *Moncton*, *Elmira* and *Sydney*. The *rugosa x chinensis* hybrids were described in *The American Rose Annual* of 1976 and in the March, 1979 issue of *The American Rose Magazine*.

The breeding program with tetraploid roses has produced four cultivars, so far. Two of these are climbers, obtained from *R. kordesii*, and named *John Cabot* and *William Baffin*. The other two were classified as shrub (for want of a better classification) and named *John Franklin* and *Champlain*. *Champlain* could also be classified as *kordesii*, but it is not a climber.

HYBRID RUGOSA

Martin Frobisher and *Henry Hudson* were obtained from open pollination of *Schneezweg* (*Iceberg*). *Jens Munk* and *David Thompson* were obtained from the cross *Schneezweg x Frau Dagmar Hartopp*. *Charles Albanel* was obtained from *Souvenir de Philemon Cochet* through three cycles of open pollination.

Martin Frobisher (Fig. 1) was the first rose named from this breeding program. It was registered in 1968. *Martin Frobisher* has a well-balanced,



The highly blackspot and mildew resistant explorer rose, Martin Frobisher.

upright and vigorous shrub with reddish brown bark and no spines on the upper part of the branches. It reaches a height of 1.5-2 m and diameter of 1.5 m in Ottawa. The flowers are soft pink (R.H.S. Color Chart 56A-56D), very fragrant, 4-6 cm across and have about 40 petals. They are borne in clusters of 6-12. *Martin Frobisher* is hardy, flowers freely throughout the Summer until frost and is highly resistant to blackspot and mildew. It can be grown in a border or as an informal hedge.

Henry Hudson (Fig. 2) was registered in 1976. It has a well-balanced



The pink rose, Henry Hudson, is resistant to blackspot and mildew.

dwarf shrub with excellent foliage cover, reaching a height of 0.5-0.7 m and a diameter of 1 m in Ottawa. The branches are bristly and prickly. The flowers are regularly formed and show the yellow stamens when open. They are very fragrant, 6-7 cm across and have about 25 petals. The color is white with a pink hue like appleblossoms. The bud is pink (55A). *Henry Hudson* is very hardy, flowers freely and repeatedly and is highly resistant to blackspot and mildew. It can be grown as a bedding plant, low hedge or solitary.

Jens Munk (Fig. 3) was registered in 1976. It has a vigorous shrub with excellent foliage, reaching a height of 1.5-2 m and a diameter of 1.5 m



The vigorous shrub, Jens Munk, with its medium pink blooms.

in Ottawa. The branches are bristly and prickly. The flowers are very fragrant, regularly formed and show the golden stamens when open. They are 6-7 cm across and have about 25 petals. The color is medium pink (73B-73C). *Jens Munk* is very hardy, flowers abundantly in June and July and again in August. In the Fall, it is adorned with flowers and attractive red hips. It is highly resistant to blackspot and mildew. *Jens Munk* can be grown in a border or as an informal hedge.

David Thompson (Fig. 4) was registered in 1979. The shrub is medium high with excellent foliage cover. It reaches a height and diameter of 1.2 m in Ottawa. The flowers are very fragrant, medium red (74A), regularly formed, 7 cm across and have about 25 petals. *David Thompson* flowers freely throughout the Summer, is very hardy and highly resistant to blackspot and mildew. It can be grown in a border, informal hedge or solitary.



The medium height shrub David Thompson with its medium red flowers.

Charles Albanel (Fig. 5) was registered in 1982. The shrub is spreading, dense and has excellent foliage cover. It reaches a height of 0.3-0.5 m and a diameter of 1 m in Ottawa. The flowers are fragrant, medium red (72B-C) above and a lighter shade (74C) below, 7-9 cm across with about 22 petals. *Charles Albanel* is very hardy, flowers recurrently and is highly resistant to blackspot and mildew. It can be grown as a ground cover.

KORDESII HYBRIDS

John Cabot and *William Baffin* were obtained from *R. kordesii* and hardy seedlings of different hybrid origin.

John Cabot (Fig. 6) was registered in 1977. It is a climber with vigorous, arching branches, reaching 2.5-3 m in Ottawa. The flowers are medium red (66A-C), slightly fragrant, 7 cm across and have about 40 petals. They are borne in small clusters of 7-10. *John Cabot* flowers profusely in June and July and sporadically in August and September. It is hardy, and the branches can be left on the trellis over the Winter, but in certain years pruning of dead wood is required in Ottawa. It is highly resistant to mildew and has a good field resistance to blackspot.



Above, a closer look at the spreading shrub, Charles Albanel. And below, the medium red climber John Cabot.

William Baffin (Fig. 7) was registered in 1983. Like *John Cabot* it has strong arching branches, reaching 2.5-3 m in Ottawa. The flowers are medium red (66A), not fragrant, 6-7 cm across with about 20 petals. They are borne in clusters of up to 30. *William Baffin* showed less winterkill than *John Cabot*. It did not require pruning of dead wood even after ten winters. It is also slightly improved in blackspot resistance to *John Cabot*. Like *John Cabot* it flowers abundantly in June and July and sporadically in August and September.



William Baffin
with its
strong arching
branches and
medium red
blooms.

SHRUB ROSES

John Franklin was obtained from the floribunda *Lilli Marlene* and a hardy seedling. *Champlain* was obtained from a hybrid of *R. kordesii* and a hardy seedling. *John Franklin* (Fig. 8) was registered in 1979. It has a vigorous bushy shrub with excellent foliage cover, reaching a height and diameter of 1.2 m in Ottawa. The flowers are fragrant, symmetrical, medium red (57A-57C), 6 cm across with about 25 petals. They are borne in compound clusters of up to 30. *John Franklin* survives the Winters without coverage but needs regular pruning in Spring. It flowers pro-



The vigorous bushy shrub rose John Franklin with its medium red blooms.

fusely throughout the Summer and early Fall and is resistant to mildew but not to blackspot. It looks good in a border or in mass plantation.

Champlain (Fig 9) was registered in 1982. The shrub is vigorous, bushy, with excellent foliage cover, reaching a height and diameter of 1 m in



Another vigorous, bushy shrub, Champlain, with dark red blooms.

Ottawa. The flowers are slightly fragrant, dark red, 5.5-6.5 cm across with about 30 petals. The color is shaded. The petal tip is dark red (53A), the center is medium red (57A), and the base is a lighter shade of medium red (57-D). *Champlain* survives the Winters without coverage but needs regular pruning of dead wood in Spring, like *John Franklin*. It flowers profusely throughout the Summer and Fall until frost. It has good field resistance to mildew but not to blackspot. In Ottawa, it is grown as a bedding rose.

TEST RESULTS

Each explorer rose was tested in Ottawa for four to six years and then for two years at locations in different plant hardiness zones across Canada and bordering states of the U.S.A., while the tests in Ottawa were continued. After six years of testing in one location, the mean values were determined and the test was complete, but registered roses remain in the Ottawa trials as standards. The test includes observations on winter-survival, flowering attributes, disease resistance and ratings of ornamental features of flower, foliage and shrub. In the accompanying table, the test results of the explorer roses and parent species or cultivars are shown for winterkill, flowering attributes and disease resistance.

The percentage of winterkill and of diseased foliage is rated on a progressive scale from 1-7, where 1 = 0, 2 = 1-5, 3 = 6-12, 4 = 13-25, 5 = 26-50, 6 = 51-75, and 7 = 76-100%. Winterkill is rated after bud-break in Spring, and diseases are rated four to five weeks after the last spray with fungicides during the last week in August or the first week in September. When necessary, the ratings of diseases are repeated. Flowering is rated in weekly intervals during a 16-week period from early June until the end of September. Flower production is rated similarly to winterkill but on a scale from 1-6, where 1 = 1-5% and 6 = 76-100% coverage with flowers.

The multiple range test indicates which means are statistically different, i. e., where the differences between means exceed the chance variation.

Winter-survival: The hardiest explorer roses were *Jens Munk*, *Charles Albanel*, *Henry Hudson* and *David Thompson*. These roses were comparable in the rate of winter-survival to *Frau Dagmar Hartopp*, the hardiest parent roses, from which *Jens Munk* and *David Thompson* were derived. *Charles Albanel* and *Henry Hudson* were improved in winter-survival to their parents, *Souvenir de Philemon Cochet* and *Schneezweg*.

John Cabot and *William Baffin* were hardier than their common parent *R. kordesii* and reached the hardiness level of the rugosa hybrids, *Souvenir de Philemon Cochet* and *Schneezweg*. *John Franklin* and *Champlain* were the least hardy among the explorer roses, but considerably improved over tender roses, such as the floribunda *Lilli Marlene*. The test results showed comparable hardiness levels for *John Franklin*, *Champlain* and *R. kordesii*, but the trailing growth of *R. kordesii* ensures a protective snow cover in most years, while the bushes of *John Franklin* and *Champlain* reach above the snow.

Flowering Period. *John Franklin*, *Champlain* and *Henry Hudson* had the longest flowering period with 14 out of a possible 16 weeks. *John Cabot* and *William Baffin* flowered 3.5 and 4.5 weeks longer than *R. kordesii*. *Martin Frobisher*, *Henry Hudson*, *Jens Munk* and *David Thompson* flowered one to two weeks longer than *Schneezweg*. *Charles Albanel* was comparable in this respect to its progenitor, *Souvenir de Philemon Cochet*.

Flower Production. *Champlain* exceeded every other rose in the test in flower production. The new rugosa hybrids flowered more freely than *Frau Dagmar Hartopp*, but they were comparable in this respect to *Schneezweg*. *John Cabot* and *William Baffin* were comparable to *R. kordesii* in flower production.

Blackspot Resistance. Most rugosa hybrids are highly resistant to blackspot, and the new additions are no exception. Laboratory tests indicated that *Jens Munk* was immune to disease. The spores of the pathogen germinated on the foliage but were unable to penetrate the cuticula. *Martin Frobisher* was not susceptible to isolates obtained from garden roses, and the isolates from *Martin Frobisher* failed to cause symptoms on garden roses. It was concluded, therefore, that the isolate from *Martin Frobisher* was a different race to the one which caused symptoms on garden roses. *John Cabot* and *William Baffin* showed less infection in the field trials than *R. kordesii*. *John Franklin* and *Champlain* had some field resistance but showed higher levels of infection than *R. kordesii*.

Mildew Resistance. All roses in the test were highly resistant to mildew, but *Frau Dagmar Hartopp* and *David Thompson* showed slightly higher levels of infection than the other roses.

SUMMARY

The explorer roses of the hybrid rugosa class combine high levels of

hardiness and disease resistance with repeated and free flowering. The climbing *Kordesii*, *John Cabot* and *William Baffin* are considerable improved in Winter survival, disease resistance and length of flowering over *R. kordesii*. The shrub roses *John Franklin* and *Champlain* excel in flower production over a long flowering period.

Each explorer rose has distinctive features. The low, spreading growth of *Charles Albanel* makes it suitable as a ground cover. *Henry Hudson* has an attractive dwarf shrub and white flowers with a pink hue. *David Thompson* has attractive red flowers and a medium high shrub. *Jens Munk* produces sparkling red hips and flowers in the Fall. *Martin Frobisher* is one of the few rugosa hybrids which has no spines on the upper part of the branches. *John Cabot* has attractive medium red flowers of a magenta shade and a vigorous growth which compensates soon for sustained injury. *William Baffin* produces large clusters of up to 30 flowers. *John Franklin* has regularly formed, medium red flowers which are produced freely throughout the Summer. *Champlain* has an attractive dark red flower which are produced in profusion throughout the Summer and Fall. *John Franklin* and *Champlain* are comparable in flowering habit to the most productive floribunda, but they are considerably improved in hardiness. No floribunda rose survives the Ottawa winters without coverage, and even with coverage, many plants are lost each Winter and have to be replaced. *John Franklin* and *Champlain* survived even severe Winters without earth mounds.

All roses in the breeding program are grown on their own roots. Since the explorer roses were not selected from budded plants, they produce vigorous shoots from their own roots. This eliminates the extra labor for removing the shoots which grow from the understock. The explorer roses were also selected for easy propagation from softwood cuttings and root easily.

This method of propagation would greatly facilitate the commercial production of rosebushes. Saleable plants can be produced in one year from Spring plant cuttings. *Jens Munk* produced 95% of grade No. 1 plants. *John Franklin* produced 52% of grade No. 1 and 38% of grade No. 1½ plants. And a climber related to *John Cabot* and *William Baffin* produced 100% of grade No. 1 plants.

The explorer roses can be purchased from Canadian nurseries and will be available in two to three years in the U.S.A. Lists of nurseries which

sell these roses are available from **Public Inquiries, Agriculture Canada, Central Exp. Farm, Ottawa, Ontario K1A 0C5** or from the author.

TEST RESULTS FROM EXPLORER ROSES AND PARENT CULTIVARS

Cultivar or species	Years tested	Winterkill %	Flowering period June-Sept. weeks	Production % coverage	Infected Foliage	
					Blackspot %	Mildew %
<u>Hybrid Rugosa</u>						
Martin Frobisher	22	10 bc ¹⁾	13.0 b	15 cd	3 d	2 ab
Henry Hudson	14	5 cd	14.0 a	16 cd	0 d	2 ab
Jens Munk	17	3 d	13.0 b	13 cd	0 d	3 ab
David Thompson	13	7 cd	13.5 ab	16 cd	0 d	5 a
Charles Albanel	13	4 d	12.0 c	11 dc	1 d	0 b
Schneezweg	12	9 bc	12.0 c	15 cd	0 d	0 b
Frau Dagmar Hartopp	5	4 d	9.5 e	8 e	0 d	6 a
Souv.Phil. Cochet	9	16 b	11.5 cd	11 de	0 d	4 ab
<u>Kordesii</u>						
John Cabot	14	16 b	11.0 d	19 bc	9 c	0 b
William Baffin	8	10 bc	12.0 c	19 bc	3 d	0 b
<u>R. kordesii</u> Wulff	17	30 a	7.5 f	22 b	16 b	3 ab
<u>Shrub</u>						
John Franklin	11	50 a	14.0 a	20 b	28 a	0 b
Champlain	10	48 a	14.0 a	35 a	25 a	2 ab
Lilli Marlene, ²	6	-	12.0 c	-	-	-

1) Means in columns followed by the same letter(s) are not significantly different at $P = 0.05$, determined by Duncan's multiple range test.

2) The floribunda Lilli Marlene does not survive the winters in Ottawa without coverage. Notes were obtained from plants grown in the greenhouse.