

A HANDBOOK ON
ROSE CULTURE
IN INDIA

BY

R. LEDLIE, F. R. H. S.

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R. LEDLIE, F.R.H.S

SUPERINTENDENT OF GARDENS

*European Mental Hospital
Ranchi*

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PREFACE.

An apology for sending out another rose book when there are already so many in publication, is, I think, unnecessary, as very few, if any, are written suitable for the climate of India. This little book contains various notes I have made during the past few years, and I will be happy if it helps, even a few, amateur growers.

The cultivation of the "Queen of Flowers" is an occupation that generally arouses a great deal of enthusiasm and perhaps I will not be far wrong if I say that there is no other flower so extensively cultivated or so general a favourite. Its cultivation dates back to 500 B. C. and it is found growing wild in many countries of Asia, Europe and America. Even in India the rose grows wild on the hills. A temperate climate suits the choicer varieties.

No garden is complete without its roses and roses should not be planted anywhere except in a garden. The beauty of the rose lies in the individual flower and how much expense, time and trouble are spent in cultivating it for the show table.

I have often seen annuals planted in the same bed as roses, but this is very detrimental to the plants. The rose should have its own special bed and its own special treatment.

Keen observers will have noticed that the new leaves of some varieties have a reddish colour, while in others they remain a pale green. This is not a characteristic of any particular variety, but is caused by a very active process of respiration or breathing, which is most active always in young organisms.

A Handbook on Rose Culture.

EXPLANATION OF A ROSE CATALOGUE.

THE public generally select their varieties of roses from a rose catalogue procured from either a Government Garden or a private concern. This catalogue is mainly a descriptive list with the object of guiding the purchaser in what he buys; but unfortunately, in very many instances, the purchaser is a bit disappointed at what he gets, owing to a rather misleading and difficult to understand description.

When looking through a rose catalogue perhaps the first column that strikes the eye is that of class. Botanically speaking there are a great number of species of roses, but of the classes that are mostly cultivated in an ordinary garden are the Hybrid Perpetual, the Hybrid Tea, the Bourbon, the Tea, and the Noisette. In all classes now cultivated there is considerable confusion and it is difficult to distinguish between them. The Hybrid Perpetual was originally obtained from a hybrid between a Chinese and a French rose. It was called Hybrid Perpetual as compared with the species of roses, for it flowered both in summer and in autumn. But its distinctive name lost its significance when it was again crossed and recrossed with other sections.

Tea scented roses are distinguished by the delicacy of their colours, slender thin growths, usually covered with a bloom as on a grape, rich coloured and shiny foliage and very free flowering. In this tribe are found probably every colour imaginable. Although some few are powerfully fragrant, the majority have the odour of a newly opened tea chest, hence the name. As a rule they are not so brilliant in colour and fullness of flower as the Hybrid Perpetual roses, yet for bouquets or cut flowers they are far superior and also last longer when cut, in fact they improve in water if kept in a cool place. Here are found most of the charming bud roses that are so useful for button holes or sprays. The group generally is tender.

The Hybrid Tea as its name implies is a hybrid between a Hybrid Perpetual and a Tea. Hybrid Perpetuals have been valued for their rich colouring and fragrance; Teas for their free flowering and readiness to withstand drought or sunshine better than the Hybrid Perpetuals; they are however poor in colouring, mostly of light colours. The object in crossing the two was to obtain hardiness and better colouring.

Bourbon roses appear closely allied to the Hybrid Perpetuals; so much so that one cannot distinguish many of the modern kinds from the latter. Bourbon roses have a very large shiny foliage, of rather a leathery tendency. The flowers are generally produced in clusters, but upon stiff rigid growth and larger than the Noisette.

The Noisette was named after its raiser Philippe Noisette, and they are distinguished by their large clusters of blossoms and their late flowering. Maréchal Niel is classed with this

group owing to its habit of yielding bunches of buds and blossoms that hang as it were like clusters of hazel nuts, the latter being termed "Noissete" by the French. Almost all the Noissetes are of climbing habit.

In another column the flowers are described and these are classified into five degrees.

1. Single—contains only one circle of petals.
2. Semi-double—two or three circles of petals.
3. Double—many circles of petals, but exposing a good number of anthers at the centre.
4. Very double—many circles of numerous petals, with a deep centre having some anthers in it.
5. Full—thick and compact arrangement of petals, with no anthers or opening space at the centre.

Then the forms of the flowers are also described and are as follows:—

- (a) Globular—distinguished by its incurved nature of petals arranged so that the flower looks like a globe.
- (b) Cupped—the outer petals are broad and high while the inner petals decrease in size, making the flower look like a cup.
- (c) Compact—the petals arranged evenly.
- (d) Imbricated—the petals are regularly bent back upon each other leaving a "pip" in the centre.
- (e) Expanded—these are synonymous and explain themselves.
- (f) Flat—

The plants themselves have various habits of growth.

- (a) Branching—a plant which rather than improving terminally has an inducement to set branches from many axils of the shoot.
- (b) Erect—growing straight upwards.
- (c) Dwarf—having a stunted growth.
- (d) Vigorous—a plant growing rapidly with strong shoots to a great height.
- (e) Pendulous—of a drooping habit, when the branches cannot hold up the weight of the blossoms.
- (f) Robust—of slow growth with good healthy shoots.
- (g) Moderate—weakly.
- (h) Free—weakly and of a branching habit.

Probably the colour of the variety is of primary interest, and this naturally occupies the principal part of the description, but oddly enough, is the most misleading. This difficulty arises on account of the different shades of colour found especially in tea roses, which are very difficult to express to the ordinary public in language easy to understand, as many are extremely variable in their tints and others when grown strongly come much fuller in colour. However, every endeavour is made to give as near a description of the colour of the variety as possible, and sometimes very accurate results are arrived at. It requires not only a good eye for colour, but also a certain amount of training, for an ordinary person to distinguish accurately between the numerous shades of colour our roses have. A good many of the Tea roses, especially the light

yellows, come practically, if not pure, white, when exposed to strong and continued sun; and as these are generally marked their original colour in a catalogue, it is easy to see how disappointments may arise.

LAYING OUT A ROSARY.

Many people prefer to have a small plot specially set aside in the garden for their roses, instead of having the plants dotted about here and there. This idea of a separate rosary has much to recommend it; for besides being more beautiful to the eye when seen as a whole, the plants can be better attended to when they are all together.

The position chosen for a rosary must be the most open and sunniest in the garden, far away from trees, houses, and tall hedges, as roses delight in sunshine and fresh air; nevertheless the rosary must be sheltered from strong winds as these are harmful.

When planning a rose garden care must be taken not to overcrowd the beds as the varieties show off to much greater advantage when the groups are isolated by turf or gravel, which allows them to be approached and viewed from different sides. A combination of grass and gravel gives a pleasing result in a rose garden.

The four simple designs here given will serve as a guide to the enterprising rosary maker. With a few alterations and additions other designs will show up. Fig. 1 is an effective design when nicely planted. A standard rose for each of the small circular beds, or these can be omitted and one planted in each of the large circular beds. Fig. 2 is another simple design. A standard rose for

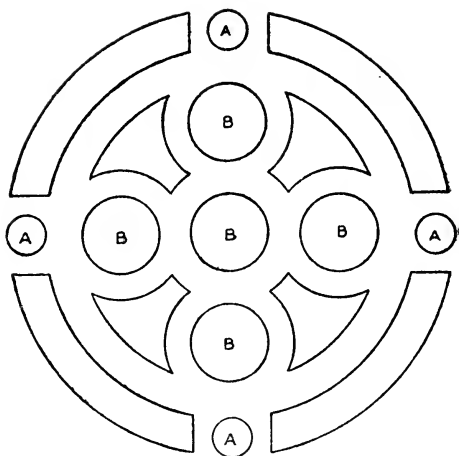


FIG. 1

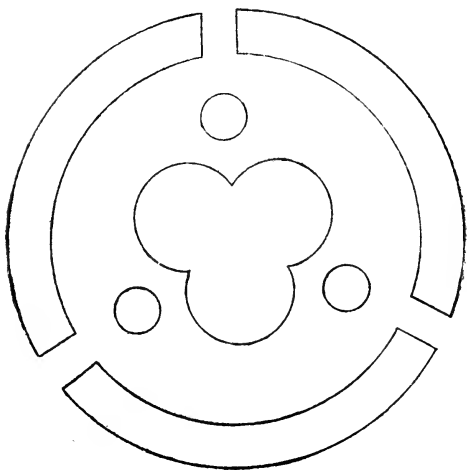
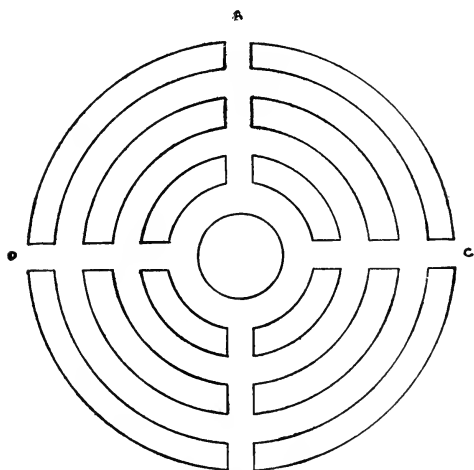


FIG. 2

each of the small circular beds and one in the middle of the large centre bed. Fig. 3 is a very neat design. The pathways AB and CD may be covered with arches for climbing roses. The centre circle can either be a rose bed or a grassed plot; the remaining beds to be changed accordingly. Fig. 4 is suitable for a long strip of grass, the small circular beds are for standard roses.



B
FIG. 3.

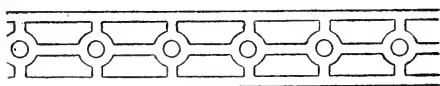


FIG. 4.

CULTIVATION.

The cultivation of roses involve—

- (a) planting and preparation of the soil,
- (b) pruning and training,
- (c) watering and application of manure,
- (d) propagation.

Any soil that is well prepared and manured will grow roses. Gravelly soil is often too quickly condemned but the gravel can be removed to the required depth and good soil substituted. The advantage is gained of a naturally drained soil. A common and good method of preparing the soil is to dig out the bed two feet deep, fork up the bottom, thus ensuring good drainage, fill in nine inches of good rotten manure, and then put back the excavated earth. It will be seen that there is at least one foot of soil between the roots and the manure; no manure should at any time come in contact with the roots of the plant. It must be remembered that the more manure is added the more the bed will sink eventually as it decays. The distance of the plants from each other in the rows or beds should depend entirely on the varieties, the spreading varieties at a greater distance than those which are small and upright. The best time for planting is undoubtedly while the plants are more or less dormant, and this will be during November, December and January. Like most other plants they can be planted during the rains, provided extra care is taken

in digging them up and planting with their roots intact. Comparative shallow planting is a great secret of success, as too deep planting is harmful; but shallow planting is of no use without cultivation, which is done by keeping the surface constantly stirred with the hoe. If you should ever have occasion to choose between the hoe and manure, choose the hoe.

As growth is usually more vigorous than in colder climates less pruning is necessary. It is an axiom in rose pruning that the more vigorous a plant is, the greater number of shoots should be cut out at the base, and the less should those which are left be shortened. There is another axiom and that is the later you prune the greater the reason for severe pruning. Three principles are aimed at in pruning roses.

1. To maintain a plant in full health and vigor.

2. To induce it to assume a form at once agreeable to the eye and advantageous for the development and display of its blossoms.

3. To secure an abundance of good flowers.

The different variations in the habit and growth of each variety must be studied as demanding a special method of pruning. As a general rule remove all weakly, malformed and dead shoots from their origin and thin out crowded branches. The Hybrid Perpetual and Hybrid Tea class are benefited by being pruned hard back. Teas require less hard treatment. Generally climbers need their old shoots cut out at the base and the others shortened a bit. They require very little pruning after the first year, merely thinning out the old and weak wood. Prune down to six inches of the ground the first season after

planting to encourage new growths from the base, otherwise cut to the ground all but two or three of the strongest shoots, these peg down away from the centre of the plant, after pruning down to the first dormant bud. Climbers occasionally present barren stems, and to obviate this, prune the leaders to different heights; cut one say six inches from the ground, another at eighteen inches, and leave another, say, three feet with a good result.

Usually all laterals should be pruned to two or three eyes. In pruning Ramblers always retain the best long maiden rods. In the Wichuraiana type leave the entire length, merely cutting away any wood as it dies back. The Polyantha type should be pruned the same as the other climbers.

For the operation of pruning a few instruments are necessary; a pair of good secateurs, a strong, sharp pruning knife and a small saw, which is very useful for thick pieces of dead wood.

Roses enjoy most manure only when established. Pig, cow and horse manure are best in the order named. When trenching the soil two or three feet deep before planting, use rank manure for heavy soils and well rotted manure for light soils, putting the uppermost of it at least fifteen inches below the surface. Heavy soils may be lightened by fresh horse manure, leaf mould and road scrapings before planting and after they are established. Manure should not be placed about the roots of newly planted roses, a layer of soil should always separate the roots from the manure. Drainage from cow sheds, stables and manure heaps, or liquid made from cow, horse, sheep, fowl and pigeon manure should be used freely during active growth diluted to the colour of weak tea. It is very advantageous to use

liquid manure for it is in this form that the plants can absorb their food immediately. Care should be taken that newly moved plants have their liquid manure weaker till they have made some strong growth with their large healthy leaves. It is a wrong principle to suppose that a strong growing plant requires least liquid manure; on the contrary it wants, because it can use, the most. In watering with liquid manure give the soil a good soaking and then hoe the surface as soon as possible after. Soap water and the overflow from a cesspool make good liquid manure. The following is a good artificial manure to be applied after pruning:—

Superphosphate of lime	..	12 lbs.
Sulphate of potash	..	12 „
Sulphate of ammonia	..	5 „
Sulphate of iron	..	1 lb.

This mixture to be applied at the rate of 4 oz. a plant. Roses like lime and an application of 3 oz. a plant is beneficial. For a liquid manure dissolve half an ounce of superphosphate, a quarter of an ounce of sulphate of ammonia, and the same amount of sulphate of iron in two gallons of water, and apply this quantity to each plant during the rainy season. Sulphate of ammonia and nitrate of soda should be used at the rate of a quarter of an ounce to a gallon of water. Another mixture to use at the same rate is—

Superphosphate of lime	..	3 parts.
Sulphate of lime	..	2 „
Sulphate of potash	..	1 part.
Sulphate of ammonia	..	1 „
Sulphate of iron	..	1 „

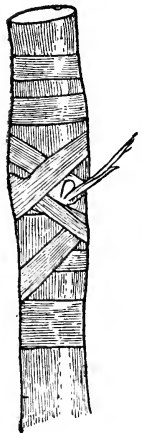
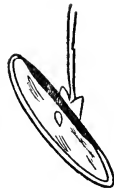
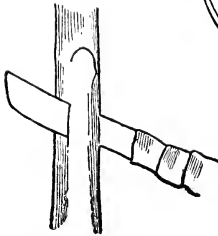
Superphosphate of lime is an excellent fertilizer for roses and should always predominate in any formula. It imparts vigour and solidity to growth, and moderate, sturdy and healthy foliage. Potash assists in the production of fine flower buds. Iron and soot water add increased depth and brilliancy to the blooms; and sulphate of ammonia increases their size and brightness of colour.

Roses are propagated in various ways, by seeds, cuttings, layers and budding or grafting. Budding, however, is the method of propagation most commonly used. No tools are required for the operation except a budding knife. It is first necessary to raise stock plants of the hardy pink rose called "Edward." Cuttings of this rose should be inserted in prepared beds three inches apart in the months of October and November. Convenient beds are six to ten feet long by three or four feet broad. The cuttings will throw out roots in from twenty to thirty days. In the course of five or six months, or at the approach of the next monsoon, they will have formed enough roots to stand transplanting.

About five months after transplanting the stock is ready for budding. Meanwhile one single shoot or two at the most should be encouraged to grow straight up by pruning off at frequent intervals all lateral growths so that good, straight, healthy stocks will be available for budding. A piece of bark containing the bud is taken from the variety desired to be increased and all the leaves cut off leaving the stalks for convenience of handling. Any wood which might have come away with the bud must be removed; this must be cleanly removed without taking with it the soft growth which forms the inside of the bud. If the bud is in the right condition, the

wood generally comes away easily leaving the base of the bud level with the bark; but if the inside of the bud appears hollow, a fresh one should be taken; a large number of failures is due to this cause. If the wood does not come out clean the bud is over-ripe and should not be used. The bud should be plump but not advanced in growth and it should be selected from healthy and vigorous growing plants. But although a fully developed plump bud is desirable, this is of less importance than the condition of the shoot, which should not be more than half ripe, with the sap still flowing freely, so that the wood parts easily with the bark. As a rule buds should always be taken from a shoot which has, or has had, a good bloom on it. Some varieties often have long, strong, flowerless shoots, with plenty of good wood buds on them; if these buds are used there is a strong probability of no flowers being produced the first year. It is safest in all cases not to use the next bud to the bloom. After the bud is prepared it should be kept in water so as to keep it moist, until the stock has been got ready to receive it. A suitable sappy region should now be selected on the stock and all prickles and leaves removed. A cut in the shape of a T must now be made not deeper than the bark and the sides slightly loosened with the ivory end of the budding knife, after which the bud must be inserted and bound up. If after a short time the leaf stalk drops off, it is a sign that the operation has been successful, if on the contrary it adheres, it is very often a sign that the bud is dying.

The buds put forth new growth within a fortnight and the binding should be loosened and finally removed. When the bud begins to break the whole of the stock plant about three inches above the bud should be cut off, and



later the remaining portion should also be pruned off.

Roses on their own roots or propagation by cuttings is also practised, but these are not so satisfactory as budded plants. They should be prepared of ripe wood and if inserted in flower pots filled with sand will root quicker than if put in the ground. If a small portion of the older wood, or "heel," be left to each cutting, there is a likelihood of the striking percentage being increased.

SELECTIONS.

There are various ways of growing roses in a rosary :

- (a) Dwarfs.
- (b) Standards.
- (c) Pegged down. This is an admirable way of growing the stronger varieties of H. P's and H. T's when a large number of flowers are required. From two to three of the longest and best ripened shoots are carefully bent downwards, and secured in a horizontal position by pegs or by tying them to wire stretched across the beds. These shoots will flower up their whole length, and the plants will throw up strong shoots from the base. The following pruning season the shoots that have flowered can be cut away and the others pegged down to take their places.
- (d) Arches.
- (e) Pillars.

Climbers are suitable for covering walls, arches, pergolas and the like, and many make grand pillar roses and large shrub like bushes. Ramblers have an extra long growth, and in many cases have a drooping tendency. All need some means of support and are, however, of great value climbing up worn out fruit trees, shrubs and trees, that have had their most spreading branches removed, thus leaving a stout and artistic support for the roses.

which show off to great effect in these cases. All are hardy and produce the greater part of their most valuable wood at or near the base of the plant.

In making a selection it is better to choose a few good varieties to begin with, than to have too many with which you are unfamiliar. To make a selection of roses to suit everybody is a difficult task as every one has his own favourites, but, generally speaking, the following will be found all-round varieties:—

Alexander Hill Gray	..	T.	Lemon yellow.
Alfred Colomb	..	HP.	Bright fiery red.
Belle Marguerite	..	T.	Rosy salmon.
Beryl	..	T.	Golden yellow.
Bessie Brown	..	HT.	Creamy white.
Bridesmaid	..	T.	Bright rose.
Caroline Testout	..	HT.	Light silvery pink.
Col. R. S. Williamson	..	HT.	Satin white.
Dean Hole	..	HT.	Silvery carmine.
Duchess of Albany	..	HP.	Deep rose.
Florence Pemberton	..	HT.	Creamy white suffused pink.
Frances Charteris Seton	HT.		Deep rose pink.
Frau Karl Druschki	..	HP.	Pure snow white.
George C. Waud	..	HT.	Orange scarlet.
Grace Molyneaux	..	HT.	Creamy apricot.
Gruss an Teplitz	..	HT.	Scarlet crimson.
Harry Kirk	..	T.	Deep sulphur yellow.
Hugh Dickson	..	HP.	Crimson shaded scar- let.
Killarney	..	HT.	Flesh pink.
Lady Ashtown	..	HT.	Pale rose shading to yellow.
Lady Pirrie.	..	HT.	Deep coppery reddish salmon.
Lady Hillingdon	..	T.	Apricot yellow.
La France	..	HT.	Lilac rose.
Laurette Messimy	..	China.	Rose shaded yellow.
Lyon Rose	..	HP.	Coral red with chrome yellow.
Mad. Abel Chatenay	..	HT.	Carmine pink.
Mad. Antoine Mari	..	T.	Pink striped white.
Mad. Eugene Resal	..	China.	Nasturtium red on orange ground.

Mad. Ravary	..	HT.	Golden orange yellow.
Marie van Houtte	..	T.	Canary yellow tipped rose.
Marquise de Querhoent		T.	Coppery salmon rose on yellow ground.
Mildred Grant	..	HT.	Ivory white.
Miss Alice de Rothschild		T.	Deep citron yellow.
Mrs. Arthur Coxhead		HT.	Claret red.
Mrs. David McKee	..	HT.	Creamy yellow.
Mrs. Edward Mawley	..	T.	Bright carmine.
Mrs. E. Townshend	..	HT.	Chamois rose.
Mrs. Herbert Stevens	..	T.	White.
Mrs. John Laing	..	HP.	Shaded soft rose.
Pharisaer ..	..	HT.	Rosy white.
Stradart Glaser	..	HT.	Sulphur yellow.
The Bride ..	..	T.	White.
Viscount Carlow	..	HT.	Carmine pink.
William Askew	..	HT.	Deep pink.
William Shean	..	HT.	Pink.
Xavier Oliba.	..	HP.	Velvety crimson.
Yvonne Vacherot.	..	HT.	White.

Standard roses are a great addition to a rose garden, and those three feet high look the best. They are propagated in the same way as the dwarfs, only the stock is allowed to grow to the required height. The following varieties will be found suitable for the purpose :—

Beryl.

Cloth of Gold	..	N.	Pure yellow.
Elsie Sauvage	..	T.	Rosy fawn.

Killarney.

Lady Hillingdon.			
Lamarque ..	..	N.	White shaded lemon.
Laurette Messimy.			

Mad. Eugene Resal.

Marie Lavelly	..	HT.	Bright rose.
Molly Sharman Crawford	..	T.	Delicate <i>eu de nil</i> white.

Mrs. Edward Mawley.

Mrs. Herbert Stevens.			
Niphetos ..	..	T.	White.
Ophirie ..	..	N.	Fawn salmon.
Queen of the Musks	..	Poly.	Small pinky white.

The following are a few good climbers :—

Maréchal Niel	..	T.	Dark yellow.
Gloire de Dijon	..	T.	Deep salmon transparent yellow.
Climbing Papa Gontier		T.	Deep pink shaded yellow.
Do.		HT.	Pink.
Lamarque.			
Dorothy Perkins	..	Wich.	Soft light pink clusters.
Lady Gay	..	Poly.	Cherry pink clusters.
Cloth of Gold.			
Crimson Rambler	..	Poly.	Crimson clusters.
Hiawatha	..	Wich.	Scarlet clusters.
			Single.

INSECT PESTS AND FUNGOID DISEASES.

In India a very few insect pests attack the rose plant and among the fungoid diseases there is only one of any importance. Good cultivation and the maintenance of a vigorous condition of the plants is in many cases an important safeguard against insect pests or fungus diseases. To have nice clean healthy rose bushes apply soap suds to the foliage. The plants will not be troubled with insect pests and if a little sulphur is added it will prevent mildew. This is a fungus disease caused by sudden changes in the atmosphere. It suddenly appears on a warm day in winter usually between the beginning of December and the end of January. It also sometimes makes an appearance between June and August. The leaves and flower buds are found covered over with a white flowery substance and the leaves curl up and fall. As a remedy spray with Bordeaux mixture some days before the usual time for the appearance of the pest and again a second time after Christmas.

The Rose Beetle during the rains feeds on the tender leaves which are then full of fresh sap. These cockchafer beetles usually emerge in numbers at this time of the year. They are nocturnal in their habits and the damage done by adults is always done by night. Control measures against these beetles can take two forms; one against the larvæ or

grubs and the other against the adult beetles. The larvæ live in the ground and feed on roots of plants and are full grown just before the rains commence. If then the soil is thoroughly hoed up these grubs can be collected and destroyed in large numbers. It often happens, however, that the beetles breed outside the garden area and the adults fly in from outside to do damage by eating the leaves by night. They may be caught then by searching on the plants at night with a lamp and hand picked and dropped into a bucket of water with a film of oil on top; or they may be sometimes attracted in large numbers to a light placed over a tub of oil and water into which they will fall. Spraying with a stomach poison in May will protect the plants. Lead Arsenate at the rate of half an ounce to four gallons of water, or Lead Chromate at the rate of one and a half ounces to four gallons of water may be used; both these poisons can be obtained from D. Waldie & Co., Calcutta.

Long slender smooth caterpillars, with longitudinal stripes of red and white, rest upon the ribs of the leaves and feed upon the green parts at night. Their presence can be detected by their habit of glueing two or more leaves together to form a shelter; these leaves should be pressed together when discovered. They pupate in small cocoons in the folds of the leaves and develop into small grey moths. They can be poisoned by spraying with Lead Arsenate dissolving one ounce in four gallons of water.

Scale insects which look like tiny white specks with a reddish centre on the stems and tender sides of leaves, attack the plants to a great extent. Spraying with Kerosene Emulsion is a good remedy.

Green fly or aphid which usually appear when the flower buds are forming, are for-

midable on account of their astonishing power of increasing and it is only in their great numbers that they do any harm. Strength, vigour and cleanliness in the plants are the best preventative measures. Spray with Kerosene Emulsion as a remedy.

White ants are another nuisance. There are many solutions used which by their smell drive away the termite, but as these remedies are only deterrents they must be used every few days. Cuttings and young plants can be protected by constant watering with a solution of Crude oil emulsion. The smell of tar is obnoxious to insect life of all kinds, and water impregnated with tar may sometimes be applied to the ground with good effect. Crude Carbohc Acid or Phenyle may be used in the same way. Nim Khali and water is a good remedy; another is—

Sulphate of copper (nela tota)	..	2 lbs.
Acorus calamus (buch)	..	10 „
Water	..	20 gal.

Kerosene Emulsion. This is a cheap insecticide and a good all round spray for sucking insects, and is prepared with two gallons of Kerosene oil, half pound of soft soap and one gallon of boiling water. Dissolve the soap in the boiling water, and while still hot, add the Kerosene. Churn the liquid steadily for fifteen or twenty minutes with a garden syringe, the liquid being pumped back until it is emulsified. Use one part of this to forty parts of water.

Bordeaux mixture:—

Copper sulphate	..	1 lb.
Quick lime	..	11 oz.
Water	..	4 gallons.

Dissolve the powdered blue-stone in water; separately slake the quicklime in water; mix the two; make up to four gallons and pour into the sprayer through the strainer. A knife blade put into the solution should not acquire a brown deposit of copper; if it does, add more lime.

Crude oil emulsion is prepared by dissolving four ounces of the emulsion in a Kerosine tinful of water.

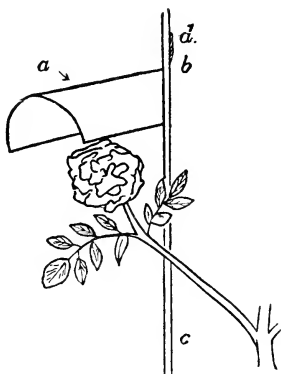
Gondal fluid is another remedy for the white ant. It can be purchased ready-made from Waldie & Co.; but it can also be made at home. Take two parts each of asafœtida, bazar aloes and castor cake, and one part of "Dek-amali" gum; pound and mix thoroughly; then keep in water for about a fortnight; and when thoroughly decomposed into a thickened compound, add water till the mixture is the consistency of paint. It is advisable to add some colouring matter, such as red ochre, so that it can easily be seen what trees have been treated. The materials can be purchased in the bazar and the cost should not be much. The fluid should be applied in a continuous band round the trunk of the tree to a height of about two feet from the ground. This part of the trunk must be brushed free of ants and quite cleaned of all mud encrustations. Care must be taken to see that the fluid penetrates into all the crevices of the bark.

EXHIBITING.

Those who are keen rose growers always have an inclination to show their best flowers at an exhibition in friendly rivalry with their neighbours. To attain this end the plants must be grown in the best possible manner so as to obtain the finest blooms. If possible grow your exhibition varieties separately so that they can get separate attention.

After the plants have been pruned they must be well manured with rotted farm-yard manure. Some growers open up the roots for a week or so, but I do not think this practice is extra-beneficial. When the buds appear select one on each shoot, and remove all the rest. In choosing this bud care must be taken to see that it is perfect in shape, pointed and green to the tip, with no colour showing or else there is a great likelihood of it not turning out a perfect bloom. As the buds begin to expand they will need protection. This is an important factor as heavy rain will spoil the finest blooms and a blazing sun will burn the colour out of them. Zinc caps make excellent protectors. The cap is provided with a socket which slides up and down a stake, and is fixed in the required positions, by small wedges. Care should be taken not to have it so close to the bloom

that it comes in contact with it when moved by the breeze.



(a) horseshoe-shaped zinc shade, one foot long and six inches deep; (b) the socket with iron arm; (c) stake; (d) wooden wedge.

When the buds are expanding the application of liquid manure is very beneficial. Sulphate of iron will add greatly to the brilliancy of the flowers. I was once told by an Indian gardener that the best way to get exhibition blooms is to leave a clear stem of one foot from the ground when pruning the plants; then prune away all branches except three. Remove the soil from the roots exposing them to the sun for a few days, then add good decayed manure and cover with some soil again.

The exhibitor should go over his flowers on the evening before the Show day and select a number of promising blooms. The flowers

should have so far passed the bud stage that the outer petals are half opened, but any that show the slightest tendency to being, or shortly becoming blown, must be rejected. Round the centre of each selected flower carefully fasten a piece of thread, which may remain until the flowers are arranged in the stand. Always take more flowers to the show than are required for the stand, in order to be able to make a choice when setting up time comes; but if there are two blooms of one variety, watch them carefully, they have a nasty way of sneaking in and getting you disqualified for duplicating.

The flowers should always be cut with strong sharp scissors, and with a long stem.

Some exhibitors may have occasion to travel from one station to another in order to show at a particular exhibition. The time for cutting the blooms necessarily depends on the time the train leaves your station. The best trains are those leaving early in the morning or failing that in the evening or night. What ever the time is, the blooms must be put into water immediately after cutting. The next thing to be considered is the way of conveying the blooms. There are various methods but all leading to the one idea of conserving moisture; *i.e.*, preventing the water in the stems and blooms from drying out and so keeping them fresh. When I was at Fyzabad, on one occasion I took my cut blooms to the Allahabad Flower Show in a basket covered with a wet cloth; on another occasion I arranged them in my show box and then took them, and on yet another occasion I wrapped each bloom in cotton wool. On each of the three occasions I was awarded a prize.

Show boxes are usually provided by the Flower Show Committee, but if you care to

make your own the following dimensions will help:—

Number of flowers.	Length.	Breadth.	Height at back.	Height at front.
6	1'	1' 6"	7"	5"
12	2'	1' 6"	7"	5"
18	2' 9"	1' 6"	7"	5"
24	3' 9"	18' 6"	7"	5"

Collections of thirty-six, forty-eight, and seventy-two may, of course, be made up from the foregoing sizes. It will be seen that the boxes are uniform in breadth and height. The lids should be six inches high at the back and eight inches at the front, making a uniform height when the boxes are closed, of thirteen inches. The box should be painted green. The commonest form of stands is that in which holes are provided for the reception of the tubes.

After you and your flowers have arrived at the show and you have secured a box, then comes the task of arranging your blooms so as to catch the judges eye. The old hand is great on getting a 'strong back row. He knows that substance there, combined with freshness, catches the judges eye quickly. The heaviest flowers should always go to the back. While however, weight is regarded, and rightly regarded as a point, symmetry and freshness must never be overlooked. A blown flower must be rigidly excluded. If with youth and freshness you can unite size, it is well; for in the rose tent as on the turf, the old trainers dictum holds the sway; "A good big 'un will always beat a good little 'un." While arranging the flowers, some fresh moss should be spread on the box between the blooms; this adds greatly to the appearance of the box.

There is one point to remember, and that is there are many roses that go under two or more different names. These are called synonymous roses and are apt to get you disqualified. In the next chapter I give a list of these roses which will serve as a guide.

SYNONYMOUS ROSES.

PROPER NAME.	SYNONYMOUS NAMES.
Adam ..	.. President.
Alfred Colomb	.. } Marshal P. Wilder.
	.. } Wilhelm Koelle.
Agustine Guinoisseau ..	.. White La France.
Baron de Bonstetten ..	.. Monsieur Boncenne.
Bennet's Seedling	.. Thoresbyana.
Charles Lefebvre	.. { Marguerite Brassac.
	.. { Paul Jamain.
Cloth of Gold	.. Chromatella.
Common China	.. { Old Blush.
	.. { Old Monthly.
Common Provence	.. Old Cabbage Rose.
Dr. Grill ..	.. Dulce Bella.
Duc de Rohan	.. Mrs. Jowitt.
Duchess de Caylus	.. Penelope Mayo.
Duke of Wellington	.. Rosieriste Jacobs.
Exposition de Brie	.. { Ferdinand de Lesseps.
	.. { Maurice Bernardin.
	.. { Sir Garnet Wolseley.
Fortunes Yellow	.. Beauty of Glazenwood.
Frau Karl Druschki	.. Snow Queen.
Himalaya ..	.. { Brunoni.
	.. { Rubata.
Jean Ducher ..	.. Ruby Gold.
Jean Soupert	.. Grand Mogul.
Lady Mary Fitzwilliams	.. Lady Alice.
Madame Bravy	.. { Alba Rosea.
	.. { Joseph Malton.
	.. { Madame de Sertot.
Madame Wagram	.. Comtesse de Turreure.
Marie Baumann	.. Madame A. Lavelle.
Marie Finger	.. Eugene Verdier.
Marie Rady	.. Comtesse de Choiseul.
Mrs. W. J. Grant	.. Belle Siebrecht.
Paul's Early Blush	.. Mrs. Harkness.
Prince Camille de Rohan	.. La Rosiere.
Sou. de S. A. Prince	.. The Queen.

POT CULTURE.

There are some people who grow roses in pots, and a short note on this mode of culture will not be superfluous. Plants that have been got ready by methods of propagation already mentioned, should receive their first potting in the month of June, in a mixture composed of two parts of good garden soil, one part of leaf mould and one part of decayed farm manure. They should receive a firm potting and a good watering; and thereafter a watering every evening. The leaves should be washed frequently from dust with a small garden syringe. Constant watch should be kept on diseased leaves and flowers which should be removed as soon as seen. Water the plants twice a week with liquid manure made from cow dung and keep the pots in an exposed position so that they get the full sunshine all the day long. Constantly stir the surface soil to the depth of one and a half inches; this surface soil requires occasional renovation.

If the plants receive their first potting in June as they should do, they will give their first crop of flowers in September. When they have finished flowering remove all remnants of flowers and stalks. Then reduce the supply of water by watering every other day for a week and then every third day for another ten days. At the end of this period cut out all dead and sickly branches, mix with

the surface soil some good decayed horse manure early in November, and start the usual daily watering again. New branches will soon appear bearing flowers in December. Rest again, manure and prune as before, and a fresh crop of bloom will appear in March and April. Then again check the water supply in April, this time waiting for a certain amount of leaf shedding; then transfer the plants to other pots. At this repotting give a fresh compost entirely and the roots should not be buried deep in the pots. Plants will flower from July to September; and the same treatment may be continued as above.

Pot plants should be kept wide apart, the branches of one pot away from another. The flower buds should also be regulated as regards number; leaving one good plump bud on each shoot and pinching off the remainder.

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HANDBOOK ON ROSE CULTURE IN INDIA



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