HOW EVERYONE MAY GROW BEAUTIFUL ROSES

FREDERICK V. HOLMAN'S ADDRESS TO THE PORTLAND ROSE CLUB VALUABLE ADVICE FROM A PRACTICAL ROSARIAN

At the last meeting of the Portland Rose Club, Mr. Frederick V. Holman, one of the most successful amateur rosegrowers of the city, delivered an address on how to grow the world's favorite flower. What Mr. Holman said, in substance, follows. Additional to the instructive talk, he prepared a list of roses suitable for general cultivation in Portland and Western Oregon, together with valuable hints. These will be published in next Sunday's Oregonian.

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THE rose is what might be called the people's flower, for the reason that it responds not only to the greatest care and attention, but will grow well with very little care and attention, but will grow well with care,—scarcely any, in fact. You will see wild roses growing out in the woods, in places where the soil is not rich, and on hillsides where the location is not advantageous. They grow everywhere in the temperate zone with little care, but they respond to treatment better than almost any flower that I know of.

Portland, by reason of its climate and soil, and particularly its climate, is what might be called an ideal place for roses to grow. By reason of the softness, gentleness and evenness of our climate, our roses have a beautiful coloring and luxuriant growth that cannot be had under less advantageous conditions. In the State of California, known as the "Land of Flowers," roses, particularly the Hybrid Perpetuals and the Hybrid Teas, arrive at only partial perfection—a perfection that satisfies Californians simply because they do not know better; but all the people of California are surprised when they come to see what wonderful roses we grow here in the City of Portland. It is because of this that it seems proper that Portland should be, and that we ourselves should make it, pre-eminently the City of Roses.

If the Lewis and Clark Fair should happen not to be a success, if it stimulates us to beautify our yards and our streets and makes roses grow in every part of the city, we have accomplished a great result, and one of which Portland may well be proud. Once having established Portland as the "Rose City," there will be no question about its continuing to deserve the name.

Mr. Sibson's lecture recently on roses was a most admirable one. He is an amateur expert. He dwelt upon producing specimen roses, such as cannot be grown in many parts of the world. There is no person that I know of, professional or amateur, who knows the subject so well and has had such magnificent results, due to patient care, work, and knowledge, as Mr. Sibson. It is a lecture that every one should get a copy of, for future reference. You will need it after a while. I am not going to alarm you by telling you how much trouble and work rose culture will entail upon you. If I can persuade you to grow roses I will take all the chances on your needing Mr. Sibson's article in the course of two or three years. You need not worry about the work that you are going to be required to do, for your interest in and love for your rose garden will grow. You might as well worry about the number of thousand feet of bread you will be required to eat before you die. In each case you will do it because it pleases you to do it. Anything that is to you a pleasure you will always wish to do. Whenever a person complains that he cannot do a certain thing because he has no time for it, I simply know that he does not really desire to do it. Whatever we really want to do, we will find time to do, and will do.

Now, to get you interested, I am going to assume tonight that you know nothing at all of the subject, taking the position that the professor of mathematics used to take when I was at college. He would say to me, "You must assume that I know nothing at all about the subject that I am asking you about, and I want you to tell me all about it, as if I were merely an intelligent person and had never heard of this proposition in mathematics; explain it fully." And so if I go down too far into the A B C's of the subject, those who are in the first or second reader need not listen, although I find that with a great many subjects we become fully acquainted only through iteration and reiteration, and if it is a subject that we like we can hardly hear too much of it—unless we hear too much of it at one time—which punishment I will endeavor not to inflict upon you at this time.

Let me compare the growing of roses with photography. To the beginner in the photographic art a snap-shot camera is all sufficient for a time—for all time, in fact, if he is willing to be satisfied with it. Mr. Sibson told you how to grow show roses, how to go beyond the snap-shot stage in rose culture; I am going to tell you how, in growing roses, as it were, to take "snap-shot pictures," and if I do not explain to you how to make carbon or gum process prints it is because those are matters which are not the subject of discussion tonight.

Success With Roses Is Not Luck.

Many people, a little superstitious, have an idea that there is something in luck in growing roses, and they say, "I have no luck in flowers, they will not grow for me." While I do not believe in luck at all, in anything, I know that luck has nothing to do with growing roses successfully. A rose is almost a sentient thing. I know that a rose appreciates loving attention, and if you will give the rose all that it wants, give it lavishly, loving care and attention, it will respond with a love something like that of Annabel Lee,

Died without other thought,
Than to love and be loved by me.

Position.

Practically the first point of importance in the growing of roses is what may be called position, that is, where to put them. A rose is, to a great extent, a sun flower; it will not grow in the shade altogether, and people who wish to have a yard full of trees and shrubbery cannot have a yard full of roses at the same time. A rose must have the sun at least half the day. If your place is situated so you can arrange it, let it have all the morning sun. Do not put a rose bush in the shade, if you can help, that is, in the direct shade of tree or house, but put it some place where there will be something to break the wind, and something to keep off the hot rays of the afternoon Summer sun. It is true a few roses will stand the sun all day, like it and thrive, and one of these is the beautiful white climber, Mme. Alfred Carriere. It seems to like sunshine. I have four bushes of it, and the very best one I have is at the south end of the house, where it gets the sun all day long, and being near the house, the warm reflection from the house as well. Of the colored roses, non-climbers, the Mme. Caroline Testout, will stand more sun and thrive than any rose I know of. It will bloom right in the middle of August, and bloom well. La France requires some shade—it does not want the sun all day.

In this matter of position we cannot all, in small places in the city, have always just what we would like to have. At my own place the house is on the east side and my roses on the west side of the ground. They would do better if the reverse were the case, but I do the best I can under the circumstances, giving the more sunny locations to those roses that I have found from experience need the sun more than others. There are a few roses, but very few, that will do quite well in some shade, but if you have very much shade you cannot have fine roses.

I do not speak wholly from the result of my own experience in these matters, but from what I have gathered from books as well, and from the experience of professional gardeners. When I find from a study of books on the subject that the experience of Dean Hole in England and Ellwanger in New York agree with my own experience along similar lines, I think I may say definitely that I am correct, not because I say so, but because other people competent to speak have the same experience, and I have found it so.

Drainage.

There is another thing that is very important in Oregon, and that is the question of drainage. Our soil is one of the finest there is in the world for roses, for they like a heavy clay soil, but they want it rich to do the best. Our soil, generally speaking, is clayey, and it packs from the heavy Winter rains. I know that many of you cannot have the drainage that you would like. If your ground is terraced from one to two, three or four feet it will drain itself very largely; if it is level with the street or a little below the street, you cannot have perfect drainage unless you are connected with a sewer, but there is a way of draining roses that every person can have if he will, and that is, when planting roses, make a hole two to three feet deep and fill in the bottom with broken stone or rock, charcoal, clinkers from the furnace, or anything that will not decay, to the depth of six to eight inches, according to the depth of the hole, and the rose will drain itself. Of course the ideal way is to have a subsoil drain of terra cotta pipe, as farms and nurseries are drained, but that is more or less expensive, and in making Portland a Rose City I do not think people ought to be called upon to spend too much money, hence I mention a way in which the soil can be drained cheaply and efficiently.

Planting.

Planting should be done, if possible, with comparatively dry soil—a very difficult thing to do sometimes. By dry soil I do not mean dust, but I mean soil which breaks all at one time in that beautiful way that a gardener likes, when the spade is put into it and it is turned over. For myself, I get leaf mold from Sauvie's Island, where I go duck shooting. This is as black as gun powder, even when it is dry. A similar mold can be found in the forests or woods around Portland, but if you cannot get that the best thing to do is to get well rotted stable manure, mixed with from two-thirds to one-half soil.

Any one can make leaf mold by gathering up the leaves from the sidewalks and streets in the Fall and putting them in a sugar barrel or other cheap barrel, pressing the leaves down as much as possible, and leaving the barrel uncovered so that the rain will wet the leaves and cause them to rot. By the next Spring each barrel will be nearly two-thirds full of black, pulverized leaf mold ready for use, and this is the best material in which to plant roses that you can get in any way. Hundreds of tons of leaves are carried away by the street-cleaning department each year which should be saved and used.

I use my hand in planting roses, for you know that after all the best tool is your right hand—unless you are left-handed. Make the hole at least two feet deep. Fill the hole to near the top—you do not want to plant your roses too deep—then take the rich earth, not too wet, and press it down with your hand about the bush, so that there will be actual contact of the root with the soil. If you have quite a large hole and a large bush, you can step on the soil gently and firm it down—gardeners sometimes use the handle of a spade and pound it down, but with small roses the hand is the best tool. If you plant when the soil is very wet it will cake, and the tender roots—the white roots—which really give all the sap and substance to the plant, will not penetrate this hard soil. There is another thing to be taken into consideration; the hardy varieties, the hybrid perpetuals, are better planted in the Fall, and it is better to get low-budded roses for that purpose, which, however, are more or less expensive. These should be planted so that the point of budding will be about three inches below the surface. You may plant well matured plants of the hardier varieties in the Fall, but do not plant teas at that time, for they are very tender and delicate, and we often have a cold snap in December or January which will kill them if they are not well rooted, and you will simply lose your roses. A great many of the roses that you buy from florists here or in the East are very small plants, with no earth about the roots. These should be carefully pruned when planted, and if the roots are more than four or five inches long cut those off also to that length, because the nearer the sap roots are to the plant the better the plant thrives. Cut off, also, all rosebuds on such plants. I know when you get a new variety you are very anxious to see what it is going to do, but the fact is that the blooming is a tax on the vitality of the plant. When it is young and tender, just out of the hothouse, it needs all the vitality that it has in order to grow strong and vigorous. While early blooming may not kill your plants, it enfeebles them, and they are liable never to be hardy and strong, just as feeble children are very liable to grow into weak men or women.

Pruning.

The next important step is pruning. The time to prune in this climate, above all others, is in the Spring, but sometimes if you have enriched your ground, and you have strong-growing varieties, other than climbers, you will find that they will grow six or eight feet in a season, and it is a very good thing, along in November, to cut off two or three feet from the top to keep the limb from swaying, for I have seen rose bushes break loose from being exposed to the wind when they are top-heavy. But do not do your full pruning in the Fall, do that in the Spring. Some of the ends of the branches when cut lose sap and become feeble, and they will Winter-kill at the end, and if fully pruned in the Fall you may damage them, and you will have to do your pruning all over in the Spring.

In pruning be careful to cut out the center of the bush and let in the light. The usual rule in pruning is to prune severely the dwarf-growing bushes and to prune lightly the strong-growing ones. If you wish many roses you should prune less severely than if you wish but a few. But the rule which I have just announced must not be observed in climbing roses, which must be pruned merely to make them shapely, nor with the Austrian briers. If you prune them severely the bushes will run to wood and you will have but few flowers that season.

Manures.

It is impossible to discuss successful rosegrowing without taking up the question of manures. I find that the very best single manure that can be used is cow manure. In the Fall it can be used perfectly new. I learned years ago from a German gardener, of knowledge, skill, and experience, that new cow manure will not heat if put under the ground. Of course, if other substances, such as straw or horse manure, are mixed with the cow manure, they will heat and are liable to do damage. I have planted roses in the Fall, using almost new cow manure in close juxtaposition to the roots, and they were not hurt at all, but were greatly benefited thereby.

For most purposes the best manure covering to use in the Fall is new cow manure, put on from four to eight inches thick. The earth-worms soon congregate under this manure, and as the weather grows cold they go down into the soil, making the soil porous, and, the rain, soaking through the cow manure, becomes rich with ammonia and is carried down deep into the soil. But for these earth-worms a clay soil would be rich only on the immediate top of the surface. They are one of the greatest aids in making the soil rich as well as friable.

Horse manure should ordinarily be used only when thoroughly rotted. It may be used perfectly new as a top dressing in the Fall, but it is necessary not to have it too near the rose bushes, for unrotted horse manure generates heat, and is liable to kill the bushes. Horse manure is said to be particularly good as a top dressing for heavy clay soils, which become very wet or where the soil is not well drained.

Chicken manure is a fine fertilizer. It is very rich in ammonia, but should be used sparingly, not because it heats, but because it is so very strong that it will kill plants and roots by reason of the chemical process going on when the uric acid changes to ammonia and water.

Some rosarians advise the use of well-rotted stable manure, that is, manure that is composed of the manure of the cow, horse and chicken. This well-rotted manure has lost nearly all of its ammonia, and while of some value has not the value of cow manure when fresh. But if horse manure, in any variety, is mixed with other manure, it cannot be used under ground, unless thoroughly rotted.

There are other kinds of fertilizer much pleasanter to handle, and which are very necessary to our soil, for it is lacking, a little, in phosphoric acid, in lime and in potash. Potash you can obtain from hardwood ashes; softwood ashes are of little value. Potash is one of the things that all plants like. If you want to use lye for plants, give them very weak lye water made with corbonate of potash, not the carbonate of soda. Both of them are effective as a lye, but for plant life get the potassium, and not the soda. There are other mineral fertilizers that you can buy. Bone dust should be used very finely ground. There is one form of bone dust that you can buy which has been treated with weak sulphuric acid, and that sets the phosphoric acid free, and all plants need phosphoric acid. Chili saltpeter, which is the nitrate of soda, is good, but must be greatly diluted.

Spraying for Pests.

If you wish fine results, you must spray. You can do this with Bordeaux mixture, which is obtainable at any of the florists' shops, and they also have spray pumps, from wagons down to hand sprayers. By diligently spraying you will keep off a great deal of mildew and the yellow leaf, and in some instances prevent aphis from bothering your bushes. We have two or three different varieties of scale. We have that great pest that came from Australia, called the San Jose scale, which gets into our shade trees and rose bushes to some extent, and nothing will kill it but spraying. The time to spray is just before the growing season, late in February or early in March. If you do not do it, the scale will kill your bushes. I have seen bushes in the yards of my neighbors simply white with scale. This is very hard on the neighborhood. However, if you will not spray on account of consideration for your neighbors, do it on account of yourself and the rose bushes. In the East they are not bothered with this scale, nor in England, but to compensate they have a great many pests that, fortunately, have not as yet come to us.

Aphis.

The aphis is a great pest. It is a little green fly that multiplies with tremendous rapidity. It is sometimes called plant louse. The very best way is not to have them; the way not to have them is to have your plants absolutely healthy. But Dean Hole says that his plants, in a very wet, backward Spring, were not exempt. Ordinarily you can prevent the ravages of the aphis by keeping your bushes healthy; otherwise it is almost impossible to get rid of them, in spite of all sorts of remedies. One method of disposing of them is to boil four ounces of quassia chips or tobacco stems in a gallon of water for ten minutes, and then throw that on with a brush or any kind of a spraying apparatus. Another way, that is used in England, is to have a long, soft brush, similar to one that jewelers use, and brush them off. But a local gardener takes the hose, puts his finger on one side of the nozzle, and thus knocks them right off the plant. Do not kill the lady bugs. Do not scare them away. Let the ants alone; they will not hurt you, they take a great many of the aphis; and do not kill the pretty birds that play about your door. You think they are hurting your roses when they alight on the bushes; but they are not; they are after the aphis. In California the lady bugs, or lady birds, as they are sometimes called, are a great nuisance, because they multiply so quickly there, but they do not do it here. A certain variety of lady bugs has been introduced in California, for the purpose of killing the San Jose scale. These are all Nature's assistants, for they destroy the aphis; but if you will make your rose bushes healthy you will not be troubled much with the aphis.

Rose Caterpillars or Leaf-Rollers.

We have another pest—the rose caterpillar or leaf roller. It is a small worm about an inch long, with a black head and green body. Very soon they will be coming. Usually just about the time the rosebuds begin to form you will find two or three leaves gathered together, and when you open them out you will find a little worm. Kill it! There is no other way I know of to get rid of it. If you do not kill it, it will get tired of living on the leaves and will curl itself right up to a rosebud and ruin it. This is one of the pests that we have that you cannot get rid of except in the manner I have mentioned. You must look carefully around your rose bushes, and soon you will become an expert, and notice that whenever the leaves are together there is a leaf roller in them; occasionally it is only a spider, but it is not dangerous. When it is discovered it will be as frightened as you are. In almost every instance when the leaves are together it is a rose caterpillar or a leaf roller.

Mildew.

Mildew is another pest. It is, of course, of vegetable origin. The best way to keep mildew off is to have your bushes healthy—neither aphis nor mildew will attack healthy bushes, under ordinary circumstances. If you have a Giant of Battles in your garden, dig it up and burn it, leaf and branch; don't make any one a present of it. It is a very bad rose to mildew, and mildew spreads from bush to bush. Mildew spreads very rapidly, but I know of nothing that will prevent it except spraying early in the spring. Mildew can often be cured by putting on a mixture of one-third powdered lime with two-thirds powdered sulphur. Place this in a bag made of cheese-cloth and shake the bag over the mildewed leaves early in the morning while the dew is still on the leaves, otherwise it will not adhere to the leaves and will do but little good. The books say that soot is even better, but that is very disagreeable to handle. Soot may also be applied from a cheese-cloth bag.

Yellow Leaf or Black Spot.

Another pest that we have here is yellow leaf, or black spot. You will find black spots starting on the leaves of your roses. These spots will spread and may be there will be two or three on one leaf and finally the whole leaf will be affected with it, and it will turn yellow. The best remedy for this is, of course, spraying in the Spring, to kill the germs; and the next best remedy is to cut it off and burn it—do not merely cut it and drop it on the ground, because that spreads the plague. If this pest makes its appearance before the flower buds are nearly ready to bloom, a very weak solution of Bordeaux mixture may be used with success.

Fall Blooming.

In July do not give your roses, except very young plants, any water. Let them stand until about the middle of August, and then give them all the water you can, and at about the same time prune the bushes. If you do this, in September and October you will have a great many beautiful roses. All roses do not bloom equally well in the Fall, but nearly all the hybrid tea and tea roses have then the most delicately colored roses of the year.

Disbudding.

Roses which do not bloom in clusters produce naturally fine, large flowers. Most roses grow in clusters, and if from these you want magnificent specimens, you must disbud, leaving but one bud on the cluster. If you want plenty of roses, let them alone, but you cannot have both large roses and plenty of them, except from some of the climbing varieties.

Watering and Sprinkling.

Do not water your roses too much. Many people water them every night. Of course, the young plants must be watered, and for this purpose it is better to take water from a barrel which has been standing in the sun in the yard, because our Bull Run water is too cold for young plants, and will damage them. But when your roses are well established I think the best way is to water them very little, if at all, until August, but if you must water, let it not be oftener than once a week or 10 days, and when you find the leaves becoming limp. Let the water come from the open butt of the hose. Many people are afraid to sprinkle the leaves. This is one of the superstitions almost as bad as believing that the moon affects the weather. Most people have an idea that the leaves are like the lungs of the plant. The crude sap comes up into the they do not inhale air or anything else. They are more like the stomach of the plaint. The crude sap comes up into the leaves and is there made into plant-food and returned, through the main stems to the branches, causing the plant to grow. This is one of the reasons why the top branches of a rose grow more quickly than the lower branches. Under each leaf there are pores called stomata. If these pores become clogged up the plant will not be healthy, just as a human being can not be healthy when the pores of the skin are clogged. Ellwanger advises spraying roses because it will drive away insects and often wash away eggs laid on the under side of the leaf. In the Summer time it is well to spray occasionally, but do not spray too often and do not spray when the buds are ready to open or the roses are in bloom, for the water is liable to affect the color of the roses. Especially is this the case with dark red roses. That the leaves are helped by being sprayed is noticeable in the Summer when we often have rainy days. The rain not only makes the leaves beautiful, but it is often noticeable that before the rain they are listless, and afterwards they appear to be revived.

Mulching.

Instead of watering when the weather is dry, it is often well to dig the ground around the bushes with a garden fork and then put on some substance as a mulch. In England cocoa nut fiber is often used for that purpose. Any substance that will let in the air and keep the direct rays of the sun from the ground is good. I have used the grass when the lawn is cut to put around the roses and find it very effectual. When a mulch is used you will find the soil damp around the bush when just outside the mulching material the top of the ground will be dry as dust.

Winter Protection.

Do not protect your roses too early in the Fall. I do not put any protection on mine at all, except a manure covering, of about six inches of new manure, but if you must protect, put the covering on when it gets cold, not before. If put on early in the Fall, when the weather is warm, you will find that young shoots will grow, only to be destroyed in freezing weather. When removing the protection from your roses, do not do it during the bright, sunny days of February and March, when you find it pleasant to be out in the yard. Take it off in the rain, a little at a time, and the last of it when the weather man says there is going to be a rain storm. If you remove the covering in the bright sun, your bushes are liable to be seriously injured, and sometimes killed.

Digging Beds.

In the Spring it is well not to dig the beds until the ground will easily pulverize as it is spaded. I usually do not have my beds dug until the weeds and grass in the manure covering has begun to grow. When the weeds are then dug under the ground there are no seeds left to germinate, and I have hardly any weeds during the whole Summer. The best plan, however, is to give a full digging as early in the Spring as possible and a less deep one later. For the best cultivation the beds should be again dug in the Fall before the manure covering is put on.

Propagation of Roses.

As many people feel that they cannot afford to buy plants, I wish to tell how roses may be propagated with little expense. There are two ways of propagating roses—by budding and from cuttings. Grafting is rarely resorted to in the propagation of roses, and is a process which can only be done successfully by an expert. Budding is very simple and does not require the use of strength nor any great skill. Any one can do it if they first learn how. I cannot teach you merely by words how to do it, but any person who knows how to bud can show another in a few minutes how it is done. The main principle is this: The bark on the bush which is to be budded on is first cut with a knife and then loosened with the bone part at the end of the budding knife. The bud to be used is cut from another bush, cutting the bark about a half inch above, and from a half inch to a full inch below the bud. The bark may be removed by using the thumbnail, and the piece of bark so removed is placed in the receptacle made for it in the bush to be budded on, and when inserted is carefully wrapped with some soft material. Professional gardeners usually prefer a grass which comes from Sumatra. I have found personally that what the ladies call "double zephyr" is most excellent for the purpose. Double zephyr is strong and soft and does not hurt the bark. If budding is done in the Summer time, it is well to cover the bud with a newspaper or with leaves to keep the sun off for at least two weeks. Usually by that time the new bark has become attached to the bush on which it has been placed and the wrapping material may be loosened, for, if the bush starts to grow strongly, the wrapping may cut into the bark and kill the bud. In many instances the bud lies dormant until the succeeding Spring, when it will grow exceedingly well. When the growth is started cut the wood from just above the bud with a sharp instrument, a knife or pruning shears being best, and it is well to place on the exposed surface a little damp, rich earth, pressed down with the thumb. This material is often called gardener's wax, and keeps the surface from becoming too dry and assists nature in covering over the wound with new growth. It is well, after the bud has sent up a shoot at a height of several inches, to pinch off the top of the new stem. This causes the bud to fasten well on the main stem and also usually causes an additional shoot to start out on each side of the first shoot.

It is important in budding to soak well several days before the operation is performed both the plant on which the bud is to be placed and the one from which the bud is taken. By giving them this quantity of water the sap starts freely and the bark is easily separated from the wood.

Budding may be done at any time immediately after the first blooming in June until the middle of October. Some florists prefer to bud in the Fall. I have found by experience that September is one of the best months in which to bud. If budding is done in the Fall the buds almost always lie dormant until the following Spring, and I consider this a great advantage. If the budding is done in the Summer time, especially in June, it is well to bud immediately before the time rain sets in, for then the bud has the advantage of a few days of cool weather in which to become accustomed to its new home.

You may bud on the shoots from manetti, from the dog-brier, and on several of our natural wild roses, or on almost any hardy rose with the flowers of which you are not pleased. If you wish you may make a climber by budding roses on a perfectly hardy, climbing rosebush, placing the buds at different heights on the stalks of the climbing rosebush.

Propagation by Cuttings.

The other means of propagation, and the one that is more easily done, is from cuttings. By "cuttings" are meant what is often called "slips." The easiest way to propagate from slips in this climate is in the Fall. Take the cuttings a foot long and put them in the ground to a depth of from four to six inches. Have the earth rich, but no new manure in it. Let the soil be black, but not subject in any way to fermentation or to heat. If cuttings are put in in this way, in October or November, and then covered over with straw or leaves, if the varieties be delicate, they will, early in the Spring, form what is called a callus, and from this callus roots will be sent out, and you will have your roses well established. This same process may be tried in the Spring, when the roses are pruned, but one is not liable to have such success as when done in the Fall.

The surest way to propagate them from cuttings, however, is after the first blooming in June to the middle of September. The cuttings should be made with a sharp instrument so as not to be bruised in any way. They may then be placed in a box or in pots. The earth should be the same kind I spoke of in which cuttings should be placed in the Fall. It is well to mix a little sand with the earth. When the cutting is put in, press the earth close around it with the hand, and then pour water over it gently so that the earth will settle around the cutting. If this is done late in the Fall the cuttings will have to be placed in the house so they will not be interfered with, but you will have the trouble of looking after them all Winter.

When cuttings are set in the Summer they should be placed in the shade so as to have almost no sun, otherwise the sun will dry the cuttings and they will die. If grown in boxes, after the callus is formed and it has become too late to plant them in the ground, it is well to place them in small pots. They should not be placed in pots larger than 2½ inches, that is, pots 2½ inches in diameter at the top. Roses do not grow well in large pots unless they have very strong and well-matured roots.

Some people place the slips in sand and keep the sand moist. This is a good way to do it until the callus forms. They must then be removed, as the sand carries little if any soil or other material on which the roots can obtain nourishment. A very good plan for propagating cuttings is in a box. Make a depth of soil of several inches, and place on top of that about two inches of coarse sand. Place the cuttings in the sand to the depth of about one-fourth of an inch above the soil, so that when the roots start from the callus they will almost immediately grow into the soil.

A number of hybrid perpetuals will not grow from cuttings. This is especially true of the Baroness Rothschild family, and some of the most beautiful of the crimson-maroon roses. Nearly all of the hybrid teas and teas grow from cuttings without much difficulty.

How New Varieties Are Produced.

One way new varieties of roses are produced is by sports, which are extraordinary shoots coming from the roots, and are similar to the parent, but often varying in color and in growth. All the climbing varieties named for bush varieties are sports from the bush varieties. There are six well-known roses which are sports from the Catherine Mermet, and there are four sports from the Perle des Jardins.

But the usual way of producing new varieties is from seeds. One method is to plant rose seeds without hybridizing. As almost all roses are hybrids, the seed will not produce the same kind of roses as the parent, so that when a seed is planted it is not known whether the variety will be good or not, and it usually is not.

Another way of growing from seed is by what is called hybridizing; that is, mixing the pollen of one kind of rose with the pollen of another. The families of hybrid perpetuals and hybrid teas have been formed in this manner. Of the new roses, the Balduin or Helen Gould is a cross between the Kaiserin Augusta Victoria and the Madame Caroline Testout, and the Winnie Davis is a cross between the Kaiserin Augusta Victoria and the Belle Siebrecht.

FIRST MAN WHO STEERED AN AIRSHIP

INTERVIEW WITH ALBERTO SANTOS-DUMONT, THE MOST DARING INVENTOR IN THE WORLD

NEW YORK, April 14—(Special Correspondence.)—The most daring inventor in the world; the absolute personification of indifference to physical dangers; a man who has carried into practical execution things which but three years ago were laughed at as the ravings of a mad-brained fool—such is Alberto Santos-Dumont, the only man in the world who has successfully navigated an airship into the teeth of a strong breeze; today the most interesting figure in the mechanical inventive world; but a year ago laughed at as an impractical theorist, who, if he had the courage of his convictions, would find his theories shattered by the dashing out of his brains in the collapse of one of his crazy schemes; today courted by everyone, a short time ago shunned by everyone.

The change is indeed a startling one. Santos-Dumont today is barely 28 years old. In the last four years he has accomplished what all the inventors and scientists from the beginning of the world have pronounced to be impossible; and, with apparently the best part of his life and career before him, who can tell what he will do, or to what lengths his genius will lead him. Already he has laid the foundation of such a revolution of existing conditions as has never occurred before in all the revolutionary and turbulent periods in the world's history.

Santos-Dumont bears his laurels modestly, yet at times, especially when he talks of his work and what he will do in the future, he has an air of such absolute self-confidence that he seems almost boastful. Yet a close study of the man shows that he is not boastful. He is simply so absolutely imbued with the convictions of his own theories that he speaks of them with the same confidence that one makes the statement that two plus two make four. When one hears of the wonderful nerve, the coolness in the face of danger which would appal the stoutest-hearted man in the world, the absolute indifference to risk which this young man has displayed time and again in his flights with his airships, one expects to see a big, lusty, bold-eyed fellow with a gigantic frame and muscles. The contrast of this ideal with the real Santos-Dumont is so great as to be ridiculous.

Santos, as he prefers to be called, is a little, thin, swarthy-skinned chap of 5 feet and maybe 4 or 5 inches. His face would be effeminate were it not for the thick, though closely cropped, mustache which shades his upper lip and lends strength to his whole face. His chin shows, however, from whence he gets the dogged stick-to-itiveness and the wonderful grit which has enabled him to keep on working until at last he has reached his present eminence. The lower jawbone is long and angular, and when he closes it the protrusion of the muscles denoting determination is very pronounced. The roof of his mouth is inclined to protrude also, and his lips are a trifle thicker than the average. He is not a handsome man. His teeth are, however, beautifully white and regular, and his smile is charming. It spreads all over his face, beginning with his eyes, and as it steals over his features it softens and lightens them delightfully.

ALBERTO SANTOS-DUMONT, FIRST MAN TO MANAGE AN AIRSHIP.

Santos talks with a captivating little accent, which is just foreign enough to capture the heart of any girl, aided and abetted by his big black eyes. These are his best features, and, with his black hair, tell of his Southern origin.

Effeminate in Appearance.

It is his voice, too, which is low and strangely gentle, that somehow conveys the idea of effeminacy, which one cannot help but feel no matter how often one is reminded of his daring feats of courage.

The effect is added to by a gold bracelet which Santos wears on his wrist, although his sleeve hides it except occasionally, when some gesture of the arm shows it for a moment. This is rare, however, for Santos thinks much more than he talks, and talks much more than he gestures. This is rather rare in a man of his education and breeding, for he was born in Brazil and educated in Paris. Of one trait which is practically universal in humanity, to judge from his past life and his talk since has has been in America, he has not an atom. This is avarice. His neglect to patent any of his machinery, or his ideas in the construction of his airships, is really wonderful in this age of commercialism.

He is not only the man who has solved the problem of the navigation of the air, but he is the man without the desire for money. There is but one more thing lacking to make him really the eighth wonder of the world. Had he been able to understand the blandishments and charm of the American girl he would indeed have been so, but no; like all the other foreigners and citizens, when the American girl is mentioned they throw up both hands and exclaim: "Ah, she is indeed great—the prettiest, the most charming, the leader of all."

Wants Others to Improve Inventions

Santos-Dumont said: "Do I believe in the practicability of the airship? I most certainly do. Not only for the purpose of sport or pleasure, but for commercial purposes as well. Why, in 10 years I firmly expect that there will be a line of airships crossing the Atlantic Ocean at such a rate of speed and in such a degree of comfort that the present-day ocean liners, magnificent as they are, will seem fitted only for freight-carriers or people in search of the healthfulness which comes from making a journey on the sea.

"Why, the possibilities of the airship have simply never been dreamed of. Three years ago if any one had said that a man would be able to sail an aerial vessel to and fro without regard to the wind, he would have been called a fool; yet today I have accomplished such a feat, and this, I do not hesitate to say, is but the beginning of what I will do.

"But do not misunderstand me, and think that I think only of myself. I hope that every one who is interested in aerial navigation will come to see my ship when it is set up, and that its construction may help them to ideas which in turn may lead to improvements upon this one. Nothing is patented. I make every one free to use for his own any idea or piece of mechanism in the Santos-Dumont, as I call my ship.

"The speed that airships will achieve in time is so nearly illimitable that I do not care to make any predictions at all regarding it, except that I think 100 miles an hour will be considered merely ordinary speed.

"As far as the danger of the airship is concerned, I do not think it is more hazardous than traveling by rail or steamer. In my airship it is almost impossible to fall swiftly, because of the construction. In one of my earlier machines I fell from a height of 600 meters, but was not injured.

His New Airship.

"With me I have brought the framework and machinery for the Santos-Dumont, No. 7, as I call the next airship I am building, and it will be much larger than any other I have built. It is between 160 and 170 feet long and about 25 feet in diameter. These, of course, are the balloon part dimensions. The motor is of 45 horsepower and weighs 730 pounds. This ship, I am convinced, will carry at least five persons, and maybe more. I have never taken any one into the air with me, except, of course, in balloons, but if I try a flight in America I should be glad to do so. I cannot, however, make any flights in America unless there is a sufficiently large prize offered to cover the expenses, for a flight costs several thousand dollars.

"Of course, when airships become more common, the cost, both running and initial flight, will be greatly decreased, but there are certainly vast sums of money in the airship business for any one who will put up a few thousand dollars now to promote inventions and arouse more interest. I am confident that there are many men in America who would do this if they once saw my ship fly, and for that reason I am particularly anxious to arrange for a flight. I go back to London in three weeks to run the Santos-Dumont, No. 6, in the airship contest in London during the coronation week, but in July I will return, and the Santos-Dumont, No. 7, will be ready for flight. I came to America really to confer with the directors of the St. Louis Exposition regarding the conditions they will insist upon in the contest for the $200,000 prize at their exposition.

"New York offers a great and a most severe test to the airship, for its buildings are so tall and so close together that only a perfect machine and a perfect nerve could navigate through them successfully. The entire country also offers a splendid field for the airship by reason of its immense distances, but the great air port of the world will be New York, I am sure. The airship is here. It is here to stay, and to be rapidly improved upon, and inside of 10 years it will be the most common vehicle for travel in sport, in business, and every other way."

W. E. BURLOCK, JR.