photograph © Owen Johnson

Trees for the future

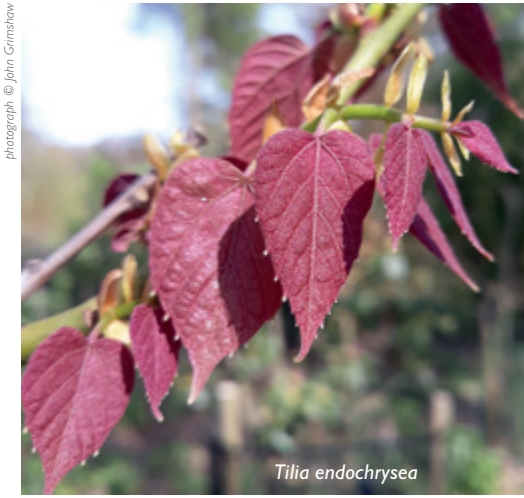
On 17 October 2019, a study day was held in London, looking at which species could be planted in the years to come as climate changes. **HARRIET TUPPER** reports on the lessons of the day.

Bute Park, Cardiff, is Britain's most diversely planted public park, and shows some of the benefits of planting trees in huge variety.

The lecture room at the Chelsea Physic Garden was packed and it was good to see the crowd included some of our younger, professional members on whom trees in the future will depend, even if we all, young and old, are planting.

The day was planned on the assumption that climate change will affect at least some of the trees that we have been growing. There was no discussion or presentation on what climate change actually is or what might happen. I think there was a general assumption that it means the average temperature will rise but I did not hear any comment on weather patterns becoming more extreme. For a long time now we have been told that we will be planting Mediterranean plants but these generally need fairly dry conditions. In fact while dry spells may be longer and drier, wet spells can be much more extreme too. This makes it much less clear which trees may do well in the future. One point that was mentioned by John Grimshaw is that if the current pattern of change continues, it may reverse the Gulf Stream which has already slowed down causing storms in Europe to be more severe. (*10 New Insights in Climate Science 2018* published for the Katowice climate summit in Poland, amongst other research documents). If the Gulf Stream is reversed, then instead of getting warmer, we will be getting colder and all those gardens on the west coast of the UK which currently can grow plants that are tender elsewhere, will be hard hit.

John Grimshaw, Director of the Yorkshire Arboretum and Editor of *Trees and Shrubs Online*, kicked off the morning showing us examples of trees now doing well in London. Avocados (*Persea americana*) can be found in several places and olives are a popular choice. He recommended Juglandaceae such as *Carya* species, *Juglans nigra* and in particular *Pterocarya macroptera* var. *insignis*. John showed us conifers that are thriving surprisingly well such as *Callitris oblonga* from Australia, very happy in the Yorkshire Arboretum, and spoke about some of the species doing well in Ray Wood, also in Yorkshire such as *Abies duangensis* and *Magnolia sapaensis*. Beech and birch meanwhile become stressed in hot or dry conditions and we were advised to try *Fagus orientalis* and *Betula kweichowensis* both subspecies *kweichowensis* and *fansipanensis* instead. He provided a hand-out with a list of trees and emphasised how important it is to get these trees out and in use, not just to grow them in collections. He then made the point that we need to grow *big* trees not just small and medium ones.



photograph © John Grimshaw

Tilia endochrysea

Unfortunately simultaneously with climate change has come an influx of pests and diseases, sped on their way by increasing globalisation. People and goods travel further and faster, and the bugs and bacteria

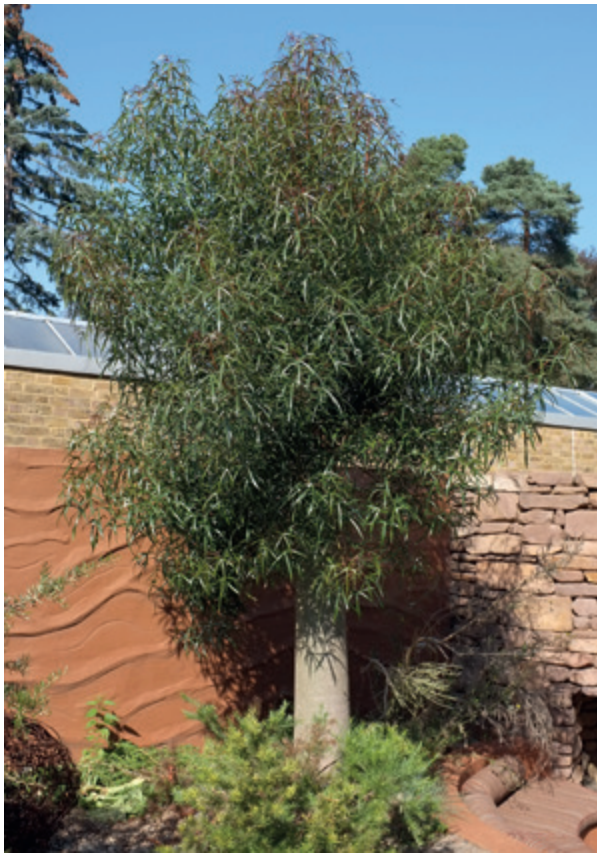
photograph © John Grimshaw

Pterocarya macroptera var. *insignis*, re-introduced from China in the 1990s, has spectacular infructescences and lacks suckers; it is fast-growing and appears to adapt to diverse conditions. This is an ornamental tree with potential for the future. (See pages 202 to 209).

travel with them, for example Asian longhorn beetles have arrived on pallets bringing goods in. *Xylella fastidiosa* is a disease affecting a wide range of plants, most notably olive trees. It has ravaged southern Italy and trees have to be felled to avoid spread. So far it has not been detected in the UK but could easily creep in given the trade in plants and the fashion for olive trees. We need to look for species that are resistant. For example, *Ulmus* 'Nanguen' is resistant

photograph © John Grimshaw

Carya ovata growing at the Yorkshire Arboretum, planted in 1979. Colouring spectacularly in autumn it could be planted more extensively.

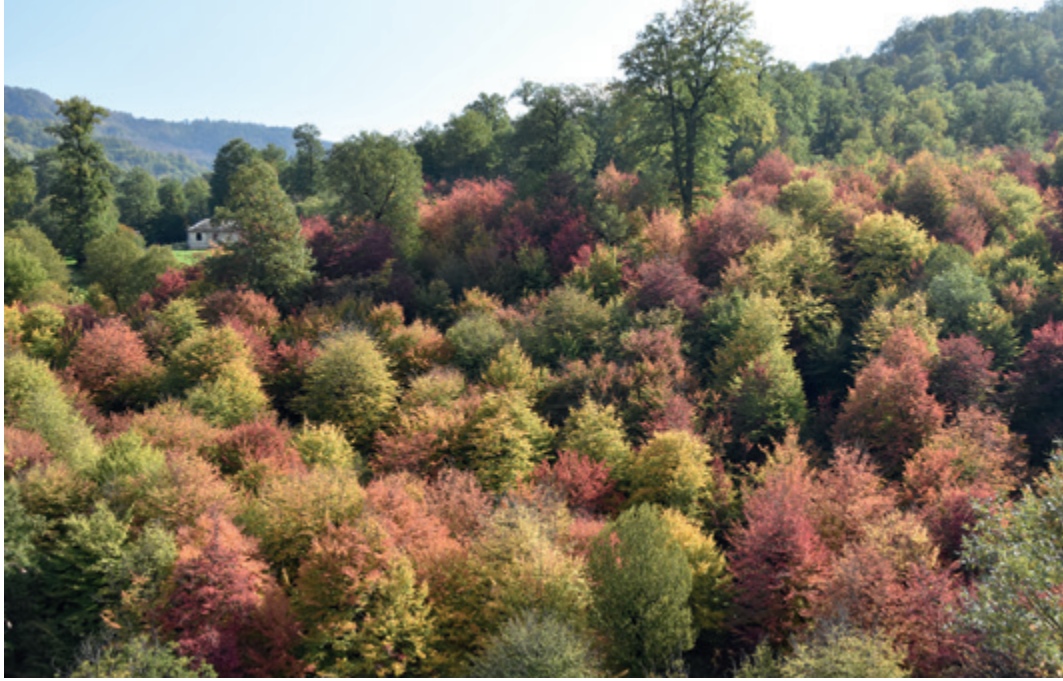


photograph © Owen Johnson

Brachychiton rupestris at Capel Manor, a real long-shot but apparently making a success of it: planted out in the northern fringes of London after featuring in a Chelsea Flower Show garden in 2011, and photographed a couple of months after 'the Beast from the East' in 2018.

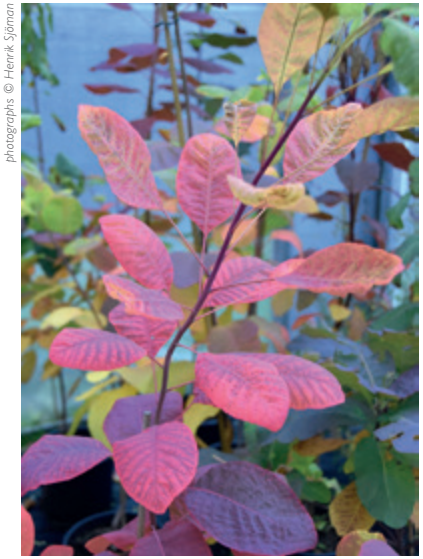
to elm disease but *Ulmus glabra* is not. With pines, five needle pines seem to be resistant to red needle blight but others are susceptible. John's message was that we should all aim for diversity, to experiment with what may thrive and to reduce the chance of being affected by pests and diseases.

Our next speaker was **Dr Henrik Sjöman** who trained as a landscape architect and is now a Professor teaching and researching at the Swedish University of Agricultural Sciences and Curator at Gothenburg Botanical Garden. His specialist area is research on the selection of trees for the urban environment; he co-authored a Tree Selection Guide for the Trees and Design Action Group. There has been an attitude change to urban greenery in the last decade with greater recognition of the benefits. It is also possible to quantify these benefits. Some trees will deliver more and different species, often untraditional, can thrive in urban areas. There has been very conflicting advice on what to plant



Above, *Parrotia persica* in autumn colours, showing the infraspecific genetic variations, here in southeastern Azerbaijan.
Below, *Cotinus obovatus*, is a promising species for horticulture from the USA. It combines adaptability, drought and heat tolerance, and spectacular autumn colour, but remains very rare in gardens.

where and what the requirements of each species are. His research has been geared towards examining precisely the soil and climate of the urban site and then looking worldwide to find a replica of these growing conditions. Inevitably this will, or should, lead to choosing exactly the right tree for the place, always bearing in mind that you need to work out what the site's climate will be like in 100 years.



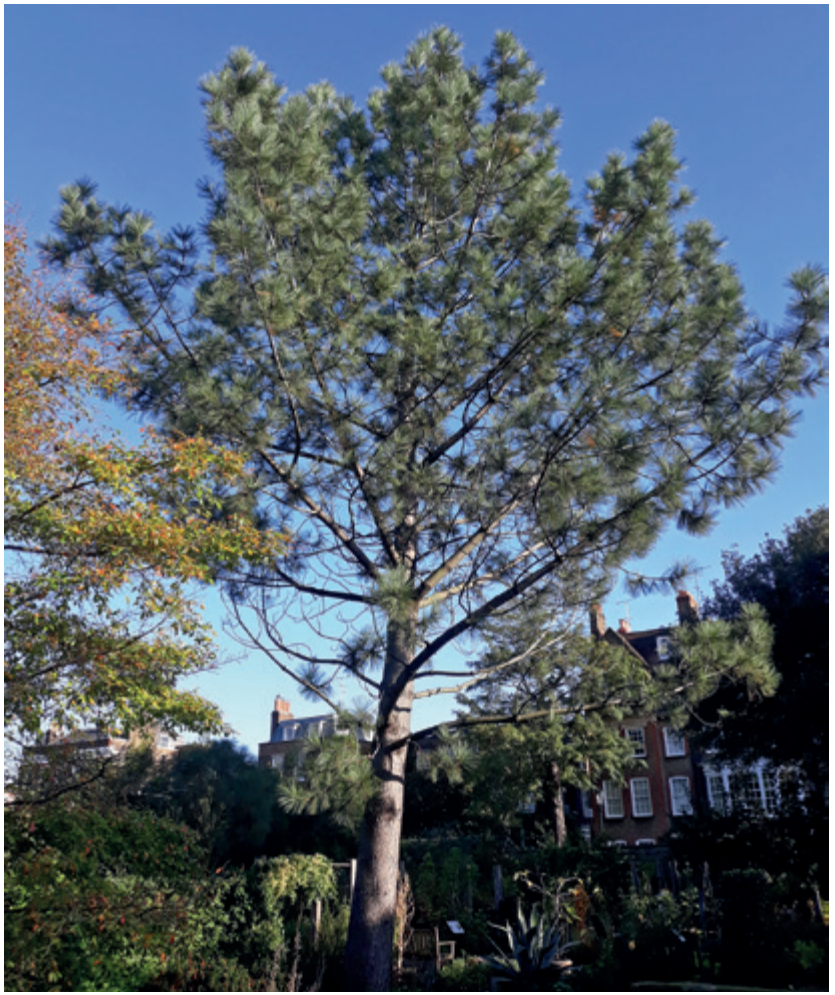
photographs © Henrik Sjöman

This research has taken him particularly to the Caucasus including Ukraine, Georgia and Azerbaijan. Like John, he recommended *Fagus orientalis* and also *Zelkova* species among many others. He pointed out the need to consider altitude and temperature as well as rainfall. It can also be important to vary collections and find better material. The species may fare better if the mother plants are more carefully or more widely

A large specimen of *Abies nordmanniana*, Caucasus, Georgia. Parts of the Caucasus may become an important source of plants for landscapes in north west Europe based on existing climate data.

chosen by selection of specific genotypes for specific conditions. Plenty of plant material originates from a single source or single tree (e.g. *Metasequoia glyptostroboides*). In planting you also need to consider the tree's social predelictions—do they want to grow alone or in a group?

Our final speaker after lunch was **Owen Johnson**, well known in the UK for his work recording champion trees for TROBI (the Tree Register of the British Isles). He travels extensively and has an eye for the unusual. Owen showed us



Pinus torreyana at the Chelsea Physic Garden. A potentially large five-needle pine for milder climates, that may be resistant to Dothistroma needle blight.

photograph © Owen Johnson

Sorbus hemsleyi at RBG Edinburgh. One of the first and the most beautiful of the trees to come out of China during the current wave of plant-hunting (1980).

one of my favourites, the *Melia azedarach* growing at the end of St Leonard's Terrace, only a couple of blocks from where we were. There were plenty of other examples of exotics growing around Britain and Cardiff was especially recommended for the exceptionally wide range of planting in Roath and Bute Parks in the city. (See pp. 202–3 and *IDS Yearbook* 2014, pp. 83–86 and p. 87).

However, it seemed to me that most of the trees we were being shown as possible Trees for the Future are as yet pretty few and far between except perhaps in London where they enjoy an altogether warmer and more sheltered existence. When I see some of these currently surprising choices in lots of places, and widely available for sale, I will feel confident that these are indeed trees for the future. Let's not forget that the winter of 2009 killed off quite a few species that had been included in *New Trees* as being suitable for temperate zones such as the British Isles. In the meantime we should all continue to experiment and aim for diversity, as I'm sure many of us do already.

Guided tours of the Chelsea Physic Garden were unfeasible because of our numbers, and the torrential rain in the middle of the day didn't help. Nevertheless the CPG's Head Gardener Nell Jones very kindly gave us an introduction to the garden, and provided a plan with many of the rare trees marked, so we could walk round ourselves and most of us were able to have at least a quick look at this unique place, home to some of the trees for the future that had been discussed.