The "Städtische Sukkulentensammlung" in Zürich and its significance for systematic botany

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The "Städtische Sukkulentensammlung" in Zürich and its significance for systematic botany [1]

(With plates XIX-XX)

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Botanical gardens and other public collections of living plants are far more than places of enjoyment and of relaxation. Many among them serve as test gardens or as experimental stations where the suitability of plants for horticultural purposes is studied, and where hybrids—which so often are showier and hardier than either of their parent plants—are created and selected.

The very earliest botanical gardens in Europe we know of had indeed a purely utilitarian bias: they were the drug-gardens of medieval monasteries who wished to have a readily accessible supply of medicinal plants and herbs at their disposal. The common people had their flower gardens from which they drew enjoyment rather than knowledge, the very rich their parks with stately trees.

Today the possession of a private garden becomes more and more the privilege of the few. Moreover, the inexorable growth of the population claims so much of the land once covered with natural vegetation, for human habitations and for industrial sites. The need for parks and for botanical gardens for recreation and study has grown accordingly, and more and more we insist on their aesthetic appeal. Witness to this need, particularly in large urban areas, are among others the Royal Botanic Gardens in Kew, to which visitors flock annually by the hundreds of thousands so as to admire its sumptuous layout and its magnificent floral displays over the change of the seasons.

The educational value of botanical gardens need not be stressed: they represent a valued source of information not only to the gardener but also to the student of pure and of applied botanical science. Apart from the scientific names of the plants, their rank in the systematic order and their origin, information on their various uses is often available, especially where useful plants are assembled in separate herb- drug- or kitchen gardens.

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[1] Conférence prévue pour le Symposium, mais qui ne put être lue en raison de l'absence de l'auteur.

As importers, propagators and distributors of economically useful plants botanical gardens have frequently played an important part; thus, Kew Gardens were actively concerned in the introduction of the quinine tree, *Cinchona ledgerana,* the rubber tree, *Hevea brasiliensis,* and of *Uragoga ipecacuanha,* the emetine drug from the American continent to the Far East and has thus not only safeguarded and increased the supply of these important products to the civilized world, but brought prosperity to the producing countries for many decades.

The importance of botanical gardens for horticulture, forestry and for botanical science itself was greatly increased after the discovery of the New World, when a wealth of new and strange plants found their way into European gardens. The prickly pear, *Opuntia,* was introduced in Europe as early as at the end of the 15th century. It was the forerunner of the host of other *Cactaceae* with their hundreds of genera and thousands of species which have since become the undisputed favourites of succulent growers all over the world. The famous garden of La Orotava on Tenerife in the Canarie Islands dates from that period; the Spaniards established it with a view to acclimatize the most promising trees and plants from their newly acquired dominions before introducing them to Spain.

In the 17th and 18th century the Dutch had gained a firm foothold in the Far East which they reached by sailing round the Cape of Good Hope, where they also established regular trade relations. The Cape and its hinterland revealed itself as particularly rich in an extraordinary flora, and the Dutch sailing ships returned to Holland with hundreds of exotic plants and seeds, many of which they cultivated successfully.

Many of the plants introduced from South Africa were succulents like the American cacti, to which they were not, however, related in any way but belonged to numerous other plant families. From Holland, a great number of these succulents from South Africa belonging to such diverse families as *Euphorbiaceae, Mesembryanthemaceae, Liliaceae, Asclepiadaceae, Crassulaceae, Compositae,* etc. found their way into other European gardens where, with their often weird and bizarre appearance and with their unusual flowers they captured the imagination of a steadily increasing number of plant lovers, botanists and artists.

It was in those days that A.-P. de Candolle published his monumental volumes: "Les Plantes Grasses", magnificently illustrated in colour by the inimitable Redouté. This sumptuous publication contributed considerably to the popularity of succulents, and before long they became the object of an intense commerce, with an assured and demanding market.

Private and professional collectors, gardeners and dealers were now busily engaged in collecting, growing, hybridizing and describing a host of new species and varieties of succulents. Because, moreover, succulents do not lend themselves to pressing as well as other plants, they were frequently not represented in herbaria, or at most by inadequate specimens. Besides, few botanical gardens devoted themselves to the cultivation of succulents received from the tropics as distinct from other tropical plants and in consequence raised them in conditions hardly suitable for their normal growth, and if they survived at all, they rarely flowered or produced fruit and seeds.

In such circumstances the nomenclature in many groups of succulents became inevitably somewhat involved and even the best contemporary botanists were hard put to establish satisfactory classifications. Thus the remarkable mono-

graph of Boissier in 1862 of the genus *Euphorbia* and, much later (1919), Britten and Rose's publication on *Cactaceae* were greatly handicapped by an inadequate knowledge of essential characters of many of the described species and also by insufficient data as to their origin.

However, as time went on, there arose, among the numerous amateurs and gardeners who concerned themselves with the study and growing of succulents, some few who contributed substantially to a better knowledge and to a more satisfactory nomenclature in certain of these groups. Thus, the Americans Allan White and Boyd L. Sloane spared neither effort nor expense in their endeavour to stablish a coherent classification of the Stapeliads. Their publication "The Stapeliae" (1937) is still the most comprehensive work on the subject, although in the thirty years which have elapsed since its appearance many new species have been discovered, new taxonomic methods have been evolved, and an enlarged and revised edition is due. The same can be said about Britten & Rose's four volumes on *Cactaceae,* published in 1919. It was followed by Kurt Backeberg's more comprehensive if perhaps less critical work: "Cactaceae", with its magnificent illustrations from colour photographs, of which the 6th and last volume appeared in 1962.

It was in the nature of things that the first gardens to specialize in succulents came into being on the mild and sunny Mediterranean coast, where already a good many exotic succulents such as *Opuntia, Agave, Euphorbia, Mesembryanthemum* and others had invaded the indigenous vegetation and become thoroughly naturalized.

The renowned garden of "La Mortola" in Vintimiglia on the Italian Riviera, founded and owned by Sir Thomas Hanbury, possessed a very large collection of succulents in the early decades of this century, especially under the curatorship of Alwin Berger who described many new species which reached "La Mortola" from all parts of the world. Unfortunately after Sir Thomas' death and Mr. Berger's departure research in "La Mortola" was discontinued and was revived only in recent years when the garden was taken over by the University of Genoa.

The "Jardin exotique" in Monaco, owned by the Principality of Monaco, is another outstanding succulent garden in which a clement climate and a superb scenery have inspired a team of devoted horticulturists to work miracles on a very limited and naturally infertile rocky slope. Its future is assured, although its site within the overcrowded precincts of Monaco-Ville has little prospect of ever increasing its present area.

Another garden favoured by the Mediterranean climate is the famous Jardin botanique "Les Cèdres" in Saint-Jean-Cap-Ferrat, owned by Julien Marnier-Lapostolle. It was founded by his father on the former estate property of King Leopold I of Belgium, but only its present owner developed it into one of the most remarkable gardens of the world. Mr. Marnier does not restrict his interests to succulents, but nevertheless the spacious gardens and immense hothouses harbour one of the richest and most successful collections of them.

There are others which space forbids me to name here, but among them all the "Städtische Sukkulentensammlung" in Zürich must be given pride of place, thanks to it's present director, H. Krainz, in whose charge it has been since its

inception in 1931. It owes its origin to a private collection of succulents, donated to the City of Zürich on condition that it should be further developed in due course and on premises to be made accessible to the public.

The City authorities' choice of Mr. Krainz for the organisation and direction of this venture could not have been happier. Besides being a first-rate gardener with an uncanny understanding for the diverse requirements of the succulents in his care, he possesses the necessary scientific turn of mind to realize the importance of accurate and reliable records for every single plant of a collection which numbers at present over 4300 different species belonging to 331 genera distributed over 28 plant families, as shown in the latest catalogue, published in 1967. The "Städtische Sukkulentensammlung" as it presents itself today bears witness to Mr. Krainz' unremitting efforts for 38 years as well as of the full support accorded to him by an understanding and openhanded City Council.

The climate on the shores of the lake of Zürich is such that all succulents have to be housed in greenhouses and in frames, although many of them are taken out of doors during the sunny summer months. The compact group of well designed greenhouses is of the best quality and, together with the grounds, impeccably kept. The main glasshouses which are open to the public show the plants to their best advantage, yet they are arranged in a scientifically coherent order. In smaller, subsidiary houses incoming plants are scrupulously inspected, quarantined if necessary, acclimatized, rooted, grafted or multiplied according to requirements. The installation of three climatrons in one of the smaller houses reproduces any deisred climate with temperature, humidity, intensity and relative length of daylight automatically controled.

It goes without saying that a close watch is kept on any incipient diseases or pests which are then treated with the most efficient chemicals. It is not surprising that visitors are impressed by the healthy aspect of all plants throughout the establishment which forms perhaps the largest, certainly the most efficiently run succulent collection in existence.

The greenhouses are grouped around the administrative building which holds—apart from Mr. Krainz' office and laboratory—an excellent reference library on the subject of succulents, an important seed collection as well as an herbarium of pressed, 3-dimensionally dried and formalin-preserved specimens, among which there are many types. There is also an important collection of colour- and black-and-white photographs among which the habitat photographs are particularly noteworthy.

The great wealth of species represented in the "Städtische Sukkulentensammlung", combined with the thoroughly reliable and accurate recording system which Mr. Krainz has so patiently built up, make it a most valuable base for taxonomic research, especially where authentic living material is required, be it for comparative studies of their cellular structure, their cytology or their chemism.

Mr. Krainz' methodical and painstaking attitude finds expression also in his many publications among which his compilation "Die Kakteen". a detailed illustrated description of all cacti in cultivation with practical hints concerning their cultivation, is the most important.

The I.O.S. (International Organisation for the study of Succulents) decided to choose the "Städtische Sukkulentensammlung" in Zürich as the custodians of their own collections in appreciation of the high and scientifically impeccable standards along which it is run.

The Xth International Botanical Congress in Edinburgh passed a resolution, sponsored by the International Association of Botanic Gardens, which stressed the importance of all such collections of living plants for supplying materials and information for research in all botanical disciplines. With this role in view they should strive to deserve to be termed: "Documented collections of authenticated taxa". The "Städtische Sukkulentensammlung" in Zürich conforms with this definition in every way.

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