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GARDEN AND FOREST

A JOURNAL OF

HORTICULTURE, LANDSCAPE ART AND FORESTRY

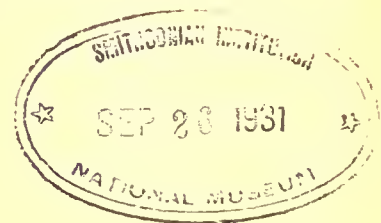
Conducted by

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ILLUSTRATED

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flower-scapes are now developing. The first two racemes opened about a week ago and gave us a foretaste of what we are to expect about the middle of April. What a lovely plant it is! flowers like those of the Sweet Pea, but of the richest carmine-crimson which glows in sunshine. This is a first-rate plant for the greenhouse here; it is perennial, stands London fog and yields a large crop of richly colored flowers in early spring. A figure drawn from the Kew plant has been prepared for *The Botanical Magazine*.

HIBISCUS MUTABILIS.—The double-flowered variety of this Hibiscus is a worthy garden plant, which, however, is rarely seen in cultivation—in European gardens, at any rate. Mr. Cannell sent me some flowers of it a few days ago, describing it as a new Mallow, and by far the finest he had ever seen; they were three inches across, very double, and colored bright rose, flaked with white. Originally Chinese, the type has long been cultivated or become established in most parts of the tropics. The double-flowered form was first flowered in London about a hundred years ago, plants having been raised from seeds obtained from Jamaica, where it forms a tree fifteen to twenty feet high, with palmately lobed, green, hairy leaves four to six inches across; the flowers are borne singly on axillary peduncles, and they are white when first they open, changing to pink, and finally to deep red. There is a good figure of this double variety in Andrews' *Botanical Repository*, t. 228.

NARCISSUS, ELLEN WILLMOT.—This is a new variety or cross of the Ajax section which we owe to the skill of the Rev. G. H. Engleheart, of Andover, one of the most successful breeders of Daffodils. It has the form of Madame de Graaf or Empress, but is larger, and is remarkable for the width and shortness of its trumpet and its broad overlapping sepals and petals. The color of the trumpet is lemon-yellow, while the other parts are creamy white.

NARCISSUS, SOUTHERN STAR, is another new seedling from the same source. It is one of the Poeticus section, but the flowers are about four inches across, with broad overlapping segments of the purest white, and the shallow, spreading, eye-like cup is nearly an inch across, and colored bright orange-red, becoming paler toward the base.

TULIPA KAUFMANNIANA.—A first-class certificate was awarded to this plant last week, when it was shown in fine condition by Messrs. P. Barr & Sons, Covent Garden, and Messrs. Wallace, Colchester. It has a short stem, broad leaves and large erect flowers, the segments of which are oblong-obovate, forming a deep cup, their color yellow at the base, the upper portion white, suffused with rose-purple. It is reported that this species is being naturalized in the garden of Mr. L. de Rothschild at Leighton Buzzard, where it does well in the grass, and was in flower on March 23d. According to a correspondent in *The Gardeners' Chronicle*, it flowered outside in a garden in Salisbury on February 26th. For its introduction we are indebted to Mr. A. Regel, who found it in Turkestan some years ago. It appears to vary in the form and color of its flower-segments and also in its leaves, judging by the figure in Regel's *Gartenflora* and the plants shown by Messrs. Barr and Wallace. It belongs to Baker's Eriobulbæ, which has woolly outer bulb-coats and broad leaves. There is a hybrid between it and Tulipa Greigii, received by Herr Max Leichtlin a year or two ago.

London.

W. Watson.

A bulb is simply a large bud with close-packed, fleshy leaves or leaf-bases in which is stored an accumulation of starch, sugar and other concentrated plant food. As hibernating animals store up fatty matter before going to sleep for the winter so do bulbs store up surplus food and hide themselves under ground so as to go through cold and drought unharmed. Bulbous plants are developed in regions where there are sudden changes of temperature or of drought and moisture, and the great natural bulb fields of the world are found where it is very cold or very dry in winter, rainy and warm in spring, and blazing hot and dry in summer and autumn.—F. W. Burbidge, M. A.

Entomological.

An Enemy of Narcissus and Amaryllis.

IN Merodon equestris, the Narcissus Fly, we have one more addition to the numerous insects which have been introduced from the Old to the New World. Its first advent in the United States appears to have been many years ago, for Packard, in his *Guide to the Study of Insects*, published in 1869, states that the late F. G. Sanborn bred the flies from larvæ which were probably introduced by importers of Dutch bulbs. Since that time the pest does not seem to have become common in this country, at least it appears to have been rarely, if ever, noticed by economic entomologists, although gardeners may have had more experience with it than is generally known.

In the Agassiz Museum, at Cambridge, Massachusetts, there are larvæ of this pest and damaged bulbs of Narcissus which were received from a garden in Brookline, Massachusetts, in 1879. During the past year or two this same establishment has suffered more than usual damage from the ravages of the Merodon, which appears to have been present in more or less abundance every season since it was first noticed in the place nearly twenty years ago. At that time, besides various species and varieties of Narcissus, it was found to attack bulbs of Vallota purpurea and its varieties. Recently it has been found very destructive to many rare and beautiful Hippeastrum hybrids, formerly known under the generic name of Amaryllis, and it is probable that it will be found to attack other plants of the Amaryllis family, to which the Narcissus belongs. There does not appear to be any previous record that it has ever attacked anything except Narcissus. The pest has affected bulbs, both in the open air and in the greenhouse.

The damage is caused by stout brownish maggots which live within and devour the interior of the bulb, either entirely destroying its vitality or so weakening it that it fails to flower or gradually decays. These maggots when full grown vary in length from about half an inch or a little more when the body is in repose to about three-fourths of an inch when active and extended. The body is somewhat wrinkled, composed of eleven or twelve distinguishable segments, upon which are a few very minute hairs. The head is very small and armed with a blackish two-pronged hook used in scraping the bulb, and on the posterior or anal segment there is a conspicuous hard, shining, black double-tubed organ, and a little below each side of this is a short horn-like appendage. When fully grown the maggots usually leave the bulbs and enter the surrounding earth near its surface, or rarely remain in the remnants of the bulbs, and change to stout dark brown inert pupæ, about half an inch in length and retain some of the marks characteristic of the larvæ. From these pupæ flies emerge in the spring if the bulbs are out-of-doors, or during the winter if they are grown under glass. These flies are two-winged and bear considerable resemblance to the well-known bot-flies, or to the Chrysanthemum flies, *Eristalis tenax*, familiar on flowers in late summer and autumn. They might be mistaken for very small humble-bees, except for the fact that the latter have four wings, while the Narcissus fly has only two. These wings spread an inch or more from tip to tip and may be nearly clear or slightly smoky.

The body averages over half an inch in length and is sometimes nearly three-fourths of an inch long. The body-color is usually bluish-black, more or less densely covered with broad areas or bands of orange, yellow, brownish or blackish hairs. The color and proportions of these areas of colored hairs are so variable as to have caused the early entomologists to give Merodon equestris several other specific names, but it would not be profitable to consider these variations here. Most commonly the male has the fore part of the top of the thorax thickly covered with yellow-brown hair, a broad black band or saddle across the middle above the insertion of the wings, the posterior tip of the thorax and first two segments of the abdomen

covered with tawny colored hairs, and the remaining part of the abdomen with bright yellow-brown hair. A common type among the females has the thorax covered with bright ferruginous hairs, the fore and hinder parts of the abdomen covered with paler hair and with a black band across the middle portion. As in most flies, the eyes are very large, appearing to form the principal part of the head. They are black, and sparingly covered with microscopic brown hairs. In the males the eyes are near together, touching at one part; in the females they are well separated by a brown hair-covered ridge which broadens from the top toward the mouth parts. The legs are black or dark brown and more or less covered with black or gray or

cavity from which it only emerges when fully grown. Usually only one larva occurs in each bulb, but more may sometimes be found. It is not easy to detect infested bulbs until the maggots are nearly fully grown and the bulbs soften because of the ravages in the interior. Sometimes the entrance of the maggot may be detected by a minute brown streak showing where it entered between the scales at the top of the bulb.

Apparently, the first account of the Narcissus Fly is that given and figured by Réaumur in the fourth volume of his celebrated *Mémoires*, published in 1738. He there states that in November, several years previously, Bernard de Jussieu had given him a number of bulbs of Narcissus in which he found the larvæ, and from which he bred the flies. In 1792 Fabricius described it as *Syrphus equestris*, afterward placing it in the genus *Merodon*. On account of the variability of the insect it has received a number of synonyms, among which appear to be *Merodon flavicans*, *M. cinereus*, *M. Narcissi*, *M. ferrugineus*, *M. transversalis*, *M. constans*, *M. nobilis*, *M. tuberculatus* and *M. bulborum*.

The bulb growers of Holland have long known *Merodon equestris* as a serious foe to Narcissus-culture, and we have records of its presence in that country since before 1840. It is generally considered as having been introduced into Holland with bulbs from southern Europe, probably from Italy. Various accounts of its ravages appeared from time to time, and it was a frequent topic of discussion in meetings of Dutch bulb growers, who found it difficult to combat on account of its habits and little-known life-history. In *The Gardeners' Chronicle* for 1842 there is a figure and account of the insect by the late John Curtis, who wrote under the nom de plume of Ruricola, and this figure was reproduced in the same journal in 1877 and 1885. The same figure is given in Burbidge & Baker's monograph of the Narcissus, published in 1875. Among other important papers was one published by F. W. van Eeden, of Haarlem, in 1853, and one by A. C. Groenewegen, of Haarlem, in 1883. The latter advised watching for weak plants and those that failed to grow in spring, and their destruction if infested, and the searching for the chrysalids which might be found near the surface of the ground around the plants before they flowered.

In May, 1882, Mr. J. H. Krelage, the well-known bulb grower of Haarlem, sent specimens to Dr. J. Ritzema Bos, with the request to make a complete study of the pest, the results to be published at the expense of the association of bulb growers of which Mr. Krelage was president. The outcome was an elaborate paper, with two plates of figures, entitled "La Mouche du Narcisse," published in *Archives du Musée Teyler*, series 2, vol. ii., part 2, Haarlem, 1885, and published also in the Dutch language. In this exhaustive monograph the author gives the results of various experiments in attempts to find means to combat this insect. One, at first thought to be efficacious, was very simple, and consisted of the immersion of the bulbs in water for eight days before planting, this seeming to kill or drive out the larvæ. Further experiments, however, showed him that immersion could not be relied upon to kill the maggots, and this conclusion is verified by Mr. Krelage in the *Revue Horticole* for 1889, who states that the method most generally followed with success is Groenewegen's plan already referred to. If the spring is cold and wet when the flies are emerging from pupæ a large proportion of them may die without laying eggs, and so there are periods of comparative immunity, but after a few favorable seasons they again become abundant.

In Brookline, Narcissus-bulbs in a warm dry rockery have been found much more liable to destruction than those growing in low damp ground, and especially among grass. Also, *Hippeastrums* under warm dry cultivation have been found much more affected by the pest than those grown under cool and moist conditions. Among these beautiful and often high-priced flowers the *Merodon*

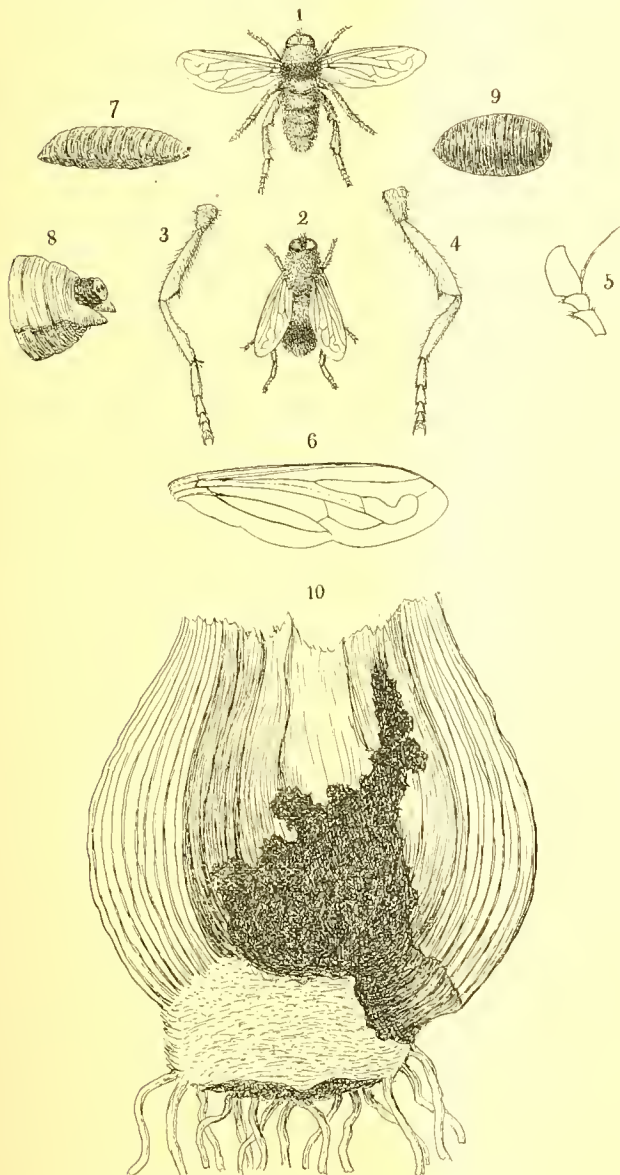


Fig. 18.—*Merodon equestris*, a Narcissus pest.—See page 154.

1. Male fly, natural size. 2. Female fly, natural size. 3. Posterior leg of male, enlarged. 4. Posterior leg of female, enlarged. 5. Antenna, enlarged. 6. Wing, enlarged. 7. Larva, natural size. 8. Anal segments of larva, enlarged. 9. Pupa, natural size. 10. Section of *Amaryllis* bulb, showing destructive work of larva and hole made for exit.

tawny-colored hair. The generic name of *Merodon* was given on account of a small tooth-like projection on the lower end of the femur of the posterior leg.

So far as known only one or two eggs are deposited at each plant, and the female appears to deposit them near the base of the leaves above ground in May or June, when the plants are out-of-doors. Upon hatching, the young larva is said to work its way into the bulb by burrowing between the scales, and once in its heart, it makes a large

equestris has proved itself capable of doing much damage, and cultivators should be on their guard against it.

The figures of *Merodon equestris*, on page 155, are from drawings by Mr. C. E. Faxon.
Jamaica Plain, Mass.

J. G. Jack.

Cultural Department.

Seasonable Notes.

AT this season every inch of available greenhouse bench and shelf room is in use, and it is difficult to find space for all the plants when potted or boxed. Every private establishment should have a number of cold frames, as they are preferable to greenhouses for growing many plants during the next few weeks, and the stock can be more readily hardened off and brought into good condition for planting outside.

Bedding plants at this season take up much space. Many flowering annuals are grown to use in the perennial borders and to grow for cut flowers. Our earliest Asters are now of good size in boxes in a cool frame. We usually plant these out about May 10th. Queen of Earlyies and Comet are used for our first sowing, and we make successive sowings of these until the first week in July. Stocks, we find, do better grown in small pots; the possibility of breaking their roots when planting out is thus avoided. Zinnias are among the best annuals for cut flowers; while stiffer in appearance than Asters, they bloom continuously. Seedlings of these and various other annuals are now pricked off into boxes or frames. Geraniums were recently transferred to a cool frame from which Violets had been removed, and will be kept moderately close for a few days until warmer weather is assured. Coleus require strong heat, and a few sashes filled with warm stable manure and leaves provide a suitable place for these plants. Alternantheras root quickly and revel in such quarters. Carnations for summer blooming are now forming roots in three-inch pots in a cool frame. These will be planted out early in May. Winter-flowering Carnations in boxes can also be gradually hardened in a similar way. We look over the plants once a week and do any necessary stopping. Thus far there have been no signs of rust on our young stock.

Considerable space has recently been taken up with plants grown for use at Easter, and not a little judgment is necessary to bring them into flower at the right time, owing to the lateness of the season and vagaries of weather. We have this year tried a few Cape Cod grown bulbs of *Lilium candidum*; they are superior to the French bulbs we have usually grown, and there seems to be no reason why so many of these bulbs need be imported annually if they can be raised and sold at corresponding prices here. The sandy soil on Cape Cod and some other places is peculiarly suited to the growth of good clean bulbs of *L. candidum*. We plant out our forced stock after the flowers are cut, and if undisturbed for a few years and generously treated they give splendid spikes. *L. Harrisii* and *L. longiflorum* have shown a larger amount of diseased plants than ever before. Some commercial growers report that from fifty to seventy-five per cent. of their stock is diseased, thus entailing a serious loss. It seems imperative for large buyers of these bulbs to visit Bermuda during the flowering season, and see that those from whom they buy bulbs have clean stock. The disease undoubtedly comes in the dormant bulbs, and is not due to subsequent treatment. As soon as *Spiræas* (*Astilbes*) have finished blooming they are planted out in rich, rather moist, land, and make capital forcing clumps after being rested a year. The Crimson Rambler Rose has proved a decided acquisition as a flowering plant at this season. We grew a few plants from cuttings rooted late last spring, and flowered them in seven-inch pots, bending the shoots over in the form of a hoop. They all broke and flowered splendidly. This Rose is reliably hardy here, and survived outdoor treatment perfectly, while many hybrid Perpetuals were killed-back quite severely. We have some young plants now in two and a half inch pots, which will be grown along in pots for flowering next Easter.

Cannas continue to make rapid strides in popularity as is evidenced by the great numbers cultivated everywhere. But there is danger that they will become so common that popular fancy will turn to some other novelty. They are not sufficiently appreciated for winter flowering in pots. We have tried about twenty of the leading sorts this season, and the majority have been in flower since Christmas and are still loaded with spikes. Among the best varieties for pots are Queen Charlotte, Madame Crozy, F. Vaughan, Eldorado, Paul Bruant, Alphonse Bouvier, Gloire de Montet and General De

Mirabel. Our stock for bedding purposes are in four-inch pots, in a Carnation-house temperature. Tuberous Begonias are capital bedding plants for partially shaded locations, where they can be kept well watered. Our tubers were recently started in boxes of light sandy loam in a frame. Water needs to be given sparingly until they are well started into growth. Fibrous-rooted Begonias are beyond question among the very best winter-flowering plants, and no greenhouse is properly furnished unless it contains some of the leading sorts. We have just potted off a lot of these plants into small pots for flowering next winter, and there is still time to root and grow on good plants if cuttings have not yet been inserted. *B. Haageana erecta*, *B. semperflorens gigantea rosea*, *B. nivea* (a beautiful white variety) and Paul Bruant are among the most attractive sorts we have grown, but many more are beautiful. Of newer sorts we have two of the *Semperflorens* type which promise to be fine, Goliath and Mastodonte. The variety Gloire de Lorraine, already several times referred to in GARDEN AND FOREST, is sure to become popular.

Pelargoniums of the regal and show sections are now flowering profusely. It is surprising that so few private places grow these plants; a bench of them in bloom presents a striking appearance. They are mostly grown in six and eight inch pots and require plenty of water, frequent doses of liquid-manure and a light fumigation every ten days for green aphid. They like a partially shaded, cool, airy house. We find them useful for decorative purposes, and we drop a little floral gum in the centre of each flower to hold the petals together.

Now, when there is a pressure of work in all departments, the compost-heap is apt to be forgotten. Our Carnation compost was prepared last fall; it will be turned over shortly to give it a thorough mixing. We usually plant our Roses out in benches early in June, and have turned over the compost-heap for these recently and added some finely ground bone. If compost-heaps have not already been prepared they should be attended to at once.

Taunton, Mass.

W. N. Craig.

Some Cool-house Shrubs.

WITH the arrival of spring we are again reminded of the wealth of good material in hard-wooded plants adapted for cool-house culture, and which have, in this country at least, been comparatively neglected in recent years. The plant-buying public becomes more discriminating each season, however, and a greatly increased demand for the few species of hard-wooded plants now offered for sale proves that interest in them is awakening.

The few *Acacias* now grown, mostly *A. pubescens*, *A. arnata* and *A. Riceana*, deserve to be more generally known, and these three species form a good beginning for a collection of these charming plants. They are as easy to manage as *Azalea Indica*, the chief difference in treatment being that *Acacias* require rather more pruning to make shapely specimens.

Azaleas can be successfully flowered in a living-room without previous preparation in a greenhouse. After blooming the plants should be repotted, if necessary, and when the weather becomes warm, for example, about May 1st, the pots should be plunged out in the garden. They should be watered thoroughly every day during dry weather, brought in before frost in the fall and stored in a light, cool room. Those I have in mind were kept in a light attic where the temperature was probably just above freezing during cold weather. They should be brought into the warmer rooms of the house as their flowers are wanted. From plants thus treated by a neighbor a bountiful crop of flowers was produced, of good size and substance.

For several seasons past it has been shown by commercial growers that species of *Ericas* can be grown as well in this climate as in that of Europe, and while all species may not prove equally satisfactory, there are enough of free-growing ones to add greatly to the beauty and variety of the cool greenhouse at this season. Among the easiest to manage are *E. hyemalis*, *E. Wilmoreana*, *E. persoluta* in its various forms, *E. hybrida*, *E. melanthera* and *E. præstans*. These give a succession of bloom from late autumn to early spring. Outdoor culture is the most satisfactory for these plants during summer, providing they are given plenty of water in dry weather. There is less danger from red spiders under these conditions than when the plants are kept in the greenhouse.

The *Boronias* and *Eriostemons* are also welcome additions to the cool house in spring, and do not occupy much space before reaching the blooming size. While their flowers are not very large, those of the *Boronias* have the added merit of being fragrant. The brown-yellow flowers of *B. megastigma* in par-