

O 33. WINTER GARDENS

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ABSTRACT: The term of winter garden winter gardens has started to emerge with the increase in construction and the gradual decrease in our ability to touch nature. Winter gardens are an important opportunity to reduce the stress and fatigue brought about by intense living conditions. It will be easier for us to increase morale and motivation in our lives with winter gardens. Within the scope of this study, information will be given about the meaning, importance, design criteria, styles of winter gardens, and place selection in winter gardens. In addition, information about plants that can be used in winter gardens will be given and sample winter garden visuals will be included.

Keywords: *Landscape, Winter plants, Greenhouse*

INTRODUCTION

Winter gardens can have a design associated with not only hobby spaces, greenhouses, but also living and resting rooms. Winter gardens, which are mostly seen in houses, are intertwined with sitting groups. The reason for this is the desire to spend time in nature (Gülgün et al., 2014; Yazici et al., 2018). Winter gardens built with the aim of hobby gardens and greenhouse cultivation are more functional applications in terms of land use. It often appears as designs that are directly linked to the home (main building). Most of the winter gardens designed independently from the main building function as greenhouses and hobby gardens. One of the most basic features of winter gardens is that it takes the light directly into the space. Thus, while providing the light that plants need, it protects the environment from adverse weather conditions outside.

Winter gardens are a type of garden that allows people to approach nature in all seasons, where we can enjoy open air during the summer and spring months and communicate with the environment during the winter months. Glasses used instead of walls in winter gardens bring the house and people together with the garden and provide psychological relaxation by being together with the nature, which is the essence of the human being. At the same time, winter gardens, where you can spend pleasant time with the family, provide great comfort to family life.

WINTER GARDEN

The winter garden is a living space that is located between the house and the garden, created in order to live the garden and green feeling in cold seasons and to protect the plants from the cold, more than one third of the roof area and more than half of the side surfaces are made of transparent material. These places have emerged as a combination of people's desire to benefit from solar energy and be in touch with nature. Winter gardens are places where the aesthetic and recreational needs of people and the functional use of the sun are provided (Özkır, 2004).

Winter gardens protect plants and green tissue from the negative effects caused by external effects and are transparent spaces whose basic material is glass, transparent plastic, etc., which aims to carry the green texture that human beings always need to the interior. (Durmus, 2006).

Winter gardens, which were designed to protect plants that are not resistant to cold in previous years, have now become a part of the interior and are designed as different areas of use.

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HISTORICAL PROCESS OF WINTER GARDENS

Winter gardens first emerged in Europe with the desire to grow various plants in times and places without season and climate. The first reason for this phenomenon to occur is to create an artificial environment for plants and keep them alive in different seasons. Early winter gardens created for this purpose are found in Greece in the 5th century before Christ. The gardens called "Garden of Adonis", designed to keep plants alive in all seasons, are regarded as the first winter gardens. After the 16th century, winter gardens have become an increasingly important place, especially in France. The search for new solutions in order to grow vegetables and fruits that are not out of season in all seasons has enabled the design of ovens that will guide today's greenhouses. These cellars, which were developed to be able to grow all kinds of flowers and plants in all seasons before winter gardens and buried in the ground, are called "ovens", which are considered the ancestors of today's greenhouses. The first of the ovens developed for this purpose was built in 1624 in the garden of Versailles Palace, in cellars buried in the ground. (Durmus, 2006).

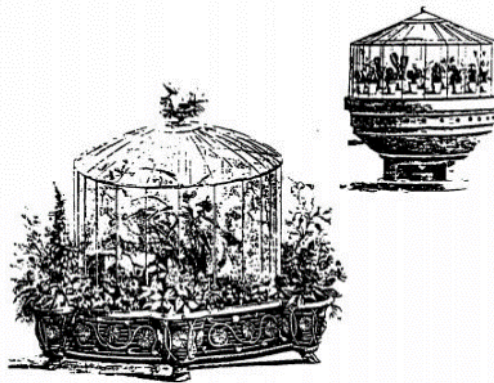


Figure 1. (Uysal,1997)

In the 19th century, winter gardens began to be used in daily life as a symbol of luxury life and associated with housing, as well as plant growing activity. With the advancement of technology, winter gardens of various types and characteristics, adjacent to the building or serving different purposes of use, started to be created. Winter gardens are not limited to private residences, but are built for most of the public. The first large conservatory was built in Regent's Park in London in 1842–46 and was used in the evenings, large flower shows and social gatherings. Other winter gardens, such as Sir Joseph Paxton's Crystal Palace in 1851, were soon built and used for various purposes. (Arik, 2020).

The Emergence and Development of Modern Conservatories

With the industrial revolution, important progress has been made in the field of winter gardens, as in all areas of the building sector. The materials used in the construction of the winter gardens have begun to change, and new roof systems have been developed, which are stronger than the old construction systems. Walls were built on certain parts of the building to cut off excess light. Ventilation systems have been developed in the ceilings in order to eliminate the dirty air created in the interior. The ventilation in the summer months was provided through the windows opening to the exterior, as before. The history of winter gardens, which first appeared as conservatories in Europe, dates back to the 17-18th centuries. One of these examples is the former headquarters of the Worcester Horticultural Society, the "Tower Hill" botanical garden in Boylston, Massachusetts, which was incorporated in 1842.



Figure 2. CrystalPalace inside view

One of the most important examples of the 9th century is the Crystal Palace structure, which was designed by architect Joseph Paxton in 1851 in the Sydenham region. It is a structure that has gone beyond its period in terms of technology and technical details.

The Emergence and Development of Winter Gardens in Turkish Society

The application of winter gardens started in the first half of the 19th century in the Ottoman Empire. The purpose of use of the buildings, which were originally built to grow plants, has changed over time. The first known example of winter gardens in the Ottoman Empire is the "Limonluk (Lemon Garden)" in the Maslak Pavilions.



Figure 3. Maslak Pavilion and Lemon Garden

WINTER GARDEN STYLES

Winter gardens should be in harmony with the architectural style of the main building and integrate with that building, whether as an extension of an existing building or independent of the existing building. Macro and micro climate, main existing structure and budget are the main factors that are effective in choosing the place of the winter garden, creating its form and determining the materials to be used. (Özkır, 2004).

In group arrangements, the relations of the plants with each other should be compatible and in accordance with the basic design principles. A hierarchy of measurements should be made between tall plants and groundcovers. It should not be forgotten that the size of the plant will change over time. If a permanent effect is desired, mature plants should be used in the design. Plants that are not fragrant reduce the aesthetic value of the environment. Plants can be evaluated as an architectural element such as roof, ceiling, wall and barrier in the interior by using their properties such as volume, texture and color. When it is aimed to give the feeling of closedness in the space, the plants in round form should be placed in a way to enclose and define the space (Arık, 2020).

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Victorian Style

Victorian-style winter gardens have a polygonal architecture rather than the usual rectangular living spaces. It adds a very romantic atmosphere to homes and gardens. It has glass roofs and windows, unlike the systems made by building walls from bricks.



Figure 4. Victorian Style Winter Garden (Url 1)

Nordic Style

The minimalist style that dominates the decoration of Scandinavian countries can be easily reflected in the design of winter gardens. A warm atmosphere can be added to winter gardens by taking an idea from the Scandinavian lifestyle Hygge, which is based on creating a comfortable space in homes especially on winter days.



Figure 5. Scandinavian Style Winter Garden (Url 1)

Modern Style

If the patio or terrace of the houses is covered, it is a very easy process to turn these areas into a winter garden. By choosing any of the closed balcony systems, the sides opening to the exterior facades can be closed practically. This winter garden design, which is frequently encountered in modern architecture, gives the feeling of continuation of the houses and helps to capture an intimate atmosphere.



Figure 6. Modern Style Winter Garden (Url 1)

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AIM AND DESIGN CRITERIA OF WINTER GARDENS

Today, winter gardens appear in various forms and purposes due to the development of technology and the diversity of human needs. Winter gardens can be designed either by adding them to the buildings later or during the formation phase of the building. Winter gardens can be applied in various shapes, various colors and for various purposes depending on the user needs and flexibility of use. This differentiation of winter gardens creates the need for an arrangement according to the place where it will be constructed rather than the building. (Durmus, 2006).

Form Criteria in Winter Garden Design

- Goal
- Aesthetic
- Building and roof harmony
- Harmony with the garden
- Heading to the landscape
- Wind
- Non-residential location
- The angle the sun's rays make with the roof
- Harmony with the residential environment
- Accessibility from the house and garden
- Durability
- Permanence
- Light transmission, appears with the above titles.

Winter Garden Approaches in Terms of Location Selection

Winter gardens can be set up in very different places and directions in terms of location. They can be located on the north-southeast-west facades of the building, or they can be positioned separately from the building at the entrance of the building, on a flat roof in the building, in a space setting in the building, on open terraces or balconies, in the garden. Many factors should be taken into consideration when choosing a place inside or outside the building for the winter gardens. Some of these factors are the level of light reception, availability of the winter garden, aesthetics, external air balance, regulation of heat loss, lighting of the building. (Durmus, 2006).

Winter Gardens Outside the Building

Winter gardens located separately from the building are not as useful and advantageous as the spaces built inside the building or adjacent to the building. As a matter of fact, winter gardens positioned separately from the building do not provide any benefit to the heating and enlightenment of the building. (Durmus, 2006).



Figure 7. Outdoor Winter Garden (Url 2)

Winter Gardens Inside the Building

Winter gardens are frequently implemented within the building. Independent spaces can be allocated to winter gardens within the building, both in living spaces, on balconies and in roof spaces.

Winter Garden as a Living and Recreation Space

Living spaces where glass is used abundantly and where daylight penetrates too much are more relaxing and useful than other conventional forms. The ventilation of winter gardens used in living spaces is provided through doors and windows. Natural materials are used to make the floors simple and natural. For example, tiles or carpets are used on floors. Along with these, many other flooring materials such as ceramic, stone, rubber or wicker are also found. In order to ensure naturalness in furniture, we focus on fabric-covered furniture as well as wood, iron, plastic, wicker or bamboo furniture. (Harding, 1995).



Figure 8. Winter Garden as a Living Space (Url 3)

Winter Garden as a Bath and Sleeping Space

Usually, the sleeping area and the bathroom are designed as a whole or arranged in the last floors or penthouses of private residences by providing a terrace or a hall passage in between. Frosted or filmed glass, stained glass or glass bricks are used to ensure privacy on the facades in cases where the bathroom and the sleeping area are designed one within the other. (Durmus, 2006).



Figure 9. Winter Garden as a Bedroom (Url 4; Url 5)

Winter Garden as a Working Space

The basic elements to be considered in a winter garden to be built as a working space; It is the creation of a useful and spacious environment for the daylight to illuminate the space correctly and adequately, creating an efficient and comfortable working environment. In winter gardens to be built in places where

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daylight is not sufficient, sufficient light level should be provided by using artificial lighting elements. In addition, in order to control the natural light entering the space, roller blinds, frosted glasses or film-drawn glasses can be used. In these spaces, flooring and wall materials are as important as light. (Durmus, 2006).



Figure 10. Winter Garden as a Working Space (Url 6)

Winter Garden as a Kitchen

By designing the kitchens as winter gardens, it is possible to make use of the interior space with more daylight. Thus, integrity is created between the interior and the exterior. While designing such a space, certain criteria should be taken into account as in other spaces. One of the most important of these is the cleaning of bad odors and dirty air that may occur indoors. While hoods or aspirators can be used in some places, this problem can be solved with doors and windows with a fan or natural ventilation method in others. (Durmuş, 2006).



Figure 11. Winter Garden as a Kitchen (Url 1)

Winter Garden as a Swimming Pool

The fact that the pool is located in the winter garden ensures that this pool can be used in four seasons. Winter gardens are ideal places to use the swimming pool in all seasons in cold climates or regions with less hot months. Swimming pools can be designed within the building or independently from the building, together with the winter gardens. The most important factor in these spaces is the choice of material to be used in the flooring. Moisture resistant, non-slippery flooring materials should be chosen around the pool. (Durmuş, 2006).



Figure 12 (Url 7)

Winter Gardens on the Balcony of the Building

The most important feature of winter gardens in balconies is that they can be solved and used more easily in multi-storey buildings. When the winter garden resolved on the balcony is associated with the kitchen or dining room, it becomes more advantageous in terms of usage and functionality. (Durmus, 2006).



Figure 13. Winter Garden on the Balcony of the Building (Url 8)

PLANTS THAT CAN BE USED IN WINTER GARDENS

While deciding on the use of plants in winter gardens, basic design principles should be used. The plant's measure, shape, texture, color, line, sequence, rhythm, balance, emphasis, composition and harmony features should be used appropriately (Arik, 2020). It should create a composition with the color of the plant material, surrounding elements (wall color, pattern, furniture, etc.) and the color of the plant container. Color selection should be made to strengthen the desired effect in the space (Arik, 2020).

Provided the appropriate environment is provided, it is possible to keep every plant alive in the winter garden. However, attention should be paid to plant selection. Fast growing and very tall plant species should be avoided. Stinging and poisonous plants should not be preferred in environments where children and pets are present.

The horizontal form plants to be used in the area where the winter garden is created are effective in gaining width, and vertical form plants are effective in gaining height. If the purpose of use is to create a more intimate and dark environment; They may prefer round-shaped plants that will completely surround the space. If there is a winter garden adjacent to a roof, terrace or another space, screening can be made by using tall plants frequently. If there are too many tall structures around the building, using dangling types in the area will help to make the height effect slightly less felt.

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Of course, personal preferences will come to the fore in plant selection. However, obtaining an effective and aesthetic appearance depends on the harmony of the plants and the demands of the environment. For example; Those who want a humid environment and those who want a dry environment should not be used together. Based on this, plants that can be used in winter gardens; Temperate Climate Plants, Humid Tropical Climate Plants, Arid Tropical Climate Plants were examined in three groups. (Beyde, 2016)

Winter Garden Temperate Climatic Plants

In this winter garden, the heating system is adjusted so that the temperature inside the garden does not fall below 0 C. When choosing plants, cold-resistant plants are used. Broad-leaved plants and palm species that do not require warmth in winter can be used in these gardens to increase the visuality and create a tropical effect. Some plant species that can be used in temperate winter gardens

Winter Garden Humid Tropical Climate Plants

In this winter garden, the heating system must be absolutely necessary. Tropical and subtropical plants can be used easily. Since the plants to be used here are species sensitive to cold, the garden temperature should not fall below 10 C. Humidity compatibility and air circulation are very important in these types of gardens. While preparing the planting soil, in addition to the peat and pumice stone, fertilizers rich in organic matter and leaf rot should be added to the mortar.



Figure 14. Wet Tropical Climate Plants (Beyde, 2016)

Dry Tropical Climate Plants

In the construction of this type of winter garden, plants and cacti that are extremely sensitive to water, low-maintenance, succulent, are used. There is very little irrigation in the garden, especially in winter. Humidity is the biggest enemy for dry garden plants. Therefore, attention should be paid to ventilation and air circulation. It is desired that the temperature does not fall below 10 C. Thorny plants to be used here may pose a danger to children or pets (Beyde, 2016). Therefore, plant selection should be made according to those who will use the living space. While preparing the planting soil in this garden, peat, fertilizers rich in organic matter and pumice stone should be mixed as well as sand as much as ½ of the mortar. While establishing the winter garden, it should be designed to make the best use of the sun. It should not be forgotten that the plants to be used here require a lot of sunlight. (Beyde, 2016)

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Figure 15. Dry Tropical Climate Plants (Beyde, 2016)



Figure 16. Dry Tropical Climate Plants (Beyde, 2016)

WINTER GARDEN SAMPLE FIGURES



Figure 17. Winter Garden Sample Figures (Url 9: Ur 10).

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Figure 18. Winter Garden Sample Figures (Url 11: Ur 12).

CONCLUSION AND RECOMMENDATIONS

We started to hear the term winter gardens more frequently with the increase in construction and the decrease in our ability to touch nature. Especially in big cities; We spend it among the crowd, in the shade of the buildings and among the green space that is decreasing every day.

In order to relieve the **stress and fatigue** brought about by this busy life, winter gardens, which we can design according to our own taste and usage needs, come to our aid and add a quality living space to our lives. Together with the winter gardens, we can add **motivation and energy** to our daily life, and we can combine plants suitable for our taste with the decoration of our dreams. (Selek, 2020)

The most important feature of the winter garden is that all environmental conditions are controlled by people. In recent years, climate-regulating and heating aspects of winter gardens have also come to the fore. Lighting has been one of the solution methods in maintaining the balance between heating and ventilation in living spaces, arrangements suitable for these purposes have gained importance and various techniques have been developed. (Durmuş, 2006; Ankaya et al., 2018).

The use of winter gardens in buildings has a relaxing and relaxing effect. Winter gardens have been relaxing and peaceful for people with the green colors of the plants they contain. Natural light in these structures, on the other hand, provides a more balanced development of people and the order of their mental health as it is the strongest force in nature. In addition to regulating the physiologic and psychological health of people, winter gardens do not create environmental and energy problems with their limited energy use. In today's world where zero energy consuming buildings are designed, winter gardens have become places that cannot be ignored in terms of storing solar heat and preserving building heat. (Durmuş, 2006).

When all these researches are considered; Winter gardens are places that are in every person's dream, making them feel happy and peaceful when they think about themselves. Even if people are in their own homes, they need a private space where they want to be alone and rest their heads. Winter gardens are a good alternative for this special area.

The plants considered and selected for this alternative, as well as let people breathe, instill a sense of inner relaxation with the peace of the green color.

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