
SUCCULENT PARADISE

Twelve great gardens of the world



“I had never had a garden of my own before, and didn’t know that the more garden you have, the more you want, and the more you do, the more cries out to be done.”

W. Somerset Maugham (1874–1965), English playwright, novelist and short story writer; owner of Villa Mauresque, Cap-Ferrat, French Riviera



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Twelve great gardens of the world

GIDEON F. SMITH & ESTRELA FIGUEIREDO

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HALF-TITLE PAGE *Agave attenuata*. **TITLE PAGE** *Agave parryi* var. *parryi* (left), *Agave cocui* (right).

OPPOSITE (left to right) *Agave nickelsiae*, *Crassula capitella*, *Agave victoriae-reginae*, *Astroloba smutsiana*, *Ferrocactus pilosus*. **FRONT COVER** Obesa Gardens, Eastern Cape (EF). **SPINE** *Aloe mutabilis*. **FRONT COVER FLAP** Huntington Desert Garden, California. **BACK COVER** (Top row, left to right) Karoo Desert Garden, Western Cape (EF); Obesa Gardens, Eastern Cape (EF); Obesa Gardens, Eastern Cape (EF). (Middle row, left to right) Jardín Botánico, Mexico; Jardin Exotique, Monaco (EF); Karoo Desert Garden, Western Cape. (Bottom row, left to right) Les Cèdres, Côte d'Azur; Boyce Thompson Arboretum, Arizona; Huntington Desert Garden, California.

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Foreword

Over the last few decades we have become increasingly aware of the fragility of our planet. We are now not only too aware of the devastating impact we are having on our natural environment, resulting in the loss of natural habitats and so much of the diversity of species with which we share this world. We understand today that we cohabit the planet with about 400,000 different plant species, which provide the basis of life in most terrestrial ecosystems, generate habitats for most of the world's animals, and provide us with the natural resources we need for food, shelter, many medicines, fibres and fuel. The almost infinite variety of life on the planet not only supports us but also includes some remarkable and unique life forms – some of the most extraordinary being succulent plants.

Succulent plants are among the world's greatest expressions of plant evolution. To achieve a successful life and efficient reproduction in an often unforgiving environment, they have adapted their structures, forms and functions to meet the conditions they face. Many are adapted to thriving in ecosystems where water is scarce, at least for long periods each year. Other plants are succulent because they live in habitats where water is hard to obtain, such as areas of high salinity. Many plants from these environments have adapted a remarkable range of features to conserve water, and to protect themselves from other species who would like to benefit from their succulence in a harsh environment. Succulent plants can be found amongst about 75 different plant families, and not just the handful of families that we might first think of; cacti (Cactaceae), houseleeks, stonecrop, wallpeppers and *plakkies* (Crassulaceae), *vygies* or midday flowers (Aizoaceae), and milkweeds and spurges (Euphorbiaceae) which, between them, include more than 6000 species.

It is not surprising, therefore, that the range of incredible plants that we count as 'succulents' has attracted the attention and interest of collectors, gardeners, hobbyists and enthusiasts worldwide, often building collections that inspire awe and wonder in those who see them. Some of the enthusiasm for succulent plants has done them no good at all – far too many succulent plant species are rare and endangered in the wild, many of them due to over-collecting. However, in other cases, this enthusiasm has resulted in the development of wonderful collections that are world-renowned centres for the study and display of succulent plant diversity. Such are the gardens depicted in this book. These gardens have also become essential centres for the conservation of succulent plants, working individually and collectively to safeguard species diversity and to raise awareness of the urgency of plant conservation.

This fascinating and beautiful book provides a unique view of some of the finest succulent gardens in the world. These are botanical gardens with remarkable collections, which go way beyond display for pleasure and recreation. Botanical gardens are defined by having documented collections to meet a combination of purposes: scientific research, education and conservation, as well as for display. Around the world, more than 2000 botanical gardens have become vital centres where the world's plant diversity is being studied and conserved, some of them specialising in succulents.



When fully illuminated by bright sunlight, the narrowly cone-shaped inflorescences of aloes become fiery torches of dazzling beauty. The branched, candelabra-like inflorescences of this stately *Aloe wickensii* var. *wickensii* drive the point home.

My congratulations to Gideon Smith and Estrela Figueiredo who have brought us such a treat describing these twelve major succulent gardens. One might ask what is the purpose of this fine book. Certainly it will delight, inform, guide and educate those of us who want to know more about the wonderful world of succulent plants and the great gardens featured. But I am sure that it will also inspire an appreciation of the achievements of the people who created, and who maintain, these garden riches. I hope it will also motivate more of us to follow their efforts in any way we can, and safeguard the irreplaceable plant treasures these gardens contain – the species that make up our diverse Plant Kingdom.

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St Louis, Missouri, USA
July, 2012

Introduction



Dating from the mid-18th century, the Jardín was laid out in small, angular beds that reflected the knowledge of plant relationships of the time. This differs from how modern botanical gardens are arranged, but it reflects a trend that is firmly rooted in history and tradition.

Over the last 400 years, domestic and amenity gardens have steadily progressed beyond being almost exclusively established for the utilitarian value of the cultivated species. Increasingly, plants were grown for reasons other than as sources of food, medicine, clothing, construction and shelter materials, or other reasons directly related to human welfare. At more or less the same period, exploration made the Americas, Africa and the East increasingly accessible, and the infinitely rich botanical treasures so discovered found their way into the greenhouses and conservatories of Europe. Inevitably, this led to the rise of botanical gardens, particularly in Belgium, The Netherlands, Germany, France, Spain and Great Britain where, to this day, accessioned material from their former colonies is carefully tended, displayed, studied and used in the training of successive generations of botanists and horticulturalists. But, to be sure, the beauty and aesthetic value of plants have always fascinated humans and, throughout past millennia, plants have been grown for their flowers and foliage.

A public garden should be a haven of tranquillity and peacefulness, where visitors can escape from the hustle and bustle of everyday life to recharge and relax, something that is increasingly important for human wellbeing. A botanical garden, however, is set apart from a municipal park or landscape relaxation facility by its prominence in horticultural and botanical research, role in plant conservation, the dissemination of information through education and outreach programmes, and accurate recording and keeping of its accessions. Although none of the gardens featured in this book are more than 150 years old, they have succeeded admirably in achieving these objectives. Indeed, for various reasons, the gardens are botanical treasures of global importance.



Nestled in a corner of the Real Jardín Botánico de Madrid in Spain, a small section is dedicated to species from the arid world. The two most conspicuous species grown here are *Agave americana* and *Agave salmiana*, both of which require maintenance as they produce basal sprouts in profusion.

In response to, among other things, the gradual drying out of natural habitats over millennia, some plants developed the ability to absorb large quantities of water under favourable conditions, to store it and to release it as and when the plant requires nourishment during times of drought and aridity. Depending on the rainfall region – whether summer, winter or year-round – different landscapes around the world are always in the throes of serious drought. While plants such as bulbs and annuals go dormant to stay alive, succulents remain at their carefree best despite receiving very little, or no water for weeks or months on end.

Whether in their natural habitats or in gardens, succulents remain perfect-looking, even when desiccated or planted in the driest, sunniest corners, often in thin, apparently impoverished, soil. Succulent plants store water mainly in their leaves, stems or roots, enabling them to survive during times of drought. A minority of succulents also store water in other organs, such as the inflorescences or the continuum between the roots and stems. Still others store water in a combination of organs.



Most botanical gardens that hold collections of succulent plants sport specimens of the fat-stemmed curiosities *Tylecodon paniculatus* (above) and *Cyphostemma juttae* (top). These also grow easily in domestic gardens and are sure to be the subject of discussion by visitors.

Succulents occur on virtually every continent and are particularly plentiful where life-giving water is at a premium and temperatures remain comparatively high in both summer and winter. Such areas are encountered in tropical, subtropical, temperate and desert regions. However, a few regions stand out as true global succulent plant hotspots and three of these – southern Africa, Mexico and southern North America, and South America – must rate as the premium sources of the succulents that are widely cultivated in the world today. These regions harbour thousands of succulent and cactus species that are spread across climatically harsh, and sometimes not so harsh, landscapes. These regions also boast exceedingly rich non-succulent floras, which manifest in a multitude of different ways at the landscape-level, as a result of numerous environmental and climatic influences and causal factors that

shaped and honed them.

Regular garden plants inevitably suffer during dry spells, both prolonged and brief. Indications are that, in many parts of the world, climates are going to get drier as a result of human-accelerated climate change. In areas so affected, tough, tactile succulents are prime plants to grow, given their remarkably efficient use of available water.

Worldwide, the gardening and horticultural scene is changing as the trend shifts towards long-term sustainability, rather than short bursts of expensive annual plantings. Even in countries where the climate is not conducive to growing succulents outdoors in open beds, keen gardeners can usually find a sheltered spot, or create an area under glass, where succulents can be grown.

One of the easiest ways to transform a property is by re-doing, upgrading or renovating a garden, even just a part of one. The right plants and hardscaping structures can convert a small outdoor space into one that looks bigger; while a lifeless, tired area can be changed into a vibrant, user-friendly zone.

Succulents offer a multitude of textures, shapes and colours – attributes that all play a part in a successful garden transformation. Consider colour: white has a calming effect, red signifies energy and passion, blue exudes peace and serenity.

ROOTING CUTTINGS: PRODUCING NEW PLANTS

Growing succulents from seed is a very satisfying way of reproducing them, but the best way of obtaining mature plants in a short time is by taking cuttings. Indeed, this method of vegetative propagation provides a quick and simple way of rapidly obtaining material that is true to the mother plant.



Large drifts of succulents grown together in gardens improve their visual impact on the landscape in general. In this garden in southern Portugal, clusters of Old World mesembs from South Africa and Mexican opuntias are grouped together; they serve as both ground covers and accent plants, as the pads and spines of the cactus are perfectly displayed against the purple flowers and soft leaves of the mesemb. The colour of the rocks is echoed in the shades of ochre in which the buildings are painted.

Humans are profoundly interested in seeing where and how other people garden and live, and how they transform their outdoor ‘rooms’ into their own private sanctuaries. Regardless of where in the world you live, the alchemy created through gardening remains endlessly fascinating. All gardens, large or small, public or private, are dynamic and require periodic redevelopment. This is also the case with the gardens featured. In virtually all of them, some parts have been, or will be, revitalised through thinning and re-landscaping, while others will be completely redeveloped. Some of the features discussed and illustrated may therefore have changed since the text was written.

This book gives a unique take on these gardens that ‘never sleep’. The living collections that make them famous are forever transforming, changing and improving, as they are all about practicality, sensibility and, of course, perfectionism in presentation. Some of the featured gardens have plant collections that go way beyond succulents but, in this book, we have highlighted only the succulents.

Although very few botanical gardens of note do not include at least one collection or display of succulent plants, the dozen gardens featured in this book rank high on the list of great destinations to view, appreciate and enjoy succulent plants, as well as learn how to use them horticulturally. These gardens are landscapes in motion, where beds, borders and displays are constantly amended, adapted and developed.

This book is also about luxuriance: it captures the plants, designs and styles used by horticulturalists and landscape architects that make any visit a real occasion. Many of the inspiring landscaping and horticultural ideas presented here can be translated into domestic gardens. Indeed, the principles advocated have been deliberately simplified to allow anyone to introduce them into their own garden, regardless of whether it is minimalist and low-maintenance or tending towards near-tropical opulence.

Environmental wisdom demands the sensible use of finite resources. Discerning botanical gardeners and many horticultural tourists, have grown tired of vast lawns framed by cypress-lined vistas. Environmentally conscious gardeners are looking for new directions, seeking planting styles and combinations that require some skill in creation, yet are simple enough to imitate, if not reproduce, at home on a smaller scale. Today's economy dictates that urban home owners who design or redesign their gardens no longer want a quick fix. There is renewed interest in gardens that will last a lifetime or at least a long time – instead of just giving an outdoor room a rather rapid and poorly considered facelift. Succulents are perfect for long-term cultivation, as the look and 'feel' of many horticultural succulents improves with time.



Blue-and-yellow-leaved *Agave americana* in regularly spaced, bulging rustic urns is a timeless combination. The classic pairing of this species in these garden pots, perhaps best known from Italian gardens, works well here in Denmark, where it is used to good effect on the balustrade around the Palm House in the Botanical Garden (*Botanisk Have*) of the University of Copenhagen.

Succulents used as garden subjects and accessories exude glamour and warmth. It is frequently the collection of individual plants that makes a garden great, but in other instances, it is the sum of the parts – often a thematic approach – that effectively harnesses nature's natural energy and endows an unforgettable greatness. Many visitors to botanical gardens have a preference for fields of bold architectural foliage that brighten dreary spots even at the height of the dormant season when very few plants are in bloom. With their bold shapes, succulents fit comfortably into this category by providing year-round delight. Creating an exuberant, exclusively, or near-exclusively, succulent garden is not

contradiction in terms. In fact, it combines functionality with stylish good looks.

As scientists, our ongoing appreciation of, and fascination with, succulents in natural and artificial landscapes has taken us on delightful journeys across the globe. We have travelled far and wide visiting numerous botanical and private gardens dedicated impressively to succulent display, cultivation and propagation. In revealing and discussing succulents in this selection of gardens, we hope to inspire you to include at least some components and elements of this style in your own gardens and living spaces. In the subtropics and mild-temperate regions this should not be difficult but in cooler climates your succulent collection may be limited to a *Petrosedum sediforme* established on a stone wall or *Aloe vera* (medicinal aloe) cultivated on a windowsill. Regardless, succulents are inspiring thanks to the many ways in which they can be used virtually anywhere in a garden or on a patio.





The silvery leaved *Cordyline australis* (left), from New Zealand, is one of the few succulents from those islands. It is exceedingly tolerant of a wide range of environmental conditions and grows happily in a pot sunk into the ground at Prague Castle in the Czech Republic. In a milder climate, such as central Portugal, cordyline will grow into a stately, fat-stemmed tree (top right). The flowers of *Cordyline australis* (bottom right) are creamy white.

With an incredible global wealth of succulent plant gardens to choose from, it was almost impossible to select just twelve gardens. We had to make some tough choices on what to include and what to leave out and there are many other gardens that deserved a place. The featured gardens are different in several respects, but they are all incredibly stylish and effective and, although they are mature, they are never static.

EXPLORING THE WORLD FOR SUCCULENTS

Perhaps not surprisingly, most of the world's great, and emerging, succulent gardens were built on, and developed from the desire – no, need! – of the director or staff members to find new and different plants to cultivate. The collector's pleasure at finding and acquiring little-known or novel plants for a garden, or a collection kept in a garden, is revealed through the love and care with which it is tended and displayed. It is the very nature of a collector to 'hunt and search', and he or she is usually driven by the promise of

acquiring the exciting find. This very much applies to succulent plant collectors and horticulturalists. However, many species of cacti and succulents have become endangered as a result of over-collecting. For this reason, there are both in-country laws and international conventions that limit their collection and trade. When acquiring succulents for your garden, take the trouble to learn about the conservation status of the species and ensure that the plants were either legally collected or artificially produced.



Many large succulent gardens encompass seasonally wet areas, or at least damp, shady places. Planted en masse, *Kniphofia rigidifolia* (left) and *Kniphofia praecox* (inset) make an unforgettable sight when they flower. These plants thrive in wet, boggy areas but their inflorescences, and even their rosettes, echo those of their drought-tolerant relatives in the aloe family. Both of these red-hot poker flowers flower in summer when few aloes are in bloom.



Portulaca oleracea Pazazz™, likely a selection of *P. umbraticola*, grows well in a hanging basket in Yokohama, Japan.



A South African *Delosperma* species is used as a ground cover in the municipal gardens in Yokohama.



Yucca elephantipes growing in small pots. Even when the roots of this species, which can grow into a majestic tree, are restricted like this, the plants will thrive and grow happily for a long time.



The purple-tinged leaves of *Carpobrotus edulis* subsp. *edulis* cascade over a wall in Foz do Arelho, Portugal, softening the sharp, angular lines. The species has become established in other parts of the world, beyond its native range.





From stately organ pipe-style cactus trees, such as *Pachycereus pringlei* (above), that flourish in the high deserts, to low-growing, shade-loving ground covers, such as *Crassula multicaeva* (right), there are cactus and succulent species that will fit in with any garden setting.



Some succulents have exquisitely beautiful flowers, such as these of *Adenium multiflorum*.



In addition, the stems of this species are swollen and smooth, adding to its interest as an architectural plant in subtropical gardens.





For winter colour in the garden there are few plants that beat aloes. Hybrids and selected forms are increasingly popular as they tend to produce more inflorescences over a longer period of time. The hybrid *Aloe ferox* × *Aloe striata* (left and inset) carries short, intensely orange buds that turn yellow when the flowers open, while *Aloe marlothii* × *Aloe peglerae* (far left) produces medium-sized plants that have erect, densely flowered racemes.



Dracaena draco, the dragon tree, from the Canary Islands, is a true stem-succulent treasure and grows very well in mild-climate and Mediterranean-climate regions.





Developing and mature fruits of the dragon tree.



A young specimen of *Petrosedum sediforme* established on a stone wall.



This hybrid between the peanut cactus, *Echinopsis chamaecereus* and, possibly, *Echinopsis rowleyi* (also known as *Lobivia grandiflora*), has exquisite crimson red flowers. It blooms profusely with true hybrid vigour and succeeds as a pot plant.



Different structures and spaces in an artificial landscape can easily serve more than one purpose. At the International Convention Centre in San Diego, California, the landings between steps provide places where *Aloe ferox* can be grown in large pots. The plants soften the harsh lines of the railing and steps.

SUCCULENTS GONE WILD

There are numerous instances where exotic cacti and succulents introduced for horticultural purposes have become invasive in their adopted countries, threatening the survival of the local flora. Well-known cases are the prickly pear, a Mexican cactus (*Opuntia ficus-indica*), that has become invasive in the central, arid parts of South Africa and Australia, and the sour fig (*Carpobrotus edulis*), a South African succulent introduced as an ornamental and now invading both the Mediterranean European Basin and California. When gardening with exotic plants, extreme care must be taken on how plant

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