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Claude Hope

Passiflora lutea

[See page 44]

Early Plant Explorers

VIOLET NILES WALKER

THERE are many more avenues of approach to the subject of plant collecting than are apparent at a first casual glance. We sit at home and enjoy—(or struggle with, as it may be), the fruits of the labors of adventurous pioneers whose enthusiastic efforts and selfless devotion to horticultural exploration have given us the modern garden. But few of us have any conception of the effort or the romance, the dangers and the thrills that even one individual flower may represent.

That we do not give just due to the scores of men who have risked their lives, and so often lost them under the impetus of their enthusiasm, is not however, entirely our fault, for until very recent times, when the development of printing facilities made it possible for any literary minded traveller to burst into print, few books commemorated the achievements of those early collectors, and even such as have been published are today out of print and hard to locate. Short articles or paragraphs may be dug out of records and from time to time enlarged upon, but for most part their achievements lie buried in scientific journals in the form of articles, notes, reports, or erudite discussions on minute details of classification and nomenclature.

A survey of material available in horticultural libraries today not only emphasizes this fact, but another as well, which is that the majority of early plant explorers seemed less concerned with publicising their own personal experiences than in the material which they introduced, while those of the 20th Century have not let their light be dimmed under the proverbial bushel, but have given, and are giving, vivid and thrilling testimony to the life and experiences of the plant collector.

However, the extensive and detailed narratives of such men as Fortune, Forrest, Wilson, Farrer, Kingdon, Ward, and so forth, are not alone valuable for their individual interest, but for the glimpses we get, through their eyes of their predecessors, and the better understanding of what was accomplished over three centuries, not only under the handicaps of primitive traveling conditions on both land and sea, but under the perils which, from the earliest times even to our own day, have always threatened the travellers who ventured beyond the borders of the white man's territories into unexplored regions.

No matter when or where the adventuring plantsmen were spurred on to intense horticultural exploring activity, no matter how the scene might shift from one savage locality to another, these men who were part of the advance guard of civilization exposed themselves voluntarily and eagerly to situations of such extreme peril as it is difficult to picture today, when enjoying in quiet gardens the fruits of their labors.

But how much more we would appreciate the beauty of our most familiar flowers if the stories that lie behind their arrival with us could be unfolded—and where might we not travel!

A lily would link us with the head hunters of Formosa; a primula with the savage tribes of western China and Tibet, where Robert Fortune could only penetrate disguised as a Chinaman. Few know that from the black Bushman of Australia the acacia and eucalyptus families were bought at the price of many human lives, one of the most notable being that of Richard Cunningham. A gladiolus ties us closely to the great engineering feat that opened up tropical Africa when Francis Fox, in

1881, found the little primulinus gladiolus growing above the bridge he built across the Zambesi River, and sent the first specimens home to his English garden.

In the naming of that beautiful greenhouse plant streptocarpus Rex, James Bowie, an early south African explorer, makes almost the only contribution towards preserving the memory of a romantic character prominent in the early history of the Cape of Good Hope, and certainly deserving of recognition for his contribution to horticulture, even if forgotten by history. This was George Rex, a natural son of George III and Hannah Lightfoot, a Quakeress. Rex was a strong and able character but a loose liver—his many known descendants vary in color from white to dark brown—and his Royal Father fearing what his future course might hold for England, exiled him for life to South Africa, though supplying him plentifully with cash.

There he engaged in many occupations, among others, adventurous plant collecting with Bowie, yet there are few records of his discoveries, and only the naming of the streptocarpus suggests to us the contributions he made to England.

Moreover, there are many plants now in generally universal usage whose introduction has been completely lost in oblivion, for instance, the peach is indigenous only to China yet it found its way, how we do not know, though probably by land, to Persia and from there into Eastern Europe before the Christian era.

A bird's-eye view is all that we can take at the moment, with only the highest spots to be touched, and it has taken a firm hand to hold down the topics, for once launched into the subject, each individual studied is more absorbing than the last, and it soon becomes a

question of not being able to see the forest for the trees.

In this bird's-eye view there should always be in the back of our minds, the consciousness of the back-ground of excitement, of hardships and danger and heart-breaking failures, which had to be undergone even with the many thrills, before the introductions of the great pioneers became naturalized citizens of our gardens.

Moreover, a brief resume of historical conditions must be the first necessity for dealing intelligently with the subject, since nothing had more influence on our present day gardening than the fluctuations of medieval sea power.

It is hard for us to realize that almost up to our own times, when the Suez Canal was opened, the nearest route from western Europe to Eastern Asia was around the Cape of Good Hope, a hazardous voyage of many months, in ships that seem to us today little more than pleasure craft. And yet, from 1600, when the first East India company was formed in England by Queen Elizabeth, there was a steady stream of trade from Western Europe to Eastern Asia. The English company was soon followed by similar rival companies in Holland, Portugal, France and Denmark, and the wealth of the Indies and China—silks, jewels, calicoes, spices, drugs, silver, tea, etc., etc., formed the important cargoes which crowded the holds on the long voyages of many months returning from the Orient, and it would seem that there could have been no room left on board for the cumbersome paraphernalia needed to bring home living plants.

Plants, not seeds, were the first to be collected, and before the Wardian Case was invented in 1836, small portable greenhouses were evolved which called for constant and careful nursing, and were the only means of transporta-

tion. How much plant material was collected, and how little in proportion survived we can only guess. Witness, for instance, one experience of Charles Maries, as recently as 1877, when the results of an extensive collecting trip through northern Japan were shipped to a trading port in a vessel loaded with sea-weed. The first day out the wet, swollen sea-weed burst open the little vessel, which was run ashore by the captain. The box of bulbs, seeds, and cones was rescued and put into another boat, but this time it in turn capsized and sank, losing the entire lot.

The chief fields of exploration during the 17th, 18th, and early 19th centuries were China, the East Indies, South Africa and Eastern America, while Australia, South America, and our own West Coast and Tropical Africa were not generally opened up until the middle and end of the 19th century. The greatest tide of plant exploration has been since 1900, and in this first third of the century it has grown to such huge proportions that today, it is a trade, not an adventure—and yet a trade that will always have its thrill and invitation to some.

The first European traveller to the Orient from whom we have any detailed account was the Venetian, Marco Polo, who, with his father and uncle journeyed to Cathay, (or China as we know it) and lived there from 1271 to 1289. He later wrote an account of fruits, vegetables, and flowers he found there in common use, and his memoirs, dictated in prison, are the first authentic account of the great Chinese civilization. So great were the marvels he described that it was regarded as one of the fairy tales of the ages, and its truth and reliability were not established till the opening of the 19th Century, when the wave of modern explora-

tion established his veracity and paid tribute to his achievement.

Shortly after this period China became closed to outside intercourse, and was not opened to Europeans until 1516 when a Portuguese captain, Raphaelo Pestrello, managed to reach Canton, having in some way contrived to sail from Malacca in a Chinese junk. Following this, the Portuguese had a monopoly of the Chinese trade for over a century, medicines, drugs, etc., being their chief commodities. There is no record of flowers or ornamental shrubs and trees being brought to Europe by them, except that to a Portuguese Viceroy of India, Juano de Castro, tradition gives the credit for bringing the sweet orange tree to Portugal. As a mere mention of historical continuity, the Spaniards next appeared in the Orient, conquering the Philippines in 1543, and trading with the Chinese, but so far as can be found, making no contributions to European gardens.

But with the arrival on the scene of the Dutch, in the later 16th century, a new era began. Spain and Portugal suffered an eclipse and for over two centuries the Dutch East India company (founded in 1631) practically had the monopoly of the trade with China and the Indies, and were the only European nation privileged to trade with the tightly closed country of Japan. From this time on plants began to creep into Europe in increasing quantities. We know that the Dutch brought in many bulbs, among them lilies from Japan, of unknown hybridization, from which are descended the unbellatum hybrids of today, but the names of their introducers are unknown.

We think of China as the first foreign parent of our modern gardens, little realizing that introductions from South Africa came at the same time. For the Cape of Good Hope, being the

half way point to the East Indies trade, drew many explorers, following the establishment of the first Dutch settlement in 1689. The names of these early Dutch Cape pioneers rest in the same oblivion as those of Japan, but we know that they were a busy lot, for in 1678 Jacob Breyne speaks of a number of Cape flowers as already well established in Holland gardens—among them *Oxalis purpurea*, mesembryanthemum, and, interesting to note, *Ornithogalum thyrsoides*, this last, so recently as within the last ten years heralded in American catalogues as a new introduction—while in the next hundred years great quantities of the wealth of the Cape were absorbed into Holland and England.

But England gives clearer records, and after Masson, the greatest of them all, the names of George Stonestreet (who collected about 1695), Sir James Cockburn, 1773, Joseph Niven in 1798, and John William Burchell in 1811, cover two centuries of plant introduction from South Africa. To them are due many of the plants and bulbs that are today either so completely naturalized out of doors, or so indispensable as greenhouse plants, that their origin is ignored by the modern world, and they have become as natural as bread and butter, with no questionings as to their ancestry.

In 1817 James Bowie was sent out from Kew, and remained the rest of his life, sending vast collections of Cape flora back to England.

Francis Masson and Carl Peter Thunberg are the outstanding South African explorers and collectors and the wealth that they have sent home has permanently enriched two continents. Masson was a Scotsman, sent out by Kew Gardens in 1772. For two years he explored the Kaffir country, much of it in company with Thunberg,

sending home plants such as *Ixias*, *Aloes*, *Euphorbias*, *Stapelias*, etc., and many new varieties of heaths. Returning to England he was sent by Sir Joseph Banks, head of the R. H. S., on a collecting voyage to the West Indies, which met with many mishaps from storms, fights, etc. In 1786 he was again in South Africa for nine years. He died in Montreal in 1805.

From the Journal of South African Botany we have detailed notes on the South African achievements of Carl Peter Thunberg, doctor, surgeon, botanist, Chevalier of the Swedish Order of Vasa, Professor of Botany at Upsala, succeeding Linnaeus, whose pupil he had been, and world traveller during the latter half of the 18th century. His name is linked not only with South Africa, but with the East Indies, and with Japan at a time when Japanese flora was entirely unknown. He wrote the first "Flora Japonica." As before noted, it must be remembered that up to 1853, when our Admiral Perry so boldly opened the ports of Japan to the world, Japan was a closed nation to all but the Dutch. Their monopoly of this Japanese trade is another one of those interesting by-paths which we must steadfastly ignore, and only mention it in as far as it concerns our Chevalier Thunberg.

Through the interest of two great botanists, the Burmans, father and son, at Amsterdam, it was arranged that Thunberg should accompany an expedition of the Dutch East India Company to Japan, but since no foreigner besides a Dutchman could enter that country, the distinguished Swede must become in appearance and language a Hollander. So following his three years at the Cape, where he learned Dutch, he was appointed first surgeon on a Dutch merchantman, and sailed from Batavia to Japan. Here he stayed for sixteen

months, and only the most cursory glance at his importations show the great value of his work. *Berberis Thunbergii* alone might be his monument. Java and Ceylon were also explored and tapped. Thunberg died in Munich in 1866.

Thunberg was followed in the Dutch East India Company by one of the greatest of all plant collectors, Philipp Franz von Siebold. Born 1796, a Bavarian, von Siebold was a doctor and an accomplished scholar, as well as an explorer. Gaining entrance to Japan, as had Thunberg, through services as a Dutchman on a Dutch ship, he lived there from 1823 to 1839, studying, collecting plants and preparing for his great work on "Flora Japonica." Much of his success among the Japanese was due to his reputation as a doctor, and we are told that he enjoyed greater cooperation and freedom than any of his predecessors.

It is said that he sent over four hundred plants back to Europe. To him we owe many flowering trees and shrubs—crabapples, flowering cherries, lilies, weigelas, witch hazels, hydrangeas, etc., as well as conifers and deciduous trees, in fact, the largest collection introduced at that time. The permanency of his introductions was aided by his establishment, in 1850, of a nursery and Jardin D'Acclimatation at Leiden, where he cultivated and distributed the introductions made possible by the friendship of the Japanese. A second trip to Japan, in 1856, after the ports were opened, was attended by additional cooperation from the Japanese, whose former friendship had been strengthened during the intervening years.

The English East India Company was the chief vehicle for plant exploration in China from early seventeen hundred, and it is interesting to note that

the first collectors were almost always ships' surgeons. Samuel Brown is the first we have mention of, James Cunningham, Kerr, and Barclay following.

Cunningham explored the Chusan Islands from 1701 to 1703, and sent back to England *Gardenia florida*, the vegetable lamb (*Cibotium barometz*), *Chimonanthus fragrans*, long used in England, and only reaching us in later years, *Sophora japonica*, *Cryptomeria japonica*, *Cunninghamia lanceolata*, and many others.

But of the early collectors in China, sent from England, the name of John Reeves stands out preeminently. He was the son of a clergyman near London. Born in 1774, he was educated at Christ's Hospital, and early began work in the tea service. In 1812 he was sent to China as an assistant in the East India Company, rising subsequently to the post of Chief Inspector of Tea at Canton. We are told he was a man of unusual attainments scholarly, scientific, and preeminent in business. He studied the Chinese flora, and in his collections was discriminating in his choice of material to be sent back. He let no ship return to England without the small portable greenhouses filled with potted plants he had nursed and established. He is responsible for the first Chinese azaleas, chrysanthemums, Moutan peonies, Chinese primroses, *Wisteria sinensis*, and so on and on. He has been called one of the Nestors of Horticulture. He died in 1856.

With the opening of Japan, our most notable Englishman is possibly John Gould Veitch, and his name opens up one of the grandest chapters in horticultural history. Five generations of Veitchs carried on a business that has been world-wide in its scope and influence, and the firm of Veitch and Sons, now unfortunately out of existence, was probably one of the most in-

fluent factors in modern garden development. They were remarkable as growers and developers of types; they united with scientific organizations in raising standards both of material and exhibiting; and they maintained, over the greater part of the nineteenth century, a corps of able and distinguished plant collectors in every continent. A list of the best known of these shows names that are familiar through their connection with plants now in daily use. The name of William Lobb, who collected in South America and California from 1840 to 1857, should at least be known to us through the nasturtium named for him — *Tropaeolum Lobbiana* var. *Veitchii*. But it was he who sent the first seeds and cones of the California Sequoia to England, together with *Berberis Darwinii*, *Escallonia macrantha*, *Araucaria imbricata*, and many of the choicest varieties found from the California Sierras down through the great ranges terminating in the Chilean Andes.

Another Lobb, Thomas, spent years in Java and India, and his name is synonymous with some of the finest orchids introduced to cultivation and also some of the first *Nepenthes* grown in British gardens. In Wilson's Plant Hunting, the chapter on the *Nepenthes*, "Plants that Kill and Eat" is one of the most interesting in the book.

Richard Pearce, who was one of the pioneer begonia specialists, was sent out to South America by Veitch and Son in 1859, for the purpose of specially collecting seeds of *Librocedrus tetragona* (the incense cedar), the Chilean Pine, *Araucaria imbricata*, and many hardy shrubs, as well as greenhouse plants and orchids. In two expeditions he sent home quantities of all these, and in addition, collections of tuberous begonias that have formed the nucleus for modern begonia hybridization. *Nie-*

rembergia rivularis is one of the familiar flowers we owe to him. Pearce died in 1867 at Panama, of the deadly tropical fever.

The name of one of Veitch and Sons' less successful collectors, Carl Kramer, has nevertheless been preserved to us by the naming of *Lilium Kramerii*. J. Henry Chesterton, a noted collector of orchids, who brought the first scarlet odontoglossum to England for cultivation, lost his life through his own recklessness in South America.

Another of the firm's collectors, Gustave Wallis, whose remarkable trip across the continent of South America from the mouth to the source of the Amazon, is still a matter for emulation, died of dysentery at Cuenca, 1878. Among his introductions is our saucy little pink-tongued modern favorite, the anthurium.

F. W. Burbidge, naturalist, traveller, author, horticulturist, and Curator of the Botanic Gardens at Trinity College, Dublin, collected for Veitch and Sons in Borneo in 1877-1878. His chief objectives were rare varieties of tropical pitcher plants, and he successfully introduced the Great Giant Pitcher Plant of Kina Balu, *Nepenthes Rajah*; orchids and ferns were also well represented in his collections.

The four greatest of all the Veitch explorers were David Burke, Charles Maries, John Gould Veitch, and Ernest H. Wilson. Burke travelled from 1881 to 1896, and is said to have covered more miles in search of plants than any man sent out by Veitch. He sent back to England some of the rarest and most beautiful tropical plants, especially orchids, from the wilds of Borneo, British Guiana, New Guinea, the Philippines, Burma, the Celebes Islands, and the Moluccas in the South Seas. Little is known of him or his death. He preferred the society of natives, and died

among them far from any European settlement, in Amboina, one of the Moluccas. His death was learned only by chance through a wandering German.

Charles Maries had an interesting and romantic life. His travels covered wide territories in China, but Japan was probably his greatest field, and we owe a huge debt to him for many of his introductions. Among them are several of our finest fir trees, *Abies Veitchii* and *Abies sachalinensis*, *Styrax obassia*, hydrangeas, several lily forms, many varieties of Japanese iris, and probably most familiar to us, *Platycodon grandiflorum Mariesii*. Maries left the service of Veitch and Sons in 1882 to take the post of Superintendent of the Gardens of the Maharajah of Durbhungah, in India, where he laid out the palace gardens. Later he undertook the same work for the Maharajah Scindia of Gwalior, and was in charge of the palace and state gardens until his death.

John Gould Veitch was the outstanding explorer in the Veitch family connection. He travelled for ten years, 1860-1870 through Japan, Australia, the South Sea Islands, and the Philippines and introduced to England one of the largest collections of evergreens brought home by any one individual, in addition to many varieties of tropical plants. Through his position, early in his travels, as a member of the staff of the British envoy to Japan, Sir Rutherford Alcock, he enjoyed many privileges one of which was the opportunity of being the first European to climb to the summit of Mt. Fuji. He died of a haemorrhage of the lungs in 1870 brought on through exposure. He was only thirty-one years old.

Ernest L. Wilson, who in 1899 started his explorations under the house of Veitch, was the last of this great

band and his name brings the list of plant explorers nearly to the present time. Indeed Wilson properly belongs to that brilliant circle of modern names guaranteed against oblivion wherever Horticulture and Literature flourish jointly—Reginald Farrar, George Forrest, Frank Meyer, Augustine Henry, Aaron Arohson, and still living, F. C. Rock, Kingdon Ward and David Fairchild. All of these are more or less familiar to us and their achievements fully recorded in their works.

The procession of Englishmen who, from 1600 explored North America, pushing ahead always of our ever-moving boundaries, forms a chapter to itself. Such names as the Tradescants, the Bartrams, Douglas, etc., etc., are among the best known but there are a host of others well worthy of study and further acquaintance.

The last half of the 19th Century with its rapid development in world travel facilities produced a band of men no less famous and no less dauntless in their conquests of untraversed territories. There is a long list but only four of the outstanding can be mentioned here. Carl Maximowicz, the great Russian scholar, author, botanist, and explorer for plants, who wrote the first intimate account of the flora of Japan and who was also the first to introduce living plants to any extent to Eastern Europe. Through the Botanical Gardens of Petrograd some of his choicest plant introductions from Manchuria, China, and Japan, found their way to our western gardens. Notable among them were several lilies.

The two greatest Frenchmen of this time were missionaries, sent out to the interior of China—M. l'Abbe Armand David, a priest of the Society of Lazarists, and M. l'Abbe Jean Marie Delavay, belonging to the Society of Foreign Missions.

From 1863 to 1874 L'Abbe David, journeyed uncountable miles through the interior of China, Southern Mongolia, and Eastern Tibet, and the scientific fruits of these travels are counted among the most important of modern times. If for nothing else David's name would be always famous for his discovery of the *Davidia*, which bears his name, as well as for the first discovery of rhododendrons in Western China. He opened up the country since made famous by Farrar, Wilson, etc. Delavay followed David's footsteps and, encouraged by the great French botanist Franchet, collected and sent back to Paris hundreds of specimens not only of rhododendrons, but of a vegetation almost entirely unknown to science. David died in Paris in 1900, seventy-five years old, Delavay died in Yunnan, China, in 1895, only 57 years old, broken in health by the plague which attacked him in 1888, and from which he never entirely recovered.

The fourth of these great explorers of the late Victorian era, and probably the greatest of all, was Robert Fortune, a Scotsman born in 1812 and who died in 1880. Fortune made four notable collecting trips, the first for the Horticultural Society of London (now the Royal Horticultural Society), the next two for the East India Company and the fourth his own private enterprise. His adventures, detailed in his four books, are exciting and hazardous to a degree, and, as before mentioned, in order to penetrate into the fiercely hostile regions of Tibet and Yunnan,

he was forced to assume the disguise of a Chinaman . . . which of itself speaks volumes, since only time and intelligent familiarity could assure proficiency in a role so difficult.

Fortune brought to England the greatest number of new plants of any known collector—190 species, 120 of which were entirely new to the botanical world, while the number of varieties ran into enormous numbers. This was due, of course, to the fact that he antedated even his contemporaries in being the first to tap the fabulously rich fields of unknown regions of Eastern Asia.

For almost an even hundred years his introductions have stood at the head of garden material even to the point of losing their identities as foreigners, deutzias, *Viburnum tomentosum*, *Akebia quinata*, roses, camellias, *Citrus japonica*, forsythia, *Jasminum nudiflorum*, *Chionanthus retusa*, are but a few of what we call common shrubs. While *Anemone japonica*, *Torenia colorata*, moutan peonies, azaleas, clematis, chrysanthemums, and so on ad infinitum, stand as eternal monuments to his memory. Perhaps his name is seemingly obliterated for the average gardener, but his own stories will live, and in the revival of interest in the origins of garden material which is bound to grow, Fortune will ever stand where he rightly belongs, at the head of that great army of plantmen to whom we owe our present day garden beauty, and whose names in all justice to their gallant lives, cannot be allowed to sink into oblivion.

Edible Weeds

HELEN M. FOX

TODAY with a large part of the world's population either starving or close to it, edible weeds have a timely interest.

Many palatable plants are eaten by very few, while others are eaten in certain localities only. Yet a large proportion of ignored or neglected vegetables have a high content of vitamins, starches and salts. Though the enterprising housekeeper may find it amusing to vary the family menu with cooked nettle greens, or soups of portulaca or sorrel, she may hesitate to grow weeds, for there is likelihood of their spreading from neat rows in the vegetable garden into the flower beds or fields of grain, unless carefully watched and tended. However, edible weeds could be picked from fields and roadsides and brought to markets if there was a demand for them. This would serve two purposes, to keep the weeds down and supply nourishing food.

In looking up the subject of edible weeds I came upon a book, "Les Plantes Alimentaires Chez Tous Les Peuples a Travers Les Ages" by D. Bois, which includes almost every plant eaten by man at one time or another; "Weeds," by Walter Conrad Muencher and "Notes on Edible Plants," by E. Louis Sturtevant. Besides, there were books and pamphlets on medicinal plants and a report entitled "Some Edible Potherbs and Salad Plants in New York State," by the Domestic Science Department at the New York State College of Agriculture.

Many of the weeds—as was true of daisies and buttercups which did not paint the fields with yellow and white before the sailing of Columbus—reached these shores in the hay bedding of animals, crowded into the little ships

with the first settlers to cross the Atlantic. Other weed seeds may have come to southwestern coasts in outrigger canoes, or to the east with tenth century viking visitors. Once they reached the land it did not take them long to become established.

Among edible weeds are salad plants, greens to be cooked as pot herbs, edible roots, seeds and young stems, or leaf buds which are cooked like asparagus.

If it were not that the dandelion ruins lawns, it would be considered a most desirable perennial, because of the cheerful beauty of the bright yellow flowers followed by silky seeds, each in the form of a parachute, and all together forming a transparent balloon borne on hollow stems, rising from a rosette of pinnatifid leaves. At the first breeze the seeds float away to rest on a bare spot, generally in a lawn or meadow. To get rid of the plants, the crowns should be cut well below the soil level—a good tool for this is an asparagus knife. Into the hole a few drops of sulphuric acid or a pinch of ammonium sulphate finish off the plants. Some think dandelion, *Taraxacum officinale*, was introduced from Eurasia but others that it is native to America. Bois mentions cultivated forms. The greens should be cut before the first bud is formed so they will be tender. They taste bitter and as salad are best with blander greens such as lettuce or Romaine all cut into pieces and served with French or some other dressing. The American Indians combine the root with other plants to make a tonic.

Roripa nasturtium-aquaticum, Water Cress, is a European plant but has escaped and spread itself in America from Nova Scotia to Georgia and west to

Idaho and California. It is so widespread, I once saw it almost choking a stream in a remote valley in New Mexico. The antiscorbutic qualities of water cress were well known to the Greeks and Xenophon recommended it to the Persians, while Romans considered it a cure for deranged minds and in India it was valued by Mohammedans. Stems and leaves float in water which must be clear and running. The small white flowers grow in elongated racemes. Bois recommends cultivated forms as better than the wild and says wider leaves taste pleasanter than narrow. When there is no stream on the farm, cress is grown in long ditches. Either seeds, cuttings of roots or stems which root at the nodes, are planted in the bottom of the trenches. As the plant grows in height, the water is gradually let in, until it is five inches deep. Cress lends a peppery taste to salads and soup and can be added to spinach with a little mint and rosemary to give this otherwise mildly tasting vegetable a tang.

Originally from the lands where Alexander the Great marched his army, is *Portulaca oleracea* with the popular names of Purslane or Pussley. It has been a potherb in Europe for centuries where the young stem and leaves are either prepared as a salad or cooked, sometimes because of their slightly acid flavor as a substitute for sorrel, in soups. China and India, it is popular as it is in Mexico where it is on sale in the markets, but it is becoming less popular in Europe and is rarely eaten in the United States where, according to Bois, it was growing before the advent of Columbus. Purslane was used as an antiscorbutic by the explorers Cook and Baron Mueller. John Evelyn, who gardened and cooked in the time of Charles the Second in England, wrote of sorrel in his book "Acetaria,

a Discourse on Sallets" as follows:

"Purslain, *Portulaca*; especially the golden whilst tender, next the Seed-leaves, with the young Stalks, being eminently moist and cooling, quickens Appetite, asswages Thirst, and is very profitable for hot and Bilious Tempers, as well as Sanguine, and generally entertain'd in all our Sallets, mingled with hotter herbs: 'Tis likewise familiarly eaten alone with Oyl and Vinegar; but with moderation, as having been sometimes found to corrupt the Stomach, which being Pickl'd tis not so apt to do. Some eat it cold, after it has been boil'd, which Dr. Muffet would have in Wine, for Nourishment."

Portulaca is annual, and grows in cultivated places. The prostrate stems are much branched and in no time, a tiny reddish sprout becomes a wide mat of reddish stems with small yellow flowers in the axils of the succulent leaves. The cultivated form is more erect than the wild and there is a form with yellow leaves, mentioned by Evelyn. However, I would have to be hard put for vegetables before I would introduce it into the garden, it is such a rapid spreader and seeds itself so widely.

So beautiful is chicory it would be in every border were it not for its invasiveness. *Cichorium Intybus* is also known as Wild Succory, Blue Sailors, Blue Daisy, Coffee-Weed and Whitloof Chicory. It comes from Eurasia and has been naturalized in North America where its tall straggly stems, almost bare of leaves carrying composite flowers $1\frac{1}{2}$ inches across, of a lovely pale blue, can be seen along roadsides and in meadows. There is a white flowered form and one with flowers a dainty tone of pink. However, as with Morning Glories and Rock Roses, they close at noon. The root is a tap root, and the basal leaves look as if they had been

gathered along the center for they pucker on either side. They grow shorter as they ascend, the hairy, hollow stems. The leaves taste bitter, nevertheless they have been eaten as a salad since earliest days. The roots when ground and mixed with coffee make it darker and intensify its bitterness. The roots are also used medicinally. When they are to be forced they are lifted, set in a trench and covered, so the young leaves will come up blanched and tender. This is not endive which comes from *Cichorium Endivia*, known to cultivation since the Egyptian dynasties.

A perennial which increases into clumps is *Rumex Acetosa*, Sour Dock, Garden Sorrel, Meadow Sorrel, Tall Green Sorrel. It is found in meadows and old pastures and is abundant in north Atlantic states. The stalks, tinted red, are ridged and sometimes twist. They bear lanceolate, wrinkled leaves, clasping at the base, and terminate in a reddish branched flowering spike, which only the seeker after the strange, could call attractive. In my garden it has grown two feet high but is said to reach another foot. To have a continual supply of edible leaves I cut the flowering spikes. Sorrel also furnishes the green for a delicious cream soup.

This sorrel is not the much smaller *Rumex Acetosella*, Field, Sheep, Red Top or Sour Grass, from Eurasia and now common throughout North America. It has been used for soup and sauce. Bois recommends growing male plants to prevent them from seeding and I recommend growing *Rumex Acetosa* which is not a troublesome weed.

The thought of eating nettles recalls the story of the Thibetan saint, Milarepa, who ate nothing else and gradually acquired a green look. It is one of the five bitter herbs eaten by Jews at Passover, and has been cooked for

greens in soup, put into meat puddings and bear and brewed as a tea since earliest days. Bois writes, before the last war it was sold in Russian and French markets. American Indians eat it too. The stinging quality on the spines is due to bicarbonate of ammonia which evaporates with heat during cooking. It is said dock is an antidote to the sting of nettles and an old rhyme about this runs

"Nettle in, dock out
Dock rub nettle out."

Another rhyme

"Tender hearted grasp the nettle and it
stings you for your pains
Graps it like a man of nettle and it soft
as silk remains."

Rosemary and sage leaves are also supposed to be antidotes for the sting. Some used the sting medicinally to cure rheumatism.

Nettle, *Urtica dioica*, is perennial, comes from Eurasia and is now widespread in the eastern states. The stems are three to six feet high, ridged and bristly with stinging hairs. The leaves are opposite, ovate, heart-shaped and the flowers small, greenish and in spikes. Eleanor Rhode writes: "To make a nettle spinach—boil the young nettle tops in as little water as possible and when sufficiently cooked, rub through a sieve."

And now comes the group of weeds, the tender young shoots of which, can be cooked like asparagus. One of these is Milkweed, *Asclepias syriaca*, of the roadsides and fields, from New Brunswick to Saskatchewan, and from Kansas to South Carolina. Peter Kalm, the Swedish naturalist and pupil of Linnaeus—for whom *Kalmia latifolia*, Mountain Laurel, was named—when visiting the American colonies found French Canadians cooking the tender stems and young pods and eating them with buffalo meat. It is also reported,

Indians ate pods and stems of Butterfly-Weed, *Asclepias tuberosa*, which flaunts its brilliant orange flower heads from the Great Plains to the Atlantic Coast. The shoots of *syriaca* can be eaten only while young enough to snap when bent, later they are filled with milky juice and too tough. *Asclepias syriaca* grows from three to six feet high, has sturdy stems, oblong leaves, tapering at tip and base and numerous purplish flowers in globular umbels.

Native from Maine to Florida and south to Mexico is Pokan, Scape, Virginia Poke. Pokeweed is botanically known as *Phytolacca americana*. The Indians ate it and in the south, colored as well as white folk eat the shoots prepared like asparagus. Writers reported them in French markets of Louisiana in the early nineteenth century and in Philadelphia. This weed has reversed the usual order and escaped from America into Europe. There the juice of the purple fruit formerly colored pastries and sauces and in Portugal, for a while, the wine. Pokeweed grows twelve feet high and has a strong smell. The leaves are oblong, the flowers first white, fade to purple and the purple fruit is one inch in diameter and crimson with juice. The shoots should be boiled in two waters to dissolve the acid which is a strong purgative and used medicinally in the United States.

The sprouts of two Bellworts, *Uvularia sessilifolia* and *perfoliata*, American members of the lily family, and woodland plants with slender leaves and stems topped with drooping pale yellow flowers are edible as are the sprouts of *Smilacena stellata*, False Solomon's-Seal, False Spikenard or Treacle Berry. The arched stems of False Solomon's-Seal clothed all the way and evenly, with alternate sessile leaves are bent forward by the weight

of the creamy panicle of flowers at their tip. The fruits are pale red, speckled with purple and are edible and, according to one authority, taste like treacle, keep for a long time, are wholesome and have medicinal virtues.

It is difficult to imagine eating the young sprouts of *Arctium Lappa* but Gerarde wrote "the stalk of the clotburre before the burre come forth, the rinde is peeled off, being eaten raw with salt and pepper or boiled in the broth of fat meat, is pleasant to be eaten." And Kalm writes when he was in Ticonderoga "the governor told me that its tender shoots are eaten in the spring as radishes, after the exterior part is taken off." In Japan, the burdock is cultivated for the tender stalks, and roots. However, another authority says the root is tasteless, hard and fibrous. *Arctium Lappa* is biennial or annual and has popular names reminiscent of the English countryside, Beggar's Buttons, Clotbur, Cuckold, Harlock and Cockle-Button. It is native to Europe and Asia and naturalized in America where it grows in neglected farmyards for it thrives in rich soil. From a tap root, grows a large rosette of leaves and the stems are erect, hairy and three to nine feet high. The stem leaves are hairy below, alternate, simple and with slightly frilled margins. The purple flower heads are in axillary corymbs. The overlapping flower bracts are hooked at the tips and form a nearly globular bur. Ray florets are absent.

To avail oneself of edible roots of weeds growing along roadsides one needs a spade or a trowel.

At first coming from Europe, but now found wild in meadows, roadsides and waste places of North America is *Tragopogon porrifolius*, a hardy biennial of the composite family, popularly called Oyster-Plant, Goats-Beard,

Noon-Plant and Jerusalem Star. The stem rises from a fleshy grey tap root, is erect, branched and smooth and has a milky juice. The leaves are alternate, clasping, and narrow and in the vegetable garden one has to look at them twice to distinguish them from leeks. The flower heads are solitary, and terminal with many purple linulate flowers which close at noon. Oyster-Plant has been cultivated since 1600 for its roots which are delicious either fried in butter or boiled and served with cream sauce. Seeds are sown fairly early in spring for it takes a long time for plants to mature. The roots are harvested throughout the winter where the ground does not freeze too deeply.

Helianthus tuberosus, Jerusalem Artichoke, was first seen by a European on July 21, 1605 at Nausett Harbor, on Cape Cod, when Samuel Champlain and his expedition, led by Seigneur de Monts, visited the homes of the natives. On their way, they passed through fields of Indian corn and saw an "abundance of Brazilian Beans, many edible squashes of various sizes, tobacco and roots which they cultivate, the latter having the taste of artichokes." The Indian name of the plant is Kaischuc-penauk, said to mean sun and roots. But through a series of more or less involved occurrences the plant has the name of Jerusalem Artichoke, inappropriate, since it is neither an artichoke nor comes from Jerusalem. Originally the name was thought to be an anglicizing of the Italian, Girasole, but lately the theory has been propounded that the name is a popularizing by English hawkers of Van der Neusen, in Holland, where the plants were grown. The plants are perennial, grow twelve feet high and have ovate-oblong leaves eight inches long with toothed margins and rough upper surfaces, while the composite flowers have yellow disk and

yellow ray florets, are three and a half inches across and borne in clusters. They grow in any soil but the richer the earth, the larger the increase of tuberous roots under the ground. One tuber generally produces six new ones a year. Because of the rapid increase, the plants are a nuisance in most gardens. However, today in England, they are highly valued for their food content and their culture is encouraged. *Helianthus tuberosus* has 360 calories in comparison with 385 of the potato, twelve percent more nitrogenous substance and fifty percent more fat and minerals. It contains as much Grade 1 protein as the potato and in spring has inulin, an enzyme which converts fruit sugars into fructose, a sugar lacking in wartime England. The tubers make a good thick soup with grated young carrots and sliced onions or can be cooked as a vegetable.

The largest percentage of edible seeds comes from grasses but there are other plants furnishing them as well. One of these is *Chenopodium album*, Pigweed, Lambs-Quarters, Baconweed, also White Fat Hen, Mealweed and Frost-Blite. Remnants of the plants were found in the debris of the prehistoric villages along the lakes in Switzerland. In America, young tender leaves and tops, as well as seeds, are collected by Indians of the southwest who either boil them or eat them raw. Seeds gathered by some of the tribes are ground into flour for a bread or mush. The plants are annual and introduced from Eurasia. They have straight, ridged, branching stems, alternate simple leaves without stipules and with a few teeth along the margins. The flowers are small green and in irregular spikes, clustered in panicles.

Seeds are gathered from two other weeds. The first is Mustard, *Brassica alba*, now cultivated extensively for this

purpose in California. The yellow flowering spikes are a cheerful sight when they appear in cultivated fields early in spring but they signify poor husbandry. In India mustard symbolizes generation and the seeds are said to render women fertile. American Indians made poultices of the leaves for pains and swellings, similar to our mustard plasters which are made from ground seed. All grownups of today remember the mustard foot baths of their childhood as a cure for cold.

A third weed which furnishes seeds is *Amaranthus retroflexus*, Amaranth, Pigweed, Green Amaranth, Red-Root. According to Cornell, the water of the cooked leaves, which are edible, makes

an excellent soup. The shiny black seeds of this and other amaranths were formerly parched and ground into meal which was baked into cakes or used for porridge. The Indians cultivated the plants for the seeds. The leaves are so bland in taste one is advised to cook greens with a stronger flavor along with them.

These are only a few of the edible weeds people could gather for nourishment if they had to. Since taste changes and people eat different food in different centuries, undoubtedly in time, some of the weeds which have not already done so, will enter the kitchen door and become part of the weekly menu.

The Ups and Downs of Tulip Bulbs

MARY M. SELDEN

Progress in all branches of horticulture particularly toward simplified care brings attention to some new ideas on long time management of tulip plantings. For several decades past an important part of the cultural directions for tulips has been to dig them *up* every year or so and replant the survivors rather than to leave them *down* permanently. In the extravagant 1920's many a garden was expanded with no thought of upkeep. Later scores of tulip plantings established on the yearly renewal basis came to grief when the 1930's tightened our purse strings with a consequent reducing of labor.

Today many gardeners are finding that under certain conditions groups of tulips established in borders will continue for years undisturbed with but little care, giving color to the spring-time picture. This does not mean that show-sized blooms in a display bed will be indefinitely maintained but it does mean we have plenty of flowers for cutting and sections of large borders may be enhanced early in the season before late perennials develop or annuals fill in to cover the departing foliage of early bulbs.

Years ago, to my quest for advice on the best management of several tulip plantings in our garden, such contradictory opinions were expressed by various successful gardeners that it became evident I must try out the different methods and decide for myself.

Beginners in any line of endeavor are eager for a set of hard and fast rules to work by but the seasoned gardener realizes perhaps more clearly than anyone else that exceptions for outnumber if not outweigh the rules. It may be that the information acquired in search of a practical rule for tulips extending over a long period of years

in a rambling old garden and through many shelves of books will help other enthusiasts to a decision on handling their bulbs year after year.

There is, of course, hardly any problem about the tulip's first season if we think in terms of one year only provided the bulbs come from a reliable dealer and were planted with any rudiments of garden sense. The following words are written neither for the indifferent and heartless person who leaves the bulbs neglected to be devoured by mice or grubs, injured by disease and finished off by careless spading, nor yet for the extravagant management that discards the bulbs after one blooming and replaces them annually without giving the poor dears another chance in anybody's garden, but for the reader who proposes to continue to enjoy his collection of tulips in spite of the fact that garden maintenance must be kept within certain bounds.

There are two main schools of thought regarding garden tulips. One would dig them up after the foliage ripens in early summer and store them until time to replant them in the fall. The other school believes that if the bulbs are very deeply planted they can be left down indefinitely to bloom undisturbed. These two opposite systems confuse the beginner who often tries for a middle course without understanding the whys and wherefores and is disappointed in the result.

I hope to make clear why certain sequences need to be followed with either general system; for an understanding of essentials enables one to adapt methods successfully to many varied conditions.

We will first consider the "Up every year" idea which is the one advocated

by professionals. In Holland, the land of commercial tulip culture, the growers strive to produce annually a large crop of healthy bulbs that will yield maximum bloom the season following sale. To this end a vast amount of labor and supervision is expended. I cannot give you a first hand account of the professional Dutch methods but I can assure you that from the reports of experts who have studied them recently, we in America have much to learn. According to Mr. R. M. Carleton tulips are grown in Holland "largely on silicious sands heavily impregnated with lime." Careful scientific analyses of these bulb soils have been made to determine their fertilizer content and they were found so low in organic matter that exact quantities were determined with difficulty. Furthermore, the level of the water table is artificially maintained at about two feet below the surface, giving constant moisture with perfect drainage for the bulbs which are seldom planted more than six inches down.

To illustrate their use of fertilizer we will classify roughly in three groups the bulbs taken out of storage to be handled in the fall after disposal of the saleable crop:

- (1) Those for "finishing" for sale next season.
- (2) Those to use for further propagation next year.
- (3) The splits and small bulbs to develop further.

According to reports these growers use no fertilizer at all in their sandy tulip beds to prepare or "finish" the bulbs for export. Those slated to increase the stock are given a small amount of inorganic fertilizer with an analysis of about 5-8-6* to stimulate

division or splitting. Otherwise even to develop small bulbs and splits a negligible amount of fertilizer is used compared to the accepted practice in America. As lime is abundant in the favored Dutch bulb soils due largely to the disintegration of sea shells, it is evidently important to use more lime over here than has been the usual custom.

It appears that in commercial plantings here or abroad the blossoms are carefully picked before the petals wither to prevent seed formation and the spread of "fire" disease. In this process the stem and leaves are not removed. In fact, injury to the leaves even to the extent of tearing or bruising is avoided which reminds us that protection from high winds and rough handling either by awkward people or frolicsome pets is equally urgent in gardens. An excellent and full account of the American professional bulb growing, invaluable to amateurs, is given in the pamphlet by David Griffiths entitled "Tulips."† Briefly, the digging up process is as follows: When the bulbs have ripened, as indicated by the degree of withered foliage, they are dug, cured (partially dried), cleaned, sorted and stored. To insure success this process must be followed through, as it is in routine fashion in a commercial planting but how about the home garden? For a few dozen bulbs this is no trick at all. For several good sized plantings of different varieties it is much more of an undertaking than most amateurs will care to cope with. Many disasters may overtake this process in a garden. My worst catastrophe occurred after several hundred bulbs were dug, carefully labelled, laid in flats and these stacked in a tool shed pending removal to a suitable place to cure. At this juncture something happened to call me away as I

*For convenience the composition of a mixed fertilizer is expressed in figures. The first always represents the percentage of total nitrogen, the second the percentage of available phosphoric acid, and the third figure the percentage of water soluble potash, hence 5% Nitrogen, 8% phosphoric acid, 6% Potash. (5.8.6.)

†This may be obtained from the Superintendent of Documents, Washington, D. C., where it is listed as U. S. Dept. Agriculture Circular No. 372.

supposed for a few minutes only. I neglected to tell the gardener to separate the trays and leave the shed door open for ventilation. Other events beyond the precinct of the garden piled up to distract me and for several hot humid days the bulbs were forgotten. When I returned it was to find they had cooked themselves to the consistency of boiled onions!! "Careless" you may say, yes, and it would not have happened in professional handling but is cited among the pros and cons when deciding on a plan of action for the amateur.

The Dutch grower, having sold his marketable product, now takes the remaining bulbs out of his warehouse to be stowed away in the fall five or six inches below the surface in their carefully prepared beds. I have already given an idea of the soil conditions in the Holland bulb district particularly regarding the use of inorganic fertilizers in the development of the bulbs through their different stages. This is quite unlike the customary methods in this country. Both at home and abroad, however, tulips are grown commercially on the same land only once in three or more years. This rotation of crops aids in keeping the land in a top notch state of cultivation. This may sound far afield from the home garden, its lesson is not. The steps of the process of cultivation are better known than the reasons for them. Turning over the ground to the depth of a foot or more discourages grubs and moles as well as improving its tilth. We have been taught that earth worms benefit the land by helping to aerate it. We also have been advised that shallow-rooted plants may be used over bulbs beneficially. A weed in one country may be a choice plant in another. Weren't purslane and dandelions carefully imported to this land of the free by the

early colonists for their herb gardens? We are tempted to leave them sometimes. Just where, after all, does this weeding and rotation lead us in the home garden? In the first place organic fertilizer, particularly well rotted cow manure which is a favorite diet of earth worms, is a gilt-edged invitation to moles, earth worms, white grubs and their ilk, also to plants with predatory roots. This invitation may be roundabout but it arrives just the same often by the circuit of encouragement to weeds especially quack as well as the better mannered grasses. Did you ever find a choice tulip pierced right through the heart of the bulb by a root of quack grass? I have several times, more shame to my gardening. (I will say this, it has always been where the bulbs were less than eight inches down). Grass roots are the favorite diet of rose chafers and May beetles in their underground phase and there are many other inhabitants of the earth that flourish among the roots of things where they are not wanted. The moles hurry around and about the well prepared tulip planting, loose friable soil making easy work of their tunneling in search of a dinner of earth worms. They must do away with many of the grubs too that have been taking ugly bites out of the tulips but alas these moles are not entirely helpful for their tunnels pave the way for mice, field mice, pine mice, all sorts of mice. Though I have never caught any of them underground at work on bulbs I have seen several kinds in the garden and found unmistakable traces of their eating the bark of the roots of trees nearby and proof that they have devoured tulips left unguarded in summer storage.

Once the protecting brown jacket of the bulb has been perforated, the bulb inside is vastly more susceptible to disease that may be lurking about and

when large gouges have been bitten out of it the bulb has a sorry time. So here we have it; soil full of humus, fat tulip bulbs at a convenient six-inch depth undisturbed for two or three seasons, weeds and grass, grubs and earthworms, moles and mice, nibbled and sick or completely devoured bulbs, disappointed and unobserving gardener, new bed, new tulips, more fertilizer and the vicious circle starts again.

There is no need to be ruffled or discouraged at warnings of pitfalls. Quite the reverse. We have a far simpler course to steer when we can see where the rocks lie and where the shoals are and what they will do to us.

The yearly round of planting and digging and replanting is accepted routine of commercial growers and while most of the directions that come with the bulbs follow such a general outline it is not always easy or possible for the home gardener to follow through the system as does the man who makes bulb growing his business, however, it is apparent that in the garden where there are ample facilities for storage, plenty of space for rotation, lots of labor, hand and foot as well as head, the "Ups" have a strong case. There the tulips may be planted six inches deep in fresh sandy soil in full sun with plenty of lime and the desired amount of fertilizer and watering in the spring. After flowering when the bulbs have thoroughly ripened they may be dug, different varieties separated into flats or trays with their labels. The next steps are to cure, clean, sort and store in a temperature less than 70 degrees where the bulbs are dry and airy enough not to mold and damp enough not to wither. There they may stay safe from mice and squirrels until planting time again.

So much for the "Ups" under ideal conditions.

Let us hear from the "Downs."

We learn of instances where tulips have persisted undisturbed for sixty or seventy years in old gardens. Mr. Alfred Bates in his gratifying and informative article "Tulips for Permanency" in the July 1937 number of THE NATIONAL HORTICULTURAL MAGAZINE mentions such a case of longevity with deep planting and without benefit of fertilizer. Again, Rev. H. Kingsmill Moore in his delightful book "Joys of the Garden" writes of tulips blooming well that were left in the ground in Ireland for some years at a depth of eighteen inches. I have watched patches of tulips blooming in old gardens without any care whatever for many a year.

It is plain that given a suitable location tulips persist happily for a long time without effort on the gardener's part. What then is a suitable location? All sorts of factors make up different combinations in different gardens. It helps to understand the meaning of this success and that failure if we remember that the delicate bulb we plant in its brown packet expends itself in leaf and blossom the following spring. It then renews itself from the nourishment derived through the roots and assimilated through the leaves. When ripe it has become a whole new rudimentary plant and food storehouse. It is vital that the leaves and roots be allowed to function unhindered if another season's performance is wanted. When the stem is broken off at the ground before maturing the bulb cannot survive. If the leaves are torn by wind or careless weeding it may allow the mysterious "fire" to damage the plant.

For years I watched the bloom of a few Pride of Haarlem bulbs planted 8 or 9 inches down between a small pine tree and a forsythia bush. In a planting of ten or a dozen bulbs some can be depended on to choose those years to

go through their cycle of increase while others are blooming. There was at least one flower from this group each year for twenty-five years with nothing done to the bulbs. However, they were in a sheltered position in sandy soil, full sun in the morning. In some years there were more flowers than others, sometimes the flowers were few and large followed by a season of small and numerous ones. Generally there were all types of leaves, from the usual stem with its two or three, to the many crowded small leaves and the big broad floppy ones that indicate a bulb is in the process of developing from a split to a mother bulb. Evidently there were continuously some bulbs in each stage of development after the first year. There was no evidence of garden pests nearby although there were plenty a few rods away. Lime and sand were naturally abundant where these bulbs continued to flourish. I am convinced that our tulips can hold their own with the roots of any but the most aggressive shrubs if planted on the sunny side. Finally the tulips were taken up to be placed elsewhere. I have no record of what was found when they came out of the ground. This incident is mentioned merely to record a happy combination—bulbs, sand, lime, sun, practically no fertilizer and many years of tulip bloom with no slightest effort on the part of mere man. I believe more people would plant tulips if they did not think them either a lot of bother or quite temporary, hence expensive.

I can tell of another instance of the staying qualities of those bulbs and the garden conditions where they persisted.

This garden with which I am familiar slopes gradually to the southwest in a limestone country. It has been under cultivation for nearly a hundred and fifty years. The soil ranges from highly fertile sandy loam full of humus to a

stiff blue clay. It is a popular resort for practically all well-known garden pests from *Pitymys pinetorum scalopoides* to *Caconema radicola* and a few others!!! Although located in Zone 5 of the nursery planting tables it is subject to winds in the spring that rival Mount Everest's. I have no doubt there are many combinations of soil and circumstance that I have not met but I have watched carefully a varied lot of procedures with tulips under the limits described.

Down a slope in this garden part way beside a nearly solid fence wandered a perennial border nine rods long. At the upper end the soil was poor, stiff and dry, lower down quite different conditions prevailed. A tiny stream from springy land beyond crossed well underneath the border in an ancient tile drain. The top soil from the upper border gradually washed down developing a rich mellow clay loam which encouraged most luxuriant growth. Twenty-odd years ago a carefully worked out color scheme in Darwins was planned with about fifty of a variety in each group. It was planted along the whole face of this border between and in front of perennials. The bulbs were set six inches down in soil amply enriched with well-rotted cow manure. It was expected by an inexperience gardener that after giving them a good start they would fend for themselves successfully without much further labor. For five or six years there was glorious tulip bloom and no further attention was given other than picking the flowers. The fence and hollyhocks afforded protection from prevailing winds and afternoon sun. Annuals often self maintaining covered the fading foliage where perennials did not overlap. After a few more years the flowers became small and scarce, the leaves indicated the bulbs at the

upper end of the planting were splitting. Abundant mole runs warned that bulbs were being destroyed.

A year ago over twenty years after the tulips were planted the whole border was revamped though there was still enough bloom from the bulbs to make charming color in May along the lower end. When this part was taken up it was found that many bulbs had disappeared entirely and those remaining were mostly a foot down. Whether these were all droppers (some definitely were) or whether the upper ground washing down and raising the surface level was responsible I cannot say, but down deep they were apparently out of reach of mole runs and grubs. There was by then a distinct lack of both lime and fertilizer in this soil however they were poor but healthy, were wearing their old jackets and each year for some time had made new jackets inside the old ones till there were as many as seven or eight brown coats intact, one inside the other. These dwindling bulbs still healthy though small presumably were flowering as there were blossoms in that section the preceding spring. No splits appeared and few tiny round bulbs.

On the higher ground they had not fared so well. Here they were only three or four inches down, in easy reach of mice and grubs and often pierced by quack roots. They were beyond the protection of the fence from wind and sun and scurrying feet, in far drier hotter ground. They had split and split and split again, each bulb forming a twisted crowded cluster. There was neither space nor food to encourage development of individual bulbs. All except the very smallest showed evidence of disease following what looked like bites of grubs more than tooth marks of mice, some were more than half eaten through. They

were as sorry looking a lot of bulbs as anyone could expect to see. This part of the experience by itself would certainly discourage a person from leaving tulips underground and is cited merely as an example of what happened under given circumstances. After sorting them all over many bulbs were discarded, those only slightly sick were dosed with formaldehyde and sulphur and planted deeply with the healthy ones, regardless of color but according to size, in a special bed to recuperate. I await with interest their performance the next few seasons.

In the revamping process the old border was filled in five or six inches deeper over the lower end after the bulbs were supposed to be all out. Grass was planted adding lime and peat moss. To everyone's astonishment up through the grass came many roistering tulip leaves in the season following. The promised flowers arrived the next year from the bulbs missed in the renovating and digging processes. It looks as though tulips would persist if they were happy and deep doesn't it?

So here is the case for the "Downs":

Groups of several bulbs each,

Deep planting in heavy loam, deeper in sandy solid,

Moisture with drainage,

Protection for the ripening foliage,

Sun part of the day,

Cut flowers (but at least two leaves left on the plant),

Lime dressing every three or four years.

Inorganic fertilizer once in five or six years or when flowers grow too small. Otherwise, leave the bulbs in peace and reap large crops of enjoyment.

For those of us with a garden, but with strict boundaries to time, labor and pocketbook the "Downs" win.

Elm Place, Arvon, N. Y.



1. *A Southern Pottery.* 2. *Chinese Jar.* 3. *Fiesta Salad Bowl.* 4. *Galoway Pottery.* 5. *Italian Pottery.* 6. *Swedish Pottery.* 7. *Unknown.*

Pots for Plants

ALFRED BATES

When one confines his gardening to the growing of plants in an apartment or a house, he has to meet two difficulties which are not present in out-door gardening. The first is suitable drainage and its opposite pole of prevention against the too rapid drying out of the soil. In the garden there is a large area of earth to conserve moisture around the plants' roots and the depth takes care of proper drainage—that is if the border or bed has been properly prepared. The second point is to provide attractive containers for the plants in order to show them to best advantage. In the garden each plant has a background formed by soil and rocks and verdure; but indoors the potted plant has only the frame of the window and the window sill. Our common clay pots have not the graceful outline nor the softer shade of color which

the English pots possess. Our pots are usually not baked hard and so have the disadvantage of rapid evaporation and because of the soft baking salts remaining in the clay have a tendency to discolor the pot unless constantly scrubbed.

Placing the potted plant in a jardiniere produces a pleasing effect to the eye but is not so pleasing to the plant; for unless a very careful watch is kept water collects in the jardiniere and the plant's roots have to struggle through a sodden soil which eventually produces a dying plant. Years ago I discarded the use of jardiniere and began to collect glazed pots with drainage holes in the bottoms. This was fairly easy to do some ten or fifteen years ago for at that time potteries were still making jars with drainage holes and saucers to match in graceful shapes and in a

good selection of colors. But shortly after that some inventive genius on the wrong side of the fence had a bright idea; he invented a pot and saucer in one piece—a drainage hole through the bottom of the jar and with several slots leading from it through the walls of the pot into the saucer. These were tried with disastrous results; for the small slits into the saucer became clogged easily and so prevented proper drainage. This trap for the lazy plant grower is still on the market but a jar with a drainage hole, either with or without a free standing saucer is now as scarce as the first edition of Homer.

The plea is made for the holeless jar that if one puts in a good layer of broken crocks at the bottom and waters carefully the plant will grow all right; there is no need to mince words, this is a down-right lie. Sooner or later the plant dies because its roots are in water-logged soil. Potted plants must have free drainage if one expects them to remain healthy. This free drainage is still provided in the common clay pot; but these pots are very porous and the soil in them dries out quickly. Beside this objection, they should be scrubbed weekly in order to keep them clean and sightly; and even then they are scarcely objects of beauty in a living room window.

Years ago I came to the conclusion that holes could be bored in any suitable jar. This, I found, was not a difficult task provided one worked slowly and carefully. My first attempts were with jars of rather soft pottery but when I struck harder material I found it meant hours of tedious labor. After several experiments, I found that the most satisfactory tools were a sharp ice-pick, a brace and bit—the bit in this case being a steel drill—and a rat-tail file. All of these may be purchased from any Five-and-Ten, but at prices

beyond the dime limit in the case of the brace and steel drills. The only other tool necessary is a light hammer which surely every household has.

With this equipment drainage holes have been made in dozens of jars and pots and none have been broken or even cracked. As noted above, pots with a soft clay base and a light glaze are easy to work and of these the easiest are the inexpensive Italian potteries; the hardest are the stone-ware crocks and jars which a generation or so ago were used by housewives for pickles, apple-butter, etc., and the red terra cotta Japanese jardinières with a dragon design around them—these are by far the worst for their material is hard and compact which means many long hours of drilling unless one has access to an electric drill, but of this later on.

It is easier to work with the jar inverted, that is work from the outside of the bottom and not from the inside, for then one can see what is being done more clearly than if working inside the jar; also if there is any chipping away of the pottery, as is usual when the tool gets through the clay, the slopes so formed aid in the drainage. Therefore a wood block or blocks should be placed on the table or work-bench to a height slightly more than the height of the jar so the rim of the jar will be above the table when inverted over the blocking. This blocking must be tight against the bottom of the jar so that all pressure exerted by the worker will be made against a solid base. If an attempt is made to drive a hole through a jar which merely rests on the bench on its own rim and without any support directly under where the hole is being made, one is almost certain to crack the jar.

From this point on there are three methods of procedure; and each method is governed by the material of the

pot. First, such jars as have an indication of a drainage hole; evidently these were molded with the hole which was later filled before glazing. It is quite easy to restore this opening by the use of the ice-pick only. Hold the pick in a vertical position with the point resting somewhere along the circumference of the indentation (not in the center of it) and with the hammer give the pick a sharp but gentle tap. You may gauge the amount of force to be used by watching the effect of the blow; far better begin with too light a blow than too heavy a one. Aim merely to crack through the glaze. If the first blow does not make an impression do not strike again in the same place but move on just a bit further along the indentation and strike a little heavier this time. Continue around the indentation until a circle of the glaze has been broken through. Then go round again and again until the whole has been made. The hole will usually be found to be jagged and irregular and may then be evened up by filing gently with the rat-tail file. Do not try to force the file but work gently for too strenuous filing may split the jar.

The second type of material are pots formed from soft baked clay, that is clay which does not bake hard and close grained, and jars of thin walls such as most chinias. In these cases one may either mark a pencil circle on the middle of the bottom and work as directed above; or mark a point in the center of the bottom and, after forcing the pick through the glaze, carefully drill through the material. I have found that a quarter-inch drill works better than a larger size. After the hole is once made the rat-tail file is then used to make the hole any size desired.

In the third type of material, which are those jars and jardinieres with a heavy and thick clay base, or of stone-

ware, or of the very compact terra cotta of the Japanese ware mentioned above, one is up against real work. After an indentation has been made with the pick one must bore for hours and when the hole is through more hours must be spent with the file to enlarge the hole; but when once finished the pot will last forever and always be a source of joy.

In all but the hardest materials I take a special precaution against disintegration of the exposed clay base by painting the unglazed clay with "water glass" chemically known as sodium silicate. This may be had from any drug store at about fifteen cents a pint can. It fills in the pores of the clay as well as the glaze does. It is the old standby of the provident housewife for preserving a supply of fresh eggs against the time when eggs become scarce and costly. In passing let me sing its praise for other uses. Any flower vase or jar which has become cracked or never did hold water without showing a mark of dampness wherever it rested may be made perfectly sound and waterproof by its use. Have the jar perfectly dry and paint the bottom with it; allow to dry for at least a day. Then pour some of the liquid into the vase and swish it around until you are sure that all the inner surfaces near the crack is covered; if the opening of the vase is large enough to admit a brush, paint the surface around the crack instead of swishing the liquid over it. Should your jar still leak repeat the inside coating, for you have not completely covered all the cracked surface.

By this simple process I have brought back to usefulness many cherished vases and have waterproofed several new ones that had defective glaze. Our western Indian pottery which is so porous may be made waterproof by use of this liquid. But don't give me credit

for this discovery. Some years ago an English publication contained the story of a stone house built near the sea where a strong prevailing wind with heavy rain made one of its interior wall wet during the periods when it blew and of how the problem had been solved by applying a coat of "water glass" to the face of the stone on the side exposed; the application was applied during a dry spell and it filled the pores in the stone and so prevented any moisture from coming through the wall.

This digression has lead us away from our subject. Little more need be added except to say that if one has access to an electric drill most of the hard work will be eliminated. I have never used one myself but I have a friend who has a horizontal drill and who now bores all my jars for me. The operation is quite simple. Chip through the glaze at a point in the center of the bottom using the ice-pick as directed above; this locates the hole and makes a slight indentation for the drill to start through. With a wood block pressed against the inside of the bottom of the jar, hold jar against the drill firmly but do not exert any pressure to hurry the work for by so doing you may crack the pot. With an electric drill the hole is made in a much shorter time than by hand; however if the jars to be drilled are of thin material or of soft baked clay it would be better to do the work by hand for the rapidly whirling drill bites through the soft thin clay so quickly that there is great danger of breakage unless one is experienced in the work.

After one realizes that he is no longer under the domination of the present-day pottery maker but is able to make his own holes and in anything he cares to utilize he begins to see possibilities in many things which were not in-

tended by their makers for floral uses. Aside from the old stoneware jars and crocks used by our grandmothers for storage of anything from pickles to butter or salt and which have already been mentioned, there are other kitchen wares now made which may be converted into fine plant containers. I have recently picked up in a large department store several 5-inch jars of a good crockery-ware yellow with white bands around them at less than fifty cents a piece; they were evidently intended for frigidaire storage. From a cocktail and highball table of another store came a 4-inch high and 6-inch wide dark blue tub-shaped piece of pottery originally intended for cracked ice. Chinese ginger jars make effective pots but when once planted there can be no shifting of the plant into a larger pot for the curved shape prevents removal.

The greatest find has been the salad bowls made by the Fiesta Potteries; they are to be had in several sizes up to 10-inch diameter, are quite reasonable in cost and come in the following colors, ivory, aquamarine, yellow, dark blue, soft green and bright red. And for the fastidious window-gardener drainage saucers may be had to match by buying small plates or tea saucers, for this ware may be bought by the separate piece.

As to pottery whose original use was floral, cylindrical flower jars of wide diameter and those tall rectangular Chinese jars, one of which shows in the cut, make splendid pots especially for deep rooting plants. The deeper dishes which, for lack of drainage, have killed our once flourishing "dish gardens" may also be converted into usefulness. Before closing I must warn the reader against a certain unknown brand of pots marked on the plate "A Southern Pottery." I could not obtain from the store where I bought them any more

information than that. The illustration shows their very excellent shape but does not convey the lovely soft yellow, the exceptionally good jade nor the blended red and brown-red of their coloring. A free standing saucer came with each. After a year of use many of them are disintegrating both on the unglazed bottom and along the top edge where the glaze cracks badly. The first ones I bought are still sound but of the dozen I got on special order some have crumbled so badly that they

have been thrown away. It may be that the special order was rushed through and had poor workmanship. I am trying "water glass" on several of the less damaged ones, painting both the upper rim and the entire bottom in hope of saving them; it is quite annoying to be compelled to transplant a dozen of so plants that do not need shifting. This experience has taught this lesson: apply water glass to the bottoms of all soft baked jars as a precaution against disintegration.

Rock Garden Notes

ROBERT C. MONCURE, *Editor*

NATIVE NARCISSUS OF MOROCCO

Narcissus monophyllus (Dur.) Maire
var. *foliosus* Maire

This beautiful plant with remarkably pure white flowers belongs to the collective species *Narcissus Bulbocodium* (Trumpet Section).

This variety, usually found mixed with the typical form, has a very localized distribution at an altitude of 250 to 500 meters. It is found in the "Sokhat," an area of primitive quartzite rock outcroppings with more or less calcareous soil in the Chaouia region (western province of central Morocco). The plant is strictly a calcifuge.

The small bulbs are grouped in very dense clusters on the thickened layers formed by the rhizomes of the fern *Polypodium serratum* (Willd.) Christ., this itself being limited to humid fissures in the quartzite with northern exposure. In Morocco the flowering is very abundant during January-February. Among the same rocks the immediate associates of the *Narcissus monophyllus* are *Dianthus lusitanus*, *Scilla obtusifolia*, *Romulea Engleri* which also flowers in January, a few *Romulea columnnea alba*, *Ruscus hypophyllum*, the orchids *Gennaria diphylla* and *Orchis lactea*, and the magnificent fern *Cheilanthes hispanica*. These quartzite areas are also the exclusive home of *Erodium Moureti* with aromatic foliage, of *Spergula Pitardiana*, of *Silene mentagensis*, and the magnificent *Celsia Faurei* whose large flowers may cover an area of one to two meters; all of these species are endemic.

One can find also, but more rarely, colonies of *Sedum bacticum* var. *Gattefossei* (perennial), and an endemic grass *Tricholaena maroccana*. Shrubs are rare on this type of rock. We could

mention, however, *Cytisus linifolius*, *Cytisus arboreus* var. *transiens* and *Osyris lanceolata*. The most characteristic annual plant is *Sedum Jahandiezii* with rose-colored flowers.

Summer is the best time to collect the bulbs of *Narcissus monophyllus foliosus*. The clumps of the fern rhizome are broken off and, since the narcissus does not have any vegetation at this time, it is necessary to hunt for the very small bulbs; but they are easily distinguished from those of *Romulea* and the *Scilla obtusifolia*.

Many variations of *Narcissus Bulbocodium* exist in Morocco, apparently every mountain possessing an endemic race. These forms are usually known under the subspecies *vulgaris*, *obesus*, *albidus*, *praecox* and *Romieuxii*. The two last named are abundantly enough distributed to repay the labor of collecting.

Narcissus praecox Gatt. & Weiller, discovered in 1936, is a plant of calciferous plains. It blooms from September to January but does not withstand freezing. The flowers are very pale yellow.

Narcissus Romieuxii Br.-Bl. & Maire, found in 1921, is a plant, more or less calcifugous, of the Moyen-Atlas (forma *mesatlanticus*) and of the Rif area (forma *rifanus*). It grows in open places of the forests of Cedres at altitudes of 1,500 to 2,200 meters. The flower is a clear yellow but slightly darker than *Narcissus praecox*. It blossoms in April. The bulb is able to withstand four to five months covered with snow.

Narcissus serotinus L.

This is a small xerophytic species bearing one flower. It inhabits the

slopes of the arid meadows throughout all of Morocco at altitudes from 50 to 500 meters, principally in calcareous soils which are not very moist. It blossoms from September to November in colonies dense enough to form a white blanket. It is a characteristic plant of the Chamaerops association (*Chamaerops humilis*) or where the vegetation is rather unstable. Such areas include plants like *Cytisus albidus*, *Asphodelus microcarpus*, and *Ferula communis*. Bulbous plants abound in these terrains, especially *Urginea maritima* var. *stenophylla* which occupies an important place, then *Narcissus Broussonetii* and *Narcissus polyanthus*, *Pancreatum oranense*, *Crocus Salzmanni*, *Romulea Engleri*, *R. bifrons* var. *rosea* and *R. ligustica*, *Iris planifolia*, *I. sisyrinchium* and its varieties, *Gladiolus byzantinus*, *Allium album*, *Urginea fugax*, *U. undulata*, *Dipcadi fulvum* and *Scilla linguata*; the last two being distinguished by their ornamental character.

The collection of *Narcissus serotinus* can be made by marking a colony during the flowering period, so that it will be easily recognizable after maturity of the fruits, that is to say, from April to May. Passing this period the bulbs are extremely difficult to find.

Narcissus elegans (Haw.) Spach. var. *oxypetalis* (Boiss.) Maire

A graceful plant with an orange-colored corona, a multiple-flowered stalk, and entirely indifferent to calcium. It grows in the underbrush of the plains at altitudes of 50 to 250 meters, but principally in clay soils of compact texture. It is very abundant in the northwest part of Morocco and blooms during November-December.

The vegetation of these heavy soils, either black or red and slightly calcareous, is dominated by the Cynaraceae. There is found especially *Echi-*

nops spinosus, *E. Bovei*, *E. strigosus*, *Arctylis gummiifera*, numerous *Onopordon*, *Carduus* and *Cirsium*, as well as *Cynara Cardunculus*, *C. humilis*, and the curious acaulous *Cynara Tournefortii*. There are few shrubs, these being generally *Anagyris foetida* and *Zizyphus lotus*. Also some bulbous plants, such as *Iris tingitana* var. *Fontanesii* with deep violet flowers, or occasionally the typical *Iris tingitana*; also *Arisarum simorrhinum*, *Biarum Bovei*, *Colchicum lusitanum* with very large flowers, *Scilla peruviana*, the magnificent *Orchis papilionacea* var. *major*, etc.

We mention finally *Salvia bicolor*, *Teucrium spinosum* and *T. resupinatum*, *Echium pomponium* reaching a height of 2½ meters, and *Silene volubilitana* as characteristic species of this formation.

The *Narcissus elegans* is generally in dense colonies but mixed with *Tapeinanthus humilis*, a small amaryllid with fragrant yellow flowers (the odor like that of violet). The bulbs of these two plants have almost the same size and shape. They can be collected at the beginning of summer before the clay soil takes on its annual desiccation. This is manifested by the appearance of deep cracks. It requires great ability to separate the two kinds of bulbs and it is preferable perhaps to do this by growing them later; the *Tapeinanthus* blossoms in September.

Narcissus Watieri Maire

This charming calcifugous species, which is cultivated to a certain extent, was discovered in 1921 by M. Watier, Captain of Streams and Forests. It is extremely rare and strictly limited to the central Haut-Atlas on northern slopes between 1,800 and 2,600 meters. It grows in the dry oak association among oak leaf humus, but it can be

found also along the streams of plateaus which have long since been deforested. It blooms after the snow disappears and consequently at variable and uncertain times. In dry and hot years one will find only fruits in April. On the contrary, the flowering might not begin before the end of May and it can continue until July.

The *Narcissus Watieri* is protected throughout all the forests, the collecting being entirely prohibited since 1937. There are only a few rare stations in the meadow zones which are accessible to eventual collectors, but the commerce is already depending entirely upon cultivation for material. Before 1937 the collecting was done in August, the bulbs being found among the stones and leaf mold under the oaks, but, due to the prohibition mentioned, one should now depend upon cultivation of the plant, preferably in altitudes of 2,200 meters.

Narcissus Watieri is closely associated with oak groves. Otherwise, it has very few associates because the shade excludes a great number of plants. We can mention nevertheless *Mentha Gattefossei*, the remarkable *Genista florida* var. *maroccana*, *Arabis conringioides* and *Arabis Josiae*, both being ornamental endemics.

Narcissus Marvieri Jahand. & Maire

This is either a minor subspecies or a variety of *Narcissus rupicolum* of Spain; the deep yellow flowers are very graceful and with a form similar to those of *Narcissus Watieri*. They appear from April to May. The plant was discovered in 1924 by our colleague, the late M. Emile Jahandiez. It is less calcifugous than *Narcissus Watieri* and perhaps to be considered indifferent in this respect. The *Narcissus Marvieri* grows also in the oak association, but in the mountains which form the junction between Moyen-Atlas and Haut-

Atlas in the western part of Chaouia, on the north and west slopes at altitudes between 1,600 and 2,200 meters.

This also is a species protected by law in the forests, although one can, by paying a high tax, obtain an authorization to collect a few hundred bulbs per year. The collection is made in August, but the plant does not occur in dense colonies and the collector is forced to dig the bulbs after the flowering period. This difficulty together with the tax explains the rarity of this narcissus in collections, which is unfortunate because of its great ornamental attraction.

The *Narcissus Marvieri* grows in a soil formed by oak leaf humus but in forests considerably more humid than those of *Narcissus Watieri*, that is to say, in higher altitudes. In lower places it can become practically xerophytic, occurring in forests of *Laurus nobilis*. In the oak associations forests it is often sheltered by *Quercus faginea*, *Cotoneaster nummularia* var. *arborea*, *Acer monspessulanum*, *Viburnum Tinus*, *Ilex Aquifolium* or *Buxus balearica*. It is accompanied by *Paeonia coriacea*, *Linaria Gattefossei* with large whitish flowers, *Nepeta granatensis*, *Erysimum Wilczekianum* (an excellent border plant of golden yellow flowers), *Ononis cenisia*, *Cerastium gibraltarium* var. *Boissiere*, *Arenaria armerina*, *Arabis Josiae*, *Iberis pseudotaurica*, *Genista pseudopilosa*, *Medicago suffruticosa*, and *Vicia onobrychioides*. The monocotyledons are extremely rare, there being only *Irisserotina*, *Scilla hispanica* var. *algeriensis*, *Colchicum autumnalis*, *Epipactis latifolia*, *Cephalanthera rubra*, and sometimes *Platanthera algeriensis*.

Narcissus viridiflorus Schousboe

This is a very curious species with dark green flowers, sometimes greenish yellow. The plant does not have leaves,

the chlorophyllic function being carried on by the flowers.

It is endemic in the south of Spain and the western coast of Morocco in the humid parts of the Chamaerops association in slightly calcareous soils at altitudes of 10 to 200 meters.

The flowering season occurs during October. The species is but little cultivated, even though it is truly a botanical curiosity and inasmuch as it withstands a great deal of heat.

Narcissus Broussonetii Lagasca

This is a large narcissus without a corona (subgenus *Aurelia*), with totally white flowers, endemic to central Morocco, at about the altitude of Casa Blanca. We have great hopes for the cultivation in Europe of this plant with such beautiful flowers, but it flowers quite early, September to November, and requires plenty of heat. For this reason the plant flowers very seldom in Europe.

The *Narcissus Broussonetii* is seen among the calcareous rocks exposed to the humid winds of the ocean. The large bulbs, more or less rounded, appear on top of the rocks and sometimes fastened only by the roots. A great number of the bulbs growing crowded together form a splendid floral cluster.

It is especially abundant in the southwest where it extends to the ocean from the Anti-Atlas. It is then a dominant plant of the meridional flora and particularly of Morocco. We can name also the bulbous plants which accompany it: *Scilla iridifolia*, *Hannonia Hesperidum*, *Vagaría Gattefossei*, *Pancratium brachysiphon*, all endemics.

But toward Casa Blanca, *Narcissus Broussonetii* is found with *Narcissus serotinus*, *N. viridiflorus* and those of the Tazetta group.

Narcissus obliquus Guss.

This plant, equally well known by the name of *Narcissus Gussonei* Rouy, is in reality an Algerian species. It has a large corona of orange yellow upon a white background. Imported by the native Moroccans for their gardens, it has become naturalized in the olive orchards of Souss and the Mesfioua country (near Marrakesh).

The collecting can be done without difficulty in summer, the flowering taking place from March to May, depending upon temperature.

It is a beautiful robust plant and merits cultivation in Europe; it appears indifferent to calcium.

Narcissus Tazetta (L.f.) *sensu lat.*

The entirely white-flowered Tazetta narcissi of Morocco are very polymorphic. With reference to the original descriptions, one can say that the subspecies *Narcissus polyanthus* (Lois.) Baker and *N. papyraceus* (Ker.-Gawl.) Baker are co-existent in the plains of the central and western part of the country. The *polyanthus* is early, flowering from December to January, followed by the intermediary forms, which are doubtless hybrids, in January and March, and then *papyraceus* in March and April.

On the Atlantic coast where *Narcissus Broussonetii* blooms from September to November, the hybrid *Broussonetii* x *polyanthus* flowers from November to January, and then the very rare hybrids *Broussonetii* x *papyraceus* from January to March. There exist all intermediary forms between the three species, and they are encountered everywhere in acid or alkaline soils of heavy or light texture.

JEAN GATTEFOSSÉ

Translated from the French by W. Andrew Archer.

A Book or Two

How to Landscape Your Grounds, by Loyal R. Johnson. A. T. DeLa Mare Company, Inc., New York, 1941. 221 pages. \$2.75.

This book is written to aid the layman in developing his home property. It does well in giving fine lists of plant material for various localities and growing conditions, (even though it lists *Magnolia grandiflora* as a small tree!) There are excellent detailed drawings for building walls, walks, arbors and other garden structures, and some splendid suggestions for grading the grounds and locating the house.

The illustrations on the whole are good.

The plans in the rear of the book showing layouts for various sized plots in diverse sections of the country are, for the most part, clearly drawn. But, here is where the book is weak. Plans at their best are made for a special location they seldom if ever fit another. In short, it is almost impossible in a book to tell adequately how to landscape the home grounds.

G. P. C.

Gardening with the Experts, by twelve noted authorities. The Macmillan Company, New York, 1941. 239 pages. \$2.50.

To glance at the jacket with its list of distinguished authors is to be surely intrigued. The reader is well rewarded inside for our experts give us of their best. Beginning with Richardson Wright's "The Heritage of Gardens," we find our interest continually stimulated by each new chapter. Henry E. Downer condenses much of his wide knowledge of annuals and perennials into a few pages. Robert S. Lemmon

leads us enthusiastically into wild gardening.

"Plants in Your Parlor," "Understanding Color," "The Order of Bloom of Trees and Shrubs," are some of the other varied topics which lead to the last one on the running of amateur flower shows, judging, and flower arrangements by Sarah V. Coombs.

The other expert gardeners include Rosetta E. Clarkson, J. Horace McFarland, Montague Free, Dorothy Biddle, Dorothea Blom, Cynthia Westcott, Howard B. Sprague, and Donald Wyman. Biographical sketches of each author give briefly pertinent facts in their lives and list their other writings.

Because there is such a wealth of information in this book and because its variety is so refreshing, it is an addition to any garden library and an excellent gift book for gardening friends.

C. B. M.

Bible Plants for American Gardens. Eleanor A. King. The Macmillan Company, New York, 1941. 203 pages, illustrated. \$2.00.

In the opinion of the reviewer this little book more than adequately fills the long felt need for a modern book on Bible plants interestingly written and accurately compiled, as far as a lay botanist can discern. It is neither wholly a gardening book, a treatise on Bible history nor botanical work but a combination of all three. Although I may be prejudiced on the subject because of personal interest, I do not believe it is a book to be read once and then thrust aside. Its usefulness would be increased by the addition of an adequate bibliography.

Mention of a few of the chapter headings will give some idea of the scope of the work, such as, "The Fig, The Olive and The Vine," "Trees of the Lord," "Flowers of the Field," and "A Garden of Herbs." Adequate quotations are made from the Bible to illustrate the subject matter, coupled with interesting discussions of the religious, social and economic background of many of the plants mentioned. This book should serve to clear away certain popular misconceptions about some plants of the Bible, as well as be an aid in the landscaping of church grounds so as to provide where possible for the inclusion of Bible plants and trees. Also it serves to clarify various sections and quotations of the Bible by filling in the technical background, familiar to persons at the time written or spoken but not so familiar today. One finds many old friends mentioned such as *Sternbergia lutea*, *Crocus sativus*, Cedar of Lebanon and the like.

The author assisted in the preparation of the exhibit of Bible plants by the New York Botanical Garden at the Spring Flower Show in 1941 and has lectured before numerous clubs and societies on this subject. Proper credit has been given to the staff of the New York Botanical Garden, and particularly Dr. H. N. Moldenke, for assistance in connection with the book.

Last of all, mention should be made of the excellent suggestions for church fairs, etc., featuring Bible plants and products, as well as suggestions for inclusion of Bible plants and trees in church gardens. Also use of Bible plant materials in floral arrangements is dealt with and supplemented by two photographs of such arrangements by Mrs. Constance Spry.

R. C. M.

The Gardener's Third Year. Alfred Bates. Longmans, Green and Co., New York, 1941. 310 pages, illustrated. \$2.50.

This is the third volume of a series with smaller titles which was initiated in 1936. We express the hope that it is not the last and that in due time the author will pass on to different specialized phases of gardening.

Each of the books in this series presents diverse phases of the fundamentals of soil preparation, garden design, planting and maintenance in a unique and detailed manner which makes them valuable for the beginner. Garden making is presented in the most logical form for the amateur: as an unhurried process of working according to a definite plan, with the various parts accomplished piecemeal over a number of years. The first book was devoted largely to annual flowering plants and the second to perennial plants and bulbs. The present work is concerned primarily with shrubs, vines and small flowering trees. The extensive descriptive plant lists in the latter part of the book are supplemented in many cases by line drawings by the author. The pronunciation of all botanical names is indicated phonetically. The notes on hardiness, size, habit and cultural needs are particularly useful since they are obviously no mere compilation, but are based on the personal experience and observation of the author. The more advanced gardeners will obtain many choice nuggets of information which are difficult to find in other places. The list of plants discussed is in no sense exhaustive, but the selection appears to be reasonably judicious. A generous number of much neglected, but highly desirable, plant subjects are described. If the use of some of these be popu-

larized, this book will have fulfilled a worthy mission.

The style of the author is informal and even conversational but definitely readable. His well developed and definite convictions on all sorts of gardening matters are stimulating. This writing has the smell of the earth and is the personal testament of a genuine gardener.

V. S.

The Gardener's Handbook. L. H. Bailey. The Macmillan Company. New York, 1941. Revised. 292 pages, illustrated. \$1.49.

The reissue of a worthy book on gardening at a popular price is always good news, especially when the work is from the pen of an outstanding authority on horticulture. Reference to the edition of 1934 discloses that the same plates were used for this printing.

This work is arranged alphabetically and might possibly be described as a reduced, one volume edition of the famous *Cyclopedia of Horticulture* with a distinct practical orientation. A generous amount of sound, readable advice is presented in a relatively limited space.

V. S.

Collecting and Handling Seeds of Wild Plants. N. T. Mirov and Charles J. Kraebel. Civilian Conservation Corps Forestry Publication No. 5. Supt. of Documents, Washington, D. C. 42 pages, illustrated. Price 10 cents.

Many gardeners, particularly those of the more advanced section of the fraternity are interested in the propagation of wild native plants. The present bulletin is particularly helpful to those dealing with plants native to the western part of the U. S. A., but those interested in plants of other regions will find suggestions on both seeding and vegetative propagation.

V. S.

Tropical Fruits for Southern Florida and Cuba and Their Uses. David Sturrock. 131 pages. The Arnold Arboretum, Jamaica Plain, Mass. 1940. \$1.25.

This paper bound brochure of 131 pages could easily have been illustrated and presented as a conventional cloth bound book. A long list of fruits, many of them entirely unknown to the average dweller in a temperate climate, is discussed from the standpoint of both culture and culinary or other uses. Some of these fruits are just beginning to appear occasionally on the markets of northern cities.

This work will be useful not only to those living in the regions described, but also to the increasingly large group interested in the resources, actual and potential, of the tropical Americas.

V. S.

Daylilies. 1941 Introductions. Color Patterns. A. B. Stout. New York Botanical Garden. 12 pages, illustrated. 10 cents.

This bulletin is a reprint of two articles originally published in the journal of the New York Botanical Garden. Twenty daylily introductions are described in a manner which will doubtless be helpful to nurserymen who eventually will list these varieties in their catalogues. Colors are described by reference to standard color charts. Careful varietal descriptions of this sort doubtless should be recorded in horticultural literature in journals commonly preserved in libraries, as material for students of progress in plant breeding.

The present wholesale introduction of daylily varieties creates much the same problem for the daylily collector and fancier as that experienced by philatelists specializing in certain issues of postage stamps. Undoubtedly the

varieties described here will attract more than average attention since the author is one of the most conservative breeders in the matter of introductions.

The second part of the bulletin discusses the color patterns which have appeared in seedlings up to the present time. The entire bulletin is well illustrated.

V. S.

The Garden of Larkspurs. L. H. Bailey. The Macmillan Company, New York, 1941. 116 pages, illustrated. \$1.39.

This is a reissue of an excellent book which was published at 1939 at a much higher price. The illustrations are good and add to the attractiveness of the book.

R. C. M.

The Garden of Pinks. L. H. Bailey. The Macmillan Company, New York, 1941. 142 pages, illustrated. \$1.39.

This is a reissue of another Dr. Bailey's excellent treatises devoted to a single plant family. There is much of historical, botanical and garden interest to all who are enthralled by this interesting family and the drawings convey the spirit of the subject matter. Those who failed to purchase the first edition can now purchase it at a lower cost.

R. C. M.

An Herbal (1925). Edited by Sanford V. Larkey, M.D., and Thomas Pyles. The New York Botanical Garden, New York, 1941. 200 pages. \$3.50.

The first herbal ever printed in the English language—the famous herbal of Richard Banckes, published in London in 1525—is again being made avail-

able, four centuries after its first appearance. A reprint of this rare work, of which only two copies are in existence today, is being issued by the New York Botanical Garden as a book of about 200 pages.

A complete facsimile of the copy in the British Museum is included in the modern reprint. This is preceded by an introduction and followed by a transcription of the entire text, with notes, in modern English done by Sanford Larkey, M.D., who is Librarian of the Welch Memorial Library at Johns Hopkins University and Thomas Pyles, Assistant Professor of English at the University of Maryland. The work was sponsored by the Scholars' Facsimiles and Reprints, an organization interested in the preservation of useful rare books of the past.

While the Banckes Herbal is anonymous (Richard Banckes was its first publisher), it became so popular during the sixteenth century that for thirty years new editions kept appearing under different titles and from different printing houses.

"It is certainly quite a different work from the grete Herball, printed in the succeeding year" writes Agnes Arber, British authority on herbs and their literature in one of her recent books, "and, although there are no figures, it is in some ways a better book." There is more botanical information given about the plants than was customary in the writings of this period.

Now that we have so wide spread an interest in the growing and the use of herbs in modern gardens, this volume should be a welcome addition to each collection and the perusal of its pages, both the originals and the transcribed should add to the keen pleasure of the owner.

The Gardener's Pocketbook

Spiraea Margaritae

The *Spiraea Margaritae* is a hybrid between *Spiraea japonica* and *Spiraea superba*. It looks like a large and improved *Spiraea* Anthony Waterer which is also a horticultural descendant of *japonica*. The bush grows to five feet and spreads from suckers and becomes quite broad. The movement of the shrub is perpendicular.

The stems are red-brown, the alternate leaves have short petioles and the blades a humpy surface. They are ovate, doubly dentate along the upper two-thirds of the margins and measure $3\frac{1}{2}$ " in length and $1\frac{5}{8}$ " in breadth; that is, the largest do. The conspicuous flowers grow in compound umbels at the termination of the stems. The separate corymbs in the umbel are three inches across while the compound umbel is ten inches across. The effect of the flower heads is fuzzy because the numerous stamens extend beyond the florets. Each floret has five petals and measures $\frac{1}{8}$ " across. They are "rose pink" shading to "deep rose pink." The shrub is not one of the handsomest but is attractive in late June when most of the shrubs have already finished flowering.

Micromeria rupestris

The *Micromeris* of the Labiatae are subshrubs with fragrant foliage, and little white flowers and are very like the savorys. One of them, *Micromeria rupestris* is hardy as far North as Zone V, but *Micromeria croatica*, *Micromeria Piperella*, *Micromeria dalmatica* and *Micromeria Juliana*, though charming, all died their first winter in a New York garden.

The plants come readily from seeds, as do most of their relatives. *Micromeria rupestris* has partially recumbent stems. They are square and their base is woody, brown, and rough, while the upper and newer growth is a yellow green. They rise up to ten inches and form much branched, shrubby plants with dainty white flowers in terminal spikes. The leaves are obovate, rounded at the tip, $\frac{3}{8}$ " long and $\frac{1}{4}$ " across at the widest part. The under surface of the leaf is finely hairy, and shows prominent net veining with the central vein the most prominent. The margins are entire except for a few notches. The stems are covered with sparse hairs. The leaves are opposite and have pairs of smaller ones growing out of their axils. They are fragrant of pennyroyal. The flowers are tiny white, $\frac{5}{8}$ " long in opposite clusters from the leaf axils and along upper part of stem forming a spike $\frac{3}{4}$ " long. The calyx is light green, cup-shaped and ridged, with five pointed sepal lobes. The corolla is two-parted, the lower lip three-parted and the central one marked purple, the upper one is notched in the center. The pistil is white, two-parted at the tip and projects beyond the corolla; there are two pairs of stamens inside the corolla.

Penstemon diffusus

Penstemon diffusus is a western plant, native from British Columbia to Oregon. It has proven hardy in my Peekskill garden, provided it is given a thoroughly well drained situation and plenty of sun. The plants come readily from seed and although handsome are of doubtful garden value because they



Walter Beebe Wilder

Spiraea Margaritae

[See page 34]

become bushy, being three feet across and two feet high, and when their three weeks of June flowering is over, look weedy.

The stems are round, smooth and downy. The dark green, cordate lanceo-leaves are opposite, toothed irregularly and deeply, stemless and widest at the base. The largest measure $1\frac{1}{2}$ " at the base and 4" in length. They grow smaller as they ascend the stem. The flowers in loose terminal racemes, three and a half inches long, are tubular and shaped something like foxgloves. The calyx is five-parted, green, with toothed sepals, each with a fairly long spike at the tip. The corolla is tubular, blue with violet shading, two-lipped, the two segments forming the upper and three the lower lip. The flowers measure one inch in length and $\frac{1}{2}$ " across at the mouth. The ovary is level with the top of the calyx and is green and egg-shaped. The style is grey-lavender. There are five stamens—four have reddish purple anthers and white filaments, the fifth is sterile and bearded. The plants smell of meadows and green stems.

The effect of the violet blue coloring in the mass and seen from a distance is faintly reminiscent of *mertensias*, only of course the plants are very different.

Leiophyllum buxifolium prostratum

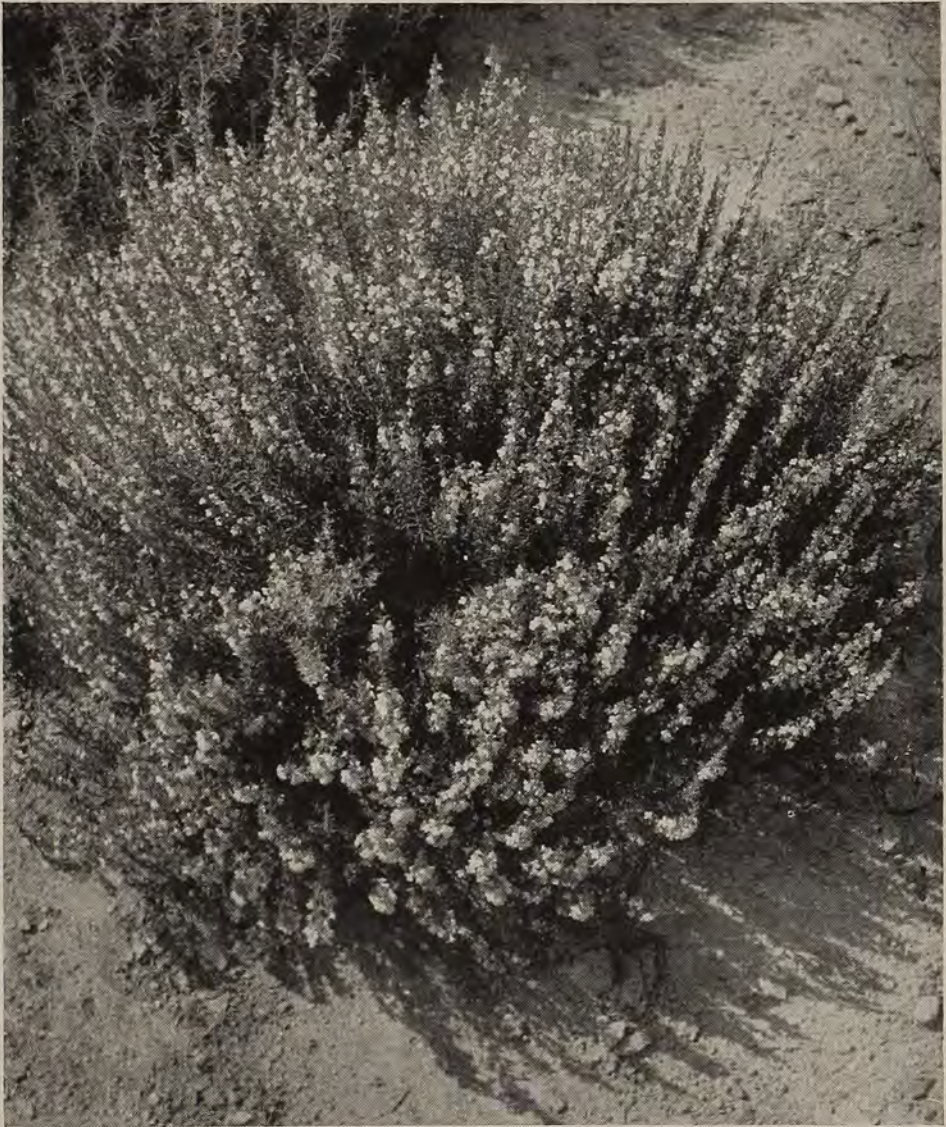
The Sand Myrtles, *Leiophyllum buxifolium* and *prostratum* are both attractive evergreen low shrubs of the Heath family. *Leiophyllum buxifolium* is native of the Pine Barrens from New Jersey to Florida and *Leiophyllum buxifolium prostratum* of the mountains of North Carolina and Tennessee. From my own garden experience I should say *buxifolium* requires sun and *prostratum* shade. They bloom the end of May.

They are both neat, small shrubs, with shiny boxlike leaves and white, rose-tinted clusters of flowers, feathery with exerted stamens. *L. prostratum* differs from *buxifolium* in having prostrate or widely spreading branches instead of being compact—and in having the leaves mostly opposite instead of alternate and in their shape "oval to elliptic oblong" to use Dr. Rehder's description which in *buxifolium* are "oblong to oblong ovate."

On *prostratum* the stems are woody and brown, and nine inches high. The plants are eighteen inches across. The shape of the leaves in English might be called oblong, and are $\frac{3}{8}$ " long, rounded at the tip, shiny and smooth. The pedicels are pubescent. The flowers in terminal corymbs are wheel-shaped and white while the buds are pink. The white filaments carry magenta anthers like little dots and are exerted way beyond the florets. There are from 12 to 21 florets to a corymb.

Lonicera praeflorens

The earliest fragrant honeysuckles to bloom have heretofore been *Lonicera fragrantissima* and the closely related *Lonicera Standishii*, both semi-evergreen shrubs with cream white flowers borne on stems bare of leaves. Their fragrance, pungent and sweet is wafted forth in the cool spring air, a portent of other pleasant perfumes to follow. This spring, after having been in the garden for three years *Lonicera praeflorens* bloomed for the first time during the second week in April, preceding the foregoing by about a week. The shrub grows wild in Korea and Manchuria and was introduced into cultivation in 1917. It has twiggy grey branches with scaling threads and when mature rises to six feet. The flowers bloom on twigs bare of leaves and their fragrance is typical of the honeysuckles. They are



Walter Beebe Wilder

Micromeria rupestris

violet-pink and enhanced by anthers which, to me, appear to be rose with a salmon tinge though Dr. Alfred Behder in his *Manual of Cultivated Trees and Shrubs* describes them as purple. Unfortunately the flowers fall off early in contradistinction to those of *fragrantissima* which last a long while. After the

flowers have dropped, from the time the young leaves begin to open and as long as they remain on the shrub, this honeysuckle is strikingly handsome. The leaves grow in pairs, are yellow-green, velvety with soft hairiness, and borne on short hairy stalks, tinted dark red magenta. They are oval, terminate in

*Silvia Saunders**Penstemon diffusus*

a sudden point at the apex and are rounded at the base. They measure $2\frac{1}{2}'' \times 1\frac{3}{4}''$, some being larger and others smaller. They are close enough on the stalks, and the stalks to each other, so that they sometimes overlap.

Perovskia abrotanoides

Perovskia abrotanoides is a fragile looking plant with semi-prostrate square stems and small bi-pinnately divided leaves, fragrant of rosemary. The tiny blue flowers are similar to those of the lavender. The whole plant is grey, covered with a soft hairiness, while the young growth looks almost white.

Perovskia is a plant for the margin of the shrubbery and also does well in a rock garden because it requires a warm and sunny situation. So far it has not set seed for me but is increased

readily from cuttings.

The semi-prostrate branches are two feet long and hairy. The leaves are $1\frac{1}{2}''$ long and $\frac{3}{4}''$ across. They are widest at the base and narrow to the tip in a slender triangle. They are hairy, exceedingly dainty and make a pretty pattern with their divisions and good proportions.

The flower spikes rise perpendicularly from the semi-prostrate stems and the flowers are far enough apart to be clearly articulated. They are $\frac{3}{8}''$ across at the mouth and the same long and grow in sparse spikes.

Usually *Perovskia atriplicifolia* is sent out by nurserymen instead of *abrotanoides*. There seems to be some confusion about the plants. *P. atriplicifolia* is a much coarser plant and not fragrant.

HELEN M. FOX



Walter Bcebe Wilder

[See page 36]

Leiophyllum prostratum

FROM THE MIDWEST HORTICULTURAL SOCIETY

Galax aphylla

Many people are familiar with the leathery, roundish glossy leaves of the galax in wreaths and other preserved decorations at holiday time. This same plant is also an excellent subject for the wild or rock garden and is effective as a ground cover throughout the year although particularly conspicuous during the colder months. One writer calls it "one of the loveliest, hardy foliage plants in existence."

Although typically a foliage plant this lovely native also produces spikes of small white flowers in the summer.

Most authorities recommend that this plant be grown in partial shade and in an acid soil. My first contact with galax was as a stray in a clump of rhododendron and since then I have given similar soil and exposure conditions to several clumps with absolute success. Probably a porous soil rich in humus would be just as satisfactory, and certainly many spots can be located in the average garden where shade can be given. The new leaves and the old ones in autumn have bronzy tints which add to the richness of coloring. The plant grows from a creeping stem which sends out runners so that a clump is quickly built up from small divisions in congenial surroundings.

ELDRED E. GREEN

Euonymus europaea

A branch of an attractive red fruited shrub was sent me for identification this last week. The branch was clothed with rather ordinary oval green leaves. At the base of each leaf was a cluster of two or three bright red fruits. The contrast between the foliage and fruit

was striking. A few days after the branch had been in water the red fruits split to display the orange seeds much as one sees in the fruits of bittersweet.

This branch was from the European Burningbush or Spindle tree. This is one of the shrubs that can be considered for winter effects in the landscape. It is a rather large growing plant and not outstanding except when in fruit. Frequently seedlings are found around mature plants and grow rapidly into large plants. The plant responds to ordinary soil and exposure conditions.

This shrub is a relative of the bitter-sweet (*Celastrus scandens*) and deserves the same consideration for landscape value.

ELDRED E. GREEN

Mahonia aquifolium

In a region deficient in broad-leaved evergreens the relatively few that are easily grown should assume more prominence than in more favored localities.

One of the more iron-clad sorts is the Oregon Holly-grape. This is a slow growing round topped shrub that is usually evergreen. The leaves are composed of several pairs of spiny-toothed leaflets which greatly resemble holly. The young foliage is an attractive bronze-green and contrasts excellently with the darker green of the older leaves.

This plant is not particular as to soil or location but a sheltered spot would assist in retaining the foliage in unusual winters. As this is a slow growing plant it should preferably be planted as a specimen and a fairly large plant obtained. Cuttings root easily and plants can be obtained by this method if one has time to wait for them to develop.



Lonicera praeflorens

As a substitute for the less tractable holly this plant deserves a wider popularity in the middle west. As an evergreen attractive shrub it is invaluable in many situations in the average garden.

ELDRED E. GREEN

Paeonia officinalis

A short time ago I was astonished by one of my peony-growing friends that he had just obtained plants of *P. officinalis* after some difficulty in locating a source. I had thought this old-

fashioned red "piney" was so common that it could be found in any catalogue. Yet I could not recollect offhand more than one or two specialists that I knew definitely had this item listed.

Apparently this lack of another old time plant in nurseries and gardens is due to emphasizing the new varieties to the exclusion of the older ones. To see this peony at its best one should visit some of the old, generally neglected cemeteries around the end of May. (Decoration Day in this section.) Here large clumps of the grand old red peony

will be covered with masses of flowers which will leave a compact dark green clump of foliage after the flowers have fallen. This peony has the most attractive foliage and plant form of any of the peonies. Perhaps one of the contributing factors to the scarcity of the plant in many nurseries is the slower rate of increase. Generally five or six years are necessary for this to build up a good clump while only three years are necessary in many of the hybrids.

As a dependable early peony this species has no equals. It is an excellent garden subject and is just as easily grown as any of the later hybrids. If your local nursery does not have this probably a trip to some old farmstead would yield a division for the garden.

ELDRED E. GREEN

Lycoris squamigera.

Just finishing its flowering is the beautiful hardy amaryllis. This is catalogued as *Amaryllis Halii* or *Lycoris squamigera*, the latter being the more correct usage.

My first introduction to the plant was in Cleveland Heights on one of the estates. Here a small valley had been planted with hundreds of bulbs and on my visit most of them were in full bloom. It was a sight of beauty that has never left my memory. The peculiar pink with a slight bluish cast of the flowers on the tall plain stem unadorned by any foliage, literally covering hundreds of feet of the magnificent estate, was a sight that I have never seen equalled.

Culturally the plant is not a difficult subject. It needs a good loam soil, full sun to light shade, moderate moisture, and fairly deep planting, six to eight inches being about right for a medium bulb.

This is one of the bulbs that flowers and grows at different seasons. In the Spring several long bright green, strap-shape leaves grow from the ground. In early Summer the leaves disappear and after a few weeks the flower scape shoots from the ground. It is generally necessary to mark the position of the bulbs in the summer so that the flower scapes will not be destroyed by routine cultivating operations in the garden before they are above ground.

The resemblance in flower size and shape to the common greenhouse amaryllis is quite marked. The technical differences that place this in *Lycoris* are matters for the botanist, to the gardener this is the hardy amaryllis.

ELDRED E. GREEN

Iris sisyrinchium L. [See page 45]

For the amateur in the Eastern States this species, unique among all its fellows in the genus, presents cultural problems that are almost too difficult to warrant the labor involved. If one looks through the countries represented by herbarium material examined in his studies—Portugal, Spain, Morocco, Algeria, Tripoli, Tunis, Majorca, Corsica, Sardinia, Italy, Sicily, Malta, Crete, Greece, Asia Minor, Cypress, Egypt, Syria, Mesopotamia, Arabia, Persia, Turkistan, Bokhara, Baluchistan, Afghanistan, Northwest Frontier Province (India)—the explanation of our difficulties is easy enough, especially if one recalls the differences in season of rainfall and incidental cold. The wide distribution is also reflected in the great diversity of plant forms that show among the specimens cultivated here.

The first specimens grown came from a California nursery and under our conditions proved hardy only for two



Walter Beebe Wilder

Perovskia abrotanoides

[See page 38]

years. They flowered the first season with one or two leaves and flowers produced on very short stalks, so that the effect was negligible. The flowering stalks shown in the illustration were grown in another garden from roots obtained in Turkey. Having been grown in a cold pit, it was possible for the plant to develop slowly during the winter which doubtless aided the normal development of the flower stalk.

As is doubtless known from books, this species is unique among iris species

since it has a cormous root, with a netted coat that suggests its possible kinship to the Reticulata Section. Mr. Dykes pointed out (Genus Iris, p. 232-233) that Sir Michael Foster considered it "an approach to the archetype of the genus" and reports for himself that "In its corm and in its single-valved spathes it is more like a *Moraea* than an *Iris* but since its segments coalesce to form a tube for a short distance above the ovary, it is considered an *Iris*."

Because of its preferences in soil and climate, it is not likely to be of much use to iris gardeners save in the Southwest, and, because of the fugacious nature of the flowers, much like those of *I. dichotoma*, it is not likely to make a great show. Possibly if its corms were abundant and therefore cheap, it might be used in naturalized schemes for dry meadows that flower "like the desert" in spring and wither for the rest of the year.

Its literary interest lies in the fact that it is illustrated in some of the earlier herbals and that it was commended there as an aphrodisiac, figuring largely in such commerce as the "Barbary nut," a purpose that would have little call in our day!

To quote Gerard (who often quoted others to be sure) "Of these kinds of Flower de-luce there hath been little or nothing at all left in wishing concerning their manner or vertues—only the Spanish Nut is eaten at the tables of rich and delicious, naie vicious persons in sallads, or otherwise procure lust and lecherie." (p. 95 Ed. 1597.)

Passiflora lutea L. [See frontispiece]

In the early 1800's the introduction of various tropical and sub-tropical fruits into hothouse cultivation in Europe was a serious business and the botanical journals of the time show plates and short notes about many species of the passion-vine. To the gardeners who had listened to tropical tales, this species, the hardiest of all to cold, must have been a desperate disappointment.

The descriptive paragraph is brief enough. "The species is native of Jamaica, Virginia, Carolina, and Florida. Will endure our common winters planted at the foot of a warm wall. The root is perennial and creeping. The

stems herbaceous, diffusely branched, climbing by tendrils, seldom exceeding four feet. The foliage varies much in size, and when young has a minute soft pubescence on the under surface, as well as the petiole, peduncle, and branches. The flowers are generally in pairs, and appear about August."

Here near the District of Columbia on the Maryland side, the plant is weedy where it occurs. The word "creeping" is far too modest an adjective; it should be invasive and with the foot-note that bits of root cut off sprout and make new plants. Moreover, it needs no warm wall and its herbaceous vine-like shoots often clamber more than four feet and then drop back an equal distance. As the vines examined were native and scrambling through existing shrubs, it is not possible to suggest how far they might go if given a decent trellis for their use.

Though entirely insignificant in size as compared to its more familiar fellows, its flowers have the same beautiful structure that has intrigued so many curious gardeners. Their greenish color differentiates them less from the foliage than one would guess from the plate in the Botanical Register (t.79), with five other species in the same volume, the publication that vied with Curtis' Botanical Magazine is offering to the British amateur the records of the then horticultural wonders. According to the Botanical Register, this species was sent to England by Catesby in 1714.

The photograph shows the relative color values and suggests the somewhat lacelike effect of the drooping shoots with their abundant flowers. It does not include, nor does the Botanical Register plate, any leaves that show the silver marbled pattern of some older leaves.



Claude Hope

[See page 42]

Iris sisyrinchium

Provided it were compatible, how splendid it might be to cross this plant with some of the showier species. Even with the relatively less showy *P. incarnata* Linn., whose range of hardiness disappears somewhere in Virginia but far south of here. This latter species was not understood clearly when first introduced into Britain and does not figure among the species that occur in these early series. It was not until 1839 that it was given a plate (t.3697) in Curtis' Botanical Magazine accompanied by a text that is concerned with differentiating it from *P. edulis* Sims, a purely tropical species which has a large literature related to its fruiting.

No special peans can be sung in praise of its small fruits which are scarcely the size of a cranberry and ripen most irregularly.

Daphne Genkwa Sieb. & Zucc. [See page 47]

Among the many fine plants that have been in and out of cultivation many times and still remain somewhat difficult to find quickly when one wants to make a purchase, is this deciduous daphne. Unlike *Daphne cneorum* which has been the subject of many cultural notes largely given over to differences of opinion as to the plants like or dislike of lime, this oriental daphne has very little notice.

Its original description found in Flora Japonica v. I, p. 137, by Siebold and Zuccarini may be translated roughly:

"Shrub 2-3 ft. high, with spreading and divergent branches, deciduous. Flowers with the coming of the foliage in March or April. The flowers of lilac color are placed in small bouquets (literally clusters) of two to six. It is originally from China but now it is cultivated in the gardens of Japan for

ornament rather than to serve the pharmacists. The flowers and the bark are considered the medicinal parts."

The paragraph on its uses shows almost as numerous and diversified potencies as we might expect of a modern nostrum.

Siebold gives the Japanese names as: "Fudsi modoki and Sigenzi and the Japanese version of the Chinese name as Genk'wa," which is taken over in the scientific name.

According to report, the plant is easily raised from seed as are most daphnes, provided one can get the seed! Young plants grafted on *D. mezereum* have not been long lived under our garden conditions and the one plant on its own roots has not grown as it should. This undoubtedly is because the situation is far too dry and the soil too full of competing roots.

Good plants in a Pennsylvania garden were given a location in rich alluvial soil where there was a good water table relatively high. Here the bushes made a more than vigorous growth up to three feet and almost as much through. While the shoots and laterals are thin, the plant does not give a meager impression. In the spring, however, before the leaves count much, the delicate lilac flowers make a smoke-like color mass through the twigs as can be guessed from the illustration. The fragrance is not so pervasive as that of *D. odora* (often wrongly called *D. indicum*).

According to Bean, "Trees and Shrubs Hardy in the British Isles" (Ed. 1925, v. I, p. 469-470) this species was "Introduced from China by Fortune in 1843, and later from Japan, where it has long been cultivated but is not native. Unfortunately it is too tender for all but the mildest parts and is short-lived in cultivation.*** It is said to require a soil devoid of chalky



Claude Hope

Daphne

[See page 46]

substances, but its treatment is little understood.”

If it were not well known that many shrubs, entirely hardy here, fail to ripen new growth in Britain and so suffer in the winter season, this note from Mr.

Bean might be puzzling. And one wonders if his last sentence will not promote another controversy over soil reaction. All plants known here have been in slightly acid soil.

Good plants of this are hard to find,

but there seems to have been a concerted effort in recent times to keep a supply available, an effort that gardeners should not overlook.

Amaryllis belladonna L.

This plant, cultivated with some frequency in Chilean gardens and generally in the entire world, has become spontaneous in numerous localities in the Province of Valparaiso.

It has been seen growing in these conditions at Olonne in El Granizo started at the foot of the Cerro de la Campana; between the station Rauten and Mauco along the R. R. of San Pedro to Quintero and in Concon.

They are often frequent enough and usually may be seen in extensive patches very conspicuous at the time of their flowering on account of their large trumpet-shaped flowers of pale rose color, which grow freely on their spikes, before the leaves which appear separately a considerable time after the flowering.

As may be proved many times, *Amaryllis*, when growing alone, usually indicates deserted human habitations, but the bulbs multiply easily and, without doubt, the late spring (early summer) rains frequently disinter the bulbs which are carried some distance, which explains the presence of these plants in sites where there are no vestiges of human habitation or old gardens.

It has been proved that the *Amaryllis* produces seeds in Chile. I have, for example, seeds of plants cultivated in Limache, which I owe to the kindness of my friend and coworker, Don Augustin Garaventa; but I am not in position to determine if they are fertile or not. The practical method of increase in gardens is by means of bulbs.

In the area of my observations, the *amaryllis* begins to grow (show shoots)

about the middle of February or the beginning of March. Usually after the leaves have entirely disappeared, the scape appears suddenly and in a week or less reaches a height of 50-80 inches and opens some 6-10 large flowers which remain fresh a couple of weeks and exhale an odor sweet and agreeable. The plant is poisonous.

The common name of this plan in Chile is *nardo* which is also applied to the genera *Vallota*, to *Hippeastrum* and to certain *Lilium* with large white flowers.

The genus *Amaryllis* Linn., Syst. Ed. I. 1735; Sp. Pl. 292, 1753, is considered monotypic in fact. Its one species, *A belladonna* Linn. Sp. Pl. 293, 1753, originates in South Africa. It was introduced to Europe in 1712 and exists in numerous horticultural forms. Previously, many species which today are placed in the genera, *Lycoris*, *Nerine*, *Brunsvigia*, etc., and especially *Hippeastrum*, were placed in the genus *Amaryllis*. On account of this, gardeners commonly call *Amaryllis* many plants which are no longer such botanically speaking, particularly *Hippeastrum*. It is easy to distinguish this last genus from true *Amaryllis*, since this has a solid scape, while that of *Hippeastrum* is hollow.

In Greek *Amaryllis* means to shine, and is the name of a nymph whose beauty was sung by Virgil.
Santiago, 17 June 1939.

Gaulterio Looser

Revista Chilena de Historia Natural.
Direccion Postal: Casilla 2974, Santiago de Chile.

Translated from the Spanish by B. Y. Morrison, 1-17-41.

Narcissus Silver Chimes

Since the Paper-white *Narcissus*, being tender, is of no further use to us after being forced, and other *Narcissus* can only go into the garden for recuperation, it is pleasant to know of one that will live along comfortably year after year in a pot.

N. *Silver Chimes* is a triandrus and *Tazetta* hybrid, and, to quote Mr. Bowles, is a "plant of outstanding refinement and charm—It has all the beauty and rich effect of the best *Tazettas*, combined with a refinement of texture and colouring not found in any of them." And again—"Silver Chimes . . . is the most exquisitely refined of all polyanthus forms, both in delicacy of colouring and the charm of its poise and proportions."

It is a cross between *Grand Monarque*, a large flowered *Tazetta* with white perianth and citron cup, and triandrus *calathinus*, which has fine-textured drooping white flowers with reflexing perianths. It is classed as a triandrus hybrid, 5b. The plant has the vigorous growth of the *Tazettas*, but the flowers have the exquisite texture and crystalline whiteness of triandrus.

It was introduced by E. and J. C. Martin of Cornwall in 1916, and received the R.H.S. Award of Merit for cutting in 1922. There is a drawing of it by E. A. Bowles in his *Handbook of Narcissus*, Plate xiv.

The heavy, rather dark green foliage makes a splendid foil for the graceful clusters of delicate white flowers. The leaves are about three-fourths of an inch wide, and eighteen inches tall. The wide-petalled perianths are about two inches across and glistening white. The cups are about half-an-inch wide and long, of palest primrose on opening, but soon fading to match the perianth, so that the effect of the flower cluster

is pure white. There are from five to eight flowers in a cluster.

We have made an effort to grow *Silver Chimes* as naturally as possible, not forcing it at all. It began to bloom February 4 in 1940, and January 30 this year. The flowers last longer if kept out of the hot sun. After they have faded, the plants should receive the same good care until the foliage withers. Then the bulbs are allowed to remain in the pot, which is either set out-of-doors for the summer, or watered two or three times, as if rain had fallen, to approximate natural conditions as far as possible. The bulbs are reotted in late summer.

The original one large bulb bore two stalks of flowers the first year, and five the second year. It may continue at that rate indefinitely if it likes, for we can never have too much of such a lovely flower. RACHAEL CAUGHEY

Ferraria undulata L. [See page 51]

According to the literature, the subject of this note has long been known to cultivation but is rarely met with. Certainly, insofar as our own country is concerned, it is not often seen and our own experience showed only that it was one of the amazing flowers figured in that book full of almost unbelievable flowers, Mrs. Loudon's "The Ladies' Flower Garden of ornamental bulbous plants," a work which rather tends to flatter many of its subjects.

The roots look somewhat like rhizomes, somewhat like corms and, as planted here, were given a warm, well-drained soil mixture, potted and kept in a slightly heated pit greenhouse. The developing growths suggest almost a dwarf bearded iris, until the flowering shoots develop. These have smaller leaves that almost clothe the entire stems, the flowers emerging from the upper leaf axils.

The size and general character of the flowers is clearly shown in the illustration, which is natural size. Whether our cultivation was at fault or Mrs. Loudon's artist was given to exaggeration, we do not know but these flowers are smaller than hers as shown, although they are of the same size as the somewhat sketchy illustration in Colonel Grey's "Hardy Bulbs" (v. 1, p. 81.)

The flower color is curious. Colonel Grey (l. c. p. 80) reports the color as "greenish-brown or plum coloured, purple blotched." This is essentially correct and yet it does not altogether suggest the plant. Left to our own devices we probably should have said olive green, not far removed from the color of the pickled green olive but immeasurably richer since the actual texture of the perianth segment is velvety. The Ridgway color notation made this year is Light Yellowish Olive to Yellowish Olive with blotches of Dark Dull Violet Blue in creamy white zone.

The stalk which was examined and later pressed for the herbarium had three lateral branches and a total of ten flowers. The flowers usually last only one day but in gray weather a little longer, withering spirally and neatly and persisting for a short time.

As is often pointed out, the plant is not far removed from *Tigridia* and requires about the same type of cultivation. As its dormant root is much smaller, however, it probably will require a little more care in its winter storage, when grown in cold areas. As it comes from South Africa, it probably will be more useful for the warmer areas in the Southwest than elsewhere, but in that land its rather retiring beauty may be overlooked. When the plant is grown entirely outside its range of hardiness, it should be allowed to die down naturally, kept dry in the pot or

flat and not removed until late summer, when it should be lifted, cleaned and replanted in fresh soil. By September growth will have appeared that continues slowly through the winter until flowering in late February or early March.

There seems to be a difference of opinion over the scent. The writer has no special recollection—the other observer insists upon a piquant scent that is pleasant at a distance but oppressive near by; Ferrari, who described it at some length in 1638, does not mention it, if I may trust my ancient Latin.

This Ioannis Baptista Ferrari published in Rome in 1633 a most interesting book with excellent engravings of which No. 171 is our plant, which carries the pre-Linnean name of "*Flos indicus e violacea fuscus radice tuberosa.*" The description of the plant is almost as good as the plate and one wonders how the plant came to his hands.

The author of the notes to accompany the plate in Curtis Botanical Magazine (t.144) [1791] quotes Mr. Miller who "informs us that he received the roots of this plant from Dr. Job Baster, F.R.S., of Zirkzee, who obtained it from the Cape, of which it is a native."

The same author states that it is "usually propagated by offsets, which its bulbs produce in tolerable plenty."

*** This agrees with experience here, since the most careful pollination of the flowers yielded few seeds in fewer pods.

Mrs. Loudon, already mentioned, quotes an apparently later edition or work of Ferrari which he claims was published in Amsterdam in 1646. Ferrarius, *** calls it a curious and rare flower, lately brought from India, almost all countries being at that time called India that were beyond the boundaries of Europe. It does not appear to have been introduced into England till 1755. This species is a favourite



Claude Hope

Ferraria undulata

[See page 49]

flower in Italy, and few persons have ever received a packet of roots from Italy without its being among the number."*** (pp. 24-25.)

Who may first have brought it to the United States may never be known.

CORRECTION :

On page 291 of the October, 1941, issue of THE NATIONAL HORTICULTURAL MAGAZINE, there appeared an article from Mrs. Coombs, "Three Interesting Foreigners," which we regret to say we should not have printed! It is not that we regret the article! Only that we must now confess that we should not have had it in the file of available material since Mrs. Coombs had sent it elsewhere and Mrs. Hansell had used the material in *The Gardener's Chronicle* for June, 1936.

We have already apologized to Mrs. Coombs and to Mrs. Hansell and now wish to bring it to the attention of our readers.

Kalmias

Small shrubs for the rock garden are always appreciated and some of the taller ones may also be used successfully by keeping them well pruned. The result is better plants because they are more compact and florescent by having this treatment. *Kalmias* belong to this group.

The common *Kalmia latifolia* may be used for years as a background in large gardens by this method. The smaller *kalmias* are excellent in many places if properly cared for. *Kalmia angustifolia* is colorful when in bloom with its many pink to rosy-purple flowers, and the foliage is attractive at all times as the glaucous blue is a contrast for most other plants. The white form of this shrub is extremely handsome. The corolla is a pure white but has the

characteristic deep maroon dots which make it so very striking. *K. carolina*, to the layman, is the same. The botanist, however, will find a few more "hairs" on the plant, especially on the new growth. All of the small leaved plants in this section seem to be of the species *K. carolina*. For me the little *K. hirsuta* has been very difficult to grow. It seldom gets more than twelve inches high and the miniature deep red flowers are most intriguing. The stems and leaves are so hairy they fairly bristle. The treatment for this should be the same as for the above as they are found growing under the same conditions.

K. cuneata is very rare and is the only deciduous one we have. It is a small shrub, seldom more than two feet tall. It bears white flowers, slightly larger than those of *K. angustifolia*, with pale red dots on the corolla. The flowers are in dense whorls around the stem. The foliage, which is rusty green in summer, turns a dark reddish color in fall before it drops, and is lovely in the landscape scene. This plant can be identified when not in flower or without foliage, if in fruit, as the capsules turn up at the tip of the petioles. It is certainly worth a place in many gardens.

ANNIE LEE R. CLEMENT

Asheville, N. C.

Tiarellas

All gardeners who have shady places are familiar with the common *Tiarella cordifolia*, Foam Flower, of the woodlands. It is excellent as the foliage is attractive all summer and the spikes of white feathery flowers are lovely in spring. This plant spreads by runners which take root at the leaf nodes. Large colonies are soon established. Another *tiarella* of this type is *T. macrophylla*,

which is a more robust plant. There are also other distinguishing marks for the advanced student.

However, it is the tiarellas that do not have runners I want to discuss. *T. Wherryi* is a compact plant which has flower spikes about eight inches high. The buds are a decided pink but are white fully open. This rather new species is very florescent and continues blooming over a period of several weeks. It is quite distinct from all others and by far a much better plant. It may be propagated by seeds or divisions and likes the same conditions as the other species. Another *tiarella* which has been given only a varietal name (but which I think is entitled to the rank of a new species) is *T. cordifolia* var. *pedmontensis*. This is a very sturdy plant with flowering spikes twelve inches. The flowers are pure white and it is the heaviest bloomer of all. I have had many plants carry fully twenty flowering spikes at one time. It has no runners and is a shapely plant at all times. These two compact tiarellas are certainly an advantage in a small garden as they stay "put" and do not spread all over everything, choking out many choice plants that need plenty of air and light.

ANNIE LEE R. CLEMENT

Asheville, N. C.

Aconitums

In spite of their ill-repute, these tall and handsome plants of the Buttercup family, appear to have become increasingly popular during the past few years. This is no doubt due to the introduction of new species; followed by the skill of the hybridist.

The popular name monkshood owes its origin to the hooded form of the flowers, whilst wolfsbane carries its own significance, for the *Aconitum* is

as dangerous to animals as to man, and this should be borne in mind if stock is grazed near the garden. It is poisonous in all its parts, but there would probably be no injury to its discredit but for the fact that the roots bear a certain, though distant resemblance to horse-radish, and has been used instead of that pungent root by ignorant and careless people with disastrous results.

Because of this it is advisable to keep the plants well away from the kitchen garden, and in any case a site in the Shrubbery, or Wild Garden is much more suitable.

If planted in a moist and partially shaded spot, not only do they make more luxurious growth, but the color of the flowers are more intense. For the best results have the site deeply dug, incorporating a liberal supply of well-rooted manure.

The common monkshood *A. Napellus* is a British native, which favors shady places near water; it grows about 4 feet high, and bears its deep blue, hooded flowers in early summer. There is also a white form but this is of little garden value.

Of the modern species, *A. Wilsoni* is outstanding. Attaining a height of between five and six feet it produces loose branching spikes of lilac-blue flowers from August to October, whilst *A. Wilsoni* Barkers variety is a very beautiful variety of recent introduction, having bold pyramidal spikes smothered with large violet-blue flowers in September and October. It has been honored with an award of merit by the Royal Horticultural Society.

The Japanese species *A. autumnale* is the deepest colored monkshood that I am acquainted with, having crowded panicles of rich dark-blue flowers during September and October, and growing to a height of 5 feet.

Of comparative dwarf stature is *A.*

paniculatum, as it only reaches a height of 3 feet. It is conspicuous by its attractive, deeply cut, dark green foliage, and stout spikes terminating in branched panicles of violet-blue flowers during July and August.

Of the so-called yellow flowered aconitums, it cannot be said that they have much garden value, excepting perhaps *A. Lycoctonum pyrenaicum* which hails from the Pyrenees, and has slender branching stems with much-cut leaves, bearing a profusion of clear-yellow flowers in August.

Finally there is the climbing monkshood which was introduced by the late George Forrest under the name of *A. volubile*. It is an excellent climber, with a profusion of dark-blue flowers in late summer, and is indeed a very lovely plant.

H. JEFFREY

*Dartington Lodge,
Totnes, Devon, England*

Vegetable Gardening, 1942

In the weeks just passed there has been much in the public print in regard to vegetable gardening and other horticultural activities among amateurs. The problem before us at the moment is not only a definite understanding of the term amateur, but an understanding of what is actually wanted from us all.

The essential thing is to maintain a level head. We know that we are passing through a period in which we must alter our ways of living in order to

meet successfully the winning of the war. We know that we have to make many decisions in regard to practices which are old and familiar and often well-beloved. What we need to know are the ultimate measures of the essential in the opinion of our leaders. Until these are more fully stated, we must go ahead with care.

It seems too obvious to need restating that if increased food production is the essential matter, this must not be left to scattered efforts of persons who have no special training and no experience on which to base their present labor. We know that each year, even in those in which no emergency exists, there are gardens planted and seeds wasted. This year when we must depend upon seed supplies which already exist within the country, we must ask ourselves with brutal candor, can I be depended upon to produce a valuable harvest from the seeds which I may purchase? Is my garden a suitable place to produce vegetables or should I find a place in the community where I can work in proper environment? Can I be depended upon, without fail, to be on the job every day no matter how I feel? The answers to these questions should go far to determine your program.

But whatever your decision, whatever your part in the community plan, it can be urged that you learn now, if you do not already know, the basic principles in good gardening and the demands that will be put upon you when you have to take your part in the food production in your community.

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There is a small stock on hand of most of the magazines from January, 1927, to date. Liberal discounts are made on orders of 6 or more. Reprints from some of the magazines may also be secured.

See page IV for price list.

THE AMERICAN HORTICULTURAL SOCIETY
821 Washington Loan and Trust Building
Washington, D. C.

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“ 9, *		
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*Vol. 9 (1930) is very limited and contains Mr. Morrison's translation of H. Correvon's *Les Joubarbes*. It is now very valuable but the full year (4 numbers) will be sold as long as the supply lasts for \$10.00.

**Single copies of 1941 magazines, if purchased without numbers of other years, will be sold at the regular price of 75c per copy.

The American Horticultural Society

INVITES to membership all persons who are interested in the development of a great national society that shall serve as an ever growing center for the dissemination of the common knowledge of the members. There is no requirement for membership other than this and no reward beyond a share in the development of the organization.

For its members the society publishes **THE NATIONAL HORTICULTURAL MAGAZINE**, at the present time a quarterly of increasing importance among the horticultural publications of the day and destined to fill an even larger role as the society grows. It is published during the months of January, April, July and October and is written by and for members. Under the present organization of the society with special committees appointed for the furthering of special plant projects the members will receive advance material on narcissus, tulips, lilies, rock garden plants, conifers, nuts, and rhododendrons. Membership in the society, therefore, brings one the advantages of membership in many societies. In addition to these special projects, the usual garden subjects are covered and particular attention is paid to new or little known plants that are not commonly described elsewhere.

The American Horticultural Society invites not only personal memberships but affiliations with horticultural societies and clubs. To such it offers some special inducements in memberships. Memberships are by the calendar year.

The Annual Meeting of the Society is held in Washington, D. C., and members are invited to attend the special lectures that are given at that time. These are announced to the membership at the time of balloting.

The annual dues are three dollars the year, payable in advance; life membership is one hundred dollars; inquiry as to affiliation should be addressed to the Secretary, 821 Washington Loan and Trust Building, Washington, D. C.

