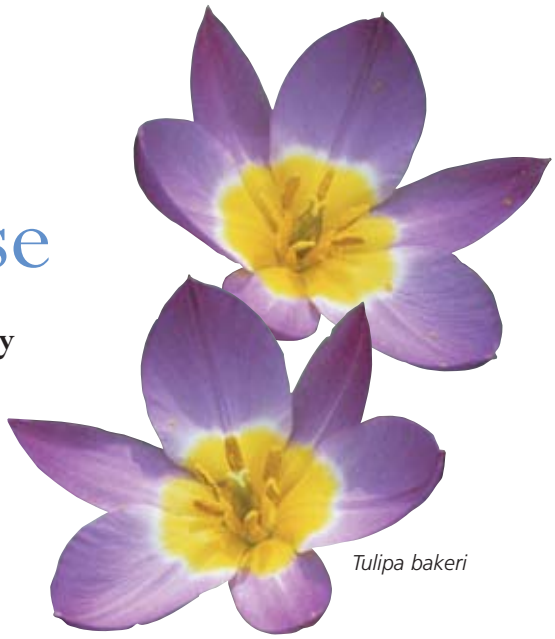
PLANTS PEOPLE
POSSIBILITIES



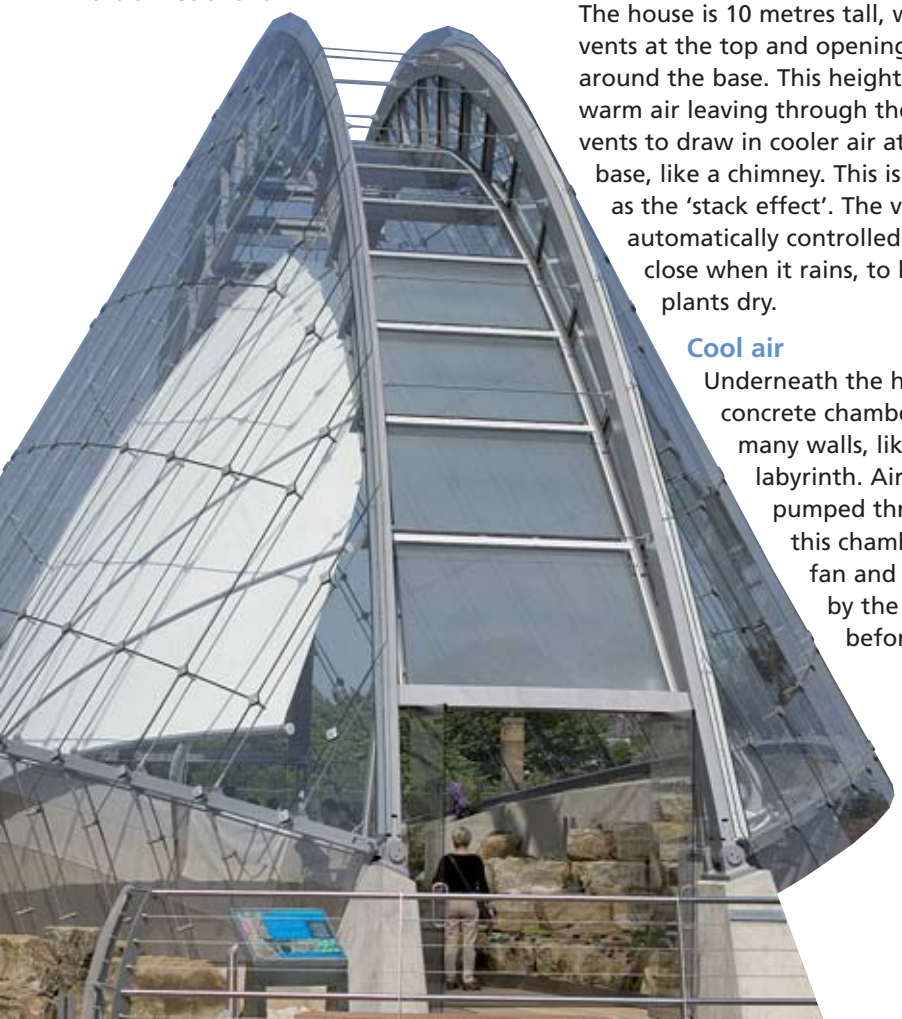
Tulipa bakeri

The Davies Alpine House

The Davies Alpine House opened in March 2006. Designed by Wilkinson Eyre Architects, this building provides a suitable home for the display of Kew's collections of mountain plants and bulbs. Although a small building, its elegant style and imposing shape continues the tradition of great glasshouse design at Kew. In June 2006, the Davies Alpine House received an award from the Royal Institute of British Architects (RIBA).

Form and function

The Davies Alpine House is designed to provide the conditions required for the successful cultivation of alpine plants. Its primary function is to protect the plants from rain, particularly in winter when in their natural habitat all water is frozen so they are kept dry, often buried under a blanket of snow.



Unlike most glasshouses, an alpine house is not designed to keep plants warm. Alpines like cool conditions so this house has several features that keep temperatures down, especially in summer.

Ventilation

To avoid a build up of heat inside the glasshouse, constant air movement through the building is important. The house is 10 metres tall, with vents at the top and openings around the base. This height causes warm air leaving through the upper vents to draw in cooler air at the base, like a chimney. This is known as the 'stack effect'. The vents are automatically controlled and close when it rains, to keep the plants dry.

Cool air

Underneath the house is a concrete chamber with many walls, like a labyrinth. Air is pumped through this chamber by a fan and cooled by the concrete before being blown over the plants via the stainless steel tubes around the inside edge of the house. This creates a pool of cool air at plant level, without the need for air conditioning. The air movement over the plants is also beneficial, driving away surface moisture that can encourage fungal diseases.

Shading

On a hot, sunny day, temperatures can still rise dramatically inside the glasshouse so a system of blinds shade the sun to keep the plants cool. There are fan-like blinds on the east and west sides of the house, to shade the morning and afternoon sun. The glasshouse is aligned north-south, to minimise the effect of the strong midday sun, which only shines on its narrowest face.

Light

In winter, when days are short and light levels low, the plants in this glasshouse need as much light as possible to reduce soft, weak growth. The 12mm thick, laminated glass has a low iron content, allowing over 90% light transmission. In addition, lamps suspended above the plants boost light levels on dull winter days.

Alpine house plants

Plants are grown in an alpine house to protect them from rain. For high altitude alpines this is important in winter, when water is frozen in their natural home. In spring, when the ice melts, they have plenty of water and burst into growth. These plants live in mountain ranges all over the world, including the Alps, the Himalaya, the Rocky Mountains of North America, the Andes of South America and the Southern Alps of New Zealand. Not all alpines grow at high altitudes. Towards the North and South Poles, alpines can be found near sea level, in northern Norway for example or southern Chile.

Plants from the hills and mountains around the Mediterranean Sea are used to long, dry summers so need protection from rain at this time. Other parts of the world have a similar climate, including California, parts of South Africa and central Chile. These regions are rich in bulbous plants, such as *Narcissus*, *Tulipa*, *Fritillaria*, *Calochortus* and *Gladiolus*.

Spring colour inside the glasshouse

Alpine plants have evolved to cope with freezing temperatures, drying winds, high light levels and poor soils. Many form a mat or a rounded, cushion shape that exposes the minimum surface area to harsh conditions. Examples include the compact domes of *Dionysia*, *Androsace* and *Draba*. These domes are composed of hundreds of tiny leaf rosettes, and they are often covered with flowers in spring.

Alpines often have large, colourful flowers to attract pollinators in the short summers. It may be only a few weeks before the snow returns, and they have to flower and set seed before then. Pollinators may be few and far between at high altitudes so the plants have to advertise themselves if they are going to reproduce. Alpine species of bellflower (*Campanula*), gentian (*Gentiana*), and pasque flower (*Pulsatilla*) often have surprisingly large blooms.

Some plants grown in the Davies Alpine House are from the wooded lower slopes of mountains. These include the intriguing arisaemas, with their hooded spathes, colourful lilies (*Lilium*) and the unusual *Roscoea* species, which are in the ginger family.

The landscape

The rocks inside the Davies Alpine House are Sussex sandstone, which is porous, water retentive and cool. They were salvaged from the previous alpine house, which closed in 2004, and are the same as in the surrounding Rock Garden.

Much of the internal landscape is planted but two beds in the centre of the house, on either side of the path, are used to display plants in pots. The pots are sunk in sand and mulched with grit. At either end of the glasshouse are benches that are used to display alpines in freestanding pots. These displays are constantly changed as new plants come into bloom. They ensure that there is always something to see in flower. There are around 250 permanent plants but the number put on display throughout the year is far greater.

To find out more information about the Davies Alpine House and Kew's alpine collection you can visit the touchscreens outside the glasshouse or go to www.kew.org

Saxifraga × *apiculata*

Ptilotus manglesii

Iris afghanica

Pulsatilla halleri var. *segusiana*

ROYAL BOTANIC GARDENS KEW

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