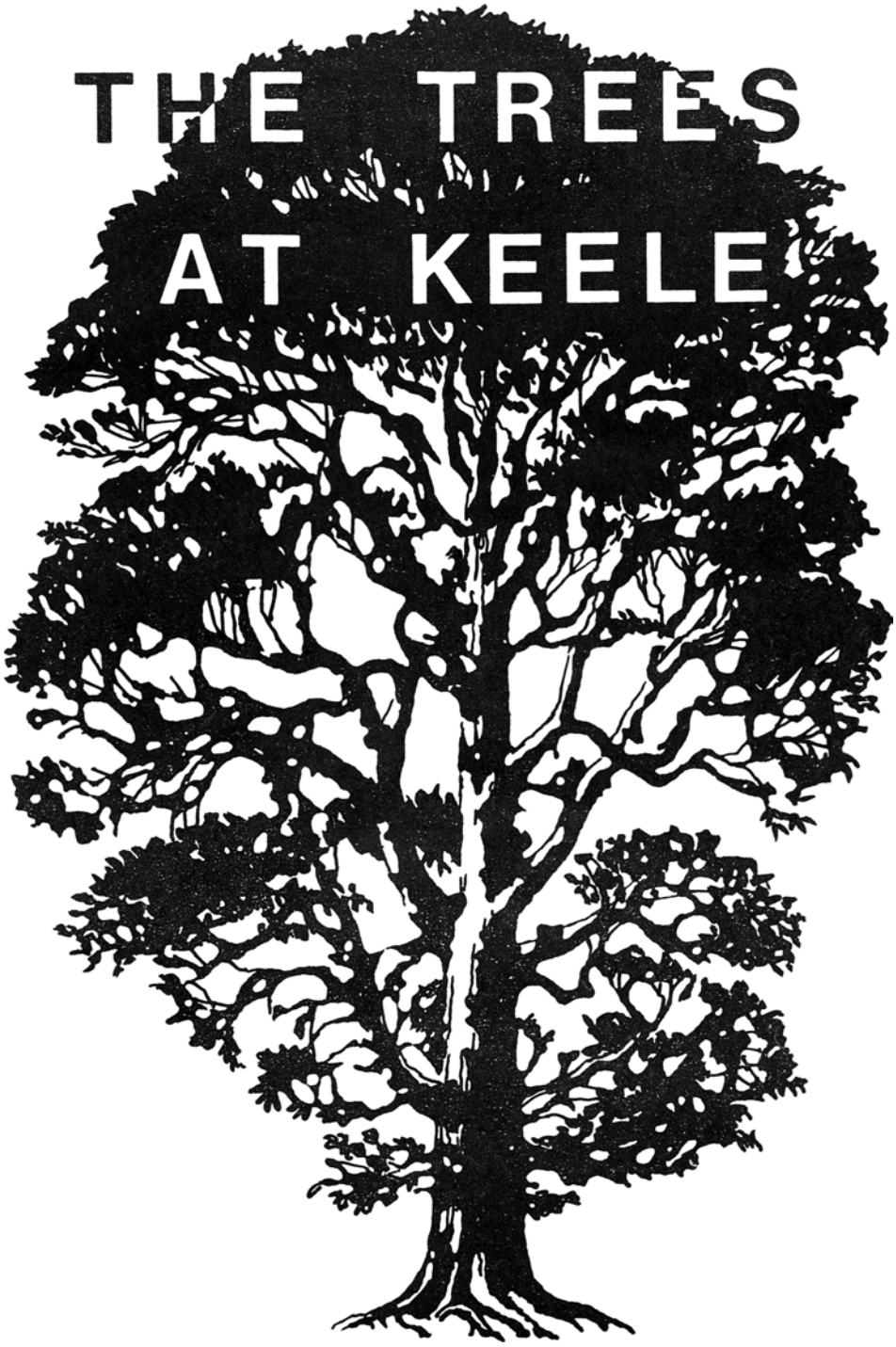
THE TREES
AT KEELE

# UNIVERSITY OF KEELE

# A GUIDE TO THE TREES AT KEELE

**by**

**K. M. Goodway**

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# Guide to the Trees at Keele

One of the most attractive features of the Campus at Keele is the variety and number of mature trees, both amongst the buildings in the centre of the Campus and in the woodlands.

We owe the majority of the trees to Ralph Sneyd, who, as soon as he inherited Keele from his father in 1830 started landscaping and planting on a grand scale. This was his major occupation and he continued with it until his death in 1870.

A few trees survive from earlier plantings, notably the old avenue of Sweet Chestnut in the Terrace Woods and a few Oaks in the woodlands, but Ralph Sneyd created the woodlands as we see them today. The farm land to the north and south of Keele Hall was part of the Park and carried magnificent single trees, but these were largely felled after the break-up of the Estate in 1949.

The University has continued this tradition of tree planting. As many as possible of the mature trees have been preserved as development has gone on in the centre of the Campus and additional trees have been planted. In 1972, with the completion of the ring road, an extensive planting programme was carried out along it. In the woodlands, the mature plantations are being replanted as they are felled and in addition ornamental species are being planted alongside the rides and paths.

Conditions are not ideal at Keele for tree growth. In particular, the wind exposure makes it difficult to establish many species and they reach their peak of growth rather early. The occasional heavy snowfalls have also caused a great deal of damage to mature trees.

This guide to the trees at Keele is set out in the form of two walks around the grounds. The more interesting species and the best specimens are described. It is impossible to list every tree, but a numerical symbol against each species is used on the maps to show the position of a number of the more conspicuous specimens of that species. Most of the trees and some of the larger shrubs are described, but a few which are recently planted and not yet firmly established have been omitted.

The maps have been prepared by the Geography Department's cartographic staff.

## I THE WOODS AND LAKES

From the Courtyard of Keele Hall, take the steps which lead up out of the W. corner. On the steep grassy bank ahead:

1. *Robinia pseudoacacia* L. **False Acacia**

On the grassy bank west of Keele Hall.
East bank of top lake

A tall tree with rugged bark, feathery foliage and white pea-like flowers, which are rarely produced here. Although it was introduced from the E. United States about 1600, it was not widely planted until William Cobbett urged that it should be planted extensively about 1828 and sold the seeds and plants himself.

Continue, beside the Estates building, to the lawns between the Hall and Clockhouse. A number of specimen trees have been plated here.

2. *Metasequoia glyptostroboides* Hu & Cheng. **Dawn Redwood**

One tree on lawn S.W. of Keele Hall (planted 1958).
Three trees below south wing of Library (planted 1962)
Three trees opposite entrance to Geology Department (planted 1970)

The genus was first described from fossil remains but this living species was not collected and described from Hupeh and Szechwan (China) until 1944. Seeds were collected by an expedition sent out by the Arnold Arboretum at Harvard and reached England in 1948.

It is a deciduous conifer and the smaller shoots are shed in the autumn complete with their leaves. In appearance, it is like *Taxodium* with feathery pale green foliage, but it has the side branches opposite one another on the shoot, not alternate.

3. *Ulmus glabra* Huds. **Wych Elm**

On grass bank between Clock House and Keele Hall, two young trees.
Below Nursery Gardens, near top of Clock House Drive, one mature tree.
In plantations, below cliff of Beech clump, a number of young trees.
At. W. end of dam of fourth lake.

The most common Elm in this part of Staffordshire. It has stout twigs and large, very rough, leaves.

4. *Aesculus hippocastanum* L**. Horse-chestnut or Conker tree**

On lawn S.W. of Keele Hall. One tree planted by Edward VII in 1901.
Beside the W. end of the dam of the top lake.
On E. bank of top lake, by site of boat house. By drive into Keele Hall courtyard.
Lower part of Clock House Drive . Four mature trees and an avenue of young ones.

A native of N. Greece. First grown in this country in the early seventeenth century.

5. *Cedrus libani* A. Richard **Cedar of Lebanon**

Lawn S.W. of Keele Hall. Two mature trees.
Bottom of lawn below Keele Hall. One mature tree.
E. bank of top lake. Two mature trees.

A native of Syria (Mt. Lebanon) and S.E. Turkey (Taurus Mountains). First introduced into this country in the seventeenth century. There is no single character which separates it from the Atlas Cedar, but the habit is often distinctive, with several main stems and widely spreading branches carrying great shelves of foliage. Unfortunately, at Keele these are often broken off by heavy snowfall.

6. *Cedrus deodara* (Roxburgh) D. Don. **Deodar**

On lawn S.W. of Keele Hall. One mature tree and one young one.
On E. bank of top lake.
Avenue at W. end of Larchwood.

Found in the Himalayas and introduced in 1831. Can be distinguished from the other Cedars by the longer leaves and the tips of the branches which hang down.

7. *Tilia x europaea L.* **Common Lime**

On lawns S.W. of Keele Hall, by Meteorological Station.
On grass bank, overhanging drive into Keele Hall Courtyard.
Lower part of drive to Keele village.
Widely planted on Campus.

A hybrid of the Small- and Large-leaved Limes. Can be recognised by its large, thin bright green leaves and the bosses on the lower part of the trunk which produce clusters of shoots around the base of the tree. It is often heavily attacked by Aphids, and the honeydew they secrete can rain from the tree and may cause the leaves to go black in late summer.

8. *Chamaecyparis lawsoniana* Parl. **Lawson Cypress**

Group in a bed by Meteorological Station S. of Keele Hall.

Although it is only found wild in a very restricted area of W. North America, on the California-Oregon border, it has, since it was introduced in 1854, produced in cultivation a great variety of forms, differing in foliage (from gold to blue), habit and size. It is probably the most widely grown conifer in gardens.

Return to the Terrace of Keele Hall and take the path leading down the lawn towards the bottom of the lake. On the opposite bank, one of the most conspicuous trees is:

9. *Populus canescens* (Ait.) Smith **Grey Poplar**

On E. bank of top lake. One mature tree.

Although possibly a native tree, it is certainly planted here. It is very striking, both in Spring as the leaves open and later in the year as the wind ruffles the silver-white leaves. It produces many suckers from the roots near to the grey trunk.

At the bottom of the lawn:

10. *Abies procera* Rehd. **Noble Fir**

Two trees at bottom of Keele Hall lawn.
Two young trees on E. side at top of Lake 5.

Introduced from W. United States in 1830. A beautiful, symmetrical Fir, with dense blue-grey foliage. The older trees have died at the top in the last few years and rarely cone now, probably because of the exposure, but the younger ones are growing well.

11. *Quercus ilex L.* **Holm Oak**

At the bottom of Keele Hall lawn, behind the Firs.

Introduced from the Mediterranean region in the sixteenth century. It is the only common evergreen oak in this country. At Keele, the dry winds in spring turn some of the leaves brown, so that it is not such an attractive tree as in milder areas.

Continue along the ride into the woods, past a fine Horse-chestnut and on the left is:

12. *Ilex x altaclarensis* **Dallim**

By the ride through the wood, just below the bottom of Keele Hall lawn

Probably a hybrid of common Holly with *I. perado* Alt, a species from the Canary Islands. It forms a magnificent tree, with the foliage weeping to the ground and large lustrous leaves with very few spines.

The ride continues past a number of fine Oaks.

13. *Quercus robur* L. **Common Oak**

Widely planted on the Campus and in the woods.
Very fine specimen at bottom end of Covert Road.

A native tree, although most of the Keele oaks were probably planted in the early nineteenth century and some show traces of hybridisation with *Q. petraea*. the Durmast Oak, which is more typical of upland woods in the north and west. A few of the Keele trees, such as one beside the drive above the Dell, look considerably older. Ralph Sneyd believed in planting as much English Oak as possible and in 1859 managed to persuade the Office of Woods, who had consulted him, to replant a length of the Broad Walk in Windsor Park with English Oak, to replace the decaying Elm in the face of opposition from the Prince Consort, who wished to plant Turkey and Scarlet Oak and had ‘Royal Prejudice against the British Oak’.

On a grassy area to the left of the ride a number of young trees have been planted.

14. *Acer negundo* L. **Box Elder**

On either side of ride by second lake, twelve young trees.

Introduced from N. America by 1688. Distinguished from other Maples by having three or five distinct leaflets. A small amount of maple sugar is obtained from this species.

15. Thuja plicata D. Don **Western Red Cedar**

Young tree near ride by second lake.

Introduced from W. North America in 1853, where the Indians used it for carving totem poles. The foliage is flattened, with small leaves concealing the twigs and smelling fruity when touched.

16. *Ailanthus altissima* Swingle **Tree of Heaven**

Between second lake and ride. Two young trees.

Introduced from China in 1751. It has large leaves, rather like an Ash, but with many more leaflets which have an unpleasant smell.

The ride crosses the dam below the third lake. From the dam can be seen, across the lake:

17. *Tsuga canadensis* (L). Carrieve **Eastern Hemlock**

Island in third lake

Introduced from E. North America about 1730. It can be distinguished from the Western Hemlock by the way the main trunk is usually branched from near the base, giving a round-headed tree.

18. Acer platanoides L. **Norway Maple**

On E. bank of third lake. Two mature trees.
On E. bank of first lake. One mature tree.
In first courtyard of Horwood Hall. Four trees.
Widely planted by ring road, e.g. Wedgwood Avenue.

Introduced into this country from Europe. Can be distinguished from Sycamore by the more pointed lobes on the leaves, which turn a clear yellow or red in Autumn.

Below the dam Alder is dominant in the valley.

19. *Alnus glutinosa* (L) Gaertn **Alder**

Common in woods beside lakes and along streams.

Its purple buds and yellow catkins are conspicuous in February and March and its female catkins look like miniature Pine cones. Where it grows beside water, it is often possible to see

the reddish swellings on the roots which contain nitrogen-fixing bacteria. Locally, its wood was used for making crates for the pottery industry.

20. *Sorbus graeca* (Epach) **Kotschy**

On dam below third lake. One small tree.

Introduced from S.E. Europe in 1830. Very similar to the British Whitebeam with rounded leaves, green above and grey-green beneath.

Continue across the dam and along the ride. On the right a flight of steps leads down into Barnes Dell, an area which was cleared of Alder in 1958 and planted with a number of ornamental trees and shrubs, including Rhododendron species. Amongst the young trees and shrubs there are:

21. *Acer circinatum* Pursh **Vine Maple**

Barnes Dell. Two small trees planted in 1966.

Introduced from W. North America in 1826. The leaves are lobed, but rounded in outline.

21. *Acer davidii* Franch

Barnes Dell. Two small trees planted in 1966.

A native of China, first introduced in 1879. The bark is green, striped with white.

21. *Acer japonicum* Thunb. **Japanese Maple**.

Barnes Dell. Three small trees planted in1958.

Introduced from Japan in 1864. Small-leaved, with long points and colouring well in the Autumn.

21. *Acer pennsylvanicum* L. **Moosewood**.

Barnes Dell. One small tree planted in1958.

Introduced from E. North America in 1755. Stems striped with green and white.

21. *Davidia involucrata* Baill. var. *vi1imoriniana* (Dode) Wanger. **Handkerchief Tree**

Barnes Dell. One small tree planted in 1958.

Introduced from China about 1900. It is a small tree with large, heart-shaped leaves. The most conspicuous feature is the pair of large white bracts which surround the inconspicuous flowers and which give it its English name.

21. *Enkianthus campanulatus* Nichols.

Barnes Dell. One small tree planted in 1958.

Introduced from Japan in 1880. It has clusters of small, hanging bell-like yellow flowers in May,

21. *Styrax japonica* Sieb. and Zucc. **Snowbell**.

Barnes Dell. One small tree planted in l958.

A native of Japan and Korea, introduced in 1862. In June it carries white and yellow bell-shaped flowers, followed by small egg-shaped fruits.

On the ride, Opposite the top of the steps is:

22. *Cryptomeria japonica* (L.f.) D. Don. **Japanese Cedar**

E. of path, opposite steps leading down into Dell. Several young trees.
W. of path, by top of lake 5.

A native of China and Japan; introduced in 1842. It can be recognised by its column shape, drooping branches and stout, pointed, curved leaves. It is the characteristic tree planted around Temples in Japan.

Continue along ride and just before it emerges into a meadow there are young *Abies procera* and *Cryptomeria japonica* planted in a clearing towards the lake on the right.

Fork right off the ride, along a path which follows round the lake and across the dam. At the far side of the dam turn left and follow the path round through dense Yew and up into the forestry plantations of Springpool Wood. Fork right, along a path between Scots Pine on the left and Larch on the right.

23. *Pinus sylvestris* L. **Scots Pine**

Below Library, by path to Keele Hall.
On E. bank of top lake.
Forestry plantations in Springpool Wood.

Native in parts of Scotland, but probably all English trees are introduced, although it may have survived as a native on the margins of some bogs in Staffordshire, Cheshire and Shropshire.

Can be recognised by its short, stiff blue-green needles and the orange-red bark of the upper part of the trunk.

24. *Larix kaempferi* (Lambert) Carriere. **Japanese Larch**

Springpool Wood forestry plantations.

Introduced in 1861. Can be distinguished from the European Larch by its blue-green leaves as opposed to bright green and, particularly in winter (when it loses its leaves) by its red or purple twigs as opposed to straw-coloured ones. It has largely replaced the European Larch in forestry, because of its more rapid growth, although it is in its turn being replaced by *Larix X eurolepsis* the Hybrid larch, produced by crossing the other two species.

100 yards further on, on the right, rows of Oak, Beech, Larch, Scots Pine and Lodgepole Pine were planted in 1958.

25. *Pinus contorta* Douglas. **Lodgepole Pine**

Forestry plantation in Springpool Wood,
N.E. of Beech Clump.

Introduced from W. United States in 1855. Indians used it for their teepees or lodges, hence its name. It can be recognised by its bright green, dense foliage and its rather prickly cones pointing back along the shoot. The cones remain on the tree for many years and may not shed their seeds until they open in the heat of a forest fire. It is often the first tree to grow again in the Rockies after a fire.

At the point where a ride goes down left, between plantations of Scots Pine, take a fork to the right, up through the young plantations to the Beech clump, on a knoll which is partly natural, but were also built up on the S. side, overlooking the motorway, by Ralph Sneyd to make a more impressive feature. Several of the Beech trees blew over when the surrounding woodland was cleared in 1958 and young ones have been planted to take their place. In the plantation below the cliff are a number of young Wych Elms.

26. *Fagus sylvatica* L. **Beech**

Clump on knoll in Springpool Wood, visible from Keele Hall, planted about 1830.
Group at E. end of Larchwood.
Widely planted in woods.

Native of Britain, but probably not occurring naturally as far north as Staffordshire. There is a young tree of the purple leaved form, planted by the Queen Mother on the lawn S.W. of Keele Hall.

Continue down the other side of the knoll, between Larch plantations. At the foot of the slope, at a cross roads, turn back sharp left. The path runs below the Beech clumps and passes on the right the Spring Pool, which in the late seventeenth century was the source of water to power the mill at which frying pans were made.

27. *Populus x canadensis* Moench. var. *Serotina* (Hartig) Rehd. **Black Italian Poplar**

Avenue at eastern entrance to Larchwood.
Forestry plantations in the valley in Springpool Woods.

A hybrid of the British *P. nigra* and the E. North American *P. deltoides* widely planted because of its rapid rate of growth.

Continue along this path, until it comes out into the open and joins a wider track curving in from the right. At this point, half left ahead can be seen:

28. *Sequoiadendron giganteum* Bucholz. **Wellingtonia or Mammoth Tree**

East side of top lake.
Springpool Wood, to S.E. of Beech Clump(four mature trees)
Bottom of Keele Hall lawn. Three young trees.

Introduced from the Sierra Nevada in California in 1853. The Keele trees are probably from seed brought in at this time. It does not grow as tall as the Coastal Redwood *Sequoia sempervirens* but is of greater girth. The bark is thick, red, soft and fibrous and has small hollows excavated in it, high up, by Treecreepers.

29. *Pinus cembra* L. **Arolla Pine**

In front of four mature *Sequoiadendron* in Springpool Wood. One mature tree.

Introduced from the mountains of C. Europe by 1746. The needles are in clusters of five and are densely crowded on the shoots, giving it a very dark, solid appearance.

Continue straight on, along the wider track, with a Spruce plantation to the left and Poplar and Larch in the valley to the right. Along the wide margins of this track Birch is regenerating.

30. *Picea abies* Karat. **Norway Spruce**

Springpool wood forestry plantations, both mature and young trees

Not a native of Britain, but forming extensive forests over N. & C. Europe. Probably introduced before 1500. This is the species usually used for Christmas trees, because the needle-like leaves are not as sharply pointed as the Sitka spruce, which has been more extensively planted for forestry.

31. *Betula pendula* Roth. **Silver Birch**.

Common in the more open areas of the woods.

It can be distinguished from *B. pubescens* by the warty young twigs. It is more common in drier areas.

32. *Betula pubescens* Ehrh. **Downy Birch**

Common in the more open areas of the woods.

It differs from *B. pendula* in having softly hairy young twigs and occurring more commonly in damper areas.

As this track curves round to the left, turn sharp left, up a ride through the plantations, with Spruce on the left and recently planted Beech and Larch on the right. At the top of the rise, at

a cross roads, turn right past the new planting, with Scots Pine on the left. At the end of this ride, curve left and follow the track beneath dense Yew.

33. *Taxus baccata* L. **Yew**.

A group by road between Keele Hall and Library.
Widely planted in woods and on campus.

Although the Yew is a native conifer, it has been introduced at Keele, since it only occurs naturally on chalk and limestone. It is almost certainly the longest-lived British tree and some specimens have been estimated to be over 1000 years old, although none of the Keele trees are very old. It bears amongst its very dark foliage bright red, fleshy cups containing a single poisonous seed.

This brings you back to the dam at the bottom of the 5th lake. This time, do not cross the dam, but continue up the W. side of the lake. By the track at the dam of the 4th lake is a Wych Elm and on the dam is a group of three Ash.

34. *Fraxinus excelsior* L. **Ash**.

A single tree with several stems besides second lake.
Plantation on S. side of Keele Drive below Drive Lodge.

Although Ash is native, it does not flourish at Keele, where the soil is too acid for it. It can be recognised by its grey twigs and black buds and very open, light green divided leaves.

Continue up the W. side of the 4th lake, but at its head, fork right through Barnes Dell, crossing the streams and climbing the steps up to the same ride. Turn left and almost immediately take a right fork. This ride goes past a clump of mature Beech on the left and then, immediately ahead at a point where the track forks is:

35. *Fagus sylvatica* L. '*Heterophylla'* **Fern-leaved Beech**

By a fork in the track on the E. side of the second lake. One mature tree.

A variety of the ordinary Beech with narrow, divided leaves, looking rather like an Oak leaf. The leaves vary in form on different shoots of the tree, some being very like those of the normal Beech. It has been cultivated since about 1800.

Take the left fork and continue past the dam at the bottom of the top lake. The suckers around the grey Poplar are abundant, and just by them is:

36. *Tsuga heterophylla* Sarg. **Western Hemlock**.

East side of top lake. Two young trees.

Introduced from W. North America in 1851. Foliage rather like Yew, but the leaves have a blunt tip and the tree is much more narrowly conical. It can be distinguished from the Eastern Hemlock by its shape and the way the tip arches over.

The mounds on the right were built up by Ralph Sneyd when he made the lake deeper at this point. By the track the trunk of a *Sequoiadendron* can be seen, with its thick, soft, red bark. On the opposite side of the path towards the lake is:

37. *Taxadium distichum* (L.) Richards. **Swamp Cypress or Bald Cypress**.

One tree on E. bank, near top of first lake.

Introduced about 1640 from United States, where it grows along S.E. coastal plain and up the Mississippi valley in wet places. It is a deciduous conifer and can be distinguished from *Metasequoia* by the side branches being alternate on the shoot, not opposite. When growing in very wet places it sends up woody 'knees' from the roots for gas exchange. The Keele tree has not produced them, as it is growing in dry soil.

Cross the head of the lake by the viaduct and go up the steps, left, to the White Well, from which the water supply to the house was drawn.

38. *Sophera japonica* L. **Japanese Pagoda Tree**

By White Well, at head of top lake. Two young Trees.

Despite its name it is a native of China. The leaves have up to fifteen oval leaflets. The white pea-like flowers are not produced until the tree is at least 30 years old.

Take the track up below the high Refectory retaining wall to the drive into Keele Hall courtyard.

## II THE CENTRAL PART OF THE CAMPUS

Leave Keele Hall courtyard by the main drive. There is a Common Lime on the grass bank to the left and Horse-chestnut opposite it on the corner. Continue along this route, straight across the ring road. On the left is a group of Yews and beyond them, by the side of the path, a single Scots Pine. Behind this is a group of 3 young *Metasequoia* and behind this again:

39. *Aesculus X carnea* Hayne **Red Horse-chestnut**

By. S. wing of Library. One mature tree.

A hybrid of the common Horse-chestnut and *A. pavia* a small, shrubby Red Buckeye from the S. United States. It probably first appeared about 1820 in Germany. It is a smaller tree with smaller leaves and the fruits are less prickly.

Continue to the central area and then turn left and up the hill past the Chapel. Outside the Walter Moberly Hall are two species of Lime.

40. *Tilia platyphyllos* Scop. **Large-leaved Lime**

By Walter Moberly Hall. Three young trees.

Not native in the Keele area, but it does grow wild in some of the woods on the

Carboniferous limestone of the Manifold Valley, 20 miles to the north-east. It can be recognised by its large leaves which are hairy above and below. One of these trees was given by the Keele Sunday School and planted by Miss Mary Glover.

41. *Tilia cordata* Mill. **Small-leaved Lime**

By Walter Moberly Hall. Two mature trees, last survivors of a group of seven.

Native to Staffordshire, although planted here. Recognised by its small leaves, dark green above and pale grey-green beneath. The flowers are very sweetly scented.

A little higher up the hill on the right:

42. *Carpinus betulus* L. **Hornbeam**

Between Geography Department and Walter Moberly Hall. One mature tree.

A native tree, but planted here. It is sometimes mistaken for Beech, but the bark has fissures down it and the leaves have teeth on the margin.

Opposite, by the entrance to the Geology Department is a group of 3 more *Metasequoia*. Between Physics and Chemistry is a pair of Common Oaks, surviving from the time when this was open Parkland. Continue straight up past Chemistry until you reach the ring road. On the left of the road, behind the car park, is a giant Holly hedge.

43. *Ilex aquifolium* L. **Holly**.

Holly hedge between Larchwood and Keele Drive.
Many trees in woods.

Holly is a common native tree in this area, occurring frequently in both hedgerows and woods. The Holly hedge at Keele was well known about the turn of the century, when it was described as 35 feet high, 28 feet through and 199 yards long.

The road continues down to Keele village, through an avenue of Sycamore.

44. *Acer pseudoplatanus* L. **Sycamore**.

Planted as an avenue down part of Keele Drive. Widely planted and regenerating from seed on the campus and in the woods. Introduced into this country from Europe as early as the fifteenth century. Useful at Keele because it will tolerate exposure to wind, but it can become a nuisance because it regenerates so freely from seed. Ralph Sneyd used it in 1844 for planting on the spoil heaps from collieries and iron works between Keele and Silverdale, an early example of land reclamation.

Retracing your steps, but this time following along the ring road. On the grass between the road and Harrowby House is:

45. *Quercus cerris* L. **Turkey Oak**

Beside ring road, near Harrowby House, group of five mature trees.

Introduced from S.E. Europe in 1735. Despite Ralph Sneyd's belief that "The Turkey Oak is a worthless tree", it has flourished at Keele and grown larger than Common Oak, from which it can be distinguished by its larger, narrower, dull green leaves which are roughly hairy to touch.

46. *Quercus x turneri* Wild. **Turner's Oak**

Beside the ring road, by Harrowby House.

Raised by Mr. Spencer Turner on his nursery in Essex in the late eighteenth century as a hybrid between the Common and Holm Oaks. It has toothed, tough leaves, grey on the underside. The Keele tree appears to be grafted.

Fork right, away from the ring road and towards the Terrace. At the back of the Terrace:

47. *Castanea sativa* Mill **Sweet Chestnut**

Avenue down the top half of the Clock House Drive
Avenue along the terrace above the Nursery Gardens
Many mature trees on the Campus and in the woods.

Introduced into this country from S. Europe before the Norman Conquest, according to legend, by the Romans. It can be distinguished from the Horse-chestnut (to which it is not closely related) by the very much more prickly fruit. Although it grows well at Keele it rarely produces nuts worth eating. Of the two avenues at Keele, the Clock House Drive was planted about 1835, while the one in the Terrace Woods, which runs along the old drive from Keele to the village is very much older, possibly 300 years old.

Continue along the Terrace and down the steps at the end. By passing through the Clock House Courtyard you can see the Drive, which formerly led to the Race-course, lined in the top part with Sweet Chestnut and lower down by Horse Chestnut. Instead of going down the Avenue, turn left and back across the lawns to Keele Hall.

## III OTHER SPECIES

Some other trees and shrubs, which cannot be seen on either of the walks, are listed below.

48. *Ulmus glabra* Huds. '*Pendula'* **Weeping Wych Elm**

Avenue planted along main road opposite Keele Church.

This weeping tree appeared in cultivation in a Perth nursery in the early nineteenth century. It is propagated by grafting on a stock of the ordinary Wych Elm to give it a trunk.

49. *Ulmus carpinifolia* Gleditsch. **Smooth-leaved Elm**.

By playing fields, opposite Barnes Hall. One mature tree.

A native tree, but uncommon in this area. It has slender twigs and small, fairly smooth leaves.

50. *Salix fragilis* L. **Crack Willow**

Copse in middle of Playing field. One mature tree.

A native tree willow with twigs that break easily at their junctions. The leaves are slender, grey-green and smooth beneath.

51. *Hippophae rhamnoides* L. **Sea Buckthorn**

On bank behind Chancellor's Building.

A silver-leaved shrub which, in this country, grows wild on coastal dunes. The female plants bear orange berries.

52. *Acer saccharium* L. **Silver Maple**.

One tree in spinney at bottom of Covert Road.

Introduced from E. North America in 1725. The leaves, larger and more pointed than those of a Sycamore, are silvery-white beneath.

53. *Quercus rubra* L. **Red Oak**

Planted extensively along the ring road in 1972.

Introduced from E. North America in 1724. The leaves turn red before they fall and differ from English Oak in the sharply pointed lobes.

54. *Sorbus aria* Crantz **Whitebeam**

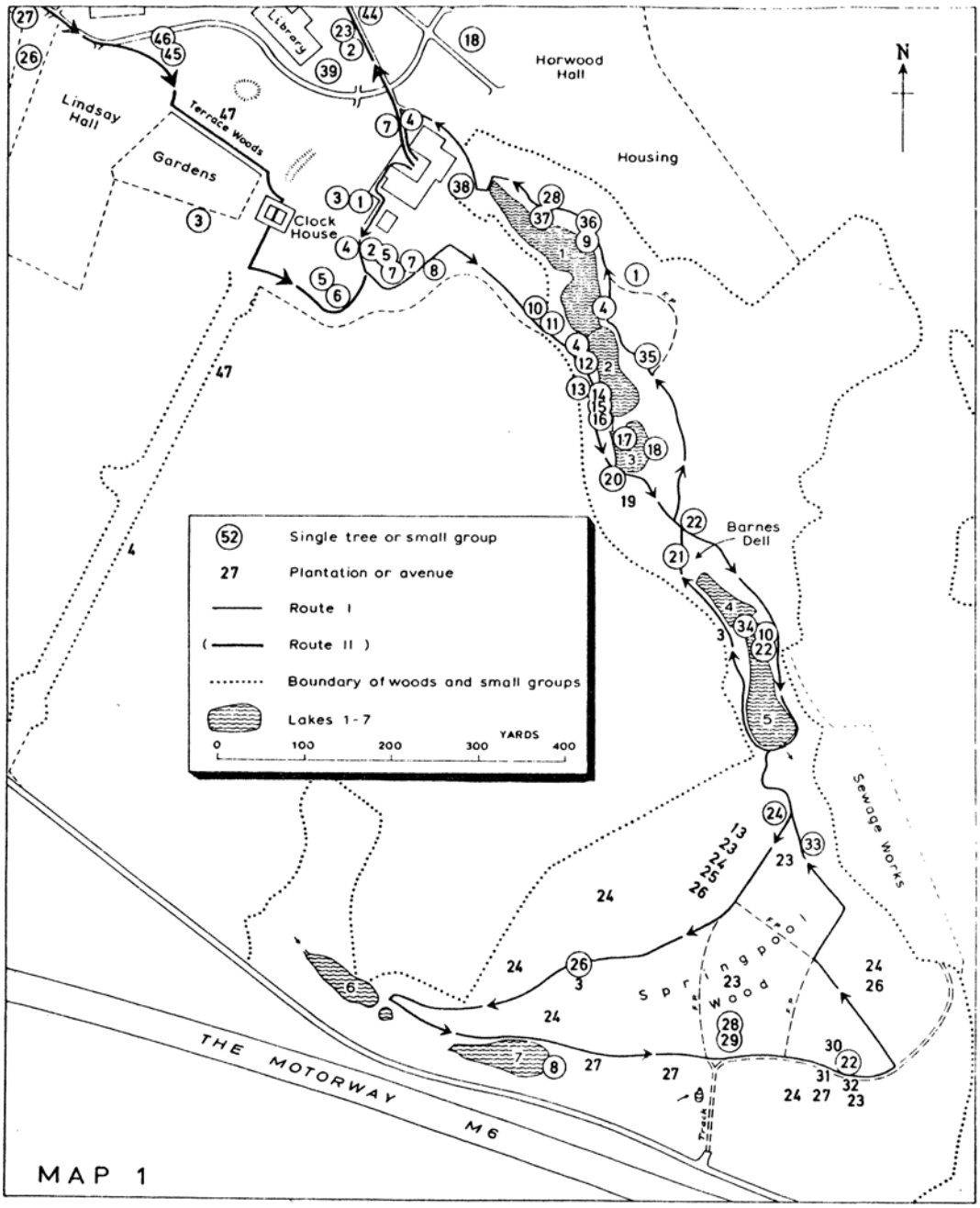
In front of Barnes Hall. Two small trees.

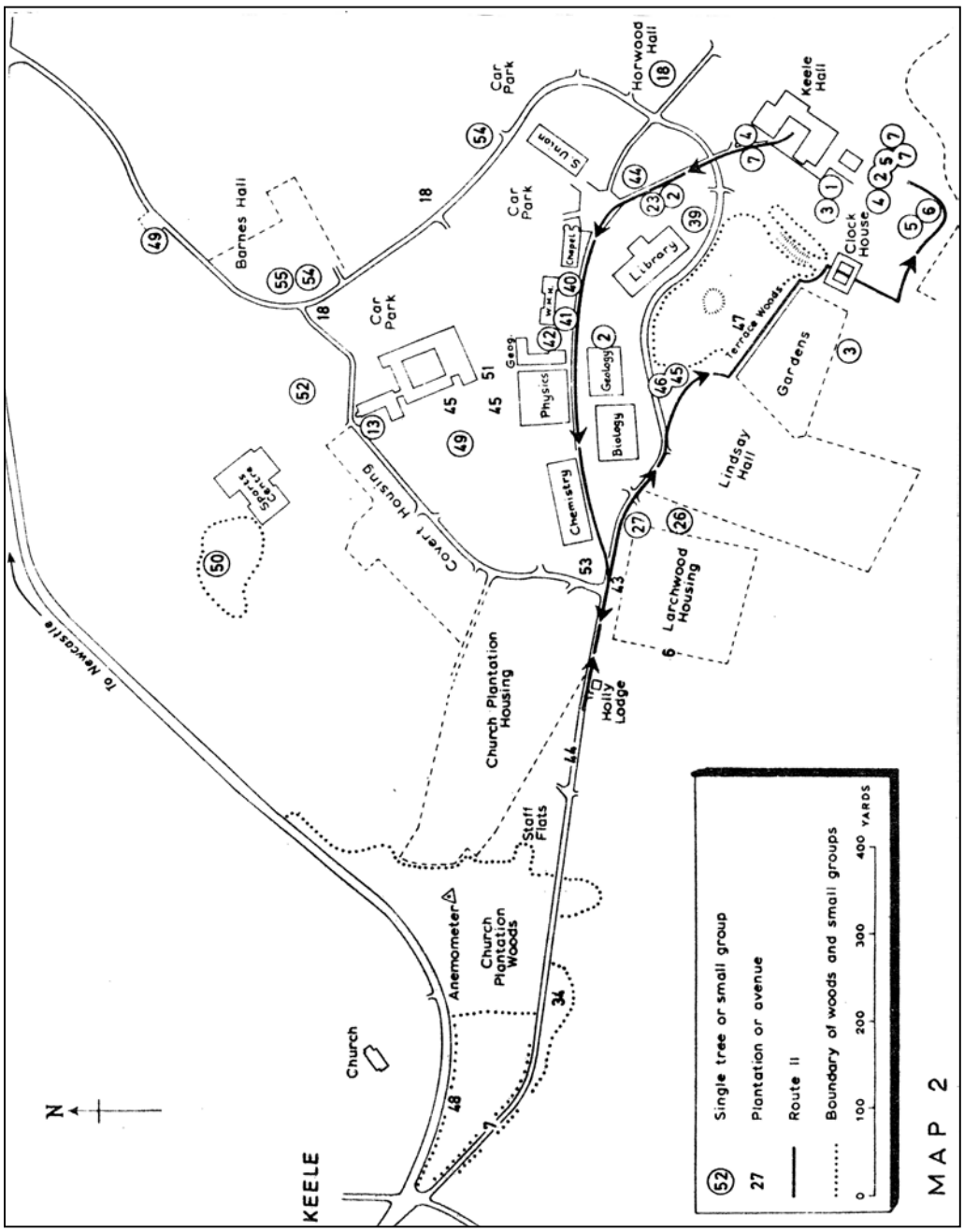
A native tree, but only found wild on chalk and limestone. It has oval leaves, very white beneath and clusters of small red fruits.

65. *Sorbus aucuparia* L. **Rowan or Mountain Ash**

In front of Barnes Hall. Three small trees.
In front of No. 9 Church Plantation.

A native, and common on the more exposed and acid sites in Staffordshire. It has about 7 pairs of leaflets to each leaf and clusters of small red fruits. The yellow-fruited form '*Xanthocarpa'* is planted in front of Barnes Hall.


Library
Horwood Hall
Housing
Lindsay Hall
Terrace Woods
Gardens
Clock House
Barnes Dell
Sewage Works
THE MOTORWAY M6
Trent
Springpool Wood
N
Single tree or small group
Plantation or avenue
Route I
Route II
Boundary of woods and small groups
Lakes 1-7
YARDS
0
100
200
300
400
MAP 1


KEELE
N
Church
Anemometer
Church Plantation Woods
Staff Flats
Church Plantation Housing
Holly Lodge
Larchwood Housing
Lindsay Hall
Gardens
Terrace Woods
Clock House
Keele Hall
Horwood Hall
Library
Chemistry
Biology
Physics
Geology
Chapel
Car Park
Barnes Hall
Covert Housing
Sports Centre
To Newcastle
Single tree or small group
Plantation or avenue
Route II
Boundary of woods and small groups
0 100 200 300 400 YARDS
MAP 2