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Hardy Roses for South Dakota

N.E. Hansen

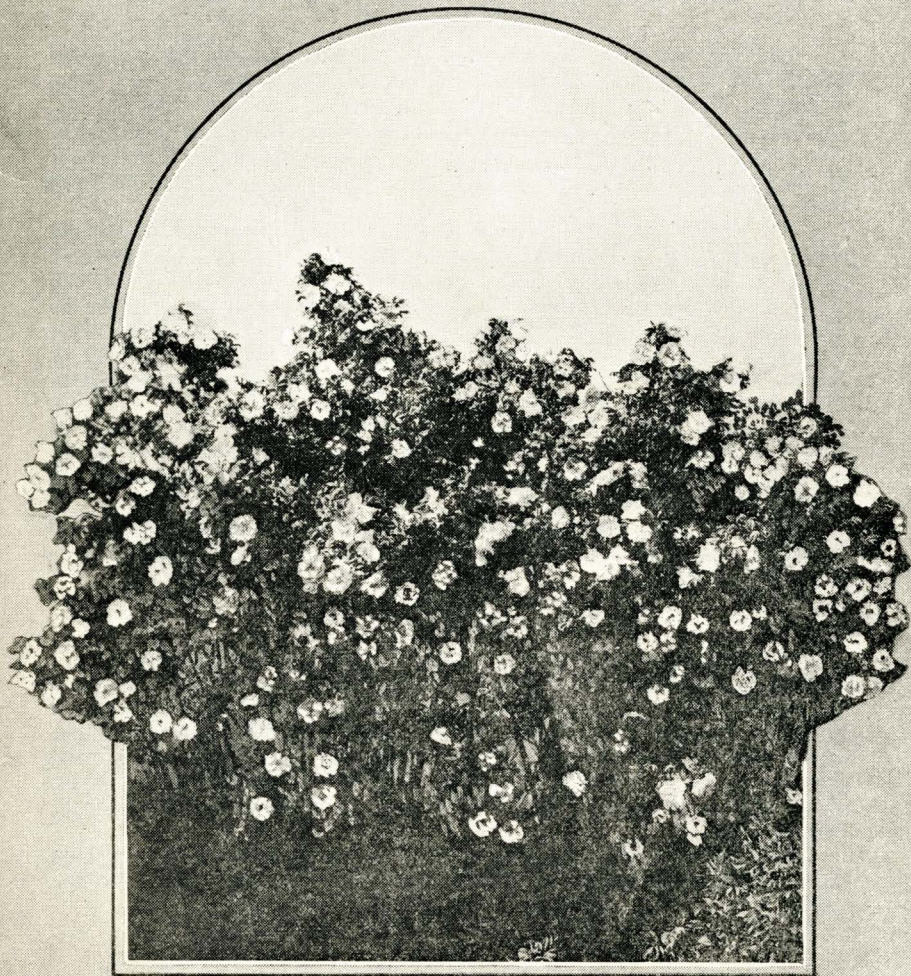
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Hardy Roses *for* South Dakota



HORTICULTURE DEPARTMENT
AGRICULTURAL EXPERIMENT STATION
OF THE
SOUTH DAKOTA STATE COLLEGE OF
AGRICULTURE AND MECHANIC ARTS
BROOKINGS, S. D.



Literature Cited

The best and most complete work on the wild roses of the world, the product of many years of research, is "The Genus Rosa," by Ellen Willmott, F. L. S., published by John Murray, Albemarle Street, W., London, England, 1914; two large volumes with numerous colored plates. The copy of this work in the library of the Department of Horticulture of South Dakota State College is noted with interest by many visitors each year.

The nomenclature followed in this Bulletin is from "Standardized Plant Names," a catalogue of approved scientific and common names of plants in American commerce. This was prepared under an American Joint Committee of fourteen of the leading horticultural associations. This was published in 1923. The members of the Sub-Committee were: Frederick Law Olmsted, Frederick V. Coville, and Harlan P. Kelsey of Salem, Massachusetts; with J. Horace McFarland, Chairman, and Harlan P. Kelsey, Salem, Massachusetts, Secretary.

The Rose part of this book was published separately as "Standardized Rose Names," 1923, by the American Rose Society, Westport, Pennsylvania. Much valuable experience has been reported in the annual reports of the American Rose Society.

Much valuable material concerning roses is noted in *Trees and Shrubs Hardy in the British Isles*, by W. J. Bean; E. P. Dutton and Company, New York, 1915.

The American Rose Society

This Society was organized March 13, 1899 and incorporated July 7, 1921, with the expressed purpose: "To increase the general interest in the cultivation and improve the standard of excellence of the Rose for all people." The secretary, 1929, is Robert Pyle, West Grove, Pennsylvania. The membership is over five thousand from all parts of the United States and many in foreign countries. The editor of the annual report of the American Rose Society is J. Horace McFarland, Harrisburg, Pennsylvania.

The annual reports of this Society are of great value as they include the best experience with roses in the United States and throughout the world.

Hardy Roses for South Dakota

N. E. HANSEN

The rose is the favorite flower of the entire civilized world. Can we imagine civilized society today getting along without roses as messengers of friendship, sympathy and love? There is no adequate substitute for this choice gift of Nature—the “Queen of Flowers.” Most of the fine standard cultivated roses of the present day have been bred up through many centuries from the roses of the Orient. They represent thousands of years of work of earnest, patient effort in plant improvement. But they are not for our open prairies. The work of improvement and development must be done over again with different materials. Much money is lost in planting tender varieties of roses every year in the prairie Northwest.

The largest rose garden in the world is Roseaie de l'Hay in the outskirts of Paris. It has been established about two hundred years, and contains about 10,000 distinct varieties of roses. M. Gravereaux has made it the crowning work of his life. There are many rose gardens in the larger cities of the United States. Among the leading ones is the new Municipal Rose Test Garden at Portland, Oregon. Boston has recently set aside \$100,000 for a rose garden. Such gardens attract visitors by the tens and hundreds of thousands.

The State Rose Garden

As for the State Rose Garden at Sioux Falls, the object is not to make a collection of all varieties for the purpose of show only. The climate will not permit it without more work than would be advisable. There are no rose flowers and plants to sell. The main object is to develop hardy double roses that will be perfectly hardy without any winter protection and that will be adapted to general cultivation in every garden in country and town in the Northwest.

The State Rose Garden work at Sioux Falls was started in the spring of 1923 and continued during 1923, with 900 plants on a block of ground furnished free by Mr. and Mrs. H. R. Dennis.

In the spring of 1924 the present State Rose Garden at Sioux Falls was started on ten acres of State property, located on high land, with no shelter belt and exposed on all sides to the full windswept. It would be hard to find a more severe test than on this stony, sandy hill. There is a fine view for many miles in three directions. After the first two winters, no winter protection was given. This lack of protection hastened the winter killing. But the location chosen was an excellent one for this experiment which is to determine what varieties are hardy without

winter protection. During this time a large number of standard varieties of Hybrid Perpetuals, Teas and Hybrid Teas have been tested with results that confirmed the previous experience at Brookings, that none of the standard varieties are hardy. *Rosa rugosa* and the *Rosa rugosa* hybrids, Persian Yellow and Harrison's Yellow, are hardy. Some of the single wild roses are hardy. The native wild roses of the prairie Northwest and a wild rose from Siberia are under extensive trial as nursery stocks for budding, because there is great need for developing hardy and desirable rose stocks. Ten thousand rose plants were planted in the spring of 1924, and eight thousand in the spring of 1925. Many thousands more were planted in the succeeding years, and thousands were discarded. All seedlings must endure the same test of no winter protection. They must be as hardy as the native wild roses of South Dakota.

The South Dakota State Rose Garden at Sioux Falls and at Brookings differs from the municipal rose gardens in forty or more states of the Union in that the chief aim is not to exhibit the cultivated varieties to millions of people for their enjoyment. The primary objects are:

1. To originate hardy roses for the prairie Northwest.
2. To solve the problem of hardy rose propagation—be it from grafts, buds, cuttings, layers or root-sprouts.

The gardens are a plant inventor's workshop, rather than a place of beauty as expressed in an art arrangement of the Queen of Flowers.

As fast as these new hardy varieties are developed the writer hopes that the work will be followed up by the establishment of municipal rose gardens in at least all the larger cities and towns of the State, and in connection with some of the leading state parks as they are established. It is quite possible to make South Dakota a land of roses with every farm and town home beautiful with roses.

All the hardy varieties developed so far will glorify the garden and fill the air with delightful fragrance. As single shrubs, for groups on the lawn and hedges they will serve well. But work must be done to obtain varieties blooming the entire season and with the long stem necessary for good cut flowers, like those grown under glass by the florist.

All the best indoor roses are of oriental or southern origin, native to such warm climate countries as Italy, Persia, Turkey, Japan and southern China. The everblooming character may come from the mild climate of these countries which permits a blooming period of practically the entire year.

TENDER VARIETIES COSTLY

More money is lost in planting tender varieties of roses every year in the prairie Northwest than would be ample to pay for the necessary expenses of the South Dakota State Rose Garden.

It is possible if money is provided to make this garden, from the standpoint of hardiness, the main creative rose center of the United States and of the world. The garden attracted two delegations in 1927, the Sioux City Garden Club and the Society for Horticultural Science of the American Association for the Advancement of Science.

In 1928 the Iowa Rose Society made a "rose pilgrimage" to the garden at Sioux Falls and Brookings. Located as it is on the A. Y. P.—the Atlantic, Yellowstone and Pacific Highway, the garden at Sioux Falls will attract more and more visitors as the years go on.

No claim to completeness is made for this Rose test. A complete test of all existing obtainable varieties would require much more money than is available. But a study of the native home of a new rose, or of its parents, will be a guide. There must be winter hardiness somewhere in the ancestry of a rose if winter hardiness is required.

At Brookings most of the work is done outdoors, but much is done with roses grown in tubs or pots. These are stored in three cement cellars during the winter. Some are grown in the greenhouse. Annual importations are made of special roses, some new, many old and rare, for use in the work. In this collection can be found roses from India, the everbloomers of China, Japan, India, Manipur, Bengal and Persia.

Ultimate success may require the growing of half a million to a million seedlings, but from such a vast multitude of seedlings must come a long series of ideal roses for the prairies.

The First State Rose Garden

In the list of Municipal Rose Gardens established in 40 states, noted in the 1927 Members' Handbook of the American Rose Society the following editorial comment is made by Dr. J. Horace McFarland:

"South Dakota. Sioux Falls. State Rose Garden in the process of being established. This is the first recorded instance of State activity in rose gardening. It is an example to be emulated."

The 5,636 members of the American Rose Society are located all over the United States and some in foreign countries.

The Working Value of Municipal Rose Gardens

"It was probably the experience in Hartford's notably successful Municipal Rose Garden that led park executives to the realization of the efficiency of the area so devoted in promoting the recreational aims of a park. It should be explained that experiments are in proportion to the number of people per acre found to use them. Under this consideration the great garden in Elizabeth Park was found to possess the highest park intensity.

At the meeting of the American Institute of Park Executives held in Minneapolis, August 19, 1922, attended on behalf of the American Rose Society by Pres. Pyle, there was further discussion of this subject, ending in the unanimous passage of the following resolution:

Whereas, experience with municipal rose gardens has proved their possibility and popularity far in excess of proportionate cost, therefore be it

Resolved, that we recommend that every park board in affiliation with us, which has not already adopted this standard, shall give earnest consideration to the development of a rose garden as a unit of recognized importance in their system." (The American Rose Annual 1923, p. 179.)

What Roses Does America Need?

E. H. Wilson, Arnold Arboretum, Jamaica Plain, Massachusetts, in the American Rose Annual, 1924, says: "The outstanding need of our gardens is hardier roses—roses that can be grown to perfection in the coldest parts of America. The parents of the Hybrid Teas and Hybrid Perpetuals are natives of warm temperate parts of Asia, and possibly southern Europe. . . . The everblooming quality of the Tea and China roses was probably induced by the sub-tropical climate of southern China."

E. H. Wilson favors the use of three species to produce the rose of the future. First, "*Rosa rugosa*, the seashore rose of eastern Asia, found wild from Japan and Korea northward to Kamchatka." Secondly, "the Burnet Rose (*Rosa spinosissima*), found wild throughout northern Europe and northern Asia, with white, pink and yellow flowers." Thirdly, the Luteae group of yellow roses, *Rosa Hugonis*, from western China; *Rosa Ecae*, from central Asia; *Rosa Xanthina*, from northern China; *Rosa foetida*, the Austrian Brier.

"By the crossing and inter-crossing of these our outdoor gardens cannot fail to benefit. A mixture of these and the Hybrid Teas, Hybrid Perpetuals, Noisettes and ramblers would produce new types. It is to such an amalgamation that I look for 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."

The work so far at Brookings and Sioux Falls is summarized in the following report from the 1928 American Rose Annual of the American Rose Society.

Originating Hardy Roses

By Prof. N. E. Hansen, State College, Brookings, South Dakota. State Vice-President American Rose Society

EDITOR'S NOTE—(J. Horace McFarland, Harrisburg, Pa.)—It is another demonstration of the universal appeal of the rose that, instead of being discouraged by climatic hardships, those who really love the world's sweetest and fairest flower are prompted to work with its varied forms, to adapt them to the more difficult environment. So Professor Hansen, pioneer in his field, tells us what he hopes to do.

South Dakota has the honor of establishing the first State Rose Garden. The main plantation is at Sioux Falls. This consisted of 10 acres at first (in 1924), but more land has since been added, and this, together with the land at the South Dakota Experiment Station at Brookings, makes the total area over 20 acres, all devoted to the breeding of hardy roses and the development of hardy rose stocks.

The path of anyone who aspires to originate hardy roses for the prairie Northwest is beset with more than rose thorns. It is, evidently, a long and difficult task. During many years I have labored with the roses of North America, Europe and Asia, hoping to produce double, fragrant roses that will be hardy without winter protection, and will bloom all summer. Of the thousands of seedlings, Tetonkaha was the first to be named. It was introduced in 1912 and is very popular in the Far North. This was followed by Tegala, which was introduced in 1926.

Fifteen new roses were introduced in the spring of 1927* One of these, Mrs. Mina Lindell, was found growing wild in Butte County, South Dakota. The difficulty of propagation and the pressure of other work prevented earlier introduction. The plants distributed were all on their own roots.

On the difficult question of rose stocks for budding and grafting, I hope soon to have something new to report. In the long run, however, it may prove best with these hardy roses to plant them far enough apart so they will sprout freely, and thus keep them on their own roots. Then there will not be the difficulty which many people experience when they neglect the wild shoots coming from below the bud—after two to three years the wild sprouts have choked out the budded portion. This danger is greater in the type of rose I am working with than in roses in which the growth and foliage of the budded variety differ greatly in appearance from the understock.

Thousands of seedlings are coming on, but it is not wise to make announcement too soon. It is well to emulate the helpful hen—she never cackles until she lays an egg. Of the large number of cultivated roses tested at Sioux Falls, we may say that all of the Hybrid Perpetuals, Hybrid Teas and Teas are not hardy without winter protection. The only one that is left is the old Mme. Plantier, which blooms quite well without protection. The varieties of outstanding hardiness are the Rugosa hybrids. As a class, these are hardy and very productive of bloom. The old Harison's Yellow, Persian Yellow and Hugonis are hardy at Sioux Falls and the Siberian form of Rugosa is also hardy there and at Brookings. This Siberian form is much superior in color to the one received from Holland and other countries as a rose stock.

The following Rugosa hybrids have proved hardy at Sioux Falls:

Conrad Ferdinand Meyer, Agnes Emily Carman, Mme. Charles Frederick Worth, F. J. Grootendorst, Belle Poitevine, Sir Thomas Lipton, Hansa, Mrs. Anthony Waterer, Ames Rose, Roseaie de l'Hay, La Melusine, Prof. N. E. Hansen, Tetonkaha and Tegala. Climbing American Beauty was hardy last winter when left on the ground. It is worth noting that roses of this type are apparently hardier if left on the ground than when tied up on a trellis. It bloomed profusely.

At Brookings, for many years, La Melusine has been one of the outstanding Rugosa hybrids. The color is something of a purplish crimson, like Hansa; the fragrance is powerful, and it blooms until frost. This variety seems to have been neglected by American propagators. La Melusine was imported from Europe some twenty years ago and has proved hardy. It is one of my favorites, owing to its intense fragrance.

Mr. Robert Pyle stated several years ago that we need more rose adventurers. I would probably be classified as such, as I have spent much time finding out what others have done in this line, in order that I may do something different. Hence, of late years, I have been working much with the primitive species.

* A Description of these roses may be found in the 1927 Annual, page 226.

The prevalence of polyploidy in the rose genus increases the interest in the problem.* Cytologists have evidently furnished a real key to some of our rose problems. What is now needed is an endowment for this work by some millionaire who wishes to do something for this best of all flow-

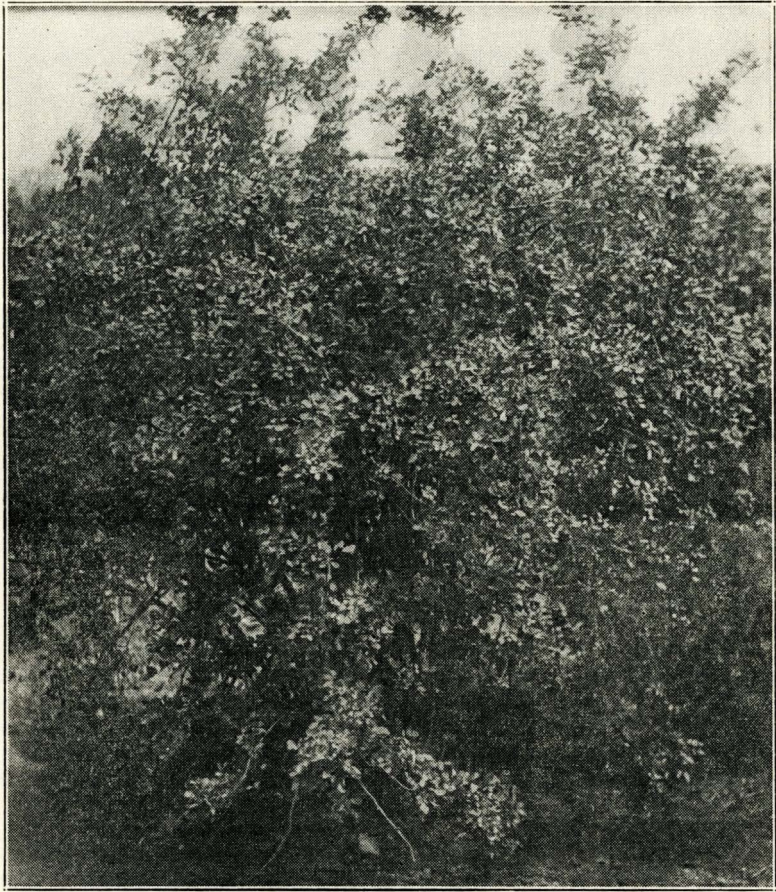


FIG. 1.—A SIBERIAN ROSE BUSH.

This bush is 9 feet high, 13 feet across. The Semi Rose, brought from Semipalatinsk, Siberia, by N. E. Hansen.

ers. It is difficult to get funds for work with ornamentals from State Experiment funds, since the main interest is naturally with fruits and vegetables.

For the prairie Northwest, hardy rose stocks are a real problem. The rose Semi which I brought from Semipalatinsk, Siberia, may help. It was

*See "Chromosomes and Their Relation to Rose Problems," by Dr. Kathleen B. Blackburn, page 54, 1927 Annual.

introduced last year as *Semi*; it is *Rosa laxa*, Retz, which I grew from seed collected on the dry steppes of Semipalatinsk, Siberia, on my 1913 tour. It grows very tall. We have plants 8 feet high and fully 13 feet across. This interesting wild rose has been described under many synonyms. The present name is given to distinguish it from other importations. It is native of the Altai Mountains, central Siberia and extending westward to the Semipalatinsk region. It should not be confused with *R. laxa*, Lindl., which is a variety of Semipalatinsk.

My six trips of agricultural exploration to northern Eurasia make me firm in the conviction that we should get more material from this region. I would like to round out my six tours with a tour to northeastern Siberia, especially to the Amur River region, to gather more material, and also to trace the northern limit of the apple; but there are no funds available at the present time for work of this kind.

The work of rose crossing at Sioux Falls and Brookings is done on a large scale. Many people work at this during the blooming season, and many combinations made. The research work in germinating rose seed by Dr. William Crocker, of the Boyce-Thompson Institute for Plant Research at Yonkers, N. Y.,* has been a great help, as it has largely solved the question of getting rose seed to germinate. Retarded germination has delayed rosebreeding work for many years.

A National Rose Garden

Professor Charles Sprague Sargent, director for more than fifty years of the Arnold Arboretum of Harvard University, Boston, wrote in the *American Rose Annual*, 1917, page 87:

"If some rich man wants to perpetuate his name in the world of horticulture for at least a thousand years, his chance is to provide the Arboretum with the means to establish a real rose garden in which all species, varieties and hybrids, old and new, could be cultivated. There is only one such collection of roses in the world, and that is Gravereaux's, near Paris. The cost of the land and construction would be considerable, and maintenance would mean the employment of a first class man to look after this garden. I do not know who the ambitious man or woman is, but this rose establishment is one of my dreams which I should like to see realized."

In a personal letter to John Horace McFarland, editor of the *American Rose Annual*, Mr. McFarland adds to the above letter: "What could be finer than the perpetuation through all time of one's name in a living monument that would be of continuous beneficence to mankind?"

How Many Varieties?

In 1908 there were on record in Paris the names of 11,016 varieties and species of rose, and, in a private collection in that city, some 8,000 varieties, according to W. A. Manda in an address to the American Rose Society in Chicago in 1908.

Several thousand more rose seedlings have been named and introduced in the twenty-one years since 1908, so that the total number of named varieties at present is probably between 15,000 and 20,000. Many of these have passed out of cultivation, being superseded by better varie-

*Reported in the 1926 *American Annual*, page 34.

ties. But there is danger of losing many rare old roses. There should be established in America a complete collection of all the roses of the world.

Species of Roses: Five or Five Thousand?

C. C. Hurst of Trinity College, Cambridge University, England, writes:*

"The genus *Rosa* has been the despair of systematists since the time of Linnaeus and the fact that Gandoger (1892-1893) divided the Roses of Europe and the Orient into twelve subgenera and gave Latin diagnoses of 5,549 binomial 'species' from this comparatively small area, illustrates at once the polymorphy of the genus and the intensive manner in which the characters of the genus have been studied by systematists."

Hurst classifies all existing roses into 5 diploid septet species, which have been identified and tested genetically. "Each of the 5 septets carries a specific complex of genes which determines its own specific set of characters."

In recent years the science of cytology has assumed great importance since it deals with the egg-cells of plants and animals as carriers of heredity. In recent years cytological research with more than 1,000 species of roses has brought out much new truth of great importance.

Tackholm in Sweden, and Harrison, Blackburn and Hurst in England, have shown that certain groups of roses are polyploid types, and that their differences are due to extensive hybridization, as well as to polyploidy. Tackholm has shown that roses are diploid, triploid, tetraploid, pentaploid, hexaploid or octoploid, and some are unstable forms. (a)* Hurst shows that each of these five primary groups or septets contain at least 50 diagnostic characters, and that they can be recognized in combinations in the hybrids, and that environmental characters may favor the expression of one or the other set of characters. Hurst gives the name differential polyploidy to these variations. (b)*

After all this work we now begin to understand why some roses never set seed while others are fruitful. It will also help to guide the future work in rose breeding.

A Rose Genius

Is wanted in America to inspire the creation of Public Rose Gardens in our country—as has been done in France and Germany by M. Jules Graveraux of Paris. For such a man we command the Roses. * * * *

If one man in America will show what can be done, he will awaken a love of beauty as universal as the hunger for bread. By virtue of its intrinsic appeal he will find his work taken up and carried on in countless communities that are now barren. He will win the gratitude of a great people.

"There is no single flower which carries with it more attraction than the Rose full blown. No flower is more significant in its choiceness than the Rose bud. No flower as a gift to sick or well has so much character

*Differential Polyploidy in the Genus *Rosa* L., paper before the Fifth International Congress of Genetics, Berlin, 1927, page 866.

*(a) *The Theory of the Gene*, Thomas Hunt Morgan, Yale University Press, 1926.

*(b) *Experiments in Genetics*, Charles Chamberlain Hurst, Cambridge University Press, 1925.

and feeling attached to it as the Rose." . . . The Voice of Humanity from the American Rose Society bulletin for 1914.

Nine Standard Hardy Red Roses

Agnes Emily Carman
Amelie Gravereaux
F. J. Grootendorst
Hansa

Madame Charles F. Worth
Mrs. Anthony Waterer
Rosa rugosa flore plena
Rosa a Parfum de l'Hay
Roseaie de l'Hay

Agnes Emily Carman.—Class, Hybrid Rugosa. Pedigree: *Rosa rugosa* x Harison's Yellow, by E. S. Carman, New Jersey. Flowers are of the most brilliant red of this whole group of Rugosa hybrids. The bright crimson is as vivid as that of the General Jacqueminot. A very



FIG. 2.—MADAME CHARLES FREDER-
ICK WORTH.
A hardy red rose, developed from *Rosa*
Rugosa.

free bloomer through a long season; open habit; extremely thorny; flowers large, in clusters. This rose is hardy and very attractive, but suffered from root-killing of the tender stocks. Hence, only own-rooted plants should be planted, or, at least, plants on hardy stocks. If budded plants are on tender stocks, they should be set deep to encourage the formation of roots above the point of union, so that the plants will eventually be on their own roots.

E. S. Carman, of River Edge, New Jersey, for many years editor of the Rural New Yorker, began the work of producing *Rosa rugosa* hybrids in 1886.

Madame Charles Frederick Worth.—Hybrid rugosa. Origin: Mme. Schwartz, Lyon, France, 1889. Flowers double, rosy carmine, in clusters, with a rich fragrance. A very free bloomer in June and less freely throughout the season. Resembles Belle Poitevine but is distinct. The budded plants at Sioux Falls suffered in 1925-1926 which is another

argument in favor of planting *Rosa rugosa* hybrids on their own roots. The plants are very thorny.

Roseaie de l'Hay.—Hybrid *rugosa*. Origin: Cochet-Cochet, 1901. Flowers large, dark red, double, with intense, most pleasing fragrance. Blooms early and throughout the season. This variety is prized for its sweet perfume. The plant is vigorous and hardy.

F. J. Grootendorst.—Class, Hybrid *Polyantha rugosa*. Origin, De Goey, Holland, 1918. A hybrid of *Rosa rugosa* and the Crimson Baby Rambler or *Polyantha*, which combines the everblooming habit of the *Polyanthas* with the hardiness and coarse, shiny, leathery foliage of the *Rugosas*. Flowers small, in clusters, a rich red with the petals evenly notched, making the clusters look like a bunch of carnations. The plants are very thorny. Excellent for a hardy, everblooming, dwarf rose hedge; as specimens on the lawn; or among other shrubs in a shrubbery border. As a hedge it will grow 4 to 6 feet high, but can be kept to 4 feet. Clipping the red flower clusters as they fade will give a constant succession of the red flower clusters throughout the season until frost.

Hansa.—Hybrid *rugosa*. Origin: Schaum, 1905. Flowers large, double, fragrant, freely produced throughout the season until frost, on a strong, very thorny plant. The color of the flowers is remarkable, a deep purplish red, sometimes called reddish violet, or violet red. The Hansa is one of the hardiest and best varieties tested both at Brookings and Sioux Falls. On their own roots the plants make a splendid rose hedge four to five feet in height, in bloom all summer. The immense rose-hips or fruits add to the beauty of the plant. It is another argument for having *Rosa rugosa* hybrids on their own roots.

Mrs. Anthony Waterer.—Hybrid *Rugosa*. Origin: Waterer, 1898. Flowers deep crimson, semi-double, bloom throughout the season. Plant very hardy both at Sioux Falls and Brookings.

"The best roses for garden decoration in the north are the *rugosas* and their hybrids, which give bloom fairly well throughout the season. These are also good farther south for massing and hedges. Mrs. Anthony Waterer is one of these hybrids."—American Rose Annual, 1917, page 29.

Rose a Parfum de l'Hay.—Hybrid *rugosa*. Origin: Jules Graveaux, Paris, France. Pedigree: (*Rosa Damascena* x General Jacqueminot) x *Rosa rugosa Germanica*. The French name is Parfumerie de l'Hay. Flowers large, dark crimson, shaded carmine, intensely fragrant, bloom throughout the season. Hardy at Sioux Falls and at Brookings, and very likely will be found hardy throughout the state. This is one of the most fragrant of all roses, and has been used with success by the United States Department of Agriculture for the manufacture of Attar of Roses, described later in this Bulletin under "Roses for Perfume."

C. D. Beadle of Biltmore, North Carolina, wrote in the American Rose Annual, 1917:

"No rose is more captivating in color and fragrance than that exquisitely beautiful rose, Parfum de l'Hay, of the *rugosa* type."

Amelie Gravereaux.—Class, Hybrid rugosa. Origin, Gravereaux, 1903. Pedigree: (*Rosa gallica* x Eugene Furst) x *Rosa rugosa*. Flowers double; a bright, dark, purplish red; very fragrant; borne several together all summer; of strong growth, with glossy rugosa foliage.

Dr. H. G. Woutout, Grand Forks, North Dakota, writes in the American Rose Annual for 1928:

"The Amelie Gravereaux deserves wider popularity, especially in cold climates, as it is hardy enough to withstand winter without protec-

FIG. 3.—A DOUBLE FLOWERED SIBERIAN ROSE.
This is a double flowered form. *Rosa Rugosa Flore Plena*.



tion, and blooms or has buds from the middle of June until October. The flowers have fair stems and are a good red, with perhaps just a trace of purple, and the fragrance is fine."

Rosa rugosa Flore Plena.—For more than twenty years this double red-flowered form of *Rosa rugosa* has blossomed freely and proven very hardy at this Station. The flowers are intensely fragrant, dark purple red, very double, with up to 49 petals, and many stamens. The flowers are 2½ inches in diameter, and open up flat; in the bud the petals are somewhat erect. The leaflets are smaller and narrower than in the type. Plants thorny, very vigorous and hardy. No record is available as to the origin of this rose, or when it was first imported. The plants described were selected by N. E. Hansen, in 1906, in the Regel Kesselring Nursery, St. Petersburg, Russia. *Rosa rugosa rubra plena* or *Empress of the North* is credited to Dr. Eduard von Regel 1815-1892, Director of the Botanic Gardens, St. Petersburg, Russia. Dr. Leopold Dippel in *Laubholzkunde*, Berlin, 1893, mentions what is probably the same as *Rosa Rugosa plena*, *Empress of the North*, (*Kaiserin des Nordens*) with double purple red flowers. W. J. Bean of the Royal Botanic Gardens, Kew, England, calls this rose *Rosa Rugosa va flore pleno*.

Three Rare Hardy Red Roses

Alika
La Melusine
Prof. N. E. Hansen

Rosa gallica grandiflora.—This rose was received from Russia in the fall of 1906, and was selected by N. E. Hansen at the Regel & Kesselring Nursery at St. Petersburg, on the 1906 tour enroute to Siberia.

Flowers large, fragrant, semi-double, with as high as 46 petals, with many stamens. The color is a brilliant red with no purple in it. The plant is hardy. Flowers abundant in June but not throughout the season.

This rose is worthy of propagation owing to its bright red color and hardiness. No notes as to the origin of this rose are available at the present time.

Since the full name, *Rosa gallica grandiflora*, is too long for every day use, the name, Alika, adapted from the Latin name (with the "i" as in "like"), has been given for convenience in recent years by the writer.

The species *Rosa gallica* is the French rose, native through central and southern Europe, and eastward to the Caucasus. This has been under cultivation since ancient times. They once formed the most extensive group of roses. It is one of the roses mentioned by Pliny, Roman naturalist and author, from which, he says, all the others have been derived. Ancient writers mentioned this as the red rose, and it is supposed to have been the one chosen as the badge of the House of Lancaster in the Wars of the Roses in England. The three old-fashioned striped varieties, *Rosa Mundi*, *Village Maid*, and the true York and Lancaster, have all been called York and Lancaster.

Thousands of spontaneous and garden hybrids were developed in Europe. In Holland a great number of *gallica* hybrids were developed and named during the eighteenth century and in France and England early in the nineteenth century. "*Rosa gallica*," according to W. J. Bean, is the chief ancestor of the most cherished of garden roses, and, through the damask rose, of which it is supposed to be a parent, is one of the chief sources from which the Hybrid Perpetual roses have been derived. It has hybridized with numerous other species and varieties of rose."*

La Melusine.—Hybrid *rugosa*. Imported, 1906, from the L. Spaeth nursery, Baumschulenweg, Berlin, Germany. Flowers large, double, dark carmine red, bloom freely in large clusters the entire season until frost; petals, about 20. Plant thorny, very strong, erect, hardy, with *rugosa* foliage. The delightful and intense fragrance of the *La Melusine* indicates that it contains much Attar of Roses. This rose deserves propagation.

Professor N. E. Hansen Rose.—Flowers large; an intense bright, rich, velvety red, with no purple or blue in them; very fragrant. Blooms

*Trees and Shrubs Hardy in the British Isles, W. J. Bean, 1915, Volume II, Page 427.

throughout the season in clusters. The plants are thorny. Foliage glossy, typical rugosa, thick and leathery. This variety was originated in 1892 by Professor J. L. Budd of the Iowa State College, Ames. The present writer, as assistant in this work, was honored by having this rose named in his honor by Professor J. L. Budd. Some 1,300 flowers of *Rosa rugosa*, the Siberian form imported by Professor J. L. Budd, were operated upon.

Many good double-flowered varieties resulted from this work and were distributed to a limited extent, but most of the stock was lost in

FIG. 4.—A HARDY RED ROSE.
The Professor N. E. Hansen Rose originated and named by Professor J. L. Budd.



later years by accident. The pollen used to produce this rose is not known, but it may have been from the General Jacqueminot, as this was the main variety used; however, the cup-shape reminds one of the American Beauty.

Hardy Pink Roses

Belle Poitevine
Conrad Ferdinand Meyer
New Century
Pink Grootendorst
Tetonkaha

Belle Poitevine.—Hybrid rugosa. Origin: Bruant, 1895. Flowers large, $4\frac{1}{2}$ inches in diameter, bright dark pink, also called magenta pink, in large clusters freely produced throughout the season. Flowers loosely formed with about 20 petals, abundant stamens and pollen. Plant hardy, of strong growth, with tough typical rugosa (wrinkled) leaves; forms a dense bush, so should be good for a rose hedge.

Conrad Ferdinand Meyer.—A Hybrid rugosa. Origin: Dr. Mullen, Weingarten, 1899, (in some catalogues, 1900). Pedigree: (Gloire de Dijon x Duc de Rohan) x *Rosa rugosa* Germanica. Dedicated to the Zurich poet.

Flowers very large, clear silvery pink, resembling in bud the famous old La France rose, very double, with about 78 petals. The leaves are thick and smooth, not wrinkled as in the typical rugosa.

This variety forms a huge, extremely thorny, tall bush, up to 15 feet in height under favorable conditions, and needs plenty of room. Some rosarians think this is the handsomest rugosa. However, at Brookings and at Sioux Falls this variety has not done well, probably for two reasons: (1) too much Hybrid Tea in the pedigree; (2) trouble with the tender stocks upon which they are budded. A rose crippled by root-killing, in whole or in part, cannot do well. Such plants should be mulched over winter to prevent root killing.

New Century.—Hybrid rugosa. Origin: Dr. Van Fleet, 1900. Pedigree: Descended from *Rosa rugosa alba* and the Polyantha, Clotilde Soupert.

Flowers very large, three to four inches across; clear flesh or shell pink, with light red center and wide border of creamy white; fragrant; very double, with about 73 petals and petaloids; little pollen. Foliage thick; rugosa leaves. Plant a strong grower with tough foliage. Hardy at Brookings. The New Century is regarded by rosarians as one of the most successful originations of Dr. Van Fleet, rose-breeder of the United States Department of Agriculture.

Pink Grootendorst.—Origin: F. J. Grootendorst, 1923. A pink sport of the red F. J. Grootendorst, with larger flowers. Not yet tested at this Station, but it will very likely be found hardy. Both will be desirable in the shrub border or for mass planting.

Tetonkaha.—Hybrid rugosa. Origin: N. E. Hansen, 1912. This is now a standard hardy pink double rose in the prairie northwest. Described under State College Roses.

Four Double Hardy Yellow Roses

Harison's Yellow
Persian Yellow
Agnes
Grace

Agnes.—Originated, 1900, by Dr. W. Saunders, Director of the Central Experimental Farm, Ottawa, Canada. A hybrid of *Rosa rugosa* with Persian Yellow as the pollen parent. It bloomed first in 1902. This variety has not been tested at Brookings, but, judging by the pedigree, it will no doubt be found hardy. The buds are coppery-yellow and pale to amber-gold on opening. Flowers double, pale amber, fragrant. This Rose was recently awarded the Van Fleet Gold Medal by the American Rose Society for the most distinct Rose of a new type originated in America.

Persian Yellow.—The Persian Yellow Rose was brought from Persia to England in 1838 by Sir Henry Willock, K. L. S., Envoy Extraordinary and Minister Plenipotentiary at Teheran. It soon became popular and later came to America.

The Persian Yellow is very hardy and blooms very freely in June at Sioux Falls and Brookings; is hardy in northeastern Montana, North

Dakota and in Manitoba, and is excellent as a single bush in the shrub border, or as a screen or hedge. The plants sucker rather freely and have glistening brown stems. The brilliant intense yellow double flowers are very attractive and make a pleasing show in the garden. But the peculiar unpleasant fragrance does not make it suitable for cut flowers. The flowers are quite double and have from 24 to 44 petals and 22 petaloids, and are about 2½ inches across. They are produced along the canes.

"Bright yellow, small, nearly full, well formed; small foliage, faintly scented like the sweetbrier; seven leaflets; the wood is chocolate brown color, armed with numerous brown thorns; it is the finest of all hardy yellow roses. It must not be closely pruned; it is desirable to grow more than one plant, and by pruning one this year, in the usual way, and the other the next, annual crops of flowers may be had. Does not grow from cuttings."—H. B. Ellwanger, *The Rose*, page 293.

The following is from *The Genus Rose* by Ellen Willmott—page 272. "On its own roots the Persian Yellow grows freely and flowers well, though not in the same profusion as when budded on the Briar or the Manetti Rose. Care must be taken not to over-prune, for it is a Rose which will rarely break back. When the old shoots have to be shortened, they should be pruned down to a strong growth and on no account below. When grown in a border or in a somewhat confined position, it becomes straggling in growth and requires all the pruning it will submit to. It should be planted in a light soil with a warm sunny aspect, and may then be left to develop unrestrained. It will become in time a bush some nine feet in height, throwing out long branches, the extremities of which will often be covered for from a foot and a half to two feet with golden flowers. In spite of its height the Persian Yellow Rose never becomes ungainly, for the branches stand erect for about half their length and then arch over gracefully, so that the appearance of the bush from a little distance is strikingly beautiful. A hedge of this Rose in flower produces the effect of a cascade of gold."

Harison's Yellow.—Harison's Yellow Rose was originated by Reverend Mr. Harison of Trinity Church, New York City, about 1830, and is still popular after a hundred years. This is very widely distributed throughout the West. The numerous root-sprouts or suckers should be dug up and transplanted to give them a better chance. The Harison Yellow is hardy in all parts of the State and northward into Manitoba.

Flowers semi-double, with about twenty petals; color bright yellow. Plants very vigorous, with good healthy foliage. A splendid shrub or hedge plant.

"In 1830, Harison's Yellow, absolutely indispensable for dooryard adornment throughout practically our whole country, was sent out from a New York nursery. It bears evidence of admixture between the Asiatic *Rosa lutea* and the Scotch rose *Rosa spinosissima*, and is the only form of the bright yellow *Rosa lutea* thoroughly at home in our climate."—*American Rose Annual*, 196, page 28.

"Harison's double yellow rose first appeared in the garden of the Rev. Mr. Harison of Trinity Church, New York City, about 1825. Judging by seedlings raised from it by Mr. Allard of Angers, which

showed by their prickles and black-purple fruits certain characteristics of *Rosa spinosissima*, it is probably a hybrid between some form of that species and *R. lutea*. Its flowers are deep yellow, double; the leaves, leaf stalks, and sepals very glandular; leaflets double-toothed."—W. J. Bean in *Trees and Shrubs Hardy in the British Isles*, Volume II.

"After many years of effort and the sowing of innumerable seeds, there has at last appeared two fairly vigorous seedlings of the prized Harison's Yellow rose. They are from chance or self-fertilized hips, all seeds from controlled pollinations having consistently failed to grow, as some influence of *Rosa spinosissima* or species other than the yellow flowered *Rosa lutea* may be looked for."—Dr. W. Van Fleet, *American Rose Annual*, 1917, page 42.

Pruning of the Yellow Roses

Harison's Yellow and Persian Yellow are descended from *Rosa lutea*. Concerning the pruning of these double roses, Rev. Joseph H. Pemberton, Vice-President of the National Rose Society of England, writes:*

"To insure free flowering: when the plant is vigorous and sends up long branches early in the summer, it is well to bend them over, so as to induce them to break into growth at as many points as possible up and down the shoot; for it is from this second growth that the flowering shoots are produced. If left to itself this species has a tendency to break into second growth only at the top, thus leaving the base bare and leggy. This method should be adopted in the case of the double varieties of the species *Harrisonii* and Persian Yellow. To propagate *lutea*, it should be budded on the brier. Cuttings do not strike readily, nor in the writer's experience does it produce fruit."

Three Single Yellow Roses

Hugonis
Austrian Copper
Austrian Brier

Hugonis.—Father Hugo's Rose. A handsome, single-flowered yellow rose, flowering in May, the earliest of all to bloom. The slender stems are covered closely in early spring with clear yellow flowers before the leaves appear. This striking display so early in the season gives it special value. The shrub is erect; eight feet high; slender branches gracefully arching, with straight, stout, flattened spines on the shoots, mixed with bristles. Leaves one to four inches long, feathery, deep green, with 5 to 11 leaflets. Flowers 2½ inches across, yellow, borne solitary on short slender twigs. Fruit nearly round, ½ to ¾ inches wide, black when ripe.

W. J. Bean in *Trees and Shrubs Hardy in the British Isles*, Volume II, page 429, writes:

"Native of West China; first raised at Kew in 1899, from seed sent to England by Father Hugh Scallen (Pater Hugo), a missionary in its

*Roses: Their History, Development and Culture, I. H. Pemberton, London, 1920.

The intuitive wisdom of a poet is in the thought:

"A Rose which lacked fragrance was but half a Rose, since perfume is the soul and spirit of a flower."

Alphonse Karr—*The Genus Rosa*—by Ellen Willmott, London, 1914, page 20.

native country. It is a most charming rose and the most vigorous of the yellow-flowered species, beautiful even when not in flower for its luxuriant, feathery masses of foliage. It shares with *Rosa sericea* the distinction of being the earliest of roses to flower—usually by mid-May. It is allied to the Scotch rose, but differs markedly in habit. It is perfectly hardy, free, but neat and not rampant in growth."

Rosa Hugonis is hardy at Sioux Falls and not fully hardy some sixty-two miles farther north at Brookings. In the State Rose Garden at Sioux Falls, the plants flourish without winter protection on a high, dry, sandy, stony hill, while at Brookings they are on low, black soil, highly manured. Many of the plants fail from a summer blight, probably favored by a too rank growth. It is evident that this rose will not stand prosperity. The native home of this Golden Rose of China is in a dry region. The writer visited Kuldja, Ili, province in this section of Chinese Turkestan in western China while on the alfalfa trail in 1897.

According to Ellen Willmott in "The Genus Rosa," *Rosa Hugonis* was first collected in western China by the Rev. Hugh Scallan. The exact habitat is not known, but there is good reason to believe it is in the province of Shan Hsi. Hemsley described it, 1905, in compliment to its discoverer, and gave it specific rank. . . . The only dried specimen in the Kew herbarium which at all resembles *Rosa Hugonis* is one labeled "*Rosa pimpinellifolia flore luteo*," collected in the Ili province in Chinese Turkestan.

E. H. Wilson, keeper of the Arnold Arboretum, Boston, says:

"*Rosa Hugonis* should be in every garden, for it is the best of all hardy yellow flowering Roses and one of the most lovely plants known to cultivation."

J. Horace McFarland, editor of "The American Rose Annual," one of the foremost Rosarians in America, writes in the May, 1926, "Flower Grower:"

"Fully as vigorous as *Spiraea vanhouttei*, this 'Golden Rose of China' makes the same sort of an outflowing, graceful, drooping plant. Of the shrub Roses, it is the first to bloom, in my knowledge, and the flowers are honestly yellow, and last sometimes three weeks. The plant is dependably hardy and makes a desirable feature for the shrubbery border, the driveway, the garden background, the corner, or a stunning hedge."

"*Rosa Hugonis* up to this time yields seedlings inferior in vigor and attractiveness to the species, both from chance and carefully controlled pollinations. The seeds, though abundantly produced, are low in germinative powers, scarcely one in a thousand coming up the first season after planting. It is to be hoped that this unusually attractive introduction will in time prove amenable to breeding influences, and give us some of the hardy, constant blooming, yellow varieties we are all waiting for." —Dr. W. Van Fleet, United States Department of Agriculture, in the American Rose Annual, 1917, page 42.

"More hardy yellow-flowered roses are needed, and in *Rosa Hugonis* there are great possibilities. This beautiful rose came to us from the Royal Gardens, Kew, where it was raised from seeds received from north-central China in 1899. It is an upright growing shrub 6 to 8 feet tall and more in diameter, with slender and spreading branches. The fragrant flowers, each about 2½ inches across, are produced all along the

branches, and so freely are they borne that the branches become yard-long sprays of soft yellow. The leaves are small and of a pale green hue, but the foliage is ample, and as I write in mid-November is still on the shrub, and has assumed a dark purple tint."—*American Rose Annual*, 1916, page 39, by E. H. Wilson.

"*Rosa Hugonis* is sure to be as much in the eye of the American rose public in 1918 as the scanty stock of it will permit. In the Editor's garden it began to be conspicuous on May 17, even ahead of *R. spinosissima*, and was a feature for ten days. The blooms, borne close to the arching stems, averaged two to the inch of length, and overlapped. The color is a definite yellow, not a mere primrose tint, and the habit of even the little plants was gracefully arching, resembling that of *Spirea Vanhouttei*. In October the foliage assumed a lovely purple hue, making the plant then distinct and a second time desirable. It is too soon to consider the settled treatment of *Hugonis*, but the Editor has an impression that it may well be either occasionally—say every three or four years—sheared to the ground, or have the old wood cut out annually."—J. Horace McFarland, *American Rose Annual*, 1918, page 102.

Austrian Copper.—*Rosa foetida*, var. *bicolor*. *Rosa lutea*, var. *bicolor*. According to W. J. Bean* this is the most striking of the varieties of *Rosa lutea*. "This singularly and beautifully colored rose has petals of a copper red. In other respects it is similar to *lutea*; in fact, yellow flowers frequently appear on some of its branches. . . . All the forms of *R. lutea* are frequently deficient in good pollen, but have nevertheless been used for hybridizing."

At Brookings the Austrian Copper did not do well as budded plants. The bright coppery red flowers are of interest.

Ellen Willmott, in "The Genus *Rosa*," states that the "Copper Austrian Briar was in cultivation in England as early as the sixteenth century. Gerard grew it in his garden in Holborn in 1596. It is probably a variation, which has become fixed, of the yellow Austrian Briar, since it is not uncommon to find on the same bush, simultaneously pure yellow flowers as well as copper-coloured and even two-coloured flowers. Sometimes the petals are half copper-coloured and half yellow There does not appear to be any double Copper Briars in existence at the present time. Wild specimens of the single form have been collected in Asiatic Turkey, western Persia and Turkestan."

"This Rose and the Persian Yellow possess characters which make it possible to distinguish them readily from other Roses; such characters are the tawny brown colour of the glistening stems; the many but solitary flowers, and their distinctive unpleasant odour. The leaves when crushed, however, have a slight perfume of sweet briar or apple. This Rose is rarely known to produce fruit, as it is deficient in pollen, but in 1893 M. Brun Joannes of Lyons succeeded, after eight years, in artificially pollinating all the flowers on his plant. The fruit was of the same reddish, well-burnished copper colour as the petals.

The flowering branches should be shortened at midsummer in order to induce lateral growths, the natural tendency of the plant being to make shoots from the upper part of the branches."—*The Genus Rosa*, page 270.

*Trees and Shrubs Hardy in the British Isles, 1915, Volume II, page 432.

Austrian Brier.—*Rosa foetida*, Herrm. Synonym, *Rosa lutea*, Miller. Flowers deep yellow, 2 to 3 inches across, single, usually solitary. The yellow Austrian Brier has flowered at this Station, but has not been thoroughly tested, as trouble was experienced with the tender stocks upon which the plants were budded. It is not generally planted as the flowers are single and short-lived. It is of interest chiefly from its many descendants, such as Persian Yellow and Harison's Yellow, and the Pernetiana roses, which are double-flowered and hence more popular.

The yellow Austrian Brier rose, according to Ellen Willmott, in *The Genus Rosa*, "ranges in a wild state from the Crimea through Asia Minor and Persia to Turkestan and the Punjab, and appears in Afghanistan and eastern Thibet. Here and there in Europe it has been found spontaneous It was already well known in gardens in the latter part of the sixteenth century" Linnaeus confused it with the Sweet Briar in the *Species Plantarum*, but this was corrected later.

Dalechamps described this rose more than three hundred years ago, in 1587, as follows (quoted from *The Genus Rosa*):

"The yellow or golden Rose is so named on account of its colour. Its flowers and its colour are different to others, its leaves are small, round, and of a brownish green, much serrated, the points almost sharp. Its branches are well armed with thorns, the flowers golden or yellow, but not double like garden Roses, for it has but five petals. Its odour is unpleasant, nature did wrong in depriving such a beautiful flower of the perfume which it should have had in common with other Roses, for had it only given forth a sweet scent, it would not have ranked among the last of beautiful flowers. It is indigenous in Italy, and we have only lately begun to grow it in our French gardens."

"The Austrian briar has been known in gardens for between three hundred and four hundred years, and differs from the Scotch rose in having no bristles (as distinct from spines) on the stems. It does not appear to be a genuine native of any part of Europe, but occurs wild from Asia Minor eastwards through Persia to Afghanistan, also in the dry N. W. Himalaya and in Turkestan. It is essentially a sun-loving plant, inhabiting regions with a hot, often arid summer. It thrives, nevertheless, in many parts of S. England, but not in or near London. I believe it is a lime-loving rose, and in places where it is found not to succeed, would advise the addition of lime to the soil if it be not naturally present."—W. J. Bean, *Trees and Shrubs Hardy in the British Isles*, Volume II, page 432.

THE ROSE IN ANCIENT GREECE

Greek mythology shows that the rose had been dedicated to the gods of Olympus much earlier than the time of Homer. Sappho, Greek lyric poetess, about 600 B. C., wrote:

Would Jove appoint some flower to reign
In matchless beauty on the plain,
The Rose (mankind will all agree),
The Rose, the Queen of Flowers should be.
The pride of plants, the grace of bowers;
The blush of meads, the eyes of flowers;
Its beauties charm the gods above;
Its fragrance is the breath of love;
Its foliage wantons in the air,
Luxuriant, like the flowing hair;
It shines in blooming splendour gay,
While Zephyrs on its bosom play.

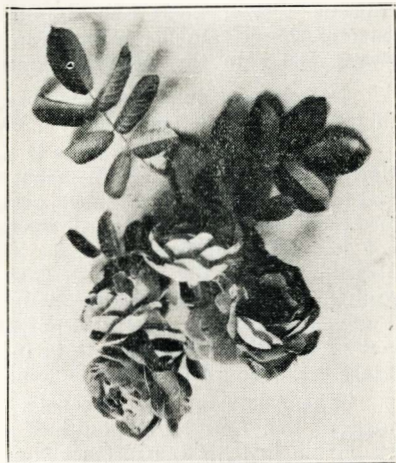
Six Double Hardy White Roses

Blanc Double de Coubert
Madame Georges Bruant
Madame Plantier

Sir Thomas Lipton
Rosa rugosa alba-pleno
Schneegewerg

Blanc Double de Coubert.—Hybrid *rugosa*. Origin: Cochet-Cochet, 1892. Descended from *Rosa rugosa* alba. Flowers double; pure white, especially when half-open. A free bloomer throughout the season. Ru-

FIG. 5.—*ROSA RUGOSA*
Ancestor of many hardy roses. This rose is native of eastern Siberia and is one of the hardiest of all roses.



gosa (crinkled) foliage. An abundant seed-bearer. This is considered by some to be the best double white *Rugosa*. Plant hardy and of very strong growth.

Madame Georges Bruant.—Hybrid *rugosa*. Origin: Bruant, 1887. Pedigree: *Rosa rugosa* x *Sombreuil*. Flowers large and pointed in the bud state; when open are semi-double, loosely formed, pure waxy white, fragrant, bloom freely in clusters throughout the season; petals of the delicate texture found in Tea Roses. Plant makes a vigorous, hardy bush; good for massing in the shrub border or as a hedge.

Madame Plantier—Origin: Plantier, 1835. A hybrid Noisette, member of a small but interesting group descended mostly from the French or the Province, and the Noisette, a hybrid of *Rosa indica* and *Rosa moschata*. Wm. Paul, in *The Rose Garden*, London, 1903, gives the following description of the Madame Plantier rose:

"Flowers creamy white when newly opened, changing to pure white, of medium size, full; form compact; habit branching; growth vigorous; shoots slender; foliage light green. An immense bloomer and a beautiful Rose, forming a large bush or tree, producing a sheet of white blossom, and lasting a long time in flower."

The Madame Plantier is one of the hardiest of the old roses at Sioux Falls and Brookings, although it has suffered some injury in severe winters. It is one of the favorite roses of old-time gardens. Although not a perpetual bloomer, this rose pleases every one for a long period with its wealth of pure white flowers.

Sir Thomas Lipton.—Hybrid rugosa. Origin: Dr. Van Fleet, 1900. Pedigree: *Rosa rugosa* x Clothilde Soupert.

Flowers of good size, snowy white, very double with few stamens, in clusters. A very free bloomer in spring and to a less extent throughout the season. Plant of very strong growth; thorny.

Rosa rugosa albo-plena.—This is a double white-flowered form, very handsome in bud and flower. It has not been tested at this Station, but no doubt will be found hardy and desirable as single specimens, hedges, or massing in shrub borders, or planted with the red-flowered form.

Schneezwerg.—Hybrid rugosa. Origin, Peter Lambert, Trier, Germany, 1912. The name means "Snow Dwarf." This makes a beautiful dwarf rose hedge, and is probably the best dwarf, white-flowered rose of the Rugosa type. Flowers half-double, snow-white, with many yellow stamens in center, freely produced in clusters throughout the season. Plants thorny, with glossy foliage, wrinkled as in the typical Rugosa. An abundant bearer of small red fruits. The plants of Schneezwerg were not tested fully outdoors, but the variety is very likely hardy.

Rosa Rugosa: Ancestor of Hardy Roses

Rosa rugosa
Rosa rugosa alba

Rosa Rugosa, Siberian Form.—From the 1907 list, Department of Horticulture, South Dakota Agricultural Experiment Station: Single Siberian Rose. A beautiful shrub with large, bright crimson, fragrant single flowers; dark green shining, rugosa (wrinkled) leaves; and large bright red fruits. Valuable for clumps on the lawn, or in front of larger shrubs. The present stock is grown from seed of plants secured by N. E. Hansen in Russia in 1897-8, as Agricultural Explorer for the United States Department of Agriculture, and is originally from the importation of St. Petersburg Botanic Gardens from Siberia. This Siberian form of *Rosa rugosa* is superior in every respect to the Japanese form of the species.

From the 1919 list: *Rosa rugosa*. The well known beautiful hardy rose with dark crimson single flowers up to four inches in diameter. An attractive ornamental in autumn and early winter, with large bright red fruits, which are used, with seeds removed, for food in its native home.

The above importation was not the first, but is the one used in the rose-breeding experiments at the South Dakota Experiment Station. It is no doubt the same as that brought by Professor J. L. Budd in his 1882 tour to Russia.

Rosa rugosa was first described in 1784 by Thunberg in *Flore Japonica*. In 1796 it was introduced into England. *Rosa rugosa* is a native of North China, Manchuria, the Amur river and Pacific coast region of East Siberia, Kamchatka, Korea, and the island of Saghalin. *Rosa rugosa*

is common in Japan. Siebold, in 1835, describes it as growing on sand-hills by the seashore towards the north of Nippon (Japan).

Meyer, in 1847, in his monograph on the *Cinnamomeae* names, describes six varieties, which he calls respectively *Thunbergiana*, *ferox*, *Lindleyana*, *Chamissoana*, *Ventenatiana* and *subinermis*. (Quoted in *The Genus Rosa* by Ellen Willmott).

Rosa rugosa var. *Kamtchatica* (*Rosa Kamtchatica*, Ventenat). "A distinct geographical variety sometimes regarded as a species. It differs from *rugosa* in having the stipular prickles distinct from the more bristly scattered ones, in the leaves being more obovate and rounded at the apex, and in the smaller fruits. Introduced about 1770."—W. J. Bean in *Trees and Shrubs Hardy in the British Isles II*, page 441.

Rosa rugosa cultivated in China and Japan. "Thunberg speaks of the *Rosa rugosa* as growing in China and Japan, being extensively cultivated in the gardens of those countries, and producing flowers of a pale red or pure white. The original plant is of a deep purple color. Siebold, in his treatise on the flowers of Japan, says that this rose had been already cultivated in China about eleven hundred years, and that the ladies of the Court, under the dynasty of Long, prepared a very choice pot-pourri by mixing its petals with musk and camphor."—"The Rose: Its History, Poetry, Culture and Classification," by S. B. Parson, New York City, 1847.

Ellen Willmott, in *The Genus Rosa*, states that *Rosa rugosa* was introduced into England in 1796. "In cultivation with us it is the least exacting of all the Roses, every position and every soil suiting it perfectly. It hybridizes freely and seems to preserve at least one distinctive character, that of its reticulate, rugose leaves, which appears in a greater or lesser degree in all the hybrids, certainly to the third generation."

"*Rosa rugosa*. Height 6 feet. A trifle exotic in appearance because of its rough, dark green, shiny foliage. Stems are thickly covered with gray prickles. Flowers large, single, in some seedlings an ugly shade of rose, followed by large orange or red haws. The hybrids of this rose are better in flower and foliage and look less exotic, particularly *Mme. Georges Bruant* and *Arnoldiana*."—*The American Rose Annual*, 1916, page 17.

Rosa rugosa is used to a considerable extent for budding. As imported from Holland and other countries of Europe, the color is more of a light pink instead of the deep, brilliant crimson of the Siberian form of *Rosa rugosa*.

Rosa rugosa is one of the hardiest of all roses, and is highly valued for the North. It is not for cut-flowers, but is excellent as a specimen plant, for foundation groups, in the shrub border, or as a screen or hedge. The color and fragrance of the flowers, and the ornamental foliage are all delightful.

Rosa rugosa in Iowa.—N. E. Hansen, in the Iowa State Horticultural Society Report, 1892, page 421.—This unique species of the rose has proven hardy even beyond the north line of the State, and is becoming popular in the east, where tender roses flourish. As imported by Professor Budd from Russia, the species varies in size and color of flower and habit of growth. Some of the bushes are fully seven feet in height. The glossy, wrinkled (rugose), leathery leaves are beautiful, and hang on late

in the fall. The flowers are very fragrant, from four to six inches in diameter, with five petals. In color they are of various shades of rosy crimson and pink; one variety is white, and one closely related form is semi-double. The buds are long and pointed, and the color shows well between the narrow sepals. The flowers appear in the greatest profusion in June, but continue to bloom all summer. The red fruits are large, often an inch in diameter, and are very ornamental. The Russian forms of the *Rosa rugosa* are superior to the Japan varieties in all respects for the west. The plants grow readily from rooted cuttings, and should be extensively planted.

Rosa rugosa alba, Siberian Form.—The flowers of *Rosa rugosa*, Siberian form, are single and usually of a bright, velvety crimson. However, in rare cases the flowers are white. The writer has grown some fine white-flowered seedlings of this Siberian form of *Rosa rugosa*, but probably they will not be introduced, as there is one already in cultivation under the name of *Rosa rugosa alba*. The shining, green, wrinkled (rugose) leaves are the same as in the red-flowered typical form. The rough foliage is rarely affected by the fungus troubles that damage other roses. The white-flowered form is desirable to add variety, light and contrast, in the shrub border. Some people consider the single red or white *Rosa rugosa* to be more beautiful and graceful than the double-flowered hybrids. Both bloom throughout the season and are intensely fragrant. The enormous red fruits are highly ornamental and remain on the bushes into the winter.

Rosa Rugosa Hybrids

It was planned under this heading to include a check-list of all named *Rosa rugosa* hybrids. This would serve a useful purpose as a monograph or summary of this work of amelioration up to date. But it appears best to postpone this complete list to a later date. Many of the earlier varieties have been superseded by the later varieties. Only the best few can be propagated and marketed at the present time.

The writer has raised from seed a large number of *Rugosa* hybrid roses which will not be named because they resemble too closely many varieties already named. There are now many more than can be propagated to advantage. It is not successful commercial practice to offer too many varieties closely resembling each other. The best few of each type are sifted out for extensive propagation. No doubt many mistakes are made in this diminution process, so that really valuable varieties are lost. The real amateur rosarian will endeavor to preserve from extinction as many of these old varieties as the individual fancy dictates.

Perhaps it is with this *Rugosa* section as it is with the Teas, Hybrid Teas and Hybrid Perpetuals. There is need now of venturing into new fields, because the limits of variation are beginning to be apparent in the *Rugosa* section.

As a class the *Rosa rugosa* hybrids have very thorny stems and very fragrant flowers. They are excellent for single specimens or in the shrub border or for rose hedges. They are not so well adapted for cut flowers, blooming as they usually do in clusters, and with short stems.

"Rugosa hybrids, as a rule, carry their vigor, beauty of foliage, frost and disease resistance well into the third and fourth dilution with Tea and Remontant blood, while gaining greatly in beauty of bloom and coloring; but the faults of excessive spininess and weak flower-stems also persist; and the rugosa type may be regarded as especially adapted for the garden and not likely to produce varieties which have value for cutting and exhibition," writes Dr. W. Van Fleet in the American Rose Annual, 1916, page 30.

"No rose hybridises more readily with others, and if seed be sown from plants growing with or near other roses, little of the progeny comes true. The consequence is that a worthless lot of mongrels have been allowed to survive their first flowering. At the same time a group of beautiful roses has been derived from it, noteworthy for their vigorous habit, fragrant flowers, and very handsome fruits."—W. J. Bean, Trees and Shrubs Hardy in the British Isles II, page 441.

Three Ancient Roses

Rosa centifolia
Rosa Damascena
Rosa alba

Rosa Centifolia.—This ancient rose is reported hardy at Dropmore, Manitoba, by F. L. Skinner. This is probably due to the greater snowfall. In the State Rose Garden at Sioux Falls, unprotected and on high land twenty-five plants of *Rosa centifolia* winter-killed.

In many cases, the writer has noted that many raspberries and roses do better in Manitoba, especially eastern Manitoba near the lake, than in South Dakota. This is no doubt because of the protection from the greater snowfall.

The *Rosa centifolia*, or "hundred-leaved roses of Roman feasts and of the painters of yesterday," will be treasured by rosarians for the historical associations and for the rare perfume, but special winter protection will be needed.

"We now come to a time in the history of the rose, the early part of the nineteenth century, when rose culture, as we now know it, really began. This was the day of the old Provence or Cabbage Rose, *Rosa centifolia*, or *Rosa provincialis*, as it was often called. This was the rose which delighted the heart of our grandmothers, and which added the rose charm to their gardens. It was the queen of the rose world in those days, and something over seventy varieties are said to have been listed in the rose catalogues at that time. It is found commonly in the South of France, but its origin is lost in oblivion. It was the popular rose of ancient Rome, being a prominent feature in their feasts and decorations. It is probably the hundred-leaved rose of Pliny. It is the blood of this rose which has mingled itself with others infusing its strong habit of growing into the progeny."—George V. Nash, American Rose Annual, 1910, page 44.

Rosa Damascena.—*Rosa Damascena tringtipetala*, Dieck, is one of the most important attar roses of the East. A semi-double form of the Damask rose. "*Trigintipetala*" is the Latin for "30 petals." It is not hardy at Brookings. The origin of this Damask rose. *Rosa Damascena*,

is unknown. Some consider it a native of southern Europe, or as having been brought to Europe from Syria by a Crusader. Others refer it to India. The color varies from deep red to white through every intermediate shade.

"*Rosa damascena*, the Syrian Rose, the Damask rose, the rose of Damascus, is a native of Syria. It is said to have been known to Europeans first at the time of the crusades. It was reported of Saladin that in 1187, when he recovered Jerusalem from the crusaders, he used rose water with which to purify the Mosque of Omar after it had been defiled, in his estimation, by the Christians' use of it for a church. It is said that 500 camel loads of roses were brought from Damascus for this purpose."—George V. Nash, in the *American Rose Annual*, 1910, page 45.

Rosa Alba, Linnaeus.—An old rose cultivated from very ancient times. Introduced into gardens about 1597. Flowers large, pure white. Probably a hybrid between *Rosa canina* L. and *Rosa gallica* L. Stems greenish white with grayish leaves. It is generally supposed to have been the white rose which was the badge of the Yorkists in the Wars of the Roses, and *Rosa gallica*, the badge of the Lancastrians.—The Genus *Rosa*, by Ellen Willmott.

Maiden's Blush. The form generally found in gardens here and there throughout the West is the *Maiden's Blush*, according to Willmott, "cultivated in England from time immemorial, and its origin is lost in the mists of antiquity." This is classified as *Rosa alba*, var. *rubicunda* Roessig. Flowers double, fragrant; color, white, tinged with delicate pink. Stems tall, arching. Prickles uniform, scattered, hooked. Leaflets glabrous (bluish green with whitish bloom) on upper surface, pubescent beneath.

The new roses are crowding out most of the old-time roses. The *Maiden's Blush* is one of the hardiest, and is reported hardy in Manitoba.

According to Willmott (*The Genus Rosa*), "many of the hybrids of *Rosa alba* formerly in cultivation are now rarely met with. They can readily be recognized by their glaucous foliage and blunt leaflets, and by a fragrance peculiarly their own, which exists to a greater or less degree in all the hybrids. These characteristics are well marked in the *Maiden's Blush Rose*."

Roses always roses are.
What with roses can compare!
Search the garden, search the bower,
Try the charms of every flower,
Try them by their beauteous bloom,
Try them by their sweet perfume.
Morning's light it loveth best
On the rose's lap to rest,
And the evening breezes tell
The secret of their choice as well.
Try them by whatever token,
Still the same response is spoken.
Nature crowns the rose's stem
With her choicest diadem.

—American Rose Annual 1921

It will never rain roses: when we want
To have more roses we must plant more trees

—George Eliot

Two New Climbing Roses

American Pillar
Climbing American Beauty

American Pillar.—Hybrid Wichuraiana. Origin: Dr. W. Van Fleet, United States Department of Agriculture, Washington, D. C., 1902.

"American Pillar, which has won wide popularity here and abroad came from a *Wichuraiana* x *setigera* hybrid, pollinated with a bright red Remontant rose. Not all crosses with *tigera*, however, are good. When the species was bred with Hybrid Tea, the result was a number of exceedingly bright-colored varieties with thin unattractive foliage."—Dr. W. Van Fleet, in the *American Rose Annual*, 1916, page 34.

The plants of American Pillar bloomed very freely in the State Rose Garden at Sioux Falls without winter protection. They were left to pile up on the ground without a trellis. Plants of good growth, thorny, very free bloomers. Flowers large, single, a brilliant rosy pink, approaching carmine, with white centers and abundant golden yellow stamens. The flowers are borne in great profusion in several layers in large clusters all over the plant. Leaves glossy, dark green. Seed-hips bright red, persistent on the bush into winter.

Climbing American Beauty.—A hybrid *Wichuriana* from Hoopes, Bro. & Thomas Co., 1909. Pedigree: (American Beauty x Marion Dingee) x *Wichuraiana*. The history is as follows:

"Mr. James A. Farrell of West Chester, Pennsylvania, fertilized *Rosa Wichuraiana* with pollen from several Tea and Hybrid Tea roses, resulting in the production of four distinct varieties. Three of these were named Edwin Lonsdale, Prof. C. S. Sargent and Robert Craig. The fourth was a large single pink variety which I crossed with the American Beauty, producing the rose named and disseminated as the Climbing American Beauty."—The *American Rose Annual*, 1916, page 46.

The Climbing American Beauty in the State Rose Garden at Sioux Falls stands well and blooms freely when permitted to lie on the ground and not up on a trellis. The large flowers are richly fragrant, very double (about 94 petals and petaloids), with very little pollen. The color is a brilliant carmine or rosy crimson. The flowers are on long stems, excellent for cutting. The plants are of very strong growth with long canes.

Three Old Climbing Roses

Baltimore Belle
Queen of the Prairies
Seven Sisters

None of the old list of Climbing Roses are satisfactory as to hardiness when tied up on a trellis. If taken down in the fall and given careful protection over winter, better results are obtained. Real hardy Climbing Roses of the new everblooming type would be a real addition

since they would be useful for porches, trellises and walls. The following three old-time climbers have blossomed freely without protection in the State Rose Garden at Sioux Falls, when left on the ground and not tied up to a trellis. This lack of care evidently helps as it kept the plants from making very long shoots, and they received greater protection from the snow.

In the recent rose-breeding experiments, special effort has been made to originate some hardy climbers.

Baltimore Belle.—Hybrid *Setigera*. Origin: Feast & Sons, 1843. Pedigree: *Rosa setigera* x *Rosa gallica*. Flowers very double, pale creamy blush, variegated carmine-rose and white, in small clusters, on strong vigorous plants.

"The Queen of the Prairies type of climber, formerly planted in great numbers but now superseded by the new *Wichuraiana* and *multiflora* ramblers, was produced, it is well known, about the year 1843 by Samuel Feast, a Baltimore nurseryman. The wild Michigan or Prairie Rose, *R. setigera*, is plainly the dominant parent, and the perfume rose of southern Europe, *R. gallica*, is assigned as the other factor, though the progeny, like the native *setigera*, is scentless. Baltimore Belle is thought to have had a Noisette Rambler as the pollen parent."—The American Rose Annual, 1916, page 28.

Queen of the Prairies.—Hybrid *setigera*. Origin: Feast & Sons, 1843. Pedigree: *Rosa setigera* x *Rosa gallica*.

"The leaves are large, rather rough, and of a rich dark-green. They grow with unexampled rapidity, exceeding in this respect any of the climbing roses, and would cover old buildings or naked ground in a very short space of time. They bloom after the other summer roses are mostly gone, and produce their flowers abundantly in large clusters of different shades, from the pale delicate blush of *Superba* to the rich deep rose of *Queen of the Prairies*.

"This last is the best, and of the most luxuriant growth. Its large flowers are of a peculiar cupped form almost globular, when in bud, and altogether of very perfect shape. They are of deep rose color, with a white stripe in the centre of each petal."—S. B. Parsons, in *The Rose: Its History, Culture, and Classification*, New York City, 1847.

At Sioux Falls the Queen of the Prairies, not tied up on a trellis, but allowed to pile up on the ground, has blossomed freely without protection, and may be termed half-hardy under such conditions.

Seven Sisters.—This is *Rosa multiflora*. Thunb., var. *platyphylla*, Thory, native of Japan and introduced into France by Noisette in 1817. The species *Rosa multiflora* is widely distributed in China and Japan, extending to the Philippine Islands and eastern Thibet.

A garden is a lovesome thing, God wot'.
Rose plot,
Fringed pool,
Ferned grot,—
The veriest school
Of peace, and yet the fool
Contents that God is not!
Not God in gardens, when the eve is cool?
Nay, but I have a sign:
'Tis very sure God walks in mine.

—Thomas Edward Brown
American Rose Annual, 1921, page 24.

This variety has blossomed very freely in the State Rose Garden at Sioux Falls, when allowed to lie on the ground, and could be termed hardy. Flowers in large clusters, pale pink, very double with very little pollen.

Two Single Climbing Roses

Rosa setigera
Rosa multiflora

Rosa setigera, Michx.—Prairie Rose. Climbing Rose. Michigan Rose. A native climbing rose with stems 6 to 15 feet long, armed with scattered, curved prickles. Found in a wild state from Ontario to Wisconsin, southwest to Kansas and Texas, and east to Florida. The gracefully arching branches bear the second year on short ascending branches an abundance of flowers, which are deep rose, single, two inches across, almost scentless. The late blooming of this rose, in July, is desirable, as it adds variety. The foliage turns a deep bronzy red in the fall. Fruits small, bright red, about one-fourth inch in diameter, in large clusters, persistent into winter. When left without a trellis to pile up on the ground, as in the State Rose Garden at Sioux Falls, it makes a dense rose hedge about four feet high, which is fairly hardy without protection, and sets fruit in abundance.

Ellen Willmott in *The Genus Rosa* writes: "*Rosa setigera* may be grown either as a standard or a trellis rose."

It can be planted in masses in front of taller roses, or back of roses of still lower stature, such as *Rosa nitida*, *Rosa Wichuraiana*, Lady Duncan, Max Graf, Mrs. Mina Lindell, Schneezweg, F. J. Grootendorst, or *Rosa rugosa repens alba*.

Rosa multiflora.—Native of Japan and Korea. First described by Thunberg in 1784. In 1846 it was described by Siebold and Zuccarini as *Rosa polyantha*. The Latin "multiflora" and Greek "polyantha" have the same meaning, "many-flowered." This rose is now the main stock upon which most Hybrid Tea roses are budded. It was planted for stocks here at Brookings, and many were left to pile up on the ground. Many branches kill back, but not enough to prevent the production of considerable seed. The thorns are avoided by budding low. The flowers are small, white, in large compact clusters, borne along the strong arching canes eight feet or more, followed by small red fruits. Under favorable circumstances often more than two hundred blossoms form in one panicle. The flowers have a delicate fragrance. This rose is easily propagated by cuttings or seeds, but suckers very little from the roots. The seeds sown in spring germinate readily. Landscape gardeners recommend *Rosa multiflora* as a very beautiful Rose for bordering woodlands or drives.

Three Dwarf Hardy Double Roses

Mrs. Mina Lindell, pink •
Schneezweg, white
F. J. Grootendorst, red

"The rose looks fair, but fairer it we deem
For that sweet odour which doth in it live."—Shakespeare.

Where a dwarf rose bush is needed as in front of larger shrubs, or for a bed of low-growing roses, the following are suggested:

Mrs. Mina Lindell, pink. (See description under State College Roses.)
Schneezwerg. (See description under Hardy White Roses.)

F. J. Grootendorst. (See description under Hardy Red Roses.)

Four Trailing Roses

Rosa rugosa repens alba
Lady Duncan

Max Graf
Rosa Wichuraiana

Rosa rugosa repens alba.—Flowers white, similar to *Rosa rugosa alba*. The plant is of first rate trailing habit, which makes it suitable as a cover for low walls. It has not been tested at this Station, but it will no doubt be found hardy.

Lady Duncan.—Origin: Hybrid of *Rosa rugosa* and *Rosa Wichuraiana*, produced in 1900 by Jackson Dawson, of the Arnold Arboretum, Boston. The flowers resemble the pink form of *Rugosa*, the glistening foliage that of *Wichuraiana*, and the habit of growth intermediate between the upright habit of *Rugosa* and the trailing habit of *Wichuraiana*. A profuse bloomer in June. Not fully tested at this Station, but very likely will be found hardy.

Max Graf.—A hybrid of *Rosa setigera* and *Rosa rugosa*. Origin: Bowditch, 1919. A trailing rose, excellent as a ground cover for covering rocks, and in rock gardens, for hanging over steep banks or stone walls, as a pillar rose, or as a climber. Flowers, single, shining pink, blooming profusely in June and a few in July. The pink is the color of the pink form of *Rosa rugosa*. The rich dark green, glossy, wrinkled (rugose) foliage is attractive until very late in the season. Plant of wide spreading habit. Not tested at this Station, but it will very likely be found hardy. Trailing roses have the full advantage of the snow cover.

Rosa Wichuraiana.—*Wichuraiana* Rose. This was first described by Crepin in 1886. According to Willmott in *The Genus Rosa*, it was named after the German botanist Wichura who accompanied the German expedition to China and Japan in 1859-61. He died in 1866. The rose was employed with great success in the Franklin Park, Boston, in covering banks and rocky slopes. This is a handsome rose as a ground cover, because of the prostrate and creeping branches with shining leaves. Flowers, white, 1½ to 2 inches across, with a delicious fragrance. Leaves bright green, glistening, small, rounded like boxwood. The branches, which lie closely along the ground, extend sometimes 15 feet or more. The *Wichuraiana* rose has been extensively hybridized with other species to produce most of the best new climbing roses.

The type species, *Rosa Wichuraiana*, has not been tested as to hardiness at this Station. Japanese plants as a class are not fully hardy on the open prairies of the Northwest. It will probably rank with *Rosa multiflora* in hardiness. The trailing habit makes it easy to give winter protection. Many *Wichuraiana* hybrids have been tested, but none ap-

"You may be rich enough to buy a rose-garden as big as the Garden of Eden. . . but unless you, with your own hands, participate to a greater or less degree in the care of your flowers, there may be a rose-garden, even a beautiful rose-garden, but it will never be YOUR garden."

—Admiral Aaron Ward.
American Rose Annual 1919, page 3.

peared to be fully hardy. Some are doing well farther south in the State.

"*Rosa Wichuraiana* is naturally a trailer and but reluctantly a climber. The species itself, as well as its hybrids, such as *Alberic Barbier*, for instance, serve best for protective or beautifying cover use." J. Horace McFarland, *American Rose Annual*, 1918, page 87.

Red Leaf Roses

Rosa rubrifolia
Rubrosa

Rosa rubrifolia.—"Rubrifolia" means red-leaved. A useful shrub because of the reddish tinge to the foliage. Height 6 to 7 feet; stems slender, arching. It is best planted with other shrubs to add variety. The whole plant is covered with a glaucous or bluish-green bloom, and tinged with red. The prickles are few, hooked or straight. The flowers are small, single, 1½ inches in diameter, 1 to 3 or more in a cluster, bright red. Fruit round, small, scarlet.

Rosa rubrifolia is found native from the mountains of central France to the Pyrenees and southern Austria. Ellen Willmott writes in *The Genus Rosa*:

"It is a very striking Rose, whether on its native mountains or in the garden. In Switzerland it rarely attains a height of more than five feet, but in English gardens sometimes reaches ten feet. It prefers partial shade, and in the Alps plants growing in a northern aspect are much better coloured and more vigorous than those which are exposed to the south."

Rosa rubrosa.—Pedigree: *Rosa rubrifolia* x *Rosa rugosa*. The following is from "Hardy Roses, Their Culture in Canada," by W. T. Macoun and Isabella Preston, Dominion of Canada, Department of Agriculture, Ottawa, Bulletin No. 17, 1927.

"The first rose-breeding at the Experimental Farm was done by the late Dr. W. Saunders, who as long ago as 1900 successfully crossed *R. rugosa* with Persian Yellow and *Harisonii*. The result of the first cross was the beautiful rose "Agnes" which was awarded the Van Fleet gold medal by the American Rose Society in 1926. "Grace" was the name given to the cross of *R. rugosa* with *Harisonii*. This is a fully double rose which opens out flat. The colour is amber deepening to apricot in the centre.

"In 1920 breeding work was started again and many crosses between two species and between species and garden varieties were tried. The result of the most successful cross is the rose that has been called *Rosa rubrosa*. The name has been made up of those of the parents, *rubrifolia* female and *rugosa* male. It is a strong-growing shrub, with reddish foliage and stems, and is very ornamental at all seasons but particularly so when in bloom. The flowers are intermediate in size between the parents and their pale pink colour shows up well against the handsome foliage. The reciprocal cross shows very little if any of the red colour of the *rubrifolia* parent in the foliage, but the flowers are intermediate

"If I were going to die tomorrow, I would plant a rose today."

Stephen Girard, the great Philadelphia philanthropist.
in size and deep red. Unfortunately they are all single and not so orna-

mental as many of the older *rugosa* hybrids."

Bud and flower medium size, single, slightly fragrant, pale pink, borne in clusters on medium strong stem. Foliage abundant, large, bronzy green, leathery, disease-resistant. Growth very vigorous (7 feet high, 11-foot spread); free bloomer for three weeks in June and July. Hardy. American Rose Annual.

One Fragrant Leaf Rose

Sweetbrier

Sweetbrier or Eglantine.—*Rosa Eglanteria* L. Linnaeus used this name for the Sweet Briar or Sweetbrier in his first edition of his *Species Plantarum*, 1753, and so it has priority over *Rosa rubiginosa* L. (1771).

The Sweetbrier is wild through Europe and east to Persia. It is the Eglantine or Eglantyne of Chaucer, Spencer and Shakespeare. It is one of the eight roses known to the classical authors.

The Sweetbrier is found in many gardens in the State. Not fully hardy, but worthy of a sheltered place in the shrub border, because of the delightful fragrance of the leaves and young shoots. This is especially marked after a rain, or when the leaves are touched. The Sweetbrier grows up to six feet high, and is best planted singly, or in groups, or in rose thickets with other tall roses, such as *Rosa multiflora* or *Rosa setigera*. Rose lovers consider it indispensable in a collection, because of the exquisite fragrance of the new shoots. The flowers are of medium size, single, bright pink. Leaves, bright green. A beautiful race, Lord Penzance Briars, was produced in England by hybridization with garden roses.

Three Single Wild Pink Bush Roses

Rosa lucida
Rosa nitida
Rosa blanda

Of the many wild roses on trial at this Station, only three will be mentioned at this time, in addition to those already described. Single wild roses are useful in groups or as specimens in the shrub border, or in mass planting in parks. Of these three, *Rosa blanda* is useful for the early pink flowers, followed by *Rosa lucida*, also with pink flowers. *Rosa nitida* has pink flowers and is useful for its very dwarf habit.

Rosa Lucida.—Virginia Rose, The Glossy Rose. This rose is usually known as *Rosa lucida*, Ehrh., the Glossy Rose, but Ehrhart described it in 1789, while Miller described it in 1768. In *Standardized Plant Names*, the preferred name is *Rosa lucida*, under which name it has been propagated in American nurseries. Native of northeastern North America from Newfoundland to Pennsylvania, and is easily distinguished by the deeply toothed, shining leaves, which turn a bright yellow in autumn. The bright pink flowers are single, 2 inches in diameter. This rose attains a height of 6 feet, is hardy at this Station and is valuable for its late and free blooming, and for its glossy polished leaves. The reddish stems and shiny red fruits are attractive all winter. Valuable in the shrub border.

Rosa nitida.—*Rosa nitida*, Willd. is a low upright shrub about 18 inches in height, with very glossy, sharply pointed leaves, with 7 to 9 narrow leaflets. Flowers single, pink, about 2 inches across. Branches

with numerous, straight, unequal red prickles. This low shrub is hardy and blooms freely in late June both at Brookings and at Sioux Falls.

"Rosa nitida. Height 2 feet. Called our most beautiful native rose. Short stems, covered with bright red prickles. Always dwarf. The flowers are darker than the other natives. Useful for steep banks, or in the front of a bed of other roses."—American Rose Annual, 1916, page 17.

Rosa nitida is a native of Newfoundland and eastern Massachusetts. The oldest specimen is in the herbarium of the British Museum, and was gathered in Newfoundland in 1776. Willdenow described it in 1809. Willmott describes it as "perhaps the most beautiful Rose of eastern North America."—The Genus Rosa.

Rosa blanda.—*Rosa blanda*, Aiton. Meadow Rose. Hudson's Bay or Labrador Rose was first described by Aiton in 1789. *Rosa blanda* ranges from Labrador, Canada and the northern United States across the continent to Vancouver Island.

"It is a pretty Rose, one of the earliest to flower, and altogether well worth growing. Its forms are infinite, and are a source of endless bewilderment to amateurs who attempt to determine their wild Roses."—Ellen Willmott, in The Genus Rosa.

Rosa blanda is a native of South Dakota. One of its descendants is Tetonkaha, described under State College Roses. Height 5 to 6 feet; stems slender, smooth or with short, slender, straight, unequal spines.

The abundant flowers are single, soft pink, 2 to 2½ inches across; followed by round red fruits. This rose spreads freely from suckers or underground root-stocks.

"Rosa blanda. Height 2 to 4 feet. The earliest to bloom of the native species, and the handsomest in winter. The branches are smooth, shiny and deep red."—The American Rose Annual, 1916, page 16.

In practice the writer has found it difficult to find plants entirely smooth and free from thorns. By selection, the writer has isolated a smooth-stemmed form from seed gathered in Roberts County, in northeastern South Dakota. This plant may prove useful as a budding stock, but the numerous root-sprouts may be an objection.

The Original Type of *Rosa blanda*

There has been some confusion in the nomenclature of *Rosa blanda*. The authorities of the Royal Botanic Gardens at Kew, London, England, were consulted by the writer and the following answer was received under date of January 7, 1926:

"The locality on the type specimen of *Rosa blanda*, Ait. in the British Museum is given merely as Hudsons Bay, 1773, without further information.

Limley (Monograph of *Rosa*, pp. 25-27) explains how *R. blanda* and *R. fraxinifolia* were both collected by Banks, and that Aiton, when publishing *R. blanda* in the Hortus Kewensis, had Dr. Solander's MS. before

The Rose

"The interest in the rose cannot pass. The appeal of the flower is practically universal. The variety in form and color is wide and the adaptations remarkable. It has become part of the experience of the race."—L. H. Bailey, American Rose Annual, 1917, page 3.

Yet the rose has one powerful virtue to boast,

Above all the flowers of the field:

When its leaves are all dead, and fine colors are lost,

Still how sweet a perfume it will yield.

—Isaac Watts.

American Rose Annual 1918 page 100

him, and in this MS. was a species marked as *blanda*, and a variety. Aiton's description applies to the variety, and Solander's species *blanda*, according to Lindley, is *fraxinifolia*. The type of the latter from Newfoundland is at the British Museum, and the locality given as St. Johns."

EIGHTEEN STATE COLLEGE ROSES

One Native Double Rose

Mrs. Mina Lindell, from Butte County, S. Dak.

Two Imported Single Roses

Rosa Rugosa, from East Siberia

Semi Rose, from Semipalatinsk, West Siberia

Fifteen Varieties Originated by N. E. Hansen

Amdo	Okaga	Yanka
Ekta	Sioux Beauty	Yatkan
Kitana	Tegala	Yuhla
Koza	Teton Beauty	Zani
Minisa	Tetonkaha	Zika

The lowest temperature recorded at this station, Brookings, was 41 degrees below zero Fahrenheit, January 12, 1912. The severe losses experienced from winter-killing of most standard roses indicate that the prairie Northwest needs harder varieties. During many years I have labored with the roses of North America, Europe and Asia, hoping to originate double fragrant roses that will be hardy without winter protection and will bloom all summer. Of the thousands of seedlings, only two had been named previous to 1927. These two are Tetonkaha introduced in 1912, now becoming very popular at the far North, and Tegala, introduced in 1926. The difficulty of propagation and the rush of other work has prevented an earlier introduction of the new roses offered in 1927. These plants are all on own roots. On the difficult question of rose stocks for budding and grafting, I hope to have something new soon to report. In the long run, however, it may be best with these hardy roses to plant them far enough apart so they will sprout freely and thus keep them on their own roots. Then there will be no difficulty which so many people experience when they neglect the wild shoots coming from below the bud. After two or three years the wild sprouts have choked out the budded portion. The question of hardy rose stocks is also under investigation as the Federal Horticultural Board has given notice that the importation of rose stocks will soon be discontinued. A hardy rose stock that will be more suitable for budding than these now in use, is greatly needed.

Amdo Rose.—Origin: N. E. Hansen, 1927. Pedigree: Tetonkaha x La Melusine. A heavy bloomer through July and into August. The pink flowers appear seven to ten in a cluster; about 16 petals and 8 petaloids. Its late blooming makes it of interest.

Ekta Rose.—Origin: N. E. Hansen, 1927. Pedigree: Rosa gallica grandiflora x American Beauty. Of tall upright habit; very hardy and vigorous. Flowers, single, pink; blooming freely throughout June and a few days in July. Since the flowers are single this plant may not be a hybrid. However, the flowers are pink, while the flowers of the Rosa gallica parent are dark crimson. Also, it blooms earlier than Rosa galli-

ca. This plant sprouts freely. May be useful for screens, hedges, or as an ornamental shrub. *Rosa gallica* is a native of central Europe extending east to the Caucasus Mountains, has been cultivated "from time immemorial," and is regarded as one of the parents of the Hybrid Perpetuals. In the Island of Bourbon, France, it is customary to make hedges and palisades with the Bengal rose and *Rosa gallica*.

Kitana Rose.—Origin: N. E. Hansen, 1927. Pedigree: Tetonkaha x Rose Apples, a *Rugosa* hybrid from England. A vigorous, hardy, semi-double pink rose, blooming very freely in June and into July. Flowers, 3 inches in diameter; intense fragrance; petals, about 36; petaloids, 25. Red fruit sets freely. Flowers are somewhat globular with little pollen; deep lavender pink.

Koza Rose.—Origin: N. E. Hansen, 1927. Pedigree: Seed parent, our seedling of *Rosa rugosa*, Siberian form x La France; pollen parent, La Melusine, a *rugosa* hybrid. Vigorous plant, over 7 feet in height; a profuse bloomer. Flowers semi-double; deep pink; blooms freely through July and into August.

Minisa Rose.—Origin: N. E. Hansen, 1927. Pedigree: *Rosa rugosa*, Siberian form x Prince Camille de Rohan, a well known Hybrid Perpetual, one of the darkest red of all roses. Minisa is not very double, having only about 17 petals and petaloids. Color, very deep crimson; rich fragrance; a free bloomer.

Mrs. Mina Lindell.—Introduced by N. E. Hansen, 1927. A beautiful dwarf semi-double, light pink, wild rose found by Mrs. Mina Lindell in Butte County, South Dakota. Mrs. Lindell, under date of March 4, 1924, wrote: "These roses grow on the west side of a hill, and have noticed that there was a clump of single roses and then a clump of double ones near them. The roses grow about a mile from the Butte called Castle Rock in Butte County." Mrs. Lindell died in February, 1925. This rose is named in her memory by the surviving family. To find a double wild rose on the prairies of South Dakota is indeed noteworthy. The plant sprouts freely so it will not be necessary to bud, graft, or grow from cuttings.

Okaga Rose.—Origin: N. E. Hansen, 1927. Pedigree: *Rosa gallica grandiflora* x Tetonkaha. A very fine semi-double rose. Flowers, deep pink; low bush; blooming very freely in June and first half of July.

Rosa Rugosa, Siberian Form.—Described under *Rosa rugosa*. This Siberian form of *Rosa rugosa* was used in producing many of the new roses on this list.

Semi Rose.—Introduced by N. E. Hansen, 1927. A tall growing upright shrub, fully eight feet in height, with hooked prickles in pairs. Flowers, small, white, blooming all summer, followed by bright red fruits. This is *Rosa laxa*, Retz., grown from seed collected in 1913 on the dry steppes of Semipalatinsk, Siberia. The plant may prove useful as a budding stock for other roses or for hedges and screens. An occasional bush has light pink flowers. This interesting wild rose has been described under many synonyms. The present name is given it to distinguish it from other importations. Native of the Altai region. It should not be confused with *Rosa laxa*, Lindl., which is a variety of *Rosa blanda*, Ait. The name, Semi, is an abbreviation of Semipalatinsk, where the seed was collected by N. E. Hansen in 1913.

Sioux Beauty Rose.—Origin: N. E. Hansen, 1927. Pedigree: Teton-

kaha x American Beauty. A real triumph in rose breeding. Delightful fragrance; plant hardy; very profuse late bloomer; blooms through July and into August. Flowers bright rose deepening into fine dark crimson

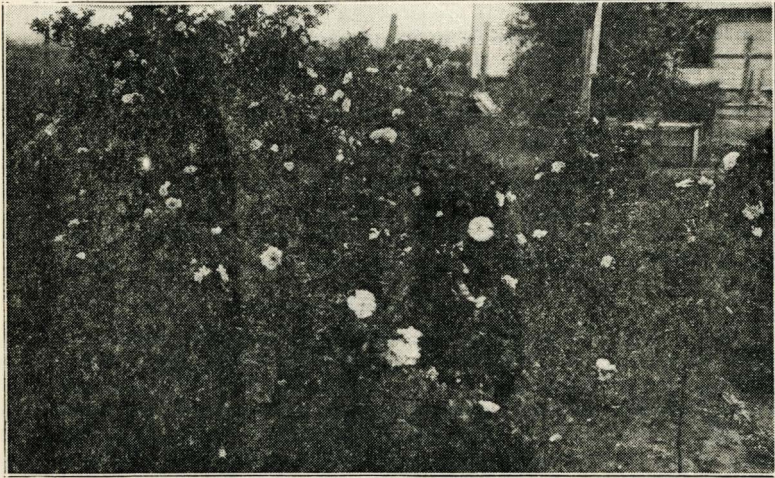


FIG. 6.—TETONKAHA ROSE.

A hardy rose from South Dakota State College, Tetonkaha is also shown on the front page of this bulletin.

in the center petals; very double, with nearly or quite 100 petals and petaloids.

Tegala Rose.—Origin: N. E. Hansen, 1927. This attractive deep pink rose blossoms very freely in June, and is semi-double much like the Tetonkaha Rose, but more dwarf in habit. The plants sent out are all sprouts from one original plant. Growth up to about four feet in height without pruning. Pedigree: Tetonkaha x *Rosa gallica grandiflora* pollen. The name, Tegala, is made up from these two names. The accent is on the second syllable.

Teton Beauty Rose.—Origin: N. E. Hansen, 1927. Pedigree: Tetonkaha x American Beauty. A sister variety to Sioux Beauty. Flowers, bright crimson, somewhat cup-shaped. Resembles American Beauty. A heavy bloomer; blooms all season through July and August, with 65 or more petals and petaloids. Delightful fragrance; color ranging from rich deep pink to crimson; foliage of a modified rugosa.

Tetonkaha.—Origin: N. E. Hansen, 1912. The following is from the original circular of introduction, spring 1912, of the South Dakota Agricultural Experiment Station:

"Offered for the first time. Tetonkaha is the west lake of the chain of lakes known as Lake Oakwood, about eighteen miles northwest of this station. Tetonkaha was an Indian maiden who lost her life many years ago in this vicinity as the penalty for saving her white lover and his people from an Indian massacre.

"The Tetonkaha Rose is a seedling of the wild prairie rose from the banks of this lake, crossed with pollen of a hybrid of the Siberian *Rosa*

rugosa, so that it is a combination of at least three species. In the 100 seedlings obtained from this cross, 74 are double and 26 single, all identical in color, a deep pink, and all fragrant. It is now time to transplant these plants and they have formed many root sprouts. The blossoms on the 74 double-flowered plants are practically identical and the stock offered consists of these sprouts from the original seedlings. The flowers are fully 3 inches in diameter; the bush is perfectly hardy, flowering abundantly in June; about 18 to 25 petals, deep rich pink; very fragrant; appears desirable for dwarf hedges or as an ornamental shrub. The habit is more upright and the flowers are less concealed by the foliage than in the pure *Rosa rugosa*."

From the 1918 spring list: "This Tetonkaha rose proves absolutely hardy and very desirable in many places. It is a very free bloomer. Plants of strong growth, and as they sprout freely, it should not be necessary to propagate on tender commercial stocks or from cuttings."

Pedigree of Tetonkaha Rose

The exact pedigree of the Tetonkaha rose cannot be ascertained. The native rose from Lake Tetonkaha is nearer to *Rosa blanda* than to any other species. Taxonomists know how difficult and even impossible it is to determine the species of most wild roses, because there are so many intermediate forms. Wild roses cross freely with each other. The real name of the *Rosa rugosa* hybrid cannot be determined, as it was not known at the time. At any rate, it was a good variety.

The Tetonkaha rose usually produces an abundant crop of seed. The foliage is chiefly of the *blanda* type and shows no trace of the *Rugosa*. The flowers are deep pink, and have as high as 37 petals, and bloom very freely early in June.

Plant Tetonkaha Rose Only on Own Roots

The Tetonkaha rose on its own roots has proven so hardy wherever planted in the Dakotas that it was a surprise to learn from F. L. Skinner at Dropmore, Manitoba, that the Tetonkaha had winter-killed. The resulting correspondence indicates strongly that own-rooted plants grown as root-sprouts from the original plant are safest for planting at the North.

George W. Dixon of Watertown, South Dakota, wrote as follows, under date of February 22, 1926:

"Wrote Mr. Skinner at Dropmore about it as I told you we would and just received a letter a few days ago from which we find that he says, 'My form was the non-suckering form and about 6 years old.' (Suppose he means he got a budded or grafted bush somewhere). You will remember I told you he said his 'froze out last winter.' I now strongly think it died of old age and not from freezing. What we wrote him about the nature and growing of them seemed quite interesting to him and he wants us to send him 'a dozen of the suckering variety' in the spring.

"That's a new one on us all right but somebody must have been sending out some of them several years ago in budded or grafted plants."

E. M. Reeves, Waverly, Iowa, writes under date of February 21, 1925:

"My Tetonkaha clumps are much admired both for their color and the fragrance while in bloom, and they do well for cut flowers when a large branch can be had."

Original field notes on the 76 seedlings, apparently identical, which were named and introduced under the name Tetonkaha, June 6, 1911,

Horticulture Department, South Dakota Agricultural Experiment Station:

"The double roses are three inches in diameter. As a class these hybrids are freer bloomers than the pure Siberian *Rosa rugosa* adjacent to them, of the same age. The habit is more upright and the flowers are less concealed by the foliage than the Siberian *rugosa*. They will be fine for budding and for low hedges or groups on the lawn. The combining of the Siberian and the native Dakota wild prairie rose gives perfect hardiness. In the single flowers the yellow stamens afford a pleasing contrast to the bright pink petals, making perhaps a greater show of color than the double, but the double ones have more substance of petals and so really make a better showing, also are better for cutting. Both the single and the double are fragrant. The plants are thorny but the thorns are not as strong as in the pure *rugosa*. The thorns are much fewer and lighter at the tips of the shoots but denser at the base of the main shoot.

"The color is all of a pleasing bright pink with no purple in it. The flowers are short stemmed, hence not my ideal for cut flowers, but it is better to offer them by way of introduction. In ten years I hope to have my perfected rose ready." N. E. Hansen.

George W. Dixon, Watertown, South Dakota, wrote in 1926:

"Our parent stock was obtained in 1912 from a root of one of the original double flowered seedlings and two more in 1913. The flowers are fully 3 inches in diameter (some up to 5 inches); the bush is perfectly hardy, never has even tipped back in winter weather of 40 degrees below zero without any covering whatever. Keeps on growing larger each year; we have 6-year-old bushes that are 7 feet tall and 5 feet across; flowering abundantly in June: about 18 to 25 petals, deep rich pink; very fragrant; as an ornamental shrub. The habit is more upright and flowers are less concealed by the foliage than in the pure *Rosa rugosa*. Blooms on 2-year-old root sprouts.

"The Tetonkaha rose proves absolutely hardy and very desirable in many places. It is a very free bloomer. Plants of strong growth and as they sprout freely it should not be necessary to propagate on tender commercial stocks or from cuttings. . . . We do not pot, but, graft, layer, use cuttings nor mound them. . . . Very fine for low hedges up to 6 feet in height.

Yanka Rose.—Origin: N. E. Hansen, 1927. Pedigree: Tetonkaha x uncertain but very likely Gruss and Teplitz x La Melusine. Flowers, semi-double, pink, blooming in clusters; blooming freely through July and into August.

Yatkan Rose.—Origin: N. E. Hansen, 1927. Pedigree: Somewhat uncertain but very likely Gruss and Teplitz x La Melusine. Flowers, semi-double, two and one-half inches across; colors, pure pink; blooms through July.

Yuhla Rose.—Origin: N. E. Hansen, 1927. Pedigree: Wild rose from Lake Oakwood, South Dakota x General Jacqueminot. Flowers, semi-double, crimson, blooming through July and August; leaves of *rugosa* type. About 20 petals and 26 petaloids.

Zani Rose.—Origin: N. E. Hansen, 1927. Pedigree: Seed parent, *Rosa rugosa*, Siberian form x Anna de Diesbach; pollen parent, Tetonkaha. Of this pedigree we have a number of hardy, strong growing seedlings, six to eight feet in height, blooming very freely from June until the middle of July. Flowers, semi-double; color, a fine dark crimson with a

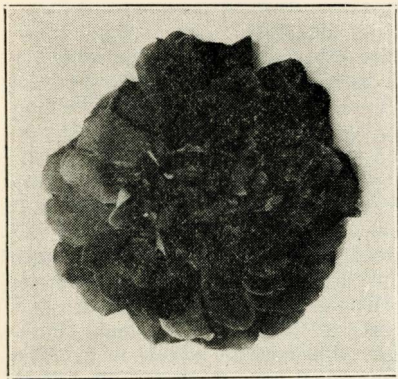


FIG. 7.—A ROSE PRODUCING ATTAR OF ROSES.
This is Rose a Parfum de l'Hay, one of the most fragrant of all roses.

white streak through the center petals. This is a very marked characteristic.

Zika Rose.—Origin: N. E. Hansen, 1927. Pedigree: Seed parent, *Rosa rugosa*, Siberian form x Anna de Diesbach; pollen parent, Tetonkaha. Flowers, semi-double; color, fine shell pink; fragrant.

Roses For Perfume

Attar of Roses.—Many of the newer roses of today have lost their fragrance in the process of combining many species of roses. The heredity factor or gene that carries the perfume got lost in the new reductions of the chromosomes or egg-cells. This is to be regretted, as a rose without fragrance loses much of its charm.

But the world will pay for rose perfume as found in Attar of Roses. Many thousand pounds of a wonderful oil comes out of the Orient every year to Europe and America. Some 10,000 pounds come out of Bulgaria alone. The price varies with the season, from several hundred to two thousand dollars per pound.

Oleum Rosae, oil of Rose, is a volatile oil distilled from the fresh flowers of some oriental species of rose. It is prepared on a large scale in Turkey in Europe, especially in the Balkan Mountains, Egypt, Cashmere, India and other countries of the East, but America and Europe are at present supplied chiefly from the southern slope of the Balkan Mountains. Some of the strongest perfume roses come from the valley of Kazanlik, Bulgaria. The rose oil is usually imported in small bottles and is very costly. The fragrance is extremely powerful and so must be highly diluted before it is suitable for everyday use.

At the South Dakota Experimental Rose Gardens at Brookings and Sioux Falls, the writer is working with some of these choicest oil roses of the Orient and their European descendants. The plan is to preserve this costly rose perfume, Attar of Roses, in the hardy varieties now being originated in these experiments.

It would be quite possible to develop this Attar of Roses industry in South Dakota. But in the present stage of development we will devote our main attention to staple farm crops.

Dr. W. Van Fleet in *The American Rose Annual*, 1919, page 17:

"The late Monsieur Jules Gravereaux, the famous rose collector of

L'Hay in France, sought with marked success to develop continuous-blooming perfume varieties by hybridizing *R. rugosa*, one of the sweetest of wild roses, with the best varieties grown for practical attar distillation. Rose Parfum de l' Hay is the best known of his productions, and has been tried in some quantity in the Arlington perfume experiments of the United States Bureau of Plant Industry. Blooms from 300 plants were collected and distilled for several seasons, in comparison with those of most other perfume roses, the result showing that it is at least equal, under our conditions, in yield and quality to the best of the kind in general use. The amount of attar obtained worked out to more than the general average rate of one pound to 3,000 pounds of fresh petals, and the quality is undeniably high. Only one other variety, Mrs. Curzon, evidently a Centifolia-Gallica hybrid, with the cabbage rose type predominating, greatly exceeded this average, giving almost double the relative yield, but the blooms were rather scantily produced during the usual short spring season. Rose Parfum de l' Hay blooms plentifully in June and at intervals throughout the summer and autumn, the late flowers being especially abundant in August, the seasonal production appearing to be considerably greater than that of the excessive spring bloomers. Thus the labor of collecting and distilling the petals extends over a far longer interval and should be accomplished by a smaller force of workers. In common with many *Rugosa* hybrids, it can only be obtained as plants budded or grafted on the usual rose stocks, making it more expensive and less useful than sucker-grown varieties that reproduce themselves from root-buds."

Roses and Highways

Wild roses generally flourish on dry embankments better than in deep shade. The European idea of appealing to the tourist by ornamental planting is also under consideration in America.

The following is from the Philadelphia Bulletin, quoted in The American Rose Annual, 1921, page 46:

"One of the main roads running out of the city of Los Angeles is lined on either side, for a distance of more than twenty miles, with rose bushes, over eight thousand settings being required. The average road-building engineer would call that a luxury—possibly a folly. A few years ago an appropriation was made on one of the eastern railroads for the planting of rambling roses along embankments and cuts beside the right of way on its main line for a distance of many miles, and 'practical' railroad men called it foolishness, although patrons of the road found in the beauty of the flowers something to take their minds off other incidentals of their journey that were more 'practical' but nevertheless neglected.

"Beauty and utility often merge. Ordinarily they can be made to cooperate. It isn't necessary that a railroad route should be a roadbed and nothing more, and that nature's deficiency in scenic attraction should be aggravated by eye-sores of negligence or design. Nor is there good reason why beauty and the eye for it should not be served 'on the side,' in road-building, at least to the extent of providing the 'setting' of shady green."

The Landscape Value of Roses. "About 90 per cent of the commonest landscape problems can be solved with the aid of nine species of wild rose," writes Wilhelm Miller, Chicago, in *The American Rose Annual*, 1917.

Rose Stocks

Budded and Own-Root Plants

Stocks for Rose Propagation

All roses vary from seed. A seedling rose that is worthy of propagation is given a name and then the work of propagation begins. Some roses have been grown for hundreds of years and their origin is unknown.

Sometimes new roses originate as bud-variations or bud-sports, a single bud or branch changing sufficiently in color or other characteristic to make it worthy of naming and propagation. Many old roses have disappeared because they were replaced by better varieties. The present writer is growing new seedling roses in immense numbers, and hopes that a few of these will be worth naming.

Roses are propagated by buds, grafts, cuttings, layers or root-sprouts. Nurserymen and florists are vitally interested in the question of rose stocks, by which is meant the rose plants used for budding and grafting. The best rose stock for greenhouse use at present is probably the Manetti, a hybrid form of *Rosa Chinensis* found many years in northern Italy. Since some twelve million Manetti stocks are needed annually by the rose propagators of America, this is an industry of considerable importance.

The stopping of all importations of rose stocks into this country has been postponed by the United States Department of Agriculture, but it is apparent that America must look forward to producing all the rose stocks at home as soon as possible.

In Europe the Dog rose, *Rosa Canina* is used to an enormous extent but such plants are short-lived here and give trouble from the numerous root suckers. *Rosa rugosa* is also used to a large extent, but gives much trouble from the numerous suckers which appear from below the buds. But for high standards or "tree roses," they are desirable.

Rosa multiflora from Japan and Korea is now being used extensively in America as a root-stock, especially when grown from seed, and for most Hybrid Teas. When budded or grafted just below the crown, there is less trouble from suckers. Many commercial growers are using the Ragged Robin stock, which is the Hybrid China rose, *Gloire des Rosomanes*. Many other stocks are on trial in the rose-propagating sections of the United States.

It is quite evident that a full report on rose stocks is not possible at this time. Before definite results can be obtained suitable for publication, much more work must be done. Nurserymen especially are interested in this important subject, since they must meet the demand for plants of hardy roses originated in the hybridization work.

The United States Department of Agriculture is working on the great problem of rose stocks under a special appropriation and much progress is being made. It is self-evident, however, that much of this work must be done from the standpoint of stocks for those regions of

the United States where the present standard varieties of roses are hardy. The prairie Northwest, being in the minority, so to speak, in this matter, must supplement this work by developing outdoor rose stocks that will endure 40 or more degrees below zero, Fahrenheit.

Propagation by layers is a sure method but too slow in most cases for the commercial nurseryman or florist.

Many varieties of roses are too weak in growth when on their own roots and succeed much better when grown on strong stocks.

Many varieties of vigorous growth are grown on a large scale from cuttings and this is a special industry in some states.

Without taking part in the extended discussion as to the relative merits of budded, grafted or own-rooted roses, the question presents itself: Is there not a better way?

Growing Hardy Roses From Root-Sprouts

Is it not possible to grow roses on their own roots by transplanting the root-sprouts? This is quite possible in hardy varieties of extra vigorous growth, such as the Tetonkaha, originated by the writer and introduced in 1912. This variety is now grown in many states and is found hardy in South Dakota north into Canada.

Experience in many places shows that the Tetonkaha sprouts very freely and that these root-sprouts transplant easily and make good plants for the garden. Hundreds of young plants may be grown from one plant of Tetonkaha. It is true that but few varieties have such great vigor. Some planters will object to the sprouts, but at any rate they are hardy, and there is no trouble from the wild stock choking out the budded portion. None of the trouble with grafting, budding and cutting is experienced with own-rooted plants grown from root-sprouts.

Rosa Laxa, Retz, as a Stock

Rev. Joseph Pemberton gives the following experience with this stock in England:

R. laxa.—This rose is a species belonging to the section *Cinnamomea*. It was introduced by Retzius in 1803, and of late years has come into prominence as a stock. It is not extensively employed, but is useful for early budding because the sap rises in this stock earlier than in others, and in addition to this advantage, the bark, being thin, will not smother the inserted bud, however small it may be. The "take" on *R. laxa* is above the average, but the period in which it is in condition for budding purposes is short, as it ripens early.—"Roses, Their History, Development and Cultivation," by Rev. Joseph Pemberton, England, Page 205-206. Year 1920.

A Word About Grafted Stock

As to the comparative advantages of grafted stock for certain cut flower sorts, I would not be qualified to speak. While quicker results may be obtained, the observation of the most experienced members of the Springfield Florists Club through many years leads them to claim with confidence that in the long run, all things considered, the own-root rose plant will outstrip its grafted competitor in the production of cut flowers and is superior for all other purposes. They argue that being "on its own legs," it must necessarily run longer and faster than when

tampered with by any artificial process.—By George D. Leedle, Springfield, Ohio, in the American Rose Annual, 1901, page 44.

Budded or Own-Root Plants

For instance, there is quite a difference of opinion as to the relative value of budded or grafted plants and plants on their own roots. I think we must all agree that budded plants are giving much better results as to vigor of growth and quality of bloom, but we realize that the average amateur grower may be better served with plants on their own roots, because there will be no danger of his losing his flowering plant through the unrecognized or unnoticed growth of wild suckers.

Now, I think we ought to at least give our friends, the customers, credit for ordinary intelligence, by telling them that if they will compare the foliage of a wild rose with that of a hybrid, they will soon learn to distinguish between a sucker and the real thing; and they will understand that by diligently removing the former they will have the very best results with the latter. Ardent lovers of flowers will be glad to learn that. For those who are too busy or don't care, the own root plants I admit may be better, but I believe it is only fair to state to the amateur the difference between the two, and let him have his choice.

If the roses are budded low, the stock eyes removed before planting and the roses planted good and deep, comparatively little sucker trouble will be encountered, and I for one shall want budded plants wherever I have something to say in this matter of choice.—American Rose Society, 1907, page 37, by Theodore Wirth, park superintendent, Minneapolis, Minn.

Trouble With Rose Stocks

"Only yesterday we were looking over a hedge of that exquisitely beautiful rose of the Rugosa type Parfum de l'Hay than which, in color and fragrance, no rose is more captivating. More than half the growth was from the stocks, and the scions in many instances were not only eclipsed but suppressed or decadent."—C. D. Beadle, Biltmore, North Carolina, in The American Rose Annual, 1917, page 51.

Elmira, N. Y.—"Plants going back to non-blooming plants of different foliage."—"Wake up, brother, or the 'suckers' will get you! Where have you been? These shoots of different foliage are not what you thought you planted, but the stock on which those varieties were budded. Cut them off, and if there is anything left of the variety you planted, take care of it. Any shoots arising from the ground, not from the stem, are suspicious and should be removed at once."—The American Rose Annual, 1923, page 53.

Rose Diseases and Insects

An excellent preventive for mildew and Black-spot on Roses is to dust the foliage when damp with dew in the morning with a mixture of nine parts dusting sulphur and one part finely ground lead-arsenate. Add one part of tobacco dust to this mixture to get the aphids. The rose-aphids or "lice" can be removed by a strong spray of water or by a solution of nicotine sulphate known as Black Leaf 40, one pound to 800

parts of water, with a little soap added to make it stick better. In a small way this means one teaspoonful of the nicotine sulphate or Black Leaf 40 to two gallons of water, and adding one ounce of soap. Either whale oil soap or common laundry soap may be used. This is very poisonous in its undiluted form and should be handled with care. The Rose curculio and Rose Chafer or Rose Bug are difficult to control. Hand-picking into pans containing a little kerosene will greatly reduce their numbers.

Rose mildew may be controlled by a spray of bicarbonate of soda (ordinary baking soda), one ounce to a gallon of water. Add a tablespoonful of washing or household ammonia to a gallon of this spray to control the aphids at the same time.

Best Methods of Winter Protection

South Dakota
North Dakota
Manitoba

A Paragraph on Protection—By Dr. John Donahoe, Sioux Falls, South Dakota in *The American Rose Annual*, 1928, page 73:

"In this climate of occasional, sudden extremes of temperature, from 35 degrees above to 20 degrees below zero, proper winter protection is the one big lesson I have learned in four years of experimenting. One bed of forty varieties, including Lady Plymouth, a Tea, came through two winters 96 per cent, owing to careful protection, while one end of the same bed has been constantly replaced where I did not use wooden shelters. All these roses were covered about 20 inches with earth brought in; then, after the ground was well frozen, covered with straw manure. Even this is not sufficient to raise healthy, strong, robust plants. It takes a wooden cover over the top to shed water and also to prevent the bright sunshine from thawing out the frost. I do not box up the ends or sides."

A. C. Ellerman, Yankton, South Dakota, gives his experience in winter protection of tender roses at Yankton in *The American Rose Annual*, 1928, page 68:

"I write merely as a rose enthusiast and culturist, willing to share experiences in the cold blizzard states where successful rose-culture has been looked upon as impossible until the last few years. Eighteen years ago, with a vision of the pleasure offered by growing the Queen of Flowers, I started on a career of rose development for the cold North. The beginning was with Hybrid Perpetuals and 'the row was hard to hoe,' until the requirements of winter protection were mastered. This has been done. Today, in my gardens, are found the choicest of Teas, Hybrid Teas, Hybrid Perpetuals, and, in fact, many of the varieties grown in the large greenhouses.

"Our good state, of which we are all proud, is termed the 'Blizzard State' but, in reality, it is a state of sunshine and roses, even if the temperature does drop to 40 degrees below zero in the winter. This very extreme change makes rose-culture in this locality a pleasure, and everyone should grow them. Roses budded to good roots, and given proper care and attention, can be grown here by anyone. In my late gardens the roses are in bloom from early summer until frost.

"Very late flowering is discouraged by removing many of the buds in

order that the plant may grow good wood and be properly seasoned for the winter. After the first heavy freeze, which hardens the wood of the plants, trenches are dug along each side of the rose-row or plant. These trenches are deep enough so that the earth removed from them forms an embankment 8 to 10 inches high around the plants. The trenches are then filled with water, so that the ground around the root system of the



FIG. 8.—WILD ROSES IN WINTER.
The abundant red fruits of wild roses are useful in autumn and winter bouquets.

plants is well moistened. The frost will then penetrate sufficiently deep to eliminate intermediate thaws and freezes which are very detrimental. When once the ground is frozen it should be kept so by proper mulching. Many plants are lost by going into the winter dry rather than well moistened.

"When the earth around the plants is partially frozen, place straw or leaves over the entire bed, insuring the retention of frost and uniformity of temperature. Straw or leaves alone, without the earth embankment, is not sufficient to carry the more tender plants through the winter. Also, when the early spring rains arrive before it is time to uncover, the contact of such material with the rose plants, if any have survived, is sure to cause mold and death to the plant. During the winter an occasional extra covering of snow will assist materially and in no way harm the undercovering. As spring sets in the straw is gradually removed and, about seed-planting time a light sprinkling of wood-ashes, bone-meal, or well-rotted manure is spread in the trenches and the earth around the plants replaced. The plants should be thoroughly sprayed with some good dormant spray, and the winter's work is complete."

Hardy Roses in North Dakota, by Professor A. F. Yeager, Fargo, North Dakota, in *The American Rose Annual*, 1928.—"The project at the

North Dakota Experiment Station was designed to determine what varieties of roses could be grown in the open with only such care as the average home-maker would be likely to give them. Our roses are planted in heavy clay loam soil, given clean cultivation, leaf-eating pests are kept down, and for winter protection the earth is mounded up in the center of the plant about a foot high. When speaking of hardiness and desirability, therefore, I mean that the roses have withstood the conditions mentioned and have given a reasonably good account of themselves.

"The following lists are made with no attempt at classification so far as botanical relationships are concerned. They contain representatives of many species which are of little importance to the majority of readers of the Rose Annual.

"In the hardiest group which have not winter-killed are the following: *Rosa rubrifolia*, Hansa, Persian Yellow, Tetonkaha, Belle Poitevine, *R. rugosa*, *R. rugosa alba*, Betty Bland and probably *Roseaie de l'Hay* and *R. laxa*.

"In the second hardiest group, which while they kill down considerably, yet practically always give good bloom, are: Sir Thomas Lipton, F. J. Grootendorst, Universal Favorite, Illinois, *R. hugonis*, Amelie Gravereaux, Conrad Ferdinand Meyer, and probably Sarah Van Fleet and Dr. E. M. Mills

"In the third group, which normally kills down to the ground-line but yet, with protection, produces abundant blooms, are: Crimson Globe, Princess Adelaide, Mme. Plantier, General Jacqueminot, and American Pillar.

"Selecting those which have attracted most favorable comment during the past few years, we would list: *R. rubrifolia*, Hansa, Persian Yellow, Tetonkaha, Belle Poitevine, Betty Bland, Amelie Gravereaux, Crimson Globe, Mme. Plantier, General Jacqueminot and American Pillar."

Winter Protection of Roses at Fargo, North Dakota.—Dr. James P. Aylen, Fargo, North Dakota, writes in the American Rose Annual, 1928, page 81: "For winter protection we hill up the plants without disturbing roots, just before the ground freezes, making the hills 10 to 12 inches high. The holes from which the soil is taken are filled with leaves and we cover the rest of the plants with hollyhock stalks, and the like, on top, to keep the leaves or straw from blowing away. A strip of chickenwire is a good substitute for 'roughage.' Tar paper or a tarpaulin may be thrown over the top. Climbers are laid on the ground and covered with 6 inches of earth and a strip of tar paper.

"Most roses need pruning. The Rugosas need only the dead stalks removed, and climbers are best treated the same way unless wanted as pillars. Hybrid Teas need vigorous pruning in the spring to get the best blooms, but if a generous piece of stem is cut with each flower, they will need little more pruning."

Winter Protection of Roses at Grand Forks, North Dakota.—From a report by Dr. H. G. Woutat, Grand Forks, North Dakota, in the American Rose Annual for 1928, pages 75-76: "I have tried various methods of protecting climbers, but I find earth to be the best protection as it does not respond to sudden changes in temperature as other covering material does, and it does not permit evaporation, which is an important factor in our dry atmosphere.

"When the ground freezes, which is usually about November 10, it stays frozen until spring. About the first week in November, I give my climbers a good soaking if there has not been much rain during the preceding few weeks. This fall I also sprayed the bushes as well as the ground around them with Semesan. I did this with the idea that probably a great deal of our winter-kill is due to disease. After spraying, I loosen the canes from their supports and tie them into snug bundles. When this is done, their weight will just about carry them down to the ground, but before putting them down flat, I elevate the surface on which they are to lie several inches by shoveling up some ground. This is to prevent the canes from lying in puddles produced by melting snow in spring. The bundles are now put down and about 6 inches of soil shoveled over them. The whole thing is then covered with tar paper, care being taken to leave the ends open to provide ventilation, and the job is done. This process is simplified if the climbers are planted where the ground to cover them is close by.

"Hybrid Teas also need careful protection. After watering and spraying, as for the climbers, I tie the branches snugly and hill them up as high as possible with the ground from the rosebed. Then I bend down the tops and add more ground until they are entirely covered. Stakes are driven along each side of the bed and, around the bed, outside of the stakes, is run wire netting about 18 inches high. This netting is then filled with leaves. I am careful to put the leaves in when they are dry and not to pack them. Supports are then nailed to the stakes on the two sides, one side having been made several inches lower than the other, and boards are placed over the bed, resting on the supports nailed to the stakes. These boards serve a double purpose: They keep the leaves dry, preventing them from matting, and they keep moisture from the plants. Roses winter better if they are kept dry, as, during our long spring, if moisture gets around the stems, bacterial growth is more likely to develop. It may be that tar paper would serve the purpose as well.

"About the middle of April I begin to uncover the roses, and by May 1, or when the peonies begin to come up, the rest of the protecting material is removed. A number of times, to my regret, I have removed protection too early when we had a period of fine weather early in April."

Roses for Manitoba.—By F. L. Skinner, Dromore, Manitoba. From The American Rose Annual, 1928, page 83: "In the order of hardiness at Dromore I list a *Rugosa* hybrid, usually sent out under the name of Kamschatka, Betty Bland (a hybrid of our native *R. blanda*), Tetonkaha, Burnett (a double white variety of *R. spinosissima*), Hansa, Banshee (a variety of unknown origin sometimes called the Cabbage Rose in eastern Canada), the true Cabbage Rose (*R. centifolia*), Maiden's Blush (*R. alba*), and Stanwell Perpetual (a very fragrant and free flowering *R. spinosissima* hybrid).

"My experience goes to show that protecting material, to be effective, must be dry when applied and of such texture that it will stay dry until removed in spring. Under these conditions the following materials have proved equally effective: Ordinary garden soil, very old thoroughly decayed stable manure, leafmold, and peat. Any material which is applied wet or which becomes wet and sodden during winter is worse than useless, and roses under such a covering are almost invariably moldy and decayed at the crown even though the exposed portions may have been uninjured."