

# THE AUTHENTIC GARDEN

## A SYMPOSIUM ON GARDENS



EDITED BY

L. Tjon Sie Fat  
E. de Jong















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EDITED BY

L. J. van der Pijl

Enschede







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The symposium 'The Authentic Garden' was a project (no. 128) of the World Decade for Cultural Development of the United Nations and UNESCO.

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## FOREWORD

KEES J. CATH

*President of the Clusius Foundation*

On the occasion of the four hundredth anniversary of the Botanic Garden of Leiden University a symposium was held which marked the growing interest for the garden in its historical context. The international character of this symposium followed the tradition of Carolus Clusius, the man who gave the Leiden Hortus Botanicus a flying start by his international experience and contacts.

In my opinion, the importance of a gathering of experts from so many countries and disciplines cannot be overestimated and it is of the utmost importance that the contributions of the participants are also published together in one volume. Everyone who is interested in the subject of gardens should have this book in his library.

It goes without saying that much work and research remains to be done.

Work on the restoration of gardens and further study on their developments in the past.

It is my sincere hope that this book will stimulate both activities and will be an incentive to follow this symposium with many such meetings in the years to come.





## THE AUTHENTIC GARDEN THE GARDEN AS CULTURAL HERITAGE

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STAAY

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Cultural Planning Bureau. He is vice-  
president of the Board of the European  
Centre for Work and Society and of the  
European Foundation for Library  
Cooperation/Groupe de Lausanne and  
chairman of the board of the international  
prize for persecuted poets, the 'Poetry  
International Award'. He was elected  
President of the Intergovernmental  
Committee for the World Decade for  
Cultural Development of the United  
Nations and UNESCO in 1990.  
Among his recent publications is a book  
about Parks and Gardens.*

Few visitors of the gardens of the Alhambra or the Generalife in Granada are not moved by the exquisite art and lifestyle of their creators. These gardens are among the oldest of the Islamic world still alive as gardens today. When one looks around for other examples, the harvest is small. Thousands of famous gardens have been created and lost, most of them without leaving a trace. Of the many Mughul Gardens the few still existing today are frequently in ruins and the imagination must recreate the flow of water and the former sweetness of their trees and flowers. It is even harder today to find the gardens that made the Ottoman justly famous for his love of flowers. All this is common knowledge and yet one should not avoid again and again stating the commonplace in this matter. The conquerors of Mexico, arriving from Renaissance Europe, were filled with admiration for the art of gardening of the Indians. One century later virtually nothing was left of the famous gardens of the Aztecs except for two meager descriptions. Gardens are living things and as such they are mortal. In this symposium we will try to resurrect what is nearly dead and gone, alas, but we will also celebrate still existing and honoured gardening traditions.

But even where contact with the past is assured, the work will not be easy. The ambitious idea of not turning to fairly recent garden traditions such as the the French classical garden or the English landscape garden, but to what went before, is surely hazardous. To try to discover which gardens existed and why they were created four hundred years ago makes us realize that this world has almost disappeared itself, and is sometimes as little understood by modern man as the cultures of even earlier periods.

The thread that links us with this vanished world is nevertheless strong. The world of around 1600 was the last stage of a traditional world that had developed continually over several millennia and was about to disappear, at least in Europe. The 16th century was also the cradle of the modern world. I am sure that this Janus-like image will constantly reappear in our symposium: the world of 1600 contains both the cradle of a new culture and the grave of the old.

No one makes us more aware of this ambivalence than Charles de l'Ecluse, or Carolus Clusius. He is in a sense the reason for our being here, because he gave form to the Botanic Garden, the Hortus Botanicus of the University of Leiden, of which we are celebrating the creation four hundred years ago in 1990. We will enter our theme through him, through his life and work and his garden and our celebration will take place only a few hundred yards away from the spot where he created his most famous garden. He died here but his garden was modern enough to outlive him for four hundred years. I do not wish to do what others will do much better and try to describe the world of Clusius. But I will nevertheless point out that in a more general way the world in Clusius' time was changing rapidly and permanently beyond recognition. Looking back from Clusius we see a world of more or less self-contained cultures: the world of the Islam, the world of Chinese culture, the world of Christianity, and the world of Hinduism for instance. Of course there was interaction, but it was mostly of a limited kind. But looking ahead from Clusius' period we see these worlds entering into a turmoil of interaction and fusion that lasted several centuries. Until finally we reach the world



of today with international conferences on the authenticity of former identities, either changed or lost. Somewhere during Clusius' lifetime world culture was born. He was one of the first cosmopolitan citizens of the realms of nature and of culture. In this respect he foreshadows the attitude of another scientist associated with Clusius' garden, Philipp von Siebold. German by birth, employee of The Netherlands for most of his working life, citizen of Japan by his marriage and interests, he was in mentality a citizen of the world.<sup>1</sup> This extraordinary man of the nineteenth century played a pivotal role in the meeting of East and West. Not only did he leave his traces in the Dutch National Ethnographical Museum, in the State Herbarium and in the National Museum of Natural History in Leiden, but he had a profound influence on European horticulture by the introduction of a vast array of living plant material, of which some of the original individuals are still present in the Botanic Garden today. He is aptly honored by a Memorial Garden designed by our guest Professor Nakamura.

This conference was conceived and prepared in the spirit of Clusius and Von Siebold and in their spirit of openness towards other cultures we will try to discuss the authenticity of gardens. The enormous fusion of cultures that was to follow the world of Clusius also contributed to a world of inauthenticity. Four centuries of mutual discovery, of assimilation (however imperfect, hastily, selectively) of other cultural forms produced many strange and undigested results. These centuries had, historically speaking, no patience with the problem that exercises so many minds today: what is authentic in our cultures? The exotic images that evolved mutually during this first period of interaction were as often projections of prejudice or wishful thinking as of true understanding. This process of imperfect assimilation leads to creative misunderstandings in the form of exotisms like *Chinoiserie*, *Japonaiserie*, or *Orientalism*.

The superficiality of mutual understanding explains much of the pain we associate with trial and error. A certain royal person in England in the 17th century being presented with a venerable screen by her distant contacts in China, had it cut up and used as wall-panelling. The reaction among cultivated Chinese was outrage:

'to see the walls of some miserable cabinet decked and adorned forewith with our unhappy ruins.'<sup>2</sup>

At the end of this letter to Mary Stuart, the Princess was asked to restore their work of art and it was suggested that if desired the closet-panelling could be made to measure in China. These situations are especially painful when no party intended to give offence. I give only this instance of the seemingly endless series of misunderstandings of each others authenticity that we are leaving behind, I am sure, only today.

There are, however, also examples from the field of gardening. The gardens of Granada were much loved by the man who wrote a magnificent book about them, the Andalusian architect Prieto-Moreno.<sup>3</sup> With the same love, he reconstructed the Moorish gardens of the Alhambra and the Generalife. Yet in their present reconstructed form, they are recognized today as not being authentic, in the sense of historically authentic, at all.

The level of the flower beds seems to be wrong by a yard, the type of planting is a product of fantasy, the symbolic value of the arrangement is different, if not lost. Millions of visitors, they themselves posing a problem for the preservation and experiencing of gardens, go away with a very inauthentic image of what these gardens were meant to be. The same seems to apply



to many of the historical gardens of China. The constant theme of the marvelous book by who should have been our guest of honour, professor Chen Congzhou,<sup>4</sup> is the message that we should see a return to historical authenticity in Chinese gardening today. He does not reject the modern and developing world with its recreational parks, parking lots and highways. He only wishes that modern man would understand the original meaning of the historical gardens he is trying to preserve. He constantly finds reasons to berate his countrymen, planners and gardeners, for their lack of true understanding of historical gardens. In this he exemplifies the modern problem, that it is no longer the foreigner alone who misinterprets history, but that modern man, even if born within a specific cultural tradition, can ignore his own cultural history as well.

I hope that the discussion of authenticity will guide us to a better understanding of historical gardens. It should not lead us into an unproductive direction, that of trying to create a pure and unadulterated national tradition of gardening. The slow and limited diffusion of the art of gardening in the centuries before Clusius was and remains nevertheless a constant and very real process. The invention of a new form of gardening, like the invention of the *glorieta*, travelled slowly, but it travelled nevertheless. This type of garden pavilion may even have been invented as long ago as the time of Cyrus the Great.<sup>5</sup> Horticultural invention cannot be limited by any political or cultural barrier, even as the plant material of one region was constantly travelling to enrich the gardens of comparable climates. The study of inventions and the way they travelled from culture to culture seems a much better way of understanding the authenticity of garden cultures, than the artificial creation of purified garden identities, which minimizes the importance of cultural exchange.

In preparing this symposium we have tried to highlight the interaction between cultures. The diffusion of plant material has been foremost in our minds, but also the diffusion of horticultural and artistic forms that may or may not have accompanied it. We are glad to have distinguished experts among us to comment on cultural interactions between China, Korea and Japan, and between the Islamic world and Europe. This being said, enormous blind spots remain in the general knowledge of the diffusion of garden lore. The Byzantine empire straddled Europe and Asia for a thousand years and was a bridge between the past and the future of ancient gardening. We know virtually nothing about gardening during this great period and in this vast area. I have already pointed out the complete disappearance of the great garden tradition of Middle America, which probably linked the disappearing horticultural tradition of the North with the opulence of the South. Nearly as badly known is the precise influence of Indian gardening on Chinese culture by way of Buddhism, and vice versa. The situation remains much the same as Marie-Louise Gothein summarized it in 1926.<sup>6</sup>

Nowadays there exists a new situation for the reappraisal of cultural exchange. The World Decade for Cultural Development (1988-1997), of which our symposium forms a part, pays much attention to the linking of cultures. The Alexandrian library will probably be rebuilt, which was a ancient symbol of cultural exchange. Another prominent World Decade project concerns the study and re-evaluation of the silk-roads through Central Asia. If we bear in mind that silk is a horticultural product, we find the importance of this symposium confirmed. The bond between cultures by the complex barter of botanical knowledge, plant material, horticultural skills and garden art is a vast theme and an important one.

In view of the involvement of UNESCO it is important that the international



community is represented. I welcome the presence of an official representative. On behalf of UNESCO and its affiliated associations of experts the Chairman of the international committee of Historical gardens and landscape, Professor Añon-Féliu will address the symposium. The national commission for UNESCO of the GDR intended to send us an expert, in view of the possible follow up of this symposium within two years. We could then envisage a Pan-European meeting on the situation of historical gardens in Eastern and Central Europe. Developments in the Republic have made this visit difficult.

A final remark. The not at all hidden agenda of this symposium is that it may not be the last one, but a beginning. This symposium strengthens the hope that the historical garden may achieve international recognition as a serious object of study and action. The historical garden has shared with all gardens the unfortunate consequences of the division between natural and cultural heritages, though in the International Convention concerning the protection of the World Cultural and Natural Heritage of 1972 both aspects are twinned. Indeed on the World Heritage List some gardens, linked to buildings, are to be found. I mention the Palace and Park of Versailles, the Würzburg Residence and its Court Gardens, the Shalamar Gardens in Lahore, and of course the Alhambra and Generalife. But in general gardens as such are ignored as a heritage field in its own right.

One set of experts will endeavour to save monuments and sites, another set protects ecosystems and animals and plants. But that ancient and much-loved interface between these two systems, the garden, has been unfortunately neglected. Only today a re-awakening on a world scale to the consequences of this neglect is becoming visible. The pioneering work of the Dumbarton Oaks symposia is now bearing fruit. International journals are specializing in garden history, though mainly from the limited point of view of art history. Talks are underway for the setting up of a specialized center for the study and reconstruction of Mughul gardens. Plans may be discussed for setting up an international programme within UNESCO for the study, safeguarding and reconstruction of historical gardens. The modest human and financial resources of UNESCO should be an aspect of the problem to solve. We thank UNESCO for what it has done so far.

As the Chairman of the Organizing Committee of the Clusius Foundation, which made this symposium possible, I have high hopes for the outcome of these few days of international cooperation. As the Chairman of the Intergovernmental Committee for the World Decade for Cultural Development of UNESCO and the United Nations, I welcome the authentic historical garden to the World Decade.

#### NOTES

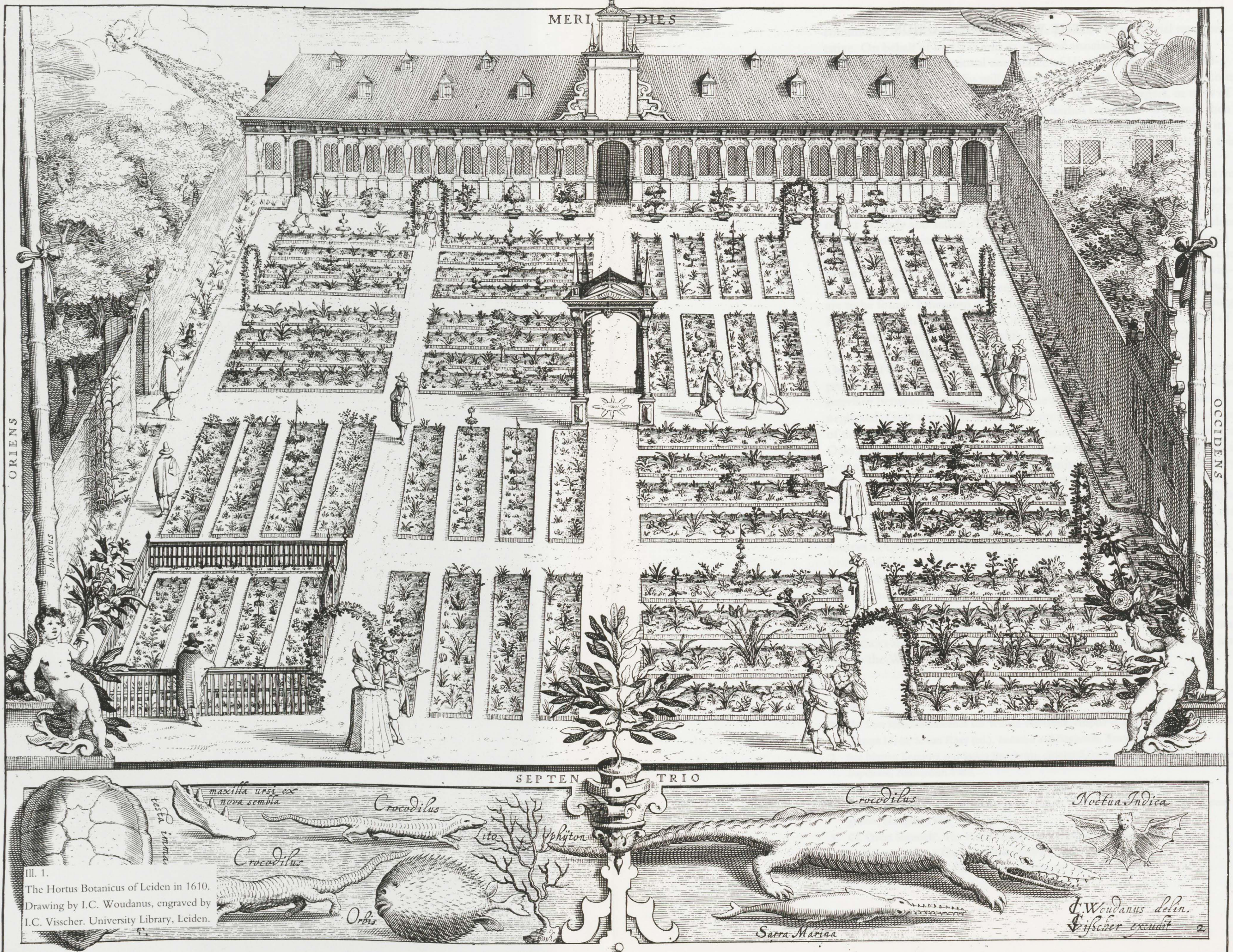
1. On Von Siebolds influence see Willem van Gulik, chapter 6, and Leslie Tjon Sie Fat, chapter 11, in: S. van Raay (ed.), *Imitation and Inspiration*, Amsterdam 1989.
2. See Marten Loonstra and Saskia Broekema, chapter 5, in: S. van Raay (ed.), *Imitation and Inspiration*, Amsterdam 1989.
3. Francisco Prieto-Moreno, *Los Jardines de Granada*, Madrid 1983.
4. Chen Congzhou, *L'arte dei giardini cinesi*, Milano 1987. Chen Congzhou, *On Chinese gardens*, Shanghai 1984.
5. Cf. David Stronach, 'The Royal Garden at Pasargadae, evolution and legacy; in: *Archeologica Iranica et Orientalis*, Gent 1(1989).
6. Marie Louise Gothein, *Geschichte der Gartenkunst*, Jena 1926.

# THE WORLD OF CLUSIUS

GARDENS AND BOTANIC GARDENS IN EUROPE IN THE 16TH CENTURY



# HORTI PUBLICI ACADEMIAE LUGDUNO-BATAVAE CUM AREOLIS ET PULVILLIS VERA DELINEATIO.



Ill. 1.  
The Hortus Botanicus of Leiden in 1610.  
Drawing by J.C. Woudanus, engraved by  
J.C. Visscher. University Library, Leiden.



## CLUSIUS' GARDEN: A RECONSTRUCTION

LESLIE TJON SIE FAT  
National Museum of Natural History  
Leiden, The Netherlands

Dr. Leslie Tjon Sie Fat studied biology at the University of Leiden. As a member of the scientific staff of the Hortus Botanicus of Leiden he did research on the botanical collections of Ph. von Siebold and on the early years of the Garden. These projects culminated in the reconstruction of the original Hortus Botanicus and the Japanese Von Siebold Memorial Garden. At present he is developing new exhibitions for the National Museum of Natural History.

Immediately after it was founded in 1575, the University of Leiden tried to attract the foremost scholars of Europe. These learned men were offered quite lucrative positions, but they had to bring along with them their personal collections of books, manuscripts, rarities, and in the case of the university garden, their plants. In view of this, it is not surprising that within a very short time the University of Leiden was seen as one of the most important centres of learning in Europe.

One of the great scientific innovations of the 16th century was the creation of the Medical Garden (*Hortus Medicus*), in which medicinal and poisonous plants were grown as a reference collection for medical students. The professor of botany would walk around the *Hortus Medicus* giving his lecture and demonstrate various medicinal plants. The first university gardens were founded by venerable universities like Pisa, Padua, Florence, Bologna, Pavia and Leipzig. In 1587 the Leiden University set aside a *ledige plaetse* (empty place) behind the Academy building for the creation of a *Cruydhof* (herb garden). However, it was not until 1594 that the garden was actually laid out (Baas Becking, Veendorp, 1938) (Ill. 1 and 2).

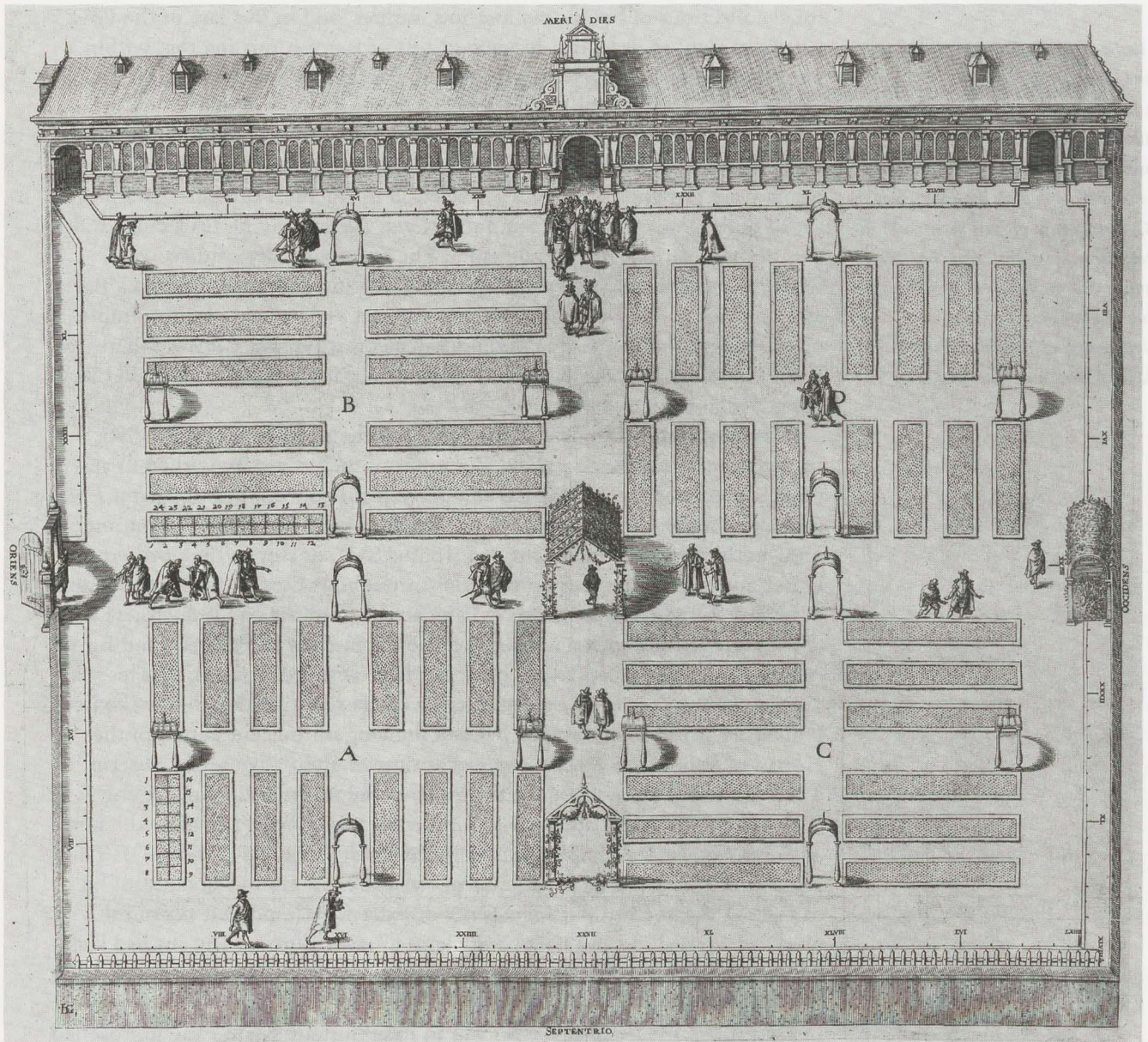
The official foundation date of the Leiden garden is February 9th, 1590. In accordance with their policy, Curatores of the university wished to appoint a great botanical scholar with a large plant collection as *Praefectus Horti* (Director of the Garden). Serious negotiations were started in the summer of 1591 with Bernardus Paludanus (ca. 1550-1633), doctor in the northern Dutch town of Enkhuizen and famous throughout Europe for his collection of plants, 'naturalia' and 'curiosa'. Paludanus had obtained his doctorate at the University of Padua and had travelled extensively in Palestine and Egypt. At first Paludanus accepted the post, but later withdrew, saying that his wife did not want to move to Leiden. However, he sent two designs for the new University garden, one of which was a drawing of the central part of the Hortus of Padua, the other a somewhat simpler alternative set of patterns. These drawings were just recently rediscovered in the Municipal Archives (E. Terwen-Dionisius 1989). The University then decided to offer the post of *Praefectus Horti* to Carolus Clusius (Charles de l'Ecluse, 1526-1609). This was a very ambitious idea, for Clusius was the most famous botanist of his day (Ill. 3). Apart from writing a series of extremely important botanical works and travelling and collecting plants all over Europe, Clusius had laid out a *Hortus Medicus* for the emperor Maximilian II in Vienna between 1573 and 1588 (Hunger 1927) (Plate 3).

In December 1591 Clusius, who was in Frankfurt am Main, was approached unofficially by his friend, the nobleman and plant lover Johan van Hoghelande, to find out whether he would like to fill the position of *Praefectus*. Clusius refused, saying that he was too old to accept the responsibility for teaching students and creating a new *Hortus Medicus*.

Van Hoghelande did not give up so easily, and on May 21st, 1592, he received a letter in which Clusius accepted the post on certain conditions having to do with his age and infirmity. Apparently these terms were met to everyone's satisfaction and Clusius was appointed on October 12th, 1592. In one of his letters to Van Hoghelande of that year Clusius emphasized that he wished to be exempted from giving lectures in botany to students:



'in my 66th year it would be onerous to descend into this arena for the first time. As far as the garden is concerned, however, it be far from me that I would deprive the youth from anything from which I have gained knowledge by long experience.' and '... if I were so stalwart as seven years ago, it would have been agreeable to me to visit the seadikes and other places together with my students from time to time, in order to observe what grows there. For it is useful to know where the herbs grow in order that we know where to place them in our gardens.' (Baas Becking & Veendorp 1938).



Ill. 2.  
Jacques de Gheyn II, plan of the *Hortus Botanicus*, Leiden. Engraving, IDG (interlaced) (39.5 x 43.5 cm) in P. Pauw, *Hortus Publicus Academiae Lugduni-Batavae*, Leiden, 1601. Amsterdam, Rijksmuseum, Printroom, Holl. 297.

Clusius' correspondence from Frankfurt prior to his arrival in Leiden also shows his interest in the future collection of the university garden. He requested Theobald van Hoghelande, Johan's brother, to collect seeds during his travels in Austria, Hungary and Transsylvania. These were confiscated by soldiers at the frontier. A second consignment was sent by ship to Dordrecht, but was embezzled by an Amsterdam apothecary. In November 1592 Clusius sent 251 kinds of seeds to the University. These had been collected by his friend Joost Goedenhuyze (also known as Josephus de Casabona) from Pisa. Most of these seeds had been collected in





In Effigiem Nobilis Doctissimique Viri  
CAROLI CLVSII.

**A**TREBATVM decus, & nostri noua gloria seculi  
CAROLVS hac Leydis CLVSII ora gerit.  
Herbarum vinas Orbi dedit ille figuras,  
At CLVSI vinam GHEYNIVS effigiem.  
BON. VVLCANIVS.

Mediterranean areas, for instance on the island of Crete. All these seeds were to be sown at once, so that the material would be available when Clusius arrived. The manuscript of 1594 shows a great many plants from Goedenhuyze's list, but as there were no greenhouses or frames, many seeds probably did not germinate or were killed by the colder and wetter Dutch climate. Just as Clusius was to set out for Leiden, he fell from his horse and dislocated his hip. Nevertheless, in the autumn of 1593 he arrived in Leiden. To assist him with the construction and maintenance of the new garden, the Curatores appointed in 1594 Dirk Outgaertszoon Cluyt (Clutius), an apothecary from Delft, who also brought with him his collection of medicinal plants (Bosman-Jelgersma 1976, 1981, 1982).

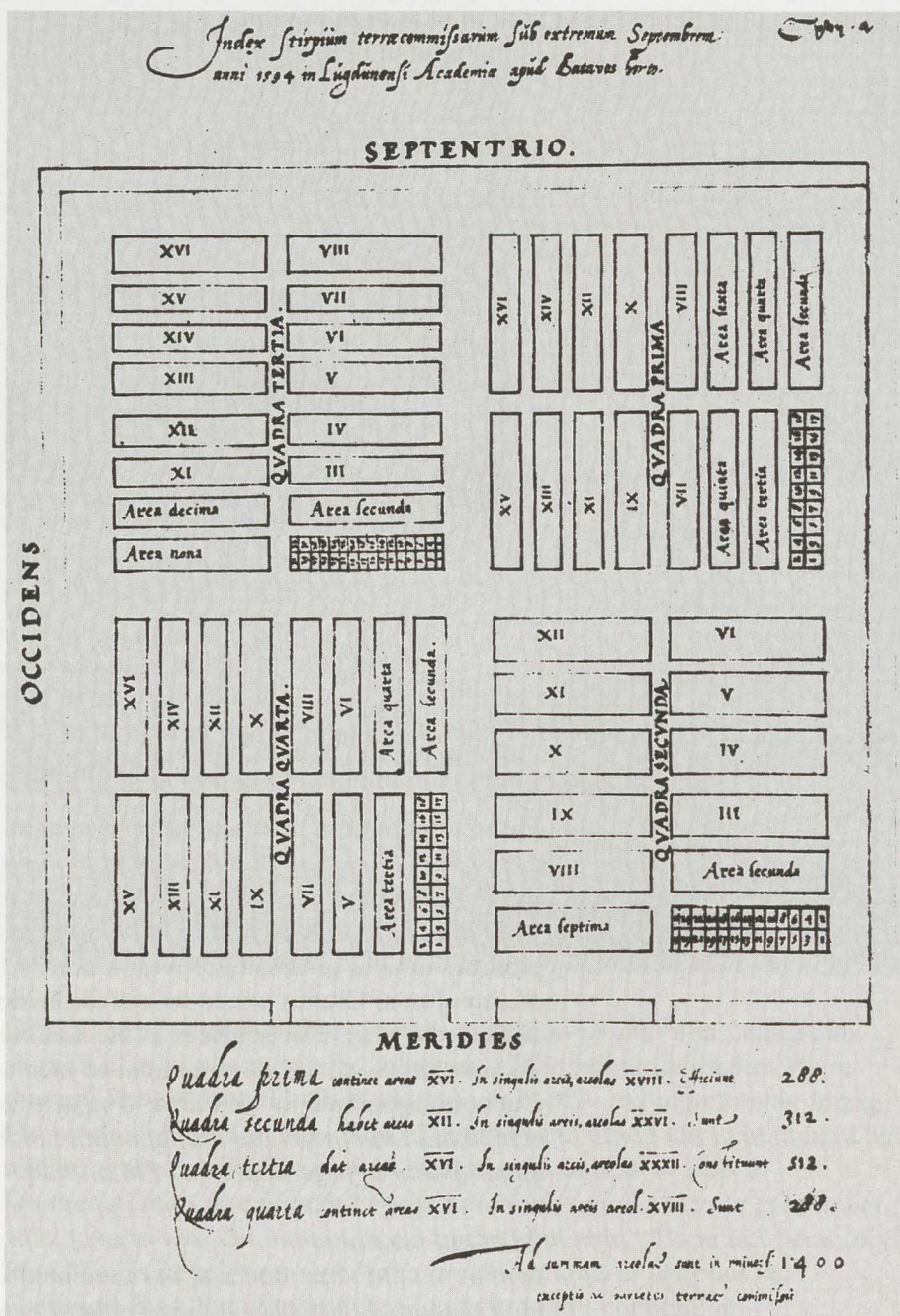
#### CLUSIUS' GARDEN

In 1931 L.G.M. Baas Beeking was appointed as *Praefectus Horti* and H. Veendorp as *Hortulanus* of the Leiden Hortus Botanicus. These two dy-



This manuscript, known as the *Index Stirpium*, consists of a detailed ground-plan and a numbered list of the plants (Ill. 4 and 5). Attention had already been drawn to it by Molhuysen (Molhuysen 1913) and Hunger (Hunger 1927). There are four appendices or lists of plants which were present in the garden in that year, but not yet put in their permanent positions. Many of the plants in these lists were grown in pots, but it is not clear where they were kept. From the *Index Stirpium* one can obtain a detailed picture of the first Hortus of Leiden, and it is upon this manuscript that the reconstructions of 1932 and 1990 were and are based. The authorship of the manuscript is unclear. Hunger, Baas Beeking and Veendorp assume that Cluyt wrote everything. This is quite possible, as the handwriting is not exactly that of

Ill. 4.  
Plan of the Hortus Botanicus of  
Leiden. C. Clusius and D.O. Cluyt,  
manuscript, 1594. University Library,  
Leiden.





Clusius. However, in *Quadra Tertia, area XVI*, it is stated 'Tulipae selectorum generum a me collectae' (various kinds of tulips collected by me). Whoever actually wrote the manuscript, one can be sure that Clusius was responsible for the contents.

The garden was divided into four *quadrae*. Each *quadra* is divided into four parts, consisting of rectangular beds or *areae*. *Quadra* A, C and D contain 16 numbered *areae*, *quadra* B only 12. Each area is subdivided into small numbered squares or *pulvilli*. The *areae* in *quadra* A and D each contain 18 *pulvilli*, those in *quadra* B 26 *pulvilli* and those in *quadra* C 32 *pulvilli*. This very precise system is explained in the ground-plan on the first page of the 1594 manuscript. Not only is it one of the oldest lists of a specific plant collection, but the only one in which the exact place of each plant is given. Thus, in theory it should be quite simple to make an accurate reconstruction of Clusius' garden of 1594. However, the names of the plants are those of Clusius, and date from a time when there was no comprehensive system of botanical nomenclature. Such an internationally accepted system was created by Carolus Linnaeus for the first time in 1753, nearly a century and a half after Clusius. Our modern nomenclature is based exclusively on Linnaeus binomial system and it can sometimes be quite a puzzle to figure out exactly which species or cultivar is referred to in pre-Linnean literature.

What is clear from the *Index Stirpium*, is that Clusius' garden definitely was not a *Hortus Medicus*. The traditional medicinal plants are all there, but these form only about a third of the species in the garden. The other plants were put in to be studied for their own sake, and not because they were of use to man. Therefore, I think it is right to state that the Leiden garden was a real *Hortus Botanicus*, a garden in which plants are studied as botanical and not as medical or agricultural material. This is not surprising, as Clusius himself was not especially interested in medicinal plants. Clusius and his friends and colleagues Dodonaeus and Lobelius described plants very accurately from living material.<sup>1</sup> But even in his famous *Cruydeboeck* of 1555 Dodonaeus only described plants with clearly defined uses. Lobelius and Clusius were real descriptive botanists in the modern sense of the word. Thanks to their work botany developed into a separate and independent science. Apart from the traditional corpus of medicinal plants, Clusius' *Hortus Botanicus* contained many interesting exotic introductions. Most of these came from the eastern part of the Mediterranean region and Central Europe (e.g. Golden-chain, Cypress). There are also species from the Middle East, such as Tulips, Daffodills, Crown Imperials, Hyacinths and many other bulbous plants and the Horse chestnut. Then there are a few plants from much further away, such as sugar-cane, bamboo and American species like the potato, tomato, *Colocasia*, *Opuntia* and *Tropaeolum*. It is often stated that the early botanists had no taxonomic system for grouping plants. In all of Clusius' works, however, there is a logical grouping of plants which have more or less similar morphological characters. But Clusius does not give his groupings names of any sort. Furthermore, Clusius' nomenclature approaches the binomial system and he nearly always provides authorities for the names used. Perhaps it is time that Clusius' books be read more carefully.

In the *Hortus Botanicus* the case can be put even more strongly. In three-quarters of the garden (*quadrae* A, B, and D) the plants are placed in such a manner as to show their similarity. Thus the various groups of bulbous plants are grouped together and all are kept together as a larger group. There are separate *areae* for roses, umbellifers, labiates, broad-leaved irises and narrow-leaved irises, and so on. Sometimes the groups look surprisingly modern. In these three *quadrae* there are quite a large amount of open spaces, sometimes



dividing two clearly different groups of plants. In the later manuscripts (1595, etc.) these spaces are often gradually filled in with species belonging to the groups already in the beds. Moreover, this same series of manuscripts give more or less generic names for the plant-groups in the beds: *Area prima habet Genera: Anemonarum; secunda: Iridum bulbosarum; teria: Ornithogalorum, Crocorum, Colchicorum; etc.*

In the years until Clusius' death in 1609 the Hortus Botanicus received an enormous amount of new plant material. Seeds arrived from Italy (519 seeds from Italy sown on July 3rd, 1596) and during his travels between 1602 and 1608 Outgers (Augerius) Cluyt, the son of Dirck Cluyt, sent much plant material from Germany, France, Spain and North Africa to the Hortus. Curatores also requested the Dutch East India Company to allow someone going to the Indies to collect plants according to the instructions given by the professor of botany. Some of the most important items were obtained through exchange, as Clusius with his more than 300 correspondents stood at the centre of an international network of plant exchange. The inventory of 1594 gives 1060 species, that of 1600 more than 1100.

As befits a Renaissance garden, a matching building was constructed in 1601 along the south side of the garden: the *Ambulacrum* (Ill. 1). Here the professor of botany gave lectures in bad weather and in winter, among the university's collection of 'naturalia'. In winter the plants in pots and tubs could be brought inside from the frost, which makes it a primitive Orangery. On the façade an inscription in stone gave the regulations for the visitors in latin, which translated, comes out more or less as follows:

'For the use and decoration of the university built by order of the Lords Curatores and Burgomasters in the year 1600 after Christ's birth. When entering the garden take heed of what is written below:

1. It is allowed to enter this garden on the hour indicated by its supervisor and to depart therefrom when the instruction is ended.
2. Those who enter the garden are allowed to observe the plants and to smell them, but it is not allowed to touch the tender herbs and those that are beginning to sprout.
3. It is not allowed to pick or break branches, flowers and seeds, to tear out bulbs and roots, or to cause any damage in the garden.
4. It is not permitted to jump over or step on the flower-beds.
5. Nothing may be done in the garden against the will of the supervisor.'

#### THE RECONSTRUCTION OF 1932

When Baas Becking and Veendorp decided to reconstruct Clusius' garden, they were confronted with a number of restrictions. First of all, the original space of Clusius' garden behind the Academy building had changed beyond recognition, mainly thanks to two or three huge buildings which were completely out of scale. Secondly, and more importantly, this part of the Hortus was dominated by an enormous purple beech,<sup>2</sup> which was planted around 1819. A plot of ground near the Hortus was offered by the Department of Finance, between the old *Collegium Theologicum* and other university buildings. Unfortunately, this piece of land was only two-thirds of the area of Clusius' original plot, but it was beautifully situated within high walls. There was also a strange little piece of ground squeezed in between low buildings which could be used.<sup>3</sup> The Praefectus and the Hortulanus tried to match Clusius' plant names with modern living plants as best as they could. On the whole, they did quite a good job, considering the scarcity of hard evidence.



# QVADRA PRIMA.

Coly.

## Area quinta.

*Chamaecirides latifoliae variorum colorum.*

I			II
III	<i>Thalictrum Hisp.</i>	<i>Pigamum</i>	IV <i>Thalictrum Hispanicum.</i>
V	<i>Aquilegiae diversorum generum multiplici flor.</i>		VI
VII	<i>Aquilinae roseae variorum colorum.</i>		VIII
IX	<i>Chelidonium vulgare</i> <i>Papaver corn. flor. luteo.</i> <i>Papav. corn. flo. luteo species.</i>	<i>Chelidonium Sprengerianum.</i> <i>Papaver corn. flor. thoeniceo.</i>	X
XI	<i>Sedum maius</i>	<i>Crassula maior Hispanica.</i>	XII
XIII	<i>an Telephium?</i>	<i>Crassula vulgaris.</i>	XIV
XV	<i>Crassula rubra.</i>	<i>Crassula rubra.</i>	XVI
XVII	<i>Rodia radix</i> <i>Apium risus. Cortusa Matthioli.</i>	<i>Rodia radix.</i> <i>Apium risus.</i>	XVIII

## Area sexta!

	<i>Hepatica. Leuc. &amp; phil.</i>	<i>Auric. risi flor. lut.</i>	<i>Leuc. &amp; phil. Hepatica.</i>	
I	<i>Colchicum flore purpureo.</i>		<i>Colchicum flore purpureo</i>	II
III	<i>Colchicum flore luteo</i>		<i>Narcissus autumnalis.</i>	IV
V	<i>Gladiolus flore carneo</i>		<i>Gladiolus flore rubro.</i>	VI
VII	<i>Gladiolus maior flore rubro.</i>		<i>Gladiolus maior flore carneo.</i>	VIII
IX	<i>Hyacinthus autumnalis</i>		<i>Hyacinthus autum. minor.</i>	X
XI	<i>Hyacinthus autumnalis minor.</i>		<i>Hyacinthus autumnalis minor.</i>	XII
XIII	<i>Hyacint. autum. minor.</i>		<i>Hyacinthus autumnalis minor.</i>	XIV
XV	<i>Hyacint. autum. minor.</i>		<i>Hyacinthus autumnalis minor.</i>	XVI
XVII	<i>Hyacinthus aut. minor.</i>		<i>Hyacinthus autumnalis minor.</i>	XVIII
	<i>Hepatica.</i>	<i>Auric. risi flor. rubro.</i>	<i>Hepatica.</i>	

III. 5. First inventory of the Hortus Botanicus of Leiden. C. Clusius and D.O. Cluyt, manuscript, 1594. University Library, Leiden.



They accurately re-created the ground-plan of 1594, on a two-thirds scale. The beds were edged with brick, though they were probably edged with planks of wood or low earthen dikes in Clusius' day. The paths were covered with shells, which was traditional in Dutch gardens in the 16th century, but not in the Hortus. Here the paths were covered with used oak bark from the tanneries in and around the city. A nice addition on the 'extra' piece of ground were six traditional straw beehives in a wooden stall. Since 1932 bees are kept in the garden in honour of Dirck Outgaertsz. Cluyt, who was one of the first Dutchmen to write a book on beekeeping.<sup>4</sup> In this small annex to the main garden Baas Becking and Veendorp planted species that grew in the garden from 1595 to 1609. Rather curious versions of an archway and a berceau depicted in two different engravings were built here. A more serious fault was the filling up of the very logical open spaces in the beds with all sorts of species Clusius might have had. As yet no attempt was made to cultivate and prune the plants in a 16th century manner and in some plants growth was rampant. Others simply disappeared. During the following fifty-five years the woody plants developed into sizable trees, overshadowing their smaller neighbours.

#### THE RECONSTRUCTION OF 1990

In 1986 it was decided to rejuvenate the reconstruction of the garden now known as the *Hortus Clusianus* (Plates 1 and 2). The central problem was, as in 1932, the interpretation of Clusius' plant names. This work was carried out by G.J.C.M. van Vliet, then *Praefectus Horti*, and the author. In his great biography of Clusius, Hunger presented a complete transcription of the 1594 manuscript. We found no mistakes in the transcription. By this time, however there were two new sources of evidence for matching Clusius' names with actual living plants.

1. In 1974 the famous *Libri Picturati*, the watercolours made for Clusius and his publisher Plantijn and which had served as models for the woodcuts, were rediscovered in the Jagiellon library in Krakow, Poland (Plates 5-9).<sup>5</sup> These works of art showed the characters of the various plants in much more detail than the woodcuts, and the exact colours could be determined (Whitehead, Van Vliet, Stearn, 1989).<sup>6</sup>
2. The herbarium of Anthoni Gaymans, a Leiden apothecary (ca. 1630-1680) made between 1660 and 1680 from plants collected for the most part in the Hortus. Not only are these real dried specimens which can actually be determined botanically, the 17th century scientific (Clusius-) and local names are extensively given on the sheets (Sosef, Van Vliet, Van der Meyden, Scannell, 1987; Heniger, Sosef, 1989).

With these two new sources of information errors of interpretation (ca. 30%) were corrected. Many of the sources consulted by Baas Becking and Veendorp were checked again, e.g. C. Bauhin's *Pinax* (1623) and Richter (1840). Parkinson's *Paradisi, etc.* (1629), the Windsor *Florilegium* of Marshall (ca. 1650), Besler's *Hortus Eystettensis* (1613) and Crispijn van de Passe's *Hortus Floridus* (1614) also proved useful.

The second problem was to find the right plants. It was possible to obtain ca. 70% of the original plants through seed exchange with other botanic gardens, from the wild in the Netherlands and from nurseries. On the other hand, most of the 16th century cultivars and forms have disappeared, which means that many bulbs, roses, primulas, columbines, etc. had to be substituted until the real form turns up somewhere. A good many wild plants have



become rare or are impossible to obtain through seed exchange. This is the case with many of the Cretan species.

It was also tried to give an impression of a 16th century garden by bringing back some of the ornaments and garden structures that originally stood in the Hortus. In this a clear choice was made to follow the engraving of Woudanus of 1610 (Ill. 1) and not the earlier, more technical engraving by J. de Gheyn II of 1601. (Ill. 2) As the younger structures were repeatedly depicted after 1610 and the 1601 structures only appear on De Gheyn's idealized ground-plan, one is tempted to conclude that these last were never built. The elegant fence around four beds in *quadra prima* were probably meant to protect the precious bulbs from destruction or theft. The exact proportions of the central pavilion were reconstructed from the measurements of the *Ambulacrum*. The architect T. Mulder and his staff carried out extensive studies on all existing engravings, drawings, paintings and photographs of the *Ambulacrum*. Especially helpful were certain ground-plans of the Leiden Botanic Garden, e.g. the extremely accurate engraving made by the famous Dutch engineer Cruquius in 1720. Though the ground-plan is on a two-thirds scale, the garden structures had to be life-size to be able to use them properly. This means that the pillars and posts now stand in the beds instead of just outside. The reconstruction of Clusius' garden will be truly finished when the *Ambulacrum* can be built along the fourth side of the plot. Only then will it be a real *Hortus Conclusus* with complete harmony between buildings and garden.

Several 'inauthentic' features were kept, such as the brick edging and the shell paths. The small 'bee-garden' now houses the plants listed in the appendices to the 1594 manuscript. Baas Becking and Veendorp's reasons for re-creating Clusius' garden are still valid and their way of stating this cannot be bettered:

'... to reconstruct the Hortus Clusianus, not only moved by motives of sentiment, but also because of the fact that nearly every plant mentioned in Cluyt's catalogue is individually treated in one of Clusius' books and that therefore a reconstruction might lead to a better understanding of Clusius' works. For the botanist it might be a reminder that his science has grown just as well as our old laburnum; for the pharmacist it might give an idea of the great knowledge of officinal plants that Cluyt has shown and for the historian it might be a living image of the birth of a science.'

We could add to this: for all visitors an image of one of the most beautiful and intimate Dutch Renaissance gardens, and quite possibly, the first Hortus Botanicus.

#### NOTES

1. Dodonaeus (Rembert Dodoens 1517-1585, born in Malines) became court physician at Vienna in 1574, from 1582 until his death he was professor of Medicine in Leiden. Lobelius (Matthias de l'Obel, (1538-1616, born in Lille) was personal physician to William the Silent, after whose assassination Lobelius left for England, where he became court physician. All three were good friends and most of their works were published by Christoffel Plantijn of Antwerp, sometimes with the same woodcuts.
2. This tree, *Fagus sylvatica* L. var. *atropunicea* West., had to be cut down in 1987 because of a fungus infection which could not be eradicated.
3. Clusius' garden measured 39.90 m x 30.90 m.
4. Cluyt, D.O., *Van de Bijen*, Leiden 1597.

5. There are about 1700 watercolours of plants, these were photographed by Dr. G.J.C.M. van Vliet in Krakow. Only a provisional list of determinations has been made as yet.
6. The library of the Plantijn Museum in Antwerp possesses two copies of every book published by Plantijn. The woodcuts in Clusius' works are all hand-coloured and were valuable for determination purposes.

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#### INTERPRETER OF CLUSIAN FLORA: JACQUES DE GHEYN II

A significant example in Holland of the relationship between science and art may be witnessed in Leiden in ca. 1600. This relationship is represented by Carolus Clusius, renowned Franco-Flemish scholar, naturalist and botanist and by Jacques de Gheyn, Dutch artist. Beauty and science are analogous to both the humanist scholar and the artist in their respective forms of floral portrayal in words and in imagery.

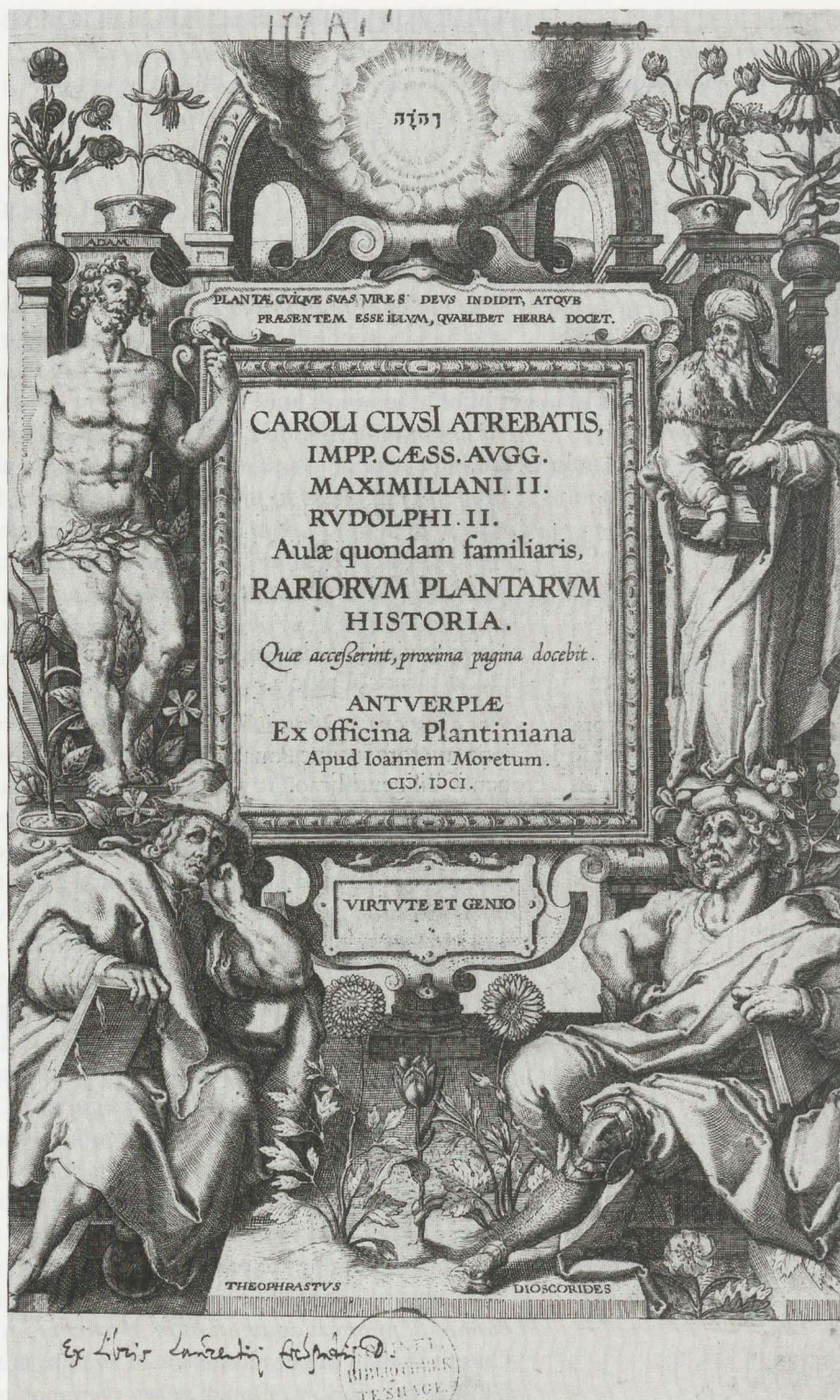
As a pioneer in the field of descriptive botany and of horticulture, Clusius heralded a new scientific age. The shift in emphasis from the therapeutic properties of plants to their value as objects of beauty and study is best exemplified by Clusius. He admired and studied plants for their own sake, therefore emancipating both botany and horticulture from their subordinate position as a handmaiden to medicine and utilitarian needs. During his lifetime which spanned nearly the whole of the 16th century from 1526 to 1609, the study of botany and natural history in general developed from a dependence on the commentaries of the ancients, in particular Dioscorides and Pliny, to an investigation of nature by direct observation. This was a slow process and an endless struggle between *verba* and *realia*.<sup>1</sup> Such naturalists as Gesner and Aldrovandi whose encyclopaedic approach attempted to encompass all knowledge, did not distinguish between the visible and the legible, between observation and fable, document and semiology, habits and use, mythology and heraldry, but linked them together in a system of relationships conceptually connected with a finite universe.<sup>2</sup> In contrast, Clusius was an empiricist concentrating on the visible, the meticulous examination of things themselves and based his system of investigation on terms of identity, difference and experimentation which he recorded in faithful words. Clusius was therefore a progenitor of the scientific method of the 17th century during which the concept of an infinite universe nurtured specialism, dividing knowledge into separate categories.<sup>3</sup> Clusius' plant descriptions answer to the criterion of the 17th century. For his concentration on the structure and the morphology of plants resulted in his defining the essential character of each species he studied. This pertains in particular to his detailed examination of the reproductive organs whose characteristic elements became a determining factor in Linnaeus' system of plant classification in the 18th century. Linnaeus is also indebted to Clusius for his rudimentary foundation of binomial nomenclature. However, in contrast with Linnaeus, Clusius studied the development of live plants and not dry specimens. Clusius' descriptions, though exact, were not couched in arid and sterile terminology but evoked the beauty and color of a living organism. In this respect Clusius is closer to the 20th century approach to plant description as well as to the relationship between aesthetics and science.<sup>4</sup>

Clusius who was born in Arras, studied medicine at Wittenburg in Germany and Montpellier in France but he never practiced as a doctor. His main interest was the quest of the unknown, to discover and observe the phenomena of the plant world in specific and remote regions of Europe as well as to study new plant introductions from all parts of the world. This quest is well expressed in the preface to his *magnum opus*, *Rariorum Plantarum Historia* (An Account of Rare Plants) (*Ill.* 6) published in 1601 at Antwerp, in which he



Ill. 6.

Jacques de Gheyn II, portrait of Carolus Clusius. Engraving, IDGheijn. (IDG interlaced) *fecit* (1600). Frontispiece in Clusius' own copy of his *Rariorum Plantarum Historia*, Antwerp, 1601. Leiden, University Library, 755A<sup>3</sup>.



also stated that 'to discover many plants unknown to Antiquity was like digging up a great hidden treasure'.<sup>5</sup> In order to observe and study their development, many of these treasured discoveries were cultivated in his own garden.

In his quest for the unknown, Clusius' botanical publications concentrated on the rare and the exotic as the title of his *magnum opus* conveys, as well as two earlier pioneering works which were incorporated in this publication in revised form. One was devoted to the flora of Spain and Portugal and the other to the flora of Austria and Hungary, entitled respectively *Rariorum*



*aliquot stirpium per Hispanias observatarum Historia* of 1576 (An Account of Rare Plants Observed in Spain) and *Rariorum aliquot stirpium per Pannoniam, Austriam et vicinas quasdam provincias observatarum Historia* of 1583 (An Account of Rare Plants Observed in Pannonia, Austria and neighboring regions). Published in Antwerp, these early works represent some of the first publications on the systematic study of plants growing together in specific regions or areas, many of which had never been described before. Clusius may be regarded as a proto-ecologist 300 years in advance of his time. His writings also represent some of the first detailed descriptions of plants and their cultivation originating from America and Western Asia, of the latter bulbs and tubers in particular. As the author of the first monograph on the tulip Clusius' name was inextricably connected with this garden plant.<sup>6</sup> Clusius' introduction into cultivation of Asian plants and the many European plants he discovered, transformed the composition of European gardens during the last quarter of the 16th century and made his name renowned in the field of horticulture. The brilliant and varicolored bulbs and tubers which he distributed were an astonishing phenomena for European plant collectors.<sup>7</sup> Clusius not only shared and exchanged many rare plants with the elite of Europe, he also designed and laid out gardens. Due to Clusius, Jean de Brancion's garden (1568-73) in Malines was famous.<sup>8</sup> In the 1570s Clusius supervised the planting of the gardens of Emperor Maximilian II in Vienna and he advised Landgrave Wilhelm IV of Hesse on his famous botanical gardens in Kassel.<sup>9</sup> For Balthasar von Batthyány in Hungary, Clusius made garden designs accompanied with detailed planting plans and planting instructions.<sup>10</sup> Clusius designed flower parterres for Marie de Brimeu, Princess of Chimay and Duchess of Aerschot, a great admirer of Clusius and it is interesting to note that in her letters to Clusius she refers to these parterre designs as 'tapisseries', surpassing 'those of gold and silk'.<sup>11</sup> This term is reminiscent of mille fleurs tapestry of the 16th century as well as of *parterre de broderie* of the 17th century. Clusius' plan for the Hortus Botanicus at Leiden was evidently frustrated by Pieter Paauw, professor of anatomy and botany, who was in charge of the gardens until Clusius' arrival in November 1593. According to a letter from Johan van Hogelande of June, 1593, Paauw altered the measurement of several planting beds (*areolae*) forming quadrants, by making them 5 to 6 feet long by 2 feet wide which were much narrower than in Clusius' plan.<sup>12</sup> The importance of aesthetics in Clusius' approach to botany has been largely overlooked, for it was a determining factor in his plant studies and approach to botany. He perceived the beauty of unknown plant forms as a reflection of the wonders of God's creation and the harmony of the universe. In order to comprehend His hidden powers, Clusius investigated, scrutinized and experimented with rare plants. In his case, beauty fostered science, leading to his meticulous examination of the structure of flowers and their reproductive organs, the comparison of species, various experiments, for example with tulips and the rudimentary initiation of binomial nomenclature. In his botanical writings those plants which he considered the most beautiful were the most precisely described. Beauty was the criterion for determining his choice of plants and the order in which the genera were described in his publications. For example, in the Introduction to Book II of his *Rariorum* of 1601, Clusius writes:

'In this second book we will deal with a family composed of bulbous and tuberous roots which attract attention because of their elegance and variety. We will begin with the lilies on account of their large size and beautiful flowers.'<sup>13</sup>





III. 7.

Jacques de Gheyn II, *One Rose Viewed from the Side and from the Front*. Centifolia Rose (*Rosa x centifolia* L.). Watercolor on vellum, IDGheijn. (IDG interlaced) Fe. 1603 (22.7 x 17.5 cm). Paris, Institut Néerlandais, Fondation Custodia (Frits Lugt Collection), inv. no. 5655, folio 19r.



Clusius' creation of the *Hortus Botanicus* in Leiden in 1594 (Ill. 1 and 2) represented the culmination of his plant collecting in Southern and Central Europe as well as his introduction into cultivation of many exotic plants. His *Rariorum* of 1601 could be regarded as a catalogue to this museum whose purpose was for study and enjoyment combining science and beauty. This dual function of the *Hortus* is expressed in the dedication of the first printed catalogue published in 1601.<sup>14</sup> A similar idea was expressed by Joachim Camerarius II, a practicing doctor in Nuremberg and an old friend of Clusius who wrote in the catalogue of his garden that a *Hortus* should be a museum for the purpose of instruction and adornment.<sup>15</sup> Clusius' *Rariorum* could also have served as a catalogue to a botanical collection in a princely or imperial *Kunst- und Wunderkammer* or curiosity cabinet which contained an encyclopaedic collection of the wonders and rarities of *naturalia* and *artificialia*, with menageries and botanical gardens forming an integral part of such a collection. The Emperors Maximilian II and Rudolf II set an example in Northern Europe for such a museum during the latter part of the 16th century.

Appreciation of Clusius' botanical and horticultural merits and multifarious accomplishments is well expressed by his contemporaries. His botanical colleague Lobelius, considered Clusius the first of all writers on the science of plants,<sup>16</sup> while his neo-stoic friend Lipsius, called him 'the father of all the beautiful gardens in this country'.<sup>17</sup> According to the Prince of Portugal, Clusius was a 'monarch of flowers'<sup>18</sup> and to his Italian naturalist friend, Aldrovandi, 'the dictator of flowers'.<sup>19</sup> Daniel Heinsius, Dutch poet and professor at Leiden University, considered Clusius the most learned man of his time,<sup>20</sup> undoubtedly in reference to Clusius' numerous latin translations from the vernacular of Italian, Spanish and Portuguese medical and pharmaceutical works, French translations of Plutarchian histories and his work in the field of epigraphy, cartography, geography and philology.

It could hardly be a coincidence that Jacques de Gheyn II should portray flowers which in visual imagery are analogous to Clusius' perception of beauty and detailed dissection of rare plants. Before his arrival in Leiden in 1595, De Gheyn had not devoted his artistic talents to the portrayal of flora and fauna, but mainly to the engraving of allegorical and biblical subjects, often after other masters. It could only be due to his encounter with Clusius in Leiden that De Gheyn directed his attention to the scrutiny and faithful depiction of flowers and animals. In Leiden De Gheyn developed as an independent artist where the scholarly ambience of the university stimulated his creative powers. Under Clusius' influence he became engaged with scientific naturalism and began to draw from life. His earliest extant watercolor drawing is a faithful portrayal of a skinned calf's head of 1599 which reveals his contact with the *Theatrum Anatomicum* directed by Pieter Paauw, professor of anatomy, who used calves' heads for his dissections.<sup>21</sup> De Gheyn also made several drawings for Paauw of aborted and malformed babies.<sup>22</sup>

De Gheyn's contact with the *Hortus Botanicus* (Ill. 2) is reflected in an engraving of the first printed plan of 1600 which Paauw commissioned De Gheyn to execute, the bill for which I discovered in the curatorial archives of the University.<sup>23</sup> In the preface to the catalogue, Paauw acknowledged that the copper plate of the garden plan was cut by 'the famous engraver Jacques de Gheyn' and inserted in the catalogue to indicate the orientation of the planting beds.<sup>24</sup> Although the plan with its distribution of four groups of parterres, each containing 12 or 16 beds, is similar to the original plan of 1594, extensively discussed by Leslie Tjon Sie Fat in this publication, the precise engraving by De Gheyn reveals a shift from a square to a rectangular



PLANTARVM HISTORIA. LIBER I.  
Smilax aspera nigro fructu.

113



Rosa centifolia Batavica.



mox Alabandicam, viliorem albicantibus folijs, vilissimam verò plurimis sed minutissimis  
K 3 Spineo-

numquam semen perficit. Mihi magna ex parte altero duntaxat à satù anno germinare cepit, nonnumquam & tertio. Perpetuò folia retinet.

Crescit prior varijs Hispaniæ locis, & in Narbonensi Gallia, aspero & arido solo: nascitur & in alijs calidioribus regionibus: raram in Lusitania conspicebam. Alteram autem plerisque illius Provinciæ locis circa sepēs, & collium convexa, & extremâ Bæticæ parte, quâ Lusitanix contermina est.

Smilax *τραχύλα* Dioscoridi appellatur, *συλ-λὰς* simpliciter Theophrasto. Gaza Hederam Ciliciam interpretatur, quia Plinius lib. xvi. cap. xxxv. scribit Smilacem Hederæ similem, primum è Cilicia profectam. Hispani priorem *zarza parilla*, hoc est Rubiviticulam appellant: Secundam extremæ Bæticæ incolæ *uva de Perro*, id est, uvam caninam, Lusitani conterminæcam, Olysiipponenses *allegacaron*.

CETERVM Dioscorides ait folia & acinos, ante & post epotos, venenorum antidota esse: & acinorum succo, inquit Plinius, infantibus sæpius instillato, nulla venena postea nocitura. Mihi in Hispanijs relatum est, ejus radice usos, Americanæ Zarzæ parillæ loco, non sine successu: & multorum opinio est Zarzam parillam Smilacem esse novi orbis.

ROSA. CAP. LXXXI.

NON minùs varia Rosarum genera conspiciuntur in Austriæ hortis, quàm in alijs plerisque Provincijs. Aliquot tamè istic aluntur quæ ante videre non memini. Sunt & Sylvestres prius mihi non conspectæ, de quibus omnibus suo ordine. Sed ante quam illarum historiam describere adgrediar, quædam de Centifolia rosâ, cujus Theophrastus, deinde eum sequuti Plinius & Athenæus, meminerunt, præmittenda esse existimavi: & de quibusdam alijs rosis, quæ postea ad meam notitiam pervenerunt, dicendum.

Theophr. ergò Plant. Hist. lib. vi. cap. vi. sic ait. Τὸν δὲ Ρόδων πολλὰ δὲ ἀφοραὶ πλεῖται τῆ φύλλον, καὶ ὀλγύτητι, καὶ τραχύτητι, καὶ λεύκῃ, καὶ κροῖα καὶ ὑσμῖα. τὰ μὲν γὰρ πλείστα πρὸς ἀφύλλα, τὰ δὲ δὴ ὠδὲ ἀφύλλα, καὶ ἱκοσάφυλλα, τὰ δὲ ἔτι πολλὰ πλείονα πᾶν τὰ τούτων. ἐντα γὰρ εἶναι φασὶν ἃ καλοῦσιν ἑκατοστάφυλλα: πλείστα δὲ τοιαῦτά ἐστι περὶ Φιλίππου, οὗτι γὰρ λαμβάνοντες ἐκ τοῦ Παργαίου, φυτεύουσιν, ἐκεί γὰρ γίνονται πολλὰ. σμικρὰ δὲ σφόδρα τὰ ἐν τῷ ἡ γὰρ ἐκφυσις αὐτῶν οὕτως, ὥστε εἶναι τὰ μὲν ἐκ τῶν, τὰ μὲν ἐκ τῶν, οὐκ ὥσμομα δὲ, οὐδὲν μέγα ἀλλὰ τοῖς μετέθεσιν: ἐν δὲ τοῖς μεγάλοις εὐαὶ ἡ μάλλον αὐτῶν τῶν κατὰ.

Plinius autem lib. xxi. cap. 111. Nat. Hist. de Rosâ agens sic scribit. Genera ejus nostri fecere celeberrima, Prænestinam & Campanam. Addidere alij Milesiam, cujus sit ardentissimus colos, non excedentis duodena folia. Proximam ei Trachiniam minùs rubentem, mox Alabandicam, viliorem albicantibus folijs, vilissimam verò plurimis sed minutissimis  
K 3 Spineo-

plan with the four groups of planting beds forming quadrants. This was achieved by widening the eastern and western sides of the garden to which was added a gallery in 1600 extending the full length on the south side. An emphatic cross axis dividing the rectangles which in turn are intersected by two narrower paths, gives this rational plan more clarity and better spatial relationships than the earlier plan. Indeed the rectangular conformation of the Hortus, measuring 30.90 by 39.90 metres, a proportional relationship of 3:4 or a square and one third, represents one of the harmonic ratios applied



to architectural proportions and symmetry in Renaissance Italy, which was derived from Antiquity. The *Hortus* with its gallery is in concordance with Vitruvius, the Roman architect, who recommended this ratio of 3:4 for a peristyle garden whose length should run across a building.<sup>25</sup>

The *Hortus* may be regarded as an early example of the Dutch classical garden.<sup>26</sup> De Gheyn himself would later become involved with the design of a garden based on the classical principles of symmetry and proportion at Het Buitenhof, The Hague, belonging to Prince Maurits.<sup>27</sup>

The first tangible evidence of De Gheyn's encounter with Clusius is the portrait he engraved in 1600 when Clusius was in his 75th year (*Ill. 3*). The portrait, within an elaborate framework, was inserted as a frontispiece in some editions of his *Rariorum* of 1601 as a special favor to his friends, according to a letter from Lobelius to Clusius.<sup>28</sup> Other than his coat of arms above and his motto below *Virtute et Genio*,<sup>29</sup> De Gheyn's imagery flanking his portrait would appear to be a celebration of Clusius' vast interests in natural history, encompassing Europe, Western Asia and the far corners of the earth. In the vases supported by winged mermaids with sea urchins on their heads, Europe and Western Asia are represented respectively by such bulbous plants as Lady's Slipper Orchids and Fritillaries, tulips and Scarlet Turk's Cap Lilies, all of which were depicted with equal precision by De Gheyn in watercolor. The two mermaids would appear to symbolize the voyages of discovery to the Atlantic and Pacific Oceans, the fruits of which are displayed below. Under the engraving Vulcanius, Clusius' humanist friend, added an appropriate quatrain:

'This portrait is of the very learned Carolus Clusius who honours Leiden, is a credit to Artois and the distinguished glory of the new century. He demonstrated the living shapes of plants of the world, but De Gheyn gave a living image of Clusius.'

From a stylistic point of view, the title page of the *Rariorum* (*Ill. 6*) appears to have been designed, but not engraved, by De Gheyn.<sup>30</sup> The respective ancestors of horticulture and botany are represented here above by Adam the first gardener and Solomon, the connaisseur of plants and below by Theophrastus, the botanist philosopher and Dioscorides, the doctor. However, the Tetragrammaton above with the following inscription below it, conveys the underlying theme of Clusius' publication:

'To each plant God has given his own might and every plant teaches us his presence.'

As if to illustrate this text, numerous rare plants are displayed, many of which are borrowed from the woodcuts in the *Rariorum*.<sup>31</sup>

Among De Gheyn's major achievements in the field of natural history are the watercolor drawings, bound in an album, which he executed between 1600 and 1604, today in the possession of the Fondation Custodia, Paris.<sup>32</sup> On 22 vellum leaves, measuring 22.7 x 17.5 centimetres which are each framed, dated and signed in gold, 59 life-size portraits of rare and exotic cultivated flowers are represented (*see Ill. 7, 9, 10, 11, and 14*) as well as various insects, a crab and a mouse. Most of the drawings are executed in the technique of miniature painting, a craft De Gheyn learned from his father, and an ideal medium for the precise delineation of details. Indeed these depictions of the 'rare wonders of nature', God's creations, reveal an astonishing accuracy and artistic perception in which the detailed objectivity of the





Ill. 9.

Jacques de Gheyn, *Two Flowers*. Scarlet Turk's Cap Lily (*Lilium chalcidonicum* L.). Watercolor on vellum, IDG. (interlaced) Fe. 1603 (22.7 x 17.5 cm). Paris, Institut Néerlandais, Fondation Custodia (Frits Lugt Collection), inv. no. 5655, folio 18r.



anatomist is combined with the vision and aesthetic sense of the artist. In manner of execution, De Gheyn's drawings parallel Clusius' modern scientific approach to natural history and they hardly could have been made possible, I believe, without Clusius' guidance.

These magnificent drawings by De Gheyn, which represent some of the most outstanding portrayals of flora and fauna in Holland in the 17th century, were purchased in 1604, together with a flower piece, by Rudolf II, Hapsburg emperor and famous art patron whose renowned encyclopaedic collection of *artificialia* and *naturalia* represented the world in microcosm. A part of this microcosm was Rudolf II's vast collection of nature drawings, his gardens and menageries. The emperor was a great lover of flowers and gardening and De Gheyn's watercolors added a new dimension to his collection not only for the rarity of the flowers but also for the manner of execution.<sup>33</sup> Given his international reputation in the field of natural history and his links with the imperial court, Clusius may well have recommended De Gheyn to the emperor, as Carlos van Hasselt has suggested.<sup>34</sup> Clusius was an excellent judge of floral portrayal as witnessed by his correspondance in which he was extremely critical of the smallest botanical errors in plant illustrations. This pertains to illustrations made for his publications as well as those sent to him by his friends, in particular Camerarius.<sup>35</sup> While living in Frankfurt and ordering new woodcuts for his *Rariorum* of 1601, Clusius wrote to his publisher in Antwerp that he needed an artist near at hand in order to instruct and show him exactly what he must draw.<sup>36</sup> De Gheyn's drawings, therefore may reflect Clusius' demand for such precision of execution in which the specific characteristics of a flower are revealed.

Most of the flowers De Gheyn depicted represent Clusian flora, from plants collected in Spain and Austria to those from Western Asia which Clusius introduced into cultivation. They are, for example narcissi, irises and lilies from Spain, fritillaries and Orange Lilies from Southern Europe, Globe Flowers, columbine, orchids, alpine squills and siberian irises from the alps of Austria and Scarlet Turk's Cap Lilies, anemones, Turban Buttercups, tulips and crocuses from Western Asia. Many cultivars of columbine and roses are also represented. De Gheyn had live models at his disposal at the Leiden botanic garden where nearly all of the flowers he portrayed were represented according to the inventories of 1594, 1596 and the catalogue of 1601.<sup>37</sup>

Another source for De Gheyn's flower portraits, in particular roses, was the garden of Johan van Hogelande, famous plant collector who had exchanged plants with Clusius for over forty years and who lived near the botanic garden in the Kolmakersteeg.<sup>38</sup> Many of these rare flowers were depicted for the first time as works of art. Together, the drawings in the album represent a small museum on paper for study and enjoyment throughout the year.

In floral imagery, De Gheyn's drawings reflect the salient characteristics of Clusius' plants descriptions and their magnificence of execution evokes as well a sense of wonder of the beauty of the flowers depicted. With his concentration on the visual description of a flower's structure, the drawings are analogous to Clusius' scrutiny and analysis of the floral parts, the accurate details of which reveal how carefully the artist studied and analyzed them beforehand. In many of the drawings, the plant's reproductive organs are prominently displayed at a mature stage of growth. Like Clusius' study of plants, De Gheyn's flowers were depicted for their own sake and not for the purpose of ornament or to reveal the artist's virtuosity by altering or improving upon the live model like his contemporary, Georg Hoefnagel, artist at the court of Rudolf II.<sup>39</sup>

Several of De Gheyn's drawings may serve as examples to elucidate the





Ill. 10. Jacques de Gheyn II, *A Crimson and White Tulip and Two Petals* (*Tulipa gesneriana* L., cv.). Watercolor on vellum, IDG. (interlaced) Fe. 1603 (22.7 x 17.5 cm). Paris, Institut Néerlandais, Fondation Custodia (Frits Lugt Collection), inv. no. 5655, folio 20v.





Ill. 11. Jacques de Gheyn II, *Five Flowers*. Love-in-a-Mist (*Nigella damascena* L. 'Plena'). Watercolor on vellum, IDGheijn. (IDG interlaced) Fe. 1602 (22.7 x 17.5 cm). Paris, Institut Néerlandais, Fondation Custodia (Frits Lugt Collection), inv. no. 5655, folio 8v.

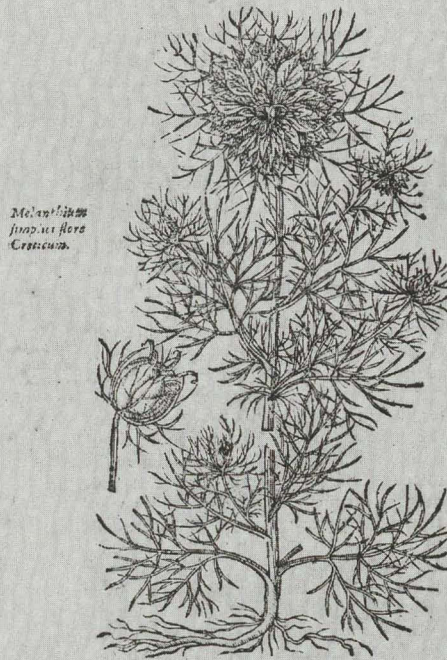


*Melanthium Demascenum pleno flore*

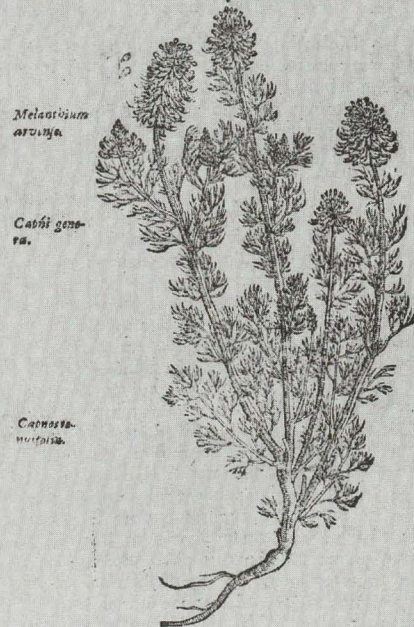
(*Nigella damascena* L. 'Plena').

Carolus Clusius, *Rariorum Plantarum Historia*, Antwerp, 1601. The Hague, Royal Library, 177A<sup>1</sup>, p.ccviii.

CCVIII CAROLI CLUSII RARIORVM  
Melanthium Damascen. pleno flore.



Capnos tenuifolia.



Natalis.

Invenitur plerisque Hispaniarum regionibus in arborum marginibus & juxta vias ac semitas: non-

rem occupant pentagona, interdum etiam hexagona & heptagona capita laxa, in totidem contorta cornicula detinentia, & semen nigrum, rugosum, inodorum continentia.

Floret utrumque genus Junio & Julio: semen maturum est Augusto.

Illud ante multos annos in hortis cultum observabam: hoc verò demum anno M.D.XCI. quibusdam in hortis Fracofortanis, unde semine à me misso amicis, illorum hortos ornare coepit.

Hic adijciendum putavi aliud Melanthij genus Cretico semine natum: cujus prima folia, Delphinij vulgò vocati folijs non multum ab similia sunt, angustiora tamen: caulis deinde brevis emergens, paulò supra radice caput, in plures ramos dividitur, tenues & teretes, bipedales vel amplioris longitudinis, valde infirmos, & vix sustinere se valentes, quibus innascuntur rara folia, paucis incisuris prædita: dividuntur rursus illi rami in alios minores ramulos, qui singuli singularem sustinent florem, in quinque folia, ut plurimum, divisum, è viridi candicante initio, ut Nigellæ vulgaris, deinde exalbida, postremò carulei nonnihil contrahentia, mucronibus interrim suam viriditatem retinentibus: è floris medio exit caput in quinque, sex, septem, desinens cornua, ut in vulgari Nigellâ, & in ambitu frequentia stamina viridia, quorum apices carulei: infra stamina porro, super ipsius folijs expansa recumbunt octo alia foliola bifida, pari distantia ab invicem sejuncta, quorum petiolus cum suâ basi caruleus est, binè transversæ venæ fulcæ, quod inter venas mediû est è viridi flavescit: radix etiam flavescit instar radice nigellarum, nec vivax est, sed hieme perit.

Illi non valde dissimilis, si non eadè, invenitur in arvis post demessas segetes totâ Pannoniâ, Austriâ, reliquaque Germaniâ & Belgio.

CAPNOS, FUMVS TERRÆ. CAP. XXX.

Vo, præter vulgarem, alteram Belgicam albo flore, viticulis seu capreolis sepius vicinis se implicantem, & tertiam Splis Italici dictâ, alia Fumi terræ genera observare memini. Quorum primum quidem, inter Stirpes à me per Hispaniam observatas descriptum fuit: Alterum, Cretico semine mihi postea natum. Vtriusque verò historiam hoc capite trademus.

DODRANTALIS herbula est, Primum illud genus à me inter Hispanicis stirpes descriptum, cauliculis mollibus & quodammodo transparentibus, ut in vulgari Fumariâ, firmioribus tamen & surrectis, non procumbentibus: quibus inhaerent folia mollicella, capillacea, & tenuissimè incisa, vulgaris folijs candidiora: summos cauliculos exornant majusculæ purpurascensium flosculorum vulgaris floribus minorum & obfertim nascentium spicæ: radicem habet exilè. Tota verò planta amara est.

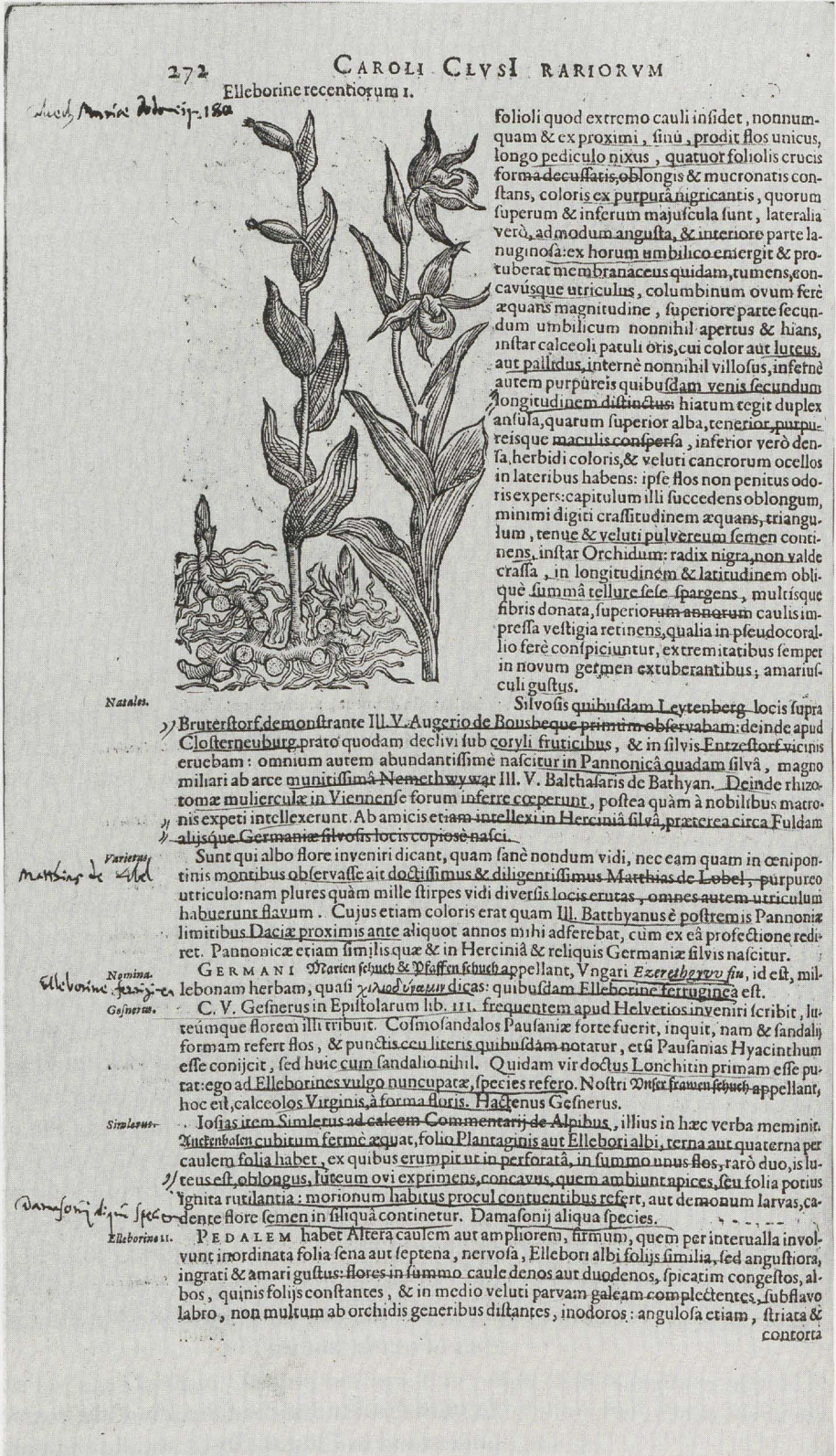
analogy between botanist and artist. A portrait and scientific study of a centifolia rose (Ill. 7), called by Clusius *Rosa centifolia Batavica* (Ill. 8)<sup>40</sup> is depicted in such a way as to indicate its inherent characteristics; the cup shape, reflexed outer petals and long projecting sepals are viewed from the side above and below the myriad pink petals with smaller ones in the center nearly obscuring the stamens and large coarse ovate and dentate sage green leaves are viewed from the front.<sup>41</sup> A herbarium specimen of 1620 in the Bodleian



Library, Oxford, verifies the accuracy with which the rose was drawn.<sup>42</sup> De Gheyn's drawing which pulsates with life and is probably the first depiction of this rose as a work of art, is in marked contrast with the mechanical woodcut in Clusius' *Rariorum* of 1601 (Ill. 8). With equal precision of execution is the monumental portrayal of a brilliant Scarlet Turk's Cap Lily (*Lilium chalcedonicum* L.) (Ill. 9), introduced from Constantinople in ca. 1570 and one of the most coveted garden plants of the time. This lily was called by Clusius

Ill. 13.

Elleborine recentiorum I (*Cypripedium calceolus* L.) Carolus Clusius, *Rariorum Plantarum Historia*, Antwerp, 1601. The Hague, Royal Library, 177A<sup>1</sup>, p. 272.





*Lilium rubrum sive miniatum Byzantinum*.<sup>43</sup> In an unparalleled portrait of a crimson and white tulip (*Ill. 10*), measuring 10 centimetres in height, De Gheyn has made a careful study of the reproductive organs.<sup>44</sup> Attached to one petal, the ovary and stigma and 4 of the 6 filaments and anthers are displayed in a manner similar to a cross section employed today in botanical illustrations. On the left is a study of the exterior of one petal. De Gheyn has followed Clusian methodology in his dissection of the flower in which its beauty and essential structure are superbly expressed.

By comparing Clusius' precise descriptions of certain flowers with those rendered in watercolor by De Gheyn, one may better understand the analogy between Clusius' written imagery and De Gheyn's pictorial translation.

I take for an example the double form of a Love-in-a-Mist (*Nigella damascena* L. 'Plena') portrayed by De Gheyn (*Ill. 11*)<sup>45</sup> and called by Clusius *Melanthium Damascenum pleno flore* (*Ill. 12*), a typical instance of binomial nomenclature which was adopted by Linnaeus by merely translating into Latin the Greek name given by Clusius for the genus. Clusius writes:

'The flower has very lacinate leaves (petals) of an elegant cerulean color which are arranged in four or more layers and present an elegant spectacle. The stamens are in the middle. Surrounding and supporting the flower are thin, finely divided leaves arranged in a circle which are of great charm and beauty. The center of the flower is occupied by a pentagonal, sometimes even by a hexagonal or heptagonal head, which terminates with just as many contorted little horns (carpels). It flowers in June and July and the seed which is black matures in August... I received seed in Frankfurt from a friend and it is beginning to adorn my garden.'<sup>46</sup>

Another example of the scientist-artist relationship is the description and portrayal of a Lady's Slipper Orchid (*Cypripedium calceolus* L.), called by Clusius *Pseudodamsonium*, *Calceolum Mariae* (1583) and *Elleborine Recentiorum I* in 1601 (*Ill. 13*). In De Gheyn's drawing (*Ill. 14*), the flower is flanked by a Globe Flower and a columbine, representing an ecological study, as all three plants would be found growing together in Alpine meadows.<sup>47</sup> Clusius writes:

'The first and most elegant (of this genus) has a single, slightly woolly stem, one foot or more long, which is encompassed one after the other by four or five clearly veined leaves. A single flower on a stem rises from the axil of a leaf lying upon a long pedicel. (The flower) is composed of four intersecting leaves (perianth segments), forming a cross which are elongated ('*oblongis*') and lanceolate and of a blackish purple color. The upper and lower leaves are larger than the lateral ones which are very narrow and have woolly inner parts. A membranous, swelling and concave utricle, nearly the size of a dove's egg, emerges and protrudes from the umbilicus. The upper part directly behind is somewhat open and gaping, resembling the mouth of an open shoe. The color is yellow or pale yellow; there are some rather stiff hairs on the inner side and the lower part has some distinct purple veins running lengthwise. The aperture is covered by a double handle, the upper one, white and thin, sprinkled with purple spots (staminode), the lower one, thick and of a grassy green color (stigma), while the lateral sides resemble the eyes of a crab (anthers).'<sup>48</sup>

Despite the fact that the function of the reproductive organs was imperfectly understood in Clusius' day (it was first described by Nehemiah Grew in





Ill. 14. Jacques de Gheyn, *Three Alpine Flowers*. Lady's Slipper Orchid (*Cypripedium calceolus* L.). Watercolor on vellum, IDG. (interlaced) *fe.* 1600 (22.7 x 17.5 cm). Paris, Institut Néerlandais, Fondation Custodia (Frits Lugt Collection), inv. no. 5655, folio 35.



1676) and that a technical or diagnostic terminology was nearly non-existent, Clusius' detailed descriptions of a flower's structure were well in advance of his time. In the passages quoted above, the pertinent characteristics of each plant are expressed in adequately explanatory terms. Clusius celebrates the beauty and aura of flowers and as a witness to their development, treats his plants as living organisms. In this respect, Clusius belongs to the 20th century during which the sterile and reductive Linnaean language was replaced by descriptions reflecting delight and animate dimensions.<sup>49</sup> Clusius' aesthetic appreciation which led to his dissection of a plant's morphology, is also in agreement with the modern scientific process of which aesthetic appreciation is perceived as an essential feature.<sup>50</sup>

De Gheyn's scientifically exact flower portrayals reflect Clusius' methodology and aesthetic appreciation. However, in visual imagery and artistic perception, De Gheyn's faithful rendering is instantaneously easier to assimilate than Clusius' written delineation.

Through the interaction of Clusius' novel approach to botany based on exact description which is ultimately derived from an aesthetic appreciation and De Gheyn's reflection of this in his drawings, the botanist scholar and the artist represent a new phase in their respective fields of endeavor. With their new perception of the visible world, they both may be regarded as 'moderns'.

#### ACKNOWLEDGEMENT

This study will form a part of a chapter in the forthcoming publication of my thesis, *An Album of Flower and Animal Drawings by Jacques de Gheyn II* (1565-1629), Fondation Custodia (Frits Lugt Collection), Institut Néerlandais, Paris, inv. no. 5655.

I would like to express my gratitude to Dr. Leslie Tjon Sie Fat in particular and to Dr. Leenhouts and Dr. de Vogel for their assistance in clarifying many botanical questions. I would also like to thank Dr. J.F. Veldkamp and Drs. B. van Peursem for correcting my rusty Latin.

#### NOTES

1. For the development of botany as an independent discipline, see George Sarton, *Six Wings: Men of Science in the Renaissance*, London, 1958, p.150-153.
2. Florence Hopper Boom, *An Album of Flower and Animal Drawings by Jacques de Gheyn II*, unpublished thesis, Institute for Art History, Utrecht University, 1976, p.27.
3. For the development of botanical science in the 17th century, see Michel Foucault, *The Order of Things: An Archaeology of the Human Sciences (Les Mots et Les Choses)*, Paris, 1966), New York, 1973, p.129-144.
4. For the 20th century approach to plant description, see M. Jacobs, 'Revolutions in Plant Description', *Miscellaneous Papers: Liber Gratulatorius in Honorem H.C.D. de Wit*, 19 (1980), Wageningen, p.155-181. I would like to thank Dr. Onno Wijnands for bringing this article to my attention. For the importance of aesthetics in science in the 20th century, see Gideon Engler, 'Aesthetics in Science and Art', *The British Journal of Aesthetics*, 30, 1 (January, 1990), p.24-34.
5. Carolus Clusius, *Rariorum Plantarum Historia*, Antwerp, 1601, 3. Carolus Clusius Atrebas. Benevolo Lectori. Magnam voluptatem mihi semper attulit, in variis quas peragravi regionibus, Plantarum observatio. Nam quum nulla sit Provincia quae peculiaries quasdam, & quodammodo sibi proprias non alat, insignis varietas ubique meis oculis sese ingerebat, quae non potuit non esse delectabilis, viro à primâ prope aetate ad Plantarum observationem propenso, praesertim quum aliquae occurrerent à veteribus Auctoribus neglectae, vel ab ipsis quidem descriptae, nundum tamen à quopiam Neotericorum satis



cognitae: tum etiam aliae, quae ad plantarum à veteribus proditarum classem referri posse viderentur. Non minus enim gaudio afficiebar, quàm si ingentem Thesaurum reperissem.

6. For Clusius' botanical achievements, see F.W.T. Hunger, *Charles de L'Escluse (Carolus Clusius) Nederlandsch kruidkundige, 1526-1609*, 2 vols., The Hague, I, 1927, p.328-350 and II, 1943, p.213-246. See also *Festschrift anlässlich der 400 jährigen Wiederkehr des wissenschaftlichen Tätigkeit von Carolus Clusius im pannonischen Raum* (Burgenländische Forschungen), V, Eisenstadt, 1973.
7. For Clusius' horticultural contributions, see Florence Hopper, 'Carolus Clusius', in G. & S. Jellicoe, P. Goode & M. Lancaster eds., *The Oxford Companion to Gardens*, Oxford, 1986, p.122-123.
8. See Hunger, *Charles de L'Escluse, op. cit.* (note 6), I, p.101-2, 121, and II, p.99 and 216.
9. See Hunger, *Charles de L'Escluse*, I, p.125-130 and II, p.34-56 for Maximilian II; I, p.127, 141, 151 and 164 and II, p.94-95, 154 and 156 for Wilhelm of Hesse.
10. For Clusius' correspondance with Batthyány from 1577-79, see Gyula Istvanffi, *Études et commentaires sur le code de L'Escluse, Augmentés de quelques notices biographiques*, Budapest 1900, p.185, 205-206.
11. For Marie de Brimeu's correspondance with Clusius, see Codex Vulcanius 101, Clusius correspondance, Department of Manuscripts, Leiden University Library, Leiden, letters nos. 2 and 3. On September 18, 1591, Marie de Brimeu writes from Leiden: '... les richesses de vos tapisseries (vraiment de tant de tant outre passantes celles qui sont dor et de soye que la nature surmonte lartifice ..).' On January 24, 1592, she writes from Leiden: '... sy avec le temps ie pouvois faire resambler (mon jardin) au dessein de la belle tapisserie que maves depuis envoie...'
12. Codex Vulcanius 101, Clusius correspondance, Dep. of Manuscripts, Leiden University Library. For a transcript of the letter, see Istvanffi, *le Code de L'Escluse, op. cit.* (note 10), p.254.
13. Carolus Clusius, *Rariorum Plantarum Historia*, Antwerp, 1601, *Liber Secundus*, p.127. The major part of this opus was finished in 1592-93. - *Liber Secundus. ARBORUM, Fruticum & Suffruticum, absolutâ historiâ, quam priore libro complexi sumus: hoc secundo, de stirpibus, qua bulbaceâ aut tuberosâ constant radice, agemus, quarum magna pars florum elegantîâ & varietate omnium oculos ad as allicit... A liliacei verò generis plantis, ob earum magnitudinem & florem pulchritudinem, initium faciemus.*
14. P. Paauw, *Hortus Publicus Academiae Lugduno-Batavae, Eius Ichnographia, Descriptio, Usus*, Leiden, 1601, p.4.
15. Joachim Camerarius, *Hortus Medicus et Philosophicus*, Frankfurt, 1588, Preface, *Rei Herberiae Studioso Lectori*, Bv.
16. M. Morren, *Mathias de L'Obel: Sa Vie et Ses Oeuvres*, Liege 1875, p.15.
17. Codex Vulcanius 101, Clusius correspondance, Leiden University Library. Marie de Brimeu writes in a letter to Clusius on September 18, 1591 from Leiden: '...vous que jay bien entendu par Monsieur Lipsius estre le pere de tous les beaux jardins de ce pâys ...' Hunger, *Charles de L'Escluse, op. cit.* (note 6), I, p.3 and II, p.217, mistakenly cited Marie Brimeu as the author of this remark instead of Lipsius.
18. Hunger, *Charles de L'Escluse, op. cit.* (note 6), I, p.269.
19. Istvanffi, *Le Code de L'Escluse, op. cit.* (note 10), p.192.
20. J.E. Kroon, *Bijdragen tot de Geschiedenis van het Geneeskundig onderwijs aan de Leidsche Universiteit, 1575-1625*, diss. Leiden University, Leiden, 1911, p.23.
21. Amsterdam, P. en N. de Boer Foundation. IDGheyn fe. 1599. See A.J. Witkam, *Iets over Pieter Paauw en zijn Theatrum Anatomicum en over het Bouwen v.d. Anatomieplaats en de Bibliotheek*, Leiden, 1967, xiv, in which various bills are mentioned concerning Paauw's purchases of calves' heads for his anatomical lessons.
22. These drawings which are now lost, were hung on the walls of the *Theatrum*. See J.A.J. Barge, *De oudste inventaris der oudste academische anatomie in Nederland*, Leiden, 1934, 44, no. 22: 'Een klein bordt daer met root crijt twe twijlingen die ontidelick op de vierde maent doot ter werelt quamen, sijn afgheitekent van Ja. de Geijn 1598.' See J. Richard



- Judson, *The Drawings of Jacob de Gheyn II*, New York, 1973, 42, no. 14. Three other drawings also executed in red chalk of malformed babies and monsters are mentioned in the inventory published by Barge (44, no. 21 and 45, nos. 1 and 5) which may be attributed to De Gheyn. See also I.Q. van Regteren Altena, *Jacques de Gheyn: Three Generations*, 3 vols., The Hague, Boston, London, 1983, II, no. 811.
23. Curatorial Archives, Manuscript Department, Leiden University Library, Leiden, Bijlagen tot de resolutien, inv. no. 41 n.p. In a short note intended for a meeting of 'curateurs en Burgermeesteren', Paauw writes about the catalogue of the Hortus, 'de boekskens van het Kruijdthof' and he requests that Jacques de Gheyn be paid 36 gulden for cutting the plate and Raphelengius, the publisher, pay for using the plate to print 150 copies. ...'Jacques de Gheyn ordonnantie magh hebben nopende de ghesneden plate. Onse bedingh is ghe laegt op 36 - gl.... Raphelengius betalen zal voort' ghebruiken vande plaete (...150 afdrucken...)...
  24. P. Paauw, *Hortus Publicus*, *op. cit.* (note 14), Preface, *Studiosae Inventuti*.
  25. For the development of the Dutch classical garden, see my articles, 'The Dutch Classical Garden and André Mollet', *Journal of Garden History*, 2, (1982)1, p.25-40 and for Vitruvius, p.33; 'De Nederlandse klassieke tuin en André Mollet', *Bulletin Koninklijke Nederlandse Oudheidkundige Bond*, vol. 82, nos. 3-4 (1983), p.98-115 and for Vitruvius, p.111.
  26. *Ibid.*, p.25-33; p.98-105.
  27. *Ibid.*, p.27-28; p.100-102.
  28. Codex Vulcanius 101, Clusius correspondence, Leiden University Library. See Istvanffi, *Le code de L'Escluse*, *op. cit.* (note 10), p.62: 'Il y eu icy une dousaine de voz livres soudains venduz, a 10 florins la piece, les Imprimens font bien leur bottes, Vostre effigie ny est pas adioustee, ie pense qu'il nen y a que pour les amis'. See also Hunger, *Charles de L'Escluse*, *op. cit.* (note 6), I, 1927, 249, 252 and 399 and Mária van Berge-Gerbaud in *Le Héraut du Dix-Septième Siècle: Dessins et Gravures de Jacques de Gheyn II et III de la Fondation Custodia*, Collection Frits Lugt, Exhibition Catalogue, Paris (Institut Néerlandais), Paris, 1985, p.93 and notes 7 and 8.
  29. 'Virtute et Genio non nitimur: at mage Christo, Qui nobis istaec donat, et Ingenium': 'We do not rely on virtue and talent, but rather on Christ who gives us these as well as intelligence'.
  30. Van Berge-Gerbaud, *op. cit.* (note 28), p.86.
  31. *Ibid.*, p.86 and 87, note 6.
  32. Florence Hopper Boom, *An Album of Flower and Animal Drawings*, *op. cit.* (note 2), p.1-185. For illustrations of all the drawings see Carlos van Hasselt, *Le Héraut du Dix-Septième Siècle: Dessins et Gravures de Jacques de Gheyn II et III de la Fondation Custodia*, Collection Frits Lugt, Exhibition Catalogue, Paris (Institut Néerlandais), Paris, 1985, p.18-33, pls. 20-41. See also I.Q. van Regteren Altena, *Jacques van Gheyn II*, *op. cit.* (note 22), III, p.101-106, pls. 172-193.
  33. Florence Hopper Boom, *An Album of Flower and Animal Drawings* *op. cit.* (note 2), p.16-18. For Rudolf II's collection of nature drawings and its relationship with De Gheyn's drawings, see my article 'Jacques de Gheyn II and Rudolf II's Collection of Nature Drawings' in *Prag um 1600: Beiträge zur Kunst und Kultur am Hofe Rudolfs II*, Freren, 1988, 126-131. See also my article 'A Munich Prayer Book and Jacques de Gheyn II: *Translatio -Imitatio -Aemulatio?*' in *Nederlands Kunsthistorisch Jaarboek*, 1987 (1988), p.97-109.
  34. Carlos van Hasselt, *Le Héraut*, *op. cit.* (note 32), p.29.
  35. See Hunger, *Charles de L'Escluse*, *op. cit.* (note 6), I, p.196-198, 331 and 341; II, 211 and 232. In reference to a drawing from Camerarius of a *Datura*, Clusius wrote Camerarius that the thorns were missing, the position of the leaf was incorrect and the flower should be pentagonal in shape (Hunger II, p.211).
  36. Ernest Roze, *Charles de L'Escluse d'Arras, Le Propagateur de la Pomme de Terre: Sa Biographie, et sa Correspondance*, Paris, 1899, p.81-82.
  37. For the identification see the Appendix
  38. For Johan van Hogelande's rose collection, see Clusius, *Rariorum Plantarum Historia*,



Antwerp, 1601, p.114.

39. See Florence Hopper, 'Jacques de Gheyn II and Rudolf II', *op. cit.* (note 33), p.126-131.
40. For a description of this rose, see Clusius, *Rariorum*, 1601, *op. cit.* (note 38), p.114.
41. Florence Hopper Boom, *An Album of Flower and Animal Drawings*, *op. cit.* (note 2), p.166-171.
42. *Hortus Hyemalis*, Bodleian Library, Oxford, Ms. Arch Selden B.3 (S.C. 3333), folio 261r.  
See also Florence Hopper Boom, *An Album*, *op. cit.* (notes 2 and 41), p.166 and 169.
43. Clusius, *Rariorum*, 1601, *op. cit.* (note 38), p.131. Florence Hopper Boom, *An Album*, *op. cit.* (notes 2 and 41), p.163-165.
44. Florence Hopper Boom, *An Album*, *op. cit.* (notes 2 and 41), p.172-174.
45. *Ibid.*, p.111-112.
46. Clusius, *Rariorum*, 1601, *op. cit.* (note 38), p.ccvii-ccvi. Cap.XXIX: ALTERUM cauliculos, & folia valde tenuiterdissecta habet, instar illius silvestris quod Damascenum cognominatur, ampliores autem superiore flores, plurimus ladiniates, & eleganti caeruleo colore praeditis folijs constantes, qui quadriplici aut frequentiore serie sunt dispositi eleganti spectaculo, nullius tamen, quemadomû nec simplex, odoris, plura longioraq; in medio habetês stamina. Florem ambiut, & quodammodo sustinent aliquot tenuia multifidaque folia in orbem disposita, magnam gratiam & venustatê illi addentia: inde succedunt, imò medium florem occupant pentagona, interdum etiam hexagona & heptagona capita laxa, in totidem contorta cornicula desinentia, & semen nigrum, rugosum, inodorum continentia. Floret utrumque genus Iunio & Iulio: semen maturum est Augusto. Illud ante multos annos in hortis cultum observaba: hoc vero demum anno M.D.XCI. quibusdam in hortis Frâcofortanis, unde semine à me misso amicis, illorum hortos ornare coepit.
47. Florence Hopper Boom, *An Album*, *op. cit.* (notes 2 and 41), p.88-92.
48. Clusius, *Rariorum*, 1601 *op. cit.* (note 38), p.271-272. Cap. LXIII, ...Primae & omnium elegantissimae caulis est singularis, pedalis aut majoris longitudinis, firmus, aliquantulum lanuginosus, quem quaterna aut quina ambiunt folia, venosa... ex folioli quod extremo cauli insidet, nonnumquam & ex proximi, sinu, prodit flos unicus, longo pediculo nixus, quatuor foliolis crucis forma decussatis, oblongis & mucronatis constans, coloris ex purpurâ nigricantis, quorum superum & inferum majuscula sunt, lateralia verò, admodum angusta, & interiore parte lanuginosa: ex horum umbilico emergit & protuberat membranaceus quidam, tumens, concavusque utriculus, columbinum ovum ferè aequans magnitudine, superiore parte secundum umbilicum nonnihil apertus & hians, instar calceoli patuli oris, cui color aut luteus, aut pallidus, interne nonnihil villosus, inferno autem purpureis quibusdam venis secundum longitudinem distinctus: hiatum tegit duplex ansula, quarum superior alba, tenerior, purpureisque maculis conspersa, inferior verò densa herbidi coloris, & veluti cancerorum ocellos in lateribus habens:...
49. For the 20th century approach to plant description see M. Jacobs, 'Revolutions in Plant Descriptions', *op. cit.* (note 4), p.155-181.
50. For the importance of aesthetics in science in the 20th century, see Gideon Engler 'Aesthetics in Science and Art', *op. cit.* (note 4).

#### APPENDIX

In order to identify the flowers in the *Hortus Botanicus* with those depicted by De Gheyn, I consulted the inventories of 1594 and 1596 and the catalogue of 1600. The tulip cultivars and some of the roses are nearly impossible to identify. The titles of the works consulted are the following:

- 1594 *Index Stirpium terrae commissarum sub extremum anni 1594 in Lugdunensi Academia apud Batavos horto*. Curatorial Archives, Leiden University Library, Leiden, inv. no. 101. Because of its accessibility, I am referring below to Hunger's copy, *Charles de L'Escluse*, *op. cit.* (note 6), p.219-235.
- 1596 *Catalogus Arborum, Fruticum, Stirpium, Herbarum omnium, tam silvestrium, quam hortensium*



in *Horto Medico Universitatis Batavo-Lugdunensis, hoc MDXVI Anno nascentium*. Curatorial Archives, Leiden University Library, Leiden, inv. no. 225. The numbering of the pages is my own, starting with the cover 3: 6: 1596.

1600 *Hortus Publicus Academiae Lugduno-Batavae*, Leiden, 1601. Although published in 1601, the catalogue gives the situation of 1600.

In listing the plants portrayed by De Gheyn according to folio numbers, I have used the nomenclature in the following order, Linnaean, Clusian and that in the inventories and catalogue mentioned above. Of the 22 folios of drawings by De Gheyn, nineteen portray flowers, beginning with folio 2.

**Folio 2r**, 1600: *Still Life, A Snakeshead and Three Tulips in a Vase with Five Insects*.

*Fritillaria meleagris* L.

Clusius: *Fritillaria, Rariorum... Pannoniam, Austriam*, 1583, p.169-171.

*Rariorum Plantarum*, p.1601, 152.

1596: *Fritillaria praecox, Meleagris flos Dodonei*, f. 30r.

*Tulipa Schrenkii* Regel.

Clusius: *Tulipae praecoces*, 1583, p.145-161;

1594: *Tulipa praecoces*, p.222; *Tulipa praecox varii generis*, p.230; *Tulipa praecox elegantissimi coloris*, p.229.

**Folio 3r**, 1600: *Three Alpine Flowers*.

*Trollius europaeus* L., A Globe Flower.

Clusius: *Trollius flos*, 1583, p.372; *Ranunculus glomerato flore*, 1601, p.237.

1594: *Ranunculus glomeratus*, p.221.

*Cypripedium calceolus* L., Lady's Slipper Orchid.

Clusius: *Pseudodamsonium, Calceolum Mariae*, 1583, p.271-273.

*Elleborine recentiorum* I, 1601, p.271-272.

1596: *Damsonium nothum, Calceolus Mariae*, f. 29r.

*Aquilegia vulgaris* L. 'Multiplex', Double Blue Columbine.

Clusius: *Aquilina pleno flore*, 1601, cciii.

1594: *Aquilegiae diversorum generum multiplici flore*, p.220.

1596: *Aquilegia pleno caeruleo flore pleno*, f. 24v.

**Folio 4r**, 1600: *Three Spring Flowers*.

*Anemone coronaria* L., Crimson poppy anemone.

Clusius: *Anemone tenuifolia coccineo flore I*, 1583, p.393-394; 1601, p.256.

1594: *Anemones tenuifoliae diversorum generum*, p.221.

1596: *Anemone tenuifolium coccineo flore*, f. 24v.

*Tulipa Staphii* Turrill.

Clusius: *Tulipa dubia pumilio*, 1583, p.156-166; 1601, p.148.

*Scilla bifolia* L., Alpine Squill.

Clusius: *Hyacinthus stellatus vulgaris*, 1583, p.209; 1601, p.184-185.

1596: *Hyacinthus stellaris minor*, f. 32r.

**Folio 5r**, 1601: *Four Flowers*.

*Ranunculus asiaticus* L., Turban Buttercup.

Clusius: *Ranunculus Byzantinus (sive Asiaticus) simpl. rubro flore*, 1583, p.374-377;

*Ranunculus asiaticus grumose radice II*, 1601, p.241.

1594: *Ranunculus tripolitanus flore rubro*, p.221.



1596: *Ranunculus tripolitanus*, f. 38v.

*Tulipa gesneriana* L., cv., Rose Feathered Tulip.

1594: *Tulipa variae*, p.219; *Areae 3 variorum colorum Tuliparum*, p.232.

*Tulipae selectorum generum a me collectae*, p.229.

*Aquilegia vulgaris* L., Variegated Blue and White Columbine.

Clusius: *Aquilegia*, 1601, cciii.

1594: *Aquilegia*, p.233.

1600: *Aquilina variorum colorum*, Index, n.p.

*Crocus angustifolius* West., Cloth of Gold Crocus.

Clusius: *Crocus vernus latifolius flavo-vario flore I*, 1601, p.206.

1594: *Crocus vernus striatus*, p.219.

1596: *Crocus aureus foris striatus*, f. 28r.

**Folio 6r**, 1601: *Three Flowers*.

*Dianthus caryophyllus* L., cv., Double Carnation.

Clusius: *Caryophyllus plenus suefiacus-pleno flore species*, 1601, p.286.

1596: *Caryophyl: flore pleno vario maior*, f. 26v.

*Tulipa gesneriana* L., cv., Flamed Bizarre Tulip.

Clusius: *Tulipa dubia maior?*, 1601, p.144.

1594: *Tulipae praecoces et serotinae rubris et luteis coloribus?*, p.222.

*Hepatica triloba* Gilib., cv., Double Blue Liverwort.

Clusius: *Hepatica trifolia caeruleo pleno flore*, 1601, ccxlviii.

1596: *Hepatica caeruleo flore*, f. 31r; *Hepatica Norvegica caeruleo flore maior?*, f. 31r.

**Folio 7r**, 1602: *Four Flowers*.

*Aquilegia vulgaris* L. 'Multiplex', Double White Columbine.

Clusius: *Aquilina pleno flore*, 1601, cciiii.

1596: *Aquilegia pleno albo flore*, f. 24v.

*Tulipa gesneriana* L., cv., Rose Feathered Tulip.

1594: See folio 5r (De Gheyn).

*Aquilegia vulgaris* L. 'Multiplex', Double Pink Columbine.

Clusius: *Aquilina pleno flore*, 1601, cciiii.

1596: *Aquilegia pleno carneo flore*, f. 24v.

*Aquilegia vulgaris* L. 'Multiplex', Double Oxblood Purple Columbine.

Clusius: *Aquilina pleno flore*, 1601, cciiii-ccv. Clusius writes that he saw this cultivar growing in Johan van Hogelande's garden in 1594.

1596: *Aquilegia pleno rubro flore*, f. 24v.

**Folio 8v**, 1602: *Five Flowers* (see Ill. 11).

*Nigella damascena* L. 'Plena', Love-in-a-Mist.

Clusius: *Melanthium Damascenum pleno flore*, 1601, ccvii-ccviii.

1596: *Melanthium Damascenum fl.: duplici*, f. 35v.

*Aquilegia vulgaris* L. 'Multiplex', Double Blue Columbine.

Clusius: *Aquilina pleno flore*, 1601, cciiii.

1596: *Aquilegia pleno caeruleo flore pleno*, f. 24v.



*Tagetes platula* L., French Marigold.  
1600: *Flos Africanus fl. pleno*, Index, n.p.

*Narcissus poeticus* L. 'Plenus', Double Poet's Narcissus.  
Clusius: *Narcissus pleno albo flore sextus*, 1601, p.161-162.  
1596: *Narcissus albo flore pleno*, f. 35v.

*Aquilegia vulgaris* L. 'Multiplex', Double Blue and White Columbine.  
Clusius: *Aquilegia pleno flore versicolor*, in a letter to Camerarius, February, 1587. Hunger, Charles de L'Escluse, op. cit. (note 5), II, p.145.  
1594: *Aquilegiae diversarum generum multiplici flore*, p.220.

**Folio 9r**, 1602: *One Lily*.  
*Lilium pyrenaicum* Gouan, Yellow Turk's Cap Lily.  
Clusius: *Lilium montanum flavo flore*, 1601, Appendix, cclv-cclvi.

**Folio 10r**, 1602: *Three Flowers*.  
*Anemone coronaria* L. 'Plena', Double Red or Plush Anemone.  
Clusius: *Anemone hort. tenuifol. pleno flore coccineo*, 1601, p.262-263.  
1594: *Anemone tenuifolia coccineo flore pleno*, p.221.

*Iris xiphium* L., Yellow Spanish Iris.  
Clusius: *Iris bulbosa angustifolia luteo flore, Rariorum... Hispanias... Historia*, 1576, p.276-278.  
*Iris bulbosa flavo flore*, 1601, p.212.  
1596: *Iris bulb. Hisp.: flore luteo*, f. 32v.

*Iris sibirica* L., Siberian Iris.  
Clusius: *Iris angustifolia media sive varia XI*, 1583, p.252-253.  
*Iris Pannonica angustifolia versicolor*, 1601, p.229-230.  
1596: *Iris angustifolia Clusij*, f. 33r.

**Folio 11r**, 1600. *Insects and Flowers*.  
*Dactylorhiza maculata* L., Heath Spotted Orchid.  
Clusius: *Orchis obscura purpurea III*, 1583, 238; *Orchis III*, 1601, p.267.  
1594: *Satrij Basilici genera*, p.225.

*Iris sibirica* L., petal of a Siberian Iris. See Folio 10.

**Folio 12v**, 1602: *Three Summer Flowers*.  
*Rosa damascena* Mill. *bifera?*, a Damask Rose.  
1594: *Rosa pallida flore carneo*, p.223.

*Tagetes patula* L., French Marigold.  
1596: *Othonna minor flore pleno*, f. 36v.

*Iris xiphium* L., Blue Spanish Iris.  
Clusius: *Iris bulbosa angustifolia violac. flo. sive II*, 1601, p.210-211.  
1594: *Iris bulbosa hispanica*, p.233.

**Folio 13r**, 1603: *Early Summer Flowers*.  
*Iris xiphium* L., Blue Spanish Iris. See Folio 12v.

*Rosa foetida* Herrm, Austrian Briar.  
1594: *Rosa lutea fl. simpl.*, p.223.



*Viola tricolor* L. 'Hortensis', Heartsease or Herb Trinity.  
Clusius: *Viola montana* III sive *tricolor*, 1601, p.310.  
1600: *Viola tricolor*, Index, n.p.

*Rosa rubiginosa* L. 'Duplex', Semi-Double Sweet Briar.  
1594: *Rosa canina* vulg. *eglanteria*, p.223.

**Folio 14r**, 1603: *Four Roses and Three Pansies*.  
*Rosa canina* L., Dog Rose.  
1594: *Rosa canina* s. *flore*, p.223.

*Viola tricolor* L.; See Folio 13r.

*Rosa x alba* L. 'Maxima', Great Double Rose.  
1596: *Rosa alba plena*, f. 39r.

*Rosa x alba* L. 'Incarnata', Maiden's Blush Rose.

**Folio 15**, 1603: *Two Roses and a Lily*.  
*Rosa foetida* Herrm, Austrian Briar; see Folio 13r.

*Lilium bulbiferum* L., Orange Lily.  
Clusius: *Martagon bulbiferum* I, 1601, 136.  
1594: *Lilium bulbiferum* Hogelandij, p.219.  
1596: *Lilium cruent.*: *rubent.*, f. 33v.

*Rosa x centifolia* L. ?  
Clusius: *Rosa Batavica* II, 1601, p.114.  
1594: *Rosa centifolia* minor, p.222.

**Folio 16**, 1603: *Three Roses*.  
*Rosa gallica* L. 'Officinalis' Thory, Apothecary's Rose.  
Clusius: *Rosa praenestina*, 1601, p.114-115.  
1594: *Rosa holoserica flore pleno*, p.223.

*Rosa x francofurtana* Muench?  
Clusius: *Rosa sine spinis*, 1583, p.109; 1601, p.115.

*Rosa x alba* L., cv., Double White Rose.  
1596: *Rosa alba plena*, 39r.

**Folio 17**, 1600: *A Madonna Lily and a Garden Pea*.  
*Lilium candidum* L., Madonna Lily.  
1594: *Lilium vulgare*, p.223.

*Pisum sativum* L. subsp. *elatius* (Bieb) Ascherson and Graebner  
1596: *Pisum nigrum*?, seed from Italy, f. 8v.  
1600: *Pisa annua*.

**Folio 18**, 1603: *A Scarlet Turk's Cap Lily and a Peony*.  
*Lilium chalcedonicum* L., Turk's Cap Lily.  
Clusius: *Lilium rubrum sive miniatum Byzantinum*, 1601, p.131.  
1594: *Lilium bysantinum*, p.220.  
1596: *Lilium Byzantini-miniati spes*, 33v.



*Paeonia officinalis* L., Double Pink Peony.

Clusius: *Paeonia pleno carneo flore*, 1601, p.280.

1594: *Paeonia duplici flore carneo*, p.219.

**Folio 19**, 1603: *One Rose Viewed from the Side and the Front (see Ill.7).*

*Rosa x centifolia* L., Cabbage Rose.

Clusius: *Rosa centifolia Batavica*, 1601, p.113 (see Ill. 7).

1594: *Rosa centifolia maxima*, p.223.

1600: *Rosa Hollandica seu centifolia*, Index, n.p.

**Folio 20**, 1603: *Tulip and Two Petals (see Ill.10).*

*Tulipa gesneriana* cv., A Crimson and White Tulip, Rose Flamed.

Clusius: *Tulipa dubia III media II versicolor*, no. 4? 1601, p.147.

1594: *Tulipa serotina selectiorum colorum*, *Tulipa serotina diversorum generum*, p.229.

1596: *Tulipa serotina*, versic: *variae spes*, 41r.



Plate 1. Reconstruction of Clusius' garden in the Hortus Botanicus of Leiden. View of the central pavilion, April 1990 (photo Faculty of Biology, Leiden University).



Plate 2. Reconstruction of Clusius' garden in the Hortus Botanicus of Leiden. In the background six flowerbeds with valuable plants fenced off, May 1990 (photo Faculty of Biology, Leiden University).





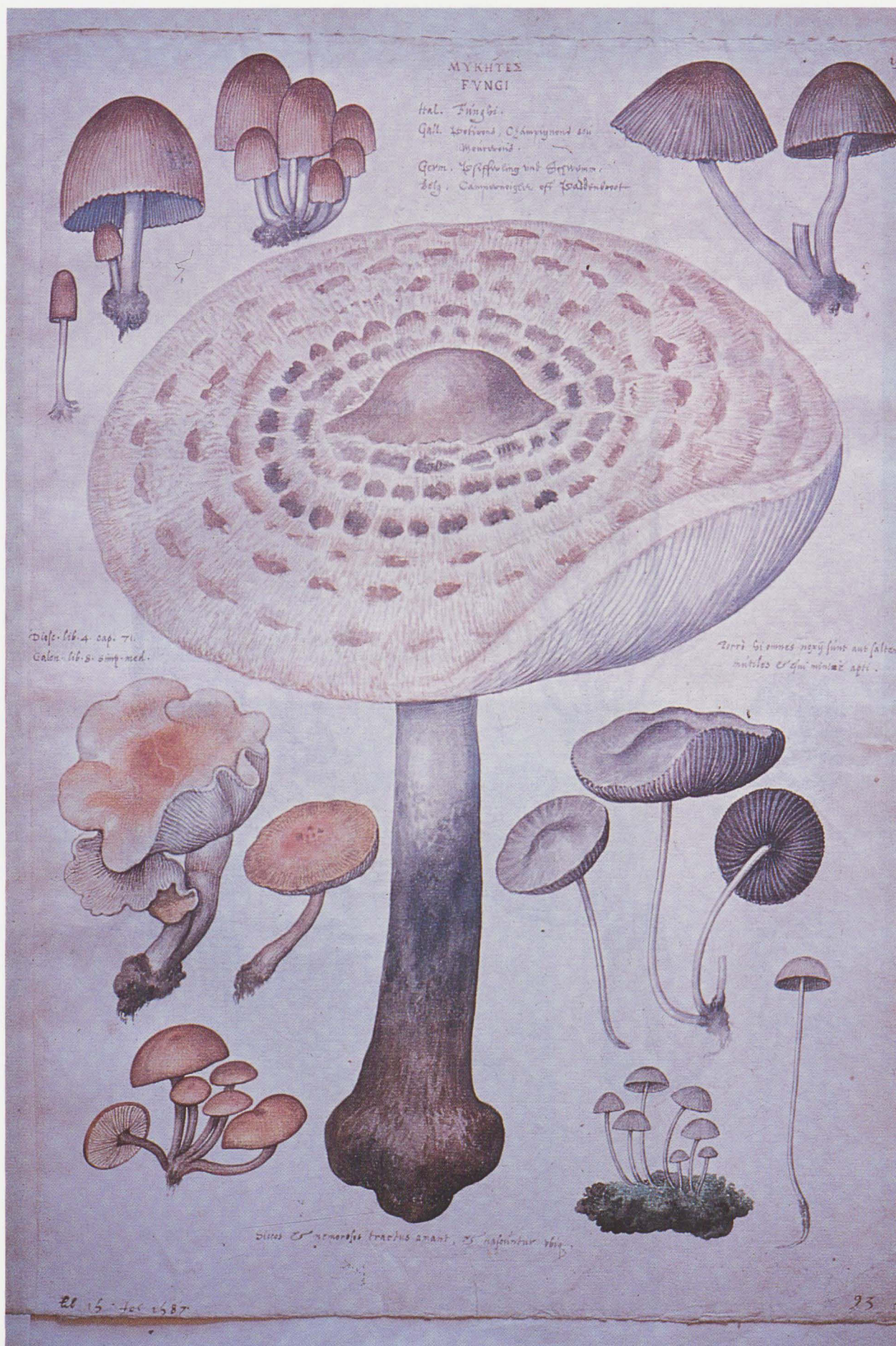


Plate 3. Various species of mushrooms from the Libri Picturati. One of the several hundred watercolours commissioned by Clusius, Jagiellon Library, Krakow, Poland (photo G. van Vliet).



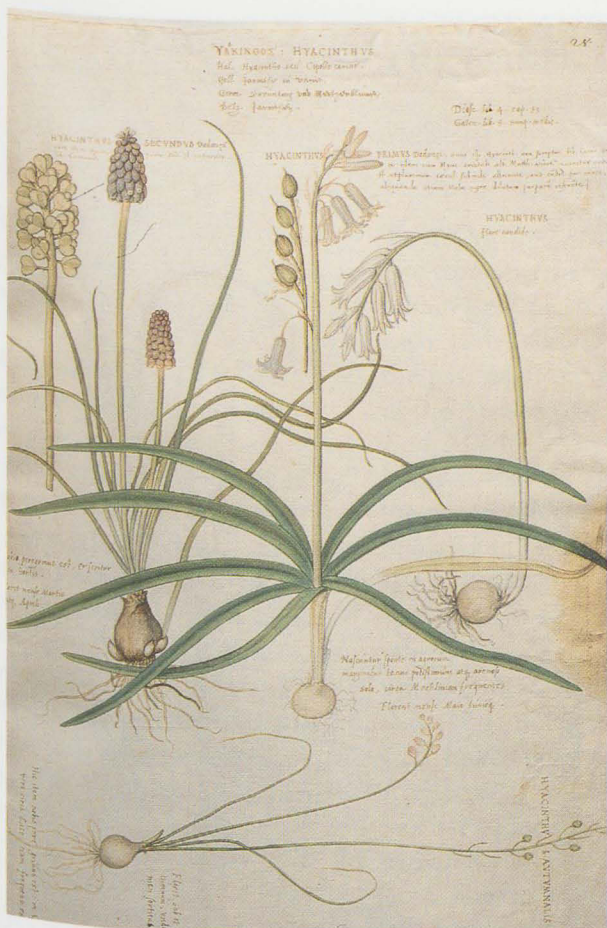






Plate 7. *Tulipa* ssp., plants and fruit. Libri Picturati, Jagiellon Library, Krakow, Poland (photo G. van Vliet).



## NATURE AND ART THE LEIDEN HORTUS AS 'MUSAEUM'

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### THE GARDEN AND THE MUSES

Approaching the Leiden Academy building and before entering the porch which gave access to the University and the Hortus Botanicus, a late 16th or early 17th century visitor was bound to walk over a circular inscription in the pavement on the Rapenburg. Watching his steps he would read in front of the Auditorium and near the entrance to the garden a quotation taken from Horace's *Carmina*: 'Musa Coelo Beat', 'T is the Muse bestows the boon of Heaven'. Orlers, in his *Description of the City of Leiden* from 1614 illustrates its location, though the actual text is only known from a notebook dated ca 1606 (*Ill. 15*).<sup>1</sup>

What would be a more appropriate way to be alerted to the Muses as *Genii Loci*, as Geniuses of the Place, governing this venerable place of learning, which in such a short span of time had become one of Europe's most famous universities. Shielded by Minerva – who took her place in the University's seal – and guided by the Muses, professors and students alike were immediately linked with a classical tradition of knowledge and inspiration.

At the very moment this institution was founded in 1575, the nine muses had been literally present during its inaugural festivities.<sup>2</sup> Accompanied by Minerva's aid Apollo, they were rowed by boat on the Rapenburg canal to the Universities first Auditorium, housed in the former St. Barbara Convent. Coming ashore, they met a long procession headed by a company of the civic-guard (honouring and memorizing its valiant behaviour during the liberation of the town from the Spaniards the year before in 1574), followed by four groups of allegorical figures on horseback representing the four faculties of the University: Theology, Law, Medicine and Letters, together with servants and halberdiers. *Sacra Scriptura* was here to be seen with the four evangelists, *Iustitia* with Julian, Papinian, Tribonian and Ulpian, *Medicina* with Galen, Hippocrates, Theophrastes and Dioscorides, while Minerva rode in front of Aristotle, Plato, Cicero and Virgil. The rest of this triumphal cortège consisted of the curators and professors of the University, the town governor, burgomasters and bailiff of Leiden and others.<sup>3</sup> On meeting, a latin adress, given by Neptune and Apollo and composed by Jan van der Does, head of the College of Curators, followed.<sup>4</sup> The way the Muses and the faculties were spoken to, could well be interpreted as a programmatic set of ideas elucidating the founding of the University.

Strikingly, the transportation of the Muses by water to the University- community, implied the return of peace in a town recently suffering deeds of war. Mars and his woes having fled, the Muses, and so the Liberal Arts, are allowed to flower, a theme not long before depicted by Antwerp painters like Maarten de Vos and Lucas de Heere, the latter painting the sleeping Muses at wartime, being awakened by Mercury proclaiming peace.<sup>5</sup>

Composing his latin speech Jan van der Does may have thought of Cicero's well known dictum 'Cedant arma togae', here in the context of the Leiden Academy to be appropriately translated as:

'may arms yield their place to the gowns of learning.'<sup>6</sup>





Ill. 15.

The Auditorium and the entrance to the Hortus on the Rapenburg, engraving from I.I. Orlers, *Beschrijvinge der Stad Leyden*, Leiden 1614 (photo: University Library Leiden).

Not surprisingly the medical faculty was especially addressed. It was asked to cure the townsfolk from hunger and plague by teaching the curing powers of trees and herbs. Indeed, which image but that of a garden filled with medicinal plants and trees, was as powerful to conjure up an image of peace, a Golden Age before and after the waging of wars in the eternal cycle of peace and strife?<sup>7</sup> Even though during this time there was as yet no thought of a botanical garden, the idea that such a garden in the urban setting of Leiden could symbolize a longing for peace, cannot have been far from their minds. During the Renaissance the garden was pre-eminently used as a rich source for allegories of which its time-old connection with Biblical paradise or classical Elysium was one of the most powerful.<sup>8</sup>

And was not nature, as Pliny and Varro tell us, the primary abode of the Muses?<sup>9</sup> This may explain why famous Lipsius, humanist and avid gardener, called his own garden in Leiden 'Et Musarum hic locus est', 'And this is the place of the Muses', as is clear from the *Lex Hortorum* he had mounted there in 1587. Earlier he had used a like phrase in his *De Constantia* from 1584 to which he had added 'and the training-school of my wisdom'.<sup>10</sup> It was his garden that temporarily served as botanical garden when the actual one was being laid out in 1593.<sup>11</sup> How powerful these ideas were, is clear from two latin inscriptions on the out- and inside of the porch leading to the Hortus, as recorded by a Swedish visitor in 1769. Here the garden is 'a garden of Pallas' and 'a usefull gift dedicated to the Muses'. 'Hortus amat pacem' one of its lines says, 'the garden loves peace and fears the severe instruments of the fury [of war]'.<sup>12</sup>

But not only in a figurative sense the Leiden Hortus was a place of the Muses, indeed in a literal way it could be interpreted as a 'musaeum', meaning it provided collections of a diverse kind. It is very likely that those involved in creating the Hortus, meant it to have such a function from the start, only slowly realizing this function to the full. Did not 'musaeum' as an

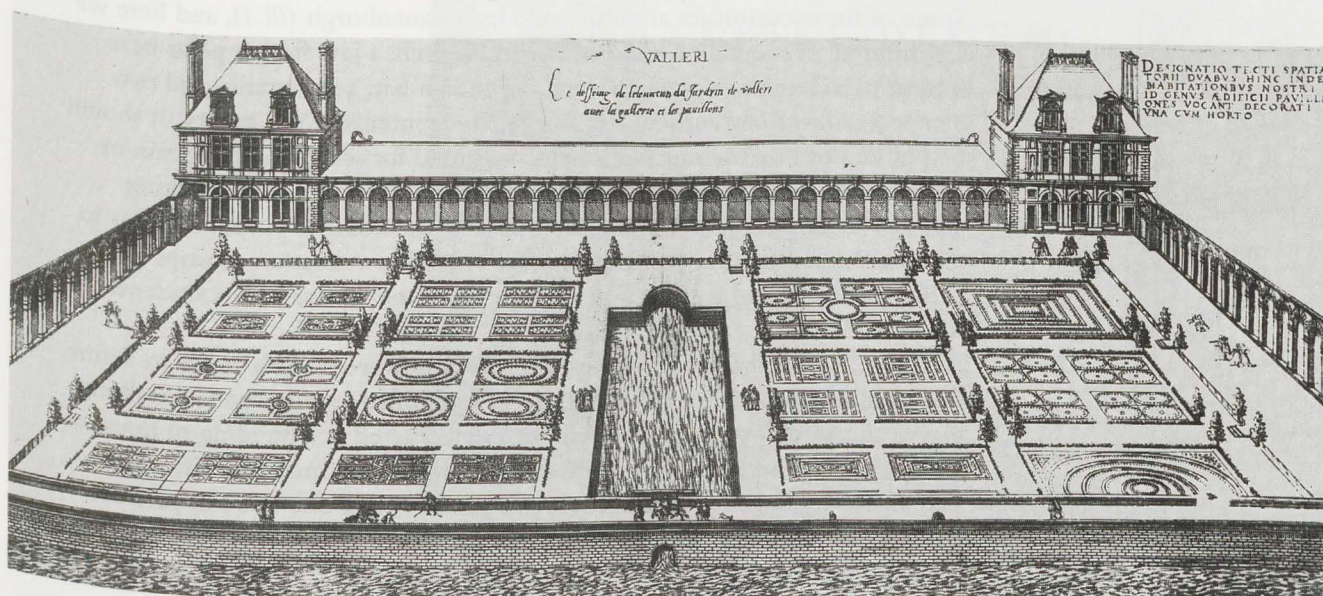


institution originally refer to the famous library in Alexandria, focuspoint of learning in the Ancient World? And did not the museum, as it evolved in the 16th century as a model for collecting, offer a system through which scholars could explore and interpret an expanding world, thereby linking narrowly the museum to the purposes of humanist learning and intellectual activity?<sup>13</sup>

The recognition that the garden as a museumcollection would not only be an invaluable instrument for the study of medicine in the first place but also for the totality of learning, must surely have been one of the reasons to create it. Since only so its significance could transcend its merely educational function and become of importance for both university and town, spreading its fame under scholar and layman alike, in the Netherlands and abroad.

Where our attention in the past has been largely directed to the cultivation of plants in the Hortus, less attention has been devoted to the gallery with its collections on the south-side of the garden. Creating a visually attractive backdrop, its architecture and function were consciously ment to be complementary to the meaning of the garden proper, and its whole idea was closely tied to contemporary ideas about a museum.

Ill. 16.  
J. Androuet du Cerceau, The garden and gallery at Vallery ca. 1549-1559 from his *Les Plus Excellents Bastiments de France*, 1576-79 (photo: University Library Amsterdam).



#### A GALLERY FOR THE GARDEN

When the need for a garden became clear from 1587 onwards and the plot of land behind the Auditorium was put to use as such in 1590 to 1593, Dirk Cluyt as daily attendant made a request to the College of Curators in 1594 to build a gallery or shed to protect vulnerable plants.<sup>14</sup> A shed, not a gallery, was built and fulfilled its function until Paauw, from 1598 on 'praefectus horti', pleaded with the Curators to have constructed 'a gallery, such as was planned earlier, wherein in summertime the professors, students and others visiting the garden may find shelter for the rain, while in wintertime plants not enduring the air are brought into it'.<sup>15</sup> This time a gallery was built at the end of 1599 through August 1600 by master carpenter Jan Ottensz van Zeyst, after selling the old shed to help financing this new project.<sup>16</sup> Both Jacques de Gheyn in 1601 and Willem Swanenburgh in 1610 depict it in the copper-engravings of the garden, be it not very accurately (Ill. 1 and 2).<sup>17</sup> This long gallery, one storey high, stretched along the south-side of the Hortus, with a length of 41.5 m. and consisted of twenty double glazed windows and three porches. A monumental frontispice above the entrance-door contained the *Lex Hortorum*, perhaps inspired by the one Lipsius wrote for



his own garden. They purposefully linked garden and gallery to a Renaissance tradition where these garden rules originally exemplified the principle that gardens are meant not only for private enjoyment, but serve the recreation of a larger public as well.<sup>18</sup> Surely for this reason the Leiden garden was often and not without pride, called *Hortus Publicus*.<sup>19</sup>

The style of the gallery was a primitive version of what is known as 'Dutch Renaissance style', with its decorative elements as the balustercolumns on pedestals, its dormerwindows enlivening the roof and the obelisks and scrollwork on the gable, inspired perhaps by Vredeman de Vries' modelbooks, but certainly by Lieven de Key's recently finished facade for the Leiden townhall.

Little is known about its interior, but from the archives we learn that it was paved in 1612, while Orler in 1614 gives a short description:

'on the inside this walking-place is decorated and hung with many different charts and maps, and also with some strange animals and plants which have been brought here from both the Indies and other places.'<sup>20</sup>

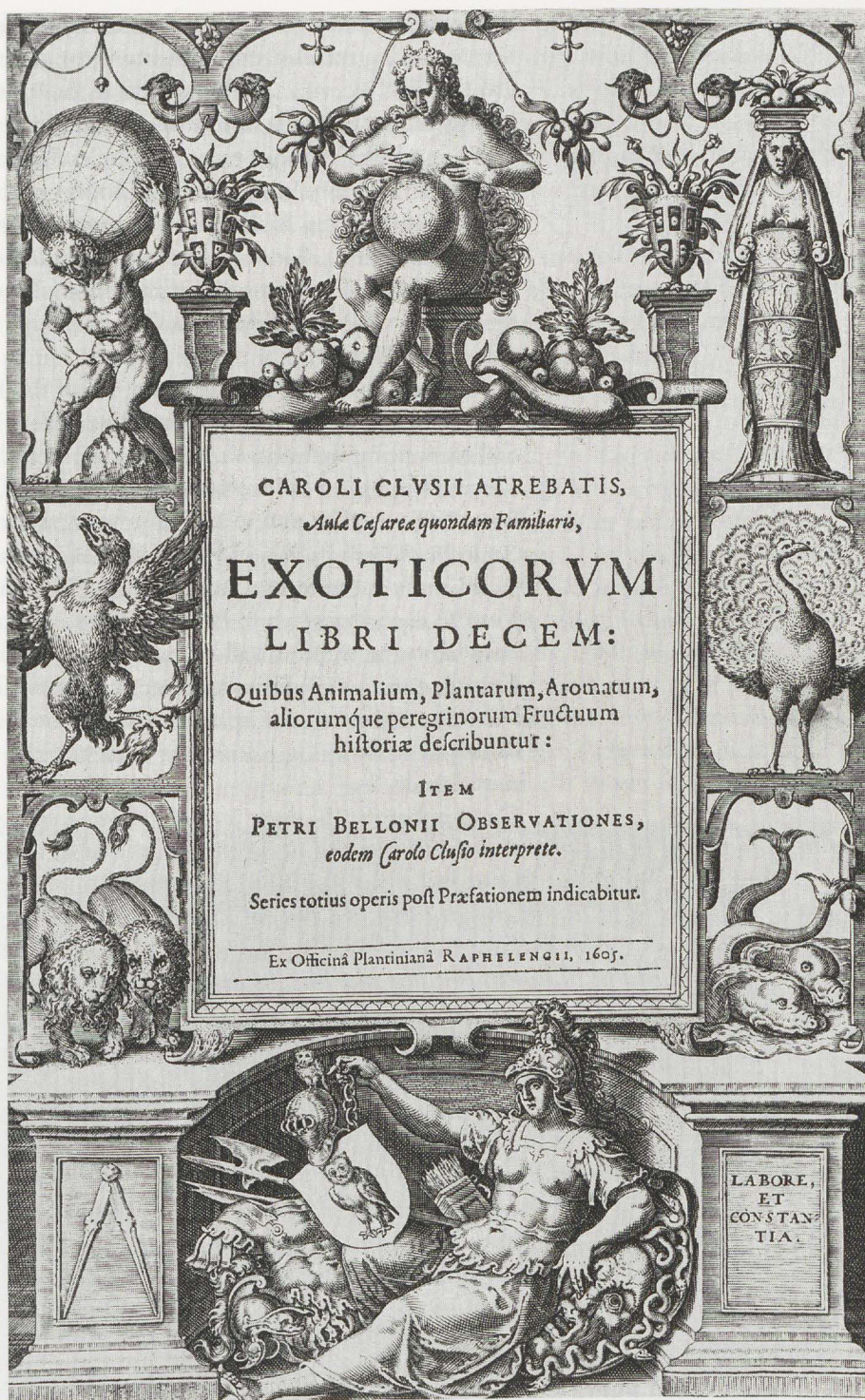
Some of these curiosities are illustrated by Swanenburgh (*Ill. 1*), and here we see different crocodiles, a sawfish, a tortoise shell, a jaw from a polar bear from Nova Zembla, a piece of coral, an Indian bat, a sea-urchin and two bamboo stalks. Before discussing further the contents of the gallery, it should be pointed out that because this place was used for walking during rain or hot sunshine, it was also called by a latin name: *Ambulacrum* or 'walking gallery'.<sup>21</sup> But of course walking here served also another purpose, that is to instruct the visitor and have him marvel vis à vis a collection of maps and naturalia, the latter brought together as part of the *materia medica* students had to study.<sup>22</sup>

It has been argued that *Ambulacrum* nor Gallery were suitable terms to define this structure since it would not have really fulfilled its purpose as a walking-place, nor would it explicitly have been constructed as a building to house a collection.<sup>23</sup> Yet in the context of early, 16th century museography, the Leiden gallery was by type meant exactly for nothing else but a display of collections, combining shelter from rain and sun with the physical exercise of walking, at the same time providing an occupation for eye and mind.

Diverse traditions are combined in the construction of the garden *cum* gallery. Firstly the gallery as a building type had evolved into a major and representative structure in French 16th century architecture and was thus a recent novelty.<sup>24</sup> As a phenomenon it was considered very much a French invention and hence Serlio termed it 'un luogo da passeggiare che in Francia si dice galeria'.<sup>25</sup> In a building complex it fulfilled a function as a connection, a corridor, between different rooms, and so evolved into a proper walking and exercise space used during bad weather. It adapted itself at the same time as an eminent space to fulfill representative and ceremonial functions as is shown by its most famous example, the Galerie François I in Fontainebleau (1528-1540). Here its functions were combined with a rich allegorical program on the walls and a large collection of moulds after antique sculpture: the gallery as a collection of art was born.

But galleries existed also as a separate unit in combination with a garden. Androuet Du Cerceau's *Les Plus Excellents Bastiments de France* published in 1576 to 1579 is very instructive in this respect. We find, for example, a gallery with its own garden in Gaillon as early as 1502 and later in the century, ca 1550 at Vallery (*Ill. 16*).<sup>26</sup> This combination must have been extra attract-





ive since it could evoke Vitruvius' description of an *Ambulatio*, a walking space whose walls were covered with landscape paintings.<sup>27</sup> It created the happy circumstance that in the French version of a gallery with garden, instead of looking at landscapes painted on the walls, one could now look out onto a real one, an emulation of the original idea which contemporaries will not have failed to appreciate.<sup>28</sup>

From a Dutch travel description from 1600, we know that these garden galleries also served to display collections. Jan Martenszoon Merens noted in the gallery at Gaillon many paintings, while the garden offered him armoury, inscriptions, a triumph of the Emperor of Rome, a dance of men and women, animals and a ship 'all very beautiful', cut out in box. In the best of



Renaissance tradition such gardens and galleries both served a display function, arousing interest and curiosity through its plants, sculptures, fountains, grottoes and aviaries. They put before the visitor the often varied and intricate interplay between nature and art, an interplay that is also fundamental in understanding the more encyclopedic collections of this time, put together by princes and scholars in their 'Wunderkammer'. The feeling of wonder experienced during such visits is at best to be realized by reading the many travel descriptions. Merens' curiosity becomes outright astonishment when confronted with a cactus and many miraculously wrought roots of herbs in the Hortus of Pisa and when walking through Pratolino, that garden of marvels *par excellence*.<sup>29</sup>

Second in explaining the form and use of the Leiden gallery, is that where museumspace was not as yet spatially defined, it is rewarding to look at the earliest writing defining a methodology of collecting.

Elucidating his ideas for a collection, Samuel Quiccheberg in his *Inscriptiones* from 1565, tried to define a proper housing for what he called a *Theatrum Sapientiae*.<sup>30</sup> In his *Digressiones* he states that 'theater is not an improper name for it' since it concerns a large building, be it arcaded or in an oval form. Yet, he says, it could also be 'ad formam ambulacri' -in the form of an *ambulacrum* or walking gallery, which he prefers to go round on four sides of a place, open to the four directions of the wind. In the middle it should leave room for an open space or garden; he undoubtedly realized the opportunity to show living plants in it as part of the *Theatrum*, keeping dried specimens inside.<sup>31</sup>

Quiccheberg's *Theatrum* is closely bound up with the pursuit of intellectual and scientific activity, striving to assemble an encyclopaedic collection of knowledge which at the same time forms a visible lexicon, primarily for the scholar but in a different way also for a layman visitor: seeing is knowing. And at this early stage of museography, there was no defined terminology as yet: *museum*, *theatrum*, *ambulacrum* and *arcus* or ark were synonymous, and one could add to it definitions like *studio*, *microcosmo* or *archivio*, all related terms that could describe the different ends served by these collections. More importantly they 'alluded to the analogies between each structure'.<sup>32</sup> For Clusius, describing the many exotics in his *Exoticorum* 'museum' is a standard expression when describing a collection in which he saw something worthwhile.<sup>33</sup>

The Leiden *ambulacrum* with its garden in front is closely related to these ideas, if not shaped by them. Do we also find an echo of them in Swanenburgh's copperengraving, where he so emphatically inscribes the four quarters of the world round the garden together with two softblowing winds as if to suggest a microcosm? Even when Quiccheberg's ideal of an allround gallery was not put to practice in Leiden, in 1610 to 1612, a new gallery was built on the north-side of the garden, this time to house the expanding collection of exotic plants during wintertime.<sup>34</sup>

Lastly, the combination of a botanical garden with a collection was known to Leiden scholars to exist in Italy and France, be they private or public ensembles.<sup>35</sup> Famous Ulysse Aldrovrandi founded the Orto Botanico in Bologna in 1568 and created in his own house a museum filled with *naturalia* and *artificialia*. Pope Gregory XIII (1572-1582) founded a university museum of *naturalia* at the Papal University in Rome, adding it to the medical garden from 1514. At Padua, Girolamo Porro, in his description from 1591 of the botanical garden there, foresaw outside its circular walls the construction of what he called a 'meraviglioso Museo', a 'picciolo Teatro, quasi in un picciol mondo si sarà spettacolo di tutte le meraviglie della Natura', 'a mu-



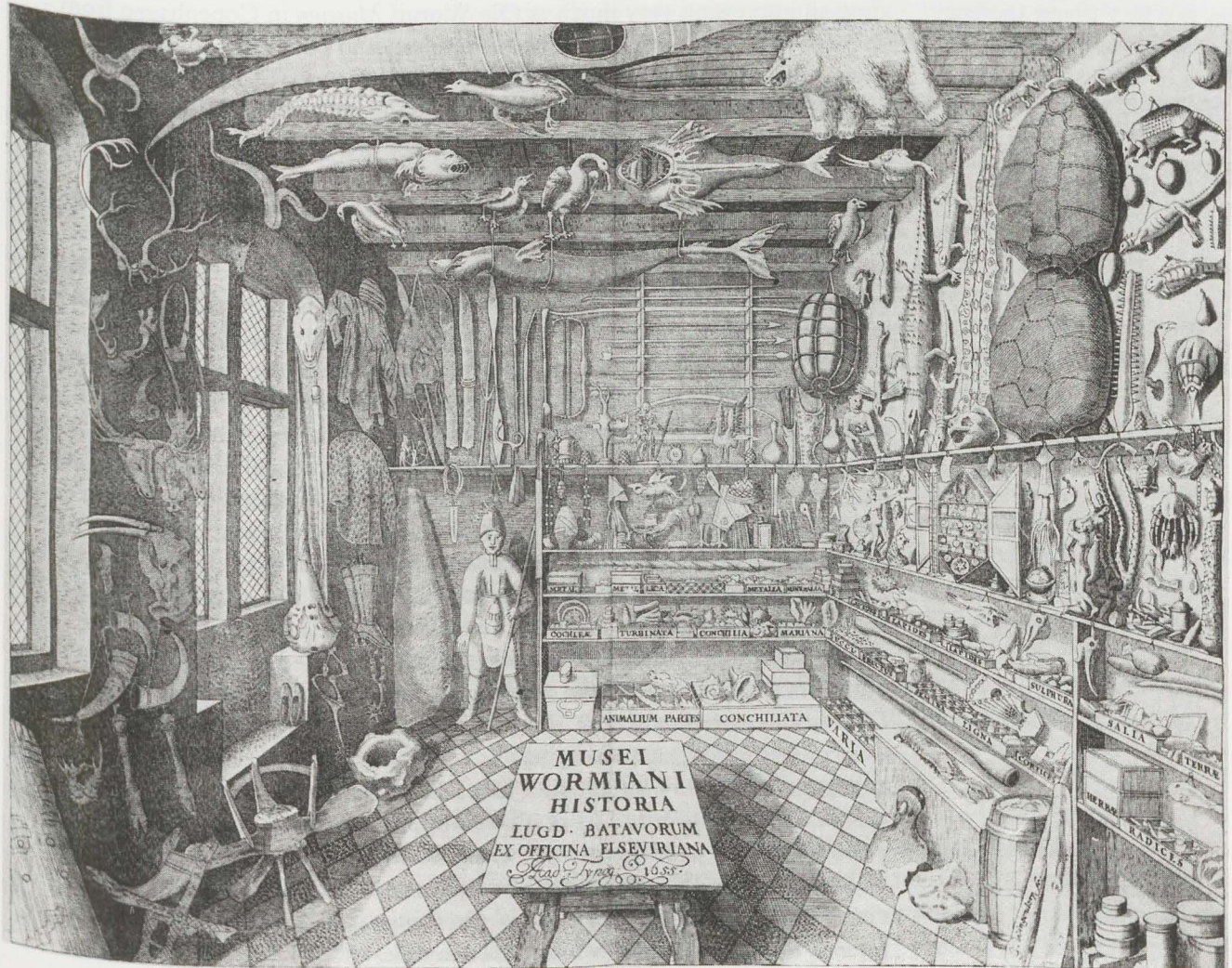
seum, a theater, a small world in which shall be shown all the wonders of Nature', and he names from sea, earth and air what would be included.<sup>36</sup> In France, Outgert Cluyt, son of Dirck Cluyt and at one time nomineed to follow in his fathers footsteps at the Leiden Hortus, described in a letter to Paauw from 1602 the Hortus of Montpellier. And adding a small sketch with notes, he drew the *ambulacrum* there, undoubtedly familiar with the recent existance and use of the one in Leiden.<sup>37</sup>

Gallery and garden in Leiden are in this way connected with practices from different countries, but this only testifies again how internationally oriented the Leiden scholars were. Through their network of contacts not only plants, but also ideas and forms were introduced on Leiden soil.<sup>38</sup>

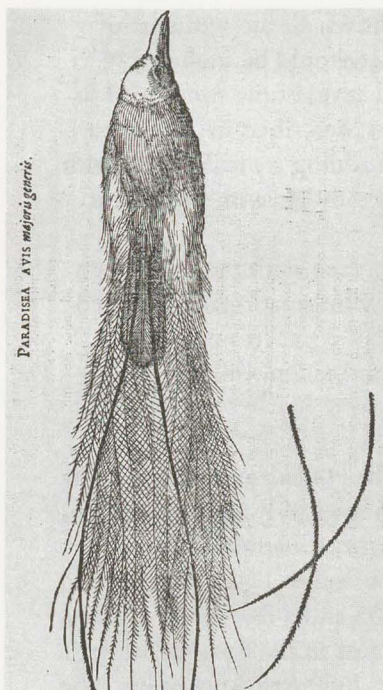
#### THE CONTENTS OF THE GALLERY

Apart from Orlers' description of the interior of the *Ambulacrum*, there exists more information about its contents, even though we sorely miss an original inventory of its early contents. But we do possess three manuscript inventories, one from 1617 and two from 1659, in Dutch and in Latin.<sup>39</sup> Together with data culled from Clusius' *Exoticorum* from 1605 and a few other sources, it is possible to make a reconstruction of the contents in the first half of the 17th century before the first printed catalogue of c. 1680 (see Appendix). The inventory of 1617 does not instruct us about the total amount of objects, since it lists all those items in the *Ambulacrum* and the new gallery (both apparently used as a museum!) as belonging to Pieter Paauw who died that same year. This in itself is an important fact since it shows how little a

Ill. 18.  
G. Wingendorp, Titlepage to the  
*Musei Wormiani Historia*, Leiden 1655  
(photo: University Library  
Amsterdam).







Ill. 19.

A bird of paradise from C. Clusius' *Exoticorum Libri Decem*, Leiden, Plantijn, 1605 Bk V (photo: University Library Amsterdam).

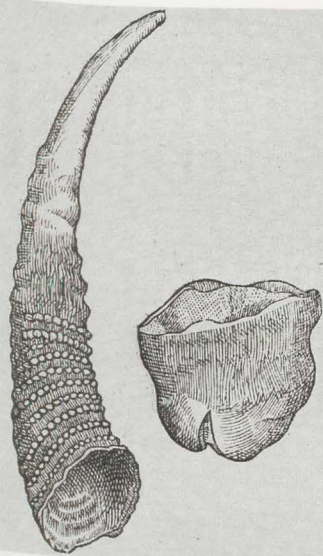
private collection was distinguished from the official University collections. The list amounts to 82 numbers in both galleries, some of them consisting of two or more objects. The lists of 1659 match each other precisely and were in all probability used as guide-lists for visitors. They amount to 110 numbers, though only approximately 23 objects from the 1617 list return in it, as far as one is able to judge since there is no systematic terminology used in these descriptions. Apparently the collection kept changing due to loss, new acquisitions, private ownership or transportation to other University collections.

In older literature the *Ambulacrum* collection has been called a 'museum of natural history', but even though objects from the natural world were in majority, other objects had a more 'ethnographical' and 'historical' character, thus diversifying the character of this collection. Evaluating a collection as this one through our practice of modern scientific specialisation, is perhaps obscuring an understanding of this unsystematic, yet in its own way growing 'encyclopedic' *Theatrum Sapientiae*, to use a phrase from Quiccheberg. If some overall philosophy dominated the different objects there, it might have taken the four elements as its reigning principle, thus covering all manifestations of nature and art. The four elements figure prominently on the title-page of Clusius' *Exoticorum*, together with *Natura* and Atlas with his celestial globe (Ill. 17).<sup>40</sup>

At first sight the *Ambulacrum* contents must have been a wonderful mixture of hanging and standing stuffed and dried animals from land, sea and air, whole or in parts, of boxes with minerals, shells, nuts, herbs and eggs, creating an impression very much as Ole Worms *Museum* in Copenhagen from 1655 (Ill. 18).<sup>41</sup> Maps and charts to be seen too, and books to consult for students, chained to prevent them from being taken away: Dioscorides with commentaries by Petrus Andreas Matthioli, Theophrastus' *De Plantis* and the commentaries of Julius Caesar Scaliger and of course Pliny's *Naturalis Historia*.<sup>42</sup>

As objects from nature there were the *simplicia* or drugs, preserved in boxes, used for lecturing on the *materia medica*. So were many *naturalia* like crocodiles, small and large, tortoise shells, Indian bats, a swordfish, bamboo-stalks, eggs (from crocodiles, birds and snakes), penguins, a foot of a casuari, different fruits, plants and fishes from the East-Indies, corals, shells, a waterbird from Norway, teeth of a hippopotamus, parts of the whale and the cachalot, hoofs and shin-bones of the elk, antlers of the stag, a parrot, Indian lizzards, a barnacle goose, an armadillo and an ant-eater, skins of different animals, a horn from the animal in which the bezoar stone grows and birds of paradise. More ethnographical were Indian exotics from the West-Indies as a string of teeth, a cast-net, a skirt, an idol, bows and arrows and a hammock; furthermore one could see a garment of a pigmee, paper with Chinese characters and depictions of plants and clothings from Russia and Japan. A more local, and historical, curiosity was papermoney made during the siege of Leiden. As said, most of these objects were in the first place tied up with the study of the *materia medica*, as were the plants in the garden, hence the books of Dioscorides and Pliny so full of knowledge and lore. Stagshorn, for example, was considered of great use against poison, elks-hoof a remedy against epilepsy and the very sought after barnacle goose, reputed to grow on trees, was valuable for its grease, curing lameness, and its blood as an antidote for poison.<sup>43</sup> Yet most of the items to see or study could not be checked in these handbooks since they had only recently become known through the early voyages of discovery. From Clusius' *Exoticorum* it is evident with how much interest these new objects were studied and described for their (possible)





Ill. 20.  
Horn and claw of the animal in which the  
bezoar stone grows, from C. Clusius'  
*Exoticorum Libri Decem*, Leiden,  
Plantijn, 1605 Bk VII (photo:  
University Library Amsterdam).

medical interest, at the same time arousing great curiosity because of their strange shapes, colours, textures and often their outstanding beauty. Reading Clusius' detailed descriptions – often based on observation of objects in the Leiden *Ambulacrum* which so served its purpose of scientific study – one realizes how much this examination of new things uprooted the long standing authority of the Ancient writers, from whose influence it must have been very difficult to free oneself. Seeing indeed became knowing. It ment not always understanding, but observation opened up a perspective to new worlds and led to a personal and independant view. How hard it was not to be tied by traditional beliefs, so often mixed with folklore,<sup>44</sup> is shown by the fact that the Leiden collection also exhibited the skin of a mermaid.

The Leiden collection may be called quite up to date. Depending foremost on Paauw's international and national contacts, the Hortus was able to acquire objects which everywhere in Europe were much in demand because of their rareness, such as the bird of paradise or *Paradisea Avis*.<sup>45</sup> Its discovery and importation in Europe in 1522 caused a major sensation, not only because of its strange appearance (since in order to prepare it its bones and feet had been removed by the inlanders, something which Westerners failed to understand), but above all because of its beauty. Clusius, who writes how long it took him before actually seeing the bird, describes in his *Exoticorum* the specimen from the Leiden Hortus (Ill.19). Very critical indeed about the then recent research on the bird, he admires at the same time its extreme elegance. The collection also had to make do. It did not, for example, have its sample of the famous bezoar-stone, so much prized an article in the European princely *Wunderkammer* as an antidote to poison and for healing melancholy.<sup>46</sup> But Leiden did have the horns from the animal this stone grew in (Ill.20).

Indian objects represented pure curiosities, though they also aroused interest because of the way natural materials were put to the use of man. They attested to the recent interest in the inhabitants from the New World since their discovery earlier in the 16th century. The many publications about their cannibalism or paradisaical innocence, their customs and habits, increased the desire with many collectors to own artefacts as hammocks, weapons and clothings, and in this respect the Leiden gallery was well stocked.<sup>47</sup> Here the visitor could marvel at them, perhaps holding in mind Clusius' latin translation of Hariot's *A briefe and true report of the new found land of Virginia* from 1590 or the more recent descriptions of their customs, trade, and religion by Jan Huyghen van Linschoten, who in 1596 published the first Dutch description of America in Amsterdam, just a few years before the *Ambulacrum* was built.<sup>48</sup> Together with the colourfull parrot and the armadillo these Indian items offered new models of knowledge and testified to a new and expanding image of the world. The maps in the gallery must have visualized and supported this image. It is tempting to think that one of these maps could have been Petrus Plancius' map *Orbis terrarum typus* from 1594 which accompanied Van Linschoten's edition of his *Itinerario*.<sup>49</sup> In its four corners it illustrates the four parts of the world and among their attributes we encounter many a bird, animal or exotic artefact which was to be seen in reality in the *Ambulacrum* (Ill.21).

#### COLLECTING

How Pieter Paauw as prefect of the garden assembled the curiosities for his 'sanctum of Apollo', as it was once termed, is not really known.<sup>50</sup> Certain items were, as Clusius notes in his *Exoticorum*, given by sea-captains from Amsterdam and elsewhere or by students like Nicolaus Gaef from





Ill. 21.

Detail from Petrus Plancius, *Orbis terrarum typus* 1594 showing *Mexicana* and *Peruana* (photo: Vrije Universiteit, Amsterdam).

Amsterdam, who presented the Hortus with a crocodile in 1599.<sup>51</sup>

Paauw was an avid collector. For the history of the hortus it is important to remember how in 1591 he also instigated the building of the *Theatrum Anatomicum* in the Fagibelijnenchapel across the Rapenburgcanal, not far from the Hortus.<sup>52</sup> At first concerned with assembling material to teach, his anatomical theatre developed into a veritable and important museum with many different skeletons, a human skin, pathological preparations, medical instruments, ethnographical objects and prints. After his death in 1617 his successor Otho Heurnius added archeological, mostly Egyptian, items.<sup>53</sup> For a large part these collections were closely tied to the study of medicine, yet as a whole it is very difficult to discern between the scientific, medical, biological purposes and an exposition valued for its curious rarities. Especially because Paauw and Heurnius gave the anatomic theatre and its collections a distinct allegorical meaning with many references to Christian ethics.<sup>54</sup> Because Paauw controlled the education in Theatre and garden, it is justified to suppose a close connection between the two. This is proven by the later history of their collections as many items were moved from *theatrum* to *ambulacrum* and vice versa.<sup>55</sup> Where in summertime the Theatre was closed and its collection displayed on the benches, the students studied in the garden, while in wintertime when the Theatre was used for sections, students were able to divert themselves among the collections of the *Ambulacrum*. From a purely educational and functional point of view both collections complemented each other. They should therefore be considered as a whole. This makes it more likely that both stemmed from one concept Paauw had in mind, a concept that shows similarities with Quicchebergs *Theatrum*, since in this book skeletons, *naturalia*, prints, professional instruments, topography and ethnographia are all described as special categories of one whole.<sup>56</sup> Collecting anyhow seems to have been a necessity in Paauw's and Clusius'



world and was greatly stimulated by recent voyages of discovery. Inspired by travels as the ones Jan van Linschoten made to the East-Indies in 1579 to 1592 under Portugese flag, Dutch ships sailed out in 1598, 1599, 1600 and 1601.<sup>57</sup> Clusius profited from his many contacts with skippers in Amsterdam and Middelburg, as did many of his colleagues in Leiden, like Vorstius and Porretus. The jaw from a polar bear from Nova Zembla in the *Ambulacrum* collections even testified to the hardships falling on those trying to discover new routes to the East-Indies. Repeatedly Clusius describes how, when, where and by whom an object was begotten. It is certainly not an exaggeration to say that these recent travels added a new élan to Paauw's and Clusius' already large network of contacts through Europe.<sup>58</sup> Clusius' even wrote a 'memorie' in 1602, for ships sailing east, specifying his wishes and indicating how to preserve flowers and branches, stating also his wish for knowing the local name of the object in question.<sup>59</sup>

To have a collection was a *conditio sine qua non* if one wanted to exert his scientific profession. In 1591, when the Curators of Leiden University started realizing the garden, they tried to induce Bernardus Paludanus to become 'praefectus horti' of the garden. Paludanus, widely travelled and having studied at Padua and a well known correspondent to Clusius and advisor to his fellow citizen Van Linschoten, was famous for his large collection of plants, *naturalia* and *curiosa* (among which objects from China, Egypt and the West-Indies) which he kept in his ark and garden in Hoorn.<sup>60</sup> At first he was quite willing to come and he even provided plans for the new Hortus, based on the botanical garden in Padua. The copies of his designs for the Curators have recently been rediscovered.<sup>61</sup> Though in the end he declined, it is nevertheless quite clear that from the start the Curators wanted a combination of a garden and a well known collection of *naturalia* and *artificialia*. Having to build up a collection from scrap instead, but aided by recent voyages, the *Ambulacrum* could not have been constructed at a more appropriate time than in 1600. Where the character of many of these early 'museum' collections was essentially of a private nature, the choice to create a University garden with a gallery that served professional and public needs is all the more striking. As such it transformed the static private museumcabinet into an open indoor and outdoor space 'for use and ornament' through which one passed, looking, studying, wondering.<sup>62</sup> The pursuit of *Virtus* or Virtue, so closely connected with the composition of princely and scholarly collections, was here transferred to the University and the town of Leiden. Garden and gallery were meant to visualize learning to a larger public than its own academics, thereby creating a renown beyond the citywalls.<sup>63</sup>

#### AN IMAGE OF THE WORLD

The garden visualized so to say an image of the world, since here in this museum, products of nature and culture had been assembled, emphasising the close relations between nature and art, both so profoundly essential to Renaissance culture. Art here meaning the control knowledge, science and labor could exert on nature, intervening in its processes, while ordering and correcting it, like *Medicina Ars*.<sup>64</sup> Likewise the nature of the garden was ordered by mathematical construction and the flowers and plants benefitted from human knowledge and skills of cultivation.

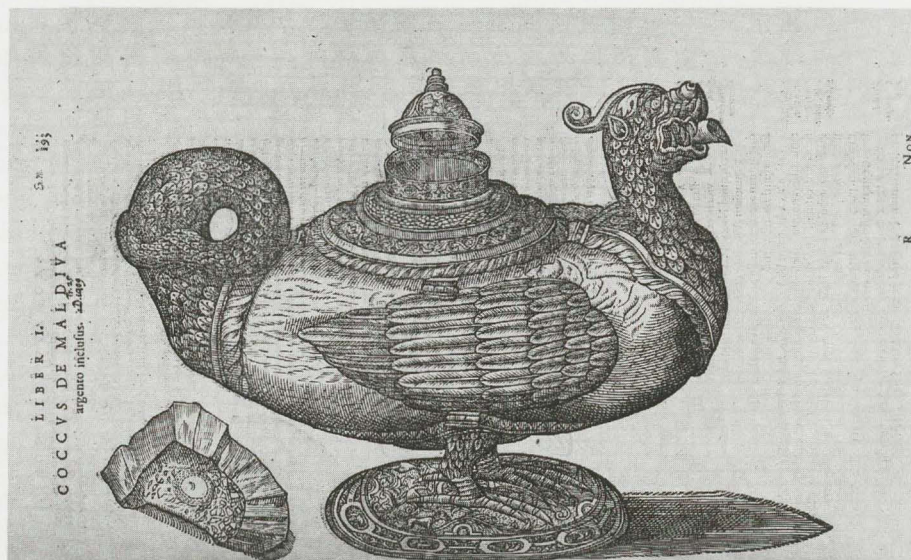
But there was also the reverse. Art was to be found in the workings of nature, in its texture, colour and form, thus approaching the perfection of human skill and art. Van Linschoten in 1596 put it this way in his *Itinerario*: there are many reasons to rightfully admire the particularities of nature and the diversity of the Creation since also nature in her abundancy imitates the



handiwork of mankind, producing it from herself and lacking little or no perfection.<sup>65</sup> Nature in itself, according to late Renaissance man, knew a degree of art, and art, as an instrument of man, needed to make use of nature, exploiting it, imitating and perfecting it. The largest plate in Clusius' *Exoticorum* therefore is not devoted to a natural object, but to a rare coconut in an artfull setting, a costly piece for a *Wunderkammer* (Ill.22).<sup>66</sup>

Ill. 22.

*Coccus de Maldiva argento inclusus* from C. Clusius' *Exoticorum Libri Decem*, Leiden, Plantijn, 1605 Bk VII (photo: University Library Leiden).



Here, in my view, lays one of the essences of the objects in the Hortus, be they plant, animal, mineral, or manmade. It forms one of the reasons why they were so avidly collected and studied. As a museum the garden continued its activities far into the eighteenth century, having still more collections added to it, including a large amount of classical statues.<sup>67</sup> New concepts of science would disperse the Hortus' collections to many different specialist institutions in the beginning of the 19th century. Thus this museum became the mother of the many museums, still in existence in Leiden. But here again the importance of the Leiden Hortus transcends its local boundaries: at the crossroads of learning, combining private with public use, it stands at the beginning of a long tradition of 17th and 18th century in- and outdoor collecting in the Northern Netherlands. And as such it deserves to be further known as the first real *musaeum* in Dutch cultural history. Would it not be a good idea to reconstruct in front of the Auditorium and near the Hortus Botanicus the inscription 'Musa Coelo Beat' so that again one could be reminded that here indeed the Muse since long bestows the boon of heaven?

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#### NOTES

1. For the note-book of E. Brinck (ca 1606) see Gogelein 1990. For the inscription 'Caelo Musa Beat' see Horace *Carmina* IV 8 29. It is not clear when and by whom the



inscription was laid out, perhaps after 1581, when the Auditorium was housed in the Chapel of the Witte Nonnenklooster.

2. For these festivities see Luttervelt 1958 and *Leidse Universiteit 400* cat.nos A44-A45, p.36/37.
3. See the copperengraving of this cortège by an anonymous artist from the fourth quarter of the 16th century, compare *Leidse Universiteit 400*, cat. no A44.
4. A translation of this text is to be found in Orlers 1614, p.133-141.
5. The relation between the imagery of the Leiden cortège and Antwerp is treated by Luttervelt 1958. The painting by Maarten de Vos (1532-1603), *Apollo and the Muses* (Brussels, Museum voor Schone Kunsten), is inscribed *Musae loco belli* (the Muses instead of War), the painting by Lucas de Heere (1534?-1584) is in the Galleria Sabauda, Turin. The iconography of the theme of war and peace is treated by Erik de Jong 1980.
6. Cicero *De Officiis*, Bk I, XXII, 77.
7. De Jong 1980. Pieter Paauw in his *Prefatio* to his *Hortus Publicus* from 1601 refers twice to the contrast between the disastrous (80-years) war and the Curators succeeding in creating the botanical garden, adding fame to the University. In this context it is not without meaning that the Leiden University was also called 'Praesidium Libertatis' ('Stronghold of Peace').
8. See for example Comito 1979.
9. Findlen 1989, p.60.
10. For Lipsius' gardens in Leiden during his stay from 1578 to 1591) see Witkam 1970, p.15-17 and Heesakkers 1988. I am grateful to prof. Heesakkers for allowing me to consult his manuscript. For a text of Lipsius' garden laws see Rapinus 1672, inserted after the *Hortorum Libri IV*.
11. Witkam 1970, p.17.
12. It is not known from when these inscriptions date. For their description in full see Gogelein 1990; 'saeva instrumenta furoris/Horret' cannot but allude to the deeds of *Mars Furor*.
13. For these aspects see the highly interesting article by Findlen 1989, to which I am very indebted.
14. Concerning the history of the Hortus I used the Archives of Leiden University and Hardenberg 1935, Karstens/Kleibrink 1982, Kroon 1911, *Leidse Universiteit 400* 1975, Orlers 1614, Terwen-Dionysius 1981, *Universiteit en Architectuur* 1979 and Veendorp/Baas Becking 1938.
15. Archief van Curatoren no 20 (not no 19 as with Terwen-Dionysius 1981, note 19), Res. Cur. fol. 57, 8 Febr. 1599. See also Archief Curatoren no 103, fols 49r-50r, 57r-58v and 83r-84v.
16. Archief Curatoren 41 Bijlage Res.Cur.1599. For the gallery see Terwen-Dionysius 1981 and *Universiteit en Architectuur* 1979, p.11-34.
17. See Terwen-Dionysius 1981, p.38-39 for these inaccuracies. Woudanus forgot to take into account that when printing the gallery on paper, he had to reverse its situation on the copperplate. Also the amount of bays has not been recorded correctly. The gallery was much changed during the course of time and its remains were torn down in 1908 to make place for the actual Botanical Laboratory.
18. For this tradition see Coffin 1982. Orlers 1614 gives a Dutch translation. Van Mieris 1770, Vol. II, p.155 gives the Latin transcription: Usui, ornamento Academiae - Curatt. et coss. jussu - Structum opus - Anno a nato Christo 1600 - Hortum ingressus, ad subscripta - Respicio
  - I. Statuta a Praefecto hora Hortum ingredi fas esto; examine finito, egreditor.
  - II. Ingressis, stirpes videre licet, odorari licet: tenellas, succrescentesve tractare laedereve non licet.
  - III. Ramos, flores, semina decerpere: scapos confringere: bulbos, radicesve evellere; hortum injuria afficere, nefas esto.
  - IV. Pulvillos, areolasve ne conculcato, transilitove.



V. Nihil invito Praefecto attentato.

19. A copy of the Willem Swanenburgh print from 1611 (printed Leiden, Andreas Cloucquius) has a description in German, Latin and French in which this public function is emphasised. For an illustration see Kroon 1911, between p.70 and 71.
20. Orlers 1614, p.142-146.
21. The term 'gallery' is mostly used in the archival documents, *ambulacrum* is used for example in P. Paausw preface to his *Hortus Publicus* from 1601, in the first printed catalogue of the collection (see Appendix) and in P. Hermanns *Horti Academici Lugduno-Batavi Catalogus*, Leiden 1687, Dedicatio.
22. All these functions are mentioned by Pieter Paauw in the preface to his catalogue *Hortus Publicus* from 1601.
23. See *Universiteit en Architectuur* 1979, p.33. Terwen-Dionisius 1981, note 11. The new Orangery from the middle of the eighteenth century is usually seen as the first building being constructed mainly for a display purpose.
24. Prinz 1970 and 1985, p.157-167.
25. Prinz 1985, p.158 (note 60).
26. Thomson 1988, p.149-163 (Gaillon) and 107-119 (Vallery).
27. Prinz 1970, p.57. Vitruvius, *De Architectura* VII, 5.2; see also Pliny *Naturalis Historia* XXXV, 112.
28. The Gallery at Fontainebleau was also specifiically orientated towards the gardens. An interesting Italian example for our context are the gallery and the loggia for antique sculptures in the gardens of the Villa Medici in Rome, built in 1580-1584.
29. Compare also Hunt 1986, Part I,6 and his contribution to Impey/MacGregor 1985, where he also mentions the Leiden Hortus. See also his article in *Arx* 1987.
30. For Quiccheberg see, with further literature, Hajos 1958; Von Schlosser 1978, p.119; Scheicher 1979, p.68.
31. Quiccheberg 1565, *Digressiones et Declarationes secundum ordinem inscriptionum*: 'Theatri etiam nomen hic assumito non improprie, sed vere pro structura grandi, vel arcuata, vel ovali, vel ad formam ambulacri, cuius generis in basilicis aut coenobiis circuitus ab ipsis incolis vocantur, ad quattuor latera altis contiguationibus exstructum, in quorum medio hortus, aut cavea sit relictas (ita enim Bavaricum theatrum artificiosarum rerum spectatur) ut quattuor maximae aulae, ad quattuor coeli regiones, latissime pateant, unde et accomodari aliquo modo amphitheatri nomen ipsi posset.'
32. The phrase is Paula Findlens, see her article from 1989, p.70.
33. See for example Clusius in his *Exoticorum* Bk VI cap.xx, p.135-36, when visiting Jacobus Plateau 'qui museum omni rerum exoticarum copia instructissimum habet'.
34. See the description by Orlers 1614, p.146. This gallery was extended in 1642. Its original appearance is not recorded, yet Orlers says it was less gracefull than the first gallery.
35. An analysis of the enumeration of those in love of gardening by Jacob Vlug in his eulogy on Pieter Paauw (see Paausw *Hortus Publicus* from 1601) could prove very instructive as to the orientation of Leiden scholars. Amongst others Aldovrandi and Porro are named.
36. For these traditions see amongst others Laura Laurencich-Minelli, 'Museography and Ethnographical Collections in Bologna during the Sixteenth and Seventeenth Centuries' in: Impey/MacGregor 1985, p.17-23. For the quotation: Porro 1591, 'Ai Studiosi Lettori'; see also Azzi Visentini 1984, p.111 and following. A collection was also founded in the Hortus in Pisa, see Tongiorgi Tomasi 1980.
37. Leiden University Library B.P.L. 1886, 30 November 1602. See also Van Molhuysen 1913, p.436-437.
38. Pieter Paauw and Joannes Heurnius, both doctors in medicine, had completed their studies in Italy. Italian models served also for their proposition to the city-council of Leiden in 1598 to transform the St Ceciliaconvent into a mad- and pesthouse. A very italianate open gallery on three sides of the courtyard was projected, but never executed. Zie Van Oerle, 1941 and *Leidse Universiteit* 400, p.91-93.
39. The latin list, dated 1659, is to be found as a loose sheet in the traveljournal of the



patrician Johann Victor Besenval de Brunstatt from Solothurn (Switzerland), who in May 1661 travelled from Paris on a tour through Europe. He reached Leiden on Monday 13.6.1661, where he visited the Hortus. It is not clear whether he, or someone else copied the list which, apparently, was available in the Hortus from 1659 on to serve as a catalogue for visitors. The list was communicated to the Leiden University Library by Th. Schneider, Basel, who prepares an edition of this journal (see his letter d.d. 11 April 1989).

40. The four elements as a classification principle was also used by Joris Hoefnagel (1542–1600) in his four books with miniatures, made as a natural history for Rudolf II in 1575–1582. See Koreny 1985, p.124.
41. *Musei Wormiani Historia*, Leiden, Elsevier, 1655 with the titlepage by G. Wingendorp. See also *Leidse Universiteit* 400, cat. D.25.
42. Veendorp/Baas Becking 1938, p.65.
43. Murray 1904, p.58–61 and 73–77.
44. Compare Grabner 1973.
45. Koreny 1985, p.100–134.
46. Scheicher 1979, p.16.
47. The impact of Indian culture in this period is treated by Honour 1975.
48. For Clusius translation see Hunger 1927, p.178. The title page of this translation shows several Indians with just those garments and attributes which were avidly collected. See Hunger, *ibidem* p.179. See Kern 1934, part III, for Van Linschoten. The same goes for Van Linschoten's descriptions of the East-Indies, where many exotics, as the bird of paradise, were described in the Dutch language for the first time.
49. Kern 1957, part III. We know Pieter Paauw was interested in collecting maps, as becomes clear from his correspondence with Orlers in 1594 (see: J. Prinsen JLzn, 'Eenige Brieven van Professor Pieter Pauw aan Orlers', *Oud-Holland* 23(1905), p.167–189). Several times he refers here to recently published, English, *mappae mundi*. I owe this reference to Kees Zandvliet, Algemeen Rijks Archief, The Hague.
50. For the 'Phoebum Penetrare' see the poem by Jacob Vlugh in P. Paauw 1601.
51. *Catalogus Principum* 1597 (!), p.56 with description.
52. Lunsingh Scheurleer 1975. For an inventory of these rich collections see Barge 1934.
53. Stricker 1948.
54. Lunsingh Scheurleer 1975.
55. See also the remarks in the Appendix.
56. Further research is needed to sustain this view.
57. Gaastra and Van den Bogaart 1980.
58. For these see Hunger 1927 Vol.I, p.265–269.
59. Hunger 1927, Vol. I, p.267 and *Leidse Universiteit* 400, p.180 cat.no D30. After his death in 1609, Clusius' private collection, among which the wing of a flying fish and several simplicia, was partly bequeathed to the University's collections, partly to Otho Heurnius. Most of them found a place in the Theatrum Anatomicum (!), where two oaken boards recorded the objects that had belonged to Clusius, see Hunger Vol.II, p.11–12 and Barge 1934, p.70, no 15.
60. Hunger 1934. Compare H.D. Schepelern, 'Natural Philosophers and Princely Collectors', Worm, Paludanus, and the Gottdorp and Copenhagen Collections in: Impey/MacGregor 1985, p.121–128.
61. Terwen-Dionisius 1989.
62. For 'usus' and 'ornamentum' see the *Lex Hortorum*, note 18.
63. For the theme of public and private see Findlen 1989. For the element of virtue, see Scheller 1969. Compare also Giuseppe Olmi, 'Science-Honour-Metaphor: Italian Cabinets of the Sixteenth and Seventeenth Centuries' in Impey/MacGregor 1985, p.5–17. The idea that seeing is knowing (and believing) is also to be found in Van Linschoten's *Itinerario* (see the edition by Kern). Many times he refers to Paludanus' collection as an illustration of his descriptions.



64. These notions with Hunt, Impey/MacGregor, Scheller, Von Schlosser and Scheicher.
65. Van Linschoten in Kern 1955, First Part, p.lxxxvii (his adress to the States General).
66. Clusius *Exoticorum*, Bk VII *Aromatum Historia*, cap. xxvi, 'De Nuce Indica' p.193 (his latin translation of Garcia da Orta's *Coloquios dos simples* (-) from 1563).
67. The Van Papenbroek collection of antique sculptures was added to the Hortus in a new orangery in a new part of the garden in 1745 (Karstens/Kleibrink 1982, p.40-41 and *Universiteit en Architectuur* 1979, p.34-36).

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Plate 8.

Various fruit and seeds. Libri Picturati, Jagiellon Library, Krakow, Poland (photo G. van Vliet).

Plate 9. Bottom left.

Lady's Slipper Orchid, *Cypripedium calceolus*, Libri Picturati, Jagiellon Library, Krakow, Poland (photo G. van Vliet).

Plate 10. Bottom right.

D. Froeschl, *Fritillaria imperialis* L., Pisa, University Library, ms. 513.







Plate 11. F. Paladini, *Scabiosa graminifolia*, Pisa, University Library, ms. 465.



f. 123.



Plate 12. *Iris Susiana* L. from Western Asia. Introduced in Europe in 1573.  
From a volume of drawings from the collection of Hendrik Jorisz d'Acquet  
(1632-1706). University Library, Amsterdam (photo J.W. Mugge).



*Capsicum* minus  
*siliquis* parvulis  
 dependens. 1679.  
 no. 24.

*Capsicum*  
 longissimum  
*siliquis* retortatis.  
 1679.  
 no. 25.

*Capsicum* rotundum  
 maximum fructu  
 erecto. 1679.  
 no. 26.

*Capsicum* minus  
 maximum  
 dependens  
 fructu  
 obtusum.  
 1679.  
 no. 27.

*Capsicum*  
 bifurcatum  
 fructu  
 1679. no. 28.



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## APPENDIX

No original inventory of the collections in the Hortus' gallery from about 1600 is known to exist. To provide a better understanding of these collections, three of the earliest manuscript inventories, one dating from after 1617 and two from 1659, are listed here. They have not been published before.

The first describes 82 objects in the *Ambulacrum* (or 'ouwe gaalderij' - the old gallery from 1599/1600 on the south-side of the garden) and the 'nieuwe gaalderij', or new gallery, the



orangery built in 1610-1612 on the north-side of the Hortus. This list was drawn up after the death of Pieter Paauw in 1617, possibly after an older list by his own hand, to decide upon the amount of objects in the two galleries as belonging to Paauw personally and now to his heirs.

The following two lists from 1659, describing 110 objects in Dutch and in Latin, match each other perfectly and probably functioned as an explanation available to the merely curious or more learned visitor.

Where possible, references are made to Clusius' *Exoticorum Libri Decem: Quibus Animalium, Plantarum, Aromatum, aliorumque peregrinorum Fructuum historiae describuntur*, Leiden 1605, \*EX followed by Book-, capita- and page- number meaning an object from the Ambulacrum collection is described by Clusius, cf EX followed by page number referring to comparable objects treated by Clusius. This has proven not to be easy because of the lack of systematic 16th century terminology. Furthermore it is not always clear whether objects described by Clusius in the possession of Paauw as 'praefectus horti' belonged to his private collection or to the Ambulacrum-contents. It should also be noted that Clusius probably kept many objects which he describes and which were given to him by others for himself. The apparent exchange between objects from the collections of the Ambulacrum and the Theatrum Anatomicum is another complicating factor.

References are to Clusius own copy of the *Exoticorum* (Leiden University Library no 755 A3) which has annotations and in which different capita (especially his original *Auctarium ad Exoticorum Libros* on p.357 to 378) have been rearranged and renumbered by himself (see Clusius' annotation on p. 355). The lists of 1659 are compared with the first printed catalogue of the Ambulacrum *Res Curiosae et Exoticae, In Ambulacro Horti Academici Lugduno-Batavi conspicuae* (Leiden University Library 2676 E 25). This catalogue contains 122 objects, unfortunately with again a different wording. Added to these curiosities is a list with 48 numbers from a *Theca, in qua asservantur variae aves indigenae e exoticae, aliaque rariora* plus an enumeration of 120 numbers *Animantia Varia utriusque Indiae Nativa facie, liquori Balsamico innatantia*, making a total of 290 objects to be seen in the Ambulacrum. These two latter collections of rarities, birds and beasts (with many specimina from Brazil and Ceylon) seem to be added to the old collection as new entities and are certainly due to P. Hermann, from 1680 to 1695 'praefectus horti'. This dates the first printed catalogue after 1680.

Later on all these collections were to be included in one list, the *Index Musaei Indici (-) In ambulacro Horti Academici Lugduno Batavi* (see the bound volume of inventories, University Library Leiden 2676 E 25).

Finally the material presented here is compared with the rarities on the Willem Swanenburgh/Jan Cornelisz. Woudanus Hortus plan (see *Ill.2*). A few objects not in the inventories, but known to have been in the Hortus collections, are added.

Brackets in the first inventory refer to (possibly) the same objects in the 1659 inventories (see followed by number meaning this is likely to be the same object, cf followed by number when this is less so). References to the *Exoticorum* are given here only when such an object does not return in the 1659 lists.

#### I.

*Inventaris van de Rareyten opde Anatomie en inde twee gallerijen van des Universiteyts Kruythoff/ Inventory of the rarities in the Anatomical Theatre and the two galleries of the Universities Garden, Archive of the Curators of Leiden University no 228 (after 1617).*

Inventaris van t'gene hangende is of bevonden wert inde twee galerijen vande Universiteijt mitsgaders inde Anatomiplaets, toekomende den sterfhuijse van Sal: Dr Paauw, naer uijtwijzen desselfs handt, alhoewel eenighe veranderinghe wert bevonden van sommige partijen minder, ende van sommige meerder/Inventory of all that is hanging and to be found in the two galleries of the University and the Anatomical Theatre, belonging to the



house of the deceased Dr Paauw, according to his own hand, though some changes have been found, of some things less, of others more.

#### Inde ouwe gaalderij/**In the old gallery**

1. Vespertilio Indicus dentatus (see 3)
2. Tres tibiae integrae alcis
3. Corii pars ex tergo alcis (cf 69)
4. Serra piscis Serrae (see 4)
5. Exuviae Crocodili (see 77)
6. Serra piscis cum sua serra (see 4)
7. Arundo Indica habens 19 internodia (\*EX Bk I, cap.xix, p.18, see 40?)
8. Arundo Indica habens 19 internodia (\*EX Bk I, cap.xix, p.18, see 40?)
9. Twee Indiaensche hanghende koordebeddens (see 35)
10. Crocodilus maior (see 48?)
11. Caput Cervi cum cornibus (see 52)
12. Cornua Cervi maiora
13. Corallum album marinum (see 8)
14. Exuviae Lacertae longae palmos octo
15. Exuviarum serpentis pars (see 66)
16. Maxilla ursae magnae habens dentes 12 (see 12)
17. Crocodilus minor (see 48?)
18. Dentes van een walrus
19. Crocodilus minor (see 48?)
20. Clava Indica ex ebene
21. Crocodilus minimus (see 48?)
22. Dorsum cum ventre testudinis
23. Portio arundinis Indicae longa pedes duos (cf 40)
24. Crocodilus maior (see 48?)
25. Echinus maximus (see 19)

#### Inde nieuwe gaalderij/**In the new gallery**

26. Corallum marinum (\*EX Bk VI, cap.i, p.119-120)
27. Quercus marina (cf EX Bk VI, cap.iv, p.121-122)
28. Planta retiformis (cf EX Bk VI, cap.iii, p.121)
29. Pseudocorallum nigrum
30. Polypodium Indicum (\*EX Bk IV., cap.xvii, p.88-89)
31. Pes Casuarii (see 43)
32. Cucurbita Indica (cf 55?)
33. Capsula, in qua guttegommu et aliquot extracta
34. Sacculus hartaccus in quo mastix, hypocystis et acatia
35. Calcei Norevagici
36. Dua picae marinae referunt anates (cf 99?)
37. Fructus guanobami (cf EX Bk VIII, cap.xi, p.231-232)
38. Fructus peregrinus tetragonos
39. Capsa constans 64 distinctis receptaculis, in quibus reposita quaedam mineralia, et multa alia admodum rara
40. Lobus Santome
41. Lobus ex Virginia
42. Acus marinae
43. Lagenulae Americae (cf EX Bk II, cap.viii, p.29)
44. Penis walrus, cuius pulvis commendatur ad calculum rerum
45. Ungula alcis (see 14)
46. Macer (cf EX Bk IX, cap.xii, p.264-265 and Bk IV, cap.iv, p.79)
47. Erica marina (cf EX Bk VI, cap.v, p.122)



48. Due mergi
49. Anas artica (cf EX Bk V, cap.xvi, p.104-105)
50. Capsa constans 64 receptaculis, in quibus reposita mineralia et quaedam gummata
51. Capsa in qua gummata, resina, succi concreti, et panes peregrini (cf EX Bk IV, cap.vi-viii, p.80-82)
52. Calcei Indici
53. Dens equi marini (see 27)
54. Testudo integra (see 94)
55. Concha imbricata
56. Een snoer van tanden uijt Indien
57. Een Indiaens inktkokerken
58. Een beck van een vreemde vogel
59. Murex
60. Pinna marina
61. Vespertiliones Indici duo (see 3)
62. Lapis amiantis
63. Crocodilus cum suo ovo in Hollandia repertus
64. Capsa in qua ova et multa alia
65. Aliquot capsae cum rarioribus
66. Rami ex arbore coralloides (see 42?)
67. Twe Indiaensche almenacken, de een van hout, ende d'ander van been (see 16)
68. Ocreae Indicae
69. Cancer maximus (\*EX Bk VI, cap.xiv, p.127-129)
70. Caput Ceti minoris cum dentibus (see 30) (cf EX Bk VI, cap.xviii, p.131-132)
71. Sacculus in quo dentes Ceti (see 30)
72. Verscheijden Chinees papier, gehele witte bladen, ende ook beschreven bladen (\*EX Bk VI, cap.xxxii, after p.144)
73. Een wintsack om opt water te drijven
74. Vestimentum Pigmaeorum
75. Een toom van een ree
76. Twee noortsche schuijten
77. Een Indiaens werpnet
78. Twee pinguijns (cf EX Bk V, cap.ix, p.101)
79. Een Indiaensche rok
80. Een steur
81. Galeus piscis
82. Acht Laden daerinne zijn verscheijdene soorten, ende fatsoenen van hoornen, conchijlien, histrices, cruijden, planten, noten, ende veel schonen rareijten

[follows a list of objects 'In Loco Anatomico', of plants 'In horto' and an enumeration of bulbs and plants given to Paauw by Jan van Hout. The inventory ends with a 'memorie' of carpentry done for Paauw on his costs 'in de huijsinge van de universiteijt']

We may conclude that out of 82 numbers, approximately 23 are to be identified with objects in the 1659-lists, which means that the rest has remained or in the possession of the heirs of Paauw, or that objects have been moved to the collections of the Theatrum Anatomicum. Numbers 12 and 72 for example may perhaps be identified with objects in the *Inventaris der Anatomie* from the 1620-ies. But further research is needed to understand in how far the collections of the University were moved about. Compare J.A.J. Barge, *De oudste inventaris der oudste academische anatomie in Nederland*, Leiden 1934.

## II.

List of curiosities in the *Ambulacrum* of the Leiden Hortus dated 1659. First the Dutch version of 1659: *Verscheijden Rarieteyten, Inde Galderije des Universiteyts Kruyt-Hoff/ tot Leyden Anno*



1659, Governmental Archives Gent, Belgium, Raad van Vlaanderen F.51 (transcription at University Library Leiden, no 1392 B9). Second follows a latin translation in a Swiss travel-diary from 1661, but also dated 1659: *Res Curiosae & Exoticae Quae in Ambulacro Hortj Academiae Leydensis Curiositatem amantibus offerentur Ao 1659*, by J.V. Besenval De Brunstatt in *Jähriger layss Beschreibung*, 1661, Zentralbibliothek Solothurn, Switzerland, Ms S 67 (transcription by Th. Schneider). Their present whereabouts explains how both lists functioned as a guide to the collections for visitors from the Netherlands and abroad. References are made to Clusius' *Exoticorum* where possible (see above), followed by a reference to the first printed catalogue *Res Curiosae (etc)* of ca 1680 (as RC followed by number). It should be noted that the printed catalogue at times refers to Clusius' *Exoticorum* as well as to other publications.

1. Adelaer of Arent/**Aquila** (RC 1)
2. Inglands vrucht als een Neut/uyt Candie/**Juglans Canadensis** (RC 3)
3. Indiaensche Vleer-muys/**Vespertilio Jndica** (cf EX Bk V, cap.iii, p.94-96) (RC 5)
4. Sweert-visch/**Piscis Serratus** (cf EX Bk VI, cap.xx, p.135-136) (RC 6)
5. Vreemde Schulp/**Cochleae majores binae** (RC 7?)
6. Ribbe van een Rhenoceros/**Costa Rhinocerotis** (cf EX Bk VII, cap.xiv, p.166) (RC 8)
7. Brasilaens Verckens-huyt/**Cutis Porcj Brasilianj** (RC 9)
8. Specie van wit Corael/**Species Corallj.albj.** (RC 10?)
9. Beck van een Zee-Vercken/**Aper Jndicus.& Maxilla Suis marinj.**(RC 11)
10. Vrucht van Ceder-boom/**Fructus Cedrij.**
11. Vogel uyt Brasil/met hoorns aen de vleugels en op 't hooft/genaemt Mitu/**Avis Brasil: jnstar Pauonis, cornu oblongum candidum fronte gerens, Singula ala duobus cornibus albis ornata, Mitu vocata** (RC 12)
12. Schoft/Beck en Voeten/van een Beer/**Virga Vrsj Albj, ossa pedes, & maxillae** (RC 14)
13. Visch genaemt Blaesert/**Piscis Blasaertus dictus** (RC 15)
14. Elants-Poot ofte Been/**Vngula Alcis** (RC 27)
15. Stroo Fedel-spel/**Instrumentum lusorium Tramineum** (RC 21)
16. Indiaensche Almanack/**Calendarium Jndicum**
17. Vischken/dat een Schip tegen-hout/**Remora**
18. Paradijs-Vogels/**Auis Paradisi** (\*EX Bk V, cap.i, between p.94-95)(RC 17)
19. Zee-Egel/**Piscis Eschinatus**
20. Beck van een Vogel Toupan genaemt/**Animal Toupan, & rostrum eius**
21. Vel van een Wilt Brasils Paert/**Cutis Equi Brasil:** (RC 13)
22. Een Veer van een Vogel Phenix/**Pluma Auis Phaenicis**
23. Indiaens Af-godt/**Jdolum Jndicum** (RC 22)
24. Indiaensche Spinne-kop/**Araneus ex India Occidentalj**
25. Zee-Vleer-muys/**Vespertilio marina**
26. Hooft van een Zee-Paert/**Hyppopotami Caput** (RC 26)
27. Tanden van een Zee-Paert/**Hyppopotami Dentes** (RC 33)
28. Boogen en Pijlen der Wilden/**Arcus cum Sagittis** (RC 39)
29. Indiaens Broot/**Panis Jndicus**
30. Tanden van een Pot-visch/**Dentes Piscis Pot Vocati** (RC 23)
31. Groote Swam ofte Sponcy/**Fungus major** (RC 38)
32. Vrucht genaemt Annanas/**Fructus Annanas** (cf EX Bk IX, cap.xliv, p.284-285) (RC 32)
33. Beck van een Vis genaemt Gieb/**Piscis Vocatus Gieb**
34. Rhenoceros Hoorns/**Cornu Rhinocerotis** (RC 30)
35. Hamack ofte Bedde der Wilden/**Hamack** (RC 31)
36. Groote Slange-vellen/**Cutis Serpentis magnitudinis jngentis** (cf EX Bk V, cap. xxvi, p.114)



37. Strunck van een Wilde Vijgeboom/**Truncus ficus Indic: Silves:**  
(cf EX Bk I, cap. i, p.1-4) (RC 48)
38. Brasils Jangde-hout/**Capput Jangadae Brasil.**
39. Een Hooft van een Vos/**Capput Vulpinum**
40. Spaens-riet/**Arundo Hispanica** (cf EX Bk I, cap. xix, p.18) (RC 50?)
41. Suycker-riet/**Arundo Succharea** (RC 43)
42. Zee-gewas/en vreemde Krabbe/**Plantae marinae species 4.diversae**  
(RC 37? or 38?)
43. Poot van een Casuaris/**Pes Casuarij** (RC 40)
44. Visch als een Vercken/**Piscis Porcus** (RC 41?)
45. Zee-Spinnekop/**Araneus marinus** (RC 42)
46. Wonderlick Gedierte in een Hennen-Ey/**Animal ex Ovo gallinae enatum**  
(RC 45)
47. Pellikaens-Beck/**Rostrum Pelicanj** (RC 46)
48. Cayman of Crocodil/**Crocodilus** (cf EX Bk IX, p.259) (RC 52)
49. 't Gebit en Rugge/been van een Haey visch/**Mandibula, & Spinadorsi Haiyae**  
(RC 51)
50. Beelden uyt Sabba/**Statuae ex Zappa** (RC 53)
51. Minerael/daermen van de vrucht die daer uyt wast/Linnen kan maken/**Lapis Amyanthus e quo pro uenit Byssus** (RC 55)
52. Herts-Hoof/**Cerui Caput** (RC 54?)
53. Brasils Ree-bocx-vel/**Pellis Capreoli Brasil:** (RC 59)
54. Leuyaerts-vel/**Cutis Luyaertis**
55. Larvoerde van Brasil/**Cucurbita Brasil:** (RC 92?)
56. De Passie-blom/gefigueert/**Flos Passionis**
57. Osse Lever in Leyden gefigueert gevonden/**Figura Anseris jnuenta in jecore bouis**
58. Een tappoens Trompet/**Tuba lignea Tappajeri** (RC 67?)
59. De Huyt van een Meer-minne/**Cutis Virginis marinae** (RC 73)
60. Groote en kleyne Mieren eeter/genaemt Tamandua Peba/**Tamandua Peba major & minor formicas edentes** (RC 62 and 110)
61. Indiaens Beestken Armadilla genaemt/**Armodilla jndica** (cf Ex Bk V, cap.xvi, p.109 and cf EX Bk X, cap.xxxvii, p.330) (RC 65)
62. Indiaensche Eghdisse/**Lacerta Jndica** (\*EX Bk V, cap.xxvii, p.115) (RC 64)
63. Zee-katte/**Felis marina**
64. Indiaensche schulp/**Cochleae Jndicae**
65. Adders Tonge/**Lingua Viperae**
66. Slangen Eyeren/**Oua serpentum**
67. Olyphants Gehoor/**Auditus Os Elephantj** (cf EX Bk IX, p.260-261)(RC 86)
68. Ratel-Slangh/**Serpens ambulando cute crepitans** (RC 70)
69. Elants Huyt/**Cutis Alcis** (RC 74)
70. Indiens Vosken/**Lupus Jndicus** (RC 69)
71. Draeck/**Draco** (RC 72?)
72. Een Zee-wolff/**Lupus marinus** (RC 75)
73. Schilt-visch/**Piscis Spilt Vocatus**
74. Struys-Eyeren/**Oua Strusj** (RC 71)
75. Arents-Eyeren/**Oua Aquilae**
76. Olyphants Tanden/**Dentes Elephantj** (cf Ex Bk VII, cap.xiv, p.166)(RC 79)
77. Crocodils Eyeren/**Oua Crocodilj**
78. Tygers-Vel/**Tigris Cutis** (RC 85)
79. Klimmende Gewasch/genaempt Cipo/**Cipo frutex in longum serpens** (RC 81)
80. Vrucht Cassia/Fistula genaemt/**Cassia fistula major** (RC 82)
81. Appel-Colocijnth-Vrucht/**Fructus Colecynthidis Variae Species**
82. Bocx-hoornen/**Cornua Capri** (RC 24)
83. Oorlocks Instrument der Brasilianen/**Instrumentum bellicum Brasil** (RC 87)



84. Hosen en Schoenen uyt Japon/**Caligae ex Jsula Japan cum calceis** (RC 88)
85. Japansche Rock/**Tunica Japaniae Chiliarchae**
86. Visch-hoof/ Water-op-blaser genaemt/**Piscis Aquam per foramina duo super nasum in altum eleuans** (RC 89)
87. Neut-gewas Pindouas genaemt/**Pindouas, & Latrux fructus** (RC 96)
88. Bochoornen inde kleynste haer Maech groeyt de Bezaersteen/**Cornua Capri, in cuius Ventriculo Lapis Bezoarticus nascitur** (cf EX Bk VII, cap.xlv, p.216-217, also Bk IX, cap.xxxvi, p.279 and Bk X, cap.xxxiv, p.327-329) (RC 24)
89. Een Pruysser-Boer/die een mes inslickte/dat hem uytgesneden/en weder genesen is/**Delinatio Rustici Prusiacy cultiuorj**
90. Een voet van een Zee Hont/uyt Groenlant/**Planta marina** (RC 99)
91. Viper-Slangh/**Vipera**
92. Grain/doer men de Scharlaken Verwe of maeckt/**Coccum Siue granum Cocci**
93. Dolphijn/**Delphinus** (RC 102)
94. Schilt-padde uyt Indien/**Testudo Indica** (RC 109)
95. Schilt-paden Eyeren/**Oua Testudinum** (RC 98)
96. Poot van een Vogel-Grijph/**Pes Gryphj**
97. Walvisch-Schaften ofte Roeden/**Virga Balaenae** (RC 107)
98. Hoof van een Zee-Leeuw/**Caput Leonis marinj** (RC 105)
99. Gans in Schotlant op Boomen wassende/**Anas in Scotia proueniens in arboribus** (RC 104)
100. Pluym-Gras/**Gramen plumeum**
101. West-Indisch Dier/Jackhals genaemt/**Animal Leoni Victum portans [?] Vocatum Jackhals** (RC 108)
102. Geremte ofte Gebeente van een Mensch/**Skeleton Hominis** (RC 122)
103. Rock van de Russen/**Tunica Russica**
104. Een Pagaey/**Psitacus** (cf EX Bk V, cap.iii, between p.94-95)
105. Vel van een Boshont/**Cutis jngens Canis Silves:** (RC 121)
106. Indiaens Schuytjen uyt een Boom/**Naugolium Jndorum** (RC 111)
107. Een Cocus Neut/[Co.s] **Cocus nux** (cf EX Bk VII, p.190-191)(RC113)
108. Papieren-gelt in 't Leyts Beleg geslagen/**Pecuniae Leydenses** (RC 118)
109. Een Hoof van een Wolff/**Caput Lupinum** (RC 117)
110. Groote Neut/Zambucaja genaemt/**Zambucaia nux magna** (RC 114)

A comparison between these lists makes clear that more or less 30 objects do not return in the printed list due to dissimilarities in wording, loss or chance of place (like no 89 which is to be found in the first printed catalogue of the rarities in the Anatomical Theatre from 1669; compare also no 18 of which one bird is placed in the *Theca* under no 41 and no 104 which perhaps may be located among the three parrots in the *Theca* nos 17-19). The printed list therefore contains (approximately) 41 objects not on show in the Ambulacrum in 1659. This can only mean that new acquisitions, perhaps mingled with extant objects from the *Theatrum Anatomicum*, replaced some of the missing things from the earlier inventory. Many objects mentioned in the printed list would later on find their way to the *Theatrum Anatomicum*, compare for example Gerardus Blanken, *Catalogus van alle de Principaalste Rariteyten die op de Anatomie-kamer binnen de Stad Leyden vertoont werden*, Leiden 1698.

### III

Since the Swanenburgh/Woudanus plan (see Ill.2) is one of our earliest sources for the Ambulacrum collection, it is important to note that many objects shown on it are confirmed by the later inventories: *testa immanis testudinis* (see I-22/53 and II-94), *maxilla ursi ex nova zembla* (see I-16 and II-12 ?), *crocodilus* (small, see I-17/19 and II-48), *orbis* (cf EX Bk VI, cap.xxiii, p.139), *lita phijton* (see I-26 ?), *crocodilus* (large, see I-10 and II-48), *sarra marina* (see I-4/6 and II-4), *noctua indica* (see I-1 and II-3) and *bandus* (2 x) (see I-7/8).



#### IV

We end this survey with Clusius: he mentions the following objects in his *Exoticorum* as forming part of the Hortus' collections: *Nux aromatica mas* (Bk I, p.14-15), *Peregrinus fructus* (Bk II, p.26-27), *Exotici fructus* (Bk II, p.51), *Echinomelocactus* (Bk IV, p.92-93), *Mergus maximus Farrensis sive Arcticus* (Bk V, p.102), *Yvana*, *lacerta genus* (Bk V, p.116-117), *Manati Phocaegenus* (Bk VI, p.133-135, this kind of seal, after having been shown in Amsterdam, 'postea in Academici horti porticu suspensus fuit Lugduni Batavorum'.



## CAROLUS CLUSIUS AND THE BOTANICAL GARDEN OF PISA

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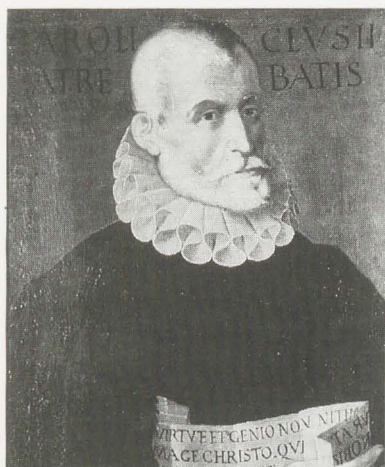
The imposing portrait of Carolus Clusius (*Ill.23*), painted in 1606 by Filippo Paladini, must surely have made a striking impression on the visitor from where it hung, as an inventory taken in 1626 testifies,<sup>1</sup> in the entryway to the third Botanical Garden of Pisa. Within may be found a further dozen portraits representing not only the directors of the botanical garden from its inception (in 1543) to the end of the 17th century, but also various eminent naturalists, some of whom had direct links with this prestigious institution. They constitute a veritable gallery of illustrious personalities, for here one may admire the portraits of Luca Ghini, founder of the first Botanical Garden of Pisa,<sup>2</sup> and those of his successors – Andrea Cesalpino, Joseph Goedenhuize of Flanders (who italianized his name to Giuseppe Casabona) (*Ill.24*), and Francesco Malocchi – as well as some of the professors who lectured on the science of herbs and simples at the city university. The remaining portraits are of Pietro Andrea Mattioli, author of *Commentarii a Dioscoride*, the first and most well known botanical text to be published in Italy in the 16th century, the physician and collector Ferrante Imperato of Naples, the herbalist and collector Francesco Calzolari of Verona and the apothecary Giovanbattista Fulcherio (called Savona) of Lucca.<sup>3</sup> The portrait of Clusius, the only foreigner among this distinguished company, represented an expression of formal homage toward one of the most prominent scientists among that select group who contributed to the long and arduous transformation of botanical studies into a modern science. It also testifies to the very close working relationship which existed between Clusius and the various directors of the botanical garden of Pisa, most notably in the period between the end of the 16th and the beginning of the 17th centuries when the renowned Flemish scientist was working at the Botanical Garden of Leiden. Thus we find that the order of payment made out to the painter Paladini and signed by the Rector of the University of Pisa contains the following justification:

*'per esser omo della professione et molto afezionato a detto giardino per mandar lui spesso piante da Leiden (because [Clusius] is an expert botanist and very closely affiliated with the botanical garden, to which he often sends plants from Leiden).'*<sup>4</sup>

We know that Clusius' affection for the Tuscan city of Pisa stemmed from the period of his very youth, when he cherished dreams of embarking on a tour of Italy for the purposes of study and herborization; in fact, no less than three times he made his preparations and was on the point of setting out.<sup>5</sup> Clusius wished above all to visit the botanical garden of Pisa, and even though during the course of a long and productive life he never managed to do so, he nevertheless maintained an uninterrupted exchange of data, scientific drawings, and botanical specimens with his Italian colleagues, in particular those associated with the garden of Pisa. The Flemish botanist was in turn deeply respected and admired by his Italian colleagues, who memorialized his name in the nomenclature which they gave to many of their taxonomical discoveries.<sup>6</sup>

The herbal garden of Pisa was the first institution of its kind to be established





Ill. 23.  
L. Filippo, *Portrait of Carolus Clusius*,  
Pisa, University, Dep. of Botany.

in Europe. It was founded by Luca Ghini in 1543 under the auspices of the Grand Duke Cosimo I of the Medici who, together with his successors, did so much through their constant patronage to promote the study of the natural sciences in Tuscany. Its first site was within the city walls close to the monastery of San Vito, in the northwestern part of the city and close to the ancient navy yards on the Arno River. The reputation of the garden soon spread and numerous scientists came to admire and to study its excellent collection of plants, including Ulisse Aldrovandi of Bologna, and Pierre Belon of France, who visited the garden in 1555 when it was under the direction of Andrea Cesalpino, botanist, physician, mineralogist, and discoverer of the principle of blood circulation, not to mention author of *De Plantis*, one of the first works to propose a systematic classification of the plant world.<sup>7</sup>

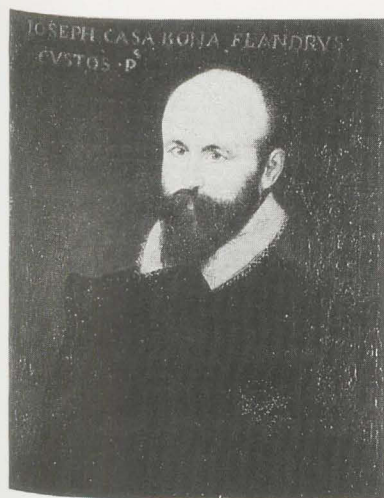
In 1563, due to the growing maritime power of the Medici, an expansion of the dockyards was projected which necessitated the transfer of the garden, at the time directed by Cesalpino, to a piece of land close to the convent of Santa Marta. The new site, however, proved to be excessively humid and thus unsuitable for the acclimatization of the various delicate plants in the garden's collection, and its location, a considerable distance from the university called 'La Sapienza', was the source of much discontent among the students, for whom the 'ostensio simplicum' required an assiduous frequentation of the garden. For these reasons the Grand Duke Ferdinand I was persuaded to acquire some land in the very center of the city, in Via Santa Maria between the university and the cathedral, in order to set up the third and definitive Botanical Garden of Pisa, which is still extant today.

The establishment of the new garden was entrusted to the herbalist Giuseppe Casabona, who had been summoned to Florence earlier by the Grand Duke Francis I of the Medici, probably upon the advice of Niccolò Gaddi, a keen naturalist and the owner himself of a very fine garden as well as a noteworthy collection of 'naturalia', scientific curiosities.<sup>8</sup> Casabona possessed a vast experience acquired during the course of numerous herborizing expeditions to various parts of Italy, Istria and Dalmatia, from which he brought back many plant species then unknown in Tuscany. His qualifications first convinced the Grand Duke to designate him in 1583 as the *curator* of his private gardens, as well as director of the botanical garden of Florence.<sup>9</sup> When it became clear that a new garden must be erected for the university of Pisa (the most important university in Tuscany) Ferdinand I without hesitation appointed Casabona to oversee its construction. On 20 March 1592 Casabona wrote to his friend and colleague Carolus Clusius:

*'Vi mando questo plico di semi e con qualche altra comodità vi mander degli altri... Sono stato più mesi a Pisa et fra due giorni di nuovo torno perchè si fa costà un bellissimo giardino nuovo de semplici per lo Studio di Pisa (I am sending you this packet of seeds and by other means will send you others ...I have been in Pisa for several months and in two days will return once again, because there a beautiful new herbal garden for the university of Pisa is under construction).'*<sup>10</sup>

In the University Library of Pisa may be found a manuscript entitled *Libro di compartimenti di giardini*, which originally belonged to Casabona. It provides us with much enlightening information, not only relating to the construction of the third garden of Pisa, but on the subject of botanical gardens generally.<sup>11</sup> In addition to numerous intricate designs for flower beds and gardening implements, some of the sketches describe the quadripartite layout which was adopted by most of the botanical gardens in Europe between the





III. 24.  
F. Paladini, Portrait of Giuseppe  
Casabona, Pisa, University, Dep. of  
Botany.

16th and 17th centuries.<sup>12</sup> In Pisa this design was even further elaborated to create a rectangular form divided into eight squares.

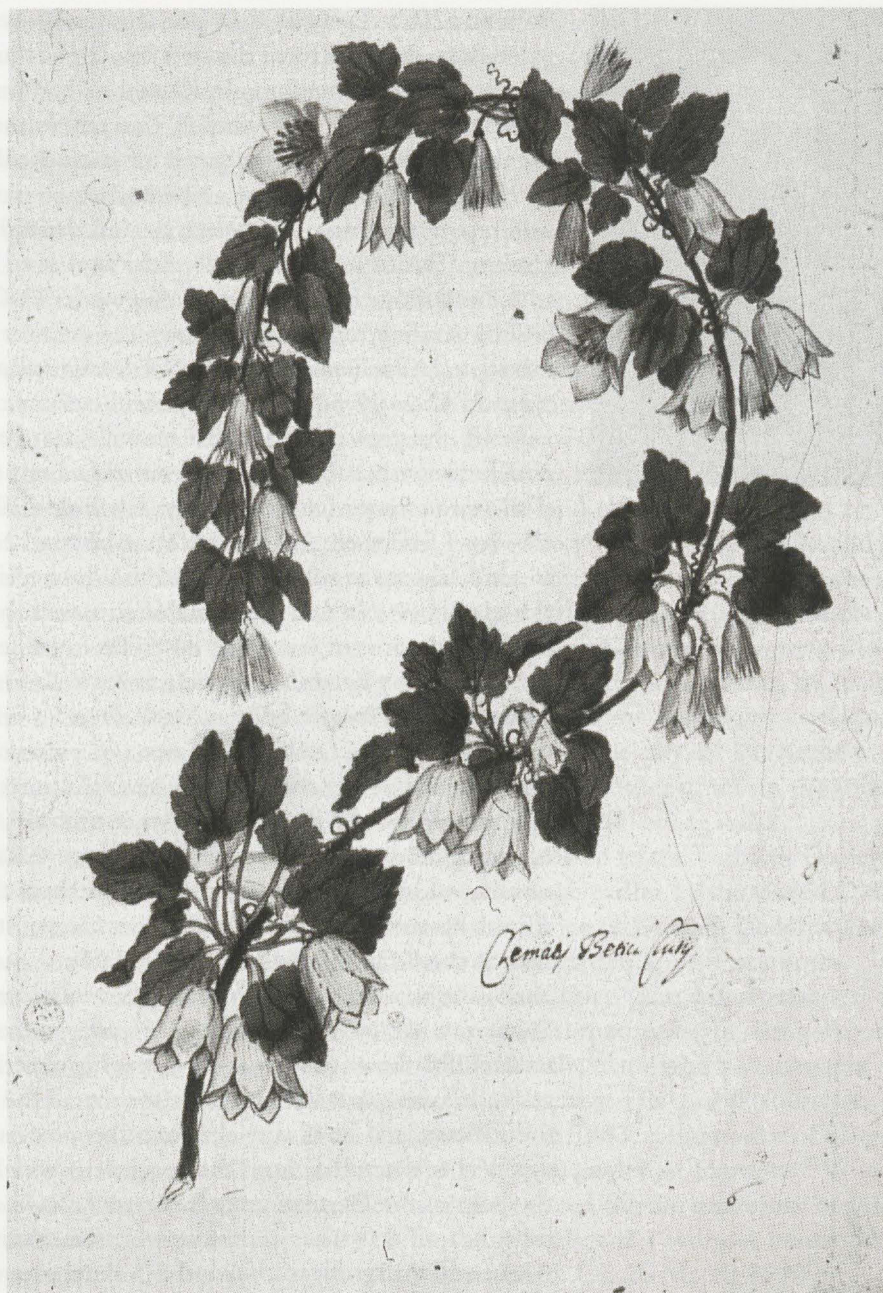
One scientific undertaking by Casabona had important repercussions not only for the history of botany in Tuscany in the late 16th century, but also for the development of the genre of scientific illustration. Between 1590 and 1591 the Flemish naturalist embarked on an extensive collecting expedition in Crete, and during his voyage he endeavored to keep his colleagues, including Clusius in Leiden, fully informed as to his progress. In a letter sent to Clusius from Florence on 25 August 1590, Casabona announces that he will be sending him '*una scatolina con 3 o 4 sorte de Croco Vernio de assai belli colori... e 2 Cipollini de una pianta de leucoio bulboso* (a box containing 3 or 4 types of *Croco Vernio* of very beautiful colours... and two bulbs of *leucoio bulboso*)'; he goes on to say that he will soon be leaving again for Crete, and concludes with assurances that '*et si andarò non mancharò a farne parte V.S. de quello che io troverà* (and when I go I will not fail to inform Your Lordship as to what I find there)'.<sup>13</sup> In fact, once he reached Crete Casabona continued to send Clusius regular news as to the discoveries which he was making on the island, so wild and inhospitable in aspect, but of utmost importance from a scientific point of view. He describes in his letters '*molte belle piante... non observate* (many beautiful plants... never before studied)' including the '*Chamipeuce, arboscello bellissima nelli dirupi..., bellissime sorte de narcisi..., vari ranuncoli differenti..., il Millefolio vero* (*Chamipeuce*, a beautiful shrub which grows on the rocky cliffs..., very beautiful sorts of narcissus..., various and different types of *Ranunculi*, the true milfoil)'.<sup>14</sup>

Notwithstanding the unfavourable season, Casabona managed to make a number of important discoveries, but perhaps the most significant event of all was his meeting with a young German painter, as he announces in a letter sent to the Grand Duke in January 1591, '*il quale ho accordato meco per tutto questo viaggio con le spese et honesto prezzo il quale tutte le piante me depinge in Carta reale al vivo et è assai valente in quella professione* ([whose] services I have enlisted for the entire voyage, paying his expenses and a reasonable remuneration, in order that he may paint for me all the plants from life, on large folio sheets, and he is very skillful in his profession)'. Casabona proposed in this way to assemble, from the specimens which he had collected and with the help of the German artist '*un'opera bellissima... con tutte le Sue descrittioni* (a most beautiful work... complete with the relative descriptions)'.<sup>15</sup>

And a truly magnificent work this indeed proved to be. Ms. 462, preserved in the University Library of Pisa, amply testifies to the diligent efforts of Casabona in Crete and to the remarkable talent of the anonymous artist who depicted the plants and flowers discovered on the island. Beginning in middle of the 16th century, botanists were in fact embarking on the study and the systematic classification, not only of those species already familiar to them, but also of the immense number of new plants which were being discovered as the boundaries of the known world were extended by exploration. Their work urgently required a precise nomenclature for each plant, as well as a clear and detailed scientific description accompanied by a graphic representation drawn, wherever possible, from life.

In fact, the birth of the naturalistic image would have been impossible without the close collaboration of the scientist and the artist, who assisted each other in the painstaking observation and accurate representation of various natural phenomena. Men of culture, but also apothecaries, physicians and other professional men were becoming increasingly aware of the crucial importance of the visual image as a tool of research, teaching and practice. A written description alone in a scientific text was often insufficient to aid in





the correct identification of a plant or animal, since certain essential details could only be clearly described on a visual level. Editors themselves began to demand with increasing frequency that the scientific works they published be accompanied by appropriate illustrations. Thus, a number of the most renowned scientists of the 16th and 17th centuries began to invite artists to collaborate closely with them in their studies.

Two important examples are offered by the figures of Ulisse Aldrovandi, professor at the University of Bologna, and Carolus Clusius of the Low Countries who managed, with great effort and at great expense to themselves, to collect together thousands of tempera paintings and to have engraved countless xylographic blocks, the former in order to illustrate his opus magnum, *Teatro di Natura*, and the latter for the books being published by the famous printer Plantin in Anvers and Leiden.<sup>16</sup>

But let us return to Casabona on the island of Crete. Among the many plants discovered by him and depicted by the German artist, two 'Sanamunda' are of particular interest, *S. clusii* portrayed while in flower and



*S. clusii altera* depicted while in leaf. This species, which corresponds to *Passerina hirsuta* classified by Linnaeus (today known as *Thymelaea hirsuta* (L.) Endl.) had been sent earlier to Clusius by Giacomo Antonio Cortuso, professor at Padova, and by Alfonso Pancio, director of the botanical garden of Ferrara.<sup>17</sup> Also interesting is a beautiful painting of 'Cretan milfoil' (*Achillea cretica* L.); this plant, typical of the Aegean, is mentioned by Casabona in a letter written to Clusius '*da Candia con fretto a di 3 de decembre 1590* (in great haste from Candia [the antique name for Crete] on this day 3 December 1590)'.<sup>18</sup> It also came to be cultivated in the 'area duodecima' of the botanical garden in Leiden, as Clusius wrote in his manuscript dating from 1594. We can further admire a branch of '*Clematis baetica clusii*' (*Clematis cirrhosa* L.) (Ill.25), a species which, although primarily to be found in the western part of the Mediterranean, was also known to occur, as the specific epithet given by Clusius indicates, on the isle of Crete. Its flowers have been drawn with the characteristic calyx-shaped bracteoles at the base, but also, curiously enough, with five petaloid-shaped sepals instead of the usual four. Finally we may note a drawing of the very interesting species '*Trifolium spinosum*' (*Fagonia cretica* L.) of the *Zygophyllaceae* family, which also appears cited in a list of the seeds gathered by Casabona in Crete and received by Clusius on 24 April 1591.<sup>19</sup> It was shortly after the return from his last journey to Crete that Casabona passed away, in 1595, after a long and extremely productive life. In a letter written to Clusius just before his death, he alludes to the immense profit which he had drawn from his expedition to Crete, recalling that he had seen '*molte cose contraria a moderni* (many things contrary to what is affirmed by modern scientists)'; Casabona also mentions the interesting fact that many of the names used by the 'villani (peasants)' were the same ones adopted by the authors of antiquity. The indefatigable naturalist concludes once again with a promise to send his colleague '*alcuni ritratti de pianti de Candia* (some drawings of the plants of Candia)'.<sup>20</sup> We do not know if Casabona was able to keep this promise before he died, but it is known that similar assurances made to Aldrovandi were not forgotten, as among the material in the vast collection belonging to this naturalist (now in the University Library of Bologna) may be found a number of copies of paintings by the German artist.<sup>21</sup> We therefore have reason to believe that among the vast amount of iconographic material housed in Leiden, or among the 'libri picti' belonging to Clusius recently discovered in Cracow,<sup>22</sup> we may find some paintings of the plants of Crete sent to the botanist of Leiden by the director of the botanical garden of Pisa.

The facsimiles which Casabona sent to his colleagues were executed after his voyage to Crete, upon his return to Tuscany. Contemporary documents confirm that he regularly made use of the skills of different artists to depict the species which he had brought back with him. From the manuscript *Agricoltura Sperimentale* (1595) by the Domenican friar Agostino del Riccio of Florence, we learn that Casabona called upon '*suo compatriotto fiamminigo Messer Daniello e gli dette ordine bello che dipingesse tutti i semplici e piante rare del Giardino in fogli imperiali ma le dipingesse quando erano fiorite acciocchè si conoscessero da quelli che erano in Pisa e da altri che venissero allo studio di detta città* (one of his compatriots, the Flemish Messer Daniello and gave him suitable orders, that he should paint all of the herbs and rare plants of the Garden on large folios, but that he should paint them when they were in flower, so that all the scholars presently in Pisa and those who in the future will come to study at the University might see and become acquainted with them)'.<sup>23</sup> The friar had apparently mistaken the nationality of the artist, since we can find in the 1626 inventory of the botanical garden collections confirmation of the





presence of the German artist Daniel Froeschl; the inventory attributes to him a certain '*Libro di mano di Daniel Froocel di diversi fiori, piante e uccelli* (a book by the hand of Daniel Froocel of various flowers, plants and birds)'. Other documents attest to the fact that this artist was working at the botanical garden of Pisa from the early months of 1594 up until 1596, and thus must have collaborated not only with Casabona, but also with his successor, the friar Francesco Malocchi.<sup>24</sup>

We may with some confidence hypothesize that Froeschl was the very same German artist whom Casabona had so fortuitously met on the island of Crete; given his proven talent as a painter of naturalistic themes, it seems quite plausible that Casabona would have subsequently invited him to work, first at the botanical garden in Pisa, and then for the Medici Guardaroba in Florence. It is known that Froeschl eventually left Tuscany to go to Prague, where he worked as an artist in the court of Rudolph II, and as curator of the emperor's vast collections.<sup>25</sup> A substantial corpus of works in tempera on botanical and zoological subjects, now conserved in the Biblioteca Universitaria of Pisa, may be attributed to Daniel Froeschl.<sup>26</sup> The wide range of subjects which attracted his attention provides eloquent testimony as to the 16th and 17th century naturalist's vision of the world as a '*gran libro della natura* (great book of nature)' which he was seeking to understand in all of its complexity. These works in fact include images of animals as well as plants, with particular attention being focused on exotic specimens from distant lands or teratological curiosities.

Particularly interesting both from a scientific and an artistic point of view is an illustration of *Fritillaria imperialis* (a plant originally from Constantinople) (Plate 10) which Pancio had sent to Clusius; the legend accompanying the painting reads:

'*Tusai, fior Persiano rosso o discolorito, con la testa abasso* (Tusai, a Persian flower either red or in darker colours, with lowered head).'

This flower was adopted and has ever since been considered as the emblem of the botanical garden of Pisa. Its likeness can be seen carved in bas-relief on the original entrance doors to the garden, presently conserved in the National Museum of San Matteo (Pisa) while they await their final disposition in the museum of the botanical garden, currently under construction (Ill. 26). Also worth noting is the painting of *Alcea pallida* or perhaps its subspecies *A. cretica*, whose seeds were collected on the island of Crete and sent by Casabona to Clusius in 1591.<sup>28</sup> On one folio may be found the images of three small therophytes which attest to Casabona's interest not only in the more rare and curious species, but also in the most humble annuals, perhaps hitherto unknown to him. This wholly objective scientific attitude was shared by Clusius who, in a letter written to the floriculturist Matteo Caccini of Florence, affirms with reference to the work *Ecphrasis* by Fabio Colonna, that this book '*non aggraderà molto alli floristi che si diletano solamente di belli fiori* (will not be appreciated by many of the floriculturists who delight only in beautiful flowers)'.<sup>29</sup> Among Froeschl's paintings of zoological subjects, of special interest are his works depicting birds, a theme in which he excelled although his interest also extended to fishes and other animals. In yet other paintings Froeschl portrays deer, bears, rodents, insects, and even a chameleon and the exotic armadillo. While a few of the strange creatures depicted represent the products of a fertile imagination, others reflect the artist's scientific interest in the teratological aspects often offered by the capriciousness of nature.



The production of paintings on naturalistic subjects did not cease in Pisa with the death of Casabona in 1595.<sup>30</sup> In the opening years of the 17th century Filippo Paladini of Pistoia, the artist to whom we owe our portrait of Clusius, was working at the botanical garden of Pisa where he had been invited by the Grand Duke expressly in order to '*dipingere piante* (depict plants)'.<sup>31</sup> In the 1626 inventory already cited above there appears an entry referring to a '*Libro di Piante in folio disegnat e dipinte al naturale* (folio book of plants drawn and painted from nature)' which can be identified as ms. 465, signed and dated by the artist and presently conserved in the Biblioteca Universitaria of Pisa. Gifted with a remarkable sensibility to natural phenomena, Paladini was able to portray with minute accuracy the unusual plants then being cultivated in the botanical garden. Particularly admirable is his rendition of *Cistus albidus* L., a plant native to the western part of the Mediterranean but at the time quite rare in Italy; the subtle chromatic shading in the painting reflects the great care with which the artist sought to reproduce the anthocyanic pigmentation of the flowers. Some seeds, identified by the same name, were sent from Crete by Casabona to Clusius, who received them on 24 April 1591.<sup>32</sup> It is known, however, that *Cistus albidus* does not grow on Crete and it appears evident that Casabona was using a specific name which Linnaeus subsequently assigned to another species altogether. Other plants represented by Paladini include *Scabiosa graminifolia* (Plate 11), which may typically be found growing on the calcareous cliffs of southern Europe, and *Bupleurum fruticosum* which the artist portrayed in fruit and in its natural habit, scrupulously delineating the growth circles evident on a transverse section of the main stem.

As director of the botanical garden of Pisa, Francesco Malocchi, like his predecessor Casabona, kept up a constant correspondence with many naturalists from various parts of Italy and Europe, including Carolus Clusius in Leiden. In two separate letters, dispatched in June and November of 1606, he sends Clusius assurances of both his own and the Grand Duke's eagerness to be of service, the latter in fact '*desidera che V.S. Ecc. ma si servi del suo giardino di Pisa* (desires that Your Excellency make use of his garden in Pisa)',<sup>33</sup> in order that the fruitful collaboration between the two botanical centers might continue. From another unedited manuscript we learn that Malocchi paid the Florentine chemist Marucelli for some colours sent '*per dipingere certe piante per mandare fuora a Carlo Clusio per servizio del giardino* (in order to paint certain plants to be sent abroad to Carolus Clusius for use in his botanical garden)'.<sup>34</sup> Thus, between Pisa and Leiden that exchange of images which represented one of the most distinctive aspects of the collaboration between men of science in the 16th and 17th centuries continued to flourish. It is also highly significant that in this period botanists and floriculturists were beginning to demand more precise and detailed information on the plants that were being cultivated in the various botanical gardens of Europe. This requisite explains the growing production of 'scientific' representations showing plants in the various phases of their life cycle, or particular parts of their structure, or examples of the different shades in which their flowers might appear. Yet another document informs us that the director of the botanical garden made arrangements in 1606 with the bookmaker Francesco Nencini for the binding of '*due libri reali Carlo Clusio di piante stampa del Plantino* (two folio volumes by Carolus Clusius of plants, published by Plantin)',<sup>35</sup> identifiable with the two volume *Exoticorum* housed in the library of the gallery which was annexed to the garden.<sup>36</sup>

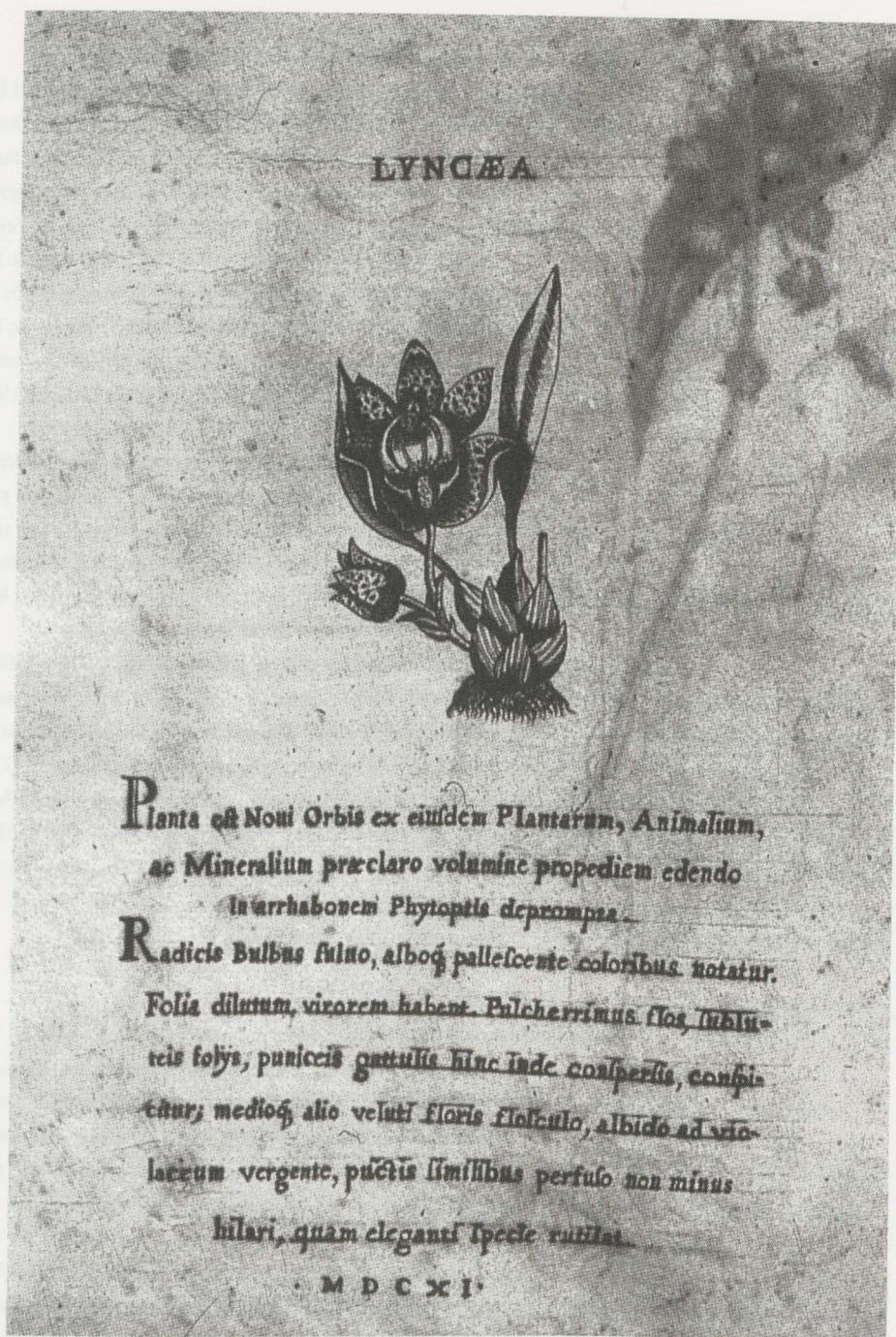
After this date the archives of Pisa contain no further documentation on the ties between Carolus Clusius and the botanical garden of Pisa. It is known,



however, that the by now elderly botanist was engaged in a frequent correspondence with the Florentine floriculturist Matteo Caccini, an exchange which began in September 1606 and which only came to an end with the death of Clusius in March 1609. From his letters we learn that Clusius' contacts with Malocchi in fact were not interrupted, for he made use of Caccini as an emissary to send letters and 'packets of seeds' to his colleague in Pisa.<sup>37</sup> Caccini possessed a fine garden in Florence attached to his house in Borgo Pinti, where he had acclimatized many rare plants. These he sold or exchanged for other plants, in this way carrying on a fruitful collaboration with herbalists and floriculturists from every part of Europe, including Emanuel Sweert of Amsterdam, the author of a famous *Florilegium*. The letters which Clusius sent to Caccini are filled with detailed descriptions and lists of plants; they thus furnish us with ample data concerning the flora of Tuscany at the beginning of the 17th century, and on the frequent exchange of images, seeds and bulbs which was carried on between the two botanists. The correspondence also demonstrates the lively interest which the two naturalists shared in the study, not only of the bulbous monocots, but of the geophytes in general.

In this period, in fact, flowers such as the tulip, the crown imperial, the iris, and the narcissus, as well as the anemone and various perennial ranunculi, became privileged subjects for study and experimentation. While horticulturists were seeking to obtain ever more unusual and stupendous varieties, the bulbs themselves were becoming the object of a flourishing commercial exchange, and the blooms a more and more widely popular subject for naturalistic representation, particularly in the very first still life paintings. It was from Caccini that Clusius received, with expressions of the greatest satisfaction, 'aliquot bulbos satis pusillos' of *Tulipa persica*, an image of the Arabian jasmine and, perhaps, a specimen of the famous *Quamoclit*.<sup>38</sup> In turn Clusius acknowledged his indebtedness to his Florentine colleague by dedicating to Caccini his very last scientific work, *Curae Posteriores*, which was published posthumously in Leiden by Plantin (1611). A particular interest in the bulbous species emerges from a manuscript volume now conserved in the Biblioteca Universitaria of Pisa. This is the work of Giovanni Rocchi, who briefly succeeded Francesco Malocchi, in 1613, as director of the botanical garden.<sup>39</sup> An amateur draughtsman but not an artist by profession, Rocchi sought to represent in pen and ink the various bulbous plants which formed the object of his studies. In his work we can see reflected the characteristic typology of the *Florilegi*, those elegant volumes so popular in the period which were composed of copper engravings representing for the most part flowers considered 'singulares'.<sup>40</sup> Although the technical quality of his work was not especially high, certain images such as those of the tulip and the fritillaria are not lacking in a certain pleasing spontaneity. In addition to familiar species amply described in the literature (cf. the 'narciso spagnolo del Clusio' in f. 13v) or those whose provenance was well known (cf. *Narcissus serotinus* gathered by Malocchi in Corsica, f. 19r), it is interesting to note that Rocchi's work includes drawings of plants still 'a nullo descriptae' such as the '*Narcissus iuncifolium*' (f. 24r), a fact which testifies to the highly scientific approach that dominated both the study of collections and bibliographic research. One of the paintings by Rocchi depicts a truly singular plant, *Lyncaea*, a rare orchid (*Stanhopea tigrina*) (Ill. 27) which was brought to Europe from the New World in that period. The significance of this image extends far beyond the mere fact of its documentary interest, however. The original painting upon which this image was based belonged to Prince Federico Cesi of Rome, a great patron of the arts and sciences and one of





the founders of the Accademia dei Lincei. This was the first scientific academy to emerge out of the Italian Renaissance and numbered Clusius among its associates.<sup>41</sup> The image of this curious flower was much admired by the great Tuscan scientist Galileo Galilei (himself an illustrious member of various Accademia) and it is quite possible that Galileo was responsible for making the image known in the scientific circles of Florence and Pisa.<sup>42</sup> The passage of this image of *Lyncea* from Rome to Pisa represents yet another affirmation of the central importance and intellectual vitality of the botanical garden of Pisa during the first decades of the 17th century, when the role which it played in the intellectual life of southern Europe was the counterpart of that played by Leiden in the north.



## NOTES

1. Pisa, State Archives, *Università*, 531, 5, f. 2.
2. The original portrait of Luca Ghini has been lost and has been substituted by a late copy of little artistic value. Research conducted in Pisa, Florence and Bologna in an attempt to recover a contemporary portrait of Ghini have thus far proved fruitless. On the subject of the portraits of the herbalists of Pisa, cf. Matteoli-Ugolini Lettieri, 1985.
3. On the history of the Botanical Garden of Pisa, cf. Fedeli 1917; Chiarugi 1953; Martinoli 1963; Garbari 1980; Tongiorgi Tomasi 1980; Sbrana 1982; Tomei-Del Prete 1983; Tongiorgi Tomasi 1983 a; Tongiorgi Tomasi 1983 b; Tongiorgi Tomasi 1984 a; Tongiorgi Tomasi 1984 b; Garbari-Raimondo 1986; Pagni 1986; Amadei 1987; Coaro 1987; Tomei-Coaro-Garbari 1987; Tongiorgi Tomasi 1987; Garbari 1988; Tongiorgi Tomasi 1988 a; Tongiorgi Tomasi 1988 b; Garbari 1990.
4. Pisa, State Archives, *Università*, 519, 1606, 8.
5. Clusius 1601, p.22: '*Italiam enim numquam vidi, licet ter profectionem tentarim, semel conscensa Massiliae navi, bis ad Alpes usque progressus: sed negotia perpetuo me revocarunt. Ideoque in posterum omnem adeundi Italiam cogitationem deposui.*' Even though he never set foot in Italy (cf. also Ginori Conti, 1939, p.37) Clusius knew the Italian language well and often included in his manuscripts the common names for the plants listed, a fact which adds to the great ethno-botanical value of his work.
6. We may recall, for example, Carlo Allioni (1728-1804), whose '*Arnica clusii*' (now *Doronicum clusii*) - a species common to the broken stony slopes and siliceous moraines of southern Europe - was painted by the artist Giovanni Peyroleri in the same period in which he was working at the herbarium of Turin (1733-1773). Cf. *Iconographia Taurinensis*, vol.IV, tav. 96 in Herb. TO.; Giuseppe Moretti (1782-1853); Michele Tenore (1780-1862); Giovanni Gussone (1787-1866); and, more recently, Adriano Fiori (1865-1950). Cf. also Ubrizsy Savoia 1978, p.67.
7. Cf. Moggi 1981.
8. Cf. Tosi 1989, p.19.
9. Battistini 1926, p.3.
10. Battistini 1927, p.200.
11. Tongiorgi Tomasi 1983 a; Tongiorgi Tomasi 1987.
12. Concerning the botanical garden of Leiden, cf. Karstens-Kleibrink 1982, p.20, 23, 25.
13. Battistini 1927, p.198. We may note here that Cosimo I of the Medici himself attempted to send to Crete Luigi Leoni, who had studied under Luca Ghini and who was director of the botanical garden of Pisa in 1558. Cf. Tosi 1989, p.13.
14. Battistini 1927, p.199.
15. Florence, State Archives, *Mediceo*, 813, f. 1. Cf. also Tongiorgi Tomasi 1984 b, p.61-84. According to Battistini 1927, p.95, the painter was chosen from among the soldiers of the guard of the governor of Crete, Girolamo Cappello.
16. The works by Aldrovandi published during his lifetime were printed by Francesco de Franceschi and by G. Battista Bellagamba; Clusius collaborated primarily with the printer Christophe Plantin of Anvers, with his successor Jan Moretus and, in Leiden, with Plantin's son-in-law, Revelingen.
17. Clusius 1601, 1, p.89.
18. Battistini 1927, p.200.
19. Cf. Clusius 1601, 6, p.242; Battistini 1927, p.202; Garbari 1986, p.30. It should be noted regarding *Fagonia cretica*, once retained to be 'casual' and then extinct in Crete, that its presence on the island was reconfirmed in 1982 (cf. Greuter et Al. 1984, p.295). Thus the plant is not a casual alien, but rather a species native to the island, where it has grown for centuries. It is also certain that *Trifolium spinosum* of Casabona is the source upon which C. Bauhin (1620, p.142) drew for his '*Trifolium spinosum creticum*', the polynymian basionym of Linnaeus' *Fagonia cretica*.
20. Battistini 1927, p.200. The activity of Casabona in Crete is mentioned in Clusius 1601, p.265 and XXV.



21. Tongiorgi Tomasi 1984 b, p.73.
22. Whitehead-Vliet-Stearn 1988, p.18-23.
23. Florence, National Library, ms. Targioni Tozzetti 52, 2, f. 75v.
24. Florence, State Archives, *Mediceo*, 860, f. 38.
25. Tongiorgi Tomasi 1988 b.
26. Pisa, University Library, mss. 513, 514.
27. Clusius 1601, 2, p.129; Ubrizsy 1977, p.148; Blunt 1971, p.75.
28. Clusius 1601, 4, p.25; Battistini 1927, p.201.
29. Ginori Conti 1939, p. 29 and 104.
30. Florence, National Library, ms. Targioni Tozzetti 52, 2, ff. 77r and 77v.
31. Tongiorgi Tomasi 1984a, p.104.
32. Battistini 1927, p.202.
33. De Toni 1911, p.31-32.
34. Pisa, State Archives, *Università*, 518, 1606, 69
35. Pisa, State Archives, *Università*, 518, 1606, 98.
36. Pisa, State Archives, *Università*, 513, f. 27. Cf. also Sbrana-Tongiorgi 1980, p.359 and Sbrana 1982.
37. Ginori Conti 1939. The prefect Malocchi is also cited on p.38, 48, 51, 81. On Caccini, see Masson, 1970.
38. Ginori Conti 1939, p.98-100; Clusius 1611, p.3, 5, 9.
39. Pisa, University Library, ms. 461. The cultivation and study of geophytes in the botanical garden of Pisa is a tradition which still continues today. Some plants of *Hyacinthaceae* have been investigated, such as the genus *Muscari* (Garbari-Greuter 1970; Garbari 1984), the name of which was used for the first time by Clusius himself, and species of the genus *Brimeura* (Garbari 1970), a name which recalls Marie de Brimeu 'amore et cultura florum in tempore Clusii incluta' (Salisbury, 1866). Marie de Brimeu was a patroness of Clusius, and the one who persuaded him to leave Vienna and come to Leiden (Ginori Conti 1939, p.11). One may identify in *Brimeura amethystina* the '*Hyacinthus minor hispanicus*', of which Clusius received in 1601 '*perpusilli quidam hyacinthi bulbi*' from I.V. Burdigala; he subsequently sent specimens of this plant to Matteo Caccini in Florence (cf. Clusius 1611, *Append. alt.*, p.11 and *Curae post.*, p.18; Ginori Conti 1939, p.62, 109, 111, 113).
40. Tongiorgi Tomasi 1983 b.
41. Ubrizsy Savoia 1978, p.54. The Academy of the Lincei counted among its founding members not only Cesi, Stelluti and De Filiis, but also the 24-year old Johannes van Heeck of Holland who, together with Cesi, was responsible for some paintings of various species of fungi, works of considerable artistic value which today may be found in the library of the Institut de France in Paris. In volume V there are annotations by van Heeck whose academic pseudonym was 'Monuro'. We may recall as well that in the *Theatrum Plantarum* by Cesi (mss. 968-970; 974-978) references may be found to various plants of Clusius (ms. 974, f. 41r; ms. 976, f. 64r and f. 80v), specifically two *Clematis* and a *Ceterach*. Cf. De Angelis 1986, p.33; Alessandrini et Al. 1986, p.321; P. Lanzara, personal communication, 3 March 1990.
42. Tongiorgi Tomasi 1983 b, p.202-204.

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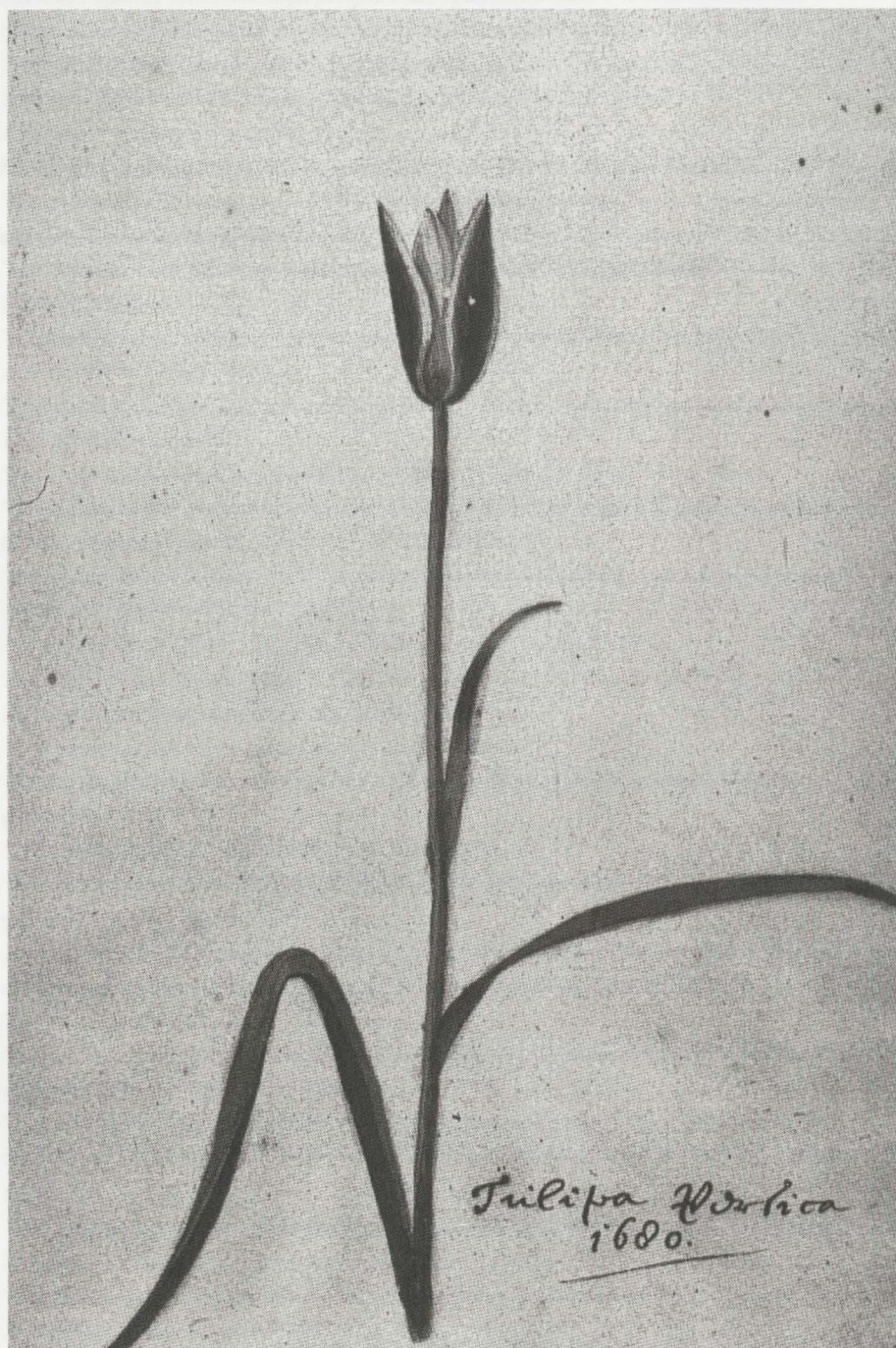


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Ill. 28.

*Tulipa Persica* (now *Tulipa Clusiana* DC) from Western Asia, introduced in cultivation in Europe in 1606. From a volume of drawings from the collection of Hendrik Jorisz d'Acquet (1632-1706). University Library, Amsterdam (photo J.W. Mugge).





## COMMERCIUM BOTANICUM: THE DIFFUSION OF PLANTS IN THE 16<sup>TH</sup> CENTURY

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Plants are the very basis of human civilization. Wherever man migrated, plants migrated with him, either as a cultivated plant or as a weed. In this way plants travelled the Pacific, with the army of Alexander from India to Greece, along the silk road in both directions between Europe and China, from Arabia to Spanish gardens, along Portuguese shipping routes between Brazil and India and with Spanish galleons between Mexico and the Philippines. However, plant introduction is a universal process and not a purely European affair as one might conclude from most of the literature on the subject.

Carolus Clusius was one of the first botanists to describe newly introduced plants in a scientific and systematic manner. Through a vast correspondence of some 2500 letters he procured plants and information on them from Asia, America and the Mediterranean area. He also had many plants illustrated for later publication. Many of these plants eventually found their way to the Hortus Botanicus of Leiden. But before Leiden, the Imperial gardens of the Hapsburgs in Vienna and Prague and the University gardens in Italy were the main centres of botanical and horticultural science in Europe.

The main source for horticultural novelties in Clusius' day were the gardens of the Ottoman Empire. De Busbecq, Quackelbeen and other Flemish ambassadors at the court of the Sultan frequently sent plants to their patrons. These plants were studied by Mattioli, Dodonaeus and Clusius. Once introduced, these plants revolutionized European gardens. Court artists such as Hoefnagel documented the plants in a scientific way. But the Ottoman plants also caused a new art-genre, the flower still-life, to develop. The paintings of Brueghel, Flegel, Savery, De Gheyn and Bosschaert show the enormous variety of bulbs then available. Plants acquired a place in seventeenth century culture which encompassed much more than horticulture and botany alone. Tulipomania was only one of the more spectacular aspects of the impact made by plants.

In the 18th century Herman Boerhaave, Professor of Medicine and Botany and Director of the Leiden Botanic Garden, referred to his own exchange of plants with colleagues as his *Commercium Botanicum*. From him I borrow the motto for this essay, and will try to demonstrate that it implies much more than the exchange of merchandise alone.

### THE RENAISSANCE OF BOTANY: SCIENTISTS, ARTISTS AND PLANTS

Until about 1550, the gardens of Europe above the Alps contained no more than six hundred, mainly indigenous, plant species. There were also some species from the Mediterranean area and a handful from the Levant and the tropics of America and Asia. From 1550 to 1620 the aspect of European gardens was changed drastically by the new introductions from Turkey.<sup>1</sup>

Though many unknown species of plants appeared, the real revelation was the large amount of varieties which had been selected and developed by Turkish gardeners. Further development in Europe resulted in a kaleidoscopic array of tulips, hyacinths, buttercups, anemones and carnations, which were to dominate the spring aspect of Western European gardens in the seventeenth century. The Turkish newcomers first appeared in Austria, but soon spread over all of Europe.



Charles de l'Escluse (Carolus Clusius), botanist and medical doctor, travelled extensively in Spain, Portugal, France, Austria and Hungary. After practising medicine at the court in Vienna, he left for Frankfurt and, well over seventy, supervised the first development of the Hortus of Leiden. The Dutch flowering bulb industry developed from the Leiden plant collections of the 16th century into a branch of commerce with an export value of well over a billion Dutch guilders per year.

Ogier Ghiselin de Busbecq (1522-1591) travelled as ambassador (1554-1562) for the Habsburg Emperor Ferdinand I to Sultan Suleyman II in Istanbul,<sup>2</sup> together with the botanist/doctor Willem Quackelbeen (1527 Kortrijk-1561 Istanbul) and the Danish artist Melchior Lorich (1527-ca. 1583). Plants from this expedition arrived at Vienna and Prague where they were grown and studied by Clusius and Mattioli. Quackelbeen sent a letter dated 26 July 1557 to Mattioli in which he discussed 28 plants.<sup>3</sup> Quackelbeen died of the plague on May 13th, 1561 on one of the islands in the Sea of Marmara.<sup>4</sup>

At the courts of the Emperor in Vienna and Prague several Dutch doctor/botanists practised and Dutch artists were among the first to portray the new acquisitions. Dutch nationality however should not be overemphasised, since humanistic culture was truly European and transcended national divisions in the world of renaissance scientists and artists. More often than not, religion was the greater barrier. Nonetheless, artists from the Low Countries played a relatively important part in the depiction of the newly introduced plants. Ferdinand I (1503-1564) succeeded his brother Charles V in 1556 as Emperor of the Holy Roman Empire, and Pierandrea Mattioli became his physician from 1557 till 1562. It was to him that Willem Quackelbeen wrote about the Turkish plants, which were collected during the missions of De Busbecq.<sup>5</sup>

Conrad Gessner (1516-1565) dedicated his book *De Animalia* to Ferdinand I. This resulted in a meeting between Ferdinand and Gessner in 1559 in Augsburg, after which Ferdinand invited Gessner to work at the court. The first illustration of a tulip appeared in Gessner's *Annotationes in Dioscorides* (1561). Gessner's *De Hortis Germanicae* contains a long list of plants from the garden of the Antwerp apothecary Peter Coudenberg (ca. 1520-ca. 1594).<sup>6</sup> In 1558 Coudenberg sent a list of some 400 plants in his garden to Gessner. Coudenberg received plants from several people, among whom Clusius. The latter was instrumental in the diffusion of Turkish plants.<sup>7</sup> Clusius arrived in Vienna in 1573 as Superintendent of the imperial gardens of Maximilian II (1527-1576, Emperor in 1564). He continued under Rudolph II (1552-1612, Emperor in 1576) till 1588. In 1593 he was appointed Director of the Hortus in Leiden, which had been founded in 1590.

From 1563 till 1565 Clusius travelled through Spain and Portugal as mentor of Jacobus Fugger from Augsburg. The Fuggers were influential southern German bankers and important patrons of art as well as of horticulture. In Augsburg Clusius also met Leonard Rauwolff; the Rauwolff-herbarium contains annotations by Clusius. In the book that Clusius wrote on his Iberian travels, his preliminary notes on Turkish plants are added as an appendix. In De Busbecq's footsteps, later ambassadors also sent plants to Vienna,<sup>8</sup> and Clusius distributed this exotic splendour to gardens in cities all over Europe such as Mechelen, Antwerp, Ferrara, London, Derby, Neurenberg, Jena, Padua and Aranjuez. Only in Leiden, however, was the cultivation of these introductions permanently successful. The diffusion of the bulbs outside Leiden was not always effected with Clusius' wholehearted consent. Repeatedly plants disappeared from the Hortus without his authorisation. His friend Marie de Brimeu once found her garden completely uprooted.



Plants also arrived from other parts of the Ottoman Empire. The son of Dirck Outgaertsz. Cluyt, Clusius' *Hortulanus*, collected plants in Algeria. Clusius received also a consignment of plants from Crete via Italy for the Leiden Hortus.

From 1575 till 1578 Rembert Dodoens (Dodonaeus) was active as physician and botanist at the Imperial court in Vienna. He was in close contact with his colleague Clusius and also published on the Turkish introductions. In 1582 Dodoens became Professor of Medicine in Leiden.

It is not clear whether Emanuel Sweerts was actually a gardener of Rudolph II and Matthias or that he called himself so because he provided bulbs and plants for the Imperial gardens. Sweerts concentrated his commercial activities in Amsterdam and Frankfurt. He received plants from Clusius and published his *Florilegium* in 1612, with a recommendation by the Emperor.<sup>9</sup>

Joris Hoefnagel (1542-1600) was painter from 1575 at the court of Maximilian and Rudolph. He mainly illustrated manuscripts. One of the earliest drawings of a tulip is by him.<sup>10</sup> An artist who never worked at the court but sold work to Rudolph, was Jacques the Gheyn II; he also portrayed many of the new Turkish plants and also made a portrait of Clusius.<sup>11</sup> Roelant Saverij, who painted a large flower-piece with Crown imperial (now in the Centraal Museum at Utrecht), worked at the Imperial court from 1604 till 1613, later for Matthias (1557-1619), who succeeded his brother Rudolph in 1612.

#### THE TULIP

The botanical background of the cultivated tulip, *Tulipa gesneriana*, is not entirely clear. The tulip as introduced from Turkey in the sixteenth century certainly was not a wild species (*Ill.*28). In the Ottoman Empire the tulip was a highly esteemed garden plant. It symbolized the court of the Sultan and was omnipresent in Ottoman culture. Even today a stylized tulip figures on the public waste-baskets in Istanbul.

In Greek, Roman and Byzantine times in Turkey no tulips were illustrated or described. With the arrival of the Turkish Seljuks in Anatolia (ca. 1071), the tulip appeared in illustrations, ceiling ornaments and tiles in the palace at Konya from the twelfth century. The poet and mystic Mevlana Celaleddini Rumi called the tulip in the thirteenth century 'the saddest of all smiles'. According to Hoog *Tulipa schrenkii* from the Crimea played an important part in the development of early flowering small tulip varieties such as the red 'Duc van Tol'.<sup>12</sup> There are many colour forms of *T. schrenkii*: white, red, purple with or without a black or yellow center, etc. The Turks called these tulips *Kefe Lale*, after the harbour in the Eastern Crimea, Kaffa, the present Feodosiya. Thus the origin of the tulip is probably to be found outside the present Turkey. Most probably all European and Turkish tulips are not wild species but camp-followers.<sup>13</sup> They came from Central-Asia mainly via the trade-routes of wheat. It is interesting that many real wild species of *Tulipa* occur in the Pamir-Mountains. Nowadays *Tulipa undulatifolia* is a typical weed of cornfields in Turkey. In Europe as well, cultivated tulips have run wild and behave like wild species, especially in the Western Alps.<sup>14</sup> In The Netherlands *Tulipa sylvestris* has been naturalized. In the sixteenth century there were various other types of tulips besides the single-flowered forms. In 1570 Mattioli depicted a tulip-plant with several flowers, which he knew from Venice.

Clusius received tulip bulbs from the Antwerp tradesman Joris Reye, as the latter did not know how to grow them. The shifting of the Levantine trade in the second half of the sixteenth century from Genova and Venice to more



western harbours must have been a major factor in the distribution of tulips. In any case, De Busbecq was not the only one who brought tulips from Turkey; he probably was not involved in its introduction at all.

The import of bulbs and seed in Europe resulted in a wide variety of tulips. Through selection by growers around 1630 a Western-European assortment emerged which clearly differed from the Turkish range of varieties.

The tulips that were popular in Turkey in the early eighteenth century were small-flowered with long petals narrowing to an elongated point. They belong to *T. acuminata*, a species which was not in cultivation in Europe then. Some 2000 different forms of it were known, usually with Persian names.

There was a committee, the *Ser Sekufeciyan-i Hassa*, which judged tulips. For that purpose a single tulip flower was put in a vase or *laledan*. The beauty of a single flower in a vase is hardly ever recognized by Dutch flower painters.<sup>15</sup> The flower was kept upright by means of an eye at the end of a stake, such stakes have also been drawn by Crispijn van de Passe.<sup>16</sup>

In 1652 Lutma, a silversmith, made a gilt silver cup in the shape of a tulip. This cup had been commissioned by burgomaster Nicolaas Tulp (1593–1674) as a gift to the *Collegium Chirurgicum* at the occasion of his resignation as Professor Anatomiae. Tulp was the author of the first Amsterdam pharmacopoeia (1635). His original name was Claes Pietersz (Nicolaas Petraeus) and as such he obtained the doctor's degree in medicine in 1614 in Leiden. Later on he established himself as a physician in Amsterdam at the Keizersgracht near the Westermarkt. The gable-stone of his house inspired his later name and his coat of arms.<sup>17</sup> By the way, the town-patroness of Amsterdam on the pediment on the back of the town hall on the Dam is offered tulips by Asia, and these also are long past the bud-stage.<sup>18</sup>

According to the Turkish traveller Evliya Celebi, Istanbul had eighty shops for flowering bulbs in 1630,<sup>19</sup> supplied by three hundred growers. The amateurs in Turkey were also interested in European tulips. These were imported and used in the development of new Turkish varieties.<sup>20</sup> Dutch tulips were especially cherished, *Lulu-Ezrak* (the Blue Pearl) being the most precious of these.

The cultivation of tulips reached its peak in the *Lale Devri*, the tulip era, under the reign of Sultan Ahmed III and his son-in-law, grand vizir Damat Ibrahim pasja (1700–1730). Ahmed was sacked because of his extremely expensive tulip feasts, with tables hundreds of meters long set up in the garden with tulip vases displayed on them, lit with lamps and laden with delicious food. Tortoises strolled through the garden with candles on their backs.

There was music and even women were taking part in the festivities.

The true reason for the Janitsar coup against the Sultan probably was his too prominent interest in the West. For instance, the *Aphorismen* of the Leiden Professor Herman Boerhaave (1668–1738) were translated into Turkish as a medical reference work.

Early Dutch flower still-lives feature many early tulips that were no longer grown in the days of the tulipomania. Such early tulips cannot easily be identified.<sup>21</sup> We can learn much about the history of the tulip from the analysis of plants on canvas. Tulips on paintings can 'propagate' themselves through the copying hand of painters. They may show a consistency in shape and colour that even in vegetatively reproduced real plants would be amazing. This visual stability of vegetatively reproduced 'broken', 'fine' or 'feathered' tulips, first described in 1601 and the principal dish in the seventeenth century, is deceptive. The degree to which a tulip would show feathering is unpredictable. It depends on the degree of infection by the virus-disease which causes such feathering.



## TULIPOMANIA

Tulips in The Netherlands became more than just popular garden plants. Though they had been status symbols for a long time, they acquired a new dimension when a lively trade in tulips developed. From 1634 onwards this trade became extravagant. No longer were the bulbs themselves the desired commodity, but the titles of ownership. Between the sale of the bulbs in the bulb fields (the 'green auction'), and the delivery of the lifted bulbs in June, several months elapsed during which the price of the papers of ownership could double many times. Fortunes were made and lost in the trade in 'paper' bulbs, which seller nor buyer had ever seen. The trade in prime quality varieties such as 'Semper Augustus' soared to thousands of guilders for a single bulb (the price was given in guilders per 'aas', which was 1/20 gram), but also less well-to-do people could speculate in common varieties ('trash') such as 'Yellow and Red of Leiden'. The stockjobbery reached epidemic proportions in which payment was settled not only with money but also with houses and property. In January and February 1637 the painter Jan van Goyen (1596-1656) bought parcels of bulbs from burgomaster Albert Claesz van Ravensteyn for 900 guilders plus his painting of Judas, and a canvas by Ruysdael. When delivered in the summer the actual value of the bulbs was only a fraction of the original purchase money, but Van Ravensteyn demanded full settlement of the contract. Only the Judas was delivered by Van Goyen and he died a poor man. In February 1637 prices started to crash. Although on February 5th prices in Alkmaar prices still soared to dizzying heights (usually these high values are noted in the tulip books),<sup>22</sup> on February 3rd the value of shares had already slumped. Prices dropped spectacularly, contracts were bought for a ransom 10% of the nominal value; in 1638 this became 3.5%. The bulb growers convened meetings to try and reorganize the trade. In April 1637 the Court of Holland nullified all contracts from November 1636 onwards.

The 'wind trade' also generated a literature of satirical poems, which became so popular that they were reprinted during the stockjobbery in 1720. Cartoons accompanied this printed matter in which Erasmus' *Stultitiae Laus* and Simon Stevin's sailing-wagon on the beach were transformed into Flora's Foolscap and Flora's Fools-wagon. Tulip bulbs remained also after 1638 an important commodity in which good profit has been made and still is made today.

## OTHER PLANTS FROM CLUSIUS' TIME

*Fritillaria imperialis*, the Crown imperial. Around 1580 the Crown imperial arrived in The Netherlands. Dodoens wrote:

'Omtrent 't beginsel vanden April van't jaer 1576 zijn dese Lelien in des Keyzers' Maximilianus ende ander groote heerens hoven in Oostenrijck gepluct ende bloeyende getoont geweest.'

('In the beginning of April 1576 these lilies were gathered and shown in flower in the gardens of Emperor Maximilian and other great gentlemen in Austria').<sup>23</sup>

The Crown imperial occurs wild in South-East Turkey and further eastwards. The Turks certainly grew it as a garden plant. Mattioli, Dodoens and Clusius named it *Corona Imperialis*. These gentlemen were all employed by the Imperial court in Vienna and in Prague, and it is plausible that the Crown imperial was adopted as an imperial flower and therefore named as such. In seventeenth century flower pieces it often takes the central topposi-



Ill. 29.

N. Overmeer (attributed to), *Molucella Sijriaca* 1683 (now: *Molucella laevis* L.) from Western Asia, introduced into cultivation in Europe in 1550. From a volume of drawings from the collection of Hendrik Jorisz d'Acquet (1632-1706). University Library, Amsterdam, (photo J.W. Mugge).



tion in the composition, often next to the Madonna lily, *Lilium candidum*. Schneider has discussed the adoption of the crown imperial as a political-imperial symbol in connection with the victory of catholic Rudolph over protestant Donauwörth in 1607.<sup>24</sup> However, Georg Flegel used it already in a flower piece in 1592.

*Hyacinthus orientalis*, the hyacinth, reached Vienna in 1562 (Plate 15). In Turkey it was already an important garden plant. In 1593 Sultan Murad III gave the order to collect 50.000 blue and 50.000 white hyacinths from the wild for his garden. A Turkish illustrated manuscript on hyacinths (*mussavver sumbulname*, 1737) shows many Turkish names for hyacinths, which then prove to be translations from the Dutch.<sup>25</sup>

Narcissi were also valued in Turkey as garden plants. An illustrated manuscript from 1667 on flowers (*sukufename-i mussavver*),<sup>26</sup> shows 21 different kinds of narcissi. All narcissi of a species were drawn following the same



design, so that the often minimal differences between the cultivars could be rendered precisely. It is quite striking that the illustrated narcissi belong to the species *Narcissus tazetta*, *N. jonquilla* and *N. poeticus*. These species do not occur in Turkey, but originate from the Western Mediterranean basin. The Turks probably introduced these plants from Moorish gardens or even from Western Europe. However, *N. tazetta* was already known in classical Crete and was also grown in Moghul gardens. It reached Japan at an early date, possibly via the silk road. The species naturalized in Japan and is known there as *suisen*.

*Iris susiana* reached Vienna in 1573 (Plate 12). Most likely all recent cultivated specimens of this species are vegetative offspring of this introduction, because it forms no seeds. All plants suffer from a virus disease.

*Iris susiana* is not known in the wild nowadays. Species in the wild in the Libanon and Syria, resembling it very closely are *Iris sofarana* and *Iris basaltica*. All species of this group are very rare and it is possible that the truly wild *Iris susiana* does not exist any longer. Another possibility, however, is that *Iris susiana* is no more than a garden variety developed by the Turks. The name *susiana* has been associated with the Iranian city Susa, but in all probability it is no more than the Arabian word for Iris: *susan*.<sup>27</sup>

*Moluccella laevis* is an annual plant, distantly related to Dead-nettles (III.29). The name *Moluccella* reflects a supposed origin from the Moluccas but incorrectly so. The plant is also known as 'bells of Ireland' although Ireland is not the homeland of the species either: it occurs in Turkey. The Venetian apothecary Sequino Martinello collected it in 1550 in the Levant. Matthias de l'Obel found *Moluccella* in 1560 in Martinello's collection and distributed the seed in Montpellier, Narbonne, Antwerp and London. In 1565 Mattioli the plant in the imperial garden in Prague. The first published record for The Netherlands dates from 1610 at Middelburg, but Clusius had the species in his planting scheme for the Leiden Hortus in 1594. Ever since, *Moluccella* has been in cultivation by amateurs as an exotic plant on a small scale. Around 1975 it finally broke through at the flower auction of Aalsmeer. First as a dried flower and later as a cut flower, because of the large, decorative green calyces. In 1986 five million sprays of *Moluccella* were sold.<sup>28</sup>

As in the days of Clusius, plants from Turkey are still imported in The Netherlands, especially bulbous plants. The Netherlands are in fact Turkey's most important client. From Holland most plants are exported again and distributed all over the world. The Turkish government yearly establishes export quota for each kind of plant and every exporter. The export data for 1987 were: snowflakes, 35 million; winteraconite, 11.4 million; Loddon lily 6.8 million; anemone, 5.6 million; cyclamen, 1.2 million.

Clusius' part in the introduction of plants from the Ottoman empire has been emphasized, but his curiosity for things exotic was not restricted to that area. When Clusius heard the news of an expedition being fitted out for Indonesia, he hastened to draft instructions for the captain with a list of desired natural history specimens and how to collect them. The resulting collections were exhibited in the *Ambulacrum* of the Leiden Hortus, making it into the first public natural history museum in the Netherlands.<sup>29</sup>

When Francis Drake returned from his circumnavigation of the globe, Clusius sailed to Britain to interview him and to beg for a share in his natural history specimens. Clusius' part in the popularization of plants such as potato and tobacco needs no further explanation here, but he introduced many American plants.<sup>30</sup>

One species discussed by Clusius in his discours on foreign plants prompted my final remark. It is shown in his figure III and named *Mucuna*.<sup>31</sup> The



rather crude woodcut print defies a definitive identification, but the same or similar beans arrived at Prague where Joris Hoefnagel used them for an illumination.<sup>32</sup> This beautiful watercolour shows the sea-bean, *Mucuna sloanei* (identified by Dr Charles R. Gunn), a tropical vine with floating seeds that must have drifted ashore in Europe from Florida on the Gulf Stream. In this case Nature took care of the dispersal of these seeds and curious and inquisitive man only noted it and singled it out as an exotic event.

## NOTES

1. Kraus, G.K.M., *Der Botanische Garten der Universität Halle*, Heft 2, Leipzig 1893; F.A. Stafleu, 'Botanical gardens before 1818', *Boissiera* XIV (1969) p.31-46. For the use of Turkish plants in Dutch gardens see: J., van der Groen, *Den Nederlandtsen Hovenier*, Amsterdam 1669, Reprinted (with an introduction by C.S. Oldenburger-Ebbers and a plant-list by D.O. Wijnands) Utrecht 1988; Pieter van Koudenhooft, *Verzameling van Bloemen naar de Natuur geteekend*, in the Lindley Library, Royal Horticultural Society, Londen; *Codex Hortus Regius Honselaerdicensis*, in the Bibliotheca Nazionale Firenze; D.O. Wijnands, 'Hortus auriaci: the gardens of Orange and their place in late 17th-century botany and horticulture', in: J.D. Hunt and E. de Jong (eds.), *The Anglo-Dutch garden in the age of William and Mary*, *Journal of Garden History* VII nrs. 2 & 3 (1988) p.288-289; J.H. Harvey, 'Turkey as a source of garden plants', *The Journal of the Garden History Society* IV (1976) p.21.
2. Huussen, A.H., *Het leven van Ogier Ghislain de Busbecq*, Leiden 1949; O.G. de Busbecq, *Omnia quae extant*, Leiden 1633; On Quackelbeen see: J. Bethune, 'Un botaniste courtraisien, Guillaume Quackelbeen', *Bulletin du Cercle historique et archeologique de Courtrai*, II, 3 (1904/05) p.112-127; J.E. Opsomer, 'Un botaniste trop peu connu Willem Quackelbeen (1527-1561)', *Bulletin Société Royale Botanique Belge*, LXXXIII (1961) p.113-130; J.E. Opsomer, 'Notes complémentaires sur les plantes envoyées de Turquie en 1557 par le botaniste Quackelbeen', *Bulletin Société Royale Botanique Belge*, CIII (1970) p.5-10.
3. Elaut, L., 'De briefwisseling tussen Willem Quackelbeen en Pierandrea Mattioli', *Biologisch Jaarboek Dodonaea* XXII (1955) p.50-74; *Petri Andreae Matthioli Senensis Medici Epistolarum Libri Quinque*, Prague 1561, Lib. III, p.171-183.  
The plants mentioned were:  
Calamus vulgaris or Acorus: *Acorus calamus* L.; Ruta sylvestris Harmel: *Peganum harmala* L.; Elissoth of Herba gladiolus: *Gladiolus* sp.; Chesmezen: *Cassia absus* L.; Castanea equina: *Aesculus hippocastanum* L.; Cardamomum: *Elettaria cardamomum* (L.) Maton, *E.major* Sm.; *Aframomum melegueta* K. Schum.; Carnabadium or Cuminum aethiopicum: *Cuminum* sp.; Doronicum: *Aconitum napellus* L.; Coulcoul en Hebulben: *Staphylea pinnata* L.; Caphura viva: *Cinnamomum camphora* (L.) J.S. Presl.; Juncus odoratus: *Cymbopogon schoenanthus* (L.) Spreng.; Maslach: *Cannabis sativa* L.; Nux Farfalach: *Strychnos nux-vomica* L.; Nux ex Aegypto: *Hyphaene thebaica* (L.) Mart.; Sadeth or Dembeheuna: *Claucium corniculatum* (L.) Rudolph.; Cassabousserire: *Acorus calamus* L.; Zedoaria indica: *Zingiber officinale* Rosc.; Behen album: *Pastinaca sativa* L.; Behen rubrum: *Centranthus rubrum* (L.) DC. or a red form of *Daucus carota* L.; Bdelium: *Commiphora roxburghii* (Stocks.) Engl.; Hermodactylus: *Hermodactylus tuberosus* (L.) Miller.; Zaccharum Alhassar: *Tamarix mannifera* (Ehrenb.) Bunge; 'manna' is exuded by insects *Trabutina mannifera* and *Najacoccus serpentinus*. *Tamarix mannifera* occurs in in Egypt, Israel and Jordan; see Baum, B.R., *The genus Tamarix*, Jerusalem, 1972.; Argadilla, Pseudocassia, Cassia lignea: *Cinnamomum aromaticum* Nees.; Herba tinctoria: *Lawsonia inermis* L.; Platanus orientalis: *Platanus orientalis* L.; Narcisse de Constantinopel: *Pancratium maritimum* L.
4. He was buried in the Catholic graveyard in Pera, the present Beyoglu. This graveyard was cleared in 1864 and the tombstone transferred to the Catholic graveyard in Feriköy where it still can be seen. Babinger, F., 'Hans Dernschwam's Tagebuch einer Reise nach



- Konstantinopel und Klein-Asien'. *Studien zur Fugger-Geschichte*, Heft 7 (1923) München-Leipzig and A.H. de Groot, 'Old Dutch graves at Istanbul', *Archivum Ottomanicum* V, 6(1973).
5. Pierandrea Mattioli (1500-1577, died of the plague), *Commentarii in sex libros Pedacii Dioscoridis Anazarbei de medica materia, iam denuo ab ipso autore recogniti, et locis plus mille aucti*, Venice, 1565, (ed. prim. 1544). This book mentions plants sent from Turkey by Ogier de Busbecq and by Quackelbeen, such as p.452, *Peganum harmala*, a woodcut after a drawing (by Melchior Lorich), sent by Quackelbeen. The woodblocks still exist, see *The magnificent botanical library of the Stiftung für Botanik, Vaduz, Liechtenstein*, 3 vols., London (1976) nr. 511 (catalogue). Mattioli is honoured by a small alpine plant that arrived from Turkey in Vienna in 1584: *Cortusa matthioli*. The genus *Matthiola* (stocks) is also named after him.
  6. Conrad Gessner (1516-1565, died of the plague), *Valerii Cordii Simesusii annotationes in Pedacii Dioscorides Anazerbei de materia medica libros V...Item Conradi Gesneri De Hortis Germaniae...cum descriptione Tulipae Turcarum...* Strasbourg 1561.
  7. Hunger, F.W.T., *Charles de l'Ecluse (Carolus Clusius), Nederlandsch Kruidkundige*, Den Haag 1927; W. van Dijk, *A treatise on tulips by Carolus Clusius*, Haarlem, 1951; J. Janse, *In geuren en kleuren*, Utrecht 1966; C. Clusius, *Rariorum aliquot stirpium per hispanias observatum historia, libtis duobus expressa: ad Maximilianum II, Imperatorem*, Antwerpen 1576, The Turkish introductions are described in an appendix. The copy of this work in the Leiden University Library (UB Leiden 755 A3) is full of Clusius' own remarks.
  8. In Vienna Clusius acquired plants from Turkey from David Ungnad von Sonneck, Philibert van Brussel, Stephan von Hansen and Karel Krym van Eeckebeke.
  9. Kuijlen, J., C.S. Oldenburger-Ebbers en D.O. Wijnands, *Paradisus Batavus*, PUDOC, Wageningen 1983, no. 118: *The magnificent botanical library of the Stiftung für Botanik, Vaduz, Liechtenstein*, 3 vols., London 1976, no. 727.
  10. Joris Hoefnagel, Illuminated book of prayers for Albrecht V; see also W. Blunt, *The art of botanical illustration*, London 1971, plate 12a: Joris Hoefnagel, flower piece with insects, 1594; F. Koreny, *Albrecht Dürer und die Tier- und Pflanzenstudien der Renaissance*, München 1985, plate 9; Hoefnagel's meticulous way of rendering plants and animals has been called 'scientific naturalism' (see N. Schneider, 'Vom Klostergarten zur Tulpenmanie' in: *Stilleben in Europa*, Munster 1979, p.301).
  11. Jacques de Gheyn II (1565-1629), Album with 24 watercolours, 1600-1604, 234 x 182 mm. Fondation Custodia Parijs. See also the contribution by Florence Hopper in this volume.
  12. Hoog, M.H., *On the origin of Tulipa, Lilies and other Liliaceae*, London 1973.
  13. Marais, W., 'Notes on Tulipa', *Kew Bulletin* XXXV (1980) p.257-259; W. Marais, 'Tulipa' in: P.H. Davis (ed.), *Flora of Turkey*, Vol. 8, Edinburgh 1984.
  14. Stork, A.L., *Tulipes sauvages et cultivées*, Geneva 1984.
  15. Baytop, T., 'Osmanli lalesi', *Lale V* (1988) p.2-8, plates 7 & 8. There are a few paintings with solitary tulips.
  16. Balthasar van der Ast: De tulp Zomerschoon, see Schneider, N., 'Vom Klostergarten zur Tulpenmanie' in: *Stilleben in Europa*, Münster 1979, p.301, plate 159; Dirck van Deelen, Stilleven, 1637, Museum Boymans-van Beuningen, Rotterdam, the tulip on this painting is in a Chinese vase.
  17. A portrait by Govert Flinck (1615-1660) of Tulp's daughter Margaretha at her marriage with Jan Six in 1655 shows a tulip as well. For its meaning see: E. de Jongh, *Portretten van echt en trouw*, Haarlem/Zwolle 1986; The portrait of Margaretha Tulp is in the Staatliche Kunstsammlungen Kassel. The tulip cup by Lutma (collection Six, Amsterdam) is discussed in A. von Grävenitz, *Das niederländische Ohrmuschel Ornament*, thesis, Bamberg 1973.
  18. Pediment by Artus Quellinus on the back facade of the Town Hall, see K. Fremantle, *The Baroque Town Hall of Amsterdam*, Utrecht 1959.
  19. Evliya Celebi, *Seyahatname*, Istanbul, 1969; A. Baker, 'The cult of the tulip in Turkey',



- Jour. Roy. Hort. Soc.* LVI (1937), p.234; H. Graf zu Solms-Laubach, *Die Geschichte der Tulpen*, Leipzig 1899.
20. A.S. Unver, 'The history of tulips in Turkey', *The Daffodil and Tulip year book*, 1969 XXXIV, London 1968, p.46-53; H. von Diez, *Tulpen- und Narcissen-Bau in der Türkei aus dem Türkischen des Scheich Muhammed Lalezari*, Halle/Berlijn 1815; J. McGrail, 'A tale of tulips', *The Garden* CXII (1987) p.209-212.  
The following Turkish manuscripts give an impression of ornamentals in Turkey: Ahmed Kamil Belgradi, *Risale esami-i lale*, 1750; Ali Emiri Efendi-Library, no. 158-171, Fatih mosque; Seyh Mehmed Lalezari, *Mizanu'l-ezhar*, 1703-1730; Ali Emiri Efendi-Library no. 174; *Sukufename-i Mussavver*, 1667; Nuri Osmaniye-Library no. 4076-4078; *Mussavver sumbulname*, 1737; Topkapi Saray-Library no. H413; *Surname-i Humayun*, 1582. Topkapi Saray-Library no. H1344; *Tulpenboek*, 1725-1731, particulier bezit, België.  
For general information on Turkish gardens see: S.H. Eldem, *Türk bahçeleri*, Istanbul, 1976; K. Krause, 'Über Türkische Gärten und Gartenwirtschaft', *Archiv für Wirtschaftsforschung im Orient*, IV, (1913) p.443; E.B. MacDougall, & R. Ettinghausen (eds.), *The islamic garden*, Dumbarton Oaks Colloquium Series, 1976.
  21. Segal has tried to tackle this problem. According to him some flowers are crosses between *schrenkii* and *praecox*, *clusiana* and *schrenkii*, and *clusiana* and *aganensis*. See S. Segal, 'Roelant Saverij als Blumenmaler' in: E. Mai (ed.), *Roelant Savery in seiner Zeit (1576-1639)*, Keulen 1985. However, the tulip breeders have never been able to create these hybrids, even in laboratory conditions. (J.P. van Eijk et al., 'Resultaten en stand van zaken bij het soortkruisingsonderzoek van tulp', *I.V.T. rapport* nr. 221, Wageningen 1986).  
Interpretations such as these cannot be proved to be wrong, but the scientific evidence on genetic barriers does not make the crosses very probable.
  22. Some examples: *Verzameling van een Meenigte Tulipaenen, Naar het Leven geteekend met hunne Naamen, en Swaarte der Bollen, zoo als die publicq verkogt zijn, te Haarlem in den jaare Ao 1637*, by P. Cos, Bloemist te Haarlem, University Library Wageningen; Jacob Marrel (1614-1681), *Tulpenboek 1637-1639*, in the Rijksprentenkabinet, Amsterdam; *Tulpenboek*, untitled, folio, half linen, University Library, Utrecht, folio 61: 'De Sultaen'; Krelage, E.H., *Bloemenspeculatie in Nederland*, Amsterdam 1942.
  23. R. Dodoens, *Stirpium historiae pemptades sex*, Antwerp 1583. See also P.J. van Meerbeeck, *Recherches historiques et critiques sur la vie et les ouvrages de Rembert Dodoens (Dodonaeus)*, Mechelen 1841, reprint Utrecht 1980.
  24. N. Schneider, *Stilleben. Realität und Symbolik der Dinge*, Köln 1989.
  25. *Mussavver sumbulname*, 1737. Topkapi Saray-library nr. H413.
  26. *Sukufename-i Mussavver*, 1667. Nuri Osmaniye-library nr. 4076-4078; See also A.S. Unver, 'The Narcissus in the history of flowers in Turkey', *The Daffodil and Tulip year book* 1968 XXXIII, London 1967, p.67-68.
  27. T. Baytop, & B. Mathew, *The bulbous plants of Turkey*, London 1884. This Iris was often illustrated in the seventeenth century; an example is found in the collection of the Delft burgomaster Henricus d'Acquet (1632-1706), fol. 132, University Library, Amsterdam.
  28. R. ter Horst, 'Moluccella', *Bulletin Botanical Tuinen Wageningen* XX (1988) p.11-12. See also *Groei & Bloei*, June 1988, p.70-71.
  29. J. Heniger, 'Some botanical activities of Herman Boerhaave', *Janus* 58 (1971) p.1-78.
  30. Ubrizsy in Savoia, A. & J. Heniger, 'Carolus Clusius and American plants', *Taxon* 32 (1983) p.424-435.
  31. C. Clusius, *Exoticorum libri X*, Leiden 1605.
  32. Joris Hoefnagel (1524-1600), illuminations; in Georg Bocskay, *Mira calligraphaiae monumenta (1561-1562)*, fols. 1-129; Joris Hoefnagel, *A guide to the construction of the letters of the alphabet*, fols. 130-151; watercolours on vellum, 16,6 x 12,4 cm, 1591-1596, Prague, for Rudolph II, King of Bohemia in the J. Paul Getty Museum, Malibu, USA, Inv.nr. 86, MV 527 (MS 2).





Plate 14. *Crocus Viceroy* (now *Crocus versicolor* Ker-Gawl.) from the South-East of France, introduced in cultivation in Europe in 1574. Plates 14, 15 and 16 from a volume of drawings from the collection of Hendrik Jorisz d'Acquet (1632-1706). University Library, Amsterdam (photo's J.W. Mugge).



Plate 15. *Hijacinthus Turcois minor flore caeruleo* 1681 (now: *Brimeura amethystina* (L.) Chouard) from South-West Europe and introduced in 1601.



Plate 16. N. Overmeer (attributed to), *Althea Arborescens* 1683 (now: *Hibiscus syriacus* L. white, pink, red, purple) from East Asia, introduced in 1596.





Plate 17. The north-facade of the Neugebäude today (1988) (photo G. Hajós).



Plate 18. Alfred Lesel, Sample-bed after Serlio for the Neugebäude gardens, 1989 (photo G. Hajós).



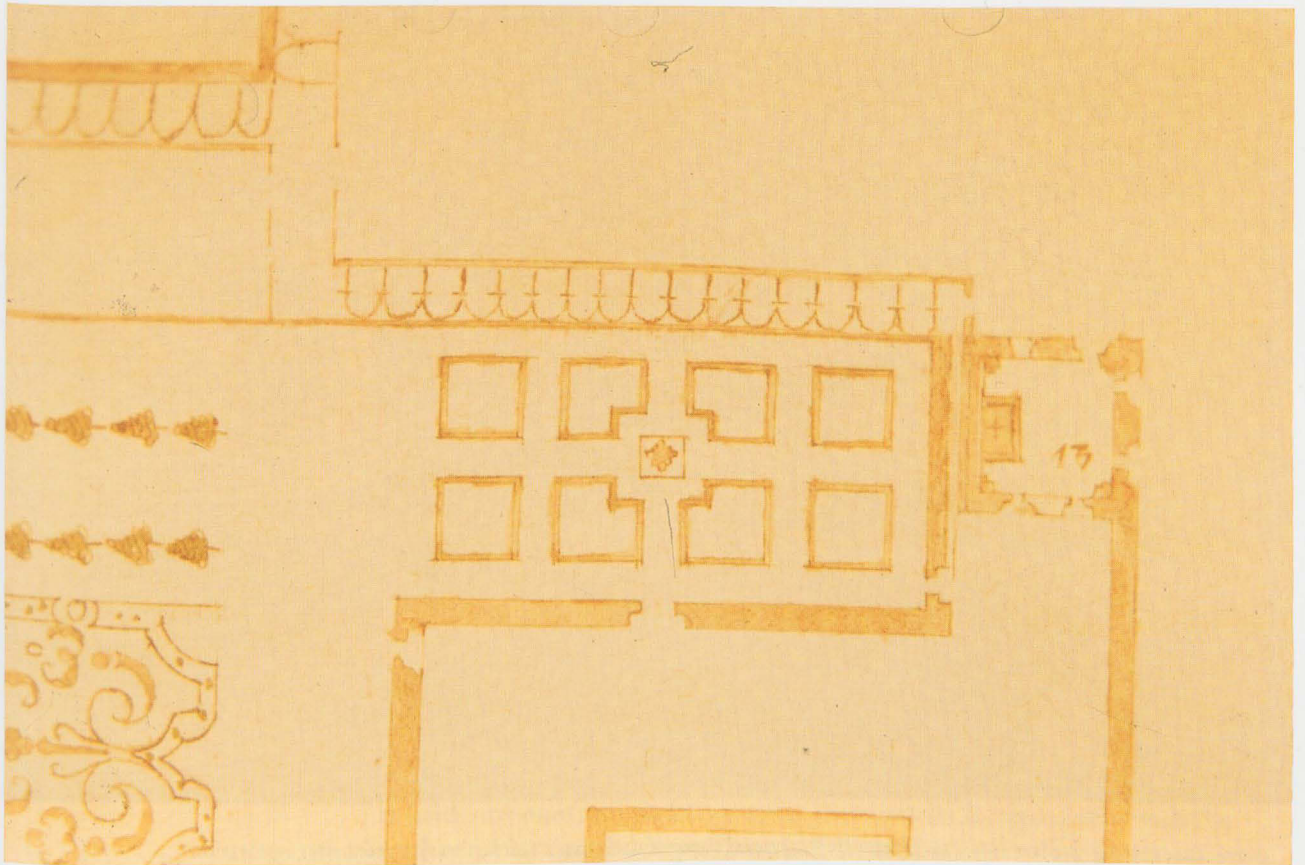


Plate 19. The King's Garden in Aranjuez in Cuéllar's plan from 1737.



Plate 20. The King's Garden before the restoration.





Plate 21. A general view of the King's Garden in Aranjuez after restoration.



Plate 22. The central fountain of the King's Garden in Aranjuez after restoration.



## RENAISSANCE GARDENS IN AUSTRIA - CURRENT RESEARCH FINDINGS AND PERSPECTIVES OF CONSERVATION

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Englische Landschaftskultur des 18.  
Jahrhunderts in und um Wien*,  
Wien/Köln, Böhlau Verlag, 1989.

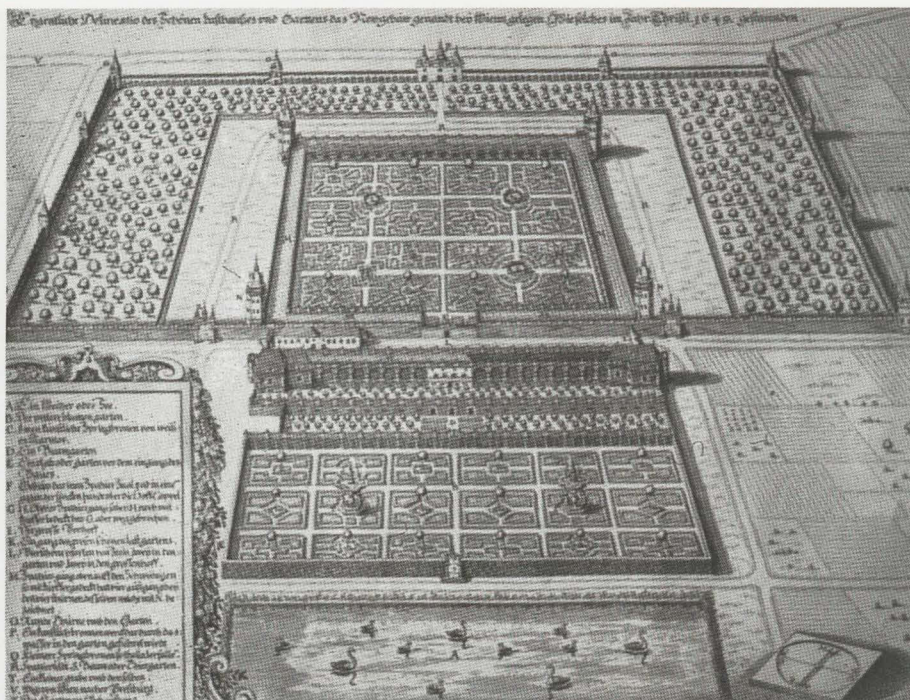
What happened to historic gardens was not a concern of the Austrian *Bundesdenkmalamt* (Federal Office for the Conservation of Monuments) for a long time; after all, a 1964 ruling of the Supreme Court had shaped public opinion in this respect for quite some time. Back then, a clear-cut separation at legal level between man-made and natural creations was intended to reflect the jurisdictions of federal and provincial authorities.<sup>1</sup> The preservation of monuments falls within the competence of the federal state, whereas the conservation of nature is a matter of the provinces (*Länder*). However, the dispute about 'what was art and what was nature' means much more than a matter of day-to-day administrative policies. It touches upon issues art theoreticians have dealt with since Renaissance days. Guided by Ovid's *Metamorphoses*, the humanists discussed whether nature could be considered a creator of art, and the ways in which the tensions between art and nature were interpreted led to the most outlandish garden designs of the sixteenth and seventeenth centuries. In Austria, the discussion had seemingly reached its end in 1964, when the Constitutional Court ruled that 'objects in the materialisation of which Nature also played a role in addition to Man, such as fields, avenues and parks... are not monuments in accordance with the method of historical interpretation'.<sup>2</sup> Due to that fatal ruling preservationists were for decades prevented from dealing with historic gardens both in theory and practice. In gardens, nature and art are each others peers, as it were, and it seems absurd to draw a dividing line between works of nature and works of art in law.

Of course, this extreme, polarising attitude is widespread, not only in Austria; what comes to mind in this context are the bio-philosophers who favour 'wild and ecological' garden aesthetics and would like gardens to be overgrown biotopes devoid of design, who want to prevent the restoration of avenues in baroque gardens and fervently deny any connexion between aesthetics - which also encompass horticultural aesthetics - and *mimesis*, i.e. the conscious representation of natural facts.<sup>3</sup> Thus, even in countries in which the legal situation is more favourable than in Austria, the preservation of gardens is faced with similar problems. Terms must be clarified, objectives clearly defined - or else preservation efforts fall victim to the speculations of real-estate developers or to aesthetic misconceptions.

This symposium in Leiden has clearly stated its point: its title is 'The Authentic Garden'. We are concerned with saving original historic gardens, which are as much part of our cultural heritage as are monumental buildings and other historical objects. The 1981 International Charter of Florence of ICOMOS-IFLA<sup>4</sup> tried to define the term 'originality' as clearly and unambiguously as possible, to cast the methodical problems of practical garden monument conservation into articles, as it were, to codify it. However, even the best of charters cannot and must not keep us from thinking on our own and tackling problems individually. In keeping with this principle the term 'authenticity' must be discussed and defined on the basis of individual cases. In spite of legal difficulties Austria set up a specialised unit in charge of historic gardens in 1986. Its first and - so far - most difficult task has been to evaluate aspects concerning the authenticity of a Renaissance garden in Vienna which has long ceased to exist: the *Neugebäude* garden, once splendid, never com-



Matthäus Merian, *The Neugebäude* with gardens in the year 1649, engraving (photo Bundesdenkmalamt, Vienna-Austria).



pletely finished and almost entirely destroyed in the eighteenth century (Ill.30). As the *Neugebäude* had one of the largest and most important architectural gardens of its day, we are considering at least its partial reconstruction and are looking for up-to-date ways of utilising the still extant building complex. Political discussions about this enormous financial venture are still going on; in the past few years the *Bundesdenkmalamt* has been continuously and decisively involved in the process of shaping an opinion both in terms of matters scientific and administrative.<sup>5</sup> In 1986 a team of researchers, including art historians, historians, building researchers, archaeologists, garden designers and other experts, was gathered around the architect Prof. Manfred Wehdorn. Their findings have been compiled, but not yet published. I was invited to participate in their work for some time to represent the *Bundesdenkmalamt* and voice an official opinion on the envisaged garden reconstruction. I do not want to go into detail about individual – partly sensational – research findings of Prof. Wehdorn's crew. This should be left to the publication in planning; however, I should like to use some of their points required whenever discussing the methods to be applied to the reconstruction of the *Neugebäude* gardens.

#### THE HISTORY OF THE NEUGEBAUDE

First of all, let me start on historical facts: in 1529, Vienna was besieged by the Turks. The pompous tent camp of the Sultan was located on the grounds which were later on to become the site of the *Neugebäude*,<sup>6</sup> which Emperor Maximilian II started building in 1567/68 as a 'new pheasantry', a garden complex consisting of orchard, pleasure garden and pheasantry with various pleasure buildings and ponds. Let me be brief about the complicated history of the building which was characterised by many conceptual changes. I should like to confine myself to pointing out that the Emperor never thought of actually living there. After all, he already had a hunting lodge close by, at Ebersdorf. According to historian Prof. Richard Perger, 'it was for the first time documented as general knowledge in 1636 that the new complex was to commemorate the Sultan's former camp'.<sup>7</sup> Several researchers have emphasised the connexion between Turkish gardens and the



Vienna *Neugebäude* garden.<sup>8</sup> This is also supported by the fact that the Netherlandish humanist Augier Ghislain de Busbeq<sup>9</sup> – who entered the Emperor's service in 1550 after having studied at Louvain, Paris, Venice, Padova and Bologna – intermittently acted as an envoy to Turkey between 1553 and 1562. After returning to Vienna, he became confidant to Emperor Maximilian II, teacher of his sons, supervisor of the Court Library, the Court Stables and – an assumption growing ever more likely – of the Imperial gardens. De Busbeq must have been familiar with Turkish gardens, as well as the most significant garden designs found in the Netherlands, France, Italy and even England (where he worked at the legation in 1552). It may have been he who advised Maximilian on the design to be used in the new kind of garden which was to surpass many similar ones. This assumption is based on several facts: on February 2, 1570 De Busbeq thanked Balthasar Batthyány – a Hungarian nobleman of humanistic learning, who was also in close contact with Clusius – for a consignment of fruit tree saplings which had been taken to a place designated by the Emperor –possibly the new pheasantry around the *Neugebäude*.<sup>10</sup> Later in the same year mention was made of a gardener for the *Katterburg* near Vienna (today's *Schönbrunn*) applying to him.

The Netherlandish humanist had also earned the high-ranking position of a garden supervisor by sending antique epigraphs and codices as well as plants – in particular tulips – to Vienna while posted in Turkey. Joseph Hammer, the famous Austrian orientalist, wrote, '(De Busbeq's) learned leisure activity was fruitful for Emperor and science alike; the imperial zoological garden and park were enriched, especially by Persian lilac and tulip, the name of which is derived from the Turkish headgear called *dülbend* and still reflects its oriental origin'.<sup>11</sup> Unfortunately, historical sources regarding the connexion between De Busbeq and the *Neugebäude* garden are scarce, and we are often left to assumptions. De Busbeq may also have 'acted as an agent in recruiting numerous French-Wallonic gardeners who worked in and around Vienna in those days', as Richard Perger supposes. In 1568/69 the name of the head gardener of Ebersdorf was Claude Renard; moreover, names such as 'de Sains' and 'Peron' are mentioned. Not only Augier Ghislain de Busbeq, but also Charles de l'Ecluse (also known as *Clusius*)<sup>12</sup> was involved in garden design activities, even though historical sources do not say much about specific ties to the *Neugebäude*. He more or less became De Busbeq's successor in botanical matters in Vienna and, joining the Emperor's service as of 1573, he was appointed prefect of the imperial gardens. However, he held this important position but for a short time until 1576 due to the untimely death of Emperor Maximilian II. From then on he worked as a private scholar, touring Hungary, Styria, Lower Austria, and even England from his base in Vienna, and corresponded with the above-mentioned Hungarian nobleman Batthyány, whose garden at Szallanak (Schlaining) he helped design. We may assume that Clusius had a decisive share in the choice of plants for the *Neugebäude* gardens between 1573 and 1576, and possibly played an advisory role later on, as he lived in Vienna until 1587. He saw three out of the four building stages, and acted as the garden prefect during the decisive second stage (1571–1575) when the most significant work was carried out: the archways in the middle garden of the southern part were covered, two fruit orchards were created, two marble fountains were set up in the lower garden, a walk along the lower garden was covered, the water pipes were reinforced and the towers in the southern garden received their artistic decoration. According to a report of the Venetian envoy, Emperor Maximilian II showed his brother-in-law Henri de Valois (later to become King Henri III)



around the splendid new complex as early as 1574.<sup>13</sup> It was only during the third building stage between 1576 and 1580 when the idea of building a huge garden salon, the actual *Neugebäude*, came up; it was conceived as a banqueting hall and *antiquarium* by Jacopo da Strada.<sup>14</sup> Its completion was, however, delayed by the death of the Emperor. Rudolph II did not take the same interest in the unfinished project as had his predecessor; *inter alia*, he also dismissed Clusius. Construction work was however continued until 1580 and the huge building, separating the gardens as a transverse axis, was erected. The construction process mainly involved Italian labour-force; it is even quite possible that Emperor Maximilian had already started to orient himself more along Italian lines of landscape architecture when De Busbeq left his service. In 1571 the Cardinal of Ferrara sent him a drawing and description of the *Villa d'Este* at Tivoli; the Emperor thus became increasingly familiar with the idea of an imperial Belvedere 'as a non-inhabitable garden architecture of monumental character'.<sup>15</sup> The question of whether this development towards an antique *villa imperialis* also led to a conceptual change regarding the layout remains unanswered. Prof. Perger's archival research has not shed too much light on it, either:

'There is little known about the plants set out. The first seeds sown in March 1569 (i.e. before Clusius) were of wheat, barley, hemp and lentils. It is indeterminable what sort of saplings Balthasar Batthyány sent to Busbeq in February 1570 to be planted at a place chosen by the Emperor. In his *Rariorum plantarum historia* Clusius stated that *Parmica Austriaca* grew at the *Neugebäude* and that various trees had been planted in the fruit orchards. A letter dated October 1581 (already during the reign of Emperor Rudolph II) mentions figs, marjoram, apples, cherries, artichokes, peaches, morello cherries, apricots, apples, pears, plums, damsons and grapes being cultivated there.'<sup>16</sup>

However, all this is not sufficient for a complete reconstruction of the upper and lower gardens. We know from Clusius' correspondence with Batthyány that the Netherlandish botanist not only selected the plants, but also determined their distribution:

'Monseigneur, je vous prie me pardonner si je suis brief: n'ayant en le loisir de plus amplement. Je vous envoie la casse de bois pleine d'herbes, comme je les ay annotees en un papier: la distribution des quelles se fera selon l'ordre en iceluy contenu: pareillement aussi des graines. *Malva tamen Hortensis posset in circuitu hortuli secundum murum seri*. Je vous envoie aussi une modelle pour patron des bois qui se devest (?) mettre alentour des carreaux ou couches, un *Patingenius*, et la *Recepta* pour la petite bouche. Le jardinier Daniel a achevé comme ils me disent à ceste heure des Marguerites, lesquelles se pourront plantés en quelques couchettes comme on le Batsimina et la Capsium sont marchés: a cause que sont belles fleurs...'<sup>17</sup>

The terms 'carreaux', 'couches', 'couchettes' and 'modelle pour patron des bois' show how painstakingly Clusius planned the garden layout. In this letter and another one, also dated 1578, the Netherlandish botanist developed plans for the Batthyány garden at Szallanak (Schlaining), at a time when the implementation of the compartment design at the *Neugebäude* was in full swing. So much for the written historical sources. What about pictorial records?

The first reasonably accurate representation of the grounds dates back to as



late as 1649, when Matthäus Merian drew up 'an actual delineation of the fine pleasure house and garden called *Neugebäude* near Vienna'.<sup>18</sup> The engraving gives us a good over-all impression, but fails to convey details, in particular with regard to the beds which must have been greatly simplified at that time due to lack of care; they were probably depicted inaccurately. The most important structural elements are, however, discernible: the lower northern garden and the pond, the monumental hall building forming a transverse axis in the over-all layout, and the southern pheasantry with its pompous centre where the covered roundabout walk and the marvellous towers were located. The current state is most deplorable: ploughed fields instead of gardens, graveyards and a crematorium in the southern part, not a trace of the towers, the covered walk or the pond. An engraving by Fischer-Delsenbach dated 1715 shows that in the early eighteenth century the grounds still gave reason for hope, reflecting baroque pleasure and the thoughts then prevailing of a representative restoration in keeping with an absolutistic rule.<sup>19</sup> Two engravings from the second half of the seventeenth century, by Matthäus Vischer dated 1670 and by Ehrenberg-Sandart around 1690 show few historical details of the gardens.<sup>20</sup> They only convey a very general idea of the architecture and the way it was placed in the landscape. In the late seventeenth century Wolfgang Praemer, the Viennese architectural theoretician, also dealt with the *Neugebäude*;<sup>21</sup> he combined his surveys with proposals for a garden design which in no way corresponded to the sixteenth-century layout.

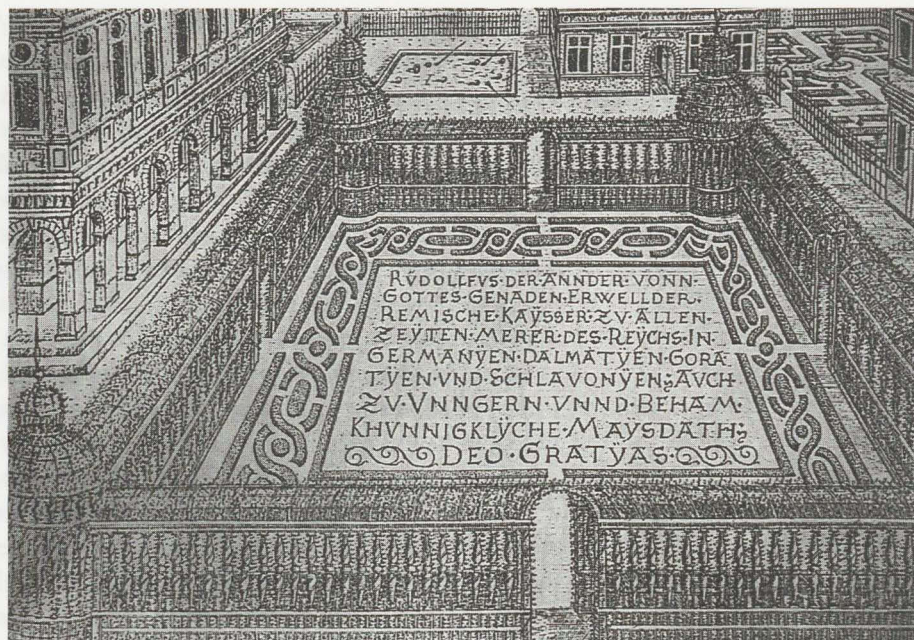
#### RECONSTRUCTING THE GARDEN

One is faced with great difficulties when it comes to reconstructing the *authentic garden* of the *Neugebäude* complex. Neither are the written records sufficient, nor is there any truly reliable pictorial documentation doing justice to the richness of Maximilian's creation. The layout has been examined in depth: the wall surrounding the large southern garden has been preserved in more or less its 'authentic' state, old animal enclosures and fish tanks have been excavated in a side section. In the northern garden the foundations of the fountain were found and pollen-archaeological research was made,<sup>22</sup> which, however, did not yield any results worth mentioning. Yellow water lily, boxtree and vine were identified in the humid ground below the pond, but there are no clues about the plants that filled the compartments in the once famous flower garden. As for the conservation of this garden monument, we decided to concentrate on the northern flower garden, as the southern garden is barely suited for reconstruction due to large-scale destruction and alterations. Another reason for this was that relatively good, albeit more recent, documentation on the northern part is available. Moreover, the northern facade of the *Neugebäude*, other than the southern one, may be reconstructed completely (Plate 17). The Wehdorn research team had a sophisticated wood model made of the entire grounds; its view of the gardens, however, is more decorative than true to history. The vision of a reconstruction suggested in the model is what the municipal politician expects when he does (or does not) grant the subsidies for complete reconstruction. The garden monument conservationist always has to point out that reality will considerably deviate from the model, but his remarks often meet with ingratitude.

What does the northern garden look like? There are terraces directly in front of the facade. Archaeological research revealed levels, supporting walls, even holes for trees in the ground. In the large garden area, which has been used for agricultural purposes for quite some time, the above-mentioned



Hans Puec(hfeldner), Garden-album  
1592-1593, title page with the  
dedication to Emperor Rudolph II  
(Washington, Dumbarton Oaks,  
Garden Library).



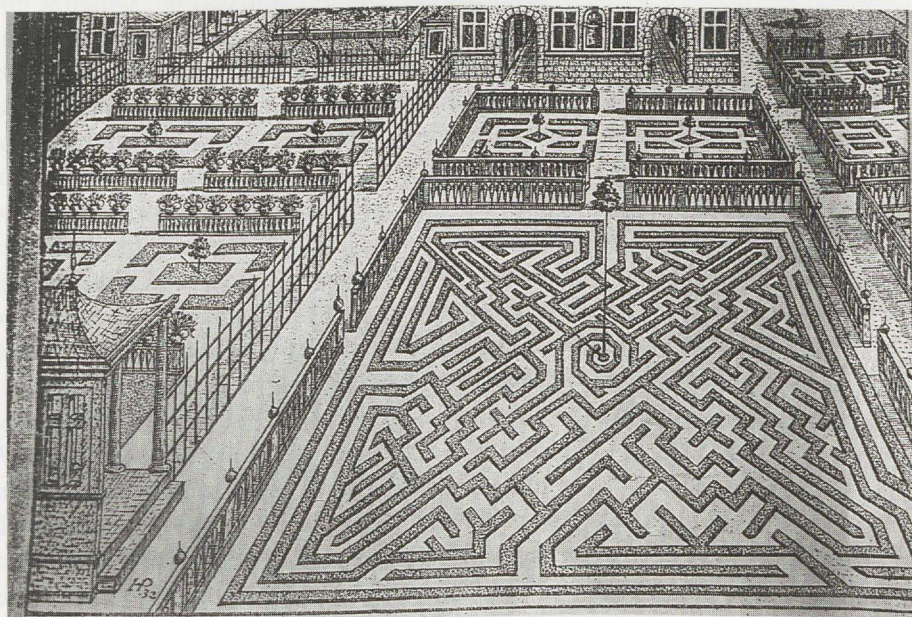
foundations of the fountain as well as the surrounding wall were excavated. Moreover, holes for trees supported by trellis were found in some spots and the wooden frame of the pond was uncovered; it was found that the pond had once been divided into two sections. In contrast to the southern garden, where further archaeological excavations had taken place, it was impossible to identify path surfaces. It was, however, possible to calculate exactly the subdivision and size of the individual fields. Thus, the structure and the basic architectural layout of the garden can be reconstructed, no more than that. In the course of our considerations we looked around all over Europe and found that really authentic Renaissance gardens dating from the late sixteenth century do not exist any more. Let me only give you a few examples: given its plants, the *Villa Lante* garden of Bagnaia is certainly not a sixteenth-century garden, nor is the *Francini* garden of Brécý in France. Both were extensively altered in the baroque age and the nineteenth century. The schematic boxwood patterns of Chenonceau, e.g., do not correspond to the richness prevailing in humanist art. Recently, attempts were made at reconstructing a garden from the early seventeenth century at Leonberg near Stuttgart. Although all historical documentation was painstakingly collected, the result is not convincing. The material used for the borders of the flowerbeds as well as the flowers planted evoke the late twentieth century rather than the time of its origin.

Pictorial documents are by no means unproblematic: there are cases in which we are fortunate enough to have surviving contemporary views of the garden concerned. The *Villa d' Este* garden, e.g., was completely and reliably documented; this, however, happened long after the time when it was built, although such a record would have been of paramount importance for the Vienna *Neugebäude*. The lunettes of Giusto Utens provide a better insight into the art of garden design in the late sixteenth century, but when we examine them more closely for details they do not offer an accurate basis for reconstruction. Most views of Renaissance gardens date from the seventeenth century, and may therefore hardly be applied to problems pertaining to sixteenth-century designs. The best and most authentic compilation of late sixteenth-century garden views are found in the marvellous work on architecture by the Frenchman Jacques Androuet Du Cerceau,<sup>23</sup> who documented French pleasure buildings in the age of the Vienna *Neugebäude*. This



is where the garden monument conservationist finds a number of leads to follow when reconstructing gardens. It especially shows how important 'minor architectural details' such as the borders of flowerbeds and the spaces in between are; they were made of perishable material and have vanished without a trace. Without them, however, a late sixteenth-century garden would have looked miserable. The *Tuileries* grounds or the garden of Blois compare very well to the *Neugebäude* because Emperor Maximilian II had close connexions to French-Wallonic horticulture (as witness the gardeners' names). After all, he proudly showed his brother-in-law Henri de Valois around the Vienna grounds as early as 1574. It is quite imaginable that De Busbeq and Clusius accounted for the orientation of garden design towards the West (shortly before the concept turned to emulating Italian and antique models). The drawings of Du Cerceau will have to be studied carefully if the northern garden is to be reconstructed in its original splendour. Further examples that lend themselves well to comparison are the grounds of Vallery (Ill.16). Mrs. Oldenburger-Ebbers has drawn our attention to the views by Vredeman de Vries<sup>24</sup> which date from the 1580's and very clearly show that flowers were treated like museum exhibits at that time (Ill.31 and 32). For the present-day viewer, the compartments appear very scanty and abstract; the garden monument conservationist will have to fight indignation of the public in case of reconstruction. Given the size of the northern *Neugebäude* 'flower garden', the misconceptions of a 'flowery Renaissance' could lead to disastrous consequences. Of course, a tulip is no longer as precious today as it was at the time when it was first imported from the orient by De Busbeq. The procedure followed by a garden monument conservationist must, however, be scientifically correct, which means that no concessions must be made to today's taste.

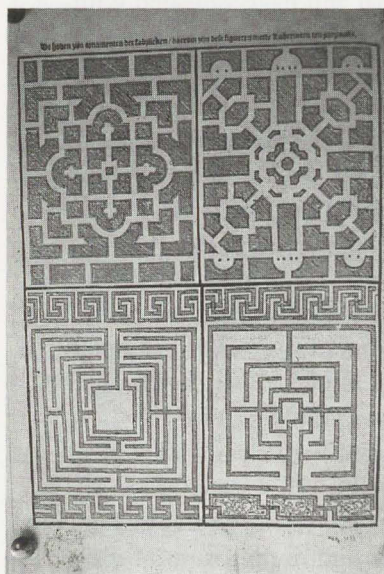
Ill. 32.  
Hans Puec(hfeldner), Garden-album  
1592-1593, project for a bed  
(Washington, Dumbarton Oaks,  
Garden Library).



#### TO RECONSTRUCT OR TO REVIVE?

At the end of our reflections on the Vienna *Neugebäude* gardens we must ask ourselves whether the term 'reconstruction' can actually be applied in view of the situation of sources and existing layout. Would not a different term befit the situation much better? We will at best be able to 'revive' the Maximilianic northern garden with a clear conscience and without pretending actually to reconstruct.<sup>25</sup> Our list of priorities reads as follows: firstly, we must save the existing layout, secondly we must attach great importance





to the scarce contemporary documentation, and thirdly we have to look for appropriate garden pattern books to form the basis of the 'repertory' of plants and minor architectural elements to be 'revived'.

Owing to the Viennese landscape architect Alfred Lesel, theories of garden monument conservation have been put into practice. He planted sample beds outside the *Neugebäude* grounds, with both the Merian engraving and the book on architecture by Sebastiano Serlio serving as a basis (Ill. 33 and Plate 18).<sup>26</sup> In these beds, various plants were cultivated and layouts corresponding to the historical sources implemented. The photogrammetric examination of the Merian engraving revealed that basically nothing in it was right: neither the proportions nor the patterns. The Serlio version was more convincing; however, we will have to ask ourselves which pattern books and illustrations could assist in the *Neugebäude* gardens' 'revival', and in what order.<sup>27</sup>

The problems of minor Austrian gardens dating from the late Renaissance period are comparable, though less grave; let me give you two examples from the province of Carinthia. The gardens of Ehrnegg castle lately became the property of a garden enthusiast who wants to revive, or rather reconstruct, the existing terrace layout from the early seventeenth century according to authentic patterns. In this context, only one historical source is available: an old view from Johann Weikhard Valvasor's 'Beschreibung des Ertz-Hertzogthums Kärndten' (Description of the Arch-Dukedom of Carinthia), which dates from 1688, approximately one century after the first layout was created, in turn to be altered and modernised in the course of the centuries. The Franciscan layout from the nineteenth century still showed the formal beds which have entirely disappeared in the course of our century. Garden-archaeological examinations revealed original path surfaces and fountain foundations. The 'reconstruction', which is not a reconstruction in the proper sense of the term, was begun under the expert advice of engineer Klaus Wallach.<sup>28</sup> Lead buttons in the garden wall used for fixing the trees to the trellis may be considered an interesting discovery, they probably date back to the eighteenth century. First and foremost, the problem involved for the garden monument conservationist is the choice of style: according to Valvasor, the garden of Ehrnegg castle ought to be an early baroque garden, the time at which the castle was built, however, would call for a late sixteenth-century garden. Eventually, the findings and the reliability of the pictorial sources are decisive; the latter are, however, scarce or unavailable for minor gardens. Therefore, the procedure will resemble that followed in the *Neugebäude* case: parallels must be drawn, plant lists of the seventeenth century have to be used. We finally decided to revive the early baroque garden. Another case in point is the terrace garden of Annabichl castle near Klagenfurt, which was originally built by Georg Khevenhüller for his second wife Anna Thurzo around 1580.<sup>29</sup> The over-all structure dates from the late sixteenth century, but the Valvasor work mentioned above contains a view of the garden about a hundred years after it was created. In contrast to Ehrnegg, more important design elements from the seventeenth and partly also from the eighteenth centuries have survived in the Annabichl garden. Grotto and entranceway probably belong to the 18th century, whereas a back garden gate and the plant-house date from the more recent period. Here we are faced with great problems because – apart from the difficulties of 'public utilisation' – the 'grown' layout, i.e. the stylistic variegatedness of the surviving architectural elements, complicates reconstruction. Moreover, reconstruction is also rendered difficult – in this case as much as in the others dealt with earlier – by a lack of historical sources. To date, no action with a



view to the conservation of the garden monument has been taken. It would at any rate require that a detailed inventory be taken, viz. a conceptual examination including suggestions for plants and subsequent utilisation of the grounds be made.

This takes us to the problem of park care plans, which are now being tested as a methodical instrument of garden monument conservation in theory and practice, not only in Austria, but in Germany as well.<sup>30</sup> Such a park care plan is to be worked out for the famous gardens of Hellbrunn near Salzburg in the near future. Hellbrunn is the earliest surviving example of a *villa suburbana* north of the Alps. It was built for Archbishop Marcus Sitticus between 1613 and 1619. The plans were probably by Santino Solari, with several artists participating in the execution.<sup>31</sup> In 1730, a large baroque parterre was added to the gardens by Franz Anton Danreiter, which then was complemented by an English park in the north in the late eighteenth century. In the heart of the grounds, dating from the seventeenth century, we find numerous grottoes, fountains and other decorative architectural elements. First and foremost, the task of the park care plan will not so much be the care for these elements, but suggestions for plants as well as ways and means to control the considerable influx of visitors, which sometimes comes close to endangering the appearance and substance of the Renaissance garden. The park care plan envisaged will have to encompass the entire complex of Hellbrunn including the forest and the so-called 'Theatre of Stone'. It is the complexity of such a 'grown' layout that calls for short-, medium- and long-term garden monument conservation concepts, which, to our minds, should include the following items:<sup>32</sup>

1. an inventory and analysis of the historical basis, from origin to present, which must not only involve old views and sources, but also the history of utilisation and a comprehensive history of phases and alterations;
2. an inventory of plants and buildings;
3. an evaluation of the inventory, including a damage catalogue and suggestions for reconstruction or plant replacements; the identification of structural specialities and visual problems (e.g. in Hellbrunn, the trimming of plants in accordance with the Renaissance character of the architecture); possibly garden-archaeological research and attention to ecological aspects;
4. the identification of objectives and concepts for utilisation with a view to garden monument conservation; these should not only set forth methodical procedures (minimalisation of damage, restoration, restitution, revival, reconstruction), but also should help to solve the problems of future utilisation.

The garden complex of Hellbrunn will be a great challenge for the Austrian garden monument conservationists; after all, it is one of Europe's most important historic gardens.

#### NOTES

1. Norbert Helfgott, *Die Rechtsvorschriften für den Denkmalschutz*, Manz'sche Gesetzesausgaben, Wien 1979, p.249. See for this problem: Géza Hajós, 'The first problems facing the Austrian Garden Monument Preservation Authorities and the 'reconstruction' of the Schönbrunn Orangery Garden', in: *The Art of Garden Design and the Preservation of Monuments*, Symposium-Papers of ICOMOS Deutsches Nationalkomitee, Mainz-Hannover 1988, p.271-277 (German-English edition).



2. Erkenntnis (Nr. 4680) des Verfassungsgerichtshofes von Österreich vom 19. März 1964, K II-4/63, published in: *Bundesgesetzblatt* 29/1964.
3. Géza Hajós, 'Kunst kontra Natur? -Gartenästhetik und Naturschönheit', in: *Kunstforum* 93 (Februar-März 1988), p.135-142.
4. Published in German in: *Deutsche Kunst und Denkmalpflege*, 47 (1985), Heft 2, p.146-148.
5. Géza Hajós, 'The laying-out of the garden at the Neugebäude in Vienna: opportunities and dangers of a reconstruction', in: *Journal of Garden History*, 7(1987)2, p.186-191.
6. Hilda Lietzmann, *Das Neugebäude in Wien. Sultan Süleymans Zelt/Kaiser Maximilians II. Lustschloß*, München-Berlin, Deutscher Kunstverlag, 1987. Herbert Knöbl, *Das Neugebäude und sein baulicher Zusammenhang mit Schloß Schönbrunn*, Wien-Köln-Graz, Böhlau Verlag, 1988.
7. Richard Perger, 'Historische Forschungen zum Schloß Neugebäude (Zusammenfassung)', in: Architekt Manfred Wehdorn, *Projekt: Schloß Neugebäude -2. Gutachterverfahren*, Beilage Nr. 3 zur Aktennotiz Nr. 18/89 (Zwischenberichte der Konsulenten), Perger, p.2 (manuscript).
8. At first Renate (Wagner-) Rieger, 'Das Wiener Neugebäude', in: *Mitteilungen des Instituts für Österreichische Geschichtsforschung* 59 (1951), p.136-144. Lietzmann, (note 6), p.196-198.
9. Literature to De Busbecq: Joseph v. Aschbach, *Geschichte der Wiener Universität*, Bd. 3, Wien 1888, p.335-343. Rudolf Neck, *Ogier Ghiselin De Busbecq, Omnia quae extant opera*, Graz 1968. Karl Teply, *Kaiserliche Gesandtschaften zum Goldenen Horn*, Stuttgart 1968.
10. Ungarisches Staatsarchiv Budapest, Familienarchiv Batthyány, P. 1314, Missiles Nr. 7811; cited by R. Perger, *Historisches Gutachten* for Architekt M. Wehdorn, 27. April 1989 (note 141).
11. Aschbach, (note 9), p.340-341.
12. Aschbach, (note 9), p.347-360. *Clusius-Festschrift (Festschrift anlässlich der 400-jährigen Wiederkehr der wissenschaftlichen Tätigkeit von Carolus Clusius/Charles de l'Escluse/im pannonischen Raum*, Eisenstadt 1973 (with many contributions).
13. Lietzmann, (note 6) p.177.
14. Lietzmann, (note 6) p.110-136.
15. Gottfried und Renate Holzschuh, 'Kunsthistorische Untersuchungen zum Schloß Neugebäude', II. Phase, 1989, (in: Wehdorn, note 7), p.15 (manuscript).
16. Perger, (note 10) Lietzmann, (note 6), p.168-169.
17. Ungarisches Staatsarchiv Budapest, Familienarchiv Batthyány, P 1314, Batthyány missilis, Nr. 8016. Cited by R. Perger in: *Wehdorn*, Projekt Neugebäude. 2. Planungsphase, 3. Arbeitssitzung, 12. Jänner 1989.
18. Illustration 3 in Lietzmann, (note 6), p.13: 'Eigentliche Delineatio des Schönen Lusthaußes und Gartens das Newgebäw genandt bey Wienn gelegen Wie solches im Jahr Christi 1649 gestanden'.
19. Illustration in Knöbl, (note 6), p. 51: 'Das Neugebäude; Ein Kaiserl. Lußthaus, eine halbe Meile von Wien gelegen, welches man dafür hält, daß es an dem Orte des Türckischen Haupt-Quartiers von Ao: 1529 und nach dessen Beschaffenheit aufgebäuet. Heüte zu Tage dienet es zur Bewahrung allerhand ausländischer Thiere'.
20. Illustrations 9 and 10 in Lietzmann, (note 6), p.40-41.
21. Wolfgang Wilhelm Praemer, *Architecturischer Schauplatz...*, Österr. Nationalbibliothek, Cod.Ser.n. 365, fol. 203-204.
22. Inquiries of Professor Friedrich Kral, Universität für Bodenkultur Wien, Institut für Waldforschung.
23. David Thomson, *Les plus excellents Bastiments de France par J.A. du Cerceau*, Paris, Sand & Conti, 1988. Kenneth Woodbridge, *Princely Gardens. The Origins and Development of the French Formal Style*, London 1986.
24. Carla Oldenburger-Ebbers, *Report for the Wehdorn-Project, 'Schloß Neugebäude'*, 2. Gutachterverfahren, Wien 1989 (manuscript). It is very important, in this connexion to know the three garden books of Hans Puechfeldner, who was certainly a student of Vredeman de Vries and lived in Prague or Vienna between 1591 and 1594. See: Franz



- Unterkircher, *Namen, die noch nicht im Thieme-Becker stehen*, in: *Schlem-Schriften* 139 (1955), p.187-189. Eva Berger, catalogue number 5.44 in: *Adel im Wandel 1500-1700*, Niederösterreichische Landesausstellung, Rosenberg 1990, p.142. John Dixon Hunt and Erik de Jong catalogue number 8 in: *Journal of Garden History* 8(1988)2/3, p.119-120. Two books are in Vienna: Österreichische Nationalbibliothek, Handschriftensammlung, Cod. Vind. 10.830 (dated 1591 and 1594; signed with 'Ir. Röm. Kay. Mayt. Gartner Hanns Puechfeldner'); one garden-album is in the Garden Library of Dumbarton Oaks, Washington DC, USA (with the dates 1592, 1593 and the signatures 'H.P.' and 'Hans Puc'). I am grateful to Erik de Jong, who during the Leiden Symposium drew my attention to this hitherto unknown important source.
25. 'Revive' is not a favourable translation of the German term 'Wiederaufführung'.
  26. Alfred Lesel, 'Schloß Neugebäude -Wiederaufführung des sogenannten 'Unteren Blumenparterres' (nördlicher Garten)', in: Wehdorn, (note 7), 11 pages; Alfred Lesel, 'Erläuterungen zur geplanten Wiederaufführung der Gartenanlage nördlich von Schloß Neugebäude', *ibid.*, 6 pages.
  27. Mrs. Oldenburger-Ebbers proposes a differentiation: Formenbeet, Farbenbeet and Blumenbeet, ordered in two groups (nine beds at a time).
  28. Klaus Wallach, 'Des arbres fruitiers élevés en espalier, oder: Die Kunst des Spalierbaus in der 2. Hälfte des 17. Jahrhunderts', in: *Die Gartenkunst*, Heft 2/1989, p.193, illustration 1. For Castle Ehrnegg see *DEHIO-Handbuch Kärnten*, Wien (Verlag Schroll), 2. ed. 1981, p.550.
  29. *DEHIO, Handbuch Kärnten*, Wien (Verlag Schroll), 2. ed. 1981, p.297.
  30. See as a methodical model *Parkpflegewerk Schlosspark Biebrich*, ed. from Verwaltung der Staatlichen Schlösser und Gärten Hessen, Bad Homburg v.d. Höhe 1987, 155 pages with numerous plans, maps, illustrations.
  31. Géza Hajós, 'Fürstliche Gärten -Wunder in der Natur', in: *Salzburg und Salzburger Land, Sonderteil des HB-Kunstführers*, Nr. 30, Hamburg 1988, p.92-94. W. Hofmann (ed.) *Zauber der Medusa -Europäische Manierismen*, catalogue, Wien 1987, p.435-437.
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Ill. 34.  
Excavations. Detail of the pavement at  
the King's Garden in Aranjuez.



## THE RESTORATION OF THE KING'S GARDEN AT ARANJUEZ

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The 'Comite des Jardins et des Sites Historiques' was established in 1968 by René Péchère in the General Assembly of the IFLA in Cerdona. Together with ICOMOS - an organization integrated in UNESCO - Piero Gazzola and Raymond Lemaire, President and Vice-President, set up a joint committee ICOMOS - IFLA two years later. The members of the Committee were all experts, chosen not for the purpose of representing certain countries, but for their professional competence, although an effort has been made to maintain a certain balance. In spite of their scarce financial resources the committee has worked without interruption throughout all these years. Among their achievements we can count the elaboration of an inventory of historical gardens which are valued internationally, the official acknowledgement that historical gardens should be considered as monuments, with all the legal protection that entails, the establishment of some fundamental criteria regarding restorations, which criteria were inserted in the Florence Charter and acknowledged by ICOMOS in 1982, the initiation of a training center for chief gardeners in Nymphenburg, Munich, as a first experiment in the field of educating professionally qualified people. In addition, the establishment of Colleges of Superior Landscape Studies is in an advanced course of preparation. This is a joint project of the Universities of York, Louvain, Versailles, Rome and Madrid. A series of bi-annual conferences in Fontainebleau, Granada, Zeist, Brussels, Bruges, Florence, Munich, Versailles, Oxford, Postdam is being organized, backed up by several meetings and colloquiums, with the purpose of promoting research, preservation, knowledge, restoration and propagation of historical gardens and sites at an international, national and regional level. We feel that the progress that has been made in the field of preserving our cultural heritage, depends largely upon an exchange of experience. This exchange can and must be established at various levels and in different directions. The committee intends to coordinate and encourage this collaboration by setting up some distinct criteria which will serve internationally as a basis for proceeding within the scope of the restoration of historical gardens.

The imperious necessity of industrial development puts the world of the garden in the background. At a European level this phenomenon can be observed in those countries that have gone through the difficult circumstances of a post-war period. The abandoned gardens started to live their own lives, falling slowly into decay. It's now a matter of putting a forgotten legislation into operation, a non-existent infrastructure, and to emphasize its importance, to demand some concern, to arouse the interest and to motivate society. In short this is a task that requires the help and cooperation of all. Both the fact that it is necessary to involve people with various professional disciplines such as historians, landscape painters, botanist, engineers, architects, biologists, woodexperts, rockexperts, etc., and the dispersion of sources of communication, make the restoration of historical gardens a field in which technical and scientific cooperation between countries is imperative.

Without going deeper into the own specific thematic of these works we must look for a serious approach and avoid falling into 'apparent restora-



tions'. In order to protect and preserve, above all we must have a profound knowledge of the garden, a preliminar requirement to whatever involvement. The garden must be studied analytically in all its aspects (architectural, vegetal, historical, topographical, environmental...) by means of documents and historical, literary or iconographical sources and the necessary techniques. This analytical or comparative study implicates the necessary involvement of a number of interrelated disciplines. We lack specialized technicians at all levels, from authorities on botanics or historical botanics, to supervisors or gardeners who seriously know their profession and who are not sufficiently appreciated. We are not acquainted with modern research and restoration systems, neither can these be made operational because of their high costs.

It therefore is necessary to create an infrastructure, which allows a serious and professional approach to the work to be materialized, and which ensures an adequate maintenance. This picture of a few aspects of the restoration of gardens gives evidence of the necessity to establish a methodological basis for future projects and rehabilitations, together with the analysis and thorough investigation of the nature of these problems. This will make a rehabilitation and new activities possible.

#### THE REHABILITATION OF THE KING'S GARDEN IN ARANJUEZ

*'Une position charmante. Une site admirable'*  
(Marquis de Langle, 1785) (Plate 19).

The restoration of the King's Garden in Aranjuez has been one of the jobs that has been accomplished thanks to the collaboration between the University of Lovain and the National Patrimony, the Trustee that manages the former possessions of the Royal Family and the present owner of the gardens. Marta Nieto, the architect, has done the researchwork in Belgium, while the personnel of the Parks, Gardens and Mountains office of the National Patrimony have done the researchwork in Spain. Part of this work will serve as a basis for the restoration of the gardens of El Escorial, thus establishing the close relation that exists with the Flemish gardens, which Felipe II knew so much about and loved so well. Emanating from his deep love for nature he ordered the first trees to be planted in Brussels (1556) and London (1557). He also had numerous Flemish gardeners and technicians come over to Spain.

Aranjuez is situated south of Madrid, in the confluence of the rivers Tagus and Jarama. The first annotations about this place reach back to the 14th century. At that time the Grand-Master of Santiago, Don Lorenzo Suarez de Figueroa, chooses this region in the meander of the Tagus for a central seat of the mentioned order. Around 1387 a palace is built here, with a garden and a kitchen garden. This palace was intended to be used for the entertainment of the Lords of Santiago. It was incorporated in the Crown in 1489, during the reign of the Catholic Kings, at which time the dignities of the Grandmasters and the Military Orders came into royal possession. Philip II, the actual creator of this garden of all gardens and its surroundings, with their universal prestige, bestowed upon it the denomination of 'royal site' in 1560. When Philip II built the new palace or 'royal residence' he ordered the plantation 'of myrtle and flowers for his garden, nowadays called the Garden of the Statues, with a fountain in the middle'.

In fact, on both sides of the palace the construction of two palace gardens was planned, one for the king and one for the queen. However only one of



these, the King's Garden, was actually laid out in the angle formed by the south side of the house and the present chapel in the right corner of the 18th century parterre. Cosimo de Medicis calls it 'secret', while at the same time he praises the rare fact that the top passage is extended through the triple arched door (at present an arcade) eventually leading to the store-house. The project was the work of Juan de Herrera. At the time of its construction the garden was completely fenced off by high brickwork 'Herrarian walls' on the eastern and northern sides. The Royal Decrees of Philip II register the arrival and presence of a great number of Flemish gardeners, as well as a couple of French ones, as from the year 1560-1561.

At the end of 1560 the king gives his attention to pleasant matters such as the planning of and the work in his gardens, those of Aranjuez in particular. Above all he is looking for Flemish and French gardeners by commissioning them from his sister Margarita, Governess of Flanders.

In the middle of 1561 a great number of gardeners, most of them Flemish, begin to arrive in Spain. Juan Holbecq, Flemish, native of Tournay was the first Chief Gardener with the title of supervisor of the gardens. Destiller of decoctions of flowers and herbs on a water- and oilbasis, he was also caretaker of the old palace. He was succeeded by his brother Franc Holbecq. Along with him came Hector Hennenon, Juan Bordieu, Daniel van Honele and his brother Jose, Guillermo Coluens, and Guillermo de Vos, born and raised in Mechlin and the most experienced of them all. They were followed by many relations.

They all go to Aranjuez, where they work under the command of their Mayor or Chief Guard, Rugal Patien. They also work at the small (artificial) lakes and waterworks, as we can read in various documents.

1563: 'The Dutchman says that the work on Lake Hontigola goes very well and will turn out excellent.' 'The Dutchman came and, seeing the lakes, said that a drainage canal is badly needed...'

1564: 'The trees from Colindres have arrived, one third of them were left in the forest to be taken to Aranjuez... could Your Majesty please tell in which part the Flemish trees, which are still on the way, will have to be planted. ...I will send for Juan Holbecq tomorrow to remind him of the Flemish trees, so Wanden can plant them in Aranjuez.'

The King will write personally '...qu'on veut que les cultivateurs flamands commencent à travailler de leur façon et faire l'expérience dans toutes sortes de terres... pour voir les résultats... *selon et à la manière de Flandre.*'

(...one wants the Flemish gardeners to start with their work in their own way and to gain experience in all sorts of soil... in order to see the results... *according to and in the Flemish way* [Madrid 2 July 1561]).

In 1577 the 'new residence' is finished and it is decided to stop working on the palace, to close the gardenwall and to complete it with a stone balustrade, to locate the spring and the flower beds according to the design of Herrera and to pave the lanes. In 1580 the Italian Roque Solario finished the 'green jaspis' fountain - qualified as 'marvellous' by Gomez de Mora - and it was placed in 1582, the year in which the garden was considered to be finished.

Both from the gallery of the lower garden, whose seven arches were closed



afterwards, as well as from the higher garden where his living quarters were situated, Philip II could enjoy his garden for more than 15 years; 'may the King enjoy himself looking out from his windows', according to Mora. In order to be able to enjoy the coolness of the private flower garden from a secluded spot, yet still detached from the 'house', nine small retreats, in the style of a 'grotto' were made in the eastern front wall.

In July 1622 the young Philip IV ordered a huge shipment of statues, which were divided between the palace and the gardens, to be dispatched to Aranjuez. The placing of one of the series of busts of the 'Twelve Caesars', a gift of Cardinal de Montepulciano to Philip II in 1561, not only gave Aranjuez cause for drawing a political parallel with the reigning Monarch, but also for a dynastic glorification. So the statue of Philip II made by Leon Leoni in 1586, was placed in a niche in the eastern front wall, where it still is today, flanked by two relief portraits of emperor Charles V and his wife - at present on display in the Prado - thus enclosing one of the 'retreats'. At this very moment one can attribute the pavement and gravel, which are quoted by all the later sources as far as 1868, to Colmenar. The artworks are recorded on a plaque which can be found underneath the statue of Philip II:

'The King N.S.D. Philip IV let this garden be adorned with the statues in which he himself is present, being Governor Don Francisco de Brizuelar. In the year 1623.'

In 1724 a start was made with the work on the laying out of the grand parterre of Philip IV in which the architect Marchand and the gardener Boutelou were involved. In 1733 it is decided to break down the Herrerrian wall which fenced off the small garden at the east side. On 27 August of that year Brachelieu says 'the gardenwall with the statues has already been removed and I will give instructions to have a guarded fence erected in order to prevent damage. At night two re-liaible workmen will have to watch, while during the day the gardeners will be assigned to do so'. The southern wall proceeds following the same pattern of niches along the entire southern boundary of the parterre. In it's turn this wall will be broken down under Charles III in 1768 and replaced by the current moat.

In the 19th century all descriptions and guides of Aranjuez certify the good state of the small garden, with its tiled pavement, its 'fine gravel' and its 'green jaspis fountain'.

In 1872 the great transformation of the 18th century parterre into an Elisabethan-landscape garden is accomplished and little changes have been made ever since. The existent plantation had to be replaced by tall trees, such as conifers, which were very fashionable in Europe at that time. For that purpose the problem of the rocky subsoil had to be solved. Probably at this particular moment it was decided to throw a layer of earth on the surface of the whole area, thus concealing the pavement of the King's Garden and the skirting board of the palace itself.

In the same year of 1872 the little green fountain is moved to the square courtyard in the nearby 'House of Lords' and is replaced by another one from the 18th century made by Mitchel. For the first time a typical Elisabethan garden is shown off.

The discovery of the pavement with its own characteristic style, the discovery of the famous 'green jaspis' fountain that belongs to it, the fact that the wall enclosing the east garden, as shown on the prints and ground-plans of Herrera and Gomez de Mora, has indeed existed, the fact that the



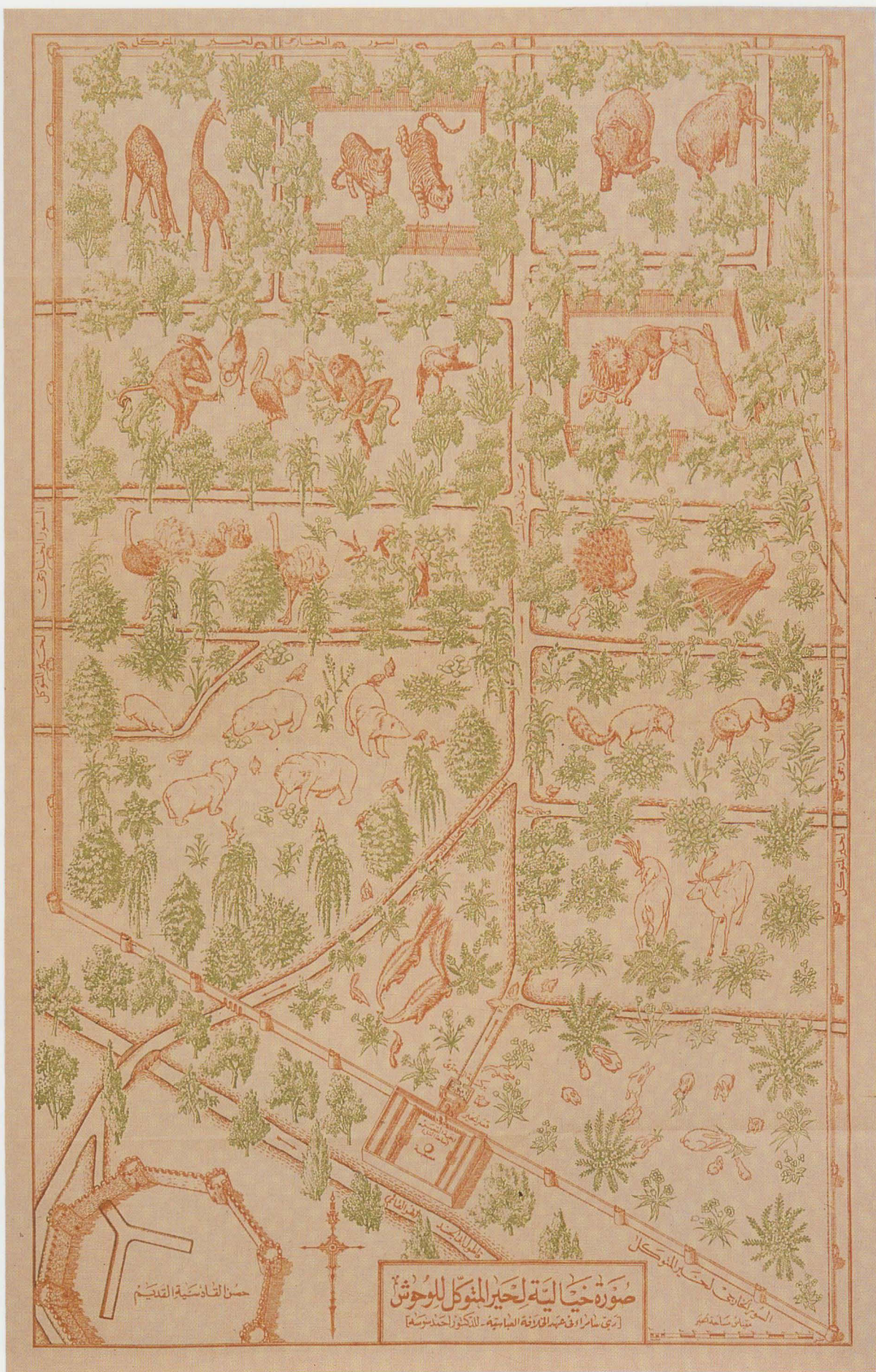


Plate 23. Hair al-Wühûsh, the zoological garden of al-Mutawakkil in Sāmarrā.  
From Diwân al-Buhturî, 1911.





Plate 24. Taking a drink outside at dawn. From: Hâfiz, *Dîvân*. Leiden University Library, Ms. Or. 856, dated 894/1489, fol. 155b.







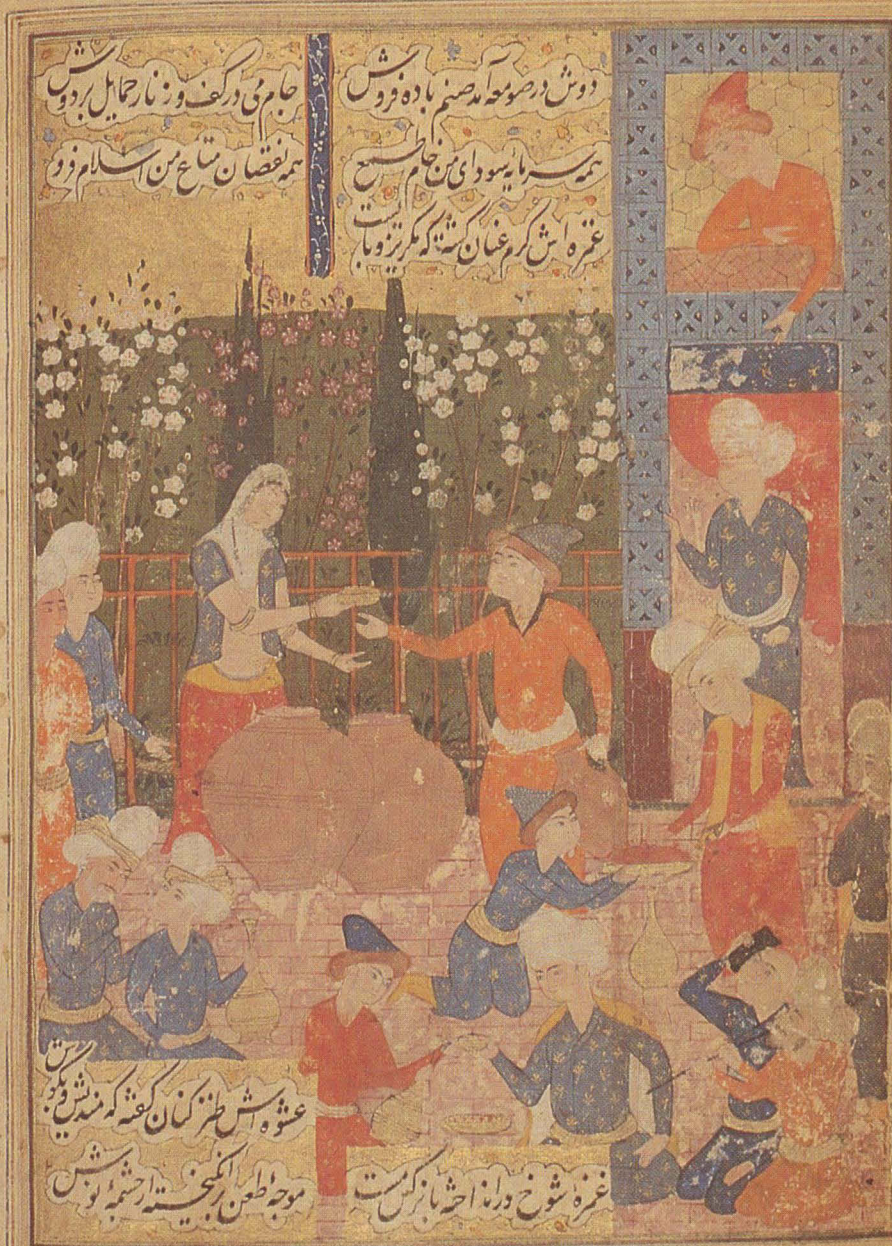


Plate 26. A drinking-bout on a garden terrace. From: 'Urfi, *Dīvān*.  
Leiden University Library, Ms. Or. 8800, 17th century, fol. 190b.



baroque fountain, with its dolphins and cupids doesn't seem to fit in the background of the walls in the austere style of Herrera, the fact that one perceives the doubtless sense of vocation of the secluded courtyard -all this made us decide to attempt to retrieve the renaissance-mannerism essence of the original period of this small area in the same way as it is recorded by Lucia Serredi, author of the project. In the restoration criteria we can say that with regard to the architectural elements a strictly preservative restoration has been carried out, while as far as the vegetal elements are concerned an environmental rehabilitation has been accomplished (*Plate 20 and 21*). The first excavations produced various discoveries which largely clarified the original lay out, as revealed in the 16th and 17th century ground-plans. The pavement which Philip IV had constructed in 1623 was discovered in the King's Garden (*Ill.34*). In principle 3 different patterns can be distinguished:

- a Cobblestone of 30 cm./pebble/cobblestone of 30 cm./pebble/cobblestone of 30: in the lanes T.2 and T.4, corresponding with the niches 3 and 7. Total width 2.15 m
- b Cobblestone of 30 cm./pebble/cobblestone of 50/pebble/cobblestone of 30: in the lanes, just as many transverse as length wise of the 'cross'. Total width 2.55 m.
- c Three cobblestones of 50 cm. alternating with two inter-vening spaces of pebble; in the 4 perimetric lanes. Total width approximately 2.90 m.

So the typology remains perfectly definite. The lanes are laid out according to three different patterns. These, in their turn, correspond to three different widths, which classify them. The shapes are slightly vaulted in order to let the water run away. The problem of the corners and the crossings is resolved in a liberal and artisan way. In the middle of various figures little birds' bones have been found, a frequent characteristic of the 16th and 17th century pavements. The pebbles were taken out of the streams in and around Aranjuez. In order not to conceal the new work, the smooth surface of the flagstones has not been treated with a carving knife, but with pumice stone. In the same way the figures have been accomplished, corresponding with drawings that are slightly different from the existing ones, taking care to clearly diversify the new work.

Due to the restoration of 1960, the two 16th century Herrerrian walls in the niches turned out to be drastically changed in their exterior aspect: in the panelling of the walls the first layer of brick was removed, after which they were tamped with common bricks and cement. The niches were coated with whitewashed cement as a result of which the ledges overlapped the mouldings of Colmenar stone. All the niches have been cleaned completely and since it turned out to be impossible to retrieve the original surface, it seemed that in this specific case, the most important thing to do was to re-establish at least a certain chromatic unity. Therefore it was decided to cover up the niches with limestone plasterwork, ochre coloured brick, smoothed with a trowel. In many documents the King's Garden is also referred to as the Garden of the Statues: the busts of the Roman Emperors, the statue of Philip II, the green marble fountain, the banks carved out of one single piece of wood, the pattern of the niches marked with the mouldings of Colmenar stone, skirting boards, cornices, railings, the very pavement, all this opulence reflects the importance of this small private garden of Philip II and Philip IV.

While awaiting the results of the profound study that is being made (only three pavements of the original collection were preserved), it was decided to



adorn the niches with the same existing busts for the time being. Only a simple cleaning operation was carried out, with water, neutral soap and soft brushes. The fountain was described in the documents to be of 'green jaspis'. In reality it is composed of an emerald coloured granite-marble (*Plate 22*). For the foundation of the fountain a square pedestal of Colmenar stone has been designed, 7 cm. high and of the dimensions as marked by the pavement itself. On top of this pedestal rests another, octagonal one with a smaller diameter and less high.

In the first gate of the palace a perfectly conditioned staircase has been discovered, of Colmenar stone as well, with four steps of each 20 cm. high. The existence of a skirting board along the whole facade of the palace with a perfect carrying capacity, has been verified. The height of this skirting-board was 80 cm., of which only 10 remained visible.

The lay out of the parterre is imposed on us by the design of the pavement, which creates eight flower-beds of 7 by 7 m. for plantation, with a construction of an architectonical element for embellishment in the four central figures, forming a square of approximately 6 by 6m.

Our contribution to the lay-out, in order to determine the typology of the gardens in their authentic period, consists in including the 8 flower-beds, according to designs inspired by Serlio, inside a figure that envelops them. (A clear illustrated example of this concept can be appreciated in an oil painting by Felix Castello of 1637 which shows the garden of the Casa de Campo in Madrid). In order to achieve this it was determined that the outer or perimetral hedge was to be 60 to 70 cm. high, while the inner hedge, forming the geometrical design, doesn't reach over 25 to 30 cm. It is the intention to place small wooden fences at the entrances of the lanes, which remind us of the ones that were used at that time with the purpose of barring the passage of birds and domestic animals. The basic plantation consists of Boxwood, *Sempervirens*, *Subfruticosa*, bulb-shaped fruittrees, flowers, shrubs and climbers selected from the botanical species of the 16th and 17th century, in accordance with the studies of the book of Gregorio de los Rios *The Garden Architecture of 1592*.

An irrigation network has been installed just like the traditional system that was used in Aranjuez - a way of irrigation which floods the terrain and lets the water take its own course - yet operated automatically.

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## THE ISLAMIC TRADITION

## SPAIN AND THE MIDDLE EAST



Ill. 35.

The justly celebrated Patio do la Acequia in the Generalife, Granada, contains many flowers as well as trimmed myrtle hedges, orange and cypress trees. However, not only are the slender arched jets of relatively recent date, but the present level of the courtyard is much higher than that of the original (photo author).





## AN INTRODUCTION TO THE PROBLEMS AND POSSIBILITIES OF RESTORING HISTORIC ISLAMIC GARDENS

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### INTRODUCTION

Most of the significant Islamic gardens that survive today may be found in a band that extends from Southern Spain and across North Africa to Iran, Pakistan and India. Together with many fine buildings, carpets, manuscripts, ceramics, textiles, glass, metalwork, calligraphy and other artefacts, they form an important part of the artistic heritage of Islam. The original attraction of these gardens was threefold. First was their symbolic reflection of Paradise, described in the Koran as a garden, a reward for the faithful. Second was their development of the secular tradition of the royal pleasure garden; to enjoy the pleasures of the privileged is always welcome. The third reason, which has most relevance today, is the particular response that these gardens provide to the demands of the terrain and climate in this part of the world, with its predominant dryness and heat. There is little doubt that many of the Islamic gardens that survive today continue to provide much pleasure to those that use them. That they be authentically restored to reflect their original state, and preserved to maintain this condition may in some cases be highly desirable. How possible this would be raises several issues, which this paper attempts to address.

### AUTHENTICITY OF TODAY'S GARDENS

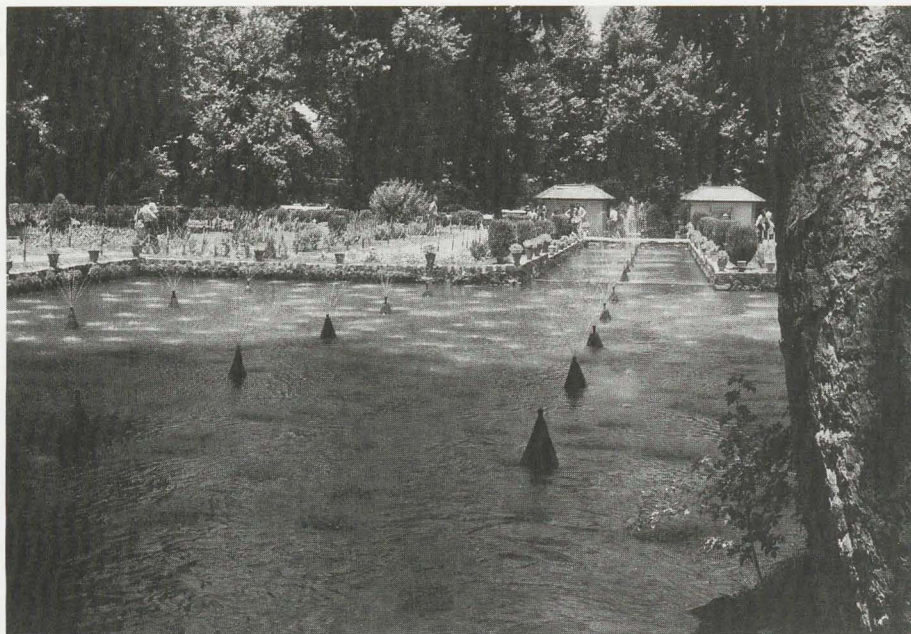
How genuine are those Islamic gardens that still exist today? Some may appear to be sufficiently authentic, but in actual fact may have been radically altered, or they may even overlay an earlier version. An assessment of a garden's authenticity will then depend on knowledge of the original plan, planting layout and plants used, and later reference will be made to this. Nonetheless, today's visitor is still able to appreciate many an Islamic garden in the manner it was originally meant to be seen, with its predominant formal and axial characteristics still prevalent. In addition, by walking through the garden, today's visitor may also be stimulated by the senses of hearing, smell and touch - the sound of waterfalls and fountains, views of flower beds, trees and paths - as well as by an intellectual appreciation of the garden's symbolic form. Indeed, due to the nature of their design, Islamic gardens reflect a completeness and finality in their regular geometrical arrangement that is usually assumed to date from their original establishment. However, by their very nature, gardens are inevitably in a transitional state, due to the succession of owners and gardeners who tend them, the subtle influence of the evolving culture of the various generations who use them, and the organic material of which they are composed; and what few original trees remain will by now be fully mature. Grassed areas are today often mechanically mown and fairly short; originally they would have been cut less frequently and possibly with the equivalent of a sickle or scythe. There is a chance that some plants in today's gardens were imported at a later date into the country, possibly from America or from the Far East. Even buildings have occasionally been added later. In Kashmir, some of the original Mughal pavilions in the gardens around Lake Dal have been replaced by those of Kashmiri design, as at Chashma Shahi or, more obtrusively, as at Nishat Bagh.

In almost every Islamic garden, water forms the most significant and



Ill. 36.

There is an abundance of water at Achabal, Kashmir, but the fountain heads, flower pots and pavilions are all additions that sadly detract from the original design of this garden (photo author).



attractive aspect. Water was introduced in a variety of ways, not all of which now remain. The full-flowing stream through the garden at Achabal, Kashmir and the spring of Bagh-i Fin, Kashan, still flow as they always have done (Ill.36). On the other hand, the wells at Sikandra, near Agra, as in many other gardens, are now dry, and the system of buckets and reservoirs that once fed the garden of the Taj Mahal from the River Jumna is now replaced by electric pumps. The authenticity of today's spray fountain heads may certainly be questioned, and the water jets in the Generalife's Patio de la Acequia, although often admired and photographed, only date from the 19th century (Ill.35). Incidentally, the present level of this garden is 50 cm higher than that of the original, which although also a *char bagh*, was of somewhat different proportions. These few examples are drawn merely to illustrate that although today's Islamic gardens may still be fully enjoyed and valued, some of their constituent parts no longer exist, and many others have been significantly changed. Restoration to their original state, if this were known and to be desired, would be a major operation, and may even sometimes not be possible. Concerning Spain, James Dickie, in the fourth Dumbarton Oaks Colloquium on the History of Landscape Architecture, states:

'Unfortunately the evidence on which an authentic reconstruction of the Andalusian garden could be based is tenuous in the extreme. The numerous allusions in poetry to flowers and fountains rarely or never specify the context in which they appeared. The gardens of the Alcazar at Seville, all too frequently eulogized as a fusion of the Arab and Spanish traditions, are neither the one nor the other but represent the typical Italian garden introduced into Spain during the Renaissance. The gardens of the Partal in the Alhambra at Granada enjoy no more antiquity than forty years, and with their box-edging, ubiquitous ivy and enormous Versaillesque perspectives in the style of Le Notre are diametrically opposed to the Muslim sensibility with its emphasis on the intimate and the within.'

However, he goes on to say, if somewhat optimistically, that:

'There remain, nevertheless, certain invaluable archaeological data which, combined with the literary descriptions and the evidence furnished by



Muslim garden design outside Spain, permit the reconstruction in plan and in detail of the Hispano-Arab garden.<sup>1</sup>

#### AUTHENTIC RESTORATION OF AN ISLAMIC GARDEN

Restoration of an Islamic garden involves two contrasting components: fixed architectural elements on the one hand, and vegetation that continually grows and renews itself on the other. The easiest elements to restore in an authentic manner would be those of an architectural nature such as pavilions, terraces and channels; even if these are misplaced or no longer in good condition, records such as carefully drawn perspectives and detailed descriptions, if reliable, can be of great assistance. In any case, for most gardens, the broad lines of the original layout still exist, or at least may be ascertained from traces of the original canal and pools, or from foundations of early buildings, walls, gateways and pavilions. As to vegetation, it is possible for greenhouses and nurseries to cultivate some rare plant species that the gardens originally contained, if they are not by now extinct. On the other hand, it is more difficult to avoid anachronistic planting, such as those plants imported into Spain after the discovery of America in 1492, or those that came from China in the 19th century. Modern hybrids of plants often differ from earlier varieties which in many cases would have been wild and indigenous; and some names, especially of fruit, have changed over the last 400 years.

Of assistance would be the archeological application of palynology, or the science of pollen and spores, which can identify plant species from soil samples and thus help locate and recreate flower beds of gardens that have long disappeared. As long as air has been excluded, the wet silt of disused wells can also yield organic remains such as twigs, seeds or leaves and thus provide an indication of what was growing, even if not its exact location. As a last resort, should no exact records of the plants in a particular garden exist, it may be possible to deduce planting from other gardens of similar period and character. As for trees, however, even if the original plants were still to exist, they would now be much more mature than when the garden was originally laid out; and when a tree does reach the end of its natural life and is replaced, this would be by one much younger and accordingly of different appearance. Whether the early means of providing water to many of the Islamic gardens should be reproduced today is more questionable.

For example, to restore water to Fatehpur Sikri in the original manner would entail a reconstruction of the early wells, tanks and other water-raising apparatus in a mode which today has clearly been superceded; to reconstruct such an original mechanism would provide a museum-like quality to an Islamic garden that may well seem inappropriate. A further problem remains with the records themselves of many Islamic gardens. Although some excellent poetic and literary descriptions, as well as wall paintings and miniatures exist, they may contain some artistic licence and their accuracy cannot entirely be relied upon. In addition, today's equivalents of some names and terms are not always known and may suffer in translation. Several plant names appear in Mughal records, for example, that today can only be insufficiently identified. It is therefore possible that although an Islamic garden may be restored in as authentic a manner as possible, the chance remains that the result may not be completely valid.

#### CONDITIONS FOR RESTORATION

To restore an existing historic Islamic garden, a full review of the documentation, both written and graphic, old and modern, should be made. An in-



ventory of existing conditions should also be undertaken. This should cover structures, the location and condition of soils, water and vegetation, including the species and ages of trees. The inventory should be accompanied by a record of existing management and maintenance practices and their effectiveness. If there is doubt about the garden's original layout, colour and infra-red aerial photography, including oblique views in low light, especially if taken in early spring and late summer, may reveal significant patterns not easily seen at ground level. For example, ground cover could reflect change in subsurface drainage, in turn affected by buried foundations or paths. Existing site conditions remain a prime determining factor. Even if historical records exist, it may not be feasible to restore the garden if all earlier features, architectural elements and vegetation, have been lost.

An adequate supply of water for the Islamic garden is also critical for its true restoration. Not only is water required for plants, but it is generally the major design focus. A sufficiency of water, with little likelihood of it being diverted for other uses, has to be ensured. Since there should also be no danger of encroachment from surrounding development - a constant threat at this time to gardens that were once located on the outskirts of a town - legal powers of zoning and acquisition, with adequate administrative support, must be guaranteed. Tax concessions, grants or long-term loans should also be available, which could possibly be counter-balanced if the garden were then to attract more tourists. Rather than leave the restoration to local creative abilities, professional and technical advice from historians, garden archeologists and architects should be sought. Management and maintenance procedures for the garden's upkeep should be established and subsequently closely followed. Responsibility for upkeep of the restored historic garden must be assumed either by government, a non-governmental organization, a combination of the public and private sectors, or by the formation of a new institution. Whatever route is followed, subsequent appropriate and effective care, as well as regular inspection of the restoration must be ensured. These individual measures would be strengthened if they were to form part of an overall planning, restoration and conservation program. Above all, a demonstrated public awareness and interest in local and national cultural heritage, if already expressed, for example, through a historic building conservation program, would be the most effective assurance of a historic garden restoration program.

#### SPECIFIC PROBLEMS

A major problem often faced in the restoration of a historic Islamic garden is the lack of accurate drawings and of an accurate, detailed description of the original design. Without accompanying graphic data, even a precise description can be misinterpreted; and even if detailed descriptions of original plant material are available, the exact location of the plant is often obscure.

Over time, some gardens such as the Bagh-i Babur, Kabul, have experienced so many alterations that it may well be difficult to identify the original.<sup>2</sup>

Even the location of a garden's entry has sometimes been altered. Entry to an Islamic garden is normally at its lowest level, so that waterfalls face the visitor on arrival; the entry to Shalamar Bagh, Lahore, is now reversed. On occasion, the original garden has even been replaced by another garden of different design. For example, the patio of the Qasr al-Mubarak in Seville was replaced in the 12th century by a quadripartite garden.<sup>3</sup> On other occasions, the original layout, as at Shalamar Bagh, Delhi, has virtually disappeared. An equally fundamental problem in restoration is change in the environment. In some cases, climate has altered, and for example has



Ill. 37.

Even when water did flow along the narrow channels to fill the shallow pools in the garden of Humayun's Tomb, Delhi, it was obviously in short supply. The water courses are now dry except during monsoon rains, after which the water soon evaporates (photo author).



become warmer and drier. The name of the city of Riyadh on the Arabian peninsula implies that at one time there were gardens in the vicinity, as well as the presence of water. Riyadh is not an isolated case; many a source of water that originally fed an Islamic garden has since either dried up, or, as in the gardens that surround the Tomb of Humayun in Delhi and Akbar in Sikandra, has fallen into disuse (Ill.37). Sometimes, water has been diverted; the spring that once emerged within the upper pavilion of Chashma Shahi, Kashmir, has now been permanently re-directed to serve a relatively recently constructed government building nearby: the result is a dry water chute, dry channels and no pools. More acceptable is the partial or intermittent diversion of water to irrigate surrounding fields, as at Shalamar Bagh, Kashmir. Some gardens are in earthquake zones. Dickie reports that the 11th century garden of the Alcazar, Seville was damaged by local tremors from an 18th century earthquake in Lisbon; the Bagh-i Babur, Kabul, was seriously damaged by an earthquake in 1842; and the oasis town of Tabas, Iran, was heavily damaged as recently as 1979.

Equally disruptive are wars and political upheavals, such as Kabul following the Mughal period, or Iran more recently. On such occasions, neither time, thought nor money are likely to be spared for garden maintenance. Also, of growing significance today is pollution, which affects air, water and soil, and especially buildings and plants in gardens located in large cities such as Delhi. The pressures of population growth add another dimension. Many Islamic gardens were originally located on the outskirts of a settlement; subsequent city expansion has increased the value of land to a point where the existence of a large garden is economically difficult to justify. High land assessments and taxes increase the pressure to build over a garden and thus destroy it for all time. This has happened in relatively recent years in Iran, with the erection of a stadium over the Bagh-i Shimal, Tabriz, and with housing on the site of the Bagh-i Takht, Shiraz. In Delhi, a section of the gardens of the Red Fort is used as a military garrison. Similar pressure is caused by a demand for increased food production, on fertile land easily accessible. A further unfortunate occurrence to gardens within urban areas is that of tall buildings erected immediately adjacent, as well as overhead utility lines, both



of which, as visual pollution, adversely affect the view from within these gardens. At the root of these threats of encroachment is the lack of protective legal power over zoning and acquisition, backed by adequate administrative support. Population increase has several further consequences. Increased vehicular traffic is one. In turn, this leads to road widening which has encroached on the edge of some gardens, and even, as at Shalamar Bagh and Nishat Bagh, Kashmir, to the cutting of a new road across an existing garden. Another effect is seen when some of the popular gardens, especially those located within or very near a large population centre, such as the Alhambra, Granada, or the Taj Mahal, Agra, are visited by enormous numbers of tourists. This leads to inevitable wear, a threat to fragile plant material even though it may be protected, the trampling of soft areas and the creation of wider paths. The introduction of incongruous features demanded by the public, such as an increase in the quantity of colourful flowers, seating, litter receptacles, restrooms, lighting, and even a car park, leads to the eventual destruction by visitors of what they came to see. Not only is the installation of all such additions visually out of place, but it reflects a general insensitivity on the part of administration and public to the garden's intrinsic beauty. One possible response to this situation would be to limit the number of visitors allowed to the garden at any one time; another would be to make sensitive parts of the garden visible but not accessible.

Understandably, lack of sufficient funding for upkeep militates against many Islamic gardens; the uniquely curved and attractively sited garden of Velez Benaudalla, near Granada, provides a sad example. Structures such as pavilions and walls in many gardens are in need of restoration; the interior of the pavilion adjacent to the source of water that flows through the Bagh-i Fin near Kashan is but one illustration. In fact, some gardens, such as that at Shahvanak, Shalvar Jig, near Tabriz, and at Medina Azahara, near Cordoba, have lain desolate for centuries (*Ill. 38*). Others, such as Pari Mahal and Hari Parbat, Kashmir, are partly in ruins. The slow speed of restoration, even when it is carried out, is not encouraging. A state of continual disrepair and neglect, indicated by meandering pipes, casual piles of bricks, sand and broken stone, tends to carry a sad air of permanency. Even the legislation which renders it illegal in some gardens to carry out alterations or to cut down trees has a similar delaying effect in restoration of the garden to its original condi-

*Ill. 38.*

The over-run and desolate site of the once flourishing extensive palace and gardens of Medina Azahara near Cordoba. At one time there were pavilions, terraces, reflecting pools, channels, gushing fountains and well-tended planting (photo author).





tion. On the other hand, when left to local creative abilities, inaccurate layouts and inappropriate or anachronistic plants and trees, as in the Alhambra's Court of the Myrtles, are almost sure to result. A specific occurrence was the 19th century restoration of the Bagh-i Babur, when planting in the Islamic tradition gave way to the then current Afghan interest in European horticultural trends.

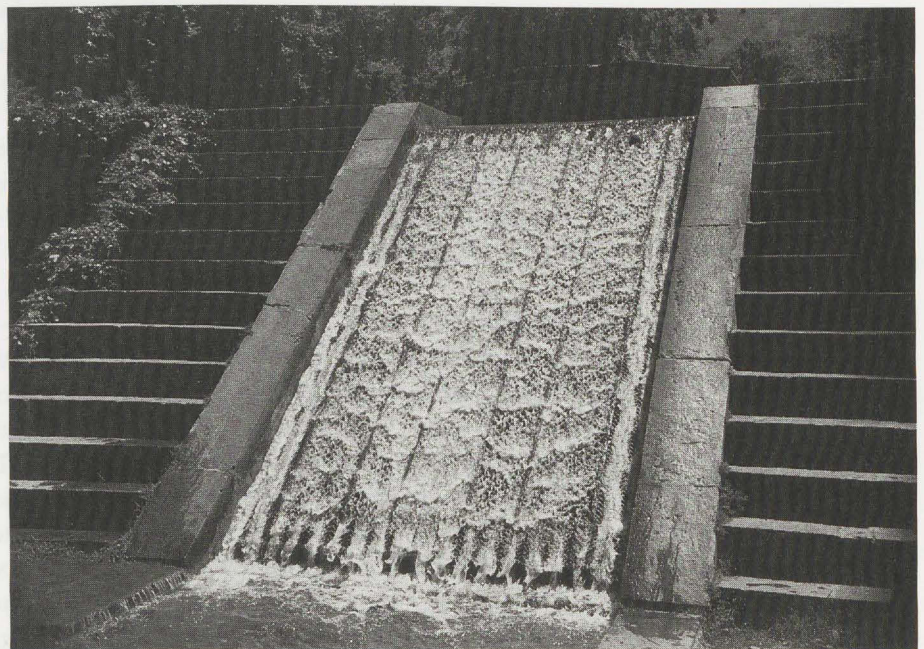
#### AN INTERNATIONAL CAMPAIGN

An international campaign to restore and preserve Islamic gardens would be worthwhile since most people prefer some measure of continuity with the past, and have an appreciation of their cultural heritage. Just as significantly, Islamic gardens possess a unity and simplicity that is still of relevance today, even though expressed in the vocabulary of an earlier time. On both these grounds alone, support should be forthcoming. A further reason is that many Islamic gardens have vanished over the course of time. Some have fallen into disuse and others have been destroyed, sometimes deliberately.

Unfortunately, the process continues. A campaign of restoration and preservation, if successful, would arrest this decline, preserve the gardens as a whole and perpetuate trees, shrubs and other plants that may otherwise disappear. There is also ample precedent for such a campaign. Many buildings and works of art are restored today both to prolong their life and to encourage public appreciation of them. To an extent, this analogy may be questioned, since the plant constituent of a garden is so short-lived compared to the inert components of buildings, paintings and sculpture. Nonetheless, a garden may still be a work of art, and its paths, platforms and pavilions have a similar life-span to that of buildings. In fact, legislation in many countries now recognises not only the value of particular buildings and art treasures, but also the value of historic sites and places of scenic beauty. A close link between such legislation and a campaign to apply it to the gardens of Islam may clearly be drawn. Such a campaign, whether under UNESCO auspices or through an existing non-governmental organization, or through such a body created for the purpose, would first list all known gardens and what is known of their history, together with an inventory of their ownership and condition. Eventually such record would contain more detailed information about each garden, and act as a basis from which the restoration process

Ill. 39.

Authentic parts of Islamic gardens are more easy to find than an entire authentic garden. A *chadar* at Nishat Bagh, Kashmir (photo author).





described in Appendix 2 could proceed.

Once public awareness and interest in the local and national cultural heritage is aroused and maintained, a resulting influx of visitors may sometimes help defray the costs of restoration. It would also be possible for funds from an international campaign to assist the restoration of historic Islamic gardens in a developing country whose funding priorities would understandably be devoted to concerns regarded as more immediate and pressing. However, for the success of an international campaign to restore and preserve the Islamic garden, several conditions would have to be met. As mentioned previously, a garden's full and accurate documentation, both written and graphic, should be available. Its water supply should be adequate, protective legal powers should be in place, and skilled professional assistance available. All this requires full agreement and support from the public and private sectors of society; and once in place, the garden's authenticity should be ensured by an appropriate maintenance program (III.39).

A word of caution remains. It has to be understood that the gardens of Islam were built at a particular epoch that met the requirements of the time. They remain fully appreciated today, but not exactly in the same way, in as much as the desires of society have since evolved. An original purpose of these gardens, through their size, location or relation to particular buildings, was to express their founder's power and prestige, or benevolence. Today their role is as a source of pleasure to the general public. They provide a site for the celebration of festivals and holidays, and are visited by families from the city, parties of school children, garden lovers and tourists. It is thus easy to understand that such visitors may well be more interested in the full experience of an artistically satisfying Islamic garden than in the more correct issues of scholarly authenticity; and this may result in the danger of an enthusiastically applied restoration that outruns the caution of one based solidly on research. An international campaign for the restoration and preservation of the gardens of Islam would therefore do well first to resolve whether restoration – the recovering of the form and details of a garden by the removal and accurate replacement of its constituent parts – would be in every case the best policy. In many instances it may indeed be highly desirable, but as we have seen may not always be possible. A focus on a specific *degree* of authenticity would prove to be a more reasonable objective in most cases. Two further options may be mentioned. First, that of rehabilitation, which while it allows a garden to upgrade and retain its historic character, yet enables it more to meet contemporary requirements. Alternatively, a policy of conservation could be adopted that would aim to harmonise preservation and change, while it prevents further deterioration. However, a clear distinction should be made between the latter policy and mere preservation, which although it would maintain the garden in its present form, would be indiscriminating in terms of authenticity.

#### PRIORITIES AND CONCLUSION

Eventually, decisions will have to be made on which Islamic gardens should receive priority for restoration. A strong case could be made for a garden created at the same time as a building that still exists and with which it forms an integral part; the garden that surrounds the Tomb of Humayun, Delhi, or the garden that leads from the Chehel Sutun, Isfahan, are such examples. For a full appreciation of the original design intentions, the survival of both building and garden would here be essential. UNESCO's World Heritage List also contains some relevant criteria that could be applied to gardens. For example, that the garden shall be a unique artistic achievement, or illustrate a



unique historic stage, or have exerted great influence over a span of time on further developments. It should also be authentic in design. The List stresses that 'reconstruction is only acceptable if it is carried out on the basis of complete and detailed documentation on the original and to no extent on conjecture'. It must also be reiterated that successful restoration of an Islamic garden may only be carried out when an adequate supply of water is available, when sufficient funds and a legal framework exist for such restoration, and skilled professional advice supported by a good supply of dedicated gardeners, is on hand.

In sum, one needs recall that the early Muslim created an image of paradise which in the Islamic garden became fused with reality and the achievement of an artistic standard of perfection. Yet such a standard of perfection has always remained the motivation of the creative artist; only in our own day is the concept of beauty questioned and regarded as subjective. If simply for this reason, it would reflect well on our own culture if it could be seen to restore and preserve such a supreme contribution to the artistic heritage of mankind as the gardens of Islam.

#### NOTES

1. James Dickie, 'The Islamic Garden in Spain', in *The Islamic Garden*, Fourth Dumbarton Oaks Colloquium on the History of Landscape Architecture, eds. E.B. MacDougall & R. Ettinghausen, Washington D.C. 1976.
2. For a thorough detailed account of the painstaking care, as well as of the trials and tribulations involved in restoring an early 16th. century garden to a credible degree of authenticity, see M.T.S. Papaghiolo *Kabul: The Bagh-i Babur*, Instituto Italiano per il Medio ed Estremo Oriente, Rome, 1972.
3. See James Dickie, in MacDougall, E.B. & R. Ettinghausen, (eds.) *The Islamic Garden*, Fourth Dumbarton Oaks Colloquium on the History of Landscape Architecture, Washington, 1976.

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## APPENDIX 1

Definitions from US Department of the Interior's Standards for Historic Preservation Projects Treatments. The following definitions are provided for treatments that may be undertaken on historic properties listed in the National Register of Historic Places:

### *Acquisition*

Is defined as the act or process of acquiring fee title or interest other than fee title of real property (including the acquisition of development rights or remainder interest).

### *Protection*

Is defined as the act or process of applying measures designed to affect the physical condition of a property by defending or guarding it from deterioration, loss or attack, or to cover or shield the property from danger or injury. In the case of buildings and structures, such treatment is generally of a temporary nature and anticipates future historic preservation treatment; in the case of archeological sites, the protective measure may be temporary or permanent.

### *Stabilization*

Is defined as the act or process of applying measures designed to reestablish a weather resistant enclosure and the structural stability of an unsafe or deteriorated property while maintaining the essential form as it exists at present.

### *Preservation*

Is defined as the act or process of applying measures to sustain the existing form, integrity, and material of a building or structure, and the existing form and vegetative cover of a site. It may include initial stabilization work, where necessary, as well as ongoing maintenance of the historic building materials.

### *Rehabilitation*

Is defined as the act or process of returning a property to a state of utility through repair or alteration which makes possible an efficient contemporary use while preserving those portions or features of the property which are significant to its historical, architectural, and cultural values.

### *Restoration*

Is defined as the act or process of accurately recovering the form and details of a property and its setting as it appeared at a particular period of time by means of the removal of later work or by the replacement of missing earlier work.

### *Reconstruction*

Is defined as the act or process of reproducing by new construction the exact form and detail of a vanished building, structure, or object, or a part thereof, as it appeared at a specific period of time.

## APPENDIX 2

*Suggested restoration process for historic Islamic gardens:*

1. Review of existing historical documentation, both written and graphic material, including aerial photography if available.
2. Plan drawn to scale, of all information, including property boundaries, existing structures, paths, terraces and vegetation.
3. Inventory of existing conditions: soils, water, vegetation (including ages of trees) and structures.
4. Record of existing management and maintenance practices and their effectiveness.
5. Proposal for restoration.
6. Proposals for management and maintenance.
7. Establishment of priorities and phasing.
8. Physical restoration.



## THE 'ABBÂSID GARDENS IN BAGHDAD AND SÂMARRÂ (7-12<sup>TH</sup> CENTURY)

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In his opening session Drs. A.J. van der Staay rightly remarked that 'Gardens are living things and as such they are mortal'. It is indeed so if they were not born within a specific cultural tradition of which the art of gardening forms but a small part. Thus Ibn Khaldûn, the famous Arab historian of the fourteenth century noticed that, 'in the Orient the arts had enough time to strike deep roots in a long succession of centuries under different rulers; Persians, Nabatians, Copts, Jews, Greeks, Romans and others. All the habits and tastes of a sedentary people's life of which art forms but one part, were fully established in these countries, and the traces they left behind will never be easily obliterated'.<sup>1</sup> One nation steps directly into another one's footsteps, learns a lesson, and adds what was already its creation. Thus the love of gardens during the 'Abbâsid period, whether in Baghdad or in Sâmarrâ, was born within the already existing cultural tradition of Mesopotamia, where the art of gardening had been perfected many centuries before by the Christian monks around their monasteries, as we shall see, rather than having been directly influenced by either the Persian or Byzantine art of gardening for a very simple reason; the land topography and weather conditions of Iraq are, in many ways, different.

Practically the 'Abbâsid horticultural art responded just as much to its surroundings as the Assyrian or the Persian one did in the arid and hilly country in north Mesopotamia or Persia. Or just like the Babylonians who are accredited with inventing the hanging gardens: an invention which is also shared by the Assyrians. As conditions must always be determined by reason of utility, there must have been a reason underlying the introduction of the hanging gardens into Mesopotamia by the Babylonians or by the Assyrians or even spontaneously by both. As one might expect, the art of gardening was not introduced ready-made by the 'Abbâsids into the architectural design of either Baghdad or Sâmarrâ, rather it was the creation of many people of different and diverse origin and culture: Arabs, Persians, Turks and others. Nor was it even purely Islamic, for many Christians, Mandaens and Zoroastrians were among its creators. In other words the 'Abbâsid Empire was no primitive upstart, but came into a world that was already very old and very civilized. Despite this diversity of its origins, however, the 'Abbâsid art of gardening was rather a new creation, in which all these elements were fused together into one new and original artistic whole by the transformation into Islamic form. Such a transformation was mainly due to the assimilative power of the 'Abbâsid culture, often misrepresented as merely imitative. By this is meant its tendency of comparative tolerance and receptivity. Unlike the Umayyads before them, the 'Abbâsid regime was generally liberal and tolerant, in so far that it depended for its cultural success and achievements not on one particular race or creed but on all, leaving all of them their religious, economic and intellectual freedom, and the opportunity to make a considerable contribution to the 'Abbâsid civilisation.<sup>2</sup>

Not long after the collapse of the Umayyad dynasty in 749, whose seat of the Caliphate was in Damascus, at the hands of the 'Abbâsid house, the new victors soon transferred the seat from Syria to Iraq. And thus the first 'Abbâsid Caliph al-Saffâh (ruled from 750 to 754) set up his capital in the small town of al-Hâshimiyya, which he built on the east bank of the



Euphrates to house his family and his guards. Later on he transferred his capital some distance southward not far from the monastery of Mâr Yûnân, of which the delightful gardens had attracted every Caliph and official dignitary who happened to pass by on their journey, to take up quarters in this monastery.<sup>3</sup> Those gardens had inspired a contemporary poet to write the following verses:<sup>4</sup>

*Like a lover's eyes watching his beloved so the narcissus are, without fear or caution  
And when the red anemones appear in full bloom glowing like fiery flames  
Or like a vast red carpet unrolling in honour of a mighty king  
And the tender violet in the garden resembles a pinch brought on a virgin's cheeks  
Daisy, lily of the valley beautifully blossoming together with ox-eyes and wormwood  
gloriously brilliant*

Now, it was left to al-Mansûr (754-775), the second 'Abbâsid Caliph and in many ways the founder of the new regime, to establish the permanent seat of the 'Abbâsid capital in the new city on the west bank of the Tigris river not far from the ruins of the old Sassanid Persian capital of Ctesiphon. The new city soon acquired an official name: *Madînat al-Salâm* (the city of peace) or *Dâr al-Salâm* (the abode of peace), an appellation which occurs twice in the Koran (6:127; 10:26) to mean: the Heavenly Paradise. As the 'Abbâsid dynasty came to power through a religiously motivated movement, and sought in religion the basis of unity and authority, the Koranic meaning was certainly in their mind. Be that as it may, the new city was and still is known by the name of a small village that previously occupied the site; Bâg-Dâd and scholars are still hopelessly at variance as to the origins of the name.<sup>5</sup>

To be sure, one of the theories stresses the Aramaic origin of Baghdad; by arguing that since most of the inhabitants of the area were Aramaic as to race and language, as is clearly revealed in the names of some towns such as Ba'qûba, Bâqûqâ, Ba'shîqâ, and since the area was swarmed with Christian monasteries, the name Baghdad must have been of Aramaic origin.<sup>6</sup>

This hypothesis is born out by the vast number of Christian monasteries mentioned by Arab historians and geographers, and the fact that some of them even devoted entire works to them,<sup>7</sup> in which they vividly described such monasteries and their delightful gardens by collecting poems and stories relating to them. Most of these monasteries were either inhabited by Nestorians or Syrian (Jacobites) monks and nuns such as *Dayr Mâr Fâthion* (the Monastery of Master Fâthion), *Dayr al-'Gâthalîq* (the Catholicos Monastery), *Dayr Bustân al-Qass* (the Monastery of the Pastor's Garden), *Dayr al-Tha'âlib* (the Monastery of the Foxes) and *Dayr al-'Athârâ* (the Monastery of the Virgins). Of this monastery and its particularly splendid gardens the poet Ibn Tâhir, addressing his drinking companion, says:<sup>8</sup>

*Don't you perceive, O' Sa'id, what a joyful time we were having  
Cheerful and sunny together with gardens beautifully arranged  
Like an embroidered garment adorned with new colours every day  
The poppies in them appear like a lover and the ox-eyes like a pale beloved  
Behold the staggering branches like maiden figures and the blossoms like their pearl necklaces  
And the fruits when covered with green leaves like swelling breasts hidden under green garments*

This being the case it is then no wonder that the first Royal 'Abbâsid palace was built in the gardens of the Mâr Fâthion Monastery by the founder of



Baghdad soon after the completion of the city.<sup>9</sup> This palace was called *Qasr al-Khuld*, meaning: 'The Abode of Eternity', that is Paradise. Only seven years later, the second palace was built in the gardens of the former and was called: *Qasr al-Qarâr*, meaning: 'The Palace of Repose' which is again a Koranic designation reminiscent of Paradise.<sup>10</sup> When asked about his choice of the site to build his first palace, al-Mansûr replied:

'I chose this site for its delightful gardens and so that I might be able to enjoy the landscape of the Tigris river.'<sup>11</sup>

In fact, this is not an isolated event but records show that in Baghdad as well as in Sâmarrâ Royal Palaces were actually built in gardens belonging to monasteries, the most prominent among them was the Caliphate Palace (*Dâr al-'amma*) in Sâmarrâ.<sup>12</sup> Even Christian or Jewish architects were entrusted with laying out Royal Palaces and gardens.<sup>13</sup> Most if not all of these monasteries were reputed to have been rendez-vous for Muslim libertines and men of pleasure who were attracted to them on account of the taverns usually attached to them. There they were free to drink as much wine as they wished and enjoy the monastery's gardens and the company of a *dayrânî* or a *dayrâniyya* (that is a monk or a nun as they were called then), particularly during the annual festivities which were held in every monastery on various occasions.

On the whole, the history of the 'Abbâsid art of gardening is almost exclusively connected with two cities, namely: Baghdad and Sâmarrâ, the second 'Abbâsid capital built some 110 km north of Baghdad in 835 CE by the Caliph al-Musta'sim to house his Turkish army. Here I must point out that in spite of the numerous allusions in literary and historical works to gardens and fountains, to flowers of various kinds, to pools and even lakes having been laid out in palaces in Baghdad and Sâmarrâ, there are rarely any specific references to the architectural design of an 'Abbâsid garden, let alone to a monastic garden. There remains, nevertheless, certain invaluable archaeological data which, combined with literary descriptions may permit for the reconstruction, in some detail, of the 'Abbâsid garden.<sup>14</sup> Evidently the monastic art of horticulture, as it seems, was a major factor in influencing the 'Abbâsid style at the beginning, but it soon began to be transformed into something more splendid and elaborate under Persian influence. This was characterized by a taste for costly and glittering materials, ostentatiously displayed to impress the visitor with rank, wealth and pomp of the owner. This is very much in evidence in the palaces in Sâmarrâ and then in Baghdad soon after the Caliph al-Mu'tamid abandoned Sâmarrâ and finally returned to Baghdad in 892 CE. Two years later, his nephew al-Mu'tadid laid the foundation of *al-Tâg* palace (the Crown Palace) on the Tigris nearby, but he later on decided to build another palace, two miles to the north-east. There he built the magnificent and stupendous *al-Thurayyâ* palace (the Pleiades palace), linking it with an underground passage of more than three kilometres to his first palace. He surrounded it with magnificent gardens; and in the middle of these gardens he ordered an immense lake to be dug out, to which he brought water through a canal connecting two rivers; the Mûsâ river to the east of the palace and the Tigris to the west.<sup>15</sup> He moreover, ordered a large zoo to be built which housed all sorts of animals, imitating of course his grandfather al-Mutawakkil's style of building palaces in Sâmarrâ. With this state of affairs in mind, it seems, therefore, natural to direct our attention temporarily to this city and its short-lived horticultural art. In the ninth century, a son of Hârûn al-Rashîd's who, in the minds of the



people of western Europe, has forever become inseparably linked with the Tales of the Thousand and One Nights, founded a new 'Abbâsid capital, which was first called: *Surra man Ra'â* (pleased is he who sees) and later on just plainly Sâmarra, on the Tigris which exceeded even Baghdad in luxury and splendor. Of this city, the geographer, al-Ya'qûbî, writing in 889 CE reports that 'the whole land was converted by al-Mu'tasim into gardens for the upper class'. In every garden there had to be a palace and herewith halls, ponds and playgrounds for riding and for the game of polo.<sup>16</sup> His son al-Mutawakkil, who was exceedingly fond of roses,<sup>17</sup> exceeded his father in building palaces with marvellous gardens. Archaeological data combined with literary sources suggest that one of al-Mutawakkil's seventeen palaces called *al-Jawsaq al-Khâqânî* consisted of 432 acres, 172 of which were gardens with pavilions, halls and basins, the whole complex being surrounded by a wall. In most, if not all, archaeological data concerning the architectural design of the 'Abbâsid garden in Sâmarra, one feature which will prove of great importance to the architectural form of the garden is wanting, namely the irrigation system. In reality, the water level of the Tigris in Sâmarra was, and still is, much lower than the adjacent area, even at the time when the water level reaches flood level in Baghdad. The first step the founder of Sâmarra took was to build an extensive irrigation system to bring water from the river. This he accomplished by digging huge underground canals some 40 km up the river and at the same time using the *noria* (waterwheel) technology to pump the water through the town by means of smaller sub-canals, which in their turn were conducted to almost every garden and pond in the city, and the rest of the water, if any were left, would end its journey in the river again.

We were informed that, in some gardens, waterwheels were erected and that not oxen were employed to rotate the waterwheels but ostriches. The court poet al-Buhturî had occasion to write the following verses praising al-Mutawakkil and at the same time describing the newly built palace called al-Sabîh and its pond. This is what he wrote:<sup>18</sup>

*And the stream being replenished with gushing water, glittering like a luminous sword  
When it bursts into the middle of the beautiful pond its marble colours the water  
would assume*

*And the waterwheels rotate with no animal of plough but with ostriches  
These gardens make us long ardently for Paradise and thus we eschew more sins and  
shun evil deeds*

*Behold the two lofty pavilions, and in between there rest circuits of gardens of veritable  
multi-colours just like what embroidery needs*

*Of all manner of colours and charm, its luxuriant narcissus, its fragrant myrtle and its  
saffron shine*

So far, the only palace unearthed at present, and that imperfectly so, to the south of present-day Sâmarra, is Balkûârâ palace, a well known palace often mentioned in literary works. It was built by al-Mutawakkil for his son al-Mu'tazz. One of its reception halls is reported to have been 100 *dhirâ'* long and 50 *dhirâ'* wide.<sup>19</sup> The area on which the palace was built covered one and a third square kilometres. It is entered by means of wide courts which are paved, and decorated with flowering plants, perhaps in big pots. These courts one would walk through before arriving at the state-rooms; on both sides there were the courtiers' apartments. A large courtyard which might possibly have been rose gardens, leads directly to two larger courts which were used as gardens or for games.<sup>20</sup> Like every 'Abbâsid palace in Sâmarra,



this palace looked towards the river and therefore it must have had large gardens in front. Its most striking feature is the strict axial plan, which makes it possible to get a view on every side owing to the raised site of the palace. The gardens on the river side are enclosed by a wall, having pillars and ending on the bank in finely decorated pavilions. In the middle there must have been a kind of large pond or very big basin. At the very extremity of the front gardens there is a harbour for boats which seems to have been a common feature of the 'Abbâsid palaces of Sâmarrâ and Baghdad. In the palace of the Caliphate to the north of present-day Sâmarrâ, so far very superficially excavated, one can observe the same axial design. Here again, both the palace and its courts stand above the high river banks on a prominent platform, which may possibly have been a set of gardens. Further inland one passes through an immense door into a great ornamental garden court, which gets its water from a basin in the centre by means of a long canal stretching from the north down to south-west; that is in the direction of the river. At the end of the garden there is a large sort of square grotto with an underground tunnel on both sides. In each wall there are three speciously constructed niches, dug out in each of the walls and richly ornamented with flowers and animal motifs.<sup>21</sup> It was meant to be the Caliph's private swimming pool probably to be used during the day, and the other one situated to the north-west of the first seemed to have been allocated to the Royal ladies and to be used during the night because the entire structure must have been roofed, a stately overture to the grandeur to follow: an esplanade of a completely walled garden.<sup>22</sup> A definite favourite of al-Mutawakkil in Sâmarrâ is his *Hair al-Wûhûsh* (Plate 23), that is his zoo (or zoological park), which he built for his own pleasure to the south of the city to house more than two thousand kinds of different animals, both wild and domesticated ones (Plate 23).<sup>23</sup> Furthermore, an extraordinarily handsome country palace was built with a huge pool. This pool of 200 metres long and 200 metres wide was laid out in front of the palace. In terms of its plan, it functions as an utterly opulent display of richness as well as a piece of engineering genius. The whole area covered by the park is about 53 square kilometres. A man-made river called Nayzak was brought to flow from the northern part of the Tigris through the park and finally through the pool to end again in the river. The whole park was densely planted with trees and bushes imported from every corner of the empire and the wild animals, we are told, were kept in extremely large cages and were looked after by especially trained keepers.<sup>24</sup> In the pool itself, not only all species of fish were swimming freely, but even some dolphins were to be seen there and some cascades appeared to have been added to complete the scenery. Such scenery inspired a court poet to portray it like a 'rushing bunch of horses', while the gardens encompassing the pool are 'resembling the peacock's tail feathers in beauty and colours'.<sup>25</sup> One may well imagine how, in times past, the master of such a park, palace, and pool together with his royal guests were wont to sit in such place so as to enjoy the gentle breeze and delightful vistas while listening to their musicians and pretty looking singers.

The same pattern can be observed in almost every 'Abbâsid palace in Baghdad. But as there is little or nothing left of the 'Abbâsid palaces in present-day Baghdad, we are forced to rely heavily on literary descriptions, which are above all tenuous in the extreme. Baghdad was the residence of the 'Abbâsid Caliphs for nearly five hundred years, with the exception of the period of less than fifty years spent in Sâmarrâ. By reason of its favoured situation, Baghdad retained its importance and remained the great centre of commerce and cultural activity, lacking only the immediate attention of the



Caliphs during their brief absence in Sâmarrâ. Once the seat of power had been moved back from Sâmarrâ to Baghdad, an active time of building began again, to such an extent that within a few years an enormous array of caliphial palaces sprang up on the east bank of the Tigris river, practically creating a town of its own, with many edifices and gardens, all encompassed by a circular wall, with gates of its own and the bank of the river forming it radial line. There were twenty three palaces within the Royal precincts; the most conspicuous among them were the *Qasr al-Tâg* (the Crown palace), *Qasr al-Firdaws* (the Paradise Palace) and the House of the Tree,<sup>26</sup> often mentioned in literary and historical sources in connection with a certain Byzantine embassy to the court of the Caliph al-Muqtadir in the year 917 CE. The Byzantine ambassadors reported that the gardens of the palaces reached down to the Tigris. They furthermore were amazed at the magnificence of what they saw. First they passed through marble halls and corridors of the so called Riding House, beside which there was a great animal park, with special houses, containing various wild beasts such as elephants, hundred lions, giraffes and leopards. Some of the animals at the Zoo were tame enough to eat out of a visitor's hands.<sup>27</sup>

We are furthermore told that the House of the Tree stood in the midst of lovely gardens, and took its name from a tree made of gold and silver, standing in the centre of a great pond in front of a large reception room of the palace ground among the trees in the garden. This tree had eighteen boughs of gold and silver, and innumerable branches all covered with all sorts of fruits that were actually precious stones. On the branches sat birds which were made of gold and silver, and when a breeze passed through, they whistled and sung in a wonderful way. At the side of the palace, right and left of the pond there were statues of fifteen knights on fifteen horses, dressed in silk and brocades and girt with swords while in their hands they carried lances. They were able to move back and forth in a straight line so that it looked as though each knight was trying to hit his neighbour.<sup>28</sup> To add to the novelty of the 'Abbâsid love of gardens, the historian al-Mas'ûdî reports that the Caliph al-Qâhir (ruled 932-934) was extremely fond of gardens. At his behest a garden was laid out for him in one of the courts of the Crown Palace. The size of this garden was only about 1500 square metres, but it contained orange-trees imported from Basra and many other trees brought from 'Omân and India. On the thickly but regularly planted trees the fruits gleamed yellow and red, bright as the stars of heaven in a dusky night. Around the trees grew all kinds of shrubs with strong-scented and sweet-smelling herbs, various sorts of flowers and other plants. He, moreover, added to his garden many kinds of birds including turtle-doves, pigeons, blackbirds and parrots, brought to him from foreign lands and distant countries. It is said that this garden was indeed the fairest one could set eyes on.<sup>29</sup> We have already alluded to the fact that the art of gardening was not brought ready-made by the 'Abbâsid to the architectural design of Baghdad or Sâmarrâ, but that it was the creation of several bygone civilizations, whose artistic roots and schemes, once given a chance, flourished again, whether they were Assyrian or Babylonian, or Byzantine or even Persian. Be that as it may, the scanty archaeological data and literary descriptions at our disposal with regard to the 'Abbâsid garden seem to point rather to a monastic influence than to a Persian design because the 'Abbâsid garden never contained 'four rivers' the most characteristic feature of a Persian garden. True enough, the straightness of the main lines of the layout is there both at Byzantine as well as at Samarqand, thus resembling the Persian style, but the decoration in plantation, water devices, zoological gardens, very



large ponds and fountains, however, point to a mixture and infusion of ideas and trends, which at their best created what we call 'the 'Abbâsid garden', lacking a specific reference.

To conclude this topic, a translation of the poet al-Sanaubarî's verses concerning the preservation of gardens and the vandalism they suffer at the hands of the 'evil-doers', seems to be appropriate here. This is what he says:<sup>30</sup>

*The eyes perceive as flirting damsels, frivolous and gay  
The Cypress trees, tucking up their skirts in bliss and joy  
And their legs, they show slim and bare  
When the Eastern breeze stirs one of them to move  
It looks like a girl dallying her mates up there  
If I ever possess power to protect the noble gardens and conserve  
No wicked man would ever set a foot inside or dare!!*

#### NOTES

1. *Al-Muqaddima*, Cairo 1311 A.H., p.18; F. Rosenthal's tr., London 1958, 1, p.58.
2. Lewis, B., *The Arabs in History*, London 1970, p.140.
3. Yâqût, *Mu'jam al-Buldân*, Bairut 1956, 2, p.537; al-Shâbushtî, *Kitab al-Diyârât*, ed. G. 'Awwâd, 2nd. ed., Baghdad 1966, p.109, 258.
4. Al-Shâbushtî, p.259.
5. Jawâd, M. and Sûsa, A., *Dalîl Khâritat Baghdâd*, Baghdad (Iraqi Academy) 1958, p.16-19.
6. Ibid., p.18; E.I.<sup>2</sup>, s.v. 'Baghdad'.
7. E.I.<sup>2</sup>, s.v. 'Dayr'; Yâqût, op. cit., 2, p.495-543.
8. Al-Shâbushtî, p.109.
9. Jawâd and Sûsa, op. cit., p.9, 56, 75.
10. Ibid., p.36-37, 75.
11. Ibid.
12. *Ta'rîkh al-Tabarî*, iii, p.1180; Yâqût, op. cit., 3, p.174; al-Ya'qûbî, *Kitâb al-Buldân*, Leiden 1861, p.29, 32.
13. Like the Christian Dalîl ibn Ya'qûb who was entrusted by the Caliph al-Mutawakkil with building al-Ja'farî palace in Sâmarrâ (Yâqût, op. cit., 2, p.143) and the Jew Sanad ibn 'Alî to build al-Mu'izziyya House in Baghdad, (Jawâd and Sûsa, op. cit., p.116).
14. Most of the archaeological data concerning the 'Abbâsid gardens in Sâmarrâ have been taken from Ahmad Sûsa's work, *Rayy Sâmarrâ' fî 'ahd al-Khilâfa al-'Abbâsiyya*, Baghdad 1948, and E. Herzfeld's, *Geschichte der Stadt Samarra*, Hamburg-Berlin 1948, together with his *Samarra, Aufnahmen und Untersuchungen zur Islamischen Archeologie*, Berlin 1907, and my own observations of the sites.
15. Yâqût, op. cit., 2, p.77; Jawâd and Sûsa, op. cit., p.120-124.
16. Al-Ya'qûbî, op. cit., p.39.
17. It is reported by al-Tha'libî that he used to say 'I am the King of Kings and the Rose is the king of all flowers', cf. *Kitâb Latâ'if al-Zurâfâ' min Tabaqât al-Fudalâ'*, my edition, E.J. Brill-Leiden 1978, p.25.
18. *Dîwân al-Buhturî*, Cairo 1911, 2, p.268, 271. See his fascinating description of al-Kâmil Palace of the Caliph al-Mu'tazz in Sâmarrâ, 2, p.124.
19. Al-Shâbushtî, op. cit., p.150-156.
20. See note 14 above.
21. Sûsa, A., *Rayy Sâmarrâ'...*etc., op. cit., 2, p.287; *Dîwân al-Buhturî*, 2, p.321.
22. Ibid., p.298-299.
23. Ibid., 2, p.296-309; 608; *Dîwân al-Buhturî*, 2, p.321.
24. Sûsa, A., op. cit., 2, p.299.
25. *Dîwân al-Buhturî*, 2, p.319.
26. E.I.<sup>2</sup>, s.v. 'Baghdad', with references.



27. Ibn Kathîr, *al-Bidâya wa'l-Nihâya*, Bairut 1983, XI, p.127-128.

28. Ibid.

29. Jawâd and Sûsa, op. cit., p.127.

30. *Kitâb al-Rawdiyyât*, Halab 1933, ed. Râghib al-Tabbâkh, p.21. Al-Sanaûbarî (died in 945 CE) was a Syrian poet.



## SOME STRIP OF HERBAGE: GARDENS IN PERSIAN POETRY

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### THE PERSIAN GARDEN

In the 1859 edition of his *Rubáiyát*, Edward Fitzgerald summarized the meaning of gardens in Persian culture in these few lines:

*With me alone some Strip of Herbage strown  
That just divides the desert from the sown,  
Where name of slave and Sultan scarce is known,  
And pity Sultan Mahmud on his Throne.<sup>1</sup>*

This version of a Persian quatrain by Omar Khayyam draws a very incomplete picture of our subject, but it was clear enough to appeal to a romantic view of the Orient prevailing in Europa at the time. Scenes of this kind have often been visualized in illustrated editions of the *Rubáiyát*, where solitary figures or couples in amorous embrace are shown revelling in the beauties of nature. In spite of the fact that such images have become a cliché, they are not irrelevant to our understanding of authentic values in Persian culture. It is undeniable that gardens did have an exceptional attraction for Persians and figure most prominently in their literature and art, but also in their ordinary way of life.<sup>2</sup> Moreover, the few features mentioned in this little poem correspond to ideas expressed time and again, not only in the quatrains of Khayyâm, but also in numerous other Persian poems.

What does the quatrain really say about Persian gardens? First, that they are tiny pleasure grounds, existing rather precariously as strips of green carved out of the waste land on the one side and the land used for practical purposes by the farmer on the other. Secondly, that gardens are places for the recluse, for anyone who wants to be free from the restraints of society and who looks upon the powers of the world with scornful pity.

In this paper I intend to pay some attention to the background of this cliché. I am not qualified at all to deal with the concrete aspects of gardens in Persia. The limitations of my competence force me to restrict myself to evocations of Persian gardens in literature. My examples are taken from the Islamic period. This is not only because the scope of today's conference is limited to gardens in the Islamic world, but also because pre-Islamic data concerning the artistic appreciation of gardens in Persia are very few indeed, whereas the material available from Islamic times is extremely abundant.

This does not mean, however, that the pre-Islamic material is insignificant. In spite of their rarity, these data give evidence of an ancient tradition of gardening in Persia, a tradition moreover which shows a remarkable consistency. They point to the tenacity of basic cultural characteristics through all the upheavals and changes which have taken place in the long history of the Persian people.

Since antiquity, Europe has been rather well informed about ancient Persia thanks to observations of Greek writers who were contemporaries of the Persian empire of the Achaemenids. Occasionally, they provide interesting glimpses of the daily life of the Persian aristocracy. In one of his works on Persian subjects, a dialogue entitled *Oeconomicus*, Xenophon reports about gardening as it was practised in the Anatolian city of Sardis. When the admiring Greek visitor Lysander asked the Persian prince Cyrus the Younger



about his own part in the creation of his garden, he answered proudly that going into battle and engaging in agriculture were to him the most important routines.<sup>3</sup> This emphasis on the virtue of agriculture is quite in harmony with the ethics of Zoroastrianism, the ancient religion of Persia, which likewise stressed the cultivation of the earth as one of the primary obligations of its followers.

In Xenophon's description of this old Persian garden several features are named which have always remained typical of horticulture in Persia. The garden is admired for the straight pattern of its outlines, the beauty of its trees and their gracious arrangement, as well as the fragrance of its flowers. These are perennial qualities of Persian gardens. It is certainly not accidental that one of the words for 'garden' in Persian has become *bûstân*, which literally means 'a place of scents'.

Modern archaeology corroborates Xenophon's report. At Pasargadae, the first imperial residence of the Achaemenids, a palace garden has been excavated which shows the same outlines as the garden described by Xenophon or, for that matter, Persian gardens in general up to modern times:

'Long white stone conduits, studded at intervals with square basins, reveal the strictly rectilinear lines of the original paths and planted areas. Two broad paths, 26 m wide, flank two almost identical rectangles at the centre of the design -one path leading to a small colonnaded pavilion... The watercourse and basins of Pasargadae (...) can be seen to represent the inspiration of a type of stone water-channel which still exists in the formal gardens of Iran.'<sup>4</sup>

The connection between gardens and palaces, as it is exemplified in these early data, survived the transition to Islam - mainly because ancient Persian traditions of kingship also lived on - and shaped the court life of Muslim rulers in Persia and other countries where Persian influences became dominant. Besides this very stylized type of garden, the ancient tradition knew another form: the wildreserve or huntingpark laid out especially for the sports of kings and aristocrats, and surrounded by an enclosing wall. The old Persian name for such 'enclosures' became, through the intermediary of the Greek *paradeisos*, the designation of the 'heavenly garden' in most Western languages.

#### THE GARDEN AS A PLEASURE GROUND (Plates 24, 25 and 26).

The first examples of the use of gardens as a source of motifs and images in Moslem Persian literature occur in the poetry written at the courts of local rulers in the Eastern parts of the Abbasid Caliphate. This court poetry emerged in the late 9th century AD and came to full flower in the course of the next two centuries. The main centre of this literary activity was, during the 10th century, the Central Asian city of Bukhara under the Samanids, a dynasty which rose to regional kingship from the ranks of the Persian gentry of that area.

The poets who served these rulers were in all respects poets of the courts. The practice of their art depended entirely upon the patronage of both rulers and courtiers. The poets reciprocated this protection by writing poems meant to please these patrons and to enhance their status. These early Persian poems are, therefore, a mixture of lyricism and panegyrics. A typical specimen consists of a lyrical introduction leading up to a long praise of the person to whom the poem was dedicated. The relationship between the two parts of the poem did not need to be very close, but it was an obligation of the genre that a transition should be made from the first section to the next



by means of some point of resemblance between the lyrical theme and the praise of the patron.

A remarkable example was given by Daqîqî, one of the court poets of the tenth century. In a way, his poem differs from most later poems of praise in as far as the transition from the lyrical to the panegyric mode is in this case not an abrupt change but develops gradually through a succession of associations. In fact, it takes up most of the text of the poem. The poet's intention was to give a laudatory description of the audiences given by his patron, taking into account the emblems of his dignity. The poem opens, however, on a quite different note. First, we become witnesses of a lover's quarrel. The beloved of the poet is described as a person of challenging beauty:

*A fairy-face, a cunning idol, stealing hearts  
with black eyes.*

The literary convention of Persian lyrics makes it likely that a male slave, rather than a girl, is meant here, although the Persian language is very ambiguous as far as gender is concerned. Whatever the case may be, it is evident that the person concerned is someone attached to the court, either as a slave, a soldier or an artist, who as the poet's beloved is a standard figure in this kind of poetry. The ensuing conversation between the lovers takes an un-pleasant turn when the poet is blamed for his lack of attention. He has never addressed himself to his beloved, although he wrote many poems about princes and other beautiful people. The least he could do, suggests his angered friend, is to make a poem in praise of his royal patron which the beloved could then hang round his neck by way of an amulet.

Daqîqî does not restrict himself to this single point of association between the two themes of his poem. He further twines them by means of an ingenuous conceit: the poet, who becomes alarmed by the spectre of a separation from the beautiful idol, sheds tears with such profusion that they drop to the ground. This produces a miraculous change: the earth takes on the beauty of the beloved's face and is turned into a garden of royal splendour:

*Clouds poured out tears from both my eyes  
because of this Sun, who was as slim as a cypress.  
I kept on weeping until the waters from my eyes  
made the earth as beautiful as my friend's face.  
It was as if the season changed into that face,  
washing its cheeks in the river of Paradise.  
Shining like the banner of ancient kings,  
embroidered with emblems and Kufi script.  
Putting on the garments of April,  
throwing off the garments of December.*

What appears to the phantasy of the poet is really the image of his patron's palace garden where the gates are opened to receive the guests for the audience which, according to custom, is to take place early in the morning. The garden provides a ideal setting for this occasion: the roses are blooming; the grass forms a tapestry of brocade; the flowers resemble stars which have rained down from the heavens; the citrus fruits hanging on the trees are like balls of gold and ambergris; the cypress tree, through the top of which the moon is still visible, is compared to the banner of the ruler, crowned by precious stones.<sup>5</sup>

Daqîqî's poem shows in various ways why garden imagery was so essential to



this court poetry. The radiance of a garden in full flower provided an obvious metaphor for the splendour of a court as well as for the glorious fortune which the flattering poet attributed to the reign of his royal patron. The association of the beauty of nature with an erotic theme, as we find it here, was not only quite common but also faithfully reflected the playful atmosphere of court life. In spite of the fanciful mode of Daqîqî's presentation, there is, therefore, a strong link between poetic conceit and reality. The royal garden was a most essential part of a royal compound. The dry climate of the Iranian plateau made it possible to hold gatherings in the open air during a great part of the year. Forms like the *îvân*, the half open cupola, and the *tâlâr*, a hall connected to a terrace, are very well adapted to these purposes. Mention should also be made of the favourite form of the *kûshk*, or garden pavillion, better known to the West as the kiosk, actually the same word loaned from Persian through Ottoman Turkish. All these types of building were harmoniously related to gardens. Gardens and parks were as essential to the palaces of the Moslem rulers of Persia as they had been to Cyrus' palace at Pasargadae.

The frequent use of nature scenes in the prologues of court poems also points to the importance of the seasonal festivals as occasions for making formal poems of praise to be recited during these festivals. The celebration of the beginning of the Persian year at the vernal equinox on *naurûz*, 'New Year's Day', was by far the most important, as it still is today in Persia. Numerous poems hail the coming of spring as the renewal of natural life, awakening high hopes for the year to come. Other Persian festivals were still celebrated during the Middle Ages, but since then have fallen into disuse: the autumn festival of *mihrigân*, originally the feast of the ancient god Mithra, which was the occasion for descriptions of autumnal gardens, and *sada*, 'the festival of one-hundred days' in the heart of winter when outdoor fires were lighted symbolizing the return of the sun.

At the end of the tenth century, the seat of power in these parts moved on from Bukhara to Ghazna, in the eastern part of present-day Afghanistan. During the first half of the next century, a Turkish dynasty, known as the Ghaznavids, made this city into a great centre of Moslem culture renowned throughout the lands of Islam. Eager to adapt themselves to the lifestyle expected of Persian monarchs, the Ghaznavids favoured both the traditions of court poetry and of gardening. They founded palaces and gardens in the main cities of their empire.<sup>6</sup> The most famous member of this House was Sultan Mahmûd (reigned 998-1030), the ruler who was named in Fitzgerald's quatrain as the paragon of wordly power.

A particularly wide range of garden imagery can be found in the poems of Manûchihri who was one of the leading poets at the court of Ghazna during Mahmûd's reign.<sup>7</sup> The garden which he describes is not clearly marked off as an enclosure, like the typical Persian garden, but is open to the countryside. The wild area of the mountains and the open plains receive as much attention as the cultivated pleasure grounds. Manûchihri also extends his interest to farmed lands, especially to vineyards. In several poems he expands on the various stages of the making of wine, a subject of great concern to the convivial life in royal gardens.

If we inventory the items described in his poems we find that trees, flowers and birds are foremost in his interest, animals far less so. Atmospheric phenomena like wind, rain, thunderstorms and, occasionally, falling stars provide dramatic elements to his tableaux.

In early Persian court poetry, the enjoyment of the garden as a pleasure ground is the dominating value. From the New Year festival onwards the



garden was the place where parties were held, especially during the night when candles were brought outside and all sorts of entertainment were pursued in the garden: listening to music, and watching dancers and jugglers, taking part in gambling and playing games like backgammon and chess, wine drinking and flirtations with the young men who served the guests as cup-bearers, singers and musicians. The poet involves the birds in the garden in these entertainments by picturing them as musicians: the partridge rings bells, the myna plays the dulcimer and the ring-dove the flute; from time to time the thunder – a welcome sign of vernal rainfall – accompanies them on his drums. Birds recite Arabic poems or read from sheets full of pictures (i.e. the leaves and blossoms of the trees) like soothsayers. They are also likened to artists when nightingales and pigeons loop like tumblers and the partridge performs as a dancer.

Within this setting, elements of nature and of culture lend themselves easily for mutual comparisons of all sorts. Enjoying the blooming vegetation of springtime, the poet saw himself surrounded by emblems of the realm of culture. In the flowers, the trees and the lawns he recognized perfumes, precious stones, expensive garments and tapestries. The richness of the blooming garden reminded him of a merchant's store. In winter, when it was covered with snow, it evoked the image of a papermaker's workshop in Samarqand. Looking at the company, on the other hand, its elegance seemed to mirror all the beauties displayed by nature.

Being specimens of court poetry, these portraits of nature as a source of enjoyment have a focal point in common: the praise of the poet's patron who was most often the ruling prince. The processes in nature the poets observed sometimes brought to his mind huntingscenes or victorious battles in which his patron had been engaged. More important, however, was the analogy which could be shown between the vegetative world and the condition of the patron's rule. No metaphor could better express the blessings of fortune bestowed on the latter than the outburst of beauty in a garden in springtime.

#### A REFUGE FROM THE WORLD.

If gardens were of such importance to the ceremonies and entertainments at royal courts how could it be that Persian poets also claimed that gardens were the right places for anyone who sought refuge from the powers of this world? An answer to this question can only be given if the development of classical Persian literature as a whole is taken into account.

From the 12th century onwards, Persian poetry entered upon its most decisive development. In spite of the fact that royal courts continued to provide the main economic basis for literary activities, the poets turned their attention more and more inwards. They ceased to see themselves only as the subservient, flattering protégés of powerful men. They began to put on the gowns of moral advisors or even the habits of Sufis. The tools with which they worked did not change all that much, however. The same images and motifs which had been used by the early court poets still constituted the stock available to later generations. But Persian poetry certainly lost much of its descriptive directness. Instead, figurative meanings could be expected to have been intended in practically all kinds of poetry and became a special characteristic of the Persian tradition. In fact, literature merely followed a general trend in Islamic culture of the later Middle Ages, namely the growing importance of mysticism in religious life. The influence of this trend was not limited to circles where the spiritual life was cultivated like Sufi convents and organizations. It also reached social spheres of a more worldly nature like the courts. It is not at all surprising, therefore, to find



mystical elements quite prominent in poetry which was unmistakably court poetry. A mystical flavour was added to most of the poetry produced in later centuries. The attention to garden themes on the part of poets did not escape from this trend.<sup>8</sup>

Some signs of this change can already be noticed in this early court poetry. The mundane nature of this poetry did not exclude its potential to visualizations of the inner life. Especially the contrast between Spring and Autumn was often used to express changing moods of the poet as a lover. These moods could effectively be shown, either in harmony or disharmony with the prevailing season.

When one looks a bit beyond the surface of this colourful imagery, a framework of cosmological concepts can be detected which binds all the separate elements together. The awareness of a hidden structure behind the dazzling phenomena was of great importance in the medieval Persian's view of the world. This manifests itself in the importance of references to the natural elements Fire, Air, Water and Earth, as well as to the system of the heavenly spheres with their planets and fixed stars. These were the powers who controlled human life. It need not surprise, therefore, that the transience of life and the illusionary nature of this world are to the poet mirrored in the seasonal changes and the brief life span of flowers.

A tendency to escapism may also be noticed in the references to far-away places, situated especially in Central Asian areas like Tibet, Khutan and Farkhâr, which are presented as places where beautiful 'idols' live. Aden in Southern Arabia was another alluring country because it was believed to have been the place of the garden city Iram Dhât al-'Imâd, mentioned in the Koran.<sup>9</sup>

Although court poets like Manuchihrî never express any deeper thoughts than passing remarks on the transience of life or the power of the heavens over human destiny, religious motifs are surprisingly frequent in their poetry. They shared, of course, the convictions of their Moslim environment and were well aware of its iconography. Religious notes appear in various forms. There are, for instance, reminiscences of non-Islamic religions: the shaman is seen worshipping his idol; the trees in full bloom resemble Buddhist statues in a temple garden; there are references to the ancient Persia religion of Zoroaster, to the fire-temples, to the arch-demon Ahriman and the elusive *paris*, the fairies of ancient Persian folklore.

Garden imagery offered a excellent opportunity to emphasize the analogy between the beauties of earthly gardens and the image of Paradise as it was known from Koranic descriptions. Even the most frivolous aspects of convivial life, like winedinking or the dalliance with beautiful youngsters, could be presented in a less objectionable form if they could be mingled with allusions to images dear to any pious believer. The garden in springtime is interpreted as a reflection of paradise when the poet states that the heavens have become visible on the earth in spite of the clouded sky. In the same manner, the celestial bodies have come to earth in the forms of flowers and blossoms thrown over the meadows.

The garden could also be compared to a mosque: the violets bow their flowers as if they are engaged in prayer. The dove calls them to this prayer like a muezzin. The complaints of the pigeons remind the poet of Shî'ites who lament the martyrdom of their spiritual leaders.

#### THE TULIP IN A POET'S GARDEN.

The variety of meanings which, in the course of time, could be attached to poetic images can best be shown at the hand of one example. Among the



flowers mentioned by the poets no one would be more appropriate for this purpose than the *lâla*, the flower known in English as the tulip. I need not expand here on the history of the importation of tulips in Europe. The excessive interest of our Dutch ancestors in this exotic plant during the tulip craze of the 1630's,<sup>10</sup> the importance which it still has to the national economy, the fact that it has become a cliché of Dutch culture to the outside world, all these things are, of course, familiar knowledge. Although the last stage on its journey to the West seems to have been a garden in the Turkish city of Edirne (Adrianople), where Busbecq first saw them, the origin of the tulip as a cultivated plant lies much further to the East. In Central Asia, where the early Persian court poets lived, tulips were not only a common feature of gardens, but they were also known as wild flowers of the plains and the slopes of the mountains.

In Persian poetry, images and figurative meanings are usually connected to each other through analogies of form or colour. In the case of the tulip, the deep red colour of the flower was in the eyes of the poets its predominant feature and gave rise to most of its connotations. However, going from the image of the flower to its colour is only one step on the road leading from the image to an abstract meaning. If we want to explore the emblematic possibilities of the tulip, we have to consider first the possible meanings of the colour 'red'. The choices seem to be endless in that case, but in practice they were strictly limited by literary convention.

As we saw earlier, garden poetry was often at the same time poetry of love. The beauty of a beloved human being is mirrored in the vegetation of the garden when it is in full bloom. A red tulip provides, therefore, a proper metaphor for the blushes on the cheeks of the poet's idol or for the latter's red lips. The comparison could also be extended to items from the mineral world, like rubies and other red stones, which in their turn could serve to emphasize the sumptuous beauty of a shining young face.

Red is also the colour of wine, another favourite subject of Persian poets and an essential ingredient of garden parties. When this analogy was drawn, a formal aspect of the tulip was brought into play as well, namely the shape of the flower, which could be seen as a glass filled to the brim with wine. Another fluid conspicuous by its redness is blood. Comparisons between tulips and blood, based on colour, led to an important series of further associations. As one of the principal fluids of the human body, blood was especially connected with the heart. It was also associated with the natural element Fire, which in itself was frequently seen as a red phenomenon. Through this chain of figurative meanings the tulip could become the most frequently used symbol of the passion of love. This connection became increasingly important when, from the 12th century onwards, Persian poetry began to be preoccupied with the life of the spirit.

In the realm of erotic symbolism the tulip did not reign alone. It had to share its rule with another flower, the rose, which equally derived most of its figurative meanings from its red colour. There was, however, a clear division of power between the two. The rose was celebrated by the poets as the emblem of beauty, more in particular as the reflection of eternal beauty in the ephemeral shape of a flower of spring. The tulip, on the other hand, symbolized the passion generated in the heart of a lover by such manifestations of beauty.

At this point, another colour of the tulip has to be taken into consideration. The passion of love cannot go without suffering. The tulip points to this aspect of love, first, by its flaming colour - meaning the loving heart on fire - and then through the black marks at the bottom of its crown which could be



interpreted as scars left by the fire of love on a burning heart. When the tulip was loaded with all these connotations it could serve the entire spectrum of meanings which in Persian culture were attached to the garden and its attributes. Love was at the heart of this spectrum, but love could be very different things to the Persian mind. To begin with, there was the earthly love celebrated by the court poets in the palace gardens. Then there was love turning itself towards the divine beloved, whose beauty was reflected in the garden. The love of the mystic was an overwhelming passion demanding the lover's surrender to suffering. The word 'love' could be applied to any situation where such absolute demands were made upon a human being. On leaving, at the end of this short walk, the garden of Persian poetry, we return to the realities of our own time. Today garden imagery has come out of the 'strip of herbage' where it had taken refuge in hedonistic fantasies or mystical meditations and has entered the world of political strife. In revolutionary Iran tulips have become primarily symbols of martyrdom. The passion of love of which these images speak has been given a new significance, a meaning which is religious and political at the same time. This, again, shows how vital garden symbolism still is as an element of Persian culture.<sup>11</sup>

#### NOTES

1. No. 10 in the first edition, published in 1859; No. 11 in the fifth or final edition of 1889, where the text has been changed in a number of places.
2. For a description of the importance of a garden to a modern household in Persia see Shusha Guppy, *The Blindfold Horse: Memories of a Persian Childhood*, London, Penguin, 1988, p.73-79.
3. Cf. V. Sackville-West, 'Persian Gardens' in A.J. Arberry, ed., *The Legacy of Persia*, Oxford, 1953, p.260-61.
4. David Stronach, 'Pasargadae' in *The Cambridge History of Iran*, Vol. 2, Cambridge, 1985, p.846-47.
5. The text of Daqiqi's poems, together with a French translation, was published by Gilbert Lazard, *Les premiers poètes persans*, Tehran-Paris, 1963, Tome I, p.144-47 and Tome II, p.151-54.
6. Clifford Edmund Bosworth, *The Ghaznavids, Their Empire in Afghanistan and Eastern Iran, 994:1040*, Second Edition, Beirut 1963, p.140.
7. The references to Manûchihrî's nature imagery are based on the original texts published in *Dīvân-i Manûchihrî-yi Dâmghânî*, edited by Muhammad Dabîr-Siyâqî, Tehran 1347/1968. An inventory of the nature poetry of the Ghaznavid poets was drawn up by C. -H. de Fouchécour, *La description de la nature dans la Poésie lyrique persane du XI<sup>e</sup> siècle*, Paris 1969.
8. See in particular: Julie S. Meisami, 'Allegorical Gardens in the Persian Poetic Tradition: Nezâmi, Rûmi, Hâfez', in *International Journal of Middle Eastern Studies* 17, 1979, p.1-40, and the same, 'The World's Pleasance: Hâfiz's Allegorical Gardens', in *Comparative Criticism* 5, 1983, p.153-85.
9. 'Iram of the pillars, the like of which was never created in the land', Sûra 89, 7-8, in the translation by A.J. Arberry, *The Koran Interpreted*, London 1955.
10. The story of the 'tulip mania' is told by Simon Schama, *The Embarrassment of Riches: An Interpretation of Dutch Culture in the Golden Age*, Foontana Press 1987, p.350-65.
11. See further on the tulip in Persian poetry: C.-H. de Fouchécour, op. cit., p.74-76; I. Mélikoff, 'La fleur de la souffrance: recherche sur le sens symbolique de lâle dans la poésie mystique turco-iranienne', in *Journal Asiatique* 25, 1967, p.341-60; Annemarie Schimmel, *Stern und Blume. Die Bildenwelt der persischen Poesie*, Wiesbaden 1984, *passim*.



## THE CULTURE OF GARDENS AND FLOWERS IN THE OTTOMAN EMPIRE

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### TURKISH GARDENS 1400-1600

The art of appreciating flowers and creating gardens has always been a central feature in Turkish culture. A brief survey of the period 1400-1600 may serve as a background to Ottoman garden art.

Originally from Central Asia, the Turkish people lived in close proximity to the Chinese, Indians, Afghans, and Persians, and the development of their moral philosophy, social and cultural traditions were strongly influenced by these civilizations. Their initially shamanistic and Buddhist beliefs were complemented by the Islam from the 10th century onwards. At about the same time they began their westward migration, which took about three centuries to complete.

Soon after the Turks' arrival in Asia Minor, after the battle of Manzikert in 1071 which was their first contact with the Byzantine world, the Seljuk State was created with Konya as its capital. In the 12th and 13th centuries contacts were made with other civilizations, such as the Byzantine, Abbassid, European, Mongol and Ilkhanide. The Anatolian Seljuks were succeeded by the Ottomans in 1300. During the next two centuries the Ottoman empire grew until in the 16th century it covered ca. 13 million km<sup>2</sup> spread over three continents.

The Turks inherited from the Byzantines a vast cultural heritage (itself based on Hittite, Persian, Greek, Hellenistic and Roman culture) and created the Ottoman civilization that would last six centuries.

Hunting was a favorite pastime until the 18th century and one of the driving forces behind the creation and preservation of the Hunting Gardens such as 'The Paradieses of the Satraps', at Sardes, the bird reserves 'Daskylion' (Manyas Kus Cenneti), and the bird paradise and reserve of 'Cesaree' (Sultan Sazligi) in Cappadocia. It is therefore quite natural to discover that in Turkish gardens eastern and western garden art have fused in many ways and that there is a clear continuity between these gardens and the gardening traditions which preceded them.<sup>1</sup>

In the development of Turkish gardens one can distinguish five periods, determined by historic events:

1. 1300 -1453: *Beginning and development*
2. 1453 -1703: *Classical period*
3. 1703 -1730: *The Tulip period*
4. 1730 -1923: *European influence, or westernization*
5. 1923 - *The Republic of Turkey today*

We will concentrate on the first two periods.

### 1300-1453 BEGINNING AND DEVELOPMENT

From 1300 to the conquest of Constantinople in 1453, there was a great deal of cultural adaptation and assimilation. During this period many gardens were laid out around palaces and mosques, first in Bursa, later in Edirne. Until about 1380 these gardens were characterized by cypresses and plane trees between the buildings and at the corners and by a simple lawn composed of a single plant species. Small basins with water jets completed these



simple and serene gardens. Water was often used in the same way as in the interior of mosques. In the last quarter of the 16th century the mental hospital built during the reign of Bayazit I possessed a remarkable park: a fountain and basin in domed Shadirvan, long walks with flowers such as roses, tulips, hyacinths, narcissi, carnations, jonquils, wallflowers and musks. Fruit-trees and vines gave the finishing touch.<sup>2</sup> The patterns made by the flowers were so much appreciated that they were reproduced as motifs on rugs.

#### 1453-1703 CLASSICAL PERIOD

After the conquest of Constantinople by Mehmet II in 1453, a new era began for the Turks. It was the time of the Renaissance in Europe and artists and scientists from Persia, Arabia and Europe (especially Italy), were invited to come to Istanbul to help to rebuild it. The art of gardening improved with every new imperial palace (Topkapi in Istanbul) or enlargement of existing ones (Üsküdar Palace). The nearly ideal conditions along various river-banks and on the plain of Maritza were not only suitable to the Edirna Palace, but also to innumerable summer- and country-houses.

The Topkapi Palace, with its walls delimiting a 80 ha. space, arose on the site of the old Byzantine acropolis, in the time of Mehmet II. The system of building courtyards in a row was established and the palace reached its present form with the addition of the summer-houses of the successive sultans. The great rose-garden *Gülhane*, looking towards the east on the Sea of Marmara, is proof of the sultan's love of this flower. The vegetable garden and orchard on the western side was surrounded by large shade trees: plane-trees, lime-trees and cypresses.

During the second half of the 15th century the Ottoman State was reorganized into an empire that reached the height of its power in the 16th century. The period of restoration, from the battle of Ankara and the defeat of Bayazit I in 1402, continued with Mehmet II the Conqueror. Not only was he a brilliant statesman and military genius, but also a Maecenas of the arts. With his profound knowledge of Arabic, Persian, Greek and Latin he was the perfect man of culture to forge a synthesis between the Orient and the Occident, as Alexander the Great and the Roman Emperors had been before him.<sup>3</sup> With the creation of the workshops attached to the palace, the organizing and standardizing of corporate and state institutions an example was set by their artistic products for the entire empire: urban development (e.g. large complexes like Küliye), architecture, paintings and miniatures, ceramics, and gardens.

The Turks kept to their Asian and Persian tradition of open air living. This resulted in the creation of a whole series of suitable palace gardens (*Hadaik'i Hassa*) in Istanbul, Edirne, Bursa, Amasya and Manissa (in these last two towns the crown-princes received their education). The Guild of the Gardeners (*Bostancı ocağı*) cared for all the imperial gardens and they also grew agricultural products, sold the surplus and maintained the summer-houses of these pleasure-gardens. Great public gardens were laid out along the seashore, a small river and near springs. The Mesire and the Teferrucgah were famous examples of such public gardens. The *mesires* of Büyükdere, Göksü-Küçüksü, Beykoz and Kagithane existed until the beginning of the 20th century. Their season started on the 6th of May, the day of *Hidirellez* for the spring festivity and continued until October. Life in the open air improved social relations, allowed young people of both sexes to meet, helped popularize palace culture (by the *Saraylı*) and greatly stimulated the creation of new works of art: music, poetry, literature, social criticism, *Hiciv*-narration and naturally of new pleasure-gardens.



During other seasons the fruit-gardens could be visited. The vineyards and gardens of plums, cherries, raspberries, blackberries and figs all had their own season for visiting, depending on the ripening of the fruit. By paying a small admittance fee, people could come and savour the fruit, and they could also take home as much as they wanted in their baskets.

Turkish urban life was entirely based on the respect of everyone's privacy within the city. The houses had their small interior courtyards where people could live in the open and carry out gardening on a small-scale: a few fruit-trees, vegetables and flowers. Narrow and winding streets, often dead-ends, profited from the greenery of the private gardens. This way the urban aspect, which could have been desert-like, was transformed when seen from afar into a 'green' town.

City-dwellers in Anatolia always had their *Bagh*, or country-house, outside the town. This ancient tradition of villas is still alive in most of the islamic countries. Around these large estates with their houses and summer-houses small settlements sprang up, which in time developed into towns, as in Konya (Meram), Malatya (Orduzu, Kernek), Harput (Buzluk), Tokad (Baglar), Safranbolu (Baglar), etc. In Harput the *Kanat* system still fulfils its function as a watersupply.

The Ottoman gardens of cities like Istanbul, Bursa and Edirne have not survived, but information about them can be found in manuscripts, on miniatures and frescoes, in letters and narratives of travellers (from abroad).

Gardens of the Ottoman epoch were, by their very nature, utility gardens, where people associated with one another in the shade of large trees, surrounded by the fragrance and the colours of fruit and flowers, accompanied by the songbirds, gazelles, peacocks, etc., wandering around in these summer-places (*Köçk Estivale*).

Water always was the most important consideration when situating gardens (on the very edge of water, like on the Golden Horn, the Bosphorus in Istanbul, and on the Maritza and the Tuntza in Edirne.<sup>4</sup> It was also extensively used inside and outside the summer-villas (houses and *Kasr*) in the shape of waterfalls, fountains, bowls and basins.

The art of creating gardens also depended on the interest taken in it by the sovereign (e.g. the imperial gardens -*Has Baghtche*), the Ottoman aristocracy and on the wealth of the State.

#### APPENDIX I

##### **The flora of Anatolia in the time of the Hittites (2000 years BC) and contemporary sources of medicinal plants<sup>5</sup>**

The tablets of the Hittite State Archives in Bogazköy (Hattusas) in cuneiform script give us precise information on the Anatolian flora of the second millenium BC. Agriculture consisted, apart from the culture of wheat and oats, of cultivating herbs, vegetables, fruit-trees, flowers and of trees for the sake of shade. They tell us that in Anatolia were grown: *Phaseolus*, *Pisum* (green peas), broad beans, raisins, dates, apple-trees, prunes, figs, olives, sweet almonds, pines, *Euphorbia antiquorum*, roses, mint, laurel, oak-trees, ebony and poplar-trees, and give precise descriptions of them.<sup>6</sup> It is worth noting that many plants have more or less retained their original name until this day:

<i>sum sar: sarmisak</i>	(garlic)	<i>sum sikil:</i>	<i>sogan</i> (onion)
<i>sur man: servi</i>	(cypres)	<i>samama:</i>	<i>susam</i> (sesame)
<i>hassika: hashas</i>	(hashish)	<i>nu urmu:</i>	<i>nar</i> (pomegranate)
<i>erin: servi</i>	(cedar)	(formerly the Lycian side)	



These texts also reveal that fruit was, beside wine and beer, used for offering, and that the State clearly controlled the fruit-tree plantations. The oldest Anatolian gardens (according to these tablets) were the property of a certain Mr. *Tiatapara*, who founded a pious institution for his garden, and a Mr. *Pulliianni*, who owned 'olive-tree gardens'. Queen *Puduheppa* (8th century BC) called Anatolia 'the land of the cedar-trees'. This tree is also mentioned in the epic poem of *Gilgamesh*. Anatolia has more or less kept its flora until this day.

The word *wachchi* meant, in Hittite, 'vegetal drug'. Plants and methods employed in medicins of the epoch of the Hittite (the *Hetti* mentioned in the Old Testament) were similar to those used in Mesopotamia. The export of herbs was one of the main sources of State revenues.<sup>7</sup>

The Anatolian laurel today has 8500 subspecies, of which more than 500 are used for therapy, a point for ethno-botany that proves the cultural continuity since the 2 millenary BC in Anatolia, homeland of well-known authors such as Hippocrates, Galenius, Diocorides, Davud D. El Antaki.<sup>8</sup>

Turkish translations of books by Ibn Sina (Avicenna) and Davud El Antaki (D'Antiochead Orontes) are sold today under the name of *EMRAZ* and herbal therapy is still valued today as a cultural heritage.

Since 1597 the flowermarket of Istanbul is held in the same place: in the court of the Egyptian Bazar (or market of spices), showing that plants and medicinal herbs were (and still are) part of daily life for the people of the Ottoman empire.<sup>9</sup> It is also noteworthy that vegetal drugs traditionally existed in all the islamic countries (in Asia, anyway) and that they were sold in special shops (*Attar*) forming an entire street together, a market of herbs and spices with the name *Souk al Attarine*.

## APPENDIX II

The Roman concept of towns and gardens remained more or less unchanged until the spread of Islam in the 6-8th centuries. The Byzantine world was strongly influenced by this new culture. Islamic influence is easily recognized in iconography and explains the appearance of the Iconoclastic movement. The manners and mores of Anatolian society became fashionable in the Byzantine empire and can even be seen in the clothes and turban of the Great Minister Theodoros Metochites, in the Chora mosaics (14th century).

Descriptions of the courtyards of Byzantine houses, and especially of Byzantine gardens remain the most reliable sources on this subject.<sup>10</sup>

Schissel's publication allows us to form an idea about some characteristics of certain gardens, such as those of: Digenis Akritis, Eumathios Makrembolites, Niketas Eugenianos, Kallimachos and Chrysorroee, Belthandros and Chryzantza, Libistros and Rhodamne, Theodoros Meliteniotes and Achilleus.<sup>11</sup>

Gothein's publication is important even today for the description of architectural elements and the ways in which water was used.<sup>12</sup> The influence of Asian and especially Abbassidan culture on Byzantine life is clearly visible in the small, raised basins, the fountain in the middle of superimposed bowls on a marble column of approximately. 1.20 m. quadrangular and hexagonal in form, the small-scale, robot-like *automata*, the gilded or silver-plated artificial trees (as in Haroun El Rachid's garden in Baghdad), and in the change of style and adoption of geometric and arabesque forms in the floor mosaics. The cultural heritage left by the Byzantines to the Ottoman Turks and to the Anatolian minorities is remarkable:

- for the intelligent way sources of sweet water are used, for picking the



right spot for gardens and palaces outside the walls, for effectively protecting these things as valuable, for creating large shaded places where *aghiasma* (small chapels near a holy fountainhead), monasteries and summer-palaces were created;

- for the cultural continuity expressed in the kind of trees planted: the plane-trees, accacias, horse chestnuts, cypresses and Judas-trees that (together with the parasol pine) still form the natural landscape of the Bosphorus shores to-day. The purple colour of the Judas-tree in bloom was the accepted imperial colour.

New archaeological and pollinological evidence found in the courts and gardens of Byzantine palaces on the historical peninsula (such as the Grand Palace, Magnara Palace, Buccoleon Palace, the Palace of Bayazid's wives, Blacherne Palace of Constantine Porphyrogenetes) could greatly add to our architectural and vegetal knowledge of Byzantine gardens.

### APPENDIX III

#### **Reflexions on the Anatolian 'Paradises' during the Persian Satraps.**

Historical references, like the *Anabasis*, prove to us that the word 'paradise' was of Persian origin: *paradeisos*, used for great gardens and reserves.<sup>13</sup>

The Satrap paradise in Sardes and the bird-reserve of Daskylion were the best known. The latter still exists today at Manyas (west of Bursa) under the name of *Kus Cenneti* (bird-paradise) and has received an award of the World Wildlife Fund. This historical evidence was discovered by the late Prof. Kosswig.

The tradition of great gardens and especially of 'hunting gardens' and reserves survived into the 18th century. The first garden that we know of to be laid out after the conquest of 1453 by Mahomet II the Conqueror, is the *Tokat* garden, at Beykoz, a game reserve.<sup>14</sup> Hunting always was essential for the leisure of the Anatolian sovereigns, the last and most famous being Mehmet IV 'the Hunter', in the 17th century.

Asia Minor was also famous in the classical world for two fruits that bore the name of the towns they symbolized: Cerise (Cerasus-Kiraz), made famous throughout the Roman empire by the Prefect of Tarsis, Cicero (1st century. BC), and Granade (-Side-Nar).<sup>15</sup> The town of Side, east of Antalya, had the pomegranate as a symbol on its mint, and the name of the town and the fruit were identical.

### APPENDIX IV

#### **The gardens of Istanbul**

##### **Sources and historical documentation**

Muzaffer Erdogan's publication remains a very important source of information on historic Turkish gardens in general and on the gardens of Istanbul in particular.<sup>16</sup> It is based on Ottoman archives and has become a researcher's textbook. It should be noted that his starting point was Evliya Celebi and his work *Seyahatname*, the narrative of his 50 years of travelling in the 17th century (remarkable in spite of the often exaggerated statistical facts).<sup>17</sup>

The following is a short list of Erdogan's sources and their subjects:

##### *Flowers:*

1. *Tezkere'i Sukufeciyan* by Muhammed b.Ahmed el-ubeydi, H.1110, (Netayic'ul ezhar) (the orator of the Shehremini mosque) Millet Libr., Istanbul, Ali Emiri, Dept. of Nat. Hist. nr. 176.
2. *Revnaku'l Ezhar*, by the same author; roses, hyacinths and others. Transl.



into mod. Turkish by Djevad Ruchdu, *Gazette Ikdam*, April 10th 1922, nr. 9004.

3. *Choukoufename* by Ali Tchelebi, H. 1078, Millet Libr., Ali Emiri, Dept. of Nat. Hist. nr.179. On tulips, hyacinths and roses.
4. *Mi'Yarul'-Ezhar* by Mehmed Tasibi Askî, H. 1193, Millet, Libr., Ali Emir Dept. of Nat. Hist. nr. 168 (on the kinds of tulips existing at the time).
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*Gardens:*

1. *Davutpasha* garden from the time of Alexios Commenos.
2. The garden of *Iskender* between Kazlıçeşme and Bakirköy, in *Tchetebe*, the Baruthane Quarter, from the second half or the 16th century.
3. *Harami Dere* garden still partially extant, between Büyük çekmece and Kücçük çekmece.
4. *Vidos* garden in Bakirköy, in the village of Litros, 17th century, mentioned by *Ere Mya Tchelebi*.<sup>18</sup>
5. The *Tersane* garden. On the Golden Horn, between Kasimpasa and Sötlüçe, near the naval boatyard; Laid out in the time of Mahomet II the Conqueror, in the 15th century. and subsequently enlarged with the imperial *Aynalikavak* summer-house, still existing but in the architectural style of the end of the 18th century. This garden went up to Okmeydanı, where it was begun by the *Tekke* of the Archers (a club and exercise field) and protected by a pious foundation.
6. The *Karaaghatch* garden.<sup>19</sup> On the Golden Horn, at Sülüce Redone. This garden, protected from north winds, was enriched with a summer-palace (Murad IV, 17th century.): the sultan's apartments, the harem and the service quarters.
7. The *Üsküdar* garden. On the Asian coast, between Harem and Salacak.<sup>20</sup> It was the favourite place of Suleiman the Magnificent, for this garden had an extraordinary view on the Sea of Marmara, Topkapi Palace, The Golden Horn and the Bosphorus. The garden and its buildings were given as a present to his architect Sinan, who gave Istanbul its Turkish aspect with the 400 buildings realized in 50 years (1538-1588).
8. The *Haydarpasha* garden. On the Asian coast, north of Kadiköy. Built on the remains of the summer-palace of Constantine for the reunion of the Patriarches, created in 1553 (960 H.) This garden occupied the actual



emplacement of the station and stretched until the meadow of Ibrahim Agha.

9. The *Phanar* garden.<sup>21</sup> On the Asian coast at Fenerbaghçe. Laid out on a southern slope of the peninsula, in 991 H. It had a summer-palace. Grelot visited this garden and made a fairly detailed description of its condition in 1680.

*Imperial gardens on the Bosphorus, on the Asian side:*

10. *Istavroz* garden. Between Beylerbeyi and Kuzguncuk, on a spot that was considered holy since Constantine the Great had had a cross erected and an *Aghiasma*. The water of the holy source is still used by the Orthodox. The garden was created at the end of the 16th century.
11. *Kandili* garden. This was one of the the best known examples of terraced gardens, on the steep shore of the Bosphorus, since (991 H), in the 16th century, during the rule of Murad III. There was a summer-palace, built on the various terraces which were sprinkled with tulips and hyacinths.
12. *Tchoubouklou* garden.<sup>22</sup> At Beykoz. Was famous for its fruitgardens and -yards, from 991 H especially for its bitter cherries (Cornelian cherry).
13. *Indjirli* garden. Famous for its fig-trees, it was laid out according to Soleiman the Magnificent's taste. The house was decorated in the Persian manner in pastel colours.
14. *Tokad* garden, Beykoz. This was the first palace to be built in Istanbul after the conquest, by Mehmet II. This large garden (reserve: *tokad*) had a summer house with a fountain in the middle and on its axis a long water basin. The game of *djirit* could be played on the lawn: riders on horse back tried to hit each other with wooden javelins of ca. 1.50 m. (2 archines) in length. Antoine Galland visisted this garden and gave a detailed description of it in his diary.<sup>23</sup>

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## L'ALJARAFE OF SEVILLA: AN EXPERIMENTAL GARDEN FOR THE AGRONOMISTS OF MUSLIM SPAIN

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Research done by Mrs. L. Bolens, A.M. Watson and Thomas F. Glick allows us to discern, behind the vast movement of transformation of medieval Arab-Muslim agriculture, the signs of a veritable 'agricultural revolution'.<sup>1</sup> Although this revolution received its first impulse in the Muslim Orient between the 8th and the 10th centuries, its maturing phase took place in Andalusia during the 11th and 12th centuries. We might call these two centuries the 'Andalusian moment' in the general march of agricultural progress.<sup>2</sup> Sevilla, after Corboba and Toledo, became an agricultural capital and an agronomists' Mecca.<sup>3</sup> But more than Sevilla itself its hinterland, the Aljarafe (transcription of the Arabic *al-Sharaf*), seems to have been the laboratory of the new agriculture. To illustrate this, we have chosen two agronomists, Ibn Hajjâj (11th century) and Ibn al-'Awwâm (12th century), both from the Aljarafe, who have given the region its reputation as an experimental and acclimation garden.<sup>4</sup> First we will try to describe the geographical limits and natural potentialities of this highlight of Andalusian agronomic research; secondly we will endeavour to define the field of research, to reconstruct the chain of experiments and to evaluate their impact on the contemporary rural practices. The variability and richness of these experiments will allow us to discover the strategic role played by the Service of the agronomic research in Andalusia. It is a little known Service, the vitality of which seems to be one of the major factors in the explanation of Hispanic-Muslim agricultural progress.

### SITUATION AND POTENTIALITIES OF AN AGRICULTURAL SITE

In its Islamic period the Aljarafe was a place with clear geographical and socio-economical limits, characterized at the same time by its dimension, the cultivated varieties and its rural population. Its destiny remained closely tied to Sevilla's, of which it was the territorial basis until the town turned its attention to seafaring, colonial and mercantile adventures.<sup>5</sup> Regrouping the indications given by Arab historians, geographers and agronomists, it is possible to describe the Aljarafe, with its topographical limits, but above all with the natural and human potentials that have made it one of the highlights of Andalusian agronomic research in the middle ages.

### Vocabular and numerical incertainties

Aljarafe (*al-Sharaf*) means 'eminence' or 'elevated ground' in Arabic. But when we try to determine exactly the spatial, geological and pedological realities covered by this designation, we stumble over the impreciseness of the vocabulary. Ibn Hajjâj talks about the 'mountain' of Aljarafe (*jabal al-Sharaf*).<sup>6</sup> An anonymous geographer describes the entire district as situated on an 'elevated hill' (*tell 'ali*).<sup>7</sup> Whatever terminology is used, the Aljarafe table-land keeps the elevated situation that has earned it its arab name and also justifies its poetic description as the 'crown' of Sevilla.<sup>8</sup> The rare existing pedological information describes the Aljarafe as a territory entirely consisting of red earth.<sup>9</sup> However, Ibn Hajjâj mentions particularly the existence of fine soils, hilly and consisting of clay.<sup>10</sup> He also sometimes distinguishes cracking earth in the *vega* of Carmona.<sup>11</sup> And Ibn al-'Awwâm speaks of sandy soils in which he has transplanted his olive-trees.<sup>12</sup> All these precisions meet



modern descriptions of a zone of sand with lime and local layers of clay.<sup>13</sup> Al-Shaquadî (13th century.) praises the region's fertility and underlines the permanence of its vegetable cover.<sup>14</sup> Numerical data concerning the Aljarafe area are no less uncertain. They vary from source to source. Following J. Bosch Vila, however, we may retain the unit of 1.650 km<sup>2</sup> as being the approximate area in the Islamic period, with the following natural boundaries: Marismas in the North, the Guadalquivir *vega* in the East, the course of the river Guadiamar in the West and the Sierra in the North.<sup>15</sup> During the phases of the Islamic domination, the Aljarafe was the agricultural hinterland of Sevilla. Its roads converged to the town, thus accentuating its role as granary of cereals and fruit.

### Rural population

People appear to have settled in the Aljarafe region very early in time. From prehistoric ages on its inhabitants have profited from its light soils, the availability of its hydraulic resources and from its elevated situation in relation to the surrounding regions.<sup>16</sup> Al-Shaquadî explains the construction of the *Hispalis* by the fascination that the Aljarafe held for Julius Caesar.<sup>17</sup> Archaeology itself confirms the presence of many rich villas in the Roman period.<sup>18</sup> But it was in the Islamic period that the density of the population seems to have reached high proportions. Available information states the existence in the Aljarafe of 200 to 8.000 well-populated villages, made up of pleasant houses and Moorish baths.<sup>19</sup> 'Under their layers of whitewash' they are like 'stars in a sky of olive-trees'.<sup>20</sup> From the beginning of the conquest on, it will be in this densely populated and fertile area that the arab landed gentry buys their properties. There was the family of the Banû Hajjâj, the one that interests us in this study, but also the Banû Khaldûn, the Banû 'Abbâd, the Banû Balkh.<sup>21</sup> These families resided only part of the year in Sevilla; the other part they spent on their land. From these patrician families, cultivated, rich and leasured, the agronomists and the 'curious' of agriculture were generally recruited. They worked together with other agricultural experts (called *shuyûkh*) to make use of their agronomic heritage, to improve it and to propagate the principles of the new agriculture. Farms and villages served as innovative breeding grounds: there men work and observe, think, experiment and adapt foreign vegetal material and practices. Their scientific curiosity drove them to compare, to appreciate and to experiment, thus authorizing us to call them agronomic researchers.

### THE ALJARAFE AS AN ACCLIMATISATION GARDEN

In Islamic Spain gardens were in particular favour. Already in the 8th century historic sources mention the existence of the first Andalusian Botanic Garden, laid out in the ar-Rusâfa Palace constructed by 'Abd al-Rahmân I (138-172/756-788) in the North-East of Córdoba, in memory of Syria. From this country the Omeyad Calif orders, by his two emissaries Yazîd and Safar, a certain amount of selected seeds and rare plants that, after their acclimation, will be distributed in the entire al-Andalus.<sup>22</sup> In later centuries the role played by botanic gardens in the diffusion of new plants will only grow more important, especially during the reign of de Tayfas kings (1031-1094). In Toledo the movement apparently was so far on its way to become an established institution that al-Ma'mûn Di'n'Nûn (435-467/1043-1075) required the services of a physician-botanist (Ibn Wâfid) and an agronomist, Ibn Bassâl, to be attached to the Royal Garden. The same process can be seen elsewhere: in Sevilla, Saragossa, Valencia, Tortosa, and Almeria. The evidence given by Ibn Bassâl, as reported by al-Tignarî, records an brisk



trade in rare seeds and citrus-fruit plants between these principalities.<sup>23</sup> The Andalusians spared nothing in order to enlarge the scale of cultivation in Spain. And the behaviour of the Cordoban al-Gazâl who, sent as an ambassador to Byzantium (9th century), succeeded in taking away from that country a fig-tree variety prohibited for exportation, will always be remembered.<sup>24</sup> Apart from royal gardens, rural ones also became centres of scientific activity. It should be specifically noted here that the pomegranate variety, imported from Syria, was first acclimatized in an agricultural village in the district of Rayyah (near Malaga) before finding its way into the garden of Rusâfa Palace. Its name perpetuates the memory of Safar, who was first responsible for its acclimatisation and who figures as a pioneer of agricultural experimentation.<sup>25</sup> We have no intention here of writing the complicated history of plants cultivated in Islamic Spain, but sufficient is said of it to state that the Aljarafe was neither the first nor the last Andalusian experimental garden. It was part of a whole series of experimental agricultural research centres cropping up nearly everywhere in Andalusia, which have been at the origin of the agronomic renewal in that region between the 11th and 12th centuries. The Aljarafe, however, distinguishes itself from the others by its informal or non-official character.<sup>26</sup> Ibn Hajjâj and Ibn al-'Awwâm, in their scientific activities there, do not seem to have worked within the framework of a well established State Service. The place can be seen as an open space where agronomists, simple farmers and interested amateurs tested their agricultural knowledge, and mutually observed, criticized and influenced each other. This freedom, necessary to all scientific or intellectual activity, favoured the blossoming of agronomic research and contributed, as we will see, to make an entire agricultural hinterland into a model-farm for Muslim Spain. Speaking of the Aljarafe as an experimental garden and highlight of agricultural research essentially means, to us, delimitating the fields explored, restituting the experiments carried out and demonstrating their influence upon the rural practices of that time.

### **Diversity of subject matter**

The diversity of the explored fields is explained by the encyclopedic nature of Ibn Hajjâj's and Ibn al-'Awwâm's agricultural works. They are didactic treatises trying to present, simplified and pleasant to read, all that an amateur needs to know about agriculture. The aspect of vulgarization is also manifest in the wish to make agriculturists familiar with the most important principles of agricultural science. Ibn al-'Awwâm even built a sort of 'Rural House' where the professional *fellah* and the town-dwelling proprietor alike could come and find guidance on all chapters of rural economy. But since in this study we are more interested in research than in the didactic aspects, we should try and make only those fields of investigation stand out in which our agronomists have made personal achievements. It is a difficult task but it allows us to define our field of investigation better. Besides, Ibn al-'Awwâm has helped us a bit by beginning all the accounts of his experiments with the term *li* (to me). This already shows an effort to turn agronomic research into patentable matter. Taking these precisions into account, we can divide the explored fields into: pedology, hydrology, fertilizing, rice culture, industrial cultures, vegetables, olive culture, viticulture, fruit-tree culture, panification etc. The inventory of these chapters can't be complete, and further study will show us that the field of agricultural research has in fact been much wider.

### **The variety of the experiments**

The research done by Ibn Hajjâj and Ibn al-'Awwâm, although spaced in



time, can be given their place in relation to three fundamental sources: the *Treatise of the Culture of Arable land* (*Kitab filâhat al-ard*, translated into Arabic in 179/795), the *Treatise of Byzantine Agriculture* (*Kitab al-filâha ar-rûmiyya*, translated in 212/827) and the *Book of Nabatean Agriculture*, (*Kitab al-filâha n-nabatiyya*, translated in 291/904).<sup>27</sup> The first two of these represent the Graeco-Roman and Byzantine agricultural heritage, while the third carries the agricultural traditions of pre-Islamic Babylon over to us. The position of our agronomists relates to this heritage. It was the position of a critic aiming either to clarify and verify the knowledge that was passed on, or to refute it with examples of the Andalusian eco-system. Ibn al-‘Awwâm affirms that he has wanted to retain in his treatise only what he has been able to establish by experiment.<sup>28</sup> Taking into account the high number of personal observations, and their diversity, we can range them in two groups of experiments: those with a general character, embracing different disciplines (pedology, hydrology, fertilizers, etc.) and those with a specific object, concerning a particular branch of agriculture (the culture of olives, viticulture) in the intention of raising its productivity.

### **General experiments**

Democritus takes as a criterium of good earth its aptitude not to crack after rainfall or by excessive heat.<sup>29</sup> Ibn Hajjâj explains that by this the author meant that the soil should neither be muddy nor hard. And he adds:

‘Some people ask me how the wise Democritus could condemn earth that was likely to crack, when we look at the territory of de *vega* of Carmona, which has that quality, and see it produce a higher yield of grain than elsewhere?’

The agronomist of Sevilla answers this criticism by calling attention to the fact that Democritus only depreciated this earth in comparison to other grounds that he judged to be better. He also specifies that cracking earth should not be preferred just because of its higher yield. For a great number of normal cultures and plantations fail on it. In that case, he ends, can one not prefer other soils to it?<sup>30</sup> Ibn Hajjâj is seen here to oppose to an observed fact a large conception of soil fertility. It should not be reduced to mean just a higher production of a single variety, but a maximum of plants growing well on a given soil. Elsewhere the author, basing his remarks on pedological considerations, discusses the possibility of planting fig-trees between rows of vine. Being less categorical than Yûniûs,<sup>31</sup> he affirms that it all depends on the quality of the soil. He gives the example of some fields near the Guadalquivir, where he has seen the trial succeed on soils that were in good condition and contained abundant nutrients. On the flanks of the Aljarafe, on the contrary, where the soil is lean, clayey and mountainous, putting the fig-tree and vine together was a failure.<sup>32</sup> Wherever rejection is systematical, Ibn Hajjâj takes up a more subtle position based on pedological and physiological arguments. Ibn Al-‘Awwâm, for his part, says he has succeeded in making olive tree grow on sandy and humid soil by mixing it with good quality earth brought from elsewhere.<sup>33</sup> The principle of ‘amelioration of the soil by the soil’, applied to the Aljarafe region, thus has brought our agronomist success where farmers tried and failed. Discussing the conception of the ancients about the leguminous plants that enrich the earth and those that exhaust it, Ibn Hajjâj is not contented with the explanation that introduces a distinction between short-rooted and long-rooted plants.<sup>34</sup> Taking for example the soil for growing cotton, he insists that not only this soil, when



well prepared by tilling it so as to be loose, can nourish the cotton, but then has even more nutrients left to feed other plants. The growth of plants appears thus to be a function of the abundance and scarcity of nutritive reserves in the soil. In the chapter of hydrology, Ibn al-'Awwâm adds ferruginous, sulphurous and coppery water to the list of waters harmful for irrigation. He goes on to note that ferruginous water is not only bad for the plants, but also destroys the buckets of hydraulic machines.<sup>35</sup> The question of fertilizers too has occupied an important place in the research of the Sevillian agronomists. We know from Ibn Hajjâj how important Andalusian agriculture thought the use of dove droppings.<sup>36</sup> But notwithstanding the development of pigeon breeding, dung production was never high enough to satisfy agricultural demand. Concerned about this problem, Ibn al-'Awwâm began to produce a mixed fertilizer, that had the advantage that not only it could be substituted for dove droppings but it was also more effective. The way of preparing this compost is the following:

'One night' he writes, 'I mixed together manure made of animal droppings, sweepings from the houses, black mould from the bottom of garbage cans and ashes; I have spread it all on the ground, on a simple, large mat. After rain had fallen, people have cut it with shovels when it was still wet. Then they have taken out the stones that had got into it and piled it up, treading it lightly with their feet. After some nights the piles fissurized and pulverized. It all had become like dove droppings. It had the same colour and odour.'<sup>37</sup>

It is this composed fertilizer that Ibn al-'Awwâm tells us he has used experimentally, for many years, to augment the yield of olive-trees.<sup>38</sup> Ibn Hajjâj, for his part, has applied himself to determining exactly the action ashes have on vegetals. He starts from Yûniûs' conviction that ashes are, for vegetables, to be preferred above all other fertilizers. This author's argument is that ashes are soft, of very warm nature and, at the same time, nourish the vegetables and eliminate all sorts of insects that crop up in manured earth.<sup>39</sup>

This conviction, taken over as a certitude from the Graeco-Roman and Byzantine heritage, allows Ibn Hajjâj to animate an important debate, nourished by bookish knowledge, with a long experience of experimenting and a well developed sense of observation:

'This', he says, 'is a product of Yûniûs' imagination. For ashes are extremely dry. And, because of their heat, lacking all moisture. If one grinds them on the ground it becomes lean, less humid, and compact. So there is no reason at all for improving the soil with ashes except to eliminate insects and worms, more specially. Their action is thus comparable to that of a medicine that kills the animals. If one wants to use them, they should be mixed with putrified manure of good quality, in order to offset the inconvenience of their dryness.'<sup>40</sup>

To support his criticism our agronomist relies essentially on an observed fact:

'To prove what I have told you', he says, 'there are heaps of ashes that stay in the same place for years, undergoing the effect of rain and air, without growing any plants at all. This is due to their excessive dryness and their lack of moisture and grease (*shahm*). Contrary to manure, moist and soft heaps of which you can see exposed to air and rain and permitting lots of plants to grow. This statement of fact proves that ashes cannot be used in the same way as manure.'<sup>41</sup>



Ibn Hajjâj concludes his argument with a hindu proverb that says:

'ignorant the man who, in his garden, substitutes ashes for manure.'<sup>42</sup>

The agronomist of Sevilla contests not so much the fertilizing worth of ashes, but the belief that fertilizers can perfectly well be replaced by them. Rice culture, only recently introduced in islamic Spain, then benefited of important research meaning to turn it into a staple food. Its history is more or less well known. Originating from Asian countries it was introduced into Mesopotamia, where the Greeks already noticed it in the 2th century BC.<sup>43</sup> The establishment of an Arab-Muslim economic empire, facilitating circulation and exchange, makes it possible for this water-consuming cereal to undertake a journey that will bring it to Andalusia. Ibn al-'Awwâm has devoted an entire article in his agricultural encyclopaedia to discussing the cultivation of rice in irrigated fields. It completely hinges on the Babylonian heritage and on an experimental substratum conveyed by Andalusian agronomists such as Ibn Bassâl and Abû l-Khayr.<sup>44</sup> The author expressly associates the Aljarafe to what might now be called the Spanish-Muslim adventure of rice:

'I have' he tells us, 'sown good seeds (of rice), with and without their skins, taking care to water them every day. They grew well. Then I put them into furrows on a ridge and in trenches. I have done so several years and always reaped an abundant crop. Only a few stalks, maturing in winter, were lost. That is why I think sowing for replanting should be done in december. It is often good to sow earlier, for then the grains partly profit from the rainfall.'<sup>45</sup>

In other parts of his agronomic work Ibn al-'Awwâm shares with us his experiments in market-gardening and flower growing. He talks about the cucumbers and pickles that he succesfully grew in an Aljarafe meadow. In order to update the opinion that rosebushes do not support lots of water, the author does not hesitate to grow them in the main irrigation canals, finally declaring the operation to be a great succes.<sup>46</sup> The cultivation of saffron was the object of Ibn al-'Awwâm's particular attention. He devoted several essays to it:

'I have,' he says, 'succesfully planted saffron on a field in the Aljarafe. I have also planted it in al-Jiyyâra village, to the east of Sevilla, where it has taken well. However, the result was better in the Aljarafe. In that region I have tried it again, on a field that was not watered, in the shade of olive-trees. For several years the saffron has continued to blossom every season.'<sup>47</sup>

Examples of experiments done in other fields can be multiplied: phytosanitary,<sup>48</sup> culinary,<sup>49</sup> etc. However multidisciplinary agronomic research has been, though, it will make certain branches of agricultural activity (olive cultivation, viticulture) its privileged domain.

### *Specific experiments*

The importance of the cultivation of the olive-tree and the vine, Mediterranean plants par excellence, in the Islamic-Spanish economy is well known. These branches of activity, and arboriculture in general, were treated in several experiments aiming to heighten their productivity.

### *The growing of olives*

Arab chroniclers have unanimously brought to attention the density of



olive-tree seedlings in the Aljarafe. The region was the biggest production and exportation centre of olive products in all Muslim Spain.<sup>50</sup> It was therefore normal for the Sevillian agronomists to devote an important part of their agricultural teaching and the essential of their agronomic research efforts to it. Ibn Hajjâj was the first Andalusian agronomist to have posed the question of the origin of the Aljarafe olive-plantations. He takes as a starting-point the opinion of Yûniûs, who states that every tree grown from seed will produce fruit similar to that of its species, except the olive-tree which, propagated from its stones, will produce a species called *Qûtinûn* (or *kotinos*).<sup>51</sup> Because of its importance the commentary on this piece of text merits to be quoted *in extenso*:

'I have found' he writes, 'this assertion to be exact. For, at home in Sevilla, on the slope of the Aljarafe, in spite of the great number of olive-trees, the density of their seedlings and the many stones falling on the eart, I have never seen - and nobody ever told me he saw - a sapling of an olive-tree grow spontaneously on its ground. Many trees of the species called *Qûtinûn* can be found there, however. They grow between the small trees and those larger ones that have been grafted. Which shows that, for the majority, they originate from olive-stones. But God knows best. I do not pretend, however, that the *Qûtinûn* species, as a whole, comes from the olive-tree, and that there is no tree of this origin. But I say that there are many of them on mountainous lands and on hard lands, that reproduce themselves from olive-stones, just as one sees oak-trees, carob-trees and similar species multiply themselves there. Neither do I deny that the olive-tree can be propagated from its stones. I have seen it done at one of my brothers', who lives in Cordoba. But I say that in most cases it is the wild species *Qûtinûn* (wild olive or oleaster) that springs from it, conform to Yûniûs' opinion.'<sup>52</sup>

If this commentary is considered to be an answer to the question of the Aljarafe olive plantations, it may be relevant to note that the hypothesis of human propagation is preferred to that of natural propagation. Ibn Hajjâj, inspired by Yûniûs, considers the possibility of improving the wild olive by means of grafting. He even thinks that this is a way of speeding up production.<sup>53</sup> This way he reduces even more the weight of the hypothesis about spontaneous generation of olive plantations in the Aljarafe and gives a more important role of creating the rich olive culture in the region to human effort. Speaking of propagating the olive tree by gemmae (*'ajuz*),<sup>54</sup> Ibn al-'Awwâm affirms on the authority of Abû l-Khayr that that is how olive plants were transferred from North Africa to Spain after the great drought had damaged the trees of this country.<sup>55</sup> Al-Tignarî, confirming this thesis, dates back this event to the times of the Romano-Visigoth domination.<sup>56</sup> What is the conclusion from this discussion? We think we may distill two important facts from it: firstly, that the olive-culture in the Aljarafe has benefited from the continuous effort to improve its growth and production, secondly that the Andalusian patrimony of olive-culture has found in North Africa, during natural crises, a source of regeneration. Leaving the question of origin behind, let us consider the accomplishments of the research in the field of olive culture. Ibn Hajjâj gives much attention to the selection of olive-stock. Referring to Yûniûs' opinion that old plants with fissurized bark are difficult to grow, he adds:

'Growing them will be difficult as long as they don't have gemmae. As soon as they have, the plant will take and more rapidly become productive.'<sup>57</sup>



He tells us that he succeeded in planting a cutting of which the gemma was affected. He put it flat into a ditch and covered it entirely with earth. The slip recovered well, growing into a productive tree.<sup>58</sup> Concerning the assertions of Samanu and of pseudo-Democritus, claiming that cuttings should be thick, smooth and of a certain length, our agronomist introduces improvements based on his own experience.<sup>59</sup> He explains that the farmers of his region refuse to use other modes of propagation for the olive-tree (like fine slips, cuttings without gemmae) because of the slowness with which that tree would grow. They prefer choosing thick branches, with gemmae and a length of at least 7 cubits (3 metres or more). They put them deep into profound ditches, without pricking them out and without watching for smoothness. Their only worry is to see that it has this embryonic bud that looks like an egg.<sup>60</sup> It is clear that the entire system of material selection seems to be determined by a logic centred on production, in the effort to grow olive trees with a rapid and abundant fructification. Concerning the ditches that should receive the olive-tree cuttings Ibn Hajjâj informs us that many people dig them large and square and put 4 plants in them, each in a corner. In this way they can prick out two or three of them, if they want:

'I have,' he adds, 'often seen this type of plantation on the slope of the Aljarafe, especially in a place called al-Ibjin. But I do not approve of this method and I do not think it is a good one.'<sup>61</sup>

Ibn al-'Awwâm advises to dig the ditches one year before putting the olive plants in. They should be as large and as long and as deep as possible. The author, basing himself on his own experience, justifies the dimensions of the ditch by the wish to break the ground in order not to have to loosen it around the young plants too often, running the risk of damaging the roots.<sup>62</sup> Ibn Hajjâj notes about the best spot for olive-trees that the farmers unanimously say exposition to the winds is good for them. Hence the importance attached to planting them on mountains and slopes that are not often snowed under. For the olive-tree likes neither frost, nor cold air, nor excessive heat. Nevertheless it should be able to profit from sufficient sunshine.<sup>63</sup>

Concerning the directive to respect the orientation on the winds in the disposition of the plantation, our agronomist tries to persuade a fringe of the peasantry, who as a whole think it is nonsense. He uses as arguments his own observations on the way fig-trees grow in his region.<sup>64</sup> Always on the basis of their own experience Ibn Hajjâj and Ibn al-'Awwâm propose a whole series of measures to improve the picking of the olives (hand-picking instead of with sticks, choosing a day that it does not rain, establishing exactly when they are ripe, etc.).<sup>65</sup> These precautions, joint to what we have just said, allow us to have a less approximative idea of the richness of the olive culture research program in the Sevillian region.

#### *Experiments and observations on wine-growing*

Viticulture has always been a privileged branch of Andalusian agronomic research. Ibn Hajjâj has been the first to introduce into his teachings the rich experience of Toledan wine-growers especially concerning the pruning of the vine.<sup>66</sup> Ibn al-'Awwâm will later add to this heritage the knowledge acquired by vine-growers in the Aljarafe region. Discussing the question of choosing when to plant the vines, Ibn Hajjâj mentions two opposing opinions: the first is represented by Qustûs, claiming to be the author of the recommendation to plant in autumn, more precisely in november; the second is defended by Yûniûs and Marsyâl who prefer planting the slips in the spring



(February), when the buds start to grow.<sup>67</sup> While Qustûs justifies his choice with several reasons (climatic aridity, the effect the cold has on young plants etc.), the claims of the other agronomic writers remain without sufficient proof. The task to confirm their assertions by new arguments taken from his own experience, will fall on Ibn Hajjâj:

‘The point of view taken in this by Yûniûs and Marsyâl’, he says, ‘pleases me very much. I prefer it to the one taken by Qustûs, even though what he has said is right. The reason for this preference is that the planting of slips, divided branches and cuttings should be done at a time when they are aqueous and full of sap, for then these fluids are directed to the lower parts, come into contact with the loam and consequently roots are made. So I prefer the last opinion for everything planted without roots, for the reason that the stick must sprout its roots and stock with the help of the sappy material it is based on.’<sup>68</sup>

The author considers that in the autumn the humidity of the cuttings is at its lowest, hence the advantage of planting in the spring, although he adds that autumn planting is possible too, as shown by the experiments of Yûniûs and others.<sup>69</sup> When talking of how to plant the vines, Ibn Hajjâj, basing himself on Yûniûs’ teachings, distinguishes two kinds of cultivating cuttings: in ditches (*hufra*) and in trenches (*jawnah, khandaq*). While the first is convenient for good soils, the second, more complicated, one is recommended for warm and heavy soils. Our agronomist considers trench plantation, extensively described by Yûniûs, to be the best and the most up-to-date:

‘However’, he precises, ‘people of our times do not like this kind of improvements, because the work is hard to do.’<sup>70</sup>

This remark clearly shows the conception determining, in Islamic Andalusia, the choice of agricultural methods. They are not exclusively chosen for their internal performance, but above all according to their capacity to economize on human effort. Beside the choice of cuttings and how to plant them Ibn Hajjâj has concentrated most of his scientific activities on the research on ways to develop the pruning procedures used in the Andalusian vineyards. Concerning himself with the most convenient time for pruning vine, the author retains, for the Sevilla region, the period stretching from December to March as the most suitable for this activity. He precises, however, that the first two months are preferable because the sap has not yet started circulating:

‘But’, he adds, ‘as people are afraid that the cold and the frost will return, many avoid this period.’

Wine-growers, though, reject pruning in March, preferring February for the job, so as to avoid two major inconveniences, to wit: frost and the circulation of the sap.<sup>71</sup> Ibn Hajjâj also draws attention to the fact that the wine-growers of his region begin with a light pruning, ready to come back for a second cutting to avoid damage to the buds by frost.<sup>72</sup> He also advises not to prune when there is snow in the air or on the ground. For pruning the vine at that time besides being difficult, may also cause fissures of the boughs and so enfeeble them. He quotes, as supplementary argument, the statement of Abû l-Qâsim b. Hamadin who, having been a prisoner for seven years of the Byzantines, saw the wine-growers of the Constantinople region interrupt their activities when the air was too cold.<sup>73</sup> The author, still basing himself



on the practices of the viticulturists of the Sevilla region, distinguishes two ways of pruning vine-stock: the first, called *muflis*, means trimming down the cuttings lightly and moderately (*mu'tadila*); the second, called *muharraf* (bent), appears to be a more severe way of pruning. This seems to have the preference, for it is both easy and open to everybody.<sup>74</sup> Should anybody want to know in which sector of wine-growing Ibn Hajjāj was most brilliant, one can unhesitatingly point to the culture of trailing vine. As a matter of fact, the author recognizes this himself, drawing attention to the fact that for the redaction of this chapter, he has had no recourse to any teachings of the ancient agronomic writers. For they have treated this subject in a rather unsatisfying manner. In the absence of knowledge about the pruning of trailing vine, the author has relied on three basic sources: the local Spanish inheritance transmitted to the Muslims, the opinion of the Toledans, of whom everybody says that they are the best informed of all and finally a group of expert wine-growers living in the region of Sevilla and who have themselves received their education from the hands of ancient wizards.

'I have' he says, 'taken down everything they have said and tied the craft (*as-sina-ca*) to a set (*qanûn*, *canon*) of wise and well ordered rules.'<sup>75</sup>

This set of rules, this 'canon' of viticulture will later be taken up and, as a whole, reinterpreted by Ibn al-'Awwâm. His version allows us to give credit to Ibn Hajjāj on at least two points: the first is to have taken down the ways and methods of the Andalusian wine-growers, methods that but for him would certainly have been lost; the second, for the specific chapter of pruning the trailing vine, that he was the first in Islamic Andalusia to fix the arcana of a new knowledge. The author, convinced of the importance of vulgarization, also tried to improve the wine-growing techniques of his time. He quotes the example of a farmer 'who declares he knows all about the art of pruning and who thinks his knowledge on the subject his excellent.

'Every time this wine-grower finds a new branch growing in the large open space between the fruit-bearing branches, he cuts it back to the old branches' length. 'I have advised him' writes Ibn Hajjāj, 'not to do this, saying: 'I fear that if you give it the same length as the others in its first year, it will get twisted because of its thinness and its length, and it will bend down without reaching the others' height. But he did not want to listen. So I left him alone with his ignorance.'<sup>78</sup>

The agronomic teachers of Sevilla refer to pockets of resistance from farmers to the progress of the new agronomy. Ibn Hajjāj's struggle against the ignorance of the farmers, taken up in about the same terms by Ibn al-'Awwâm, makes us wonder how deeply the propagation of agro-technical innovations penetrated in Andalusian farming circles. Let us not forget, however, that the Aljarafe emerges from the descriptions of our agronomists as a breeding ground of enlightened farmers, agricultural experts and specialized researchers who work together on the improvement of cultivation methods. Thanks to their efforts only this region could carve out room for its creativity and become one of the highlights of agronomic Spanish-Islamic research. M.R. Delatouche, who chose to treat the theme of agronomic research in the medieval West, did not fail to draw attention to the paradoxal character of his work.

'One can hardly name' he writes, 'any researcher, nor date and attribute



precisely any important discovery, nor quote but a infinitely small number of techical works.’<sup>79</sup>

Compared to this paucity we may consider our investigation of the Andalusian terrain particularly fruitful. There is no shortage here of researchers, nor of discoveries. We have restricted our subject and left aside what was realized in the fields of grafting, of palm-tree fecundation, and of arboriculture in general. Mrs. L Bolens, in her study of the role of grafting in the metamorphosis of Andalusian gardens, has noted in our agronomists the existence of a sort of ‘inventive delirium’ and of ‘a passion of agronomic invention’.<sup>80</sup> We think that these expressions, without being an exaggeration, cover all the defenders of the new agriculture who have made the Aljarafe a place of cultural exchange and a hearth of agricultural creativity.

#### CONCLUSION

At the end of this study we can make a few basic conclusions:

1. Between the 11th and the 12th centuries the Aljarafe has, thanks to its natural potentialities, its proximity to a cultural metropolis like Sevilla and probably also to the quality of its human inhabitants, become a high light of agronomic, Spanish-Islamic research.
2. Agronomic researchers such as Ibn Hajjāj and Ibn al-‘Awwām do not appear to have benefited from a framework of state institutions or an official patronage. They have succeeded, with simple means, in exploring an imposing amount of subjects. Scientific curiosity does not explain it all by itself. And one can imagine the side-effects, beneficial to agronomic research, caused by the development of an agro-exporting sector (oil, cotton) and the growth of demand from the towns. We have been able to follow, from one agronomist to another, the evolution of cultivating methods, the enrichment of the ancient agronomic heritage, and the recovery and improvement of local agricultural experience.
3. The study of the Aljarafe as an experimental garden also allows us to pose again the question what role agronomic manuals have played in the diffusion of the new agricultural methods in Andalusia. A.M. Watson, who brought up the problem, thinks it was a secondary one. He justifies his opinion by pointing to the late arrival of agronomic treatises and their vulgarization of rules known to the enlightened farmers. He considers that in the 12th century the agricultural revolution was an ‘accomplished fact’ already.<sup>81</sup> Let us remember that the theme of the farmer’s ignorance was the favourite topic of most of the Andalusian agronomists. It means that agricultural progress was not such an accomplished fact as is often thought. The agronomists always have had to deploy continuous efforts to overcome rural resistance to change and to assure the triumph of a rational and well conducted agriculture. The Aljarafe is a perfectly good example of this.

It shows us how Ibn Hajjāj and Ibn al-‘Awwām could not only contribute to the agricultural prosperity of their region, but also participate in a larger movement that made the period of the 11th and 12th century the ‘Andalusian Moment’ in the general march of progress. We will have to wait until the 16th century before Flanders and the Low Countries will become in their turn zones of agronomic creativity and contribute to those decisive advancements that will eventually make England the country of the agricultural revolution.



# NOTES

1. The 'agricultural revolution' consisted of the introduction of new plants, the extension of irrigated surface, the improvement of the hydraulic system and the amelioration of production methods. Mrs. L. Bolens, in her documented and erudite study *Agronomes andalous du Moyen-Age* (ed. Droz, Geneve 1982) has shown the progress of cultivating methods in islamic Andalusia clearly. A.M. Watson has followed the process of introduction and diffusion of new plants in the arab-islamic world (Cf. 'The Arab Agricultural Revolution and its diffusion, 700-1100', in *Journal of Economic History*, Cambridge University, London, 1983). For the same theme, consult Thomas F. Glick, *Islamic and Christian Spain in the early Middle Ages* (New Jersey, 1979, p.51-85). With these works in the back of our mind, the concept 'agricultural revolution', as applied to al-Andalus reality, seem less excessive, especially in the light of the frequent use of the expression for changes of rather less amplitude occurring in medieval European agriculture.
2. The only work that could bear comparison to the Andalusian agronomic treatises is written later: in 1304, by the Italian Pietro di Crescenza. It is the *Opus Ruralium Commo dorum*, translated into french under the title of *Livre de profits champêtres et ruraux* (1373).
3. Sevilla, disposing, according to at-Tignarî, of an agronomic schooling establishment, saw the number of its local agronomists (Ibn Hajjâj, Abû l Khayr) supplemented by other agronomic writers (Ibn Bassâl, Ibn Luenco) who came to the town after the fall of Toledo (1085).
4. Ibn Hajjâj wrote his agronomic treatise *The Persuader* (al-Mugni') in 466/1074. We used the arab critical edition of this agricultural manuscript by S. Jarrâr and J. Abû Safiyya ('Ammân, 1982). Cf. also the spanish translation by Julia Maria Carabaza Bravo. Ibn al-'Awwâm wrote his *Treatise on Agriculture* (*Kitab al-filaha*) around the end of the 13th C. We have two sources: the spanish translation by A. Banque'ri (*Libro de Agricultura*, Madrid, 1802, reissued in 1988 by the spanish Ministry of Agriculture), and the french translation by C. Mullet (*Livre de l'Agriculture*, Paris 1864-1867, re-issued by Dâr Bouslama, Tunis, 1977). For an introduction to the author and his work cf. the latest survey of E. Garcia Sanchez and E. Hernandez Bermejo (*La figura de Ibn al-'Awwâm y el significado de su 'Tratado de Agricultura' dentro de la Escuela Agronomica andalusi*, re-issue 1988, p.11-46) We prefer using the arab text, in order to avoid possible translation errors.
5. For a closer study of the Aljarafe in the islamic period, see J. Bosch Vila, *La Sevilla Musul mana*, 712-1248, University of Sevilla, 1984.
6. Ibn Hajjâj, ed. 'Ammâm, p.91-92.
7. Al-Maqqarî, *Nafh at-Tib*, ed. al-Biqâ'i, Beyrout, I, 1986, p.153-154.
8. H. Pe're's, *La poésie andalouse en arabe classique au XIe s.*, ed. Maisonneuve, Paris, 1953, p.119 (note 1)
9. Al-Maqqarî, op. cit., p.153-154.
10. Ibn Hajjâj, quoted by Ibn al-'Awwâm, ed. Banque'ri, I. p.358.
11. Ibid. p.42.
12. Ibid. p.214.
13. M. Drain, *Les campagnes de la Province de Seville: espace agricole et societe rurale*, University thesis, Paris V, I, 1975, repr. Lille III, 1977, p.16.
14. Al-Maqqarî, op. cit. I, p.153.
15. J. Bosch Vila, op. cit. p.335.
16. M. Drain, op. cit. p.292.
17. Al-Maqqarî, I, p.153.
18. M. Ponisch, *Implantation rurale antique sur le Bas-Guadalquivir*, ed. De Boccard, Paris, 1974.
19. Al-Maqqarî, I, p.153-154.
20. H. Pe're's, op. cit. p.121.
21. J. Bosch Vila, op. cit. p.336.



22. Al-Maqqarî, op. cit. p.15-16. For the history of Andalusian gardens, see J. Samso, *Ibn Hisham al-lakhmî y el primer Jardin Botanico en al-Andalus*, in RIEEI, 1981-1982; J.E. Hernandez Bermejo, *Approximacion al estudio des las especies botanicos originariamente existente en los Jardines de Madinat al-Zahra*, in *Cuadernos de Madinat al-Zahra*, I, Cordoba 1987; J. Dickie, 'The Islamic Garden in Spain', in E.B. MacDougall and R. Ettinghausen (eds), *The Islamic Garden*, Washington, Dunbarton Oaks, 1976, p.89-105.
23. Cf. At-Tignarî, *Zahr al bustan wa-nushat al-adhan*, (*Garden flowers and spiritual walks*), ms. D1260, Salle des Archives, Rabat, fol. 132v-133r. For a recent survey of this author's work, cf. E. Garcia Sanchez, *At-Tignarî y su lugar de origen*, in *Al-Qantara*, vol. IX, 1988, p.1-11.
24. This case of agronomic spying is reported by at-Tignarî in *Zahr al-bustan*, op. cit. fol 74r
25. Al-Maqqarî, II, p.16.
26. Thomas F. Glick distinguishes formal (royal gardens) and informal mechanisms (role of the immigrants from the Orient, of agronomic manuals...), both having acted as agents in the diffusion of new plants in islamic Andalusia (Cf. his commentary on the article of A.M. Watson, *The Arab Agricultural Revolution*, op. cit. p.76). The Aljarafe could be classified as an informal agent of the propagation of agricultural innovation.
27. The first work is attributed to Anatolius of Berytos, 4th-5th C.). The second appears to have been compiled by Qustûs from Graeco-Roman and Byzantine sources. As for the third: it is compiled by a Babylonian agronomist, called Qûtâma' (3th-4th C.) and translated from Syriac into Arabic by Ibn Wahshiyya (10th C.). For a study of the economic and scientific contents of this treatise, cf. our thesis *Les conceptions économiques et agro-techniques dans le Livre de l'Agriculture Nabate'enne*, I-II, Faculty of Economic and Social Sciences, Casablanca, 1987.
28. Ibn al-'Awwâm, ed. Banque'ri, I, p.10.
29. Ps-Demotrites or Bolos de Mendes, (2nd C B.C.), who has written a geponical work very often quoted by Anatoliûs and Qustûs (Cf. T. Fahd, *Matériaux pour l'histoire de l'agriculture en Irak: al-Filaha an Nabatiyya*, in *Handbuch des Orientalistik*, Leiden/Köln, Brill, 1977, p.373.
30. Ibn al-'Awwâm, ed. Banque'ri, I, p.43.
31. The identity of Yûniûs has caused much speculation. Nowadays there is a distinct difference of opinion between those who identify Yûniûs with the Latin agronomist Columellus, and those who prefer to attach the name to Vindanioniûs Anatoliûs. For a discussion on this topic, cf. L. Bolens, (*Agronomes Andalous*, op. cit. p.44-49) and R.H. Rodgers, (*Yûniûs o Columela en la España Medieval?* in *Al-Andalus*, vol. XLIII, 1978). In our opinion a tentative answer to this question could be found in an attentive reading of the text of the critical arab edition of Ibn Hajjâj. This author has indeed sown some confusion by using the complete name of Vindânioniûs Anatoliûs, now in the form of Anatoliûs (p.6-42), now in the form of Vindan(ioniûs) (p.43-120).
32. Ibn al-'Awwâm, ed. Banque'ri, I, p.358.
33. Ibid., p.214.
34. Ibid., II, p.14-15.
35. Ibid., I, p.137.
36. Ibn Hajjâj, ed. 'Ammân, p.72.
37. Ibn al-'Awwâm, ed. Banque'ri, I, p.131-132.
38. Ibid., p.543.
39. Ibid., p.112; Ibn Hajjâj, ed. 'Ammân, p.112.
40. Ibid., p.113; *ibid.*, p.113.
41. Ibid.
42. Ibid.
43. A.M. Watson, *Agricultural innovation*, op. cit. p.15.
44. Ibn al-'Awwâm, ed. Mullet, II, p.54-62.
45. Ibn al-'Awwâm, ed. Banque'ri, II, p.58-59.
46. Ibid., I, p.570.



47. Ibid., II, p.120.
48. Ibn al-'Awwâm tells of how he saw young olive and fig-trees on the Aljarafe fall ill and start losing their leaves. To cure them he had wrapped their trunks in a kind of circular protection (*masatib*) up to about 4 empanes (0,924 m). This allowed the trees to recover (cf. Ibn al-'Awwâm, ed. Mullet, p.576). He recommends this recipe for all etiolated trees.
49. Ibn al-'Awwâm tells us he has had a semolina (*'asida*) made at home, from panic flour. He ate part of it and the rest served the same evening to make bread, baked in the common oven. The result was a tendre and soft bread (Cf. Ibn al-'Awwâm, ed. Banque'ri, II, p.78).
50. J. Bosch Vila, op. cit., p.334.
51. This word has often been transcribed as *Quartînûn* or *Quartânûn* (Cf. C. Mullet, I, p.145 and ed. 'Ammân, p.91). In fact this should be read as *Qûtnûn* or *Qûtnûs*. This reminds us of the Greek origin of the word, signifying wild olive (*kotinos*) Cf. L. Guyot and P. Gibassier, *The names of trees*, PUF, 'Que sais-je' 1966, p.92.
52. Ibn Hajjâj, ed. 'Ammân, p.91-92.
53. Ibid., p.91.
54. C. Mullet mistakes burr (*'ujra*) for gemma (*'ajuz*). For translation of botanic terms we prefer to rely on the well documented dictionary of M. Che'habi (*Dictionnaire Francais-Arabe des termes agricoles*, Cairo, 1957).
55. Ibn al-'Awwâm, ed. Banque'ri, I, p.240-241.
56. At-Tignarî, op. cit., fol 80r.
57. Ibn Hajjâj, ed. Ammân, p.89.
58. Ibid., p.97.
59. Ibid.
60. Ibid., p.59.
61. Ibid., p.92.
62. Ibn al-'Awwâm, ed. Banque'ri, I, p.242.
63. Ibn Hajjâj, ed. 'Ammân, p.87.
64. Ibn al-'Awwâm, ed. Banque'ri, p.207.
65. Ibid., I, p.244-245; Ibn Hajjâj, p.55.
66. Ibn Hajjâj, p.101
67. Ibn al-'Awwâm, ed. Mullet, I, p.329-330
68. Ibid. We have sometimes changed the initial translation, basing ourselves on the arab text. (ed. Banque'ri, p.352-353).
69. By 'others' the author probably means Ibn Bassâl who made this recommendation his own.
70. Ibn al-'Awwâm, ed. Banque'ri, p.356.
71. Ibn Hajjâj, p.99-100.
72. Ibid., p.99.
73. Ibid., p.100.
74. Ibid., 101
75. Ibid.
76. Crispo Moncada, *Sul taglio della vite d'Ibn al-'Awwâm....*, in *Actes du VIII Congrès des Orientalistes*, Stockholm, 1889, vol.II, p.215-257.
77. Ibn Hajjâj, p.104.
78. Ibid.
79. M.R. Delatouche, 'L'Empirisme médiéval' in *Les aspects et les étapes de la recherche agronomique en France (1761-1961)*, French Academy of Agriculture, no date, p.2.
80. L. Bolens, op. cit., p.290.
81. A.M. Watson, *The Arab Agricultural Revolution*, op. cit., p.31-32.



# BOTANICAL FOUNDATIONS FOR THE RESTORATION OF SPANISH-ARABIC GARDENS: STUDY OF THE PLANT SPECIES USED AND THEIR INTRODUCTION DURING THE ANDALUSI PERIOD

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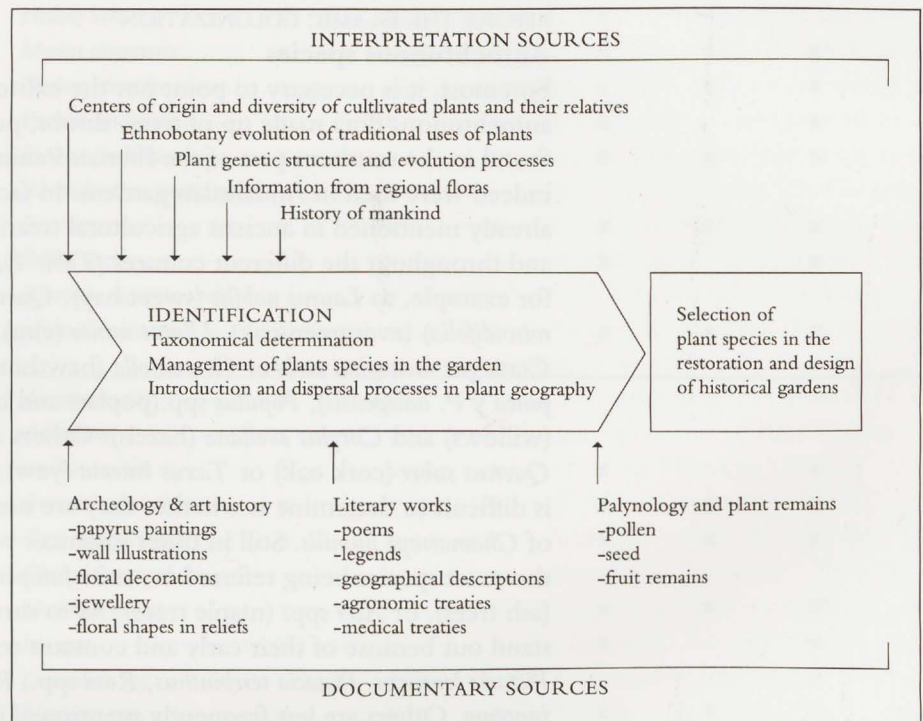
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## INTRODUCTION

The restoration of historical gardens and design of new ones with a distinctive style are usually rigorously studied by architects and archaeologists as to their general distribution, design, buildings, construction materials and architectural elements. However, the selection of plants and criteria to follow (arrangement, formation, pruning practices) are frequently considered in a secondary way. Indeed, the ignorance of the geographical origin of the plants, the history of their domestication and geographical dispersion has led, for example, to the use of American plants in Spanish-Arabic gardens or to the exclusion of the species originally used, in many cases causing the disappearance of countless varieties. This paper focuses on the species originally used in Spanish-Arabic gardens from the 10th to the 15th centuries by studying the incorporation of autochthonous species, the garden flora used under the Spanish-Roman and Visigothic periods and the gradual incorporation of African and Asian species by Eastern Mediterranean cultures. This latter process represented a gateway of oriental species into Europe through the Iberian Peninsula and thrived at least until the 14th century.

Figure A



## DOCUMENTARY SOURCES

The geographical origin, dispersion and domestication of cultivated plants has been widely studied by botanists and agronomists. The determination of their centers of origin and diversity is something which was already dealt with in 1882 by Decandolle, although it was not rigorously studied until 1926 by Vavilov. The more recent approaches by Zeven & Zhukovsky (1975), Zeven & De West (1982), Hawkes (1983) and Mathon (1981) should also be mentioned. Moreover, the considerable advances in the



taxonomy of floras from different parts of the world in the last two centuries have also given rise to more concise facts on the autochthonous and/or allochthonous characters of wild or locally cultivated species. Palynology is another science which has likewise contributed to the recent advances in the evolution of regional floras. Furthermore, breakthroughs in cytogenetics and phytochemistry have led to the clarification or have even authenticated the origin and evolution of species and varieties currently being cultivated. Together with these strictly biological, genetic, phytogeographic and agronomic methods and documentary sources, the botanist can resort with the help of archaeologists, philologists and historians to the study of much wider fields of science and culture. Our *Figure A* outlines the botanical, archaeological, historical and literary sources and establishes the phytogeographical (origin and dispersion of plants), phylogenetic (evolution of the world of plants), ethnobotanical (the uses given to plants throughout time) and temporal (history of mankind) criteria to be followed when interpreting these data. These multidisciplinary methods should be applied to the study of Andalusian agriculture and gardening (9th to 15th centuries) in order to correctly define the species used. We have applied these methods in collaboration with archaeologists, philologists and historians, for instance, to the study of the gardens from the town of Madinat al-Zahra' (Hernandez-Bermejo 1987) or when interpreting Spanish-Arabic agricultural treatises (Garcia-Sanchez & Hernandez-Bermejo, 1989; Hernandez-Bermejo, 1990).

#### AN OUTLINE OF THE BIODIVERSITY OF GARDEN SPECIES IN AL-ANDALUS BEFORE THE ISLAMIC COLONIZATION

##### **Autochthonous species**

Foremost, it is necessary to point out the existence of the very rich wild autochthonous flora made up of trees, shrubs, perennial plants and bulbs found in the southern part of the Iberian Peninsula and which may be and indeed were used in Andalusian gardens. In fact, many of these plants are already mentioned in ancient agricultural treatises. Among the tree species and throughout the different cultures (*Table 1*), there are constant references, for example, to *Laurus nobilis* (sweet bay), *Quercus ilex* (including *Q. rotundifolia*) (evergreen oak), *Ulmus minor* (elm), *Tamarix* spp. (tamarisk), *Crataegus monogina* and/or *C. azarolla* (hawthorn), *Pinus* spp. (especially *P. pinea* y *P. halepensis*), *Populus* spp. (poplars and black poplars), *Salix* spp. (willows) and *Corylus avellana* (hazels). Others are cited less often, e.g., *Quercus suber* (cork oak) or *Taxus baccata* (yew), whereas in other cases, what is difficult to determine is whether they are mentioned or not, as in the case of *Chamaerops humilis*. Still in other instances what cannot be determined is the exact species being referred to, as in *Juniperus* spp. (junipers), *Fraxinus* spp. (ash trees), or *Acer* spp. (maple trees). As to shrubs (*Table 1*), the following stand out because of their early and constant references: *Myrtus communis*, *Pistacia lentiscus*, *Pistacia terebinthus*, *Rosa* spp., *Rubus* spp. and *Spartium junceum*. Others are less frequently mentioned or rarely mentioned at all, e.g., *Rhododendrom ponticum*, only cited by Isidorus of Seville. Among the perennial plants and bulbs with ornamental flowers or leaves, quite a few common wild species are also spoken of. It is possible to find references of *Narcissus* spp. (daffodils), *Iris* spp., *Viola* spp. (violets), *Cheiranthus* and *Erysimum* spp. (wallflowers), *Ruscus aculeatus* and *R. hypophyllus*, *Nymphaea* spp. (water lilies), *Acanthus mollis*, *Adiantum capillus-veneris* (maidenhair fern) and numerous aromatic ones like *Capparis spinosa*, *Ruta graveolens* (rue), *Artemisia absinthium* (wormwood), *Lavandula* spp. (lavender), *Rosmarinus officinalis* (rosemary), *Thymus* spp. (thyme), and



Table 1.

Autochthonous species mentioned by  
Spanish-Roman, Spanish-Visigothic  
and Spanish-Arabic authors.

	Columella	Isidorus	Ibn Arib	Ibn Hayyay	Ibn Bassal	Ibn Awwan	Ibn Luyun
	I	VI-VII	X	X-XI	XI	XII	XIV
<i>Acer</i> spp.	x	x		x		?	
<i>Chamaerops humilis</i>				x			
<i>Corylus avellana</i>	x	x	x	x	x	x	x
<i>Crataegus monogyna</i>	x	x	x	x		x	x
<i>Fraxinus</i> spp.	x	x		x	x	x	
<i>Juniperus</i> spp.	x	x				x	x
<i>Laurus nobilis</i>	x	x	x	x	x	x	x
<i>Pinus</i> spp. (esp. <i>P. pinea</i> )	x	x	x	x	x	x	x
<i>Populus alba</i> , <i>P. nigra</i>	x	x				x	x
<i>Quercus rotundifolia</i>	x	x	x	x	x	x	x
<i>Quercus suber</i>	x	x				x	
<i>Salix</i> spp.	?	x	x	x	x	x	x
<i>Tamarix</i> spp.	x	x	x			x	x
<i>Taxus baccata</i>	x	x		x			
<i>Ulmus minor</i>	x	x		x	x	x	x
<i>Arbutus unedo</i>	x				x	x	x
<i>Buxus sempervirens</i>	x	x		x			
<i>Daphne gnidium</i>		x		x			
<i>Hedera helix</i>	x	x		x			
<i>Myrtus communis</i>	x	x	x	x	x	x	x
<i>Nerium oleander</i>				x	x	x	x
<i>Pistacia lentiscus</i>	x	x	x	x		x	x
<i>Pistacia terebinthus</i>	x	x	x	x	x	x	x
<i>Rhododendron ponticum</i>		x					
<i>Rosa</i> spp.	x	x	x	x	x	x	x
<i>Rubus</i> spp.	x	x		x		x	x
<i>Spartium junceum</i> and other <i>Genisteae</i>	x			x	x	x	x
<i>Acanthus mollis</i>	x	x					
<i>Adiantum</i>							
<i>capillus-veneris</i>	?	x	x	x		x	
<i>Artemisia absinthium</i>	x	x	x	x	x	x	
<i>Capparis spinosa</i>	x	x	x	x	x	x	x
<i>Cheiranthuscheiri</i> & <i>Mathiola incana</i>	x			x	x	x	x
<i>Iris</i> spp.	x	x	x	x		x	x
<i>Lavandula</i> spp.		x				x	
<i>Narcissus</i> spp.	x	x	x	x	x	x	x
<i>Nymphaea</i> spp.				x		x	x
<i>Rosmarinu officinalis</i>	x	x				x	
<i>Ruscus aculeatus</i> , <i>R. hypophyllus</i>	x					x	
<i>Ruta graveolens</i>	x	x		x	x	x	x
<i>Santolina</i> <i>chamaecyparissus</i>						x	
<i>Thymus</i> spp.		x				x	
<i>Viola</i> spp.	x	x	x	x	x	x	x



*Santolina chamaecyparissus*. In many cases, it is also difficult to determine up to what point the species mentioned are alien (*Iris germanica*, *Viola tricolor*, *V. odorata* for instance) or wild species of the same genera native of the Iberian Peninsula such as *Iris planifolia* or *Viola crassiuscula*. There are also references of some species which are most probably allochthonous but which, precisely because of the antiquity of their introduction, cannot be separated from Betic and Andalusian gardening. Some of these species have even turned wild and blended into the Iberian landscape. Amongst these, we find: *Olea europaea subsp. sylvestris* and *O. europaea subsp. oleicola* (olive tree), *Ceratonía siliqua* (carob), *Celtis australis* (hackberry), *Castanea sativa* (chestnut), *Vitis vinifera* (grapevine), *Ficus carica* (fig) and *Phoenix dactylifera* (date palm) (Table 4).

Table 2.

Species used in Egyptian Gardening which could have been gradually introduced into the Western Mediterranean Region.

#### Trees

<i>Acacia albida</i>	<i>Acacia nilotica</i>	<i>Balanites aegyptiaca</i>
<i>Balsamodendron myrrha</i>	<i>Ceratonía siliqua</i>	<i>Citrus medica</i>
<i>Cupressus sempervirens</i>	<i>Dyospyrus ebanus</i>	<i>Ficus carica</i>
<i>Ficus sycomorus</i>	<i>Fraxinus</i> spp.	<i>Laurus nobilis</i>
<i>Myphaene thebiaca</i>	<i>Olea europaea</i>	<i>Phoenix dactylifera</i>
<i>Pinus</i> spp.	<i>Prunus dulcis</i>	<i>Punica granatum</i>
<i>Pyrus communis</i>	<i>Quercus suber</i>	<i>Salix subserata</i>
<i>Tamarix nilotica</i>	<i>Taxus baccata</i>	

#### Herbaceous and flowering ornamental plants

<i>Acorus calamus</i>	<i>Alcea</i> sp.	<i>Anthemis</i> sp.
<i>Arnica donax</i>	<i>Celosia</i> sp.	<i>Centaurea depressa</i>
<i>Cyperus papyrus</i>	<i>Hibiscus</i> sp.	<i>Iris</i> spp.
<i>Nymphaea coerulea</i>	<i>Nymphaea lotus</i> .	<i>Papaver</i> sp.
<i>Ricinus coccum</i>	<i>Rosa</i> sp.	

#### Other horticultural and aromatic plants

<i>Allium cepa</i>	<i>Allium sativum</i>	<i>Allium porrum</i>
<i>Anetum graveolens</i>	<i>Apium graveolens</i>	<i>Asparagus officinalis</i>
<i>Atriplex hortensis</i>	<i>Carthamus tinctorius</i>	<i>Citrullus vulgaris</i>
<i>Coriandrum sativum</i>	<i>Cucumis melo</i>	<i>Cucumis sativus</i>
<i>Cuminum cyminum</i>	<i>Foeniculum vulgare</i>	<i>Gossypium herbaceum</i>
<i>Lactuca sativa</i>	<i>Lagenaria siceraria</i>	<i>Mandragora autumnalis</i>
<i>Momordica balsamina</i>	<i>Rosmarinus officinalis</i>	<i>Solanum dulcamara</i>

#### Shrubs and climbing plants

<i>Hedera helix</i>	<i>Lawsonia inermis</i>	<i>Myrtus communis</i>
<i>Paliurus spina-cristi</i>	<i>Pistacia lentiscus</i>	<i>Pistacia terebinthus</i>
<i>Vitis vinifera</i>		

### Oriental influence through Egypt

For millions of years (especially during the last 5 millennium AC) the Egyptians not only administered a flourishing agriculture but also dedicated themselves to the design of very unique gardens, forerunners of the Islamic ones, and to the importation of species from more oriental and southern places (like Ethiopia). They were the first to organize phytogenetic expeditions, being authentic lovers of plants. For instance, Queen Hatshepsut (from the 18th dynasty - around 1500 years BC) sent an expedition to Somalia to collect frankincense trees in order to transport them to Thebes. Hence, a considerable part of the species and gardening know-how in the Iberian Peninsula from Phoenician, Greek, Roman and Arab colonizations come



from or originated in Egypt. The data available on the species used by Egyptians, especially in the 3000 years AC, is extensive thanks to floral and plant decorations on painted walls, on jewellery, on papyrus illustrations and thanks to plant remains and plant fabrics. As early as 1887, V. Loret published a list of plant species which he identified from these sources. In the very recent work by Scott-James et al. (1989), the plant species were identified from the archaeological collections displayed in the British Museum in London. Indubitably, these studies give us quite a bit of information on the species used in Egyptian gardens (Table 2). Many of these species were most probably introduced gradually into the western Mediterranean areas, reaching the Iberian Peninsula either through Roman cultures and colonizations or directly through the commercial trade of merchants from the eastern Mediterranean (Phoenicians, Greeks). However, the non-selection of certain species which do not seem to be mentioned by any author or in any record is noteworthy. This is the case of *Hyphaene thebaica*, an Egyptian palm, with costa-palmate leaves frequently drawn in their tombs together with *Phoenix dactylifera*, whose leaves were used for mats and shoes. Something similar occurs with *Balanites aegyptiaca*. Others will take much longer in arriving and will only do so after the Islamic colonization, as in the case of *Lawsonia inermis* (henna) and *Gossypium herbaceum*.

### Spanish-Roman gardening

There is quite a bit of data available on Roman gardening and plant species used not only from archaeological remains which are still conserved (paintings, pottery, design and landscaping of their gardens) but also from the extensive literature which has survived. Virgil, Discorides, Strabo, Cato, Varro, Pliny and Columella devoted themselves directly or indirectly to the world of plants. These works sometimes offer references or data of species used in gardens. Some of these authors even had a direct experience in the Betic region (for instance, Columella, in the 1st century) or directly refer to Spanish and Betic gardening and agriculture (Strabo or Pliny in the 1st century). In this way, they describe the arrival to 'Hispania' of the plane (*Platanus orientalis*), the considerable size of the olive tree (*Olea europea*) in the Betic region and its gradual spread towards central Europe. Compiling data from another author, Pliny mentions that the olive tree 'was not found in Italy, Hispania and Africa when the Tarquinos reigned in the year 173 after the founding of Rome but can now be found on the other side of the Alps, in Gaul and interior of Hispania'. He also reveals that in 'Hispania' *Ricinus communis* 'soon reaches the size of an olive tree'. He talks about pears, figs, evergreen oaks, artichokes and other species cultivated in the Roman Betic. More generally and without geographically referring to 'Hispania', Pliny also provides data on oriental species which were beginning to be commonly known in the western Mediterranean area, for example, *Saccharum officinarum* (sugar cane), *Gossypium arboreum* (cotton tree), *Terminalia catappa* (mirobalan), *Styrax* spp. (storex) and so on. Although it is possible to find more recent studies on agriculture and gardening in the Roman Hispania (for example, Garcia-Badell, 1951), it is necessary to point out the importance of consulting Pliny's book directly and even more so the *Twelve Books of Agriculture* by Columella. Out of the almost 200 species cited in the latter, almost half of them may have been used in gardens. Unfortunately, the author does not deal with the subject in a direct way, as one is only able to find paragraphs like 'Tmolus and Corycus are famous for their flower (saffron crocus) but in our city neither of the two are necessary, as in many parts of it, it is already possible to see the cassia with leaves, the frankincense tree and gardens full of



myrrh and saffron crocus'. As can be seen, the species cited were already in Rome but had most probably not reached the Iberian Peninsula. Among the main plants used in Spanish-Roman gardens and cited by Columella, the following trees stand out: sweetbay, date palm, cypress, plane tree, hackberry, elm and poplar. There were also numerous fruit trees used in these gardens like apple, pear, pomegranate, quince, plum, peach, chestnut, walnut, and Chinese date trees and grapevines. A curious reference is the mulberry tree (*Morus* spp.), which most probably was already present in 'Hispania' at this time as opposed to the widely held opinion that the Arabs introduced it into the Iberian Peninsula. Among the flowering plants, the following should be mentioned: violets, roses, white lilies, hyacinths, daffodils, wallflowers and acanthus. There is also mention of ornamental shrubs and evergreens like myrtle, holly, boxwood and of numerous aromatic plants like rosemary, lavender cotton, wormwood, rue, thyme, dill, coriander, mint and so on.

### Spanish-Visigothic gardening

Although the documents and references of Spanish gardening during the centuries of Visigothic dominance is scarce, it is possible to find certain data, surprising in some cases, regarding the gradual arrival of oriental species into the Iberian Peninsula thanks to the *Etymologies* by Isidorus of Seville, probably written around the year 625 AD. In this encyclopedic work, a small part is dedicated to the explanation of the origin of the names of some of the most common plants, in some cases, including comments on their uses and origin. There are more than 300 species cited, some of which are even group species. The author pays little attention to the ornamental use of the plants as opposed to other applications (medicinal, aromatic, agricultural, scents and fruits). However, he does not hide his admiration of orchards and therefore, we must point out here the basic concept of the Islamic garden as an 'orchard-garden'. Explaining the etymological origin of the word 'orchard' which comes from the Latin '*orire*' (to be born), Isidorus tells us that it means that there are always 'fruits being born'. He does not only mention numerous shade and garden trees, fruit trees, aromatic and horticultural plants which can be used in gardens (Table 3) but also flowering plants. Besides mentioning violets, roses, hyacinths, daffodils, white lilies and acanthus, already referred to by Columella, he also cites aconites, peonies, papyrus and gladioli. However, these are not the only new contributions of species to Hispanic flora. It is quite surprising to verify the arrival during this time of numerous species from the Orient (for Isidorus, the Orient is an indiscriminate mixture of Arabia and India). The cultivation of saffron crocus (*Crocus sativus*) is perfectly known and he even tells us the way of detecting its adulteration. The follow species were also well-known: sugar cane (*Saccharum officinarum*), sesame (*Sesamum indicum*), ginger (*Zingiber officinale*), reed grass (*Arundo donax*), ebony (*Diospyros ebanum*), frankincense tree (*Boswellia carteri*), myrrh (*Commiphora abyssinica*), cardamon (*Elettaria cardamomum*), pepper (*Piper nigrum*), storax (*Styrax* sp.), several *Cinnamomum* species (*C. camphora*, *camphor*; *C. zeylanicum*, *cinnamon*, *C. cassia*, *cassia*), *Commiphora africana* (African bdellium), *Terminalia catappa* (mirobalan) and others. Were these species only known because of their trade? In many cases it seems that there was a more direct knowledge of them, as is the case with mulberry (*Morus* spp.), saffron crocus (*Crocus sativus*) and sugar cane (*Saccharum officinarum*). These species, which are usually considered to have been introduced by the Arabs, had most probably been cultivated before them in the Iberian Peninsula. In which way were the oriental species introduced during the



Table 3.

Plant species cited by Isidorus of Seville (7th century) and probably used in Spanish-Visigothic Gardens

<b>Trees</b>		
<i>Abies</i> spp.	<i>Acer</i> spp.	<i>Alnus glutinosa</i>
<i>Castanea sativa</i>	<i>Cedrus</i> spp.	<i>Ceratonia siliqua</i>
<i>Corylus avellana</i>	<i>Crataegus azarola</i>	<i>Cupressus sempervirens</i>
<i>Cydonia oblonga</i>	<i>Fagus sylvatica</i>	<i>Ficus carica</i>
<i>Ficus sycomorus</i>	<i>Fraxinus</i> spp.	<i>Juglans regia</i>
<i>Juniperus</i> spp.	<i>Laurus nobilis</i>	<i>Malus domestica</i>
<i>Maspilus germanica</i>	<i>Morus</i> spp.	<i>Olea europaea</i>
<i>Phoenix dactylifera</i>	<i>Pinus</i> spp.	<i>Pistacia vera</i>
<i>Platanus orientalis</i>	<i>Populus alba</i>	<i>Populus nigra</i>
<i>Prunus armeniaca</i>	<i>Prunus avium</i>	<i>Prunus domestica</i>
<i>Prunus dulcis</i>	<i>Prunus persica</i>	<i>Punica granatum</i>
<i>Pyrus communis</i>	<i>Quercus ilex</i>	<i>Quercus rotundifolia</i>
<i>Quercus suber</i>	<i>Salix</i> spp.	<i>Sorbus</i> spp.
<i>Tamarix</i> spp.	<i>Taxus baccata</i>	<i>Tilia</i> spp.
<i>Ulmus</i> spp.	<i>Zizyphus jujuba</i>	
<b>Introduced ornamental plants</b>		
<i>Arundo donax</i>	<i>Boswellia carteri</i>	<i>Cinnamomum camphora</i>
<i>Cinnamomum cassia</i>	<i>Cinnamomum zeylanicum</i>	<i>Commiphora abyssinica</i>
<i>Commiphora africana</i>	<i>Crocus sativus</i>	<i>Diospyros ebanum</i>
<i>Elettaria cardamomum</i>	<i>Morus alba</i>	<i>Morus nigra</i>
<i>Piper nigrum</i>	<i>Saccharum officinarum</i>	<i>Saussurea abyssinica</i>
<i>Sesamum indicum</i>	<i>Styrax</i> sp.	<i>Terminalia catappa</i>
<i>Zingibor officinale</i>		
<b>Flowering plants</b>		
<i>Acanthus mollis</i>	<i>Aconitum</i> spp.	<i>Crocus sativus</i>
<i>Cyclamen</i> spp.	<i>Cyperus papyrus</i>	<i>Gladiolus</i> spp.
<i>Hyacinthus</i> spp.	<i>Iris germanica</i>	<i>Iris pseudoacorus</i>
<i>Iris</i> spp.	<i>Lilium</i> spp.	<i>Narcissus</i> spp.
<i>Paeonia</i> spp.	<i>Rosa</i> spp.	<i>Viola</i> spp.
<b>Ferns</b>		
<i>Adiantum capillus-veneris</i>	<i>Ceterach officinarum</i>	<i>Equisetum</i> spp.
<i>Polypodium</i> spp.		
<b>Shrubs and climbing plants</b>		
<i>Buxus sempervirens</i>	<i>Hedera helix</i>	<i>Myrtus communis</i>
<i>Pistacia lentiscus</i>	<i>Pistacia terebinthus</i>	<i>Rhododendron ponticum</i>
<i>Rosa</i> spp.	<i>Rubus</i> spp.	<i>Salix</i> spp.
<i>Vitis vinifera</i>		
<b>Other horticultural and aromatic plants</b>		
<i>Anthemis</i> spp.	<i>Anethum graveolens</i>	<i>Apium graveolens</i>
<i>Artemisia absinthium</i>	<i>Calamintha</i> spp.	<i>Chamaemelum</i> spp.
<i>Cominumo cimirum</i>	<i>Coriandrum sativum</i>	<i>Foeniculum vulgare</i>
<i>Lavandula</i> spp.	<i>Mentha</i> spp.	<i>Origanum vulgare</i>
<i>Pimpinella anisum</i>	<i>Rosmarinus officinalis</i>	<i>Ruta graveolens</i>

Visigothic period? The solution to this question lays most likely in the influence of the Byzantines and their intentions to penetrate the Mediterranean coasts of the Iberian Peninsula during the 6th and 7th centuries, being finally ousted by King Leovigildus. We must not forget either that it was precisely



Leandrus of Seville, Isidorus' older brother and bishop of Seville before him, who was ambassador to King Hemenegildus in Byzantine. Both brothers lived in Cartagena, a city which was under Byzantine rule for a time. Although the cultural connection has been demonstrated, the determination up to what point the influence of Byzantine was felt during this time, as part of the introduction of Asian species into Europe through Iberia, warrants further study.

#### PLANT SPECIES IN SPANISH-ARABIC GARDENING

The scientific and cultural consequences of Islamic colonization in the Iberian Peninsula, from the 8th to the 15th centuries were considerable in fields like medicine, philosophy, mathematics, astronomy and agriculture. Although this is unquestionable, it is also necessary to recognize that in some cases this has been a bit exaggerated as all these changes were also based on the assimilation of all the local skills accumulated during the previous cultures. It was a gradual process which most probably reached its cultural and creative zenith between the 10th and 11th centuries, coinciding with the political decline of the Cordovan caliphate. With regards to agriculture, there were indubitable changes in agricultural practices and in the eating habits of the Christian World with an increased consumption of vegetables and fruits. In gardening, changes were observed in more refined techniques and styles, better water management, in the introduction of new species and in the vitalization of others. Indeed, there is a gradual incorporation of new species together with many others already cultivated by Romans and Visigoths. The Islamic agronomists had produced in the Orient an exceptional work, *Nabatea 'Agriculture'*, probably written by Ibn Wahsiyya at the end of the 9th century. But it is in al-Andalus, where the most outstanding agronomists of medieval Islam will appear and where the most important treaties on agriculture will be written. Despite the fact that many of the treaties have been totally or partially lost, there are still many at our disposal thank to the excellent works of prestigious arabists like Banqueri, Millas Vallicrosa, Asin Palacios and Garcia Gomez and more recently, Garcia Sanchez, Bolens, Carabaza Bravo, Eguaras Ibañez, and so on. Thanks to these works and translations we have carried out a chronological study comparing the species cited by:

- a the Cordovan author Arib Ibn Sa'id (10th century) in his work *Calender of Cordoba*;
  - b the author from Toledo, Ibn-Bassal (11th century);
  - c the one from Seville, Ibn Hayyay (11th century);
  - d Ibn Al-Awwan (12th century), also from Seville, who is the author of what could be considered the most complete *Treaty on Agriculture*; and
  - e the author from Almeria (14th century), Ibn Luyun (*Tables 1 and 4*).
- Despite the enormous work by Spanish Arabic specialists in the translations of these authors, the difficulties in the identification of the plant species mentioned is great, and once again only the combined co-operation of philologists, historians, botanists and agronomists will succeed in giving a correct solution to the problem. These difficulties are picked up in Hernandez Bermejo (1990). Even in prestigious translations we find the mention of species impossible to find in al-Andalus, such as prickly pear (*Opuntia ficus-indica*). A comparative study of the authors mentioned, makes it possible for us to determine that in the book by Arib (10th century), we find most of the oriental species which had not been introduced before the Islamic colonization. Thus, we find *Solanum melongena*, *Lawsonia inermis*, *Gossypium* sp. (probably *G. herbaceum*), *Oryza sativa*, *Musa* sp., *Jasminum*



Table 4.  
Gradual introduction of oriental  
species during the Spanish-Roman,  
Spanish-Visigothic and Spanish-Arabic  
periods.

	Columella	Isidorus	Ibn Arib	Ibn Hayyay	Ibn Bassal	Ibn Awwan	Ibn Luyun
	I	VII	X	XI	XI	XIII	XIV
<b><i>Species introduced very early but rarely cited</i></b>							
<i>Arundo donax</i>	?	x					
<i>Celtus australis</i>	x	?		?		x	x
<i>Glycyrrhiza glaba</i>		x	x			x	
<i>Lilium candidum</i>	x		x				
<i>Ricinus communis</i>	?	?		*			
<b><i>Species introduced very early and constantly cited</i></b>							
<i>Castanea sativa</i>	x	x	x	x	x	x	x
<i>Ceratonia siliqua</i>	x	x	x	x		x	x
<i>Citrus medica</i>	?	x	x	x	x	x	x
<i>Cupressus sempervirens</i>	x	x	x	x	x	x	x
<i>Cydonia oblonga</i>	x	x	x	x	x	x	x
<i>Ficus carica</i>	x	x	x	x	x	x	x
<i>Ficus sycomorus</i>	?	x		x	x	x	x
<i>Juglans regia</i>	x	x	x	x	x	x	x
<i>Morus alba/M. nigra</i>	x	x			x	x	x
<i>Olea europaea</i>	x	x	x	x	x	x	x
<i>Phoenix dactylifera</i>	x	x	x	x	x	x	x
<i>Platanus orientalis</i>	x	x		x		x	
<i>Prunus armeniaca</i>	x	x	x	x	x	x	x
<i>Prunus avium/P. cerasus</i>	x	x	x	x	x	x	x
<i>Prunus domestica</i>	x	x	x	x	x	x	x
<i>Prunus dulcis</i>	x	x	x	x	x	x	x
<i>Prunus persica</i>	x			x	x	x	x
<i>Punica granatum</i>	x	x	x	x	x	x	x
<i>Vitis vinifera</i>	x	x	x	x	x	x	x
<i>Ziziphus jujuba</i>	x	x		x	x	x	x
<i>Allium sativum</i>	x	x	x	x	x	x	x
<i>Allium cepa</i>	x	x	x	x	x	x	x
<i>Atriplex hortensis</i>	x	x		x		x	x
<i>Carthamus tinctorius</i>	x		x	x	x	x	x
<i>Cucumis melo</i>	?	x	x	x	x	x	x
<i>Cucumis sativus</i>	?	x	x	x	x	x	x
<i>Citrullus vulgaris</i>	?	x	x	x	x	x	x
<i>Cyperus papyrus</i>		x		x		x	x
<i>Vicia faba</i>	x	x	x	x	x	x	x
<i>Vigna sinensis (?)</i>	x	x		x	x	x	
<b><i>Species gradually introduced</i></b>							
<i>Althaea officinalis</i>		x	x	x	x	x	x
<i>Citrus aurantifolia</i>							x
<i>Citrus aurantium</i>				x	x	x	x
<i>Citrus limon</i>			?	x	x	x	x
<i>Crocus sativus</i>		Roma	x	x	x	x	x
<i>Gossypium arboreum</i>						x?	
<i>Gossypium herbaceum</i>			x		x	x	x
<i>Jasminum officinale</i>			x	x	x	x	x



	Columella	Isidorus	Ibn Arib	Ibn Hayyay	Ibn Bassal	Ibn Awwan	Ibn Luyun
	I	VII	X	XI	XI	XIII	XIV
<b><i>Species gradually introduced</i></b>							
<i>Lawsonia inermis</i>			x			x	x
<i>Mussa</i> spp.			x			x	x
<i>Oryza sativa</i>			x		x	x	
<i>Pistacia vera</i>		x	x	x	x	x	x
<i>Rhus coriaria</i>	x		x			x	x
<i>Saccharum officinarum</i>		x	x	x		x	x
<i>Solanum melongena</i>			x	x	x	x	x
<i>Sorghum</i> spp.				x		x	
<i>Spinacia oleracea</i>				x		x	x
<b><i>Species irregularly cited and probably cultivated</i></b>							
<i>Cannabis sativus</i>			x	x		x	
<i>Cyperus sculentus</i>		?		?	x	x	
<i>Opopanax chironium</i>	x	x				x	
<i>Sesamum indicus</i>	x	x			x		x
<b><i>Species irregularly cited and probably not cultivated</i></b>							
<i>Boswellia carteri</i>	x	x			x		
<i>Calocasia sculenta</i>		x				x	x
<i>Cinnamomum camphora</i>	x						x
<i>Cinnamomum cassia</i>	x	x			x	x	x
<i>Cinnamomum zeylanicum</i>							
<i>Commiphora abyssinica</i>	x	x			x?		x
<i>Dyospiros ebanum</i>		x				x	
<i>Elettaria cardamomum</i>	x	x		x		x	
<i>Indigofera indica</i>						x	
<i>Piper cubeba</i>				x			x
<i>Piper nigrum</i>	x	x		x	x		x
<i>Saussurea lappa</i>	?	x		x		x	
<i>Styrax officinale</i>		x			x	x	
<i>Terminalia catappa</i>		x		x	x	x	
<i>Zingiber officinale</i>		x					x

\*Cited by an anonymous author (11th Century)

*officinale*, perhaps *Citrus limon* and of course *Crocus sativus*, *Saccharum officinarum* and *Morus* spp., which as we have already said, were already known. During the 11th century, authors like Ibn Hayyay mention *Spinacia oleracea* (spinach), *Sorghum* spp. and *Citrus limon* and *Citrus aurantium*. Ibn Bassal was a known expert in gardening as he was curator first of the 'King's Orchard' in Toledo constructed by Al-ma'mun on the banks of the Tagus River and later of the 'Sultan's Garden' in Seville under the reign of Taifa al-Mu'tamid. However, there is no mention of new agricultural nor ornamental species in his work. With Ibn Al Awwan, in the 12th century, it is already possible find a complete treaty mentioning numerous flowering species and their varieties as well as a very complete treaty of practically all the species found in the afore mentioned works. Finally, the *Book of Agriculture* (*Kitab al-Filaha*) by Ibn Luyun, poorer in the identification of species



than the others, should be mentioned as it is more relatively important to gardening. It gives more than thirty garden species. From it we may deduce the enormous importance that the aromatic species and use of grapevines, figs, and other fruit trees had as noble and useful elements in Spanish-Arabic gardens.

#### THE CURRENT SITUATION OF ANDALUSIAN GARDENS

We have analysed the current situation of the Spanish-Arabic gardens from a point of view of the origin of species which forms an integral part of them. The result is distressing if one wants to be rigorous with the history of mankind, plants and phytogeography. Gardens like the Alahambra or Generalife in Granada, Patio de los Naranjos and gardens of Madinat al-Zahra' in Cordoba, the Alcazabas in Malaga and Almeria, present an arbitrary mixture of exotic species of different origins, some of recent introduction. In this way, American species like *Agave americana*, *Opuntia ficus-indica*, *Bougainvillea spectabilis*, *Washingtonia filifera*, *Cupressus macrocarpa*, *C. arizonica*, and *Magnolia grandiflora* appear together with others of Australian origin like *Eucalyptus* spp., *Casuarina equisetifolia* and *Myoporum tenuifolium* or together with South African ornamental species like *Pelargonium zonale*, *Tecomaria capensis* or *Plumbago capensis*. There are only very few species, which, like *Ceratonia siliqua*, *Laurus nobilis*, *Olea europaea* and *Myrtus communis*, constitute a reliable

Table 5.

Some species introduced after the 16th century and consequently recommendable of elimination, present in some Spanish-Arabic gardens in Andalusia.

#### Madinatal-Zahra' (Córdoba)

species	origin	species	origin
<i>Agave americana</i>	Mexico	<i>Ailanthus altissima</i>	China
<i>Bougainvillea glabra</i>	Tropical America	<i>Bougainvillea spectabilis</i>	Tropical America
<i>Cedrus deodara</i>	Afghanistan + Himalayas	<i>Cestrum nocturnum</i>	South America
<i>Cupressus macrocarpa</i>	California	<i>Cotoneaster pannosus</i>	China
<i>Eucalyptus camaldulensis</i>	Australia	<i>Erythraea japonica</i>	China
<i>Heliotropium arborescens</i>	Peru	<i>Gleditsia triacanthos</i>	North America
<i>Ligustrum ovalifolium</i>	Japan	<i>Jasminum nudiflorum</i>	China
<i>Myoporum tenuifolium</i>	Australia	<i>Magnolia grandiflora</i>	North America
<i>Pelargonium zonale</i>	South Africa	<i>Opuntia ficus-indica</i>	Central America
<i>Philadelphus coronarius</i>	Caucasus	<i>Pelargonium peltatum</i>	South Africa
<i>Plumbago capensis</i>	South Africa	<i>Pittosporum tobira</i>	Japan
<i>Thuja orientalis</i>	China	<i>Tecomaria capensis</i>	South Africa
		<i>Washingtonia filifera</i>	North America

#### Alcazaba Gardens (Málaga)

species	origin	species	origin
<i>Acacia farnesiana</i>	America	<i>Agave americana</i>	Mexico
<i>Ailanthus altissima</i>	China	<i>Aloe arborescens</i>	South Africa
<i>Bougainvillea glabra</i>	Tropical America	<i>Bougainvillea spectabilis</i>	Tropical America
<i>Cassia didymobotria</i>	Tropical Africa	<i>Cestrum nocturnum</i>	Tropical America
<i>Cupressus arizonica</i>	North America	<i>Cupressus macrocarpa</i>	California
<i>Eucalyptus camaldulensis</i>	Australia	<i>Jacaranda mimosaeifolia</i>	Brazil
<i>Lagerstroemia indica</i>	Eastern Asia	<i>Lantana camara</i>	Tropical America
<i>Myoporum acuminatum</i>	Australia	<i>Opuntia ficus-indica</i>	Central America
<i>Pelargonium peltatum</i>	South Africa	<i>Pelargonium zonale</i>	South Africa
<i>Pittosporum tobira</i>	Japan	<i>Plumbago capensis</i>	South Africa
<i>Schinus molle</i>	Tropical America	<i>Yucca aloifolia</i>	Central America
<i>Yucca elephantipes</i>	Central America	<i>Washingtonia filifera</i>	North America



historical reference. To demand this rigor at the level of primitive varieties in cases like *Rosa* spp., *Punica granatum*, or *Iris* spp. is almost impossible for the moment. Moreover, species like *Citrus medica*, *Lawsonia inermis* or *Ficus sycomorus* have disappeared completely from these gardens. Little by little and unfortunately, *Cupressus macrocarpa* and *C. arizonica* are gradually substituting *C. sempervirens*; *Ulmus pumila* is replacing *Ulmus minor* because of its greater resistance to graphyosis and *Nephrolepis* spp. is substituting the traditional *Adiantum capillus-veneris* in Andalusian patios. The same thing is happening with the South African species of *Pelargonium*, which have eliminated violets, daffodils and white and yellow lilies. *Bougainvillea spectabilis*, *Plumbago capensis* and *Tecomaria capensis* have displaced to a great extent *Vitis vinifera*, *Hedera helix* and the autochthonous species of *Lonicera*. The common presence of prickly pears, agave and eucalyptus in these gardens constitutes an authentic insult to the historical landscape. As an example we enclose two lists of exotic species found in the Alcazaba in Malaga and in the gardens of Madinat al-Zahra'. Among the Islamic gardens in Andalusia, the archaeological town of Madinat al-Zahra' is a notable exception because despite an erroneous initial concept in its landscaping which led to an inaccurate selection of many species, a more rigorous study is currently being carried out. It includes a more careful choice of the species to be used and even paleopalynological studies of the deposits.

In conclusion, we feel that the study of the gradual introduction processes of species and the exact knowledge of those cultivated in each age has to be especially considered when trying to establish rigorous criteria for the restoration of historical gardens and when designing gardens with well-defined cultural styles. To ignore the historical and geographical components of the ornamental species in gardens is simply a lack of culture and indifference.

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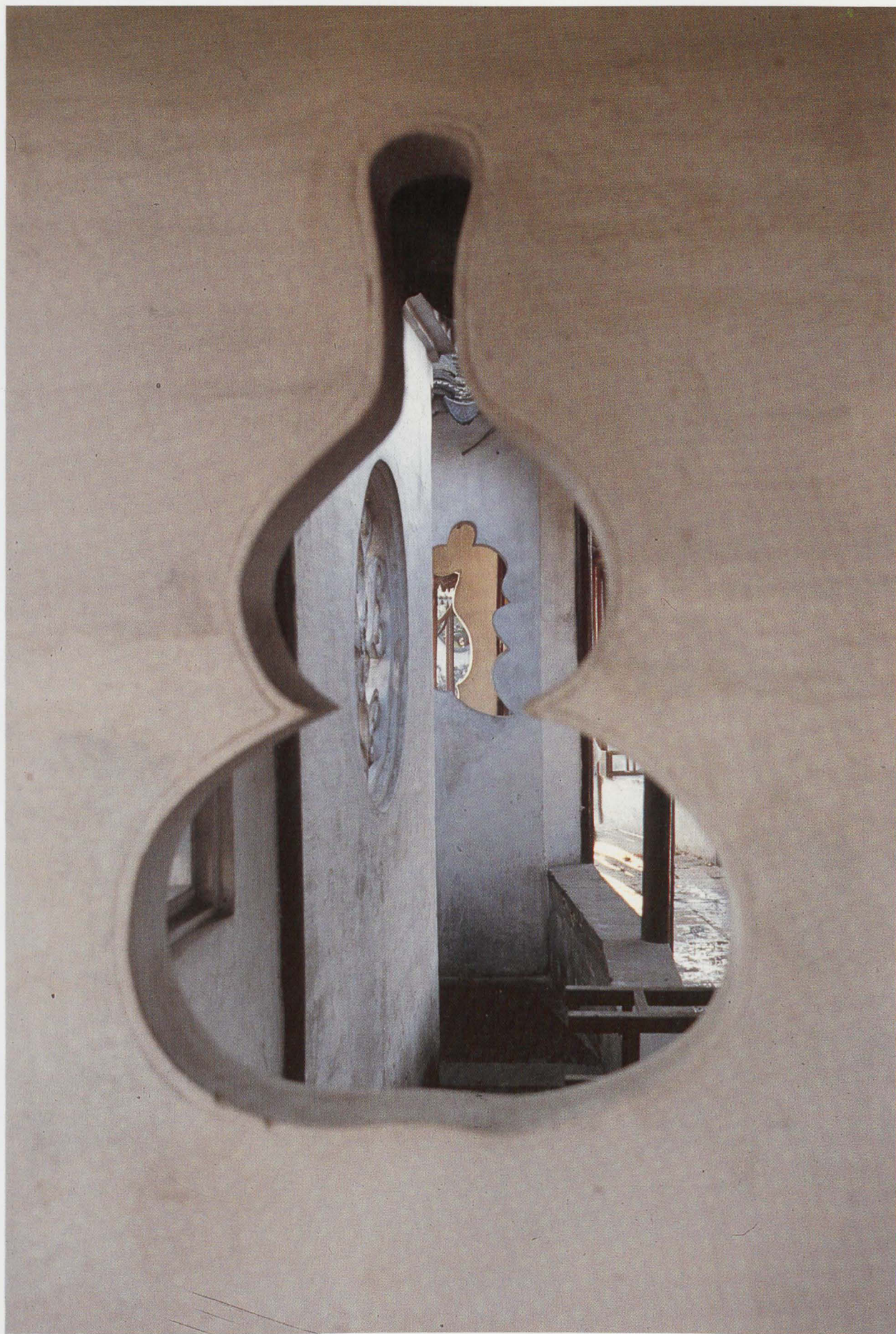


Plate 27. Opening in wall, Ye Yuan, Suzhou (photo M. Keswick).



Plate 28. Island rock mountain, Chengde (photo M. Keswick).







Plate 29. Wang Shi Yuan, Suzhou (photo M. Keswick).



Plate 30. Mi Fei's rock, Xi Huo (photo M. Keswick).



Plate 31. Central area of the Ge Yuan (Isolated Garden) in Yangzhou, Jiangsu Province: a Qing dynasty garden built on the site of an earlier garden said to have been designed by the eccentric late Ming -early Qing painter Shi Tao (photo Zhong Ming).





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## THE ISLAMIC GARDEN

The concept of the 'Islamic garden', or more specifically, 'Arab-Islamic garden', is relatively complex, because as is characteristic in Arab-Islamic culture in general, there is influence from pre-existing ideas assimilated into their own in the course of their conquests towards East and West. To the primitive common-Semitic concept of garden (*janna*), as opposed to desert, were added on one hand the oriental concept of garden (*bustân*), of Persian origin,<sup>1</sup> and on the other the western concept of orchard garden (*hortus*) of Graeco-Roman origin, all of which developed, as well as retaining their individual existence in the Islamic world; although they were not lacking in certain tendencies which remained prevalent in their places of origin, such as happened with the Nile gardens in Egypt,<sup>2</sup> or the Berber 'agdal' in the Mogreb.<sup>3</sup> However, the idea of the garden had been acquiring in the Orient a progressively eschatological significance, originating in Persia with the diffusion of the Buddhist concept of paradise (*pairidaeza*), which was readily developed by Judaism. At the same time, in the west the Graeco-Roman garden had, from the time of Epicurus and his hedonist doctrine, achieved ultimate perfection to ensure man's happiness, disassociated from all disturbing elements. A fusion of all these ideas, re-elaborated and widely spread by the first Christian communities,<sup>4</sup> seems to exist in the basic detailed description of paradise, which is both mystic and sensual, and which we find sporadically in verses of the Koran; this description was later commented and elaborated on by the koranic scholars,<sup>5</sup> with a consequently idyllic image which had a strong influence on the concept of the Islamic garden, conceived as the image and anticipation of a celestial paradise. This fact could explain the deep-rooted Islamic custom of burials in gardens, not only with the hedonist significance known from ancient classical times of allowing the dead person to enjoy the delights in which he had taken pleasure during his lifetime, but also as a symbolic form representing the dead person's entry into the paradise. For this reason the word 'rawda', the plural of which means 'arriate' in Spanish (border), means both garden and cemetery.<sup>6</sup>

## THE HISPANO-ARABIC GARDEN

The Hispano-Arabic garden<sup>7</sup> was known by the generic names of 'janna' (garden), 'hadiqa' (orchard) and 'hâ'it' (garden wall); in actual fact it is nothing more than a remarkable fulfillment of the Arab-Islamic garden, which because of its geographical situation at the westernmost extreme of Islam, received the important influence of the ideas from Graeco-Roman garden and the Berber 'agdal'. There existed a remarkable abundance of gardens of every nature in Muslim Spain, and we can affirm the fact that no palace was lacking in one or several gardens offering spiritual relief and relaxation to their inhabitants. Many houses also enjoyed the benefits of a garden, whether of lesser or greater size, and we know of the existence of many others in the further outskirts of the cities. Unfortunately, we only have the slightest references to the great majority of them, therefore their structure is unknown to us. Arab sources give us brief descriptions of some of the most important of these gardens, which together with the traces still remaining archaeologically, allow us to form an idea of their composition.



With regard to the content of Hispano-Arab gardens, Arab sources are considerably more eloquent, not only in the description of the gardens themselves, but also in their verses, and most important of all, in the abundant agricultural and botanical writings which had developed in al-Andalus. However the present-day composition of these gardens is hardly very reliable, as many plants and species of a later date have been included.

#### THE FORMAL LAYOUT OF THE HISPANO-ARABIC GARDEN

If we analyse the layout of the gardens in Muslim Spain taking into account the distribution and importance of their principle components, namely, water, plants and buildings, we are able to establish four fundamental types of gardens, which are frequently not separated, but joined, and even mingled together. In the first place we have the cruciform garden, in Arabic '*rawd*' and sometimes '*hayr*', which may be found inside palaces or houses, which explains why we have considerable archaeological remains.<sup>8</sup> This concept was directly inspired by the Persian garden, and above all it pretends to be an image representing paradise. This garden is predominantly architectural on which its character and shape depend, even to the extent of introducing porticoed pavilions in the garden itself. The ground plan is square, divided by the symmetrical arms of a cross, either crossing centrally or not, as the case may be. These central axes are concurrently the water ducts, while plants occupy the squares in the angles, which are on occasions slightly sunken. The second type is the orchard garden, '*bustân*' in Arabic, also as a synecdoche irrigation channel, '*sâqiya*', water mill in a river '*sâniya*', and water wheel at a well '*nâ'ûra*'; its origin is the Latin '*hortus*'. It was frequently found on the outskirts of towns, Roman '*villa*' style (in Arabic '*munya*'), consequently the few existing archaeological remains have been completely transformed. The component of paramount importance in this garden is the vegetation, as here we are dealing with agricultural land on a small scale. The water is carried through an irrigation channel dividing the land in two symmetrical, or asymmetrical, parts. The lay-out of the plants and architectural components varies. Sometimes, more particularly in the case of flat land, the plants are situated on both sides of the irrigation channel, and the architectural element at either of the two extremes. On other occasions, particularly dealing with sloping land, the building may be constructed on a higher level or dry land, while the plants are on a lower level, to facilitate irrigation. Thirdly we have the garden with a pool, '*buhayra*' in Arabic, and sometimes a lake or '*hâ'ir*'. It seems that this type of garden was inspired by the berber '*agdal*', reminiscent of the oasis in the African desert, and became widespread in al-Andalus, notably from the time of the Almohads. It was also situated on the outskirts of towns or beside palaces, and thanks to this, some of these gardens have been preserved. The maximum component in this garden is water, in the form of a large central pond with a small building on one side. Distributed laterally was plantmaterial, which may have been a combination of agricultural and ornamental plants. Lastly, we have the poplar grove garden, '*munzaha*' or '*mutanazzaha*' in Arabic, the origin of which is not easy to pinpoint; it could equally have been inspired by the desert palm groves, or by the Graeco-Roman poplar groves, or perhaps by both. Maybe there is a greater similarity to the former, due to their condition as an open garden with no boundary walls. They were situated outside the city and almost all of them had no architectural components, therefore there are no remains. No specific plan was followed, as they generally took advantage of a natural riverbed, or an artificial irrigation channel, which offered opportunity to distribute trees in the form of long avenues and pleasant walks.



## THE VEGETATION OF THE HISPANO-ARABIC GARDEN

In order to establish which plants constituted the Hispano-Arabic garden, we must necessarily follow a diachronic criterion to be applied to the data supplied to us from Arab sources in al-Andalus. First of all we must establish which Arab sources these are, and afterwards we shall see how to apply this diachronic criterion. In the first place there are historical and geographical sources which supply basically descriptive information. Unfortunately, however, they are not generally abundant in their description, and the information we obtain is scarce, although almost always reliable. The best example here is *Nafḥ al-Tīb* of al-Maqqarī. Next, there are agricultural sources; this type of literature seems to have flourished in al-Andalus more than in any other Islamic region, and offers us plenty of information on which plants were grown and how. However, we must take into account that there was a certain dependence on oriental translation from Greek texts, which may lead to errors. The best example of this type of source is *Kitāb al-filāḥa*, or the book on agriculture by Ibn al-'Awwām. Thirdly, there is a range of botanical sources offering wide information about almost all the species of plants grown in the Spanish peninsula, including the wild ones. However, this information must be carefully selected, since it is probable that among it are numerous species imported into the country, and which were neither grown, nor existed wild in al-Andalus, in spite of being well-known and used, particularly in medicine. *Kitāb al-Jāmi'* of Ibn al-Baytār is the best example in this category. Lastly, we have literary sources, particularly poetry, a specific genre of poetry called '*nawriyyāt*', specially cultivated in al-Andalus and dedicated exclusively to the description of flowers and gardens. This verse offers us abundant information, which must be treated with precaution, because of frequent repetition of oriental-poetic clichés, together with allusions to oriental plants of flowers. The most notable example of this type is *Diwān* by Ibn Jafāja, who showed such a tendency for this genre of poetry that he was given the nickname of the Gardener (*al-Jannān*).

We should now discuss the diachronic method which must be applied to the information supplied by these sources to enable us to widen our knowledge on the plant component of these gardens, and their foreseeable reconstruction. First, evidently, we must exclude from the Hispano-Muslim gardens all those plants which were introduced into the Spanish peninsula at a date subsequent to the fall of the kingdom of Granada. This therefore eliminates all the flora originating in America from the 16th century, the oceanic flora from 18th century, as well as the European flora of more recent origin, principally dating from the last century. At the same time, we are aware that the arrival, acclimatisation and spreading of the foreign species of flora in al-Andalus constituted a continuous process during the whole period of Arab domination in the peninsula, with species arriving from the 9th until the 11th century. In relation to this, it can be inferred that the vegetation forming part of the gardens of Medina Azahara obviously cannot coincide with that in the Generalife. So it will be necessary to select sources which will give information useful to the reconstruction of each of these gardens, depending on their individual chronological location. On this score we can make considerable use of the research in botanical archaeology into pollen, seeds and vegetation remaining from past times to be found on these sites. This research, which had not been carried out previously, is now beginning to be undertaken systematically, and the results promise to be fascinating.<sup>9</sup>

## DESCRIPTION OF SOME BOTANICAL GARDENS IN MUSLIM SPAIN

We have a considerable list of Hispano-Arabic gardens, from which we shall



select only those of a specifically experimental botanic nature, those in which we know that important agronomical experiments were undertaken, particularly orientated towards the introduction, acclimatization and spreading of new species. These gardens have two distinctive features, on one hand they are all of the type '*bustân*', oriental garden, and '*buhayra*', with a pond, because their agricultural characteristics are best adapted to this work; on the other hand, almost all of them were dependent on royal patronage, which allowed them the use of whatever natural and labour resources might be necessary to undertake the work. We shall select a list of the most important of these gardens in chronological order.

#### THE ARRUZAFÁ OF CORDOVA

The first known botanical garden in Muslim Spain is the Arruzafa of Cordova, an orchard or country house, '*almunia*', ordered to be built by the first Andalusian emir, 'Abd al-Rahmân I (756-788), whose intention was to emulate the favourite residence of his grandfather, Hishâm ibn 'Abd al-Malik in the Syrian desert, from which he took the name.<sup>10</sup> It is located at a short distance from Cordova, on the edge of the foothills of the mountain range and of the Guadalquivir valley; it was an exceptional situation, ideally communicating with the city by means of the Roman road which continues through as far as Merida, and divides the town in two. Owing to its communications, almost from its commencement, this country house became a small aristocratic town, as Arab sources indicate, including palaces, mansions, mosques, a cemetery, splendid gardens and magnificent poplar groves. Our information on the palaces and gardens is very scarce. We know that to the north there was a natural wooded area which offered protection from the harsh north winds. The cemetery should have been located to the south, near the road to Cordova. To the west was a rushing stream called *Wâdî l-'Aqîq*, named after a river in Arabia, beside which could be found the long walks and poplar groves which stretched as far as Cordova itself, therefore making it one of the favourite places for meditation and relaxation of the Cordovans.<sup>11</sup> To the east was a wide plain called 'Pavilion Field', perhaps because a pavilion had been installed there for certain military ceremonies. In the centre of all this must have been the palace with its ornamental and vegetable gardens, watered by the irrigation channel which flowed into the *Wâdî l-'Aqîq*, previously mentioned. One of the gardens we know was called 'Garden of the Marguerites' (*Rawd al-uqhuwân*), which seems to have been situated just beside the palace.<sup>12</sup> Arab documents are the source of a fascinating account of its construction and of the agricultural activities which took place there, with emphasis on its fundamental importance almost as an experimental garden. Here species new to the Spanish peninsula were introduced and cultivated, and after their adaptation to climate and soil were distributed throughout al-Andalus:

'Ibn Hayyân, god rest his soul, says: One of the great works that 'Abd al-Rahmân ibn Mu'âwiya had carried out at the beginning of his rule was the orchard of the Arruzafa, to the north-east of Cordova, for his enjoyment and relaxation for long periods. He built a splendid royal palace, and laid out extensive gardens in which exotic plants and trees from all parts were planted. He ordered the planting of stones from special fruits, as well as rare seeds brought by Jazîd and Safar, his ambassadors in Syria, so that with the benevolence of destiny and careful cultivation, the surrounding gardens became the home of luxuriant trees producing exotic fruit, which shortly spread to all parts of al-Andalus, where the supremacy of these fruits over other var-



ieties was soon recognized. He says: 'He called it Arruzafa after the favourite residence in the Syrian desert of his grandfather, Hishâm, who he rivalled with in choosing the site of this palace. He grew very fond of it, visited it frequently, and resided there most of the time. It became well-known during his lifetime, and his successors continued singing its praises.' He says: 'Everyone favoured it and continued to expand to the palace, while the most eloquent poets did not cease in their acclaim of it, competing with each other in writing excellent poetry which has been passed down to us today.'<sup>13</sup>

Numerous poetical texts have in fact been preserved, although almost all of them have rather vague and confused descriptions referring to the Arruzafa, though none as rich in ideas as those dedicated to it by the ruler who built it, and who addressed a solitary palm tree, expressing his yearning for the Orient where he was born.

*I saw the lonely palm tree in the midst of the Arruzafa,  
here in the west, far from its land,  
And I said: you suffer, like I, in exile and with nostalgia,  
and the same prolonged separation from my children and my people.  
You have grown up in a land in which you are a stranger,  
and like me, suffer the remoteness and distance;  
Let the morning rain from the scurrying clouds fall upon you,  
their waters spilling upon you,  
and let the stars weep their tears upon you.'*<sup>14</sup>

But the Arruzafa was born with the Omeya dynasty in al-Andalus, and died with it too. During the division or revolution which put an end to the Caliphate of Cordova, while the Berbers besieged the capital in 1010, the defending General Wâdih ordered it to be destroyed for fear that they should attack from there. The chronicler says:

'Then Wâdih, despondent and with bad judgement, gave free rein to the rebels in the gardens to the Arruzafa, which were ravaged and burnt, the fruit trees plundered of their fruit and goodness, and cut down for fear that the Berbers should enter in there. Later on they were repentent, when they realized that there was a fortress inside.'<sup>15</sup>

Unfortunately nothing remains in the Arruzafa today, because to that tragic devastation we must add the disappearance of any ultimate archaeological remains with the construction of a modern and practical tourist hotel.

#### MEDINA AZAHARA

The palatine city of Medina Azahara was founded by the Caliph 'Abd al-Rahmân III (912-961) at a short distance from Cordova, and it was also destroyed during the revolution of 1010. Even during the short duration of its life its gardens were undoubtedly the most remarkable in the whole of the west. However there is very little on record with regard to the agricultural work carried out there, and we must regret the loss of the descriptive works of this town by Jonàs ben Masud, a Jew from Cordova, who had curiously enough been born in the Arruzafa. Even so, some contemporary writings contain considerable agricultural and botanical information which allow us to form a reasonable idea of the garden's contents.<sup>16</sup> There is also a scarcity of archaeological remains, as only the slightest part of the town has been



excavated, but even so we already have an idea of the plan of the main gardens beside the palaces. These gardens were of considerable size, the largest measuring 150 x 130 m, in the form of a cross. One of the gardens had porticoed pavilions at the end of the arms of the cross, and an other had a pavilion surrounded by ponds in one of the arms, which had to be widened for this reason.<sup>17</sup> As well as the Arruzafa and Medina Azahara, there were other lesser orchard gardens, where in the same way as the royal gardens, worthy agricultural tasks were undertaken, but we have no reports of this, nor archaeological remains which could show plans of the gardens.<sup>18</sup>

#### THE WATERWHEEL ORCHARD GARDEN OF TOLEDO

As a result of the dismemberment of the Caliphate and the setting up of the Taifas kingdoms, all the rulers of these kingdoms hastened to imitate the customs of the de-throned caliphs. The same happened with regard to botanical gardens, which were not missing from the court of any of these minor kings. This happened in Toledo, where at that time the famous Yahyà ibn Ismâ'il ibn Dhî l-Nûn, nick-named al-Ma'mûn (1043-1075), and called in his own times 'Lover of gardens', ordered an orchard garden to be planted outside the city, as a place for his own recreation, and at the same time as an exotic garden for agricultural experiments. This garden, situated in the valley, on the left bank of the river Tagus just before the Alcantara bridge, was under the guidance of Ibn Wâfid, the physicist from Toledo, who worked together with the famous agronomist Ibn Bassâl, who has left us an important book on agriculture based on his experiments.<sup>19</sup> We know it as the 'Orchard of waterwheel' (*Bustân al-nâ'ûra*) and from the archaeological remains to be found, we know that a canal passed through it, coming from the river, from which it raised the water using a water wheel, for irrigation and for filling a medium sized pool with a small domed glass room in the centre, over which a cascade of water fell like a curtain. Between the pond and the water wheel was the small palace, which still stands, and on one of its sides a water clock was to be found, with two vessels which filled and emptied alternately.<sup>20</sup>

The setting must have been truly beautiful, because the Arab writers eulogize it profusely. Among them, the great writer from Granada, Ibn Sa'îd al-Maghribî, tells us:

'In Toledo are the magnificent Dhî l-Nûn-ie buildings, among which is the outstanding Bedroom of delights (*qubbat al-na'im*), which al-Ma'mûn Ibn Dhî l-Nûn ordered to be built, over which a curtain of water falls, creating a type of domed alcove in the interior of which he reclined in the cool of summer days with one of his intimate friends, and not even a fly could disturb them. This was in the Orchard Garden of the Waterwheel.'<sup>21</sup>

Among the agricultural projects undertaken in Toledo at that time, this one was remembered for a considerable time. A century afterwards, when al-Hijârî visited it, he described it, as also recounted by Ibn Sa'îd al-Maghribî:

'Al-Hijârî is eloquent in his account of Toledo, he describes it adorned with great defence walls, and surrounded by trees in every direction; he says that he walked from the Bisagra gate between balusters -this is a tree resembling the pomegranate, and has no other similar to it. A great variety of grafts have been taken, and other work unequalled in any other city.'<sup>22</sup>



#### THE SUMADIHIYYA OF ALMERIA

In the eleventh century the city of Almeria reached its apogee as a result of the relative peace which it enjoyed, unlike almost all the rest of al-Andalus. This splendour was particularly evident under the government of Muhammad b. Ma'n b. Sumâdih, al-Mu'tasim, culminating in a series of constructions, both residential and functional (irrigation systems and water supplies to the city). The geographer and historian from Almeria, al-'Udhri, a contemporary of these events (died, 1085), is the author of an ample and detailed description of the buildings undertaken by al-Mu'tasim. Within the castle precincts the great palace or royal fortress is outstanding:

'One of the palaces is the great royal palace situated inside the Castle, with views towards the north and Mount Layham, and which has a very plentiful orchard garden (*bustân*) where they cultivate exotic fruits of unsurpassable quality; the length of this garden is almost equivalent to the width of the whole Castle. The southern side of the garden is flanked by a large reception hall (*majlis*), with entrance doors carved in the traditional and oriental style... Al Mu'tasim had the irrigation channel (*sâqiya*) taken to the Almeria mosque, through which the water ran as far as a tank (*siqâya*) which he also had built to the west of the mosque on the first day of Ramadan of 458 (27th July, 1066). Then he had a tributary of the irrigation channel diverted in order to take the water further than the castle; this water went by a subterranean channel until it reached the northern part of the fortress, where a well (*bi'r*) had been dug, beside which watermills (*sawânî*) were built to raise the water to the level of the fortress, and to the orchard garden mentioned previously.'<sup>23</sup>

We would like to mention some of the most outstanding aspects of this description. Firstly, the close link between the closed-in agricultural area and the architectural element, a porticoed pavilion giving on to the open air, but at the same time still joined on to the palace. With reference to the hydraulic constructions, we can find a perfect network of water outlets which take maximum advantage of the flow of the water, as well as the construction beside the well of water mills<sup>24</sup> or hydraulic wheels to raise the water to the level of the orchard, in this way irrigating it from above. However, al-Mu'tasim seemed to have a special predilection for al-Sumâdhiyya, a country house for relaxation built by him outside the city. We have a detailed description of this by the geographer al-'Udhri:

'On the outskirts of Almeria, al-Mu'tasim built an orchard garden (*bustân*) with a very artistic layout, and palaces of surprising design. In this garden, not only the usual fruits were grown, but also tropical ones, such as various species of banana and sugar cane. In the centre of this park there is a large pond (*buhayra azîma*) surrounded by open pavilions (*majâlis*) paved in white marble. This garden, known as al-Sumâdhiyya, is situated very near the city, and in the vicinity there are other similar orchard gardens, with incomparable poplar groves.'<sup>25</sup>

This brief description indicates quite clearly, among other things, the triple purpose of the garden, for recreation, as an orchard, and as experimental botanical garden, which in perfect combination characterize the Hispano-Muslim orchard garden. The plan of the garden was not the usual rectangular one; it was asymmetrical, because of the moral scruples of al-Mu'tasim who did not allow land belonging to some orphans to be included in his



land, even though it was essential for the correct proportions of the new park.<sup>26</sup> As is implied by the description by al-Udhri, the large central pond (*buhayra*) overhung by the porticoed pavilions erected around it constitutes the main feature of the recreational or ornamental area. In spite of the fact that the time when this element reaches its culminating moment is under the Almohads, as we shall see later, it first appears in the 11th century; as well as the pond in the Sumâdhiyya, we also know of the existence of others in gardens of this period of the Taifas, specially in Seville. With regard to its location, data from different sources give us to understand that it was in the fertile valley of Andarax, by the river Pechina, in Almeria, overlooking the numerous orchard gardens owned by the high dignitaries of the Almeria Taifas on both sides of the river, where at the present day we can find the production of early vegetables grown under cover. Due to its location on alluvial land, up till now it has been impossible to discover any ruins of small palaces or other buildings which adorned these orchard gardens, creating an oasis in contrast to the arid and desolate surrounding land. There are numerous poetic descriptions, which tend to be rather inexact and offer us little information, including those by al-Mu'tasim himself:

*'Regard the beauty of the flowing water!*

*It flows like the movement of a fleeing serpent.'*<sup>27</sup>

Apart from the ornamental features, al-Sumâdhiyya offers the agricultural elements, the orchard, being dual purposed: productive or self-sufficient, and experimental, as recounted by al-'Udhri, referring to the bananas and sugar cane. We have some reference in the same respect by the Granada agronomist, al-Tignari, who seems to have known this royal orchard garden. One of his descriptions refers to the special way of planting stones from the date palm in order to achieve their bearing fruit more quickly and avoiding any risks, just as the master builder of al-Sumâdhiyya had said.<sup>28</sup>

#### THE BUHAYRA IN SEVILLE

Undoubtedly the orchard garden which is most representative of the Andalusian Almohad period is the Buhayra in Seville. It was erected by the Almohad Caliph, Abû Ya'qûb Yûsuf in 1171, and like all orchard gardens was situated outside the city, to the south-east, near the gate of Yahwâr. Leopoldo Torres Balbas<sup>29</sup> stated more precisely the location of the garden in the '*Huerta del Rey*', King's Garden, well-known from mediaeval times for becoming the property of the Castilian king, Alphonse X. This is now in the urban area of the city, and this has provoked a great deal of controversy, due to a new town-planning project. It was the site of ancient settlements, having discovered within the precincts some Roman remains, a villa from the first century AD, and a fifth century cemetery, as well as buildings from the period of al-Mu'tamid. One of these could be the one called '*Buhayra Kabîra*', in the centre of which there was a large pond surrounded by trees and flowers; another one, with a twisting stream crossing the gardens<sup>30</sup> was re-designed by the Almoravid emir, Alî b. Yûsuf b. Tâshufîn, who liked to reside there when visiting the city. The Arab historians of that time, in particular Ibn Sâhib al-Salât, speak highly of their beauty and splendour. The latter mentions the palaces briefly, but gives no description of them, and only explains that they were the work of Ahmad b. Baso, the same master builder of the Giralda. However, he does give details about the garden and its construction. At the Caliph's command the design was entrusted to a cadi and an imam who were experts in geometry, surveying and agronomy, and



they marked out the land adjoining the palaces 'to embellish them with the planting out of olives, vines, ornamental and fruit trees of all kinds'.<sup>31</sup> From the Aljarafe regions specially chosen olive roots of different types were dug up, and special orders were given to the governors of Granada and Guadix to send fruits of all kinds to the Buhayra. The organization of the agricultural work was entrusted to the '*almojarife*' (official of the king in charge of collecting rents) in Seville, and the Caliph himself supervised the building work. Very little has remained of these buildings: the entrance gate in the west façade, of Almohad foundation and with later Gothic-Mudejar additions;<sup>32</sup> the wall surrounding the Buhayra, of which the base of about 90 cm is preserved in the northern part, built of earth; an irrigation channel joining the pool of the time of al-Mu'tamid with the Almohad period; also the so called '*Caños de Carmona*' (gutters), built on top of a Roman aquaduct by the engineer al-Hajj Ja'ish 1172, to provide the city with water, and crossing the land like a main axis. There are also remains of the great central pool from the Almohad period, together with part of the palace on one of its sides; we can find the walls set out in the three galleries orientated north-south, with a series of arches to the north, separated from the pool by a passageway tiled in bricks. The Sevillian Buhayra is an evident example of a mixed garden; of '*bustân*' type, garden with axial irrigation channels, combined with '*buhayra*', although the last type is predominant. A garden similar to the Buhayra can be found in Marrakech, in the gardens of the Agdal or the Menara.

#### THE GENERALIFE OF GRANADA

Under the Nasrite rule there were many orchard gardens belonging to the royal family and court dignitaries, built not only on the outskirts of the town, but within its walls, and even inside the palatine city of the Alhambra. The most representative of these royal estates is the Generalife, situated on the hillside next to the Alhambra. This estate, designed for the recreation of the Nasrite sultans, is clearly divided into separate parts: the most important one being the inner garden of the palace, called the '*Patio de la Acequia*' (Court of the Long Pond); the other consists of the extensive orchard gardens laid out on either side. The original design for the garden of the Court of the Long Pond was discovered during the excavations following the fire which affected the royal gardens in 1958.<sup>33</sup> It was shown to be '*rawd*' or cruciform, with two unequal axes crossing in the centre, the longer one being the Royal Long Pond, and the shorter one being a path which crosses over it. There are four rectangular flower beds in the angles of the cross, sunken 50 cm lower than ground level, and watered by very small spouts from the pond. In spite of their frailty, some components from the outer gardens have been preserved. One of them is called the Stairway of Water, on the higher parts of the grounds, where the water from the Royal irrigation channel falls, either down the glazed tiles on top of the handrails, or cascading down the steps themselves, afterwards flowing into the Court of the Long Pond. Another is the so-called Oleander Walk, at one of the palace exits, over which these bushes meet to form a delightful arch of leaves. The orchard gardens are at present four; they have still preserved their former watering system, and their agricultural purpose characteristic of this type of '*bustân*'. Apart from the Generalife, two other gardens of *buhayra* type have remained. One is the Partal, within the precincts of the Alhambra, and although considerably changed, it retains the original layout, with a large central pool and porticoed small palace on the northern side. The other is called Alcazar Genil, a large garden preserved up to the middle of this century but which has now been reduced to a small palace only, the central pool and



garden being lost in new urban planning. Last of all we shall refer to the 'bustân' type garden, existing in the village of Velez Benaudalla.<sup>34</sup> Its layout seems to fit in perfectly with the ideal orchard garden described by the agronomist from Almeria, Ibn Luyûn, in his famous poem on agriculture. All the components are there: the location of the house on higher ground, the irrigation system crossing the high area from one side to another, the pergolas to support the branches over the pond and maintain the cool of the water, the pools as reservoirs... The position of this garden on the tropical coast of Granada, leads one to believe in the existence there of many plants which would not be suitable for the capital, such as the banana or sugar cane.

#### NEWS ON THE INTRODUCTION INTO AL-ANDALUS OF SOME PLANTS GROWN IN THESE BOTANICAL GARDENS

Finally, we shall mention several texts on the introduction into al-Andalus of different species of foreign plants brought from distant lands, which after becoming acclimatized in these botanical gardens were disseminated throughout the Spanish peninsula; some of these species still remain.

The first mentions a variety of pomegranate still well-known today as the 'zafari' pomegranate:

'Ibn Sa'îd said: The 'zafari' pomegranate, which spread throughout al-Andalus because this variety was preferred to any other kind, originated in the Arruzafa of Cordova.

Ibn Hayyân dedicates a whole chapter to this: 'This variety is outstanding for its quality; it is the best type of pomegranate for its sweetness, smooth texture, juiciness and beautiful shape. It was brought to al-Andalus by the ambassador who 'Abd al-Rahmân had sent to Syria to contact his sister in order to bring the finest examples of pomegranate from the Arruzafa of Caliph Hishâm, in Syria. 'Abd al-Rahmân I proudly showed it, in all its beauty, to his most intimate friends, among them Safar ibn 'Ubayd al-Kilâ'î...

The monarch handed over to him some of these pomegranates, and he was so surprised by their beauty that he decided to carry out an experiment with them. He took them to his farmhouse in the district of Malaga, manipulated the seeds, planted them and treated them with great care until a tree grew and bore fruit. Safar admired them and took them into the presence of 'Abd al-Rahmân I who was able to confirm that they were similar to those of the Arruzafa in Syria in all respects. The emir asked him how he had achieved this, and Safar explained the process he had followed to obtain them. The monarch praised his discovery, thanked him for his efforts and for the task he had undertaken, and recompensed his present generously. He immediately planted that pomegranate in his orchard garden, the Arruzafa, and in other gardens of which he was the owner. In this way the cultivation of the species was spread, and their origin was attributed by people to Safar, and hence it is known up until now as the 'zafari' pomegranate.'<sup>35</sup>

The second text refers to a variety of figs known to the present day as 'doñegales'.

'The 'doñegal' fig was brought by al-Gazâl when he went from Cordova to Constantinople as ambassador. There, he saw these figs which he admired, but it was not allowed to take anything out of the city. So he took some seeds from green figs and put them inside the cords with which he had tied up his books, after unsewing the ends and then tying them up again as before. When he left his luggage was inspected, but no sign of them was



found. On reaching Cordova he took the seeds out from inside the strands of the cord, sowed them, took great care of them, and when the trees bore fruit he took them to the ruler of Cordova, who was impressed, and he explained his ruse for bringing them. He was grateful for his deed, and asked their name, but the person who picked them had said 'Donno cole' meaning 'Look sir', so the Prince of Believers called them 'doñegales'.<sup>36</sup>

The third text makes reference to the Indian myrobalan, a rare species in Spain now, introduced in the 11th century and cultivated in some gardens:

'The wise ruler Abû l-Hassân ibn al-Luengo showed me three seeds of Indian myrobalan and explained that he had brought them from India to al-Ma'mûn in Toledo, and that they were difficult to find, since they originate from Upper India, which is the remotest part of India.'<sup>37</sup>

Translated by Diana L. Kelham.

#### NOTES

1. D.M. Wilber, *Persian Gardens and Garden Pavilions*, Rutland & Tokyo 1962; R. Péchère, 'Etude sur les jardins iraniens', *Les jardins de l'Islam. Islamic Gardens*, Granada 1976, p.19-76; Daneshdoust, 'Islamic Gardens in Iran', *Les jardins de l'Islam. Islamic Gardens*, Granada 1976, p.71-74.
2. M. Hammad, 'On the Gardens of Egypt', *Les jardins de l'Islam, Islamic Gardens*, Granada 1976, p.103-110.
3. G. Marçais, 'Bustan. I. -Les jardins de l'Islam', *Encyclopédie de l'Islam*, Nouvelle édition. vol. I, Leyden-Paris 1960, p.1386-1387.
4. A. Jimenez Martinez, 'Los jardines de Madinat al-Zahrâ', *Cuadernos de Madinat al-Zahrâ*, vol. 1, Cordoba 1987, p.81-82.
5. L. Gardet, 'Djanna', *Encyclopédie de l'Islam*, Nouvelle édition, vol. II, Leyden-Paris 1965, p.459-464.
6. L. Torres Balbas, 'Cementerios hispano musulmanes' *Al-Andalus*, vol. XXII, Madrid-Granada 1957, p.130-191.
7. Vid. J. Dickie, 'Notas sobre la jardinería árabe en la España musulmana', *Miscelanea de Estudios Arabes y Hebraicos*, Vols. 14-15 Universidad de Granada 1965-66, p.75-87. This paper and the one mentioned below are the only joint studies published on this subject. It has been translated into English under the title 'The Islamic Garden in Spain', *The Islamic Garden*, ed. E.B. MacDougall & R. Ettinghausen, Washington, 1976, p.89-105; L. Bolens, 'Jardins et vergers en Europe Occidentale 8e. 18e. siècles', *Flaran*, 9 1987, p.71-96.
8. L. Torres Balbas, 'Patios de crucero', *Al-Andalus*, vol. XXIII, Madrid-Granada 1958, p.171-192.
9. J.E. Hernandez Bermejo, 'Aproximación al estudio de las especies botánicas originariamente existentes en los jardines de Madinat al-Zahrâ', *Cuadernos de Madinat al-Zahrâ*, vol. 1, Cordoba 1987, p.61-80.
10. Although the Arruzafa of Caliph Hishâm in the Syrian desert has not been the subject of any studies as yet, other desert residencies of the same Caliph have been studied, such as Qasr al-Hayr al-Sharqî and Qasr al-Hayr al-Gharbî. Vid. K.A.C. Creswell, *Early Muslim Architecture*, New York 1979, vol. I, part II, p.506-518 and 522-544; and D. Schlumberger & c., *Qasr el-Heir el-Gharbî*, Paris 1986, in which there is a particularly interesting study into the catchment and channeling of water, and irrigation of agricultural lands.
11. E. Teres, *Materiales para el estudio de la toponimia hispanoárabe*, Tomo I: Nómina fluvial, Madrid 1986, p.189-190.



12. H. Peres, *Esplendor de al-Andalus*, Madrid 1983, p.136.
13. Al-Maqqari, *Nafh al-Tib*, ed. I. 'Abbās, Beirut 1968, vol. I, p.466-467.
14. Ibn al-Abbar, *al-Hulla al-Siyarā*, ed. H. Mu'nis, Cairo 1963, vol. I, p.37.
15. Ibn 'Idhari al-Marrakushi, *al-Bayān al-Mughrib*. Tôme troisième: Histoire de l'Espagne musulmane au 11<sup>ème</sup> siècle. E. Levi Provençal, Paris 1930, p.102.
16. J.E. Hernandez Bermejo, 'Aproximación al estudio de las especies botánicas originariamente existentes en los jardines de Madinat al-Zahrā', *Cuadernos de Madinat al-Zahrā*, vol. 1, Cordoba 1987, p.61-80.
17. A. Jimenez Martin, 'Los jardines de Madinat al-Zahrā', *Cuadernos de Madinat al-Zahrā*, vol. 1, Cordoba 1987, p.81-92.
18. E. Garcia Gomez, 'Notas sobre la topografía cordobesa en los Anales de al-Hakam II por 'Isā Razi', *Al-Andalus*, vol. XXX, Madrid-Granada 1965, p.334-342.
19. Ibn Bassal, *Libro de agricultura*, ed. J.M. Millaés Vallicrosa & M. Aziman, Tetuaén 1955.
20. F. Chueca Goitia, 'Rápidas consideraciones sobre los jardines-huertos en la España musulmana', *Les jardins de l'Islam. Islamic gardens*, Granada 1976, p.127-142.
21. Ibn Sa'id al-Maghribi, *al-Mughrib fi hulā al-Maghrib*, ed. Shawqi Dayf, Cairo 1978, vol. II, p.9.
22. Ibidem, vol. II, p.8.
23. Al-'Udhri, *Tarsī' al-ajbār*, ed. 'Abd al-'Azīz al-Ahwānā, Madrid 1965, p. 85. This page, describing the building undertaken by al-Mu'tasim, has been translated into Spanish by L. Seco de Lucena, 'Los palacios de la taifa almeriense al-Mu'tasim', *Cuadernos de la Alhambra*, vol. III Granada 1967, p.15-26.
24. The water mill on a river, 'sāniya', one of the first Arab words in irrigation, and recorded for the first time in 945, tends to be confused or identified with another Arabic word of the same context, water wheel as a well, 'nā'ūra'. On both terms, refer to J. Caro Baroja, 'Norias, azudas y aceñas', *Tecnología popular española*, Madrid 1983, p.239-248.
25. Al-'Udhri, *Tarsī' al-ajbār*, op. cit., p.85.
26. H. Peres, *Esplendor de Al-Andalus*, op. cit., p.148.
27. S. Gibert, *Poetas arabes de Almería* s. X-XIV, Almería 1987, p.50-51.
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33. J. Bermudez Pareja, 'El Generalife después del incendio de 1958', *Cuadernos de la Alhambra*, vol. I, Granada 1965, p.9-39.
34. F. Prieto Moreno, *Los jardines de Granada*, Madrid 1952, vol. I, p.99-102.
35. Al-Maqqari, *Nafh al-tib*, op. cit. vol. I, p.467-468.
36. Al-Tighnari, *Kitāb Zuhurat al-bustān*, op. cit. ms. no. 2163 de la Bibliothèque Nationale d'Alger, fols. 12v-13r.
37. M. Asin Palacios, *Glosario de voces romances registradas por un botánico anónimo hispano-musulman siglos XI-XII*, Madrid-Granada 1943, p.XV.



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ASPECTS OF AN ANTHOLOGY OF NATURE POETRY COMPILED BY ABULWALID AL-HIMYARI (1020-1042).

Although Spain was conquered by the Arabs as early as the beginning of the eighth century, an Arabic literary life of some importance starts only in the tenth century during the reign of the famous 'Abdarrahmân III, who, in 929, proclaimed himself Caliph and Commander of the Believers. When the caliphate disintegrated in the course of the eleventh century, giving way to the so-called petty kingdoms, Andalusian culture was at its height. One of the main focuses of literary activities was Seville, ruled by the dynasty of the 'Abbâdids. Its founder was the *qâdî*, or judge, Abulqâsim Muhammad ibn Ismâ'îl Ibn 'Abbâd, who held supreme power from 1023 to 1042. He was succeeded by his son and grandson, usually known by their honorific titles of al-Mu'tadid (1042-1068) and al-Mu'tamid (1068-1091). Despite political upheavals art and letters flourished under the petty kings, since each little ruler imitated the splendour of the former caliphal court as far as his resources permitted. The court of Seville, however, was undoubtedly the most brilliant in Spain.

Language and poetry were extremely important pursuits at this court. The collected poetry of al-Mu'tamid has been preserved and so have many pieces of his father and grandfather. Characteristically, the praise of these rulers was sung by court poets who could accumulate quite a fortune if they succeeded in striking the right note. On the other hand, luck could easily reverse as well and many a poet would meet his death as the result of the whims of the ruler. It was in this milieu that the life of an Andalusian lover of poetry called Abûlwalîd al-Himyârî took place. He is said to have died at an early age in 1048: according to some report killed by order or even at the hands of the 'Abbâdid ruler al-Mu'tadid. Most sources say he was 22 when he died, but according to one report he died at the age of 29. I shall discuss these dates later on. He was a poet in his own right, but his importance is due to his being the compiler of a collection of Andalusian literature on nature, especially springtime gardens and flowers.

The love of the Andalusians for gardens and flowers is well established. There was an interest in growing plants and crops; there were many beautiful gardens and there is testimony that people actually liked to go outside in order to enjoy nature. The existence of a body of nature poetry would seem to confirm this interest in nature. What, however, is the value of this kind of poetry for our knowledge of the authentic Hispano-Arabic garden? In order to answer this question we have to consider several points. Does poetry in general and Arabic poetry in particular portray reality? What is the role of poetic conventions, metaphor, imagery and poetic language? To what extent can our sources be said to be reliable?

This last question in particular is important if we want to use Abûlwalîd al-Himyârî's collection as a source. Abûlwalîd worked as a courtier in the service of a ruler. In fact, his anthology *al-Badî' fî Wasf ar-Rabî'* is dedicated to the founder of the dynasty (the *qâdî* Abûlqâsim Muhammad) and to the second man in power, his son the *hâjib* Ismâ'îl. Their names (as well as those of other members of the family) are constantly quoted in a eulogistic fashion. Is this the right independent setting for a scientific work? The same question



may be asked with respect to what might be called the nationalistic context which marks the work. The author's purpose is not to give a complete account of his subject irrespective of partisan considerations. On the contrary, the work has the definite purpose of demonstrating the outstanding character of the poetry of his own people. It is a work in the tradition of the so-called *fadâ'il* literature: writings in which the merits of a particular town or country are enumerated, as Abûlwalîd's famous contemporary Ibn Hazm (d.1064) did for his home country in his *Letter on the Merits of Andalusia*. In Abûlwalîd's case, his anthology was to prove that the Andalusian litterateurs had attained a higher degree of perfection than the Eastern writers. This is not done by systematically comparing Andalusian and Eastern works: Abûlwalîd only mentions Andalusian poets, and among them especially those from Seville. We are therefore far from getting a complete picture of nature poetry in Classical Arabic.

Another factor to be considered is the chronology. All poets quoted are either Abûlwalîd's contemporaries or poets belonging to the preceding generation. This means that we get a rather narrow picture, both in time and in place.

It is also noteworthy that Abûlwalîd's anthology functions within the Arabic rhetorical tradition very much like a catalogue of similes. Its title *al-Badî' fi Wasf ar-Rabî'* could arguably be translated as *Novelties in the Description of Springtime*, but such a translation would conceal the fact that the word *description* has a more neutral connotation in English than the corresponding term *wasf* in Arabic. The technique of poetic description does not consist in giving a list of characteristics of the object depicted, but rather in linking two or more objects by means of a simile. The success of the poem does not depend on its degree of truth, but on the poet's wit and his ability to bring about astounding combinations. In Arabic literature there has been a constant interest in philological matters and this can also be seen in this case. Several *tashbîhât* works (inventories of similes, in order of the *primum comparationis*) have survived. Literally everything can be used by the poets as the starting point for a comparison. The work compiled by Abûlwalîd's older Andalusian contemporary Ibn al-Kattânî (d.1029) contains 66 chapters on subjects such as stars, the sun and moon, wine, fire, hunting, snakes, horses, swords, lances, etc. It also has a chapter on 'Springtime and Flowers', and characteristically there is some overlap between the poems quoted in this chapter and those in Abûlwalîd's work, which seems to confirm the basic similarity between the two works. Some of the similes occurring in Arabic nature poetry are quite commonplace (as when the poet speaks of cheeks like roses), but a more elaborate example is from a poem by al-Sanawbarî (d.945, who is the main nature poet from the East) which has the narcissus as its subject:<sup>1</sup>

- 1 *Have you seen anything prettier than the eyes of jonquils, or the glances they cast at one another in the midst of a party?*
- 2 *Pearls unfolding from yellow sapphires that rest on emerald stems on carpets of fine green silk.*
- 3 *Eyelids of camphor which flutter in saffron eyes, delicate to the touch.*
- 4 *It is as if night-time moons encircled suns in the dark over smooth branches.*
- 5 *They are drowned in tears, with the glitter of dew upon them; they stare with a scrutinizing eye.*
- 6 *And when the wind strikes them, they exhale something like the fragrance of musk. What a breath!*
- 7 *Their closeness to one another resembles the closeness, one day, of friend to friend.*



- 8 The latter embrace when they are at a party, the former embrace in flowerbeds.  
 9 And when you grow drowsy with wine you see them staring at you with undrowsy eyes.

This poem deals with flowers, but they are not the flowers we buy at the florist nor those which we find described in florals. It is as if the poet uses nature merely as an excuse for his own wit and imagination. It is in the light of all these considerations that we should devote some attention to the work of Henri Pérès, the scholar who fifty years ago published the text of Abûlwalîd's anthology of garden poetry on the basis of the unique manuscript preserved in the Escorial Library (number 353). The edition was published in Rabat as Volume IX of the Collection de Textes Arabes of the Institut des Hautes Études Marocaines. A few months ago a 'revised and corrected' edition came out in Casablanca (Manshûrât Dâr al-âfâq al-Jadîda). As far as this new edition is concerned, it is a pity that the mistakes which have crept in during the process of copying the first edition should far outnumber those few that were found in the original. Regrettably, also, Pérès' French introduction has been left out. In it, Pérès summons up some of his findings in his work on Andalusian poetry *La poésie andalouse, en arabe classique, au 11e siècle* which appeared in 1937 and in which he made extensive use of Abûlwalîd's text in the chapter on gardens and orchards. His conclusion on flower poetry which is repeated in the Introduction runs as follows:

'Les poètes andalous, dans leurs *nawriyyât*, ont montré un amour sincère pour la fleur; ils ont cherché avec évidence la plus grande précision dans les descriptions, sans trop verser pour cela dans la préciosité. Les fleurs qu'ils décrivent ont été vues autrement qu'à travers des souvenirs d'école. Les précisions qu'ils donnent prouvent qu'ils ont fait leurs observations dans la nature même; on n'a aucun moment l'impression de végétaux en papier teint. Si les métaux précieux abondent dans les comparaisons, on y trouve tout aussi souvent des rapprochements avec les êtres humains. Quel que soit le procédé employé pour rendre leurs impressions, ils cherchent toujours à animer la nature, et, dans les couleurs, les parfums et les formes, à retrouver un reflet de la civilisation matérielle dont ils peuvent voir les nombreuses manifestations autour d'eux. En donnant une telle ampleur aux descriptions de fleurs, ils se sont, en quelque sorte, approprié un genre que les Orientaux avaient connu, mais qu'ils n'avaient traité que comme un accessoire. La fleur, avec tout ce qu'elle éveille de couleurs et de parfums, est véritablement l'enchantement de la littérature andalouse du 11e siècle.'

Pérès' thesis of the Hispanic character of Andalusian poetry in general and the preeminent status of nature poetry in particular has been given much attention in the writings of western students of Arabic literature. García Gómez has written that oriental influences on Andalusian poetry in the eleventh century were as prominent as ever. Several other authors have confirmed the dependence of Andalusian poetry on Eastern models. Most of these views are discussed by Wilhelm Hoenerbach in the Introduction to his chapter on Nature in Andalusian Poetry of his *Dichterische Vergleiche der Andalus-Araber* and by Gregor Schoeler in his article 'Ibn al-Kattâni's Kitâb at-Tashbîhât und das Problem des 'Hispanismus' and we need not go into them here. But I think there still is room for a more detailed discussion of some aspects of Abûlwalîd's work, as it contains some arguments which are relevant to our discussion, but which have so far received little attention.



Let me first treat some biographical aspects concerning the compiler. His full name is Abûlwalîd Ismâ'îl b. Muhammad (b. Ahmad) b. 'Amir b. Habîb al-Himyarî. His father, known as Habîb, was a local man from Seville, who acted as a *vizier* to the first ruler of the 'Abbâdid dynasty, Abûlqâsim Muhammad Ibn 'Abbâd al-Qâdî (who ruled from 414-433/1023-1042). The second man in the court was the *hajib* Ismâ'îl, the *Qâdî's* son, who died at Écija in 431/1039 in a battle against the ruler of Granada, Bâdîs b. Habbûs, and his allies. The young Abûlwalîd grew up at the 'Abbâdid court and received his literary education from Abû Ja'far Ahmad b. Muhammad al-Khawlânî Ibn al-Abbâr (d. 433/1042). At the age of 17 he is said to have been an accomplished writer of poetry and ornate prose. Before he was 20 years of age, he was appointed *vizier* by the ruler Al-Qâdî Muhammad. Most sources agree that he died at the age of 22. If these data are correct, then he cannot have died in 1048, as Pérès states, because this would mean that he was appointed *wazîr* in 1045, when the ruler who appointed him had been dead for some three years. Moreover, as internal evidence points towards the period between 1035 and 1039 as the date of the anthology's compilation, such a view would also mean that Abûlwalîd was only 12 years old when he wrote his work, which seems rather precocious. Moreover, as the year 1048 is mentioned in the sources only as an approximate date, it seems reasonable to establish the year 1042 as the date of his death. This would tally neatly with other information on the author. Although it is impossible to be completely sure, the following chronology might be valid: Abûlwalîd was born in 1020. His education was complete by 1036, which is the probable date of the compilation of the anthology. When the *hajib* Ismâ'îl died in 1039, his brother, 'Abbâd, the later al-Mu'tadid, succeeded him as *hajib* and on that occasion many members of the establishment were discarded. Abûlwalîd's father was probably among them. Abûlwalîd succeeded his father as *vizier*, probably against the will of 'Abbâd. When some three years later the ruler died, this 'Abbâd succeeded him as ruler, and one of the first things he did was to murder his *vizier* Habîb. It seems probable that Abûlwalîd, who, according to some texts, was indeed known by the name of Habîb as well, is the victim in question.

The brilliance of the 'Abbâdid court in Abûlwalîd's days can be gauged from the great number of contemporary Sevillian poets quoted in the Anthology. There are at least eleven such poets who belonged to the circle of Abûlwalîd's personal friends. Several of them had important positions at the court. They include the ruler, one of his sons, two *viziers* (Abû 'Amir b. Maslama and Abûl-Asbagh b. 'Abdal'azîz), and two judges (*sâhib al-shurta*) (Abû Bakr b. al-Qûtiyya and Abûlwalîd b. al-'Uthmânî). The others include local litterateurs or itinerant poets who, like Abû 'Alî Idrîs b. al-Yamânî, tried their luck where they could get the highest price for their panegyrical poems. When asked by 'Abbâd to compose in his honour an ode which would outstrip the one he had sung in praise of the Hammudids of Málaga Abû 'Alî answered:

*'my intentions are easily explained  
my mental daughters are of noble stock  
whosoever wishes to marry the virgin  
is well aware of the dowry.'*

Abûlwalîd's life was short, but it must have been a happy life, at least until 1039, when his patron, the *hajib* Ismâ'îl b. Muhammad, fell in battle. In one of his poems Abûlwalîd praised him as the one thanks to whom he could



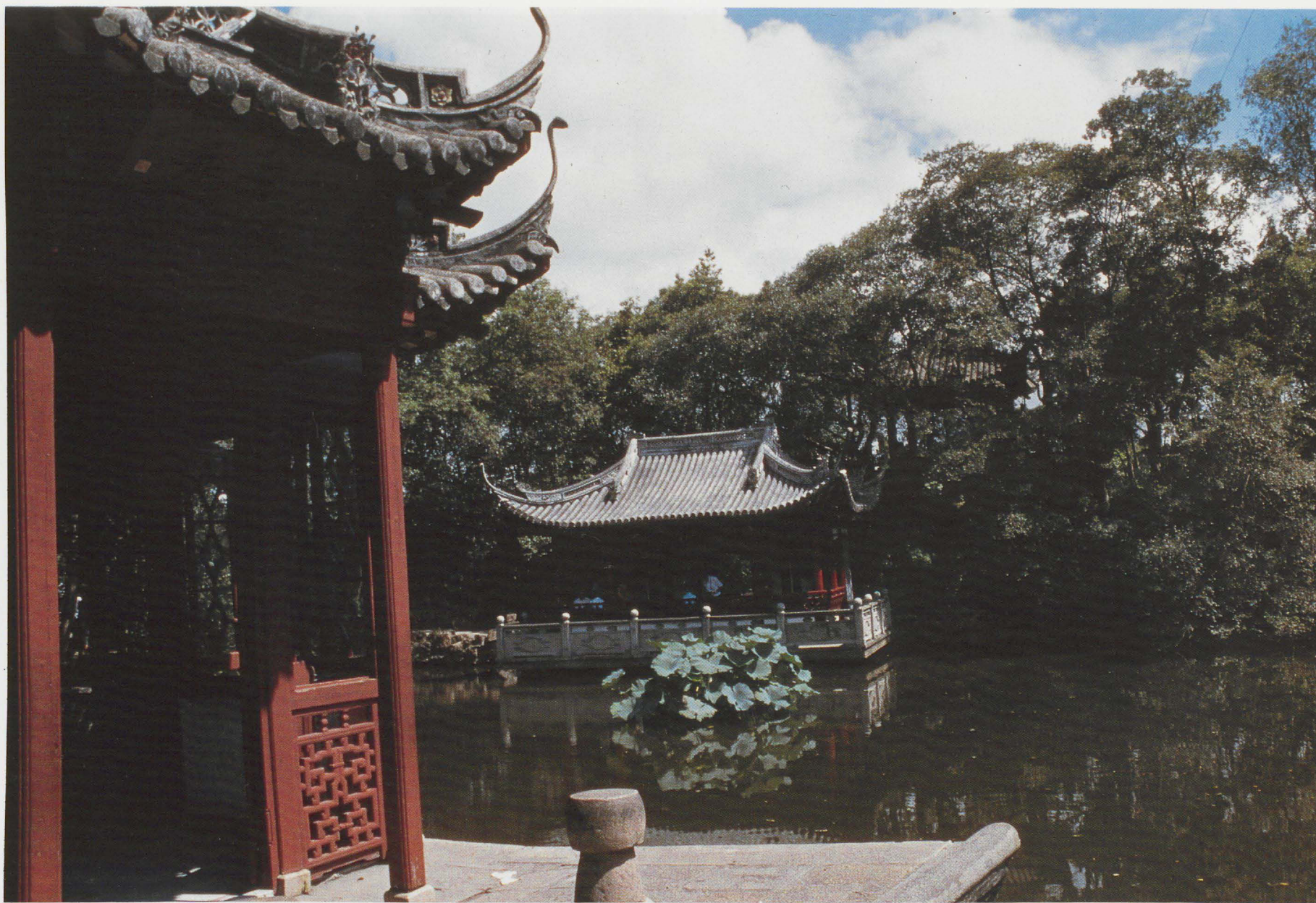


Plate 32. The Pond Where Geese Play, Yi Yuan (Elegant Garden), Nanxiang, near Shanghai; the garden dates from the Ming dynasty (photo Zhong Ming).



Plate 33. He Yuan (He Family Garden), Yangzhou. Although built in the late Qing, for an official of the salt monopoly, this is a good example of the integration of plants, rocks and architecture typical of a Chinese garden (photo Zhong Ming).





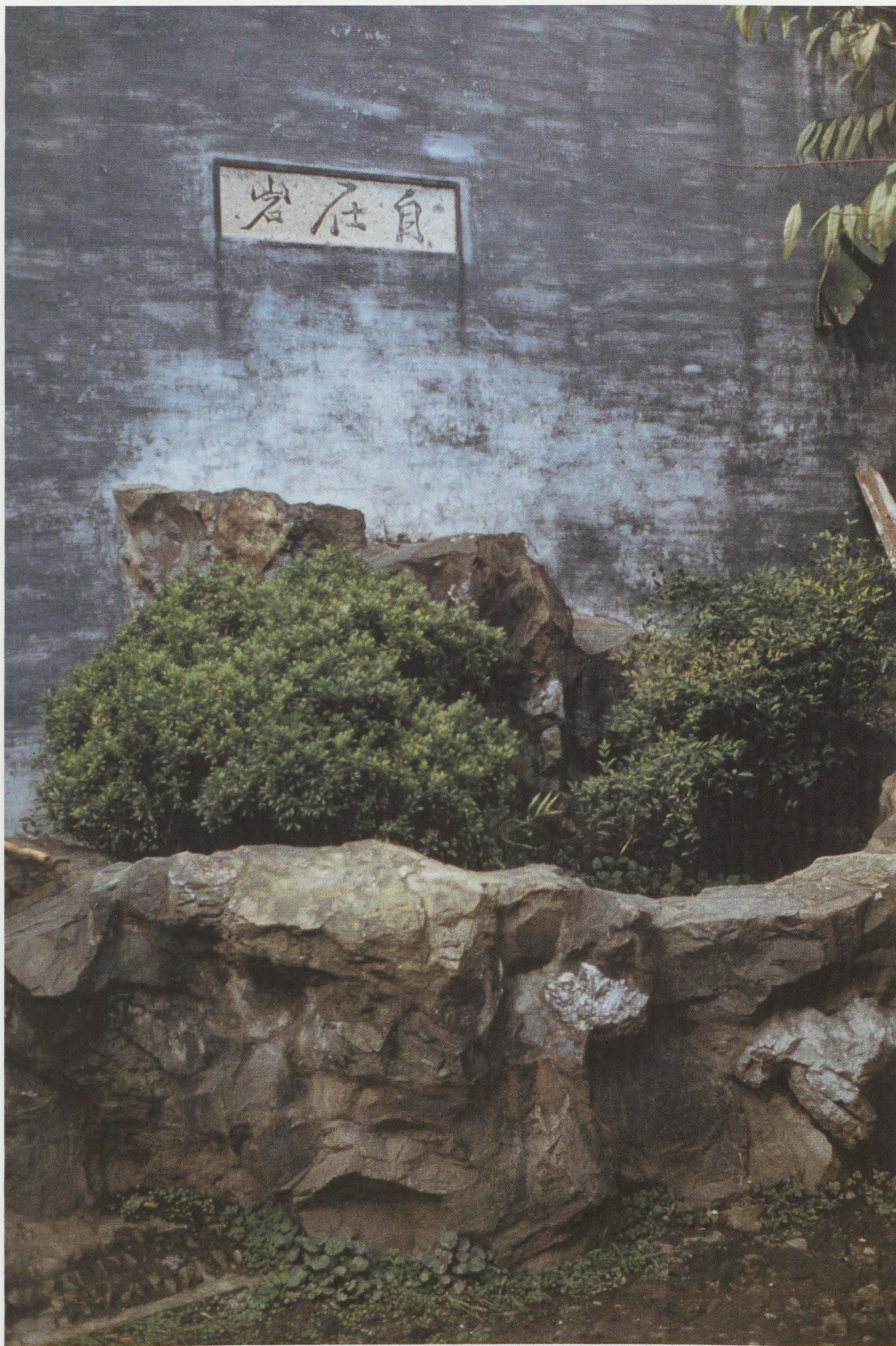


Plate 34. Qing Teng Shuwu (Green Vine Studio), Shaoxing, Zhejiang Province, home of the 16th century painter and writer Xu Wei. The arrangement of plants and rocks, with its calligraphic title 'Zi Zai Yan (Relaxation Cliff)' set in the wall above it, shows the influence of literati painting on garden design (photo Zhong Ming).



Plate 35. A terraced garden in the Secret Garden (Changdok Palace) in Seoul.





lead a careless life (fol. 68a). Flowers and the charms of natural beauty must also have played their role. Abûlwalîd's anthology is enriched by details on the amenities of nature which betray the genuine pleasure with which he and his contemporaries must have enjoyed them. Several instances are mentioned of people sending each other flowers, either a single flower or an entire bouquet. The author himself had a garden which he had received from one of the members of the ruling family, who once went to visit him there and produced two lines of improvised poetry on a beautiful jasmine that had caught his attention. There are also references to excursions to the countryside in order to enjoy the spring, for example, when the compiler received a letter from his friend Abû Bakr Ibn Nasr inviting him to join him on a springtime outing and containing the following poem:

- 1 *The gentle breeze unveils to you the garden's hidden features.*
- 2 *The spring vegetation is refreshing and appears to you in all its vigour.*
- 3 *Nature's garments are embroidered and embellished with the finest brocade.*
- 4 *These meadows are like young brides clad in yellow and reddish raiment,*
- 5 *Or, like richly ornamented singing girls proudly prancing about.*
- 6 *The decorated hills are in full bloom diffusing their fragrance;*
- 7 *Their scent so strong that redolent musk lies idle; from this odour the beautiful universe derives its fragrance.*
- 8 & 9 *Felt cloths neatly laid out, striped fabrics spread alongside as if Yemen and Abqar had sent their costly merchandise.*
- 10 *This lovely splendour so typical of spring can only be enjoyed in springtime.*
- 11 *Trees in blossom with rich foliage moistened by the sparkling dewdrops.*
- 12 *Do not withhold your friends your company in visiting these fields: only by you will their eyes perceive.*
- 13 *Pave their way towards a beautiful springtime recreation of which they can be proud if you will graciously accept.*

'When I received this piece of poetry,' Abûlwalîd says, 'I was deeply moved and stirred by this invitation. Therefore I turned to my father in a letter (wherein I included some of these beautiful descriptions) in order to ask permission for my excursion, which he granted me.'

The text of the letter (after the preamble) is as follows:

'Since spring derives its nature from your natural disposition and since its flowers were stolen from the flowers of your character, it pleases every eye to watch the springtide and it is agreeable to each ear to hear about it; therefore, also, souls long to find rest in the vernal fields and they feel inclined to look at the flowers which wrap the earth in festive attire of the highest perfection. They seem to be stars scattered over the earth full of musk and ambergris: fragrant to the nostrils, a feast for the eye (...)

- 1 *In full bloom the earth is clad in a cloak, which makes a mockery of the finest brocade and costly fabrics,*
- 2 *(A cloak) brought to perfection by the hands of heavy rains and embroidered with the pearls they sent down,*
- 3 *Showing itself in all its splendour it has captured our eyes by its charm after it had been hidden and out of sight for so long a time.*

Furnish me with a means to have a look at it in order that I may polish my inner eye by the splendour of its views, because the season is coming to its



end and its time is almost over. Do not deprive me of an occasion to restore my soul's health. I have not asked you for such a permission for a very long time and I am filled with longing for it. Souls get rusty as much as iron does. He who gives his soul a chance for recovery, does the right thing.'

The rhetorical framework in which these letters are placed is evident. Abû Bakr's letter has the form of a poem; Abûlwalîd's request to his father is in so-called rhyme-prose, with three lines of poetry in the middle. In both cases the writer uses an ornate style with metaphors, similes and fanciful imagination. It is almost as though nature is only there to provide the poet with an excuse for a rhetorical exercise. This, of course, does not rule out a genuine love for flowers and nature, but it is noteworthy that all references to nature as a reality are couched in rhetorical terms and that examples of the exchange of flowers are always provided with the mention of the poems that were sent along. When Abûlwalîd tells us that one day he entered his garden with his friend the *faqîh* Abûlhasan b. 'Alî, all the details provided are of a merely literary nature. Abûlhasan takes some bean-flower blossom, characterized by black spots on white flowers, and says 'pitch coal in a cup of pearls' and asks his friend to fill this hemistich out to a complete line. His answer is 'or an eclipse in the middle of the full moon; or grains of musk among pearls, or dusk at daybreak'. Not only does Abûlwalîd provide the second hemistich, but he adds a complete second line, showing himself an expert in the literary game known in Arabic as *ijâza*.

Another poet called on al-Mansûr ibn Abî 'Amir carrying three white lilies, one of them not fully out yet. When ordered by the prince to recite a poem on these lilies, he aptly compares the flowers with hands, one closed, because it has already received some bounty from the prince, the other two stretched out ready to receive. Although Abûlwalîd does not say so, we may rest assured that al-Mansûr got the message and that the poet was recompensed for his wit. In fact, the number of flower poems quoted by Abûlwalîd that end as panegyrics is considerable. It is another indication that the occurrence of flowers in this poetry is often not the poet's primary interest. One gets the impression that these court poets really liked playing games. Abûlwalîd tells us about his friend Abûlhasan b. 'Alî having composed a piece of poetry wherein several spring flowers were mentioned; this poem he liked so much that he himself composed a piece in the same metre and with the same rhyme pattern in emulation of his friend. He then went to recite this poem in the presence of the ruler, who was so delighted that he asked Abûlwalîd to fetch the judge Abû Bakr Ibn al-Qûtiyya and the poets Abû Ja'far Ibn al-Abbâr and Abû Bakr ibn Nasr. He then ordered them to compose some lines in the same vein. After working on it overnight, each of them produced a fairly long piece in the same rhyme and the same metre, mentioning such flowers as the rose, the white lily, the violet, the jasmine, the anemone, the narcissus, the daisy, etc., ingeniously integrating the praise of the ruler into the poem before winding up. These poems are all quoted by Abûlwalîd. Afterwards, the *vizier* Abûl'asbagh got wind of this affair and not to be outdone, he set about making up his own piece and recited it in the presence of the ruler. Abûlwalîd, who quotes part of it, observes that it was a very fine piece. The ruler, however, had noted a deviation from the established canon in Abûl'asbagh's dealing with the daisy. The contrasting yellow and white colours of this flower are traditionally compared with gold and silver, or the hyacinth stone of a silver ring, or stars in a white glass, or a drinking cup in the hands of a pretty girl who had left some of the wine she had been drinking from it. Abûl'asbagh, however, had said:



'The daisy is a whiteness, as if it were a silver necklace'

failing to make any reference to the flower's yellow heart. So after Abûl'asbagh had done, the Ruler started an extempore poem (still in the same metre and rhyme) in which he ventilated his criticism by giving the above-quoted similes in just as many lines, all of which, according to Abûlwalîd, would not have been out of place in the work of an accomplished poet who took his time for in composing it. The ruler, then, emerges triumphantly from this literary competition and Abûlwalîd does not forget to praise him. It is not only Andalusian poets who are said to be better than their Eastern colleagues, not only individual poets at the 'Abbâdid court of Seville who are portrayed as outwitting their friends, but the spirit of emulation and rivalry in Abûlwalîd's anthology extends to the domain of the flowers themselves. In a short poem Abû 'Amir b. Maslama discusses his preferences with regard to three flowers: a stock, a violet and a narcissus. The narcissus wins, then comes the violet and, finally, the stock. The beauty of the poem seems to consist in the ingenuity with which the argumentation is presented.

Arguments need not be true on a realistic level: at times we find the flowers themselves discussing their own merits; and the poet will often wittingly invoke a patently false etymology, e.g., if he has decided to argue against the lily (in Arabic: *sûsan*), he will certainly mention the fact that a flower whose name starts with evil (in Arabic: *sû*) can be up to no good. And if the violet comes second after the narcissus in the poem just mentioned, this certainly does not mean that the violet always loses. In an epistle written by Abû Marwân al-Jazîrî, also quoted by Abûlwalîd, the personified violet turns to the Prime Minister Ibn Abî 'Amir explaining why it outranks both the pheasant's eye narcissus and the daffodil.

This is not the only example of such a tract: Abûlwalîd quotes the *risâla*, or letter, written by Abû Hafs Ibn Burd, in which some flowers - acting as though they were human beings - organize a symposium in order to decide who is to be their leader. The Creator has made his creatures of different ranks, there being both kings and slaves, beautiful and ugly persons. So it is only logical that there should be among the flowers someone who can best be their ruler. The symposium, attended by the daffodil, the violet, the white narcissus and the mauve stock, decides upon the rose as being the eligible candidate. All attendants vote in favour, and give their motivations either in rhyme-prose or in rhyme-prose and verse. An official act is drawn up which contains declarations of allegiance in the form of small verses by all the flowers present.

In the tradition of emulation referred to above, Abûlwalîd writes a sequel to this interesting piece. He writes to his patron, the Ruler of Seville, saying that he will no doubt have taken notice of Ibn Burd's essay in which the flowers organise a symposium where the rose is proclaimed leader of them all and the participants decided to write down their resolution for the sake of notifying flowers growing in other seasons or other places. Abûlwalîd tells us that the springtime flowers were the first to receive the letter in question. They were shocked. They take the matter up at once with the rose, explaining that it was a completely wrong decision, as priority evidently belonged to the white narcissus. The rose does not deserve this honour and, in fact, they tell him that this nomination is in reality an insult:

'Whosoever praises a man for a quality he lacks insults him twice'.



It does not take long for the rose to understand that his interlocutors are right. So they all decide to write their point of view to the other flowers, particularly those who had drawn up the pro-rose declaration in the first place. That is why they send it to the daisy and the yellow wallflower, as both of them grow in the same season and the same place as the signatories of the pro-rose declaration. In their letter, the springtime flowers argue that the pro-rose declaration was a mistake and that the highest rank belongs to the white narcissus. One of the arguments reads that in poetry the narcissus is always compared with the eye, and the rose with the cheek. The eye is the most prominent of all the sense organs, whereas the cheek is not even one. A line by the Eastern poet Ibn al-Rûmî (d. 896) is quoted in evidence:

‘What a difference between eyes and cheeks when leadership and preciousness are at stake –unless, of course, a false comparison was made.’

This Ibn al-Rûmî was famous for a vivid description of the rose from which it is easy to see that it was probably not his favourite flower:

‘it is like the mule’s arse when he sticks it out while defecating, with some dung left in the middle of it.’

Abûlwalîd refers to this verse as well, without, however, actually quoting it. He had, of course, a learned audience.

At the time when this letter arrives at the home of the daisy and the yellow wallflower, it so happens that the violet, the mauve stock and the daffodil are discussing the entire case with them. The daisy and the wallflower are quite upset about the pro-rose actions of their visitors and take them severely to task. Exactly at that moment the letter of the springtime flowers arrives. This settles the question. The visitors plead guilty: now they know better. Their eyes have been opened. Of course they acted too hurriedly. The daisy and the wallflower are delighted at their conversion and they all decide to go to the white narcissus in order to ask for forgiveness.

After that an answer is written to the springtime flowers. Finally, all flowers decide to record their allegiance to the white narcissus in a declaration especially meant for the flowers of other seasons and places. The letter is written by the violet, who starts a series of testimonies, in poetry and in rhyme-prose, in honour of the white narcissus. The discussion concerning the preeminence of either rose or narcissus has become very famous. Still, this does not mean that it is the only issue of this nature to be discussed. It is to Abûlwalîd’s credit that he put together all sorts of writings on the subject. And although he readily concedes that the discussion about the rose and white narcissus is the one that has received the bulk of attention on the part of the Arab writers, still it must be realized that all sorts of other cases occur as well. For instance, there are verses that are in favour of the white narcissus but against the daffodil; verses in favour of the violet; verses in favour of the yellow wallflower; etc.

Pérès’s view that the East was pro-narcissus and Andalusia pro-rose is therefore much too simple a view. We have already seen that Abûlwalîd himself composed a *risâla* in favour of the narcissus. There is also a pro-white narcissus poem by Abû ‘Amir b. Maslama.

On the other hand, Pérès seems to be of the opinion that these points of view reflect the poets’ real attitude, not just standpoints defended for the sake of argument. There are, in Abûlwalîd’s text however, clear indications that for him that matter was different. For one thing, although he is the



author of the pro-narcissus essay quoted above, he praises the ingenuity of one of the arguments of Ibn al-Jayyânî's pro-rose poem. Also, after quoting a group of pro-wallflower poems, he tells us that he himself has composed a poem in favour of the mauve stock, out of compassion, as it were, for this flower in view of so many pro-wallflower compositions. Pérès' suggestion that there existed a general preference in the Arab West for the rose in contrast with a special liking for the narcissus in the East seems unwarranted. He apparently forgets that these poems and essays on the merits of certain flowers are to be interpreted within the rhetorical framework in which they occur. Abûlwalîd's anthology is divided into three sections. It starts with a section on nature poems, in which no particular flowers are mentioned; then comes the second section with two or more flowers: this is where the merits of the rose and the narcissus are discussed; and the book concludes with poems on just one flower each. There the arrangement is by flower, so that all pieces on the rose are found together in one subsection. This arrangement is pseudo-scientific. It is said to be based on the criterion of the time of the year when these flowers bloom. On inspection one notes that the criterion does not really hold. Twenty-one flowers are enumerated and this might seem a considerable quantity. If we take a closer look, however, it appears that only four flowers are responsible for half the number of lines of poetry on single flowers in the anthology. These are the rose, the lily, the white narcissus and the water-lily. Of the other species, Abûlwalîd often tells us: this is all I found about them. It is important to keep this in mind when one tries to form a judgement on the documentary value of the anthology. After all, it appears that nature poetry (according to Abûlwalîd himself, a minor part of Hispano-Arabic poetry of the time) deals, in fact, with some stereotyped flowers. It is not, as Pérès would have it, the result of a conscientious treatment of nature. Characteristically, Pérès wonders why some flowers, whose presence in the Mediterranean area is well attested, are never dealt with by the poets. The answer seems clear: the poets were concerned with their own world: the world of poetry. Stylized as it is, this world does not have a 1:1 relation with the real world. The case of a certain kind of myosotis, or mouse-ear, is a good example in point. Pérès notes that it existed in the Mediterranean area, but that it was not 'described' by the poets. It so happens that one of the poets from Abûlwalîd's entourage does have an epigrammatic poem on the *mardaquûsh*, as it is called in Arabic. Significantly, it has nothing to do with a 'scientific' description, but is the subject of this fanciful etymological play that the poets, as we have seen, loved so much. The word is said to be from Persian origin, meaning mouse-ears. The poet celebrates - by way of poetic aetiology - the justification of its name.

During the discussions at the flower symposium in Ibn Burd's essay on the preeminence of the rose, the flowers praise God because He has given them their beauty, their delicious fragrance, their delicate aspect. For this reason, they maintain, they are loved, used for the preservation of good relations between lovers and chosen for gifts. This is also why beautiful poetry has been composed in which they are celebrated. Abûlwalîd's anthology therefore confirms that the Andalusians really liked flowers. Still, I think I have adduced sufficient material to make clear that his book is not on botany, as readers of Pérès might think, but a book with 'words, words, mere words.'

#### NOTES

1. Cf.: Hamori, p. 78 ff.



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## MOTHER OF GARDENS

## GARDENS OF THE FAR EAST



Ill. 40.

Mountain landscape. Artist unknown.  
After a Tang Painter.





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In the last fifty years while the gardens of Japan have attracted international scholars, the gardens of China have remained strangely neglected. Yet the Chinese have the oldest unbroken, indigenous tradition of gardenmaking in the world and by the end of the eighteenth century, the 'naturalistic' Chinese approach to gardening had already reached Europe and affected the course of garden history in the West. The '*jardin anglo-chinois*', however, owed more to English than Chinese ideas, and once the fashion passed, so too did any more profound Western interest in the Chinese tradition. Today the great Imperial parks with their palace-complexes informally set among apparently natural hills and lakes are popular tourist venues. But visitors are often unprepared for China's old private gardens where nature is condensed and heightened in ways that are unfamiliar outside China. Compositions of courtyards in mostly urban settings, to the untrained eye these complex gardens may seem uncomfortably full of buildings; open spaces are relatively small and usually paved; there are no lawns and huge rockeries tower above the walls and run wild along the lake shores. Not just the feet, but the visitor's eyes move restlessly over these fragmented shapes, seeking a place to pause. The effect, far from the more familiar stillness of Zen stone gardens, is almost violently energetic. Not in his wildest dreams could a Westerner describe such gardens as 'natural': to understand how the Chinese came to see them so, it is necessary to discuss briefly some of the complex and multi-layered ideas about natural forces that lie behind them.

## NATURE, 'VITAL BREATH' AND THE FENG SHUI MASTERS

The Chinese attitude to nature is an amalgam of ideas and feelings which spill over from magic into philosophy and from spirituality into aesthetics and the arts. In prehistoric times, great landscape features and even large or strangely-shaped rocks were felt to be imbued with supernatural power and, by the 5th century BC, a passionate poem from the *Songs of Chu* already expresses the numinous beauty of mountains. In the West such scenes came to represent the chaos from which divine compassion rescued man: not until the 15th century AD did Petrarch record climbing a mountain for pleasure -and he was tormented lest its material ravishment lure his soul from God. The Chinese, unencumbered by this dualism, held instead that everything in existence, including man, is composed of the same fundamental *Qi* or 'Vital Breath' which pulses through nature in different degrees of intensity as 'dragon veins' or currents of energizing force. (III.40)

The dancing dragons of Chinese art represent the energy of this *Qi* as it moves through and vitalizes all living matter. From deep within mountain peaks (the dragon's lair) it rises along the 'dragon's back' and falls in streams to the valleys below till, growing ever heavier and more earthy, it winds sluggishly to the sea. Thence, drawn up by heaven, it lightens again and swirls amongst the clouds to descend, revitalized and pure as rain, upon the mountain peaks. In this endless cycle, where the polar opposites of *yin* and *yang* are represented in their most extreme forms by the *yin* power of oceans and the translucent *yang* energy of the sky, man stands midway, a blend of both, and united by the Vital Breath with everything else in existence. The courses of *Qi*, which can be traced both in the physical features and the



orientation of a landscape, exert a powerful effect on human affairs: families prosper who place their houses and ancestral graves in propitious, well-veined sites; those who don't may fail. In the 3rd century AD the practice of Chinese geomancy by *feng shui* masters skilled in the location and manipulation of *Qi* was already so important that the biography of Qu Yuan, an early expert, was included in one of China's earliest literary collections.

#### VITAL BREATH AND THE PRESERVATION OF YOUTH

The principles of *feng shui* affected the location of gardens and, as we shall see, the placing of pavilions, lakes and rocks within them. Underlying these site-specific influences, however, lay something even deeper – a promise of longevity. The Chinese, unconvinced by ideas of an afterlife, have long sought the prolongation of youthful energies. Many folk tales involve the *hsien*, or Chinese Immortals, who can travel on the wind and live either in the Kunlun mountains – the axis of the world and a kind of lightening conductor for *Qi* – or on movable islands in the Eastern Sea. Emperor Qin Shi Huang (who unified China 221 BC) sent an expedition to these islands, but although visible from a distance, they vanished into the mist like the *hsien* themselves once ships approached. Later the Han Emperor Wudi (141–86 BC) tried instead to build a great lake behind his palace with islands so beautiful the Immortals, mistaking them for their own, would descend and reveal the secrets of longevity. Oddly, though he died in normal old age, he did achieve a kind of immortality, since it is an echo of that ancient lake-and-island pattern visitors still enjoy in Chinese and Japanese gardens today.

#### NATURE AND DAOISM

Daoist adepts meanwhile sought the prolongation of youth by becoming one with the eternal currents of time and change they called the Dao. (III.41) Some sought an elixir of immortality; others, through diet, sexual techniques and breathing exercises, to control the internal movement of *Qi* through their bodies whilst saturating themselves externally in its vital, invigorating force.

#### NATURE POETRY AND BUDDHISM

As immortality-seekers explored the hills looking for magic *lung-chieh* mushrooms, the grandeur of the landscape itself began to have an effect as it distanced them from the inconsequential cares of men: the phrase 'longing for mountains and waters' became synonymous with the life of the spirit, and one great official of the third century AD, asked his opinion of a new Prime Minister, replied:

'In official matters I am no better, but in appreciation of hills and waters I think I surpass him.'

Tao Yuanming (AD 365–427) became the first great poet to give lyric form to the ideal of the cultivated man retreating from 'the web of the world's dust' back to nature while Buddhism, which gradually filtered into China from India also made use of this indigenous idea. Monasteries were sited high in the hills; below, the soundless, misty valleys became symbols of the Void. Monastery gardens preserved old trees (notable repositories of *Qi*) – impossible elsewhere in a fuelstarved country, and China's natural landscape parks were probably begun by Buddhist monks who, returning in the 4th century AD from the great monastery on Lu Shan mountain, tried to recreate, within reach of their home cities, the peace and majesty of its setting in





III. 41.  
Tao Chi: paintings inspired by poems  
of Sun Tung Po.

the form of 'Lu Shan parks', with pavilions, paths and calligraphic inscriptions carved to inspire the visitor on the living rock. Buddhist laymen also sometimes sought retreat in country estates. The most famous, the *Wang Chuan* villa, was made by Wang Wei (AD 701-761), an artist, calligrapher, musician and poet who imbued the garden - and his painting of it - with erudition and spirituality. In the words of the modern historian Wango Weng, this is what 'every Chinese scholar since would like to recreate around him'.

#### THE CONFUCIAN ASPECT

In China, however, it was not always easy to abandon family, friends and civic duties for the hills. Government posts were awarded by means of Imperial examinations in the Confucian classics and since, for those who were not hereditary princes or aristocrats, a position in the mandarinat was the only acceptable route to wealth and success, families exerted great pressure on sons who were potential candidates. A man of promise who endangered his prospects by taking to the hills - however great his spiritual longings - was unlikely to be commended for filial piety: once in office it was hard to escape. The solution lay in recreating nature near at hand. A high wall could exclude the activities of men, and the inside be returned to nature. Here, in the company of a few like-minded friends and a jar of wine, the harassed official could assuage his longing for mountains and waters and saturate his weary body in currents of life-enhancing Qi, while still fulfilling his duties to state and family. The Buddhist Vimalakirti, a man who, despite wife and children, once had achieved Nirvana by remaining 'unmoved in the midst of movement', reinforced the appeal of gardens. Not only the



owner but all his family could benefit from the channelling of Vital Force which a garden made possible.

#### ON REDUCTION AND CONCENTRATION

For what Chinese garden-makers aimed at was not merely to represent or copy parts of nature on a smaller scale but to create, within a small space, a microcosm where the miniaturization of living forms concentrates and makes even more effective, the powerful forces of nature. The most extreme examples of this belief in the power of reduction are those small bowl landscapes, *penjing*, found not only in garden courtyards, on scholars' desks and in summerhouses, but before the main halls of temples. They are afforded these places of honour because, not unlike cooking stock boiled down to increase its flavour, the great reduction in their size concentrates the Vital Force within them.

#### ROCKS AND WATER

Equally effective miniaturization are the great stones and piled-up rockeries unique to Chinese gardens. Famous collections of mineral stones were first recorded in the Tang dynasty, while huge single rocks, *shi feng*, may be set up much as sculpture is in Western gardens, on plinths in courtyards (Plate 30). The most famous, are of water-worn limestone (*taihu shi*) from Lake Tai, near Shanghai; during the Song dynasty they were the most expensive objects in the Empire. They are placed to rise from their narrowest points: From the front – the south or *yang* side – their flanks swoop out in curves and hollows like frozen clouds; from the back – the north or *yin* side – they are often much straighter, their texture rougher. Potent harmonies of both polar opposites, they can be seen as concentrations of China's five sacred mountains and as axis-of-the-world stones, equivalent in their own way to the Hindu *lingam*. The tiny slivers of space behind or between buildings in Chinese gardens are often enlivened with compositions of three such stones, placed to simulate a range of peaks like the Chinese character for 'mountain' against the whitewashed background of a wall. More interesting are 'false mountains' or *jia shan*: huge piles of pitted rocks held together by invisible wires, cement and the garden-maker's competence in dynamic equilibrium. Sometimes they are hollowed into rough caves for summer shade, sometimes planted with trees and smoothed with earthy banks, and sometimes three-dimensional labyrinths wound round with little paths and steps leading up to belvederes. Such rocks, combined with streams and pools, form the basis of a garden's plan. The Chinese word for landscape, *shan shui*, literally means 'mountains and waters' while a common phrase for making (in English we would say 'planting') a garden means 'digging ponds and piling mountains'. In nature, mountains are the skeleton of the earth and streams its arteries; in a garden, rocks form the bony structure, water its living pulse. The rocks are hard, unmoving, masculine, *yang*, and must harmonize and balance the reflective, flowing *yin* of water. But since *yin* forever gives way to *yang*, and *yang* to *yin* in the unceasing pendulum of change, on sunny days when light sparkles off the water and shimmering leaves cast shadows on these tormented heaps, it may often seem as if it is the rocks that move, the water that is motionless (Plate 28).

Often Chinese visitors like to point out faces and the figures of animals – lions, eagles, tortoises, deer – which come into focus as the sun moves round the rocks. In Qing gardens, made often not by the literati but by *nouveaux riches* merchants, this can become an obsession, obscuring the subtle play on what is 'real' and 'unreal' in a vulgar display of too-obvious animal



rock forms. Even in late and vulgar gardens, however, more aware visitors may trace the flow of *Qi* from the high peaks down to the 'sea' of the central lake.

#### ARCHITECTURE IN GARDENS

'Once we have a *ting* (pavilion)', one saying goes, 'we can say we have a garden'. Chinese scholars divide their gardens into two types, 'strolling' and 'fixed-point', but many, especially Imperial and nature gardens, are both. Even relatively small examples of old private gardens, like the beautiful one-acre *Wang Shi Yuan* (Garden of the Master of the Fishing Nets) in Suzhou, manage both types of viewing, their set piece views framed in the pillars of *ting* pavilions and linked by roofed and open sided corridors called *lang*.

#### PAVILIONS AND SUMMERHOUSES

In the garden-maker's repertoire there are at least ten different types of pavilion, all in some measure enclosed, sometimes tightly, in courtyards. The gardens' boundary walls are tall and whitewashed, occasionally opened with fretwork *lou chuang* windows made of tiles, which, placed high, let in sunlight without allowing precious Vital Force to leak away. Inside the garden, walls twist and zigzag, their grey-tiled roofs sometimes undulating in regular waves like sea snakes or dragons. They order the currents of *Qi*, channelling it round the halls and sitting-terraces, containing it in courtyards, and allowing it to spill from one enclosed space to another through many lower window openings. Here these are often in propitious or humorous shapes like bells, teacups, pomegranates and banana trees. Moon gates, often used as entrances to gardens, use the symbolism of the circle, suggesting 'heaven' and 'perfection', while other doors are shaped like vases – a play on sounds since the word for vase, *ping*, is a homonym for 'peace' (Plate 27). Once inside, the *lang* galleries zigzag in irregular turns and bridges also sometimes zigzag across the lakes, always an uneven number of times to shake off straight-flying, destructive currents of *sha*. But bridges may also take the visitor low over the water on flat stone slabs or raise him high above a stream to give a new perspective and reflection. Underfoot, pebbles of varying size and colour are often used to make simple mosaic patterns and even pictures, on the pathways.

#### TREES, SHRUBS AND FLOWERS

The layering of all these buildings is enhanced and made more mysterious by planting, and the visitor is lured on through the mazy courtyards by glimpses of new blossom just beyond the next wall. Unlike Europeans, the Chinese did not particularly seek novelty in horticulture, however, preferring plants rich not only in physical beauty but in historical, literary and symbolic associations. Above all, however, what every Chinese longed for in his garden was an old pine tree, its trunk hoary and twisted with age, its glorious green needles sighing in the breezes overhead. 'Whence', asked one scholar, 'are the joys of life to come, if one has not a pine tree and a jar of wine'?

#### PAINTING AND GARDENS

Like the bamboos and winter plum associated with them as the 'three friends of winter', pines were also a constant motif in Chinese art. Almost all garden-makers were also painters, just as they were scholars, calligraphers and poets, and it is impossible to see a garden through Chinese eyes without having some appreciation of Chinese landscape painting. 'The Question of reality will not really bother (the visitor)' says a twentieth century Chinese,



'as soon as he ceases to be in the *garden* and starts to live in the *painting*'. When Chinese garden-makers looked at nature they saw it through eyes educated by a thousand years of landscape painting. When they arranged rocks, bamboo and their shifting shadows against a whitewashed wall, that wall became the equivalent of empty silk, the background of a landscape scroll. In certain lights it might even seem to have melted away altogether, leaving rocks and bamboo floating in the vaporous distances of a Song painting. Shrinking himself in imagination to the size of an ant, the connoisseur could wander in these misty wastes among rocks now grown into mountains. And as he walked and paused, the landscape unfolded around him as if he were taking a three-dimensional stroll through one of his own paintings, slowly unrolling the horizontal scroll from right to left. Thus he could create a paradox in the garden: for the walls that enclosed and limited his space also served to extend it magically beyond all bounds. As painters and connoisseurs these men would also, however unconsciously, in gardens as in art, have looked for a quality described as *qi yun sheng tong*. This, the 'first principle' of painting, was formulated by Xie He in the sixth century AD and has been interpretatively developed by others ever since. Translated by Alexander Soper as 'animation through spirit consonance', it means two things: first, that the *qi* or 'vital spirit' of every part of a painting must 'vibrate' with the *qi* of every other part; second, that the *qi* of the painted forms must respond to that of the real forms as they exist outside the painting. In aesthetic terms it thus implies both inner consistency, by which themes set up harmonious vibrations among themselves, and a mystical realism, whereby the artist magically captures the animating spirit of nature itself. Thus trained, the garden designer also seeks the essence behind the forms - the *energies* of mountains rather than the shape of a specific range - and feels the special qualities of his site, allowing them to lead him to the reality of art. Much will depend on his own qualities for, as Ji Cheng, author of the seventeenth century garden manual *Yuan Yeh*, says, 'When you have the real thing within you, it will become real'. In the end the garden-maker will 'know that it is right when it moves him'.

And this, perhaps, is the key; for within its own small space a garden must make possible a whole range of emotions that otherwise could be felt only in nature. Thus the garden designer strives to heighten his effects by contrast and juxtaposition - high leading to low, open to closed, narrow to wide, light to dark - in a constant, delicate pairing, on an infinity of levels, that echoes the dynamic equilibrium of *yin* and *yang*. In practice the designer manages so to confuse the visitor and at the same time so to delight and lull his senses, that the space of his little garden seems to extend indefinitely.

#### THE LITERARY DIMENSION

It extends indefinitely also in a literary sense. Confucius had spent most of his life out of office, and his ethics included an ideal of self-cultivation through the arts. Gardens became an acceptable venue for writing poetry, practising calligraphy or admiring antiques, and the French phrase *cultiver son jardin* has added meaning in China. For an educated Chinese, part of the pleasure of a garden lies in the savouring of *vers d'occasion* written by previous visitors and engraved on stone tablets let into the walls. Just as a great landscape painting acquires, over time, the calligraphy of connoisseurs as colophons around its margins, so the garden acquires savour from poems that record, maybe a hundred years before, the same pleasures as still are there today. In addition, paired couplets were written in expressive calligraphy on each side of gateways, and the names of pavilions or courtyards on wooden



tablets above their entrances. In choosing such names scholars could cap each other with a brilliant literary allusion while they set the mood for each new part of the garden. And the supple and powerful strokes of the calligraphy in which they were written echoed the shapes of the leaves and branches (Plate 29).

Although the magical purposes of garden-making in China may seem to have been largely subsumed under centuries of skillful practice and sophisticated aesthetic development, an atavistic sense of their magical powers still persists, and the riches of their sensuous effects still express a profound and moving attitude to nature, and man's place in it.

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Ill. 42.

Portrait of Li Zhen, Duke of Cao.

Anonymous, 15th-16th century.

Nanjing museum.







Plate 36. Rock arrangement in the Anapji garden in Kyongju.



Plate 37. A rectangular pond in the Secret Garden (Changdok Palace) in Seoul.

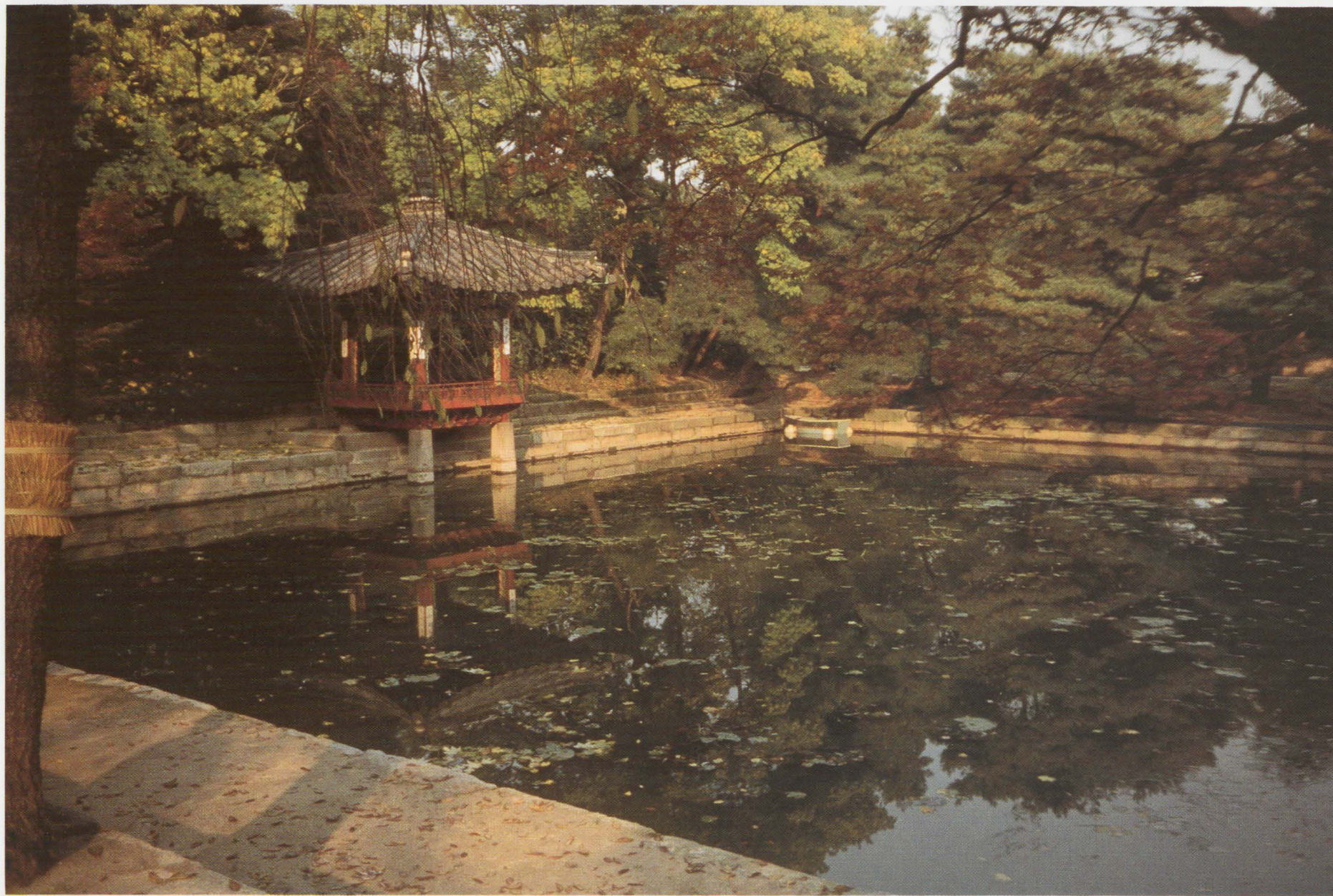






Plate 38. A pavilion of the Buyongji Pond in the Secret Garden (Changdok Palace) in Seoul. Two pillars of the four of a pavilion are set on the bottom of a pond, so that half of the pavilion appears to be floating on the water.



Plate 39. The Flower Patterned Wall of the Secret Garden (Changdok Palace) in Seoul. The wall is patterned by flowers, animals, Chinese characters, that imply happiness and longevity.





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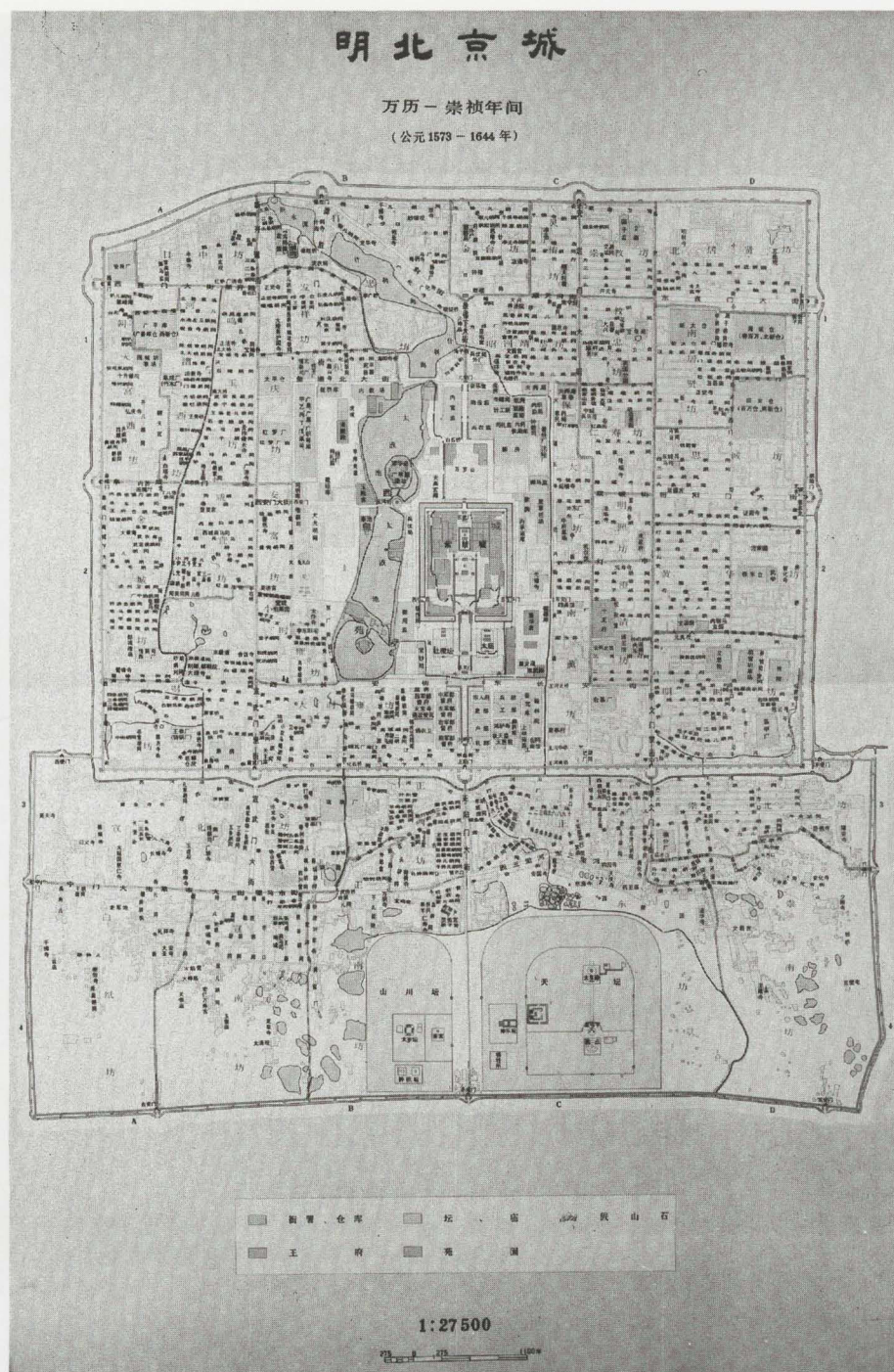
Who owned the famous gardens of Ming China (1368-1644)? Today, the association is sometimes casually made between these highly aestheticized gardens and the class of scholar gentry, the 'literati' who have fascinated Europeans since the first full encounter of the two civilizations. Yet this association is based more on accidents of survival, than it is on examination of the historical record. In the following paper, I argue that some of the most famous and admired gardens in late sixteenth and early seventeenth century China belonged not to the degree holding elite, but to the much less well known imperial aristocracy. These holders of hereditary ranks, though deprived of political power, were yet the bearers of immense wealth and social prominence (Ill. 42). This was particularly the case in the two Ming capitals; Peking in the north (Ill. 43), and the secondary capital of Nanjing in the south. Perhaps the situation in these two metropolises was untypical, with an unusually high concentration of the aristocracy. They were, however, no more untypical of China as a whole than were the towns of the Lower Yangtze (Jiangnan) region, such as Suzhou, whose high number of surviving gardens has perhaps dominated our perception of the period to an unreasonable degree. Before establishing the prominent role of the aristocracy as garden owners, it is necessary to show that ownership was a significant issue to contemporaries. This is not difficult to do. The gardens of the lower Yangtze region which have survived, in however modified a form, to the present are largely now known by names which embody literary references, e.g. 'The Garden of the Master of the Fishing Nets'. Ming sources do otherwise. There, gardens are more likely to be known simply by the name of a current or previous owner 'the garden of Xu Wenbi, Duke of Dingguo', etc. Even a garden belonging to a member of the scholar bureaucrat classes could be named in this way. The famous garden outside Peking built between 1612 and 1614 for Mi Wanzhong is as likely to be referred to as 'the Mi garden', as it is by its more literary name of *Shao yuan*, 'the Dipper Garden' (Ill. 44a-b). It seems that people in the late Ming were both aware of and interested in who a given garden belonged to. Indeed, the close association between owner and garden could work in other ways, through the rhetorical figure of metonymy, where the literary name of a garden became the sobriquet of its owner. A passage from the writing of Shen Defu (1578-1642), entitled 'The Gardens of the Capital',<sup>1</sup> from his work *Random Gatherings of the Wanli Era*, published in 1606, enumerates the memorable gardens of the imperial capital, Peking. Not a trace of any of these gardens can be found today, though their sites can be established with some degree of certainty:

## 'The Gardens of the Capital'

'The gardens of the capital are rather notable, yet the majority of them are the product of the Imperial Relatives, holders of Merit Titles and even wealthy eunuchs. In general the situation (of Peking) is open and clear, with a preponderance of palaces and little in the way of landscape, and not a foot or a yard of water for boating excursions. Only in the north-west of the city, by the side of the Jingye Temple, are there the two Front and Back Lakes, which are particularly suitable for opening up paths. Nowadays there is only



Ill. 43.  
Peking in the late Ming period. From:  
Hou Renzhi ed., *Beijing lishi dituji*,  
Beijing 1985.



the garden of Xu Wenbi, Duke of Dingguo,<sup>2</sup> which abuts onto the water's edge, and seems already to have searched out the best spot. However its halls are tragically lacking in tranquility and delicacy. Over the pillars of the main gate the inscription reads, 'Garden of the Grand Preceptor', from which the garden's style can be judged. Of those gardens which can be visited and which I have myself seen, outside the walls the garden of the Li Earls of Ningyuan<sup>3</sup> is most spacious, but the owner is enfeebled by age and no longer maintains it, so that I gather by now it has come into someone else's possession. The garden of Zhang, Earl of Huian<sup>4</sup> is rich only in herbaceous peonies, with several tens of thousands of them. In the course of excursions in the 3rd month people enjoy them over a number of days, and compete with one another to possess them. Then there is the garden of Commandant Escort Wan Zhanming,<sup>5</sup> which fronts onto a small pond, and also has

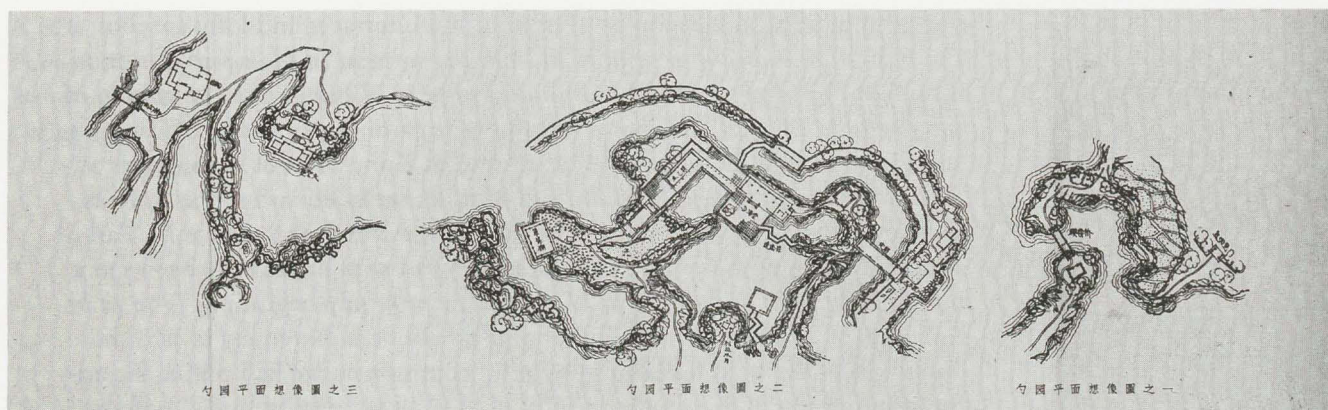


flourishing herbaceous peonies. Despite its high terraces and lofty gazebos, it also has rather secluded corridors and remote studios, and it is said this emanates from the direction of the prince's daughter. There is also the garden of the *jinshi* Mi Zhongzhao,<sup>6</sup> patterned in every particular on those of Jiangnan, almost as Huan Wen modelled himself on Liu Kun, without the slightest variation. The site is called Haidian, and is rather secluded and refined. By its side lie the newly built pavilions and halls of the Imperial Relative Li, Earl of Wuqing, occupying several hundred *mu*.<sup>7</sup> A vast sum has already been spent on digging ponds and piling up hills, and it is still only beginning. The parks and gardens of other powerful and noble families are extremely lavish, and those of wealthy merchants and powerful commoners are laid out in the aristocratic quarters of the suburbs, still awaiting further exploration. I suppose that there has been a long period of peace and prosperity, but it is still an excellent thing to be able to adorn the capital in this way.'

Shen's statement that most Peking gardens are the property of the relatives by marriage of the imperial house, or of hereditary military officials, needs little commentary. Of the six garden owners he mentions, two belong to the former category and three to the latter. Only the garden of the degree holder Mi Wanzhong is there to represent the wealth of the meritocracy. The reason for this distribution is not hard to find. The principal qualification for the ownership of a significant garden in the Ming period was wealth. A garden was the most conspicuous form of consumption possible, particularly within a congested city like Peking. Unfortunately, there is minimal evidence on how much a garden cost to build, or on its value as real estate in any subsequent transaction. When the confiscated property of the purged Grand Secretary Yan Song was valued in 1562, his principal residence in the city of Nanchang was deemed to be worth 7850 ounces of silver. Of that, 1000 ounces was specifically given as the value of the 'flower garden' (*hua yuan*).<sup>8</sup> The vast sums which could be spent can be seen in the case of the 'Duke's Flower Garden' at Jiangning, a pleasure park valued in the 1650s at 100,000 ounces of silver, which had been bought by a group of local officials each contributing the still substantial sum of 3,000 ounces.<sup>9</sup> This garden was described as being open to the public, though issues of access to the gardens of the wealthy were not straightforward at this period, and it is hard to draw a clear separation between 'public' and 'private' gardens.

Wealth was the quality most associated with the hereditary aristocracy, whose prominence on the Ming social scene has not been matched by their interest for historians. In fact, the aristocracy have rather vanished from our view. While volumes are devoted to the paradigmatic figure of the Chinese 'scholar', the 'scholar's taste' and 'scholar artist', the aristocracy goes unrecorded. Yet a glance at the 'Hereditary Houses' section of the official *Ming History*, or a reading of early western visitors to China, reveals the major significance of these aristocratic figures in the social landscape. Similarly, the comments of contemporaries, many of them of impeccable 'scholar' backgrounds themselves, show that it would be very unwise to attempt to draw a simple distinction between 'elegant' gardens belonging to men of literati background and tastes, and 'vulgar' gardens belonging to a rich but tasteless aristocracy. The passage by the degree-holder Shen Defu, a man with intimate connections to the most prestigious families of the Jiangnan region, does not suggest that the garden of Mi Wanzhong was inherently more valued than the garden created by the emperor's grandfather Li Wei, situated just next door. The statement that Li Wei's garden 'was not as famous as the





Ill. 44a.  
Plan of the 'Dipper garden' of Mi  
Wanzhong, constructed 1612-1614.  
From: Wang Shiren, *Wenwu cankao*  
*zilio* 1957.

Dipper Garden'<sup>10</sup> is not tenable, however much it may accord with later Chinese enthronement of the scholar ideal as hegemonic in the cultural sphere.

We see the acceptance by the scholar class of the predominant role of the aristocracy as owners of gardens, in another late Ming account of Peking, the *Resume of the Sights and Affairs of the Imperial Capital*, dated 1635.<sup>11</sup> Its two authors were famous literary figures, associated in particular with the Jingling school of literature. In their listing of nine famous gardens of Peking, they follow initially the list as laid out by Shen Defu. The only one of Shen's gardens which they omit is that of the Earl of Ningyuan, which had presumably fallen into dereliction in the twenty-nine years separating their text from his statement that the owner 'no longer maintains it'. They add four gardens unknown to Shen. These are as follows:

The New Garden of the Dukes of Yingguo,<sup>12</sup> p.31-32

The Garden of the Dukes of Chengguo,<sup>13</sup> p.54-55

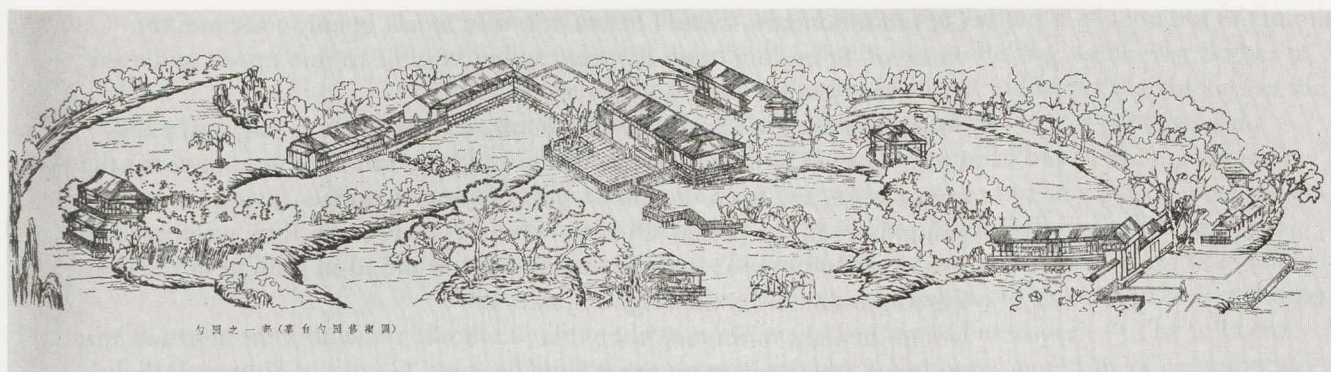
The Yi Yuan, (Imperial Son-in-law Ran),<sup>14</sup> p.56-57

Imperial Kinsman Li's New Garden, p.104-105

This text is of particular value for my argument, since the authors fortunately give poems and commemorative essays written for each of the sites they cover. What these reveal is that leading writers were prepared to see published poems by them which praise the gardens of the aristocracy and refer to their owners in flattering terms. The number of poems praising the Mi garden is exactly matched by the number praising the Li garden. The *bon mot* by Grand Secretary Ye Xianggao (1562-1627) that, 'Li's garden is splendid and beautiful, Mi's garden twists and turns. Mi's garden has no vulgarity, Li's garden has no astringency',<sup>15</sup> was celebrated, but it should not be read as a condemnation of splendour and beauty. Rather these were alternative aesthetic values in a cultural climate which was more pluralist than the sombre orthodoxy of the eighteenth century. The garden of Zhang Yuanshan, earl of Huian, was famous for its massed peonies, yet this sumptuous and far from astringent display was celebrated by the great Yuan Hongdao (1568-1610), poet and essayist, who records his meeting with the elderly Earl, 'white haired and ruddy cheeked'.<sup>16</sup>

We have a comparable list of the prominent gardens of Nanjing in the late Ming, in the work of a native, Gu Qiyuan (1565-1628), who lists sixteen in all.<sup>17</sup> Once again there is the predominance of the imperial aristocracy, with no fewer than eleven gardens being attached to the various residences of the Dukes of Weigu, the descendants of Xu Da, original companion in arms of the founder of the dynasty. At the turn of the sixteenth century, the Duke





Ill. 44b.  
Bird's eye view reconstruction of the  
'Dipper garden' of Mi Wanzhong,  
constructed 1612-1614. From: Wang  
Shiren, *Wenwu cankao ziliao* 1957.

was Xu Hongji, whose fame was spread beyond China itself by the hospitality he offered to the famous Jesuit observer, Father Matteo Ricci, in the spring of 1599. Ricci describes the Duke of Weiguo's garden as *'il piu bello di questa città'*, echoing the words of Gu Qiyuan that it was 'Rich in rocks and majestically beautiful, the finest of all gardens'. Ricci was struck in particular by the multitude of garden pavilions, by 'a mountain of stone artificially made', and by the garden's labyrinthine qualities, which meant that 'without it occupying much ground, one needed two or three hours to go into every part, before returning and going out by another gate'.<sup>18</sup> Of the other five gardens Gu Qiyuan records, two are the creations of the imperial aristocracy, and only three have connections with members of the scholar bureaucracy. Establishing the aristocratic ownership of famous gardens, enables me to move on and discuss three aspects of gardens in Ming China which stem from it. These three aspects are: the role of the garden as a commodity, the question of access to gardens, and the role of the garden as an essentially social space.

The garden's role as a commodity is the simplest of these three points, but it is worth stating. Gardens were bought and sold, and changed hands with some frequency. In Peking, the earl of Ningyuan sold his garden when old age enfeebled him, the Duke of Yingguo bought the site of his garden from a nunnery, the Yi Yuan belonged to three aristocratic families within a century. In Nanjing, the Shiying garden was split in half, and one half sold off on the death of its builder, while the Wu family garden changed hands 'several times' in the course of about fifty years. Here gardens were no different from other cultural property, for example paintings, which could change hands with surprising rapidity. For example, the Yuan masterpiece 'Dwelling in the Fuchun Mountains' by Huang Gongwang changed hands eight times in the century from 1570 to 1669.<sup>19</sup> In the highly commercialised world which the Ming upper classes inhabited, there was very little which did not have a commodity value in the marketplace. In this very fact lay some of the discontents of the age. If the Ming garden was, like a painting, a commodity, it shared with art a role in establishing a social status for its owner. Yet in order to do so it needed to be seen and appreciated by a peer group. Here we must touch on the question of access to the famous gardens of the day, where some comparisons from contemporary Europe are suggestive. For there, not only were the gardens of corporate entities, such as the Leiden *Hortus Botanicus*, accessible to members of the correct social class, but ostensibly private gardens were too. This was most marked in Italy, particularly in Rome, which has been studied by David Coffin. The Garden of Cardinal Andrea della Valle, installed in the 1520s, had an inscription explicitly extending the right of access; 'for the delight of citizens and strangers'.



Giovanni Pontano, in his *I trattati delle virtù sociali*, openly associates the virtue of 'Splendour' with gardens made accessible to one's peers and even to a wider public.

Foreigners in the 16th century frequently remarked on the right of public access to great Roman gardens, which generally had a *giardino secreto* for the owner's use, and from the 1560s, public entrance portals, giving access with going through the palace. Outside Italy, the Tuileries in Paris were open to respectable visitors, at least up to the 1680s, while royal gardens in London were accessible from the reign of James I.<sup>20</sup>

It is in the light of this evidence that we should remember the assertion that the great 11th century historian Sima Guang's 'Garden of Solitary Delight' was, far from being solitary, in fact open to the public.<sup>21</sup> This will help us to read some of the statements made in Ming China, such as Shen Defu's listing of 'gardens which can be visited, and which I have myself seen', and the assurance that, 'At peony time in the capital, no-one fails to visit the garden of

Ill. 45.

Feasting in a garden. Illustration to the drama *Fen xiang ji* (Burning incense).

Late Ming period.





the Earl of Huian'. This is what explains the existence of accounts of famous gardens in what are essentially guide books to Peking, since why bother to give such detailed notes on inaccessible sites. It explains the existence in the same guidebooks of the poems commemorating visits to gardens, visits which did not necessarily involve social intercourse with their aristocratic owners. We know that even the gardens of the imperial palace were accessible to members of the respectable classes. Shen Defu records how in his youth he would visit the Western Park, the principal palace gardens, where it was a standard amusement for men of fashion to throw chickens and dogs to the tigers and leopards kept in the imperial menagerie.<sup>22</sup> The full taxonomy of Ming gardens must consider which ones were part of conspicuous consumption, and which were essentially private parts of dwellings. It might be anachronistic to describe the 'Duke's Garden' in Jiangning as a 'public park', but it would certainly be acceptable to see it as a park open to the public. The famous Nanjing courtesan Ma Xianglan did not own the 'Flying Catkin Garden', in which she threw one of the celebrated parties of the late Ming, for the birthday of her lover Wang Zhideng.<sup>23</sup>

Ming gardens were social spaces, celebrated in some ways not so much for themselves as for the social gatherings which took place there. The famous but fictional eleventh century 'Elegant Gathering in the West Garden' never took place, but its immense fame in later centuries is due not so much to the garden of the imperial prince renowned as its site, as to the literary and artistic luminaries supposedly there.<sup>24</sup> It was the prototype of countless 'elegant gatherings' which have fortuitously preserved the names and even the topographies of the gardens in which they took place (*Ill. 45*).

Thus we know about the 'Apricot Garden' of Grand Secretary Yang Rong largely from its immortalizing as the scene of an 'elegant gathering' there in 1437, when he and two senior colleagues, along with seven other officials, met for a party of poetry and connoisseurship.<sup>25</sup> The theme of the elite gathering in a garden became a standard one in the art of the sixteenth century, particularly in the work of what came to be called the Wu school. This was the cultural lineage based on the city of Suzhou, and embodied by artists such as Shen Zhou (1427-1509) and the family of Wen Zhengming (1470-1559). Shen Zhou's 'Literary Gathering in the Garden of Wei Chang'<sup>26</sup> of 1469 shows the artist seated in an arbour with four named companions, while the host stands to one side. The collaborative handscroll 'Herb Mountain Cottage'<sup>27</sup> of 1540 shows Wen Jia (1501-1583) and several other famous figures of the Suzhou cultural scene disporting themselves on the estate of the 'cottage's' owner, Cai Shupin. Several factors unite these paintings but one is of particular significance to my thesis. In all three paintings the guests (and chroniclers of the event in picture and words) are very famous cultural figures, while the hosts are unknown to history. Neither Wei Chang nor Cai Shupin were holders of civil service degrees, neither left any literary works. Their sole memorial lies in the paintings of their property. Examples of this sort of relationship could be multiplied, and support the following supposition; that a key social role of gardens was to equalize out economic and cultural capital. They allowed the former to be transmuted into the latter, as the fact of ownership was universalised and estheticized through the garden's transmutation into the object of art, whether painting or poetry.

This type of context, where 'property' is transformed into 'art', has recently come to dominate our understanding of much landscape painting in the European tradition, particularly in early modern Britain.<sup>28</sup> However research is beginning to tease out some of the same sorts of relationship in China, at



least as far back as the Yuan dynasty. Richard Vinograd has shown how Wang Meng's 'Bian Mountains' scroll of 1366 records the topography of land important to of his patron,<sup>29</sup> while Joseph McDermott has similarly demonstrated the links between land ownership and art in the seventeenth century Anhui school's depiction of the local scenery of Mt. Huang.<sup>30</sup> These connections between ownership and representation are suggestive of a rich vein of future research.

The same sort of links seem also to inform the writing about gardens which appears towards the very end of the Ming period, and of which Ji Cheng's *Yuan Ye* is the best known example. Although unique in being a work totally devoted to the 'Craft of Gardens', the material in it is in many ways paralleled by sections of the 'Treatise on Superfluous Things' (*Zhang wu zhi*), by Wen Zhenheng (1585-1645), scion of the family of Wen Zhengming, cultural arbiters as well as political leaders of the scholar bureaucracy in the city of Suzhou. I argue elsewhere that Wen's 'Treatise' is probably a work of the years immediately before or after 1620, hence predating the writing of the undeniably socially less prominent Ji Cheng. However in method and content their prescriptions on the 'elegant' garden are remarkably similar. Neither provides a practical handbook on 'how to do it'. Rather I would maintain they are concerned to remove gardens, which were a very conspicuous commodity, from the world of ownership and insert them into a purely aesthetic discourse. Their aim is to mask the status of gardens as the property of the rich, and particularly of types such as generals and imperial in-laws, by making them subject to the same impenetrable laws of taste as pictures, furniture, dress and the other categories of the Ming world of goods. The measure of their success is the degree to which the language of aesthetics has dominated the study of Chinese gardens to the present day.

#### NOTES

1. Shen Defu, *Wanli ye huo bian* (preface dated 1606), Yuan Ming shiliao biji congan, second edition, 3 vols, Beijing 1980, p.609-610.
2. Xu Wenbi (inherited 1568-d.1602), *Ming shi*, Zhonghua shuju ed. 28 vols, Beijing, 1974, p.3146-3147.
3. Li Rusong, Earl of Ningyuan (1549-1598), *MS*, p.3259-3260, L. Carrington Goodrich & Chaoying Fang eds, *Dictionary of Ming Biography*, 2 vols, New York & London 1976, p.830-835.
4. Zhang Yuanshan (inherited 1555-d.1609), *MS*, p.3274-3275.
5. Wan Wei (d.1644) married Princess Ruian, full sister of the Wanli emperor, in 1585; *MS* p.3675-3676.
6. Mi Wanzhong (*jinshi* of 1595), owner of the famous 'Dipper Garden' (*Shao yuan*); Arthur W. Hummel (ed.), *Eminent Chinese of the Ch'ing Period*, New York 1943, p.572-573.
7. Li Wei, Earl of Wuqing (1510-1584) was the maternal grandfather of the Wanli emperor. *DMB*, p.856-859 credits him with the building of the Qinghua yuan, but he was long dead when Shen Defu was writing, and Shen must be referring to Li Wenquan, who inherited the title from him in that year, and died in 1608; *MS*, p.3295-3296.
8. *Tian shui bing shan lu* (preface dated 1562), in *Ming Wuzong wai ji*, Zhongguo lishi yanjiu ziliao congshu (ed.), Shanghai 1982, reprint of Shenzhou guoguang she (ed.), Shanghai 1951, p.165.
9. Frederic Wakeman Jr, *The Great Enterprise: The Manchu Reconstruction of Order in Seventeenth century China*, 2 vols, Berkeley/Los Angeles/London 1985, p.978.
10. Wang Shiren, "Shao yuan xiu xi tu' zhong suojian de yixie Zhongguo tingyuan buzhi shoufa", *Wenwu cankao ziliao*, 1957, 6, p.20-24.



11. Liu Tong and Yu Yizheng, *Di jing jing wu lue* (preface dated 1635), Beijing guji chubanshe (ed.), Beijing 1980.
12. Zhang Weixian (inherited 1598-d.1637); *MS*, p.3131-3132.
13. Zhu Dingshen (inherited 1590-d.1644); *MS*, p.3099-3102.
14. Ran Xingxiang (d.1644) married Princess Shouning in 1599, and was the Wanli emperor's favourite son-in-law; *MS*, p.3676.
15. Quoted in Liu Tong & Yu Yizheng, p.217-222.
16. Quoted in Sun Chengze, *Tian fu guang ji*, p.575-576.
17. Gu Qiyuan, *Ke zuo zhui yu*, quoted in Xie Guozhen, *Mingdai shehui jingji shiliao xuanbian*, 3 vols, Fuzhou 1980, I, p.271-272.
18. Pasquale M. D'Elia S.J. ed., *Fonti Ricciane...*, 3 vols, Roma 1942 II, 64.
19. Craig Clunas, *Superfluous Things; Material Culture and Social Status in Early Modern China* (forthcoming).
20. David R. Coffin, 'The 'Lex Hortorum', and Access to the Gardens of Latium during the Renaissance', *Journal of Garden History*, 2, vol. 3, 1982, p.210-232.
21. Wango H.C. Weng, *Gardens in Chinese Art*, China House Gallery, New York 1968, no IV.
22. Shen Defu, p.606.
23. DMB, p.1362.
24. Ellen Johnston Laing, 'Real or Ideal: The Problem of the 'Elegant Gathering in the Western Garden' in Chinese Historical and Art historical Records', *Journal of the American Oriental Society* 88, vol.3, 1968, p.419-433.
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26. *Im Schatten hoher Baume. Malerei der Ming- und Qing-Dynastien (1368-1911) aus der Volksrepublik China*, edited by Lothar Ledderose, Baden-Baden 1985, no 8.
27. *The Chinese Scholar's Studio, Artistic Life in the Late Ming Period*, edited by Chu-ting Li and James C.Y. Watt, New York 1987, no 7.
28. John Barrell, *The Idea of Landscape*, Cambridge 1972 and John Barrell, *The Dark Side of the Landscape*, Cambridge 1983.
29. Richard Vinograd, 'Family Properties: Personal Context and Cultural Pattern in Wang Meng's Pien Mountains of 1366', *Ars Orientalis* (13), 1982, p.1-29.
30. Joseph P. Mc. Dermott, 'The Making of a Chinese Mountain, Huangshan: Politics and Wealth in Chinese Art', *Art and Power in China and Japan, Asian Cultural Studies*, International Christian University Publications III-A, Tokyo 1989, p.145-176.







## JI CHENG'S YUAN YE (THE CRAFT OF GARDENS) IN ITS SOCIAL SETTING

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In this paper I will try to outline some aspects of Chinese society in the late 16th and early 17th centuries – the late Ming dynasty – which formed the social milieu out of which Ji Cheng's book on garden design, the *Yuan Ye* or *The Craft of Gardens*, arose. In many ways it was a very different world from that of Clusius, having developed from completely different cultural origins, but I think that Chinese and European society at that time were probably much less different than they are now. In my translation, I rendered the original title of Ji Cheng's book, *Yuan Ye*, as *The Craft of Gardens*. *Yuan* means garden; *ye* is a word which is now used primarily to refer to metallurgy (*yejin*): it means smelting, so applied to gardens it must mean the technical process of creating a garden out of raw materials, hence my use of the word craft. The author, Ji Cheng, says in his introduction that he originally intended to call the book *Yuan Mu* or *The Care of Gardens* (literally 'Garden Shepherding'). The title *Yuan Ye* was suggested by a friend of one of his patrons who was impressed by the creative aspects of the book. An interest in technical processes is, as we shall see, characteristic of this period of Chinese history.

The book was published in the early 1630's, just as the Ming dynasty, which had been founded in 1368, was stumbling to a close under the combined pressures of internal dissension and the inroads of the vigorous Manchu people from the North-East, who finally conquered China in 1648. By this time the art of Chinese landscape gardening had reached or even passed its height, but the *Yuan Ye* was the first book systematically to study and summarise the theory of garden design. There had been plenty of earlier writing on gardens, dating back to the Tang dynasty or even earlier, and reaching an enormous quantity in the Ming dynasty, but it had all been primarily descriptive of actual gardens, often idealised; this was the first work of theory, written by an actual garden designer with practical experience in the creation of landscapes, rather than purely an aesthetic appreciation of them. It can thus be said to sum up the Chinese theory of gardens at just the period on which our symposium is concentrating, the age of Clusius.

I am not convinced that the text as we have it now is the complete text as written by Ji Cheng, since the existing division into sections seems rather odd, but as it stands the book can be divided into introductory matter and sections on Situation (the different types of site suitable for the creation of gardens); Layout; Buildings; Non-structural features (such as windows); Structural features (doorways, walls and paving); and Scenic Features (concentrating primarily on rocks, and also covering 'borrowed scenery'). I will discuss the concept of 'borrowed scenery' later.

One aspect of the book which will be clear even from that brief summary is the attention paid to buildings and rocks, in preference to plants. Buildings and rocks are a far more essential part of the Chinese garden than they are in the West. Also, the truth is that Ji Cheng, while passionate about rocks, evidently found plants – other than large trees and bamboo – rather boring: they presented no intellectual or spiritual challenge, as rocks did.

Another characteristic of the *Yuan Ye* is that, although presented as a work of theory applicable to garden design throughout China, it is obvious from the descriptions of architectural style, and from the types of rock referred to, that



the book applies only to the comparatively limited geographical area of Jiangnan –corresponding to present-day Jiangsu and Zhejiang provinces, i.e. the vicinity of Shanghai, Nanjing and Hangzhou. This was where the art of classical garden design reached its fullest development; it was where Ji Cheng lived and worked, and where the book was published. Sometimes the book even uses local Jiangsu dialect expressions. Ji Cheng probably saw no need for the book to circulate beyond the area of Jiangnan, the cultural and artistic centre of China at that time.

Despite the seminal nature of the *Yuan Ye*, it never really received the attention it deserved in China until this century. Its fall into obscurity was evidently related to the book's publisher. One of Ji Cheng's patrons, Ruan Dacheng, was a prominent late Ming official, who was disgraced and banished from court in 1627 on the downfall of his political associate, the notoriously corrupt eunuch Wei Zhongxian. Ruan Dacheng then took up residence in Nanjing, at that time one of the most fashionable and glamorous cities in Jiangnan. He was immensely rich and operated a private publishing concern as well as his own theatrical troupe (he was a distinguished playwright). It was his publishing house which produced Ji Cheng's book. Later Ruan returned to official life in the wake of the powerful Ma Shiyong. He became Minister of Defence but then decided to surrender to the invading Manchus, and died shortly thereafter, possibly by his own hand.

It was Ruan's treachery in going over to the Manchus which put the final seal on his bad reputation, and it seems that the reputations of those dependant on his patronage, such as Ji Cheng, suffered also. No doubt, too, the general chaos and upheaval associated with a change of dynasty helped to complete the disappearance of Ji Cheng's unlucky book. Fortunately, however, copies of the book made their way to Japan. There was a good deal of commercial and cultural contact between China and Japan at this time. A number of Ming loyalists chose to go into exile in Japan rather than serve the alien Qing dynasty. One of them was a man called Zhu Shunshui, who helped to design gardens for the Tokugawa shoguns. This Japanese interest in Chinese garden design helped to preserve Ji Cheng's book; it was rediscovered in a Japanese library earlier this century and republished in China by the *Zhongguo Yingzao Xueshe* or Chinese Architectural Society in 1931, almost exactly 300 years after its original publication. A partial English translation was been published by the Swedish art historian Osvald Siren in the 1940's in his book *Gardens of China*. However, that translation concentrates on the more general and poetic parts of the book, not the technical parts, and it is in any case not very accurate, as it was done direct from the original text, without the benefit of a scholarly edition. Professor Chen Zhi of Nanjing, one of the original members of the *Yingzao Xueshe*, later prepared an annotated edition of the *Yuan Ye*, which was finally published, after the vicissitudes of the Cultural Revolution, in 1978.

No gardens known to have been designed by Ji Cheng survive, and little if anything is known of the man himself, other than what he and his patrons tell us in the introductions to his book, which may not be wholly reliable. Ji Cheng claims to have become known, in his youth, as a painter, but if he had been really distinguished as a painter, there would surely be some independent record of the fact, especially given the abundance of written records about the arts in the late Ming dynasty. However, he could well have been successful as a craftsman painter without becoming recognised as a great artist in this medium.

Indeed, it seems most likely that Ji Cheng was of comparatively humble social origins, probably a member of the artisan class. This would explain a



number of things: his dependence on Ruan Dacheng and other influential figures in society, which in the end caused the fortunes of his book to fall with those of his patron; his use of local craftsmen's terms; and the style of his book, with its wild swings between prosaic common sense and poetic flights of fancy. Professor Chen Congzhou has suggested that Ji Cheng wrote the practical parts of the book himself but, conscious of his own lack of education, had the poetic parts ghost-written, probably by some down-at-heel scholar in Ruan Dacheng's entourage.

Although there is no independent documentation of Ji Cheng's life, we do know something about other late Ming to early Qing garden designers and rockery builders, and what we know supports the idea that these people came mostly from the artisan class.

One famous predecessor of Ji Cheng in the Jiangnan region was Zhang Nanyang, from Shanghai. Also known as Zhang Shanren (Mountain Man Zhang), he was born sometime before 1517 and died sometime after 1596. According to his biography, written by one of the scholars for whom he helped design a garden, Mountain Man Zhang's forebears were peasants. His father was a painter, as was Zhang himself. One assumes that with their social background they were craftsman painters, rather than artists in the *xieyi* style, and Ji Cheng's painting was probably of a similar type.

Two other garden designers whose work is recorded by the same patron who wrote Mountain Man Zhang's biography are Cao Liang, also from Shanghai, and a Mountain Master Gu, who was of such humble origin that he does not even seem to have had a personal name; he was a serf of the Zhu family, but his skill at rockery design became widely admired, and was considered to surpass that of both Zhang and Cao.

A refreshing thing about the late Ming dynasty is the social fluidity which became apparent as the artificial barriers of class broke down under the pressure of economic and political change. One of the most vivid pictures of this is given in a work of dramatic art which belongs chronologically to the early Qing but in subject matter and spirit to the late Ming – the great playwright Kong Shangren's masterpiece *The Peach Blossom Fan*. Based on many years of research by Kong Shangren, who incidentally was a direct descendant of the philosopher Confucius, this historical drama tells the story of the political intrigue and military conflict surrounding the collapse of the Ming dynasty. Ji Cheng's patron Ruan Dacheng features in it as one of the major villains, and although Ji Cheng himself is not mentioned, many important and positive characters in the drama are folk artists of a similar social status: a singer and a story-teller play pivotal roles, and the heroine is a geisha, as famous for her singing as for her beauty. A minor character is the painter Lan Ying, who is an example of the blurring of the distinction between craftsmen and artistic painters which was starting to take place. Lan Ying (1585–1664) is one of the outstanding painters of the late Ming, but his family was poor and of obscure origin; he seems to have learnt his art by apprenticeship to local craftsman-painters in the Hangzhou area. The respect for folk artists implicit in Kong Shangren's presentation of them helps to explain the social prominence and artistic influence which could be attained by an individual like Ji Cheng. It is recorded that two of Mountain Man Zhang's patrons 'treated him with honour as an important guest' and no doubt Ji Cheng received the same treatment in his patrons' households.

Another aspect of contemporary social change which is illustrated by *The Craft of Gardens*, is the development of science. Ji Cheng was clearly an artist rather than a scientist by temperament, but there is also a methodical, scientific intention behind the compilation of his experiences as a garden



designer, and he was evidently interested in and conversant with technological matters such as the 'laws of dynamic balance' to which he refers more than once. China had traditionally been far ahead of the West in science and technology, but during the Ming dynasty the West started to catch up. This was partly as a result of the mathematical sophistication of the Arabs spreading into Europe, and partly as a result of the practical applications of science required for ocean-going navigation, which had become an economic necessity for the small European states.

However, China too had something of a scientific renaissance in the late Ming, which may have been stimulated partly by the introduction of new scientific and mathematical concepts by those brilliant scholars, the Jesuit missionaries, and also no doubt by the greater freedom of thought which comes with economic change and increased social mobility. Examples of the exploratory, technological and scientific spirit of the time are the botanist and pharmacist Li Shizhen (1518-1593), author of *The Great Pharmacopoeia* or *Ben Cao Gang Mu* (as in Europe before Clusius' time, botany in China was merely a branch of medical science, and Chinese pharmacology was far more advanced than European); the mathematician and astronomer Paul Xu Guangqi (1562-1633), who collaborated with Matteo Ricci on the translation of scientific texts into Chinese, and also wrote an original work on agriculture (*Nong Zheng Quan Shu*); the traveller and geographer Xu Xiake (1586-1641) whose detailed diaries are of immense value in understanding the development of the Chinese landscape and its ecology; Song Yingxing (born c. 1600) who made a detailed study of all existing forms of technology and manufacture; and Gu Yanwu (1613-1682), a Ming loyalist whose researches into philology used methods similar to those of modern scientific research. Significantly, all these people, like Ji Cheng, came from the Jiangnan area.

There is yet another aspect of Ming society which is reflected in *The Craft of Gardens*, and that is the contemporary requirement among the nouveaux riches for manuals of social savoir-faire. With the economic development of the later Ming, many merchants became extremely wealthy; their wealth gave them social influence and they were in a position to mingle on almost equal terms with senior officials and old land-owning families. One of the ways they marked their arrival in society was, of course, by building or enlarging their mansions, buying up land, and constructing impressive gardens on their estates. But they lacked the generations of education which gave the literati their culture. So one can see that there would be a definite market for 'teach yourself' books which would enable the nouveaux riches to avoid making shattering faux pas in society.

It seems likely that in some ways *The Craft of Gardens* is aimed at this market. There are frequent references to the need to avoid some 'vulgar' form of decoration or design, such as balustrades decorated with Chinese characters like 'long life' and 'prosperity', elaborate carving in an unsuitable position, or over-ambitious rockery designs within too small a space. It seems unlikely that cultivated, scholarly readers would need to be given these warnings; one assumes they are directed at those most likely to make the mistakes described. At the same time, and no doubt in reaction to the rising influence of the merchant class, the late Ming was an era in which the cult of elegance and refinement, and the art of belles-lettres, flourished among the educated, official class. It became fashionable to write books, or essays, on the pleasures of the gentleman's life, on the refined enjoyment of these pleasures, on collecting, art appreciation, and other hobbies. Such essays were intended to prove the writer's culture and to share his pleasures with like-minded



persons. The underlying, perhaps unconscious intention was to express the solidarity of the old educated elite against the parvenu merchants. But no doubt the books also served those very parvenus as guides to desirable social behaviour.

As I mentioned earlier, Chinese garden design was already a highly developed art form by the time that Ji Cheng was practising his craft and summarising his experiences in writing. It does not appear that Ji Cheng's approach to his art was in any way unique. We can only take his word and that of his patrons for it that he was technically and artistically superior to other contemporary garden designers. However, it is obvious from the personality revealed in his book that Ji Cheng was not the type to underestimate his own abilities, so even that has to be taken with a pinch of salt. Where he was original was in summarising and recording in book form the theoretical basis of his art.

The aspects of this which he stresses are characteristic of Chinese art as a whole at this period: the belief in simplicity and refinement as the highest form of artistic expression, and the cult of the natural –following the natural form of the landscape and endeavouring to make a man-made landscape look as natural as possible. Elegance and simplicity were the ideal of the literati as much in everyday life as in art, if one can even draw a distinction between the two. The pursuit of this ideal is clearly seen in the clean, elegant lines of Ming furniture. As is often the case in an over-sophisticated culture, the cult of elegance and simplicity was represented as a return to the true ancient traditions, without any real historical sense of how different antiquity actually was.

In the case of the Ming dynasty, the idealised past was the Han dynasty or even earlier. Ji Cheng frequently decries modern taste in phrases such as 'What a contrast to the style of the ancients!'. One of the reasons for the Ming idealisation of the classical past had been to reassert Chinese national identity after the century or so of Mongol rule which ended with the establishment of the Ming dynasty in 1368. By Ji Cheng's time, of course, any strong animus against the Mongols must have had time to wear off, but one wonders whether the literati of Jiangnan perceived the threat from the next alien dynasty gathering its strength beyond the Great Wall. At any rate the very instability of life in the late Ming evidently increased the desire of the literati to retreat into their gardens and into the contemplation of the past as an escape from the dangers of the present.

To go back to Ji Cheng's artistic theories, his two crucial principles of garden design are *yin* and *jie*, which can be translated as 'following' and 'borrowing' or 'making use of'. As Ji Cheng says:

'Skill in landscape design is shown in the ability to 'follow' and 'borrow from' the existing scenery and lie of the land.' (p.39) (*Page references are to my translation, published by Yale University Press, London 1988.*)

'Following' applies primarily to the land on which your garden is actually being created, where if there is already a stream, a lake, or a hill, you will wish to 'go along with' it, perhaps enlarging the lake slightly, or altering the course of the stream to make it more interesting, but basically 'following' what is already there. 'Borrowing', on the other hand, means making use of features external to the garden, yet incorporating them into the garden's design. If there is a view of hills in the distance in one direction, for example, you might wish to lay your garden out in such a way as to frame them at the end of an open vista. Or if your neighbour on another side has a particularly



fine garden himself, you could put up a low fence rather than a high wall as the boundary between your properties, and enjoy the view of his garden as well as your own -what Ji Cheng calls 'an unending springtime'.

This belief in conforming to the natural world and making the best of what you have already got is extremely characteristic of Chinese culture. It forms the greatest possible contrast to the European idea of a garden in Ji Cheng's time, where the land was levelled and laid out in strictly geometric forms and straight lines, the human will being imposed on the landscape by force rather than coming to an agreeable compromise with it.

Another aspect of Ji Cheng's approach to garden design is very characteristic of artistic life at this period, and that is his emphasis on the expressionism (*xieyi*) so typical of literati painting. Ji Cheng maintains that a garden design can only be successful when the designer (or designers, for the owner of the garden is expected to take part in the design process) has the hills and valleys already in his heart, and can attain an emotional state which will allow him to transfer these subjective concepts on to the objective world:

'The depths of your imagination should be full of pictures, and your feelings should overflow into hills and valleys.' (p.106)

'If you have the real thing within you when you make the imitation, the imitation that you make will become real.' (p.107)

This is the same process whereby the literati painter who 'has the bamboo fully formed in his heart' transfers it on to paper. The garden is therefore a direct expression of the personalities of its designers, and can reflect to other visitors their emotional life. To the Western mind, this is a remarkably modern idea, and it shows how far in advance of Western artistic concepts the Chinese have usually been. Indeed it is only the most monstrous ignorance of their own culture which allows the present-day authorities in China to claim that self-expression in art is a product of Western bourgeois liberalism. I have referred to the link between the arts of garden design and literati painting; the connections between them are particularly obvious, especially as landscape painting and the creation of physical landscapes are in many ways aiming at the same thing. Ji Cheng often remarks that he was aiming at reproducing in three dimensions the work of some Old Master such as Ni Zan or Huang Gongwang:

'Shadowy temples should appear through round windows, like a painting by the Younger Li (Chaodao). Lofty summits should be heaped up from rocks cut to look as if they were painted with slash-strokes, uneven like the half-cliffs of Dachi (Huang Gongwang).' (p.43)

'Paths will develop naturally among the peach and plum trees, and the buildings and terraces will grow to look like a painting.' (p.50)

'What are known as precipitous mountains are built up against walls, so that the whitewashed surface acts as paper and the rocks as the painting upon it. The designer should follow the natural cracks in the stone, imitating the brushwork of the old masters.' (p.109)

'Small-scale mountains should imitate the work of the Master of the Cloud Forest (Ni Zan), and large ones should honour the style of Zijiu (Huang Gongwang).' (p.112)





Plate 40. Riverside pavilion, Hampyok pavilion. Openness and the view toward the surrounding scenery are the characteristics of the Korean pavilion.



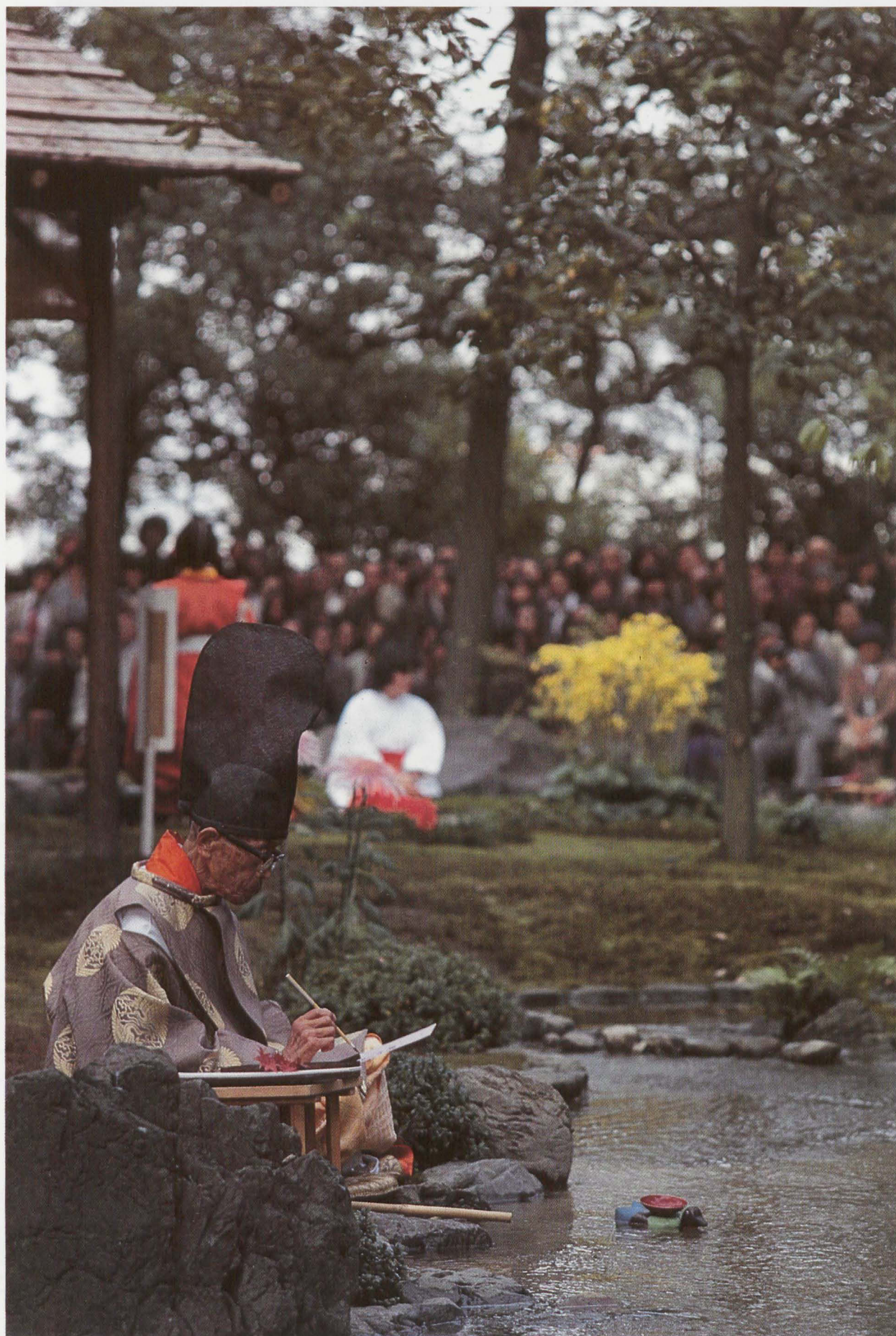


Plate 41. A *kyokusui*-banquet restaged at the Jonangu Shrine, Kyoto (photo Wybe Kuitert, November 3, 1982).





Plate 42. View of the winding stream garden *Kyuseki* in Nara. Stone work 8th century, building reconstructed recently (photo Wybe Kuitert, February 1985).

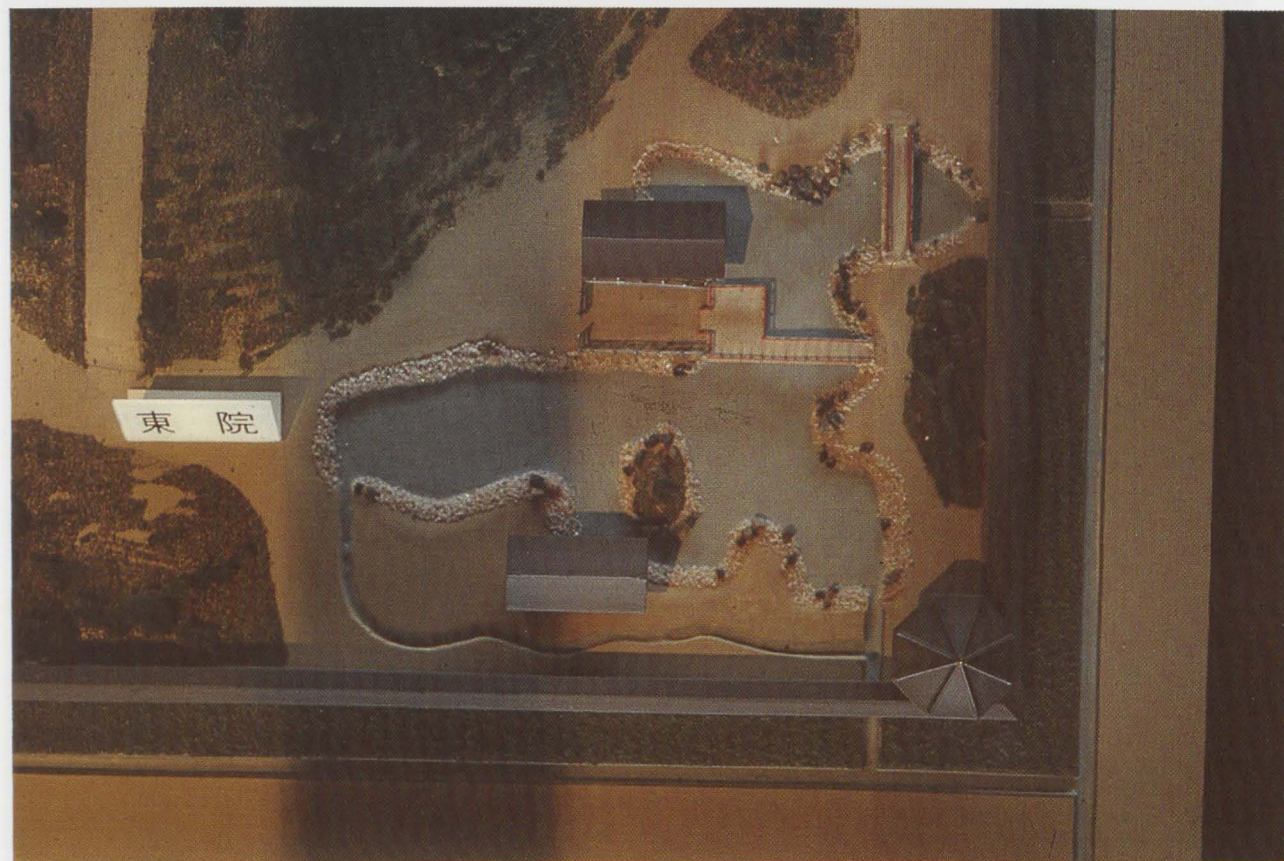


Plate 43. View of a model that reconstructs the outline of the garden of *Tō-in*. The octagonal pavilion stands in the south-east corner of the garden (photo Wybe Kuitert).



Plate 44. Another view of the winding stream garden *Kyuseki* in Nara. Stone work 8th century, building reconstructed recently (photo Wybe Kuitert, February 1985).





Painting is by no means the only art form which is closely linked with the art of garden design. The garden is both an art form in itself and a setting for participation in or display of other art forms – poetry, music, and perhaps especially the quintessential Chinese art of calligraphy, which is such a direct and unfettered expression of the artist's personality. No Chinese garden would be complete without calligraphic inscriptions on pavilions or over doorways to bring out the essence of that particular scene and remind the viewer that however natural the landscape may appear, it owes both its existence and its meaning to human consciousness.

One of the most appealing aspects of Ji Cheng's personality is his common-sense approach. Art is treated not as something separate from or superior to ordinary life, but as an integral part of it. This is characteristic of the outlook of Ming literati. Ji Cheng robustly rejects any sort of formulaic approach to art; he repeatedly stresses that there are no fixed rules which he can lay down but that each garden designer has to do his own thing in the light of the landscape and environment he has to work with, and of his own personality. Although a geomancer would inevitably be consulted before starting the construction of a garden, Ji Cheng says firmly:

'In laying the foundations of a garden, you should not feel any restriction as to the direction it faces; the shape of the ground will have its natural highs and lows.' (p.44-45)

'There is no definite way of making the most of scenery; you know it is right when it stirs your emotions.' (p.121)

On a certain type of building, he remarks:

'There are all kinds of subtleties which cannot all be shown in diagrams; you just have to use whatever structure is appropriate to the particular circumstances, and not confine yourself to a single design.' (p.72)

Ji Cheng often points out the contrast between the formal layout of a family dwelling-house and the informality of a garden:

'All family seats and dwelling-houses...should be built in accordance with the accepted conventions. Only studios set in gardens...are most exquisite when built to take advantage of the seasonal scenery...Family dwelling-houses are bound to be subject to general discussion, but the outlying buildings will only be right if they harmonise with the landscape.' (p.64)

In other words, all the landowner's extended family have a right to give their opinions on the buildings they are actually going to live in, but the landowner and the garden designer are the only ones whose views count when it comes to the garden itself and its buildings. The division between dwelling-houses, which conform to a standard pattern, and the individualistic design of a garden parallels the difference between the demands of a hierarchical family and social life, with its strict protocol, and the relaxed informality to be enjoyed among friends of equal status in a garden. One of the most important social – as opposed to artistic – functions of a Chinese garden was to provide a setting in which it was possible for Confucian scholar-officials in particular, whose everyday life was so constrained by etiquette and propriety, to enjoy a natural, relaxed way of life. So one might argue that gardens helped to ease the strains of the social change which was taking



place in the late Ming.

I would like to be able to say something about the influence of Ji Cheng's work in China, but given the fate of his book it seems that it had little if any contemporary influence at all. It is impossible to know what direct influence on other garden designers was exercised by the gardens actually designed and created by Ji Cheng. Did they even survive the turmoil and destruction of the fall of the Ming dynasty, when so many famous gardens were wiped out?

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## INSIGHT INTO CHINESE TRADITIONAL BOTANICAL KNOWLEDGE

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The reader of Volume VI:1 of *Science and Civilisation in China* that Joseph Needham dedicated to botany, will have an idea of the importance of the technical literature on plants in medicine and horticulture in ancient China. This fact, which had already been pointed out by Jesuit missionaries like Cibot or Du Halde during the 17th century, was still not accepted at the end of the nineteenth century. In 1878, the Dutch professor of chemistry and natural sciences at the Medicinal school of Nagasaki (Japan), created twenty years earlier, A.J.C. Geerts,<sup>1</sup> could write in the preface to his book *Produits de la Nature japonaise et chinoise*:

'En Chine, on ne peut pas encore parler de l'avènement d'une science de la nature libre et pure, parce qu'on ne la cultive que dans un but essentiellement pratique.'

And it is true that if we look for taxonomical or morphological treatises on plants we will not find any until the first adaptation of works of John Lindley by an English missionary Williamson, working together with the Chinese mathematician Li Shanlan. This first botanical book in the modern sense of the word, written in classical Chinese, whose title was *Zhiwuxue* (*Botany*) was published in 1858.<sup>2</sup> It is also true that departments of botany in the main Chinese Universities, began to be created only during the twenties of this century and the same is true for botanic gardens.<sup>3</sup> We must not forget that when Chinese students began to be sent abroad - to Europe, United States and Japan - at the end of the nineteenth century, botany was not one of the crucial sciences they had to learn to strengthen the country.

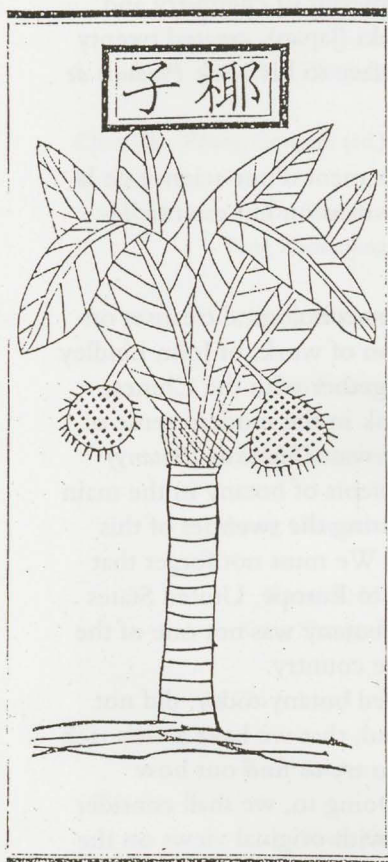
So, considering on the one hand that, what is called botany today, did not exist in China until recently, but on the other hand, that we have a very rich literature about plants in Chinese, it is necessary to try to find out how ancient Chinese considered the world of plants. Doing so, we shall consider with Edward Lee Greene,<sup>4</sup> an American botanist with original views on the history of botany, that 'botany did not begin with the first books on botany, nor with the men who indited them' but that through the way people speak and write about plants and explain how to cultivate them, it is possible to get a good idea of the traditional botanical knowledge existing in any culture. What I am now going to try is to give the outlines of the history of Chinese botany, following a canvas from a modern point of view but through the eyes of these candid botanists of ancient China. Successively, the classification of plants, their morphology and physiology will be analysed and at last some examples from Chinese texts will give an idea of what I understand by 'traditional Chinese botany'.

### CLASSIFICATION

Considering the way plants are classified, one must have in mind that the literature on plants being manyfold, classifications are of different kinds.<sup>5</sup> Big trends however can be observed; the different systems seem organised between two poles. The various authors use basically and implicitly a folk taxonomy which is embedded in different ways of categorization, based on philosophical and practical considerations.



The first two pictures are from different editions of *Zhenglei bencao* dated 1109 and 1249. The third is taken from the encyclopedia *San cai tu hui*, dated 1609. The fourth represents an illustration from the first edition of *Bencao gangmu*, 1596, and the last one is extracted from *Zhiwu mingshi tukao*, 1848. The first three are obviously from the same source.



Two Chinese terms are found for 'plant', '*zhiwu*' meaning 'planted things' and '*caomu*' meaning 'herb-tree'. The first one which is now the common term is solely used in ancient texts, the second one being the standard classical term. And in fact 'herb and tree' give the two main categories of plants as they appear in the *Erya*, the first encyclopedia in Chinese (3rd century AD).<sup>6</sup> This book quotes about 300 plants (200 herbs and 100 trees), everyone of these entries corresponding either to a variety, a species or a genus of modern botany. Between these two levels of classification, the basic and highest one, the unknown authors of this encyclopedia recognize groups named by the juxtaposition of two basic terms. So we have the '*song-bai*' 'pine-cypress' group, the '*tao-li*', 'peach-prune' group, '*yang-liu*' 'willow-poplar' group and several others. One technical term, *chou*, meaning 'of the same kind as', was also used.<sup>7</sup> Another way of classification seems also to be the mere juxtaposition of entries in the book. Considering these two ways a modern Chinese botanist, Xia Weiyong (1962), has recognised some fourteen groups whose plants belong to modern genus, family or higher taxa. Besides that, a list of 'kinds' of trees is given, like 'naturally bent', 'standing dead', 'giving shade', 'rubbing mutually', 'growing from the same trunk', 'grouped together', 'bending downwards', etc. We can see that all these different ways found in *Erya* form a sort of 'natural classification'. On the other hand, we find in the *Zhouli* (*The Rites of Zhou* dynasty 300 AD), a classification of plants in five categories, each in correspondance with types of soils, animals and men; there are plants with black fruits with receptacles, with bone fruits, with legumes and plants growing in clumps or thickets. Other artificial classifications are to be found in the first pharmacopeia still known today, the *Shennong bencaojing*, which may have been composed between the second century BC and the first century AD. Plant, animal and mineral drugs (365 items) are mixed together without any differentiation, but two types of classification of another kind appear here. As we have it today, the book is divided in three chapters, corresponding to three grades, *pin*, of the materia medica: superior, medium and low. Drugs of the first kind are non toxic and of little therapeutic value but may be taken as food or for dietetic purposes on the long term; the second kind puts together rather toxic drugs which can be used for short period in case of illness; the last and inferior grade concerns highly poisonous drugs which actually can cause death and are to be prescribed only when the life of the patient is otherwise condemned. Besides these main three classes, every item is concerned with another system of reference in relationship with what is called the 'Five Phases' or 'Five Elements' - *wuxing* - theory. Created by the interaction of two basic principles *yin*, female and *yang*, male, the five fundamental phases of wood, fire, earth, metal and water are in dynamic relations with each other. They are supposed to be all the things which can be grouped under each of them and they are considered as a fundamental category; so are the 'five tastes' (*wuwwei*) and the 'five natures' (*wuxing*). Following this system, taste and nature characterize every drug quoted in *Shennong bencaojing*.

Before going further, let us summarize the situation at the eve of our era. One 'natural' system with two poles, herbs and trees, appears in the encyclopedic literature, another 'artificial' system based on the theory of *yin-yang* and *wuxing*, tends towards a grouping of objects by five, and another pharmacodynamic one with three levels, based on relative toxicity, appears in the pharmacopoeia.

These three conceptions will intermingle later on, mainly in the pharmacopoeia. Plants, differentiated from the animal and mineral kingdoms, will be separated into five classes in the sixth century as herbs, trees, fruits, grains



III. 46 (b).



and vegetables. But we'll have to wait until the end of the sixteenth century for Li Shizhen, to find them no longer split in two in the pharmacopoeia – separated by animal products – but grouped together in a logical sequence 'from herbs to trees, from the smallest to the biggest'. Furthermore, Li Shizhen in his *Bencao gangmu* (*Organisation of the Pharmacopoeia*, published in 1596) also created subgroups within the five classes – 32 altogether – based on various criteria like ecology, use, taste, origin and toxicity. At the beginning of the sixteenth century another improvement of the old system had been done in a book which, compiled by imperial degree in 1505 and beautifully illustrated, unfortunately was never printed until the text alone was published in 1937. *Bencao pinhui jingyao* (*Essentials of the Pharmacopoeia, ranked according to Nature and Efficacy*), is a compilation done under the responsibility of a doctor of the Imperial Medical Academy, Liu Wentai;<sup>8</sup> the work is mainly based on the structure of twelfth century great pharmacopoea *Zhenglei bencao*.<sup>9</sup> But, following a taxonomic system presented by the neo-Confucian thinker Shao Yong (1011-1077), every plant within the five traditional categories was also concerned with four virtues, namely *cao* 'herb', *mu* 'tree', *fei* 'flight' and *zou* 'walk';<sup>10</sup> besides that the habits of plants, like 'spreading over', 'sarmentous', 'erected', 'floating', 'mud-growing', 'epiphytic' were mentioned, in order – as the introduction indicates – to 'facilitate their gathering following their shapes'. Anyway, the basic classificatory system was still the combination of the three grades and the five kinds of plants.

Besides the pharmacodynamic system with three grades, another system of classification based on the grading of the ornamental value of the plants is found in some books on horticulture. Plants are ranked following their preciousness by analogy to the ranks of people in society. The last large traditional book on plants which puts together texts of the different pharmacological, agricultural, horticultural traditions was published in 1848, the *Zhiwu mingshi tukao*<sup>12</sup> (*Illustrated Investigations of the Names and Natures of Plants*) still follows the old system of five classes: 'grains, vegetables, herbs, fruits and trees', introducing however a new category: fragrant-ornamental plants, just after the herbs. But, except seven sub-groups for the herbs, the sub-categories we had found in Li Shizhen have been suppressed and 'though written at such a recent date, this splendid and well-illustrated treatise was entirely traditional in character, and did not take any account of the advances in botany which had been made by Camerarius and Linnaeus'<sup>13</sup> (Needham, 1970, p.400).

#### MORPHOLOGY

As far as the description of a plant is concerned, we notice a tendency in antiquity to give a specific name to almost every part of a plant distinct from the one used for the same part in another plant; in some cases, the various stages of growth were often named with different terms for a same plant too, like for reeds, bamboos, etc. Later on, there is, from a linguistic point of view, a richer but more economical terminology. But because of the habit, found in most books, to quote abundantly from previous authors, the archaic terminology is to be found even in texts of the 19th century.

So, besides the conservative aspect of this literature, we notice a tendency towards the structuration of vocabulary, going along with a more precise terminology. This precision seems to be linked in some case to the appraisal of the beauty and diversity of ornamentals; for instance a special term, *rui*, existed in Chinese for 'anther', which was an important character of ornamental value, though 'filament' of stamen and 'pistil' were generally not distinguished and named by the same terms, generally 'barb' (*xu*) or 'poles' (*leng*).



Here we must notice that the fundamental characteristics of Chinese language have offered, and still offer, a very practical tool for neologism and scientific terminology.<sup>14</sup> In Chinese every syllab corresponds to a particular character and also to a specific meaning. Since, on the other hand, the basic structuration of the vocabulary is by determination, following the order: determiner-determinatum, a few basic monosyllabs with a specific botanical meaning (flower, root, stem), associated with names of the ordinary language, form the core of the technical vocabulary. And we must realize that through this fact, the modern botanical terminology is deeply rooted in this traditional one.<sup>15</sup>

Though there was a rather elaborate descriptive terminology, it was never used systematically. We always find mixed diagnosis; analogy, through references to parts of other plants supposedly known by the reader, is used to complete an objective description. Let us notice that this is not a Chinese specificity but has also been the case in Europe up to the creation of an elaborate descriptive system. This coincided with a better understanding of the functions of floral parts of plants during the seventeenth and eighteenth centuries.

#### ILLUSTRATION

In 1061 was achieved a most renowned pharmacopoeia which gave pictures of the materia medica of the different parts of the Empire. This *Bencao tujing*, which is lost today, was still available at the beginning of the sixteenth century and seems to have had a very strong impact on later publications about plants. We have already noticed that compilation of previous texts was the basis of any technical book -pharmacopoeae, horticultural or agricultural treatises. And it seems that for illustration this has happened too. In some cases, ancient pictures have obviously been used for some five hundred years, as can be seen in the case of the coconut tree (Ill. 46a, b, c, d, e.). Another tradition of plant drawing is artistic painting with the brush where the botanical accuracy goes far beyond what can be seen in the printed books with engraved pictures. In some cases pictures are incorporated in the text and the text makes actual references to them, as in *Zhenglei bencao*, or various encyclopedias. In other cases the engravings come in an appendix without any textual reference as in the *Bencao gangmu*.

#### PLANT PHYSIOLOGY

When we come to the nature of plant life, the first point is that it is considered as basically the same as that of animals but of a different kind. Plants, like all things, are produced by the *yin-yang* interrelation. In the introduction to the section of *Bencao gangmu* on herbs (Chapter 12), Li Shizhen writes:

'Heaven creates, Earth transforms and so are born herbs and trees. The Hard mingles with the Soft and so are achieved root and bulb. The Soft mingles with the Hard and so are achieved branch and trunk. Leaf and sepal belong to *yang*, flower and fructification belong to *yin*.'

Exactly two hundred years earlier, in 1378, a scholar wrote in a chapter of his writings, called 'Observation of things', reflexions about plants and animals. This was not awkward at all, the 'investigation of the nature of things' being even a main recommendation of the Confucian teaching as indicated in one of the Four Classics, the *Da Xue* (*Great learning*) and abundantly commented later on by the neo-Confucian school.<sup>16</sup> The author, Ye Ziqi states:

Ill. 46 (c).





'Animals have their origin into the sky. And their head is directed towards the sky to let them inhale and exhale the air/material force.<sup>17</sup> Plants have their origin into the earth. And their root is directed towards the earth to make go up and go down the saliva/sap. So animals take their material force from the sky and are brought by the earth, plants take their sap from the earth and grow into the sky. (...) Animals having their origin into the sky have a warm body, plants having their origin into the earth have a cold body. It is what means *yin-yang*.'

The author goes on:

'Plants, their stone is minute; but colour, fragrance or strong-smelling, taste, flower, fruit, stem, leaf, everything is within one kernel. When it grows again, it is absolutely identical.'

Further on the author notices that the material force of plants lies on the periphery because if one takes off the skin/bark, the plant will die. This recognition of the vital importance of peripheral zone can be well appreciated in the case of grafting techniques. Since the sixth century book on agriculture *Qi Min Yao Shu* (*Essential Techniques for the Peasantry*), it is prescribed to carefully put wood and skin of the scion into contact with that of the trunk where it is inserted. In another agricultural treatise, called *Nong Shu* or *Book of Agriculture* (preface: 1313), the author Wang Zhen, summarizes the various techniques in use and says that, before inserting the scion once it is properly cut, one has to keep it in the mouth 'using one's saliva to help the material force of the scion'. The circulation of the material force between scion and wood is considered as the criteria of the success of grafting; first, one or two 'eyes' must be left on the scion 'to help material force (of the scion) to go down' and once the circulation of material force is effective, i.e. grafting is successfully done, all the leaves under the scion have to be removed in order not to loosen the potential strength of the scion. As for what is expected through grafting, Ye Ziqi clearly indicates:

'(When) grafting flower or fruit, what is transmitted above the grafting (place) is this same flower, this same fruit. But under the grafting (place) - or when a trunk has been cut and buds and shoots are sprouting - it is the flower or the fruit of the original (tree).'

From these few quotations it seems obvious that as early as the sixth century a double circulation of material force (*qi*) and saliva/sap (*jin*) was thought to happen in plants under the bark, since *Qi Min Yao Shu* points out that when preparing the lower part of the scion, and taking off with a knife its 'black skin', 'one must not hurt the dark green skin, otherwise the scion will die'. The relations between plant and soil were also considered as very important and changes in colour of flowers, for instance, were obtained by adding minerals.

As for sexuality in plants, it is believed, at least since the thirteenth century, that 'all trees have male and female; the male ones often do not give fruits; if one carves a cubic hole of one inch, takes off (a piece of) female tree and insert it, (the male tree) fructifies'.<sup>18</sup> An application of this old principle is found in an horticultural treatise of 1620, *Runan Pu Shi* (*Garden of Runan*) by Zhou Wenhua, explaining how to get ginkgo fruits from a male tree. In this case the old saying would probably mean the grafting of a female branch, which is frequently done in public gardens nowadays for this tree, to avoid

III. 46 (d).





the excessive number of ill-smelling fruits rotting on the ground.

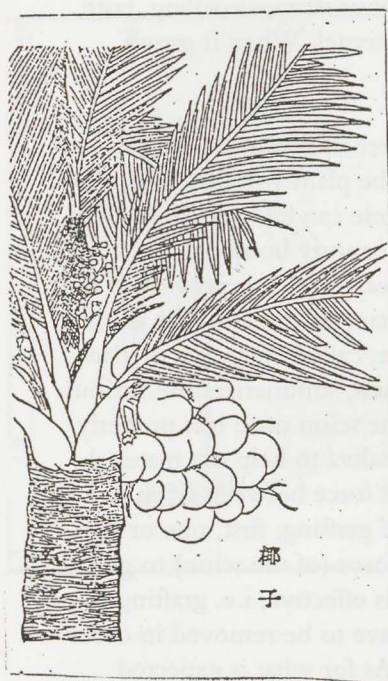
#### OTHER ASPECTS OF TRADITIONAL BOTANY

Having presented an idea of the traditional knowledge in China about the plant world, it is now time to define the nature of this traditional botany. Since two centuries at least European observers have written that China had no natural science but had developed only what we would call the economic aspects. It is obvious that technical books form the bulk of the literature about plants in China, and are the main source of information about traditional botanical knowledge. But there is another aspect of 'cultural botany' deeply rooted into the Confucian tradition which is worth considering. 'Investigation of the nature of things' or *ge wu* was one of the basic attitude of the scholars confronted with nature. Even if this appeared at the time of Confucius, eventually it played a great role in the reflexion towards natural objects only after the Neo-Confucian movement (11th century). Another fundamental aspect of the Confucian teaching was the emphasis on the 'correctness of names', *zheng ming*. Besides the moral aspect of this statement - to behave in accordance with one's situation within the society - this interest in looking for the adequacy of names with things named, induced very early researches on the meaning of the terms for plants and animals in ancient texts. This tradition has been continued all along in Chinese history and I would like now to give an example of what seems to me very typical of what is traditional Chinese botany. The problem is not to identify an unknown plant or a new one in the fields but, as it was for the scholars of European early Renaissance, to find what plant lies behind a name found in a text of Antiquity. In the case of Cheng Yaotian, who was an official during Qian Long era (1736-1796), the problem was to explain the meaning of plant names found in the chapter '*Shi cao*' (Explanations of herbs) in the first encyclopedia of the 3rd century, *Er Ya*. We are going to follow him in the investigation of the obscure meaning of a name *tu* in relation with a plant name *kucai*:

'There are two kinds of *kucai*, one is the Chinese lettuce, the other the denticulate lettuce. I have seen the Chinese lettuce which grows during the 8th and 9th months. Firstly appear many leaves spreading in all directions over the ground. Then in the middle, grow regularly tender leaves which can be more than twenty. All these leaves come from the root and not from a stem. If we cut them there is a white sap. Its taste, first slightly sweet, becomes bitter. This bitterness stick to the tongue and last long. (...) The flower is yellow like the chrysanthemum. Sepals form a receptacle which protect the basis of the florets. In the receptacle under every floret, one seed. The flower having more than hundred florets, there are more than hundred seeds. Silk-like white hair grows to the extremity of the seeds. More than hundred can be counted, half an inch long. All these florets whose basis is inside the receptacle close down one or two days after blossoming, then their colour changes. After a few days they shrivel and fall down. After more days again the receptacle dries out and opens out. White hair at the end of the seeds can be seen. They must be counted by ten thousands, all identical, well ordonated and arranged in round, like a ball: this is what is called *tu*.'

Then, the author gives the description of the second plant and compares his observations to the opinions found in two pharmacopoea about these two plants. In this case, the philologist appears to act as a real botanist, far from any economical motivation. Besides that, I would like to introduce also

Ill. 46 (c).





another kind of literature about plants: the small notes where scholars put down their reflexions or opinions. Their authors seem to be first of all plant lovers or amateurs, appreciating plants for their beauty, but also very fond of their history. Most of them had a garden and, while travelling, were eager to find new guests for it and to collect stories about them. To come back to the period of Clusius, I have chosen to end with three quotations from a very rare small book, dated 1617, called *Zhi pin* (*Appraisal of plants*), written by a scholar Chao Xian, well known for his taste for ancient inscriptions.<sup>19</sup> About one hundred plants are quoted. Through these three short texts we may get an insight of another, but not the least aspect of the traditional Chinese botany, the anecdotal:

‘And now, the facing-sun-chrysanthemum. During Wan Li era (1573-1620), monks from the Western regions began to bring its seeds to China. Its stem grows from seven or eight feet up to more than ten. At the top there is a big flower looking like a plate. Its direction follows the sun. When the flower is fully opened, it is heavier and does not turn any longer. Originally civil servants bought it at a high price to introduce (it). At this time it had no name. The emperor gave it the name ‘facing-sun-chrysanthemum’. After, its seeds progressively were diffused among the people. Between 1606 and 1607 it became very popular in Shanxi province where people made real hedges. But when it bend down, its flower looks like a big wasp nest which is particularly ugly. I hate it. Eventually, in two years, progressively it ceased to be planted. There is also the western-red-persimmon which came from the West at the same period. It creeps, being four or five feet long. Its fruit is like the persimmon but uneatable. Stems and leaves stink so much that one cannot stay close to them: it is worse than the facing-sun-chrysanthemum. So, today it is no longer cultivated.’

After this first-hand report on the introduction of the sunflower and the tomato into the province of the author, here is now the case of a small tree flowering in winter and very famous for its fragrance, *Chimonanthus praecox* K. Koch, a wintersweet:

‘Lamei, the wintersweet in my region has numerous sharp petals but is not very fragrant. It is only in Chang’an at the prefect-hall that there is one tree in a room; it is said that it comes from the first who arrived into the empire. Its perfume is superior. When it blossoms, people who are offered a flower, treasure it. But the variety is not widespread. I have heard that in the Yi family they have sown seeds from this tree in their garden, but the flowers are not identical. I do not know why. Having a tree in my garden only slightly inferior to the one at the prefect-hall, everyone who sees it wants to have it. So, I have to make many cuttings to multiply this variety.’

And now, to end, I leave to your meditation this report on the dangers of excessive beauty in authentic gardens:

‘On the sunny bank of River Jin, Mr. Fan Zhongshe, also called Pomao, had a garden of one hundred *mu* (6,6 ha). There were buildings, terraces, pools, pavillions on summits. The flowering trees planted there had been introduced from the south. One man named Yang and called Master of the Mountain, looked after all the trees. It was as beautiful as a painting from the ancient masters. There were also carved stones with holes, making false mountains with extraordinary strange shapes. During the summer of 1616,



in one night this garden was submerged by a flood and disappeared. Could it be that the divinities of the bank and of the river had been jealous of the men?’

Considering ancient botanical knowledge, books on medicinal plants, horticulture or agriculture are a very rich source of information and reveal a botanical level comparable to the one reached in Europe at least up to the middle of the seventeenth century.<sup>20</sup> But this knowledge did not evolve into a distinct scientific field. It seems therefore necessary to look further in more philosophical or literary texts in order to appreciate what the questions were which interested the Chinese considering plants as a whole or individually. Doing so, we'll have a better understanding of what may be called the traditional Chinese botany.

#### NOTES

1. Geerts, A.J.C. (1), p.6.
2. Métaillé, 1981, Pan Jixing, 1984.
3. Haas, 1988, Pei, 1984, Wang, 1985.
4. 'The Philosophy of Botanical History', vol. 1, p.118 in Greene, 1983.
5. At a same period, books on agriculture and horticulture do not organize the vegetable kingdom in the same way as the pharmacopea and of course, there has been an evolution from the beginning of our era to the end of the 19th century. Chen, 1978, Jiang, 1980.
6. For a description of this book, Needham, 1986, p.182 sq.
7. Cf. Needham, 1971.
8. For a description of this book, Needham, 1986, p.302 sq, Unschuld, 1986, p.128 sq.
9. On this pharmacopea, cf. Needham, 1986, p.282 sq., Unschuld, 1986, p.70 sq.
10. For instance, among the trees, possessing the virtue 'tree' - 'arbority' as Joseph Needham (1986, p.307) translates it - we find the mulberry tree, 'flight' - 'volity' - is the virtue of the bamboos; 'walk' - 'repety' - that of the Chinese wistaria and 'herb' - 'herbarity' - characterizes the pepper.
11. On this point cf. Needham, 1986, p.360 and 406.
12. On this book, cf. Needham, 1986, pp. 475 sq, Unschuld, 1986, p.255 sq.
13. The first mention of the Linnean system will be in 1858, in the last part of the book called 'Botany', *Zhiwuxue*, that we have already mentioned.
14. Hence the stimulating proposal of Joseph Needham (1986,p.181) of using written Chinese as international scientific language.
15. On this subject: Métaillé, 1981, 1988.
16. On the problem of Neo-Confucianism and scientific thought in China, through the appreciation of Joseph Needham's work, cf. Chan, 1957.
17. I follow here the translation given by Chan Wing-Tsit for the Chinese term *qi*, (p.360, in: Chu Hsi, Lü Tsu-ch'ien, 1967).
18. On this fact André G. Haudricourt points out the difference with Europe where it was the fruit bearing plant - in the case of dioecious plants - which was considered as male. For instance, the case of *Cornus Mas*.
19. One copy is found in the Peking Library.
20. Cf. a comparison between Li Shizhen and French contemporary Jaques Dalechamp in: Métaillé, 1989.

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Ill. 47.

Covered walkway and path with plum-blossom design in pebbles, Zhan Yuan (Outlook Garden), Nanjing, a garden which originates from the early Ming dynasty (photo author).

12. *On the rock*, cf. *Nature*, 1906, pp. 477-9; *Far East*, 1906, p. 250-1.
13. The first mention of the Japanese name, will be in 1904, by the last part of the book "Index" (Index). Japanese name was first already mentioned.
14. There are also some pictures of Japanese gardens (1904 and 1905) of which we have no copies.
15. *On the rock*, *Nature*, 1906, pp. 477-9.
16. *On the rock*, *Nature*, 1906, pp. 477-9.
17. *On the rock*, *Nature*, 1906, pp. 477-9.
18. *On the rock*, *Nature*, 1906, pp. 477-9.
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## AN APPROACH TO THE RECORDING AND PRESERVATION OF CHINESE GARDENS

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Hong Kong

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In this paper I will look at how the role played by the garden in Chinese culture has affected the availability of information on historic gardens, and how their recording and preservation should be tackled in the contemporary context.

The woodcut illustrations to a Ming dynasty edition of the drama *Romance of the Western Chamber* (*Xi Xiang Ji*) have inspired some thoughts about gardens in Chinese culture. Gardens play a pivotal role not only in the plot of this play but in other literature such as the play *The Peony Pavilion* (*Mudan Ting*) and the great 18th century novel *A Dream of Red Chambers* (*Hong Lou Meng*), also known as *The Story of the Stone* (*Shitou Ji*). This emphasises the importance of all kinds of literary and artistic records in throwing light on Chinese garden culture: they do not have to be specifically concerned with the subject of gardens, because gardens are so closely connected with art and literature in China. In the *Romance of the Western Chamber* the garden provides the setting for the meeting between scholar Zhang and the beautiful Yingying. In the drama, spatial movement through the garden is used to represent the passage of time. The old illustrations show such characteristic aspects of Chinese gardens as rockeries, the elegant stems of bamboo, the fronds of Japanese banana, and winding paths inlaid with pebbles.

All these aspects of Chinese gardens are such a standard part of Chinese culture and consciousness that the average Chinese hardly gives them a second thought, and this, in my opinion, is a major element in the destruction and neglect of Chinese gardens which has taken place, not just in recent years but for many decades. There are some striking differences between the attitudes of the West and China to their cultural monuments, including gardens. Because Europe consists of a group of competing sovereign states, Europeans have traditionally been very conscious of the value of their monuments, cultural relics and historic sites, as symbols of a distinct culture and nationhood. China has traditionally been in a completely different situation, being a large, cohesive empire with a strong cultural, and often political, dominance over neighbouring countries. The result of this Middle Kingdom mentality - and, after all, China does occupy a central position on the map of Asia - has been that rather than being valued as cultural symbols, gardens have often been the targets of the unfocussed anger and destructiveness associated with political and military upheavals. Of course, like the Yuan Ming Yuan (the Old Summer Palace) also gardens have been destroyed by foreign invaders as well as by Chinese.

More recently, there has been a political element in the failure to preserve historic gardens, partly due to their association with the privileged lifestyle of the literati class, but a far more widespread cause has been the lack of value attached to gardens because of the idea that they will somehow always be there, and if one is destroyed another can always be created. It has taken the attention of the West to bring home to contemporary Chinese the need to preserve historic gardens and to restore them in an authentic way rather than simply rebuilding either in a contemporary idiom or with an unscholarly contemporary idea of what a classical garden should look like.

It is unfortunate that the importance of conservation was not recognised in the 1940's and 1950's, in view of the massive losses of historic gardens that



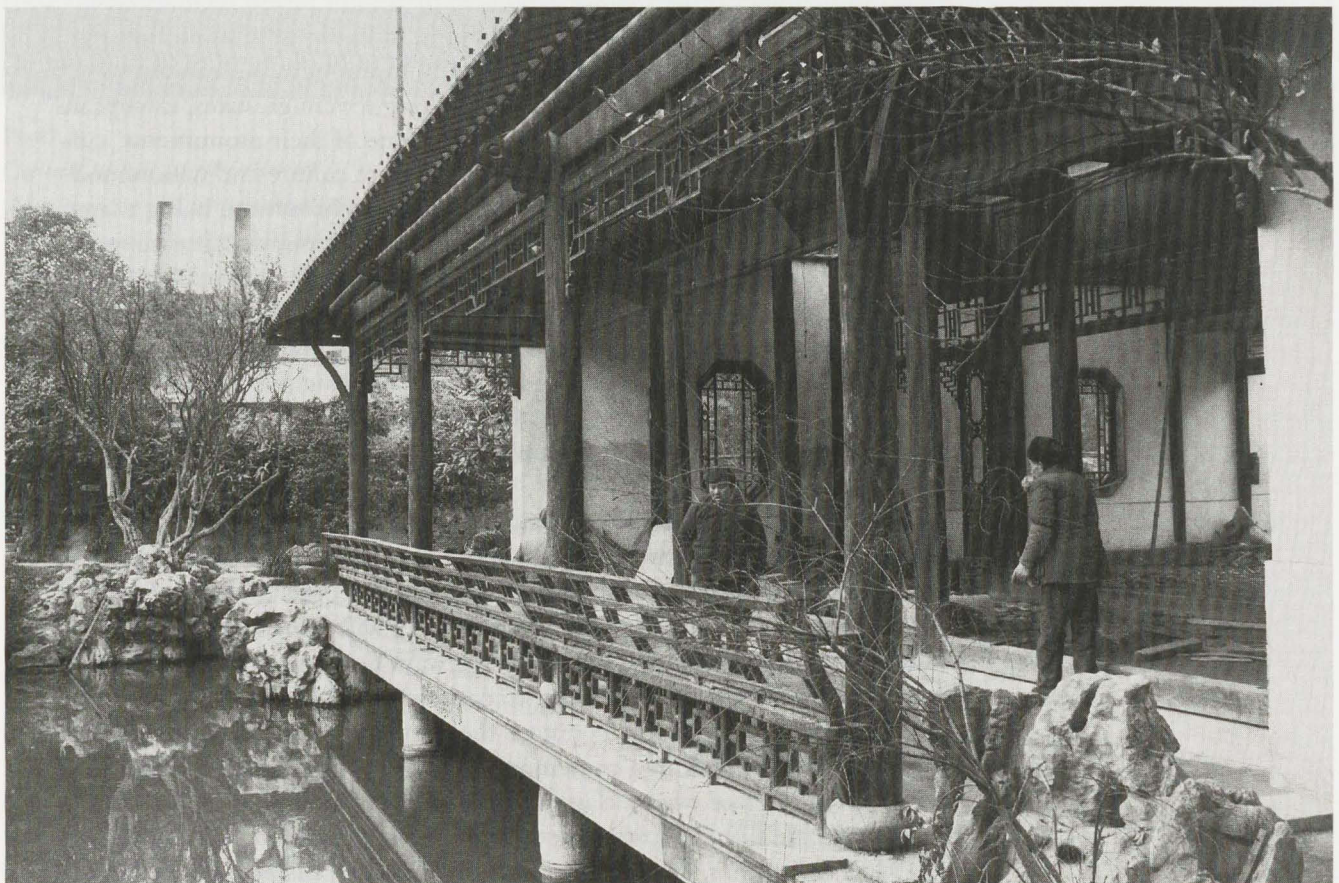
have taken place since then, particularly as a result of urban development and reconstruction. Once active destruction of gardens is already under way, it is too late to stop it: pre-emptive action has to be taken before the destruction starts. The fact that so much has been lost, and that there are so few resources to look after what remains of our heritage, should make us think very carefully about how to move ahead in recording, conserving and restoring historic gardens. For example, some years ago there was much publicity about plans for a complete restoration of the Yuan Ming Yuan, or Old Summer Palace, the imperial retreat outside Peking burnt and looted by the French and British in 1860, but so far, few results are to be seen. Instead of embarking on over-ambitious projects such as this one, I believe that a more realistic approach should be taken, which would at least have some chance of success in China's present economic situation. The conservation or restoration of all historic gardens would be an impossibly heavy task; the compiling of a full archive of what still exists, however, could be tackled with some hope of achievement.

To some extent, reconstruction today of historic gardens is bound to be inauthentic, because the whole cultural basis on which those gardens were predicated has altered. This will become even more the case as society changes further. This only adds to the importance of making a start on creating an archive of information while it is still available. We in the present generation must take our responsibility both to the past and to posterity seriously. Nevertheless, gardens themselves are not static but evolving entities, and this too has to be borne in mind when compiling records and planning conservation or restoration.

Moreover, every garden is different in its history, associations and artistic concept, a fact which has to borne in mind in making a visual (photographic) record of any garden. The photographs have both to convey the essence and

Ill. 48.

Building over water, Zhan Yuan (Outlook Garden), Nanjing. The building, although undergoing reconstruction, is still providing a place of relaxation for visitors (photo author).





Entrance to the Ge Yuan (Isolated Garden), Yangzhou, Jiangsu Province. Bamboos not only grow around the entrance but also provide the raw material for the low balustrades. The shape of bamboo shoots is echoed in the vertical rocks set among the real bamboo (photo author).



artistic character of the garden as a whole and to illustrate individual aspects of particular interest (*see Ill. 47-51 and Plates 31-34*). If they do not convey the beauty of a garden then they cannot be considered a true record of it. Visual records of a garden must also be able to convey information both to viewers familiar with the history and background of Chinese garden design, and to viewers without this experience. The photographer needs to be particularly sensitive to the essence of each individual garden, always bearing in mind the relationship between each element within it and the garden as a whole, and identifying as fully as possible with the feelings and intentions of the original garden designer.

Although many books on Oriental gardens are now being published in the West or aimed at a Western readership, there is a tendency for them to be somewhat repetitive, illustrating the same gardens and providing a fairly elementary level of information more appropriate to a pioneering work. It is surely time for more variety and for books of this kind to approach their subject from different angles rather than giving a general overview. Possible areas of study are the garden as an expression of the cultural ideals of the Ming dynasty, the social and political function of Chinese gardens, the treatment of Ming gardens under the Qing dynasty and the development of a Qing garden style as the expression of Manchu assimilation into the majority Han culture.

A thorough study of Chinese gardens would be a matter of generations rather than years or even decades. Research done now will be of interest to future generations not only for what it says about Chinese gardens in the past but for what it reveals about attitudes to Chinese gardens in our time. In this way it may be as significant to future scholars as a book like Ji Cheng's *Yuan Ye* is to us as an expression of late Ming cultural attitudes. Like other arts, garden design and the cultivation and appreciation of gardens changes, develops and declines in step with the society in which it exists.

The range of knowledge necessary for a full understanding and appreciation of Chinese gardens is a very wide one, covering botany, architecture, literature, art and history to name but a few aspects. This requirement conflicts with the present tendency of academic research to concentrate on ever narrower fields of study; this may make it easier for academics to master their areas of study, but harder for them to develop a real understanding of cultural phenomena. Research on gardens needs to concentrate both on specific



A fantastic rockery structure in the Ge Yuan, Yangzhou (photo author).



gardens and on the historical and cultural background of their time.

One advantage that the study of Chinese gardens has over that of European gardens is the immense wealth of written records in China, especially in the imperial archives which were carefully preserved in the imperial palace from dynasty to dynasty. Not surprisingly the Qing archives, being from the most recent imperial dynasty, are fuller than those for the preceding Ming, but nevertheless the Ming archives are amply stocked, and the early Qing records provide plenty of evidence on Ming customs and practices.

The Chinese penchant for feuding and controversy, particularly among scholars and officials, has been of great benefit for the creation of detailed contemporary records on every aspect of life through the ages, since no sooner did an educated man become involved in controversy than he would commit his view-point to writing. Third parties, disinterested or otherwise, would also record the details of contemporary disputes. Thus the body of



written comment and opinion on all subjects was always increasing. Since much of this took the form of official correspondence or came to be included in the canonical literature of a dynasty, it all ended up in the imperial libraries or archives. A study of the archival material on gardens, though no doubt less voluminous than the literary material, should prove very rewarding.

At the same time as participating in official life, the Chinese literati also upheld a tradition of seclusion from the world and pursuit of the hermit's life, which has very deep roots in Chinese culture. This had an immense influence on the development of Chinese gardens, since the garden was the ideal retreat into which to escape from the world. The importance placed on the eremitical ideal by Chinese literati also led to the development of a huge body of literary and artistic representations of gardens, many of them imaginary or idealised but also providing valuable evidence of actual garden design. These are of great value for the development of a record of the history of actual gardens.

It is my view that the essential point for the recording and conservation of Chinese gardens is to develop among as many people as possible an understanding of the spirit of Chinese gardens. Since there is no hope of authentic conservation and restoration without that, it is something to which consideration of practical ways and means has to take second place. There is no point in a restoration in which the individual details are historically accurate but the spirit is missing from the whole.

This is not to deny the importance and indeed the urgency of practical action on recording and conservation of historic gardens. The matter is especially urgent in that, despite the abundance of written records referred to above, the techniques of the craftsmen who actually construct gardens are in danger of disappearing as the older craftsmen retire or die, while few young

Ill. 51.

The elegant silhouette of a pavilion near Yangzhou contrasts with the modern construction in the background (photo author).





people are interested in taking their place. Craft techniques in China - like the techniques of popular art-forms such as Peking opera - have always been handed down orally and by demonstration from master to apprentice, with very little in the way of written or printed instructions, designs etc.

The important thing in my view is not so much to record the practicalities of craft techniques - these can to some extent be reconstructed from the existing artefacts - but to record the feelings and opinions of the craftsmen themselves: what ideas guide them in designing a structure in a particular way, how they view the purpose of their work and so on. Since every generation of craftsmen adds something of their own creative spirit to the craft as a whole, this is something which is of immense value to a full understanding of the garden tradition.

In another generation, also, there will be no-one left who has grown up or lived in a traditional Chinese garden or courtyard dwelling with its unique way of life, and this is also something that deserves to be recorded while there is still time.

The breadth of research and work involved in creating a complete archive of the Chinese garden requires the co-operation of a great number of scholars, enthusiasts and specialists in different disciplines, each working in their own way to build up a complete record. Naturally there is one other specialist discipline of vital importance to the recording and preservation of Chinese gardens: the art and science of fund-raising.



### BYOUNG-E YANG

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A garden can be regarded as a mirror reflecting the culture and philosophy of the people of the period when the garden was constructed. According to Korean literature, Korea has a garden history spanning 2000 years.<sup>1</sup> There is much similarity between Korean, Chinese and Japanese landscape styles since these three countries have similar cultural backgrounds. The distinctive characteristics of each evolved from the importation of the Chinese landscape style into Korea and Japan. Six criteria are employed to identify the distinctive characteristics of early Korean gardens in comparison to Chinese and Japanese gardens: the layout of the garden, the use of plants, the use of rock and stone, the use of water, architectural elements and borrowed scenery.

### CHARACTERISTICS OF KOREAN GARDENS

#### The layout

Essentially, the layouts of Chinese, Japanese and Korean gardens are based on the principle of asymmetry which was encouraged by Taoist and Zen teachings.<sup>2</sup> The Korean attitude toward nature which is characterized by harmonious adaptation to nature is well represented in the asymmetrical layout of its gardens. The layout of a traditional Korean garden is characterized by vertical division of garden space rather than horizontal division. Traditionally, the selection of a site for Korean houses is determined by geomantic principles, called *feng-sui* (derived from the Chinese *feng-shui*). According to *feng-sui*, a flat area with a steep hill in the back and a flowing stream in the front is recommended as the most ideal site for a house. Since the buildings are located on the flat area, the garden is created on the steep hill in the back. In order to overcome the steep slope of the backyard, a terraced garden was eventually developed (Plate 35). The terraced garden in the backyard is one of the typical characteristics of a traditional Korean garden, and is not found in either Japanese or Chinese gardens. In a Korean garden the observer must look up along the slope of the hill from a low position at the bottom of the garden. There are no large trees on the terraces, only flowers and shrubs, rocks and artificial elements such as chimneys.<sup>3</sup>

#### The use of plants

Korean gardeners preferred and respected the natural appearance of trees and shrubs in the garden. Shrubs and trees were never pruned or trimmed in Korean gardens since to the Korean garden designer any appearance of artifice was contrary to his belief in the harmony of all things in nature, originating in Taoist principles and *feng-shui*. The natural shape of trees and shrubs in a Korean garden is beloved by Korean poets and gardeners. The plants in a Korean traditional garden have much stronger symbolic aspects than aesthetic or functional aspects and the symbolism of the plants has influenced the selection of plants for the Korean garden. Symbolic meanings and geomantic interpretations were attached to most trees and shrubs based on their natural appearance. These concepts were related to other natural phenomena such as the changing of the seasons, the character of animals and lifeless things and famous men and women, and were described in detail in a Korean garden book, *Yanghwa Sorok* (*A Note on Ornamental Horticulture*), published in 1474. For example, the Chrysanthemum symbolized eternal life



because of its long period of flowering. On the basis of such symbolic meanings and natural appearances of garden plants, Korean gardeners gave hierarchical ranks to most of their preferred plants and grouped and classified them according to their respective ranks. Highly ranked plants as Chrysanthemum, Lotus, Japanese apricot, Bamboo and Pine-tree were preferred and seen as fundamental components of the Korean garden.<sup>4</sup>

### **The use of rock and stone**

There are three ways of using stone and rocks in a Korean garden. Firstly, to link a variety of spaces within the garden. Bridges, pathways, steps and terraces are the main stone structures designed for linking spaces.

Secondly, to delineate the space within the garden. Stone walls are mainly used for dividing the space in the garden.

Thirdly, to define and create space. Rectangular ponds and terraced gardens are defined by stone embankments and stone retaining walls. Rocks with natural shapes are used for decorating the garden space and as landmarks. Sometimes, stone artifacts with special functions are arrayed in a Korean garden as decorative elements. There are various types of stone artifacts depending on their functions and ornamentation, for instance stone pedestals, plant pots, water buckets, stone tables, decorative stones and stepping stones for horse-riding. The techniques of rock arrangement were developed mostly in Japan and Korea. But unlike the scalene triangle pattern of stone groupings in Japan, natural arrangements of stone under or between the trees without any artificial formal balance is the distinctive style of rock arrangement in Korea. In the fifth century, a typical Korean rock arrangement was built in the palace gardens of Anhak Palace in the vicinity of Pyongyang and another rock arrangement was displayed in the Anap-ji Palace in 674 AD (Plate 36), while in Japan, the first work of rock arrangement was constructed during the period of 710-729 AD.<sup>5</sup> Since Korean people believed that rocks were characterized by the presence of Gods, rocks were widely used for the worship of heaven or as a symbol for the protection of graveyards or villages. For example, animal-shaped rocks were used for a graveyard in Kaya Kingdom during the third and fourth centuries.

### **The use of water**

In contrast to the curvilinear shapes in Japanese and Chinese gardens, the shape of water containers in the Korean garden is mostly rectangular, whether a lake or a pool (Plate 37). Sometimes there are up to three circular islands with symbolic meanings in the middle of the lake or pool, but most lakes or pools have one island.<sup>6</sup> According to *feng-sui* in Korea, the rectangular shape symbolizes earth, or *Yin*, and the circular symbolizes heaven, or *Yang*. Artificially cut stones of rectangular shape are used for the embankment of rectangular ponds in Korea while naturally shaped stones and rocks or soil are used for the embankment of natural shaped ponds in Japanese and Chinese gardens. The integration of houses or pavilions into water in Korea is achieved in a typical way by setting two of the four pillars of a pavilion in a pond instead of building the pavilions beside the pond. This creates the effect that half of the pavilion appears to be floating on the water (Plate 38). Rectangular stone water containers, called the 'stone lotus pond', were substituted for a pond in case there was no room in the garden for a sizable pond.

### **Architectural elements**

Decorated walls, called 'flower patterned walls' (Plate 39), decorated chim-



neys, stone artifacts, pavilions and bridges were widely used as the architectural elements in the Korean garden. Private and public sections were divided by walls and small courtyards were created and surrounded by walls in the upper class private houses or palaces. Walls in a Korean garden were built of stone bricks or black bricks and sometimes decorated with flower patterns or Chinese characters with wishes for longevity, safety and happiness. When a wall was built on the steep slope, a terraced wall was adopted to create a rhythmical pattern. Sometimes, ornamented chimneys became a part of the wall by attaching them to the wall. Made of black bricks and roofed by the black tiles they are an essential element for the terrace garden. The decorative patterns of chimneys include ten symbols of longevity such as crane, deer, tortoise, sun, mountain, cloud, water, rock, pine tree and sacred herb, and the pictures of auspicious animals such as the dragon and the swan. In the terrace garden, the erect chimneys contrast with the horizontal lines of the terraces and serve as a landmarks in the garden.

### **Borrowed scenery**

The Korean landscape style does not incorporate borrowed scenery. In Korea, the garden itself is located in nature and the natural landscape becomes a part of the garden instead of borrowing surrounding scenery for use in the gardens.<sup>7</sup> Korean gardeners did not use the framed view to borrow outside scenery. Instead, they tried to open the view to natural scenery surrounding the pavilion or house by locating them at the visual vantage point. Voids and openness are desirable spatial qualities of the Korean pavilion. The inside of the pavilion should be as empty as possible and the view from the pavilion toward surrounding scenery must be open and as vast as possible in order not to screen or control any view from the pavilion.

## **CLASSIFICATION OF KOREAN GARDENS**

### **Palace Gardens**

#### *Philosophical background*

Korean geomancy has influenced greatly the building and siting of Korean Palaces, for example one dating from the period of the Chosun dynasty. The site with the background of Bukak mountain and the stream in the front was selected for this palace. Geomantic considerations were also taken into consideration when laying out and designing buildings and gardens of the palace. The axis of clustered buildings in the palace linked to the main axis of the mountain was chosen to follow the geomantic principles. Confucianism also regulated the traditional architecture of Korean palaces. Formal, axial and symmetrical architectural layouts were employed in the public section of the Korean palaces and all buildings were controlled by the rank and social status of the occupants. However, the layout of garden is characterized by asymmetry with a curvilinear form which expresses the Taoist ideal of beauty and so forms a striking contrast to the formal architectural tradition.

#### *The layout of garden*

The layout of a Korean palace followed the principle of 'public space in the front and private space in the back'. Korean palaces were clearly divided into two sections, one public and one private section. The buildings in the public section were located symmetrically along the linear axis while those in the private section had the characteristics of asymmetrical layout. Most of gardens were constructed in the private section rather than public section. The Korean palace garden can be divided into four areas: front garden, inner garden, back garden and annex garden. According to Korean geomantic prin-



ciples, the planting of large trees was prohibited in the front garden and the inner garden.

The terraced garden was usually built in the back garden to adapt to the steep slope of mountains or hills behind the buildings. The retaining walls in the terrace garden were constructed of rectangular stones. Small trees or shrubs were planted and several rocks and decorated chimneys were placed around the terrace.

The annex garden is always separated from the back garden by the wall. The entrance of the annex garden is linked to the back garden by means of steps. The steps in the back garden provide a rhythmical pattern for the horizontal lines created by each terrace.

The Secret Garden in Seoul is one of the typical examples of a Korean palace garden and is characterized by the harmony of the garden with the natural shapes of the surrounding mountains. Completely artificial gardens were built only in areas with limited space, and even such gardens possess elements of the natural landscape such as naturalistic streams, mountains or hills.

### **Private Villa Gardens**

#### *Philosophical background*

The Korean villa garden was greatly influenced by the paradise philosophy (called *Shinseon* philosophy). The influences of paradise philosophy on the villa garden can be found in the names of artifacts or pavilions in the garden. In order to express the desire for paradise, the artifacts or pavilions located in the Kwanghanru villa garden were named *Bangchang*, *Youngchu* and *Bongrae*, which are the names of three 'mountains of the immortals'. The paradise philosophy was also expressed by constructing a pond with three 'islands of the immortals' in the villa garden. The ancient Chinese philosophy of Taoism had influenced the Korean villa garden by emphasizing the harmony of man and nature. Most of Korean private villa gardens were built for the owner of the villa to enjoy a life of seclusion, to escape from the mundane world after his retirement from governmental positions.

#### *Location*

The sites of Korean villa gardens were chosen on the basis of the geomantic principles of *feng-sui*. According to these principles, a site with mountains in the background and a flowing stream or river in the foreground was regarded as being ideal for the construction of a villa. For example, the Wooncho villa garden in Kurye is surrounded by three mountains symbolizing the Blue Dragon, the White Tiger and the Red Phoenix, with a fourth mountain on the opposite side. The river Somchin flows in front of the garden. The most secluded and fascinating spots in mountainous regions or on islands in the sea were chosen for the sites of private villa gardens.

#### *Layout of the garden*

Water elements such as ponds, streams and rivulets are the central components of the layout of a villa garden. Usually, a rectangular-shaped pond with one or three islands is located at the center of the garden or on the main axis. One or three islands symbolize the legendary 'three mountains of the immortals'. The terraced garden was created in the villa garden to integrate the garden into the natural mountainous landscape. Private villa gardens can be divided into three sections, e.g. front garden, inner garden and back garden. The division of the garden space is based on the traditional way of life. The wife's living space, including living room, bedroom and kitchen, is separated from the husband's. The husband's living space is usually located at



the entrance of the house and the wife's living space is situated at the rear of the house. Thus the front garden belongs to the husband's space while the inner and back garden are a part of the wife's space.

#### *Plant material*

Symbolic meanings attached to the plants were important factors in selecting plant material for the villa garden. A large number of plants have symbolic meanings originating from the shape of plants, their growing habits and the relationship of the plants with famous Chinese poets. Japanese Red Pine, Bamboo, Chrysanthemum and Japanese apricot, the 'four friends of fidelity', were favorite plants in villa gardens. The Lotus, symbol of a wise man, and the Peach, symbol of paradise, were also beloved by the villa gardeners. Most of the plants in the villa garden are flowering trees or fragrant plants with the exception of Pine tree and Bamboo.

#### *Pavilion gardens*

Korean pavilions can be classified in two types: *Lu* and *Chong*. A *Lu* is larger and more luxurious than a *Chong* and has a higher floor and no separate rooms while a *Chong* has lower floor and rooms. A *Lu* was built mainly by local governors, whereas a *Chong* was built by people of various social status.<sup>8</sup> Therefore, the *Lu* is mainly used for public meetings or public entertainments while the *Chong* is used for private parties or for private living. Every pavilion has a name referring to the natural landscape or to landscape associations.

More than 2000 pavilions were built in Korea since 475 AD. The location of the pavilions was determined by rivers, streams and brooks as well as hills or mountains. About one-third of all pavilions were located on sites adjacent to water, such as rivers, the sea-side, on the bend of a river, at the junction of two rivers or on the banks of a pond. In the case of riverside pavilions, the hill nearest to the concave bank of the river-bend was selected for the site of pavilion because of the wide and spectacular view along the water. A fifth of the total number of pavilions was also located at the top of hills in order to command a good view of the surrounding scenery. Some pavilions were built in the forest or within the precincts of palaces or compounds. Openness is one of the characteristics of the pavilions (*Plate 40*). In the pavilion one can enjoy a wide and panoramic view of the surrounding scenery. The boundary of the view from the pavilion is the skyline of the surrounding mountains and forests. The middle ground of the view from the pavilion is mostly composed of field and villages. The foreground includes the river, the hill, rocks and bluffs.<sup>9</sup>

#### NOTES

1. Min, 1985.
2. Graham 1938, Inn 1940, Thacker 1979 and Oldham 1980.
3. Im 1974; Yoon 1978.
4. Kang 1474.
5. Yoon 1985.
6. Chung 1983.
7. Yoon 1983.
8. Ahn 1989.
9. Ahn 1989.



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## TWO EARLY JAPANESE GARDENS

(Dedicated to Professor Makoto Nakamura)

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Dr. Wybe Kuitert (1955) is a practising landscape architect. He has been attached to the Research Institute of Professor Makoto Nakamura, Landscape Architecture, Kyoto university (four years) and the International Research Center for Japanese Studies, Kyoto (one year). He obtained his doctorate at the Agricultural University of Wageningen in The Netherlands in 1988 with a thesis on the cultural history of Japanese garden art. Besides his work as a licensed landscape architect, he is an honorary research fellow at the Botanic Garden of the Agricultural University of Wageningen.

From 710 to 784 AD the town of Nara was the capital of Japan. This period of 74 years was uncharacteristically long. In the past the houses of the courtiers were clustered around the palace of the Emperor. With every new Emperor the palace was rebuilt on a new site and the Court followed suit. Naturally, such centres of government were not very large. In the 7th century the 'Taika Reforms' reorganized the whole political system along Chinese lines, which also implied a more permanent seat of government. Nara was the first capital city which was meant to be permanent and was a copy of the Chinese capital city Chang-an, albeit on a much smaller scale, the Chinese capital being four times as large. The streets and buildings were organized in a strict grid system, with one or more families on a square area of one *chô*, enclosed by a wall. Within these walls the main house and out-buildings were organized in a regular manner. Sometimes a garden was laid out.

The area of the old town of Nara has been reasonably well excavated and the remains of quite a few gardens have been found. It is highly probable that Chinese and Korean experts were involved in the designing and building of these early Japanese gardens. Korea as a political entity did not exist in those days and each of the three independent regions (the 'later three kingdoms'), Koguryo, Silla and Paekche, influenced early Japanese garden art independently (I Song 1982). In this respect the Korean 'landscapist' Michiko no Takumi, also known as 'the ugly artisan', should be noted. This artist from Paekche is said to have been involved with the design and building of the courtyard of the Imperial Palace in the 7th century (Kuck 1968). Much of the sophistication and elegance of Chinese culture reached Japan through Paekche. A great many plants with important associations in Chinese poetry were introduced in Japan during this period, such as the flowering plum (*Prunus mume*) and a species of bamboo with black stems (*Phyllostachys nigra*). These species and varieties were planted in gardens for their literary associations and not for their botanical or horticultural qualities (Kuitert 1988). The 8th century gardens of Nara must be considered continental gardens in style and content. This point is illustrated by the remains of two gardens in Nara which were excavated in the eighties.

The first garden discussed here was found while digging for the foundations of a new post-office (Plates 42 and 44). The spot was named *Kyuseki* or *Sakyô sanjô nibô rokutsubo*, a reference to the street-plan of ancient Nara. The most spectacular discovery was a pond in the shape of a double S. The shape of the pond was defined by a layer of stones, each about as big as a fist, on the bottom and by groups of artistically placed rocks in certain places along the edge. Evidence of a small reservoir which had been fed by the river Komogawa was found upstream. Water from the reservoir entered the pond by means of a wooden construction involving conduits and locks. The pond itself was about 15 m wide and 55 m long. It has been restored and the water-level is now 20 cm above the bottom. The remains of wooden containers were found in the stone lining of the bottom. These objects were probably used for growing aquatic plants, such as irises. The excavation also brought to light vestiges of building-piles. In the western part of the garden



there was a building in Chinese style, its eastern side looking out onto the garden. This building has been reconstructed. The pond and the building were enclosed by a wooden fence. Outside the fence stood several smaller buildings for the preparation of food and drink. It is certain that the building looking out on the garden was used as a hall for ceremonial banquets. The roof-tiles of the building are identical with those used in all the buildings of the imperial palace compound and one has the impression that the garden building was not part of a private residence of a nobleman, but rather an independent 'detached retreat' of the Imperial Court itself. The garden and its buildings are not mentioned in any written source and were probably informal in character. The water in the meandering pond flows from north to south.

The pond was probably used for *kyokusui* (or *gokusui*) parties (Narashi kyôiku iinkai 1983; Tanaka 1989). The guests of a *kyokusui* banquet were invited to sit along the banks of the winding pond. They were supposed to finish a poem before a floating cup of wine reached them (Plate 41). The Chinese calligrapher Wang Xi-Zhi (303-379 AD) inspired the tradition of the *kyokusui* banquet. On the third day of the third month in the year 353 he invited forty-one 'men of abilities' for a *kyokusui* banquet. The resulting poems were gathered in the 'Records of the Orchid Pavilion', one of the most famous anthologies of classical Chinese literature. This type of party, together with the winding stream, became part of the classical garden repertoire and there are many descriptions of such banquets in Chinese, Korean and Japanese sources. In Kyongju in Korea there is a channel cut out in granite, which is the *kyokusui* garden stream of the Poseog palace, destroyed in 927 (e.g. Kuitert 9-1988). A Chinese handbook for architecture (*Yingzhao-fashi*, 1100 AD) depicts a *liu-pei-qu* ('gutter that runs a wine-cup'), which is virtually identical to the granite channel of Poseog (Tanaka 1989). Such large granite channels have never been found in Japan, on the other hand winding streams lined with stones do not occur on the mainland. Though one should not be tempted to draw the conclusion that the Japanese liked more naturalistic shapes and that in China and Korea architectural shapes were preferred, the naturalism of this 8th century garden in Nara foreshadows later Japanese garden design. In this sense the early Nara gardens herald the beginning of a specific Japanese gardening tradition. Yet the way in which gardens were used - one of the central aspects of garden culture - was the same in Japan and on the mainland, at least where the *kyokusui*-banquets were concerned. This is one of the most important arguments for the influence of Tang dynasty garden art on Japan.

The reconstructed *Kyuseki* garden has been opened to the public and the post-office of Nara was built elsewhere.

The second garden excavated in Nara is the 8th century garden of the *Tô-in*, the Eastern Palace. This compound was a 'detached palace' in the south-eastern part of the Imperial Palace compound. The roofs of the *Tô-in* were also covered with Imperial roof-tiles. From historical sources we can infer that there were several gardens in Nara and about ten of these are known by name. The *Tô-in* is very important in this respect, as not only are there relatively many historical sources, but the site has been extremely well excavated and studied. The original lay-out of the garden can be reconstructed from the stone lining of the pond and the remains of wooden piles (Plate 43). It seems that a garden from the beginning of the 8th century was radically changed in the middle of the same century. The old garden was covered and a new garden laid out on top of it. This second garden was especially grand.



The use of stone is somewhat different than in the *Kyuseki* garden described above. Only the banks of the pond were lined with stones and these were larger. The rocks of the artistically arranged groups were also larger. A garden pavilion stood on wooden posts in the water, more or less the same as in the *Anap-ji* palace in Korea, which was built in the middle of the 7th century (I Song 1982). Though the *Anap-ji* is more than ten times larger than the *Tô-in*, the two gardens have much in common. In both the pavilion stands on the eastern edge of the pond, looking out onto the water, the architectural shapes of the building contrasting boldly with the curving lines of the pond. Both ponds contain islands, a possible reference to the Taoist symbolism of the 'islands of the immortals'. In both systems water from natural sources flows into the pond from the north-eastern corner of the garden. Both gardens are based on the same geomantic principles (I Song 1982). An important difference is the fact that in the garden of the *Tô-in* the pond is crossed by two bridges instead of one. It is known that 'the ugly artisan' Michiko no Takumi built a Chinese-style curved bridge in Japan. This bridge was built a century before that of the *Tô-in* in Nara and maybe it took a hundred years for certain aspects of garden art, filtering through Paekche, to develop into an indigenous Japanese style. Ponds with pavilions above the water and an island with one or more bridges became the dominant style in the Heian period from the 9th century (Kuitert 1988). During this period both Korea and Japan were culturally isolated from China and developed their own characteristic types of garden art. With the garden of the *Tô-in* a style of garden art was born in Japan which would become classical in the next ten centuries.

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## A SYMPOSIUM ON GARDENS

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### AN EVALUATION BY THE CHAIRMAN

The mysterious nature of gardens, which links them to deep irrational needs in the human body and soul, has been present through the very different contributions we have heard or seen projected on the screen. This has sometimes been a voyage among marvels, and we have encountered a monstrous calfs-head, a mermaid in a museum, diplomatical discussions among flowers, ostriches pedalling water-systems, a flower compared to the anus of a mule, and a procession of gardeners carrying models of Ottoman gardens.

On the other hand this has been a scientific symposium as befits the University of Leiden. Serious research was presented, and will only show its full importance when the Proceedings are published. I will allow myself a general observation on the state of scientific research in the field of gardens. During the symposium, which after all was an experiment, several myths still circulating as common knowledge in reference works and popular articles about garden history, have been exploded.

For instance, the certainty with which the Crusades are made to look so important in the mythical history of plant diffusion has to be questioned. The role of the Byzantine empire in the introduction of the ideas of Dioscorides in Spain has been highlighted and the general role of this empire in the continuity of garden history is enhanced by several contributions. The specific cultural conditions in Mesopotamia and around Sevilla in Moorish Spain have been clarified. The role of monasteries and rich landowning families have been invoked and the importance of the Jewish expert as a go-between among centres of Islamic, Byzantine and European knowledge of botany and gardening, has been established.<sup>1</sup> Ideas about the flow of information and plant material have been criticized. Sometimes information flows in one direction only, whereas in the next century it can change direction, often it does not flow at all and sometimes it flows but is not utilized. The all too easy assumption that poetry in Arabic, Persian or Greek reflects specific gardens, regions or even reality has been undermined. A tremendous amount of work still remains to be done if garden history is to be lifted out of the vague dilettantism that still bedevils it.

However, one can be more optimistic after this symposium than before. It appears after all, that much can be discovered about gardens quite far away in time. The specialist, limiting himself to philology or to agronomics, to architecture or botany, may despair of finding enough evidence to reach conclusions. But by pooling the evidence from the many disciplines present at our symposium, one may arrive relatively quickly at a much clearer understanding of what really happened. Indeed one of the reasons why sometimes little progress is made in garden history and that myths have to be taken for granted, lies in this lack of interdisciplinary cooperation. One should set up relatively small projects, preferably centred on specific themes or even specific gardens, try to pool all evidence available and publish the results. A systematic programme of efforts on such a small scale could over a ten year period already greatly advance our stock of knowledge. I need not say that this in itself will not be easy, that an endeavour to spend time on what to some may still seem a peripheral subject, intellectually and financially, cannot be taken for granted. On the other hand it is always dangerous in



scientific research to marginalize a subject, as clear insights on central issues may suddenly be the result of marginal research.

Turning to the history of gardens, I would like to share with you a few impressions of this symposium. One is the great age and continuity of development. In general, research into the history of mankind is pushing back the beginning of certain developments, like that of languages or agriculture, by hundreds or thousands of years. This is certainly true of gardening. Many developments are not as recent as thought before. If all the available evidence from different disciplines on the diffusion of species and cultivars, of garden lore and horticultural techniques, of water-systems and architectural forms, of institutions and legal and religious systems of gardens could be linked historically, this would probably shift our picture of history significantly. Though the garden itself is a living thing and thus mortal, as I said in my opening address, garden culture is an ancient and continuous, albeit little researched, development.

It is also clear that not only Eurocentrism, but any kind of centrism in the description of the routes travelled by the garden in history will simply not do. The idea that a plant or a technique was always introduced one-sidedly with a receiver and a sender, is misleading. Cultures have not only been linked through barter and commerce since prehistory, but also through the exchange of ideas and skills. This symposium clearly shows the two-way character of garden development. One hopes that a world history of gardens, without nationalist overtones will once be written. This global history should however be firmly based on local facts.

There is another conclusion that I would like to share with you. The return to the centuries before 1600 has been a liberating experience. Especially to me as a European about to become a citizen of the European community. In those days there were no small states that were able to dictate a homogeneous language, religion, or concept of history. One experienced a feeling of moving on a grand cultural scale. We encountered networks between learned people and garden enthusiasts that would quite naturally extend across boundaries. A man from the Southern Netherlands creating gardens in Vienna and in Leiden. A Fleming at Pisa, shedding his Dutch name for Casabona. Others in Aranjuez.

There also was the experience of richness. The omnipresence of modern culture had not yet effaced the great differences between local cultures. Many plants were still in cultivation that have now been devaluated or forgotten or become extinct. From China to the Islamic world to Europe the Red Salvia (*Salvia splendens*) nowadays reigns supreme. But who has written an Ode to the Salvia?

Another impression: that of physical space. The enormous pressure on the quality of culture that the population explosion is having today was still absent. Nature, the garden and culture were not yet in deadly competition with economic development and city planning.

Where do we proceed from here?

I think the first priority would be to see ourselves not as participant in a temporary cultural event, but as members of an international network that will continue to exist through our work. This could be done if the present company would coagulate around certain projects as a follow up of this symposium. The Clusius Foundation, together with the ICOMOS committee on historical gardens could try to relay information, and perhaps help in finding sponsors to finance the projects.

This symposium suggested the following projects:



- 1: the establishment of an authoritative list of pre-Linnaean plant-names, especially those used in the 16th century in Europe, based on the work done in the reconstruction of the Clusius garden. If properly prepared, this list could be established in one or two sessions of a workshop of about a half a dozen people.
- 2: a small expedition to Crete by Leiden and Pisa, to collect living plants and seeds such as gathered by Casabona, for instance.
- 3: an edition of the letters of Clusius.
- 4: a complete description by different disciplines of all the known Moorish gardens of Andalusia.
- 5: a systematic study of the diffusion of garden expertise in the Mediterranean area between 1000 and 1500 based on the movement of transmitters (people) and the transmitted (books, and information).
- 6: a monograph and workshop on the missing link in garden history of the sixteenth century: the Southern Netherlands, especially in its contacts with Vienna, Spain and Italy.
- 7: a complete description from various disciplines of Ottoman gardens.
- 8: a proposal of a series of Islamic gardens to be documented and put on the World Heritage List.
- 9: a monograph by various disciplines about the ancient Japanese and Korean gardens that would shed light on *Tang*, *Sung* or *Ming* gardens in China.
- 10: a symposium in two years time on historical gardens in Eastern Europe.
- 11: audiovisual records of Chinese gardens.
- 12: a workshop on the methodology of restoring ancient historical gardens, based on a series of exemplary projects.

You may have other proposals. If you keep the Clusius Foundation informed it will see to it that these proposals will be transmitted to the right authorities. Moreover it is essential that the results are published comprehensively as future source books. The Dumbarton Oaks publications have set a standard in this respect.

But it is surely not enough to document the past, one should also revive it, where this is feasible and worthwhile. This would of course require sufficient knowledge, good will and resources.

It is very important that adequate legal protection is provided, especially in the form of zoning in landscaping and city planning. It is also important that bodies are set up with the necessary expertise in restoration and gardening to carry out projects and guarantee the authenticity of a garden. Simple technical and relatively cheap modern solutions should be found to return water to the gardens, to provide the necessary plant material etc. The botanical collections have a role to play, also in the survival of ancient cultivars.

Several speakers have made suggestions based on practical experience. Some international codification of these practices has already occurred, such as the Florence Declaration and the World Heritage Convention. But more renovations or reconstructions are needed that could serve as models and examples.

We called this symposium *The Authentic Garden*, because we thought the garden could profit from analytical knowledge about its original form and its roots. We also called it authentic because we were convinced that the garden was more than its parts, and that a true garden, an authentic garden, is only genuine if it reaches out beyond itself towards something more profound. During the whole symposium the idea of the garden as a meeting-place be-



tween nature and culture has been present. Gardens link science to beauty, the material to the spiritual, nature to the ideal, illusion to reality. The garden unifies mankind and at the same time makes us marvel about him. Sometimes our lecturers made me think that they themselves were like the Ottoman garden guilds proudly parading their garden models. Before closing this session I would like to thank first those institutions that made this meeting possible, financially and otherwise. Secondly I wish to thank those invisible hands which made these days run so smoothly, which were present to receive us when we arrived somewhere and, last but not least, which placed many beautiful flowers wherever we went.

#### NOTES

1. We regret to say that the lecture of Dr. S. van Koningsveld on the subject has not been included in this volume.



















