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Rosa rugosa and its Hybrids. No exotic rose has made itself more at home in New England than the Asiatic species, *Rosa rugosa*. From the Bay of Fundy to Long Island Sound it is found growing spontaneously on sandy beaches quite as though it were a native American species. First reported as running wild in 1905, it is now known from the Elizabeth Islands, the Penikese Islands, Yarmouth, Nova Scotia, and from many intermediate points. In some of these situations it has merely "jumped over the fence" from a nearby garden. But in many of them, as on the Gurnet at Plymouth, Mass., it is found making itself thoroughly at home on isolated sand spits far from any garden.

Rosa rugosa is a rampant, thrifty grower and is most decidedly a plant for the shrub border rather than for the formal rose garden. It can be trusted to look after itself more than can most roses, for it is winter hardy and resistant to such diseases as "black spot". If the bush becomes too large and scrawny it can be cut back ruthlessly close to the ground and will respond with clean new growth. It is particularly useful in situations where ordinary roses would be killed in cold winters or in seaside gardens where its natural tolerance of salt water gives it a special advantage.

The foliage is a shiny dark green and is held crisply erect. In the typical form, the flowers are dark magenta, single, and very large, sometimes reaching over five inches in diameter. There are varieties which are semi-double as well as white-flowered and pink-flowered varieties. The flowers are borne more or less throughout the summer and are succeeded by brilliant fruits which gleam like large enamelled beads among the dark green foliage. When the frost comes the leaves also turn color and finish the season in glowing shades of orange and scarlet.

Quite as interesting as the species itself are the numerous hybrids which have been made between it and other kinds of roses. It has

been remarkably fertile in crosses, and hybrids with the following species have been recorded: *R. arvensis*, *R. chinensis*, *R. odorata*, *R. borboniana*, *R. palustris*, *R. blanda*, *R. carolina*, *R. Roxburghii*, *R. multiflora*, *R. Wichuraiana*. Even in the Arboretum's modest collection of hybrid roses there are over fifteen which carry the blood of *Rosa rugosa*. These hybrids are now in flower in the Shrub Collection. Most of them are grouped together in one bed at the south edge of the collection; a few will be found scattered among the other species of roses. They are particularly interesting when considered as a group and compared with their parent species. In all of them the influence of *R. rugosa* is evident in their shiny, rugose leaves, large flowers, and vigorous growth. Unfortunately, some of the undesirable characteristics of *R. rugosa* seem to have been passed on quite as regularly, for nearly all of the hybrids have weak flower stems and a somewhat weedy habit of growth. All in all, however, they are a fine lot of flowering shrubs and should be much better known. As the president of the American Rose Society has said, "They are of yet unrealized garden value".

It would seem as though many of these Rugosa hybrids might be useful in producing new varieties of hardy roses. It should be possible in further crosses to keep the better Rugosa characteristics and lose the less desirable ones. For the convenience of those amateurs who are doing breeding work with roses, the pollen of the hybrids in the Arboretum's collection has been examined in the Cytological Laboratory. In the following discussion the percentage of fertile pollen, as determined by microscopical examination, is reported for each hybrid where buds were available for study.

Lady Duncan (*R. rugosa* × *R. Wichuraiana*).

Pollen fertility 20%.

A vigorous trailing rose, useful for holding banks, but not suitable for growing on a trellis. Flowers very large, fragrant, single and a vivid, clear pink. Foliage dark green, resistant to black spots. This was one of the hybrids produced by the Arboretum's first propagator, the late Jackson Dawson.

Max Graf (*R. rugosa* × *R. Wichuraiana*).

Pollen fertility 20%.

Very similiar to LADY DUNCAN, and therefore probably of the same ancestry, although *R. setigera* has been reported as one of the parents. The flower buds and foliage are slightly darker than those of LADY DUNCAN and the plant is somewhat more vigorous. This hybrid was raised at the Bowditch Nurseries in Pomfret Center, Connecticut, and bears the name of a gardener who was with the firm for many years. In the vicinity of Chicago, MAX GRAF has been used extensively as a

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ROSA RUGOSA var. KAMTSCHATICA

bank cover in gardens along the Lake Michigan bluffs. In eastern Missouri it has withstood successfully the cold winters and blazing summers of that trying climate.

New Century (*R. rugosa* × *R. multiflora* "CLOTILDE SOUPERT").

Pollen fertility 10%.

Flowers large, fragrant, flesh-pink and fully double. Foliage light green. This variety and SIR THOMAS LIPTON were both originated by the late Dr. Van Fleet of the U. S. Department of Agriculture, who is known particularly for his hybrid climbing roses, SILVER MOON and AMERICAN PILLAR.

Sir Thomas Lipton (*R. rugosa* × *R. multiflora* "CLOTILDE SOUPERT").

Pollen fertility 20%.

Though this rose came from the same cross as did NEW CENTURY, it has much more the appearance of the next variety on the list, BLANC DOUBLE DE COUBERT. Like that variety its flowers are white and fragrant, sometimes showing a trace of pale pink in cloudy weather. It is reported as being much more of a continuous bloomer than the other large-flowered Rugosa hybrids. The foliage is dark green and glossy, the bush large and vigorous. Its general effect in the landscape is very fine.

Blanc Double de Coubert (*R. rugosa* × *R. odorata*).

Pollen fertility 35%.

This variety was originated by Cochet-Cochet and has been variously reported as a sport of *R. rugosa alba*, and as the result of a cross with another species. The low pollen fertility would favor the latter interpretation. As compared to SIR THOMAS LIPTON the foliage is darker green, the bush less shapely and the flowers larger.

Alice Aldrich.

Pollen fertility 50%.

From the appearance of this rose one might suspect it to be the result of crossing the old-fashioned pink Moss Rose with *R. rugosa.* The flowers are borne in clusters, the buds are pointed and open into fully double bright pink flowers. The foliage is thin for a Rugosa hybrid, the bush is thorny and of a rather floppy habit.

Arnoldiana (*R. rugosa* × *R. borboniana* "GENERAL JACQUEMINOT").

Pollen nearly all sterile.

This was another of the hybrids produced by Jackson Dawson. The flowers are single and a brilliant shade of dark crimson. The bush is a very vigorous grower.

Agnes (*R. rugosa* × *R. foetida* "PERSIAN YELLOW").

Pollen nearly all sterile, but apparently a few fertile grains.

This lovely rose, only recently becoming well known in the United States, was produced in 1900 by the Canadian plant breeder, William Saunders, who was then Director of the famous Experimental Farm at Ottawa. The flowers are a soft primrose yellow and semi-double. They are delightfully fragrant, the odor being a blend of the heavy rugosa perfume and the almost medicinal scent of the PERSIAN YELLOW. While very distinctive, it is quite similar to the delicate fragrance of most Tea Roses. The foliage is similar to that of *R. rugosa*. The variety is not only desirable for its beauty but for its extreme hardiness. It has been reported as having come unscathed through winters which killed other Rugosa hybrids back to the ground. In 1926 it was awarded the Van Fleet Gold Medal by the American Rose Society as being the most distinctive new rose originated in America.

F. J. Grootendorst (*R. rugosa* × *R. multiflora* "MME. NORBERT LEVAVASSEUR").

Pollen less than 10% fertile.

A hardy, everblooming rose. The flowers are small, very double, and with notched petals, giving the effect of a small red carnation. They are fragrant and are borne in clusters all through the summer. The foliage is dark green, rugose, and leathery.

R. rugosa × *R. ferruginea*.

Pollen fertility 60%.

Flowers white and single, borne in clusters. Foliage thin but tough. The general effect is that of a tall, white-flowered wild rose.

Ruskin (*R. rugosa* × "VICTOR HUGO").

Pollen practically all sterile.

RUSKIN is another of Dr. Van Fleet's hybrids. It has fully double flowers of bright, dark crimson borne singly or in small clusters. It is very fragrant and has leathery dark green foliage.

Belle Poitevine.

Pollen fertility 90%.

The flowers are large and semi-double, very similar to those of *R. rugosa* in appearance and verging too closely on magenta to be generally popular. The variety is very hardy, however, and is a reliable bloomer.

Nova Zembla.

Pollen fertility 20%.

This variety and the very similar CONRAD FERDINAND MEYER are vigorous hybrids with fully double flowers resembling those of a hybrid tea or hybrid perpetual. It has long-pointed buds, borne several in a cluster on stout stems and opening into a fragrant flower of pale shell pink. It is almost too vigorous and requires severe pruning out of old canes to be kept within bounds. It is sometimes planted as a hedge around rose gardens to form a background for the lower growing varieties.

Schweidnitzia.

Pollen fertility 10%.

The flowers are white and semi-double. The bush is low, the foliage dark green and leathery.

These few hybrids of *Rosa rugosa* are a motley group. Some are high shrubs, some low bushes, and some are vines. Their flowers are white, red, pink, and yellow; small and large; clustered and single. All of them are only partially fertile; none of them, so far as we know, are absolutely sterile. Various as they are, their variety is as nothing compared to the hidden possibilities locked away in their pollen grains and egg cells. Any one of these hybrids would give rise to varied progeny. It is beyond the limits of the human imagination to conceive of all the possibilities which might result from inter-crossing these fifteen varieties. Yet out of the thousands of hybrids which could be raised only a few would be worth growing. How then to select these few? Though the laws of heredity are in the process of being revealed, we still know relatively little about what happens when species are hybridized. We can usually explain the results we get, but we cannot predict the possibilities. It is for this reason, among others, that much of the time of the Cytological Laboratory of the Arboretum is spent on problems which have no immediate bearing on plant breeding but which do add to our knowledge of how hybrids behave. When a little more is known about hybrids between

species, it will be possible to recommend in advance the particular crosses, out of the hundreds which might be tried, which will yield the desired results. When this time comes we shall, indeed, be able to produce the rose visioned by Mr. Wilson, "The hardy rose of the future—the rose for the cotter's porch, for the rich man's garden; the rose that needs no protection in winter, the rose that will thrive in the coldest parts of these United States of America".

EDGAR ANDERSON.
W. H. JUDD.

Plants of Current Interest. The finest display in the Arboretum is still along the valley of the Bussey Brook and at the foot of Hemlock Hill. Though the Rhododendrons are rapidly dropping their brilliant trumpets, the Mountain Laurel is quite as rapidly coming into flower and while not so gorgeous in its coloring it is even lovelier in its general effect in the landscape. Further up the valley the conifers, with their clean new foliage are now as beautiful as if they were in flower. The blue spruces and silver firs are their very bluest and the Nikko Fir (*Abies homolepis*) is a symphony of contrasting greens; the old foliage is a dark bluish green, the new foliage much lighter, and the bloom on the backs of the needles a soft gray blue. At the very head of the valley close to the Walter Street Gate, the Japanese Golden Larch (*Pseudolarix amabilis*) is in full leaf. Its soft green needles, borne in whorls, are exquisite in their form and arrangement and well repay a close examination. The young cones, on the higher branches, are already large enough to be attractive. They are quite unlike the cones of other conifers in their general effect and look rather like clusters of pale green roses set along the upper side of the branches. They will continue to be a lovely sight all through the summer and early fall and will drop to pieces, scale by scale, just as the tree loses its needles for the winter.

In the Shrub Collection and along the road through the lilacs, the Mock Oranges are about at their best. Every year the Arboretum receives numerous inquiries by mail and telephone as to the proper use of the words, Lilac, Syringa, and Mock-Orange. The name Syringa is a somewhat unfortunate one, since it is used for two different groups of flowering shrubs. As a common name it refers to the Mock-Oranges, shrubs with large, fragrant, white flowers with waxy petals. Scientifically these are classified in the genus Philadelphus. Syringa as a scientific name belongs to the genus which includes the Lilacs and Tree Lilacs, earlier-flowering shrubs with much smaller flowers borne in large panicles. In using common names it is therefore better to refer to the latter group as Lilacs and to the first as Mock-Oranges, and avoid possible confusion.