

BRITISH BOTANICAL GARDENS IN THE 1980s:

CHANGES REFLECTED BY BIBLIOGRAPHICAL

AND SOCIAL SURVEY

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and wishes to sell plants, specimens of wild flowers, particularly those of the local district, grown from seed at the garden, might be a popular attraction and in the interests of conservation. This idea, including the question of plant sales in botanical gardens, is discussed in Chapter 14.

To sum up, a few years ago growing native wild flowers in a garden was simply an attractive novelty. Now, with conservation interests, it has been accepted as normal. In 1984, a nurseryman had a special display of wild flowers as his exhibit at Chelsea Show.

The following extract from an article by Martin Baxendale in Amateur Gardening (31 March 1984) reinforces the point. AG is always a good reflection of the interests of the amateur gardener in this country.

Of all the latest trends in gardening, probably the most important is the widespread interest in growing wild flowers. It's a hobby that not only gives great pleasure but which also helps to ensure the survival of some of our loveliest native plants.

Urban development, new road schemes and the increased use of weedkillers on farmland continually threaten the existence of wild flowers. If some of those lovely plants can be guaranteed a safe haven in the country's gardens, then that can't be a bad thing.

Botanical gardens the world over are striving to collect and save the countless thousands of plants threatened with extinction in various parts of the globe.

Many botanists believe that in the future

private gardeners will play an increasingly vital role in helping to preserve the world's wealth of plant life, because the botanical gardens simply won't be able to accommodate all the threatened plants....

You don't have to turn your entire garden into a jungle to enjoy a few of our loveliest native plants. Why not create your own little nature reserve in an odd, unused corner? Any derelict patch can quickly be transformed into a flourishing wild garden, and such awkward areas as steep banks, rough grass and the bases of hedges are ideal....

Growing wild plants in cultivation is clearly an activity in which botanical gardens can, and do, play a considerable part. Growing wild flowers in gardens has also received considerable support from television programmes which have the advantage of reaching many viewers.

The added attraction of the wildlife that the plants encourage is a bonus for the gardener, as well as beneficial for the bird and butterfly population, so much affected by destructive factors elsewhere. Widespread removal of hedgerows is, of course, a major cause. Wild plant collections in botanical gardens, especially of species typical of the area, could help offset losses, and encourage amateur gardeners to follow their example.

## Botanical gardens and world organizations

As part of the plant conservation world, British botanical gardens are affected by the activities of international organizations in this field (the Council of Europe has already been discussed). Reference is constantly made here to the relationship between botanical gardens and institutions and societies in Great Britain active in similar areas to the gardens.

Some international organizations have activities (e.g. IUCN's TPC) with a direct bearing on the work of gardens. Information about world bodies such as UN, and its different sections, is readily available in print.

### NCCPG

The NCCPG is a good example of the informal co-operation so often described as 'typically English'. When the Council was set up by the RHS, it appealed widely for support in conserving plants and gardens, and especially the older varieties of flowers, vegetables and fruits. Influential bodies have given it active support. The so-called 'National Collections' scheme, whereby an institutional or private garden becomes responsible for a particular species, lends itself admirably to participation by members in different categories, some of them the owners of comparatively small private gardens. Also included are the great gardens administered by the National Trust, which are taking a major part in the scheme. The Trust



has compiled its own lists, of both ongoing and 'closed' Plant Collections, as already mentioned. Some botanical gardens and local authority Recreation Departments have also joined the scheme. Botanical gardens were specifically mentioned by the RHS as institutions which, they hoped, would play an important part, and whose participation would be valuable.

The NCCPG scheme is frequently publicized in The Garden, with notes on progress and continuing appeals for new groups or individuals to take part in the project. The NCCPG has compiled a list of plants believed by the Council to be endangered. By appealing for public help in this conservation scheme, it has achieved more than one objective. Not only does the scheme benefit from the expert knowledge and specialized collections of amateur gardeners, but it gains the enthusiastic interest of a wide section of the community instead of being restricted to large public and national gardens.

Conservation schemes need assistance from many sources in dealing with problems and, sometimes, opposition. The NCCPG scheme has been criticized, mainly for being too slow, but, with the backing of the RHS, it has wisely chosen to aim for wide and varied support from different sections of the community. The NCCPG, although constituted as an independent body, has advantages through its relationship with its parent body, the RHS. There is valuable publicity, in The Garden, reaching the public

most likely to respond to appeals for help or to take an informed interest in the work of the Council. Publicity is essential in conservation activities; the sponsorship of a body such as the RHS is invaluable.

### RHS

The RHS is, predictably, one of the voluntary bodies most concerned, in this country, with the conservation of gardens and garden plants. (The gardens in the NCCPG scheme are not all directly relevant to this study, if they are not botanical gardens.)

The RHS held a Conservation Conference in 1978 and has made a point of reporting on subsequent progress in this field.

### Public support for conservation

Conservation operates through many different channels. Major decisions, leading to legislation, have to be made at governmental or inter-governmental level. Governments, however, are frequently urged to action by pressure groups, who, in their turn, know the value of 'grassroots' support from the public. A great deal may be due, on occasion, to the vision and rapid action of a few far-sighted individuals; the constant interest of the public also plays an important part. The media have their own role. Popular gardening magazines, with a wide readership, exert a useful influence on opinion.

No attempt can be made to list here all the articles

on aspects of plant conservation that have appeared in these journals. An article in Amateur Gardening, as an example, may describe a conference in Somerset. It is a long distance from the corridors of power to the armchair of the gardening enthusiast, but both are part of the picture.

The WWF/IUCN Plants Conservation Programme is of great international importance. The following extracts from The Kew Magazine, Vol. 1, part 3, August 1984, indicate its scope.

We must somehow discourage the wanton destruction of wild plant populations by overzealous collectors. Commercial gain is the bane of the conservationist, whether it be the chopping down of tropical forests for timber or the digging up of a humble Cyclamen on a Turkish mountain....

This year the World Wildlife Fund, in close collaboration with the International Union for Conservation of Nature and Natural Resources, the IUCN, launched their Plants Campaign with the motto - 'Save the plants that save us'. The campaign sets out to explain the importance of plants to mankind. They feed us and clothe us, provide medicines and chemicals for a wide variety of uses, supply materials to industry and numerous species are used to enhance our gardens and homes. The aim of the campaign is to make the general public aware of plant conservation and what is being done to solve the very serious problems of habitat destruction in many 'corners' of the World. To this end they seek to raise money as part of a 'worldwide movement to save our green home'.

The WWF/IUCN Plants Conservation Programme will:

- Encourage the world's leading botanists to develop new and more effective approaches to plant conservation, with particular emphasis on plants used in agriculture, medicine and industry.
- Inform the public of the importance of wild plants and plant communities and how it can participate in conservation action.
- Help governments solve conservation problems in ecologically important and species-rich plant communities.
- Expand tropical rain-forest conservation programmes which stimulate further independent action, particularly in Central and South America, where over one third of the world's species are found; in Madagascar, which has a flora as diverse as some continents; in Southeast Asia and in Africa south of the Sahara.
- Describe the plant genetic resources of specific areas; gather data on little known plants useful to man.
- Develop legislation to assist in plant conservation and regulate international trade; stimulate international agencies to take action on their own, and initiate national plant conservation plans.
- Participate in joint conservation projects with major botanic gardens which grow plants, inform the public, train local experts, and press for local plant conservation....

#### Abbreviations and acronyms

The many conservation organizations in existence result in a long list of initials and acronyms. Fortunately several keys are available, from those giving only titles and abbreviations to others providing information

about the aims and objects of organizations. Reference is made later in the chapter to some of the most useful. (It is hardly surprising that many bodies are usually known by an abbreviation, as their names are frequently long and involved.)

Acronyms and abbreviations are common in wildlife and conservation fields and therefore relevant to botanical gardens. In public relations over conservation it is worth remembering that 'insiders'' terms can be puzzling for the non-expert. The best television presenters of wildlife topics manage to be at once informative and intelligible.

#### Some important abbreviations

The following list contains major organizations associated with plant conservation and the environment, if they are regularly known by initials or acronyms. Organizations not so known, e.g. the Countryside Commission, have been omitted.

BANC	British Association of Nature Conservationists.
BSBI	Botanical Society of the British Isles.
BTCV	British Trust for Conservation Volunteers.
CPRE	Council for the Protection of Rural England.
FFPS	Fauna and Flora Preservation Society.
IABG	International Association of Botanical Gardens.
ICOMOS	International Council on Monuments and Sites.
IDS	International Dendrology Society.

IUCN	International Union for Conservation of Nature and Natural Resources.
NCC	Nature Conservancy Council.
NCCPG	National Council for the Conservation of Plants and Gardens.
NT	National Trust.
NTS	National Trust for Scotland.
RHS	Royal Horticultural Society.
RSNC	Royal Society for Nature Conservation.
TPC	Threatened Plants Committee (of IUCN).
TPU	Threatened Plants Unit (at Kew).
UNEP	United Nations Environment Programme.
WWF	World Wildlife Fund.

#### Literature references

Interesting correspondence on the role of British botanical gardens, especially with respect to conservation, was published in the GC and HTJ magazine, during 1981 and 1982.

The literature included in the bibliographical section of this chapter covers subjects wider than the immediate topic. An interesting article by Frank Sharman is a good example. Writing in the Journal of Planning and Environment Law, August 1980, he discusses the preservation of historic gardens, a subject closely connected with this study.

'Silent Running': conservation in science fiction

This classic science fiction film conveys with great conviction the passionate feelings aroused by plant conservation.

Silent Running, first shown in 1971, is set in the future, at an unspecified time. Following a nuclear holocaust on earth, plant life cannot survive. Some plants, including trees, have been rescued and put into a series of large domes circling the earth, in the care of a team of scientists with two robots.

Sherman Lowell, alone of the team, is devoted to these 'forests'. The original intention was to bring back the domes when conditions again became suitable for plant life on earth. (It is not clear how men there are surviving, since nothing will grow.)

The space project is suddenly cancelled, the team ordered to destroy the domes and return to base. The other scientists welcome this order. Lowell is too late to prevent the destruction of all but one dome. The last he saves by shooting his colleagues. He then sets off, with the two robots, into outer space. Located and ordered to return to earth at once, he detaches the remaining dome, sending it off in the charge of one of the robots. He then turns his own craft, containing himself and the second, damaged, robot, towards the earth. Rather than return to a world without plant life (although

it is unaccountably prosperous, and free from want), he presses the autodestruct button, thus blowing up his capsule.

The film has many anomalies, but, when it was made, was remarkably far-sighted. Its quality lies in a convincing atmosphere of dedication to plant conservation which makes the destruction of human beings seem understandable, in defence of threatened plants. As a warning of the need to take action before it is too late, the film fulfils a serious purpose. Far-fetched, scientifically impossible, it still lingers in the memory. The film title is from the term used of a submarine remaining underwater, out of contact with its base. Presumably it refers, here, to the time when Lowell steers his craft with the surviving 'forests' through outer space, undetected by his superiors on earth.

Renewed interest attaches to this film on account of the Biosphere 2 project, in the Arizona desert. A series of domes is being planted, to reproduce permanent self-contained habitats; these are to be launched eventually into space, perhaps to be landed on another planet. The domes seem to bear a striking resemblance to those in 'Silent Running', an example of how forward-looking the best science fiction can be.



### 'The Galactic Garden'

A recent film of a science fiction type, on a natural history theme, is 'The Galactic Garden', written for BBC TV, first shown in 1984, and shown again in 1986. It portrays the adventures of two tiny beings from another planet who land in their courgette-shaped spacecraft in an English garden. Although they live in the future they have succeeded in breaking the time barrier and have come to Earth at the present day. The trick photography shows familiar plants and insects through the eyes of these tiny creatures. The main object of their journey is to find out how the Earth keeps its oxygen, which is being dangerously used up on their own planet. During their explorations they discover the importance of plants in supporting other forms of life. The film thus stresses current conservation topics.

## Chapter 8

### Reference Material

#### 1. NCCPG

The NCCPG'S work for conservation of gardens and plants is mentioned earlier in the chapter. For publicity, the NCCPG takes advantage of the resources of the RHS, its founding body. Notes on the aims and objects of the NCCPG, details of the National Collections Scheme for plants, and an invitation to participate have appeared in The Garden on more than one occasion. Many botanical gardens are taking an active part in the scheme.

The following extract is from the official advertisement:

#### SAVING THE PLANTS IN OUR GARDENS

We all remember good garden plants - roses, lettuces or old primroses to mention only a few - which we ourselves have lost. Many had virtues of flower, hardiness, colour or other genetic significance which made them essential for our 'Plants Wanted' list yet through the vagaries of fashion and commercial distribution they are now unobtainable.

Now, as a result of a conference sponsored by the Royal Horticultural Society, the National Council for the Conservation of Plants and Gardens has been set up. It has obtained initial funds to begin the process of collating information on where and what good garden plants exist. From this comes the need to propagate and distribute rare plants.

The NCCPG wants to do more than this. It is trying to see that the stock is not lost again by encouraging the establishment of

National Reference Collections of particularly important groups of plants, which may be large, e.g. camellias, or small like hellebores. Therefore, important collections will not only be the prerogative of great gardens or municipal authorities.....

What your group can do

1. Affiliate the group to the NCCPG.
2. Accept responsibility for recording the plants and gardens in your area, including local garden centres and nurseries.
3. Contact your County Horticultural College/local expert/etc. who will be able to help with plant identification.
4. Arrange a programme of events which brings your enthusiasts together to share experience and information from themselves and from outsiders. Many organisations have a list of lecturers covering virtually every subject.
5. Contact the local and national expert societies to arrange joint meetings and suggest lectures.....

2. National Trust

The National Trust plays a very important part in the conservation of gardens and plants. Associated with its responsibilities for plant conservation under the National Collections scheme, the National Trust issues two kinds of duplicated list. These cover the National Collections, ongoing and closed, in NT gardens. One is arranged by plant names, giving the location, the other is a list of gardens, showing the collection(s) present at each property. Together, they form a useful source of information on many special plant collections.

3. Aldridge, Don. The Monster Book of Environmental Education (1981)

Don Aldridge has an original method of conveying his message about conservation and the environment. He suggests this method to those responsible for public education, to be used, for example, in posters and other publicity material. The book may appear rather frivolous, an amusing collection of good drawings with witty captions, intended for entertainment rather than serious study. It is, however, published under the auspices of the Council of Europe, in both English and French editions, and consists of a collection of papers given by Don Aldridge at meetings and conferences. For botanical gardens, No. 6 (Do you dig botanical gardens?) is relevant. This paper was read at the Second Kew Conservation Conference.

The book may not be widely known, but an example from Paper 6 illustrates Don Aldridge's technique. For joint conservation of animals and plants, practised in some establishments, he offers a warning of one hazard. The illustration shows a group of rare and endangered wild animals emerging from a glasshouse which, until recently, also contained a collection of rare and endangered wild plants. The glasshouse is empty - the plants have provided the animals' latest meal.

On the serious underlying purpose of the book, the author says:

This is a book about that fashionable word 'environment', a painless introduction which explains how to communicate the significance of a place to those who visit it (sometimes called 'interpretation'). The chapters cover 15 illustrated talks, most of which were given by the author at international Council of Europe meetings, in the form of very long strip cartoons drawn on continuous rolls of drawing material - if all the originals had been stretched, end to end, they might well have gone round the Council's Strasbourg headquarters three times....

A short review, quoted in the book, is evidence of its originality. It is as follows:

Raises all the right issues and disposes of them in such a sensible way. Don Aldridge sets his audience thinking about what attitudes and values about the environment, rural and urban, we want to pass on.

(Colin Ward, Town and Country Planning).

4. The First Conservation Annual; ed. by David Shreeve (1982)

This Conservation Annual is deliberately popular in content and presentation. It covers the whole field of conservation, including plants and reserves, but it is rather miscellaneous in content. It illustrates the availability of important information in many sources. This volume contains an interesting description of the William Curtis Ecological Park, a new type of provision, sharing some of the aims of a botanical garden. Further editions have now been published of this well-established annual.

Excerpts from the article mentioned are given

below:

#### WILLIAM CURTIS ECOLOGICAL PARK

Two hundred years ago, the 18th-century botanist William Curtis grew plants which he collected together from all over the country, in a garden in Bermondsey.

Today, few who know the area would expect to find a haven for wildlife under the shadow of Tower Bridge, but half a mile from William Curtis's own garden, an area of London's dockland has been adopted by the Ecological Parks Trust to turn a derelict site into one of surprising beauty.

Three hundred years ago, the two-acres site was part of a marshy meadow, but since then it has seen a variety of development, decay and demolition. By 1976 it had been covered with a hard, flat surface of hoggin and ash and used as a lorry park.

The change of life began in 1977 when, to celebrate the Queen's Silver Jubilee, the owners of the site, Hays Wharf and the London Borough of Southwark generously agreed to let it for five years at a minimal rent to develop London's first ecological park. It took 350 lorry loads of soil from demolition sites all over London to begin the work. Then came the landscaping to create a pond, and to plant trees and plants.

Today, the park is used as an example for other urban projects and welcomes visitors with a variety of interests. Some are ardent ecologists and conservationists, others come simply to escape for a while. The appointment of two full-time teachers has enabled many local students and schoolchildren to study the wealth of nature in the park.

The park is managed by the Ecological Parks Trust which plays a national and supportive role in promoting and advising on the conservation of urban wildlife, and the study and teaching of urban ecology....

5. Fauna and Flora Preservation Society (FFPS)

This society was formerly the Fauna Preservation Society (FPS); it is still based at Regent's Park Zoo, London. By the change of name, it now acts on behalf of wild plant conservation as well as wild animals. A periodical publication, Oryx, appears quarterly.

The aims of the Society are given as follows:

This is the second oldest wildlife conservation organisation in Britain. (The oldest is the Royal Society for the Protection of Birds, founded in 1888.)

Although the Society has always maintained a concern for the British fauna, it has over the years become an international body. Its aim is to preserve wild animals and plants, especially those which are endangered or threatened. To do this the Fauna and Flora Preservation Society provides information on safeguarding wild animals and plants in their natural conditions, and promotes the establishment and proper management of National Parks and Reserves. In addition it encourages the enforcement of laws for protection and conservation and provides a link with societies throughout the world with similar interests....

6. International Dendrology Society. Yearbook.

As the name indicates, IDS members are primarily concerned with trees. Their interests are wider than this, however; during one-day excursions and longer tours they visit gardens of many types. Amongst botanical gardens visited are Birmingham (Botanical and Horticultural Society) and the interesting, comparatively recent, garden at Ventnor on the sheltered south coast of the Isle of Wight in 1980.

Articles on these two visits, as well as others made each year at home and abroad are described in some detail in the relevant yearbook. The Yearbook also reports sometimes on other conferences, e.g. the Second Kew Conservation Conference, 1978, and some of the annual RHS conferences.

An excerpt from the 1983 Conservation Report of the IDS is quoted below:

Hugh Synge has become the most valued and effective deputy Chairman of our Committee. Drawing on his experience and access to information in running the office of the International Union for the Conservation of Nature (IUCN) at Kew he proposed and has organized a methodical search through botanical garden records to establish a list of 250 ornamental and hardy trees which are known to be rare or threatened. Despite all our concern we have never before been able to 'nail' the species which we should be conserving. Through Hugh Synge we have commissioned Michael Lear to compile this list for us, and expect to have it ready early in 1984.



The next step in this project is to arrange for the propagation of these rareties and their distribution to appropriate collections. This we hope may become a self-financing activity of the IDS. We feel that it is important to establish the monetary value of trees that are rare....

7. Perring, F.H. and Walters, S.M. Conserving rare plants in Britain (1971), Nature, 5 February.

The conservation of our native flora is considered by many botanical gardens in Great Britain to be an important function. This article, therefore, is particularly relevant, as the work of informed botanists.

The account, by date near the beginning of the period specially studied here, is by two botanists who have collaborated over the years, Dr. Perring, formerly at the Institute of Terrestrial Ecology (NERC) at Abbots Ripton, near Huntingdon, and Dr. Walters, until 1984 Director of UBG Cambridge. In the latter garden the flora of Breckland has been carefully assembled and is grown both for general interest and as a conservation measure.

8. Stuart, David. Cultivar cultivation, The Garden, January 1983.

This article was mentioned earlier in the chapter, but as it is important for botanical gardens it is also included here. Opinions differ in British botanical gardens about the relative importance of cultivating,

in the limited space available, native wild plants, exotic wild plants or rare, endangered, garden plants. This article urges the importance of growing cultivated plants in gardens.

9. Nature Conservancy Council (1984).  
Nature Conservation in Great Britain.

10. University College, London, Ecology and Conservation Unit (1984).  
A Nature Conservation Strategy for the UK: an independent view (Discussion Papers in Conservation No. 38).

The NCC's report was fully reviewed in Natural World (Winter/Spring 1984-5) by Barry Goldsmith, a lecturer with conservation interests at University College, London. He says:

This book is an important contribution and will become a classic. It is the best review of nature conservation in Britain ever written....

11. Council of Europe Newsletter

The two extracts quoted are examples of the important material to be found in this source.

(1) WWF/IUCN - WORLD CAMPAIGN TO SAVE PLANTS

Plants are our prime life-support system - they have fed the world and cured our ills since time began. Many important and

valuable plants and plant communities are in danger of dying out. They are endangered mainly by the disappearance of the habitats in which they live and by international trade. So the World Wildlife Fund (WWF) and the International Union for the Conservation of Nature (IUCN) have just launched a large-scale international plant conservation campaign under the motto: "Saving the plants that save us". This campaign will describe the world's resources and seek to guarantee freedom of choice for the future and safeguard the productivity of ecosystems. Its objectives include: encouraging specialists to take an active part in plant conservation by drawing attention to the use of plants in agriculture, medicine and industry; helping governments to solve conservation problems in ecologically important and species-rich plant communities; expanding tropical rainforest conservation programmes; developing legislation to assist in plant conservation and regulate trade in plants....

Council of Europe Newsletter No. 3, 1984.

- (2) The EUROPEAN COMMITTEE FOR THE CONSERVATION OF NATURE AND NATURAL RESOURCES (CDSN) held its annual meeting in Strasbourg from 20 to 23 March 1984 and drafted a Recommendation on the introduction of non-native species of wild flora and fauna. The member governments are recommended:
- to enforce strict controls on the introduction of non-native species into the natural environment of the territories of Council of Europe member states;
  - to regulate such introduction by means of permits issued by the proper authorities;
  - to undertake, before authorising introduction, to evaluate the probable

consequences this would have for  
wildlife and ecosystems and to  
inform the CDSN and the governments  
of neighbouring countries concerned  
by moves of this kind.

A recommendation will also be drawn up  
on the REINTRODUCTION OF NATIVE SPECIES  
.....

Council of Europe Newsletter No. 5, 1984.

## Chapter 9

## Chapter 9

### BOTANICAL GARDENS OPEN TO THE PUBLIC; GUIDES TO THE GARDENS - PRINTED PUBLICITY; ILLUSTRATIONS FROM THE GUIDES

The first section here lists botanical gardens open to visitors on a regular basis. An introductory note on the terms 'open' and 'not open' precedes the list, but hours of opening (which may vary) are not given.

Municipal botanical gardens are, predictably, open all day to the public. This applies also in some university gardens; where a 'Friends of the Garden' scheme exists, the garden may be closed at times to the public but available to members.

The gardens of the RHS at Wisley and of the Northern Horticultural Society at Harlow Car are included in the list. The difficulty of defining a 'botanical garden' has been mentioned already; compilers include different gardens on a somewhat arbitrary basis.

An unusual situation operates at Chelsea Physic Garden; after centuries of not opening to the public, the Garden began to do so for restricted hours in 1983. New management and new circumstances made this easier; it was an important addition to the gardens which are accessible to non-specialist visitors.

Gardens not open to the public are those of some universities, where the research function is paramount.

These may be described as 'Experimental Botany' gardens, which explains their primary purpose, distinguishing them from botanical gardens in the usual sense. However, even where a garden is not normally open, there may be limited access, perhaps on occasional 'open days'. Permission to visit a garden may be given to visitors, at the Director's discretion, on special application. Sometimes the research function is carried on at a site separate from the public garden, as at Oxford University. This, of course, deprives the ordinary visitor of the opportunity to see research in progress.

If a botanical garden is not regularly open to the public it does not indicate lack of interest on the part of the managers. Probably lack of the necessary facilities, including staff, with lack of finance, makes such a scheme impossible. There is increasing pressure on botanical gardens to open to the public. Now that new technology and changing conditions have deprived many workers of their job, the community's resources are needed more than ever to deal with this situation of increased pressure on leisure pursuits. Any contribution from a garden must be a welcome addition to recreational facilities, especially in an urban environment. At the same time, a garden's problems may not always be appreciated. Risk from vandalism is unfortunately very real and must be taken into account. Although only a small proportion of visitors are likely to cause trouble, the risk is a serious matter for those in charge.

Community workers are well aware that the community is not entirely reasonable in its demands. Facilities are expected, but the staff in charge are held responsible for breaches of security, when they occur. It is a situation with no easy solution; it applies also to librarians with rare books in strongrooms, to keepers of museums and art collections. Reconciling accessibility and security has to be attempted even if it cannot be entirely successful.

### Arboreta

Arboreta are included in the following list, as specialized botanical gardens; in some cases they are annexes, perhaps at a considerable distance from the parent botanical garden. Only genuine arboreta are included; some gardens have been called 'Arboretum' which are public parks and have been so, since their foundation.

Arboreta and pineta also exist as part of private estates. It was once fashionable, as mentioned already, for owners to establish a collection of interesting specimen trees in their grounds. Some collections have now disappeared, or become overgrown. Those remaining may be open to the public, like other private gardens.

There is a strong, apparently growing, public interest in trees. It may be partly due to realization that trees are vulnerable; the ravages of Dutch elm disease have brought this home vividly.



## Chapter 9

### Reference Material

There is no professional yearbook in this country listing all botanical gardens in Great Britain, whether they are open to the public or not. This reflects the fact that by origin and purpose gardens fall into different categories, and consequently no professional body officially represents the interests of them all.

1. International Dictionary of Botanical Gardens (IDBG)

The International Association of Botanical Gardens publishes this directory; several revised editions have been issued. The directory is not completely comprehensive; it is based on questionnaires returned by gardens. Only gardens open to the public are said to be included, although exceptions exist. The lengthy introduction, updated in successive editions, contains interesting and useful material.

2. Hessayon, D.G. and Hessayon, J.P. The Garden book of Europe (1973)

A list of botanical gardens and parks in Great Britain is given here as well as useful horticultural information. Dr. <sup>D.G.</sup> Hessayon, an authority on horticulture, has written numerous books for the amateur gardener; his style is clear and enthusiastic. Listing botanical gardens, he emphasizes the difficulty of which to include. He refers aptly to the fine dividing line separating botanical gardens from other gardens.

LIST OF BOTANICAL GARDENS, INCLUDING ARBORETA, IN  
GREAT BRITAIN, CURRENTLY OPEN TO THE PUBLIC

(\*) Gardens open by special arrangement

NATIONAL

England

Bedgebury National Pinetum and Forest Plots, Hawkhurst,  
Kent.

Royal Botanic Gardens, Kew, Richmond, Surrey.

Wakehurst Place, Ardingly, Haywards Heath, Sussex

(attached to the Royal Botanic Gardens, Kew).

Westonbirt Arboretum, Westonbirt, Near Tetbury, Gloucestershire.

Scotland

Royal Botanic Garden, Edinburgh, Lothian.

Logan Botanic Garden, By Ardwell, Wigtownshire (attached  
to the Royal Botanic Garden, Edinburgh).

Younger Botanic Gardens, Benmore House, By Dunoon, Argyll.

UNIVERSITY

England

University of Birmingham Botanic Gardens, Winterbourne,  
Edgbaston Park Road, Birmingham B15 2TT (\*).

University of Bristol Botanic Gardens, Department of Botany,  
Woodland Road, Bristol, BS8 1UG (\*).

University of Cambridge Botanic Garden, Cambridge,  
Cambridgeshire.

University of Durham Botanic Garden, Botany Department,  
South Road, Durham, DH1 3LE (\*).

Englefield Green, University of London Botanical Supply  
Unit, Elm Lodge, Englefield Green, Surrey (\*).

Exeter: The Grounds and Gardens of the University of  
Exeter.

University of Hull Botanic Garden and Experimental Garden,  
Thwaite Street, Cottingham, Yorkshire.

University of Leeds Botanical Experimental Garden,  
Department of Plant Sciences, The University,  
Leeds, LS2 9JT (\*).

Beaumont Hall, Stoughton Drive South, Leicester  
(attached to the University of Leicester).

Granada Arboretum, Jodrell Bank, Cheshire  
(attached to the University of Manchester).

Ness Gardens (University of Liverpool Botanical Garden),  
Ness, Wirrall, Merseyside.

University of Oxford Botanic Garden, Rose Lane,  
Oxford, Oxfordshire.

University of Reading Plant Science Botanic Garden and  
Experimental Grounds, The University, Whiteknights,  
Reading (\*).

University of Southampton Botanic Garden,  
Southampton, SO9 5NH, Hampshire.

#### Scotland

University of Aberdeen: Cruickshank Botanic Garden,  
St. Machar Drive, Old Aberdeen, Grampian.

University of St. Andrews Botanic Garden,  
St. Andrews, Fife, KY16 8RT.

Wales

University of Aberystwyth Botany Gardens,  
University College of Wales, Aberystwyth (\*).  
University of Swansea Botanic Garden, University College,  
Singleton Park, Swansea, Glamorgan.

MUNICIPAL

England

Bath: The Botanical Gardens, Parks Department,  
12 Charlotte Street, Bath, Avon.  
Bradford Botanic Gardens, Lister Park, Bradford,  
Yorkshire.  
Chester Zoo, Chester, Cheshire.  
Hammersmith and Fulham, London Borough of,  
Parks and Cemeteries Department.  
Hillier Arboretum, Jermyns Lane, Ampfield,  
Near Romsey, Hampshire.  
City of Liverpool Botanic Garden, Calderstones and  
Harthill, Liverpool, L18 3JD.  
Manchester: Wythenshaw Park (formerly Alexandra Park  
cactus garden) and Fletcher Moss Botanical Gardens.  
Probus Demonstration Gardens, Near St. Austell  
(Cornwall County Council Education Committee).  
Sheffield Botanical Gardens, Sheffield, South Yorkshire.  
Southport Botanical Gardens, Churchtown, Southport,  
Merseyside.

Ventnor: Steeplehill Botanic Garden, Ventnor, Isle of Wight.

York: Museum Gardens, Yorkshire Museum, York YO1 2DR,  
North Yorkshire.

### Scotland

Glasgow Botanic Gardens, Glasgow G12 OUE, Strathclyde.

### Wales

Swansea: Singleton Botanic Gardens, Swansea, West Glamorgan.

### PRIVATE (Society, Individual)

Birmingham Botanical Gardens (Charity-Educational),  
Westbourne Road, Edgbaston, Birmingham B15 3LW.

Northern Horticultural Society Gardens

(Northern Horticultural Society)

Harlow Car, Harrogate, North Yorkshire.

Garden of Leonard Maurice Mason (Leonard Maurice Mason),

Talbot Manor, Fincham, King's Lynn, Norfolk.

Chelsea Physic Garden (City Parochial Foundation)

(Board of Trustees),

Royal Hospital Road, Chelsea, London SW3,

(open during restricted hours).

South London Botanical Institute Gardens,

323 Norwood Road, London SE24.

Royal Horticultural Society's Garden,

Wisley, Ripley, Woking, Surrey.

### Guides to the gardens: printed publicity

British botanical gardens, at least those regularly open to the public, usually issue an official garden guide. In this respect, they probably make above-average provision, compared with other public institutions. (Full-length books devoted to individual botanical gardens are not considered here.)

The collection of extracts which make up this section is selective, showing the wide variety of features to be found in the gardens. The rock garden at Edinburgh, for example, is world-famous; plant collections and different points of interest, in others, may be less well-known. The selection is an attempt to highlight in each case a feature for which the particular garden is noted, and to indicate the variety in the gardens as a whole.

The second, perhaps even more important reason for including these extracts, is for their significance in public relations. In this context, the widely varying styles are of interest. All of them, naturally, are intended for use as practical handbooks by visitors while touring the gardens, and afterwards, perhaps, kept as pleasant souvenirs. They are usually reasonably priced (perhaps subsidized to some extent). The number of illustrations varies as much as the size and general layout of different guides, ranging from lavish to economical.

Of particular interest is the fact that UBG Cambridge

and RBG Edinburgh have taken the opportunity in their guides to ask: What should the functions of a botanical garden really be? This treats the visitor as someone seriously concerned about the gardens' purpose.

## Bristol University

### HISTORICAL

The first Botanic Garden within the University was established in 1882 on the [small] triangle of land between Woodland Road and University Road by Adolf Leipner, who in 1886 became the first Professor of Botany.

In 1938 a larger garden was laid out on the site now occupied by the Senate House in Tyndall Avenue. The transfer to the present site took place from 1959 to 1960.

The Hiatt Baker garden was also formerly sited at Tyndall Avenue, and the inscribed stonework is in commemoration of the bequest of that site to the University....

### THE ASSOCIATION OF FRIENDS OF

### BRISTOL UNIVERSITY BOTANIC GARDEN

We hope that members will find pleasure and reward in this Association from being able to gain access to the garden at weekends, from extending their acquaintance with plants and with other people with like interests, from having a meeting point and a source of help and advice at our occasional meetings, from themselves having an influence on the activities of the garden, from receiving our reports and seedlists, and from being able to acquire plants not normally available from commercial sources....

Since 1974 the Garden has had a special contract with the Nature Conservancy Council, under which a collection of native flowering plants and ferns rare in the Eastern Region of England is being gradually built up. In 1976 this new Conservation Section of the Garden began to occupy a permanent site (M4-5) in the Research Area, equipped with a small glasshouse and potting shed. The growing of stocks of rare British species is not, of course, a new activity in the Garden, but the aim of the conservation section is to hold vegetatively propagated (cloned) stocks under controlled conditions where the risk of genetic contamination by cross-pollination is reduced or eliminated. Such stocks are important for several reasons, as an 'insurance' against complete extinction in the wild, to provide bona fide research workers with rare species they may need for their study, and also to provide examples of 'protected' species so that members of the public can see as live specimens plants which they may otherwise only know as illustrations in publicity for nature conservation. This last function is increasingly important, especially as there are now twenty wild plants on the list of nationally rare species which are protected by law against picking or uprooting. A special display bed (J8) shows some of the famous East Anglian rarities as they flower during the season, including some nationally rare protected plants such as the beautiful Spiked Speedwell (Veronica spicata)....

Botanic Gardens, like many other institutions, seem to be questioning their future role much more consciously than ever before, a process which the economic recession and financial stringency of recent years has powerfully encouraged. (The hard facts are that it cost more than twice as much to pay for the labour force in 1976 than it did in 1970, although we actually employed nine fewer people!)....

In this climate of thought, one activity of the Garden which is both new and possible is in the field of botanical conservation. All aspects of environmental conservation have received a great deal of publicity in recent years, and many governments, including our own, have explicitly recognised that



environmental problems are urgent and of great importance. The contract made by the Nature Conservancy Council to the Garden is just one instance of this heightened concern. Fortunately, Botanic Gardens are in general well equipped to make an important contribution, not only directly, by holding stocks of endangered plants, but indirectly, and perhaps even more importantly, by educating people in the problems of botanical conservation in the modern world....

Any attempt to publicise the work of the Garden, whether in conservation, or in other fields, raises a series of questions about the material we can use, its suitability, and of course its cost. Here we have new tasks and new possibilities. To what extent should the resources of the Garden be used to educate 'the general public' - whatever that may mean - and to what extent should we limit our activities to the education of University students? What of the increasingly large field of specialists whose requirements fall somewhere between these two categories? In a television age, where the man in the street and, even more, the child in the classroom is likely to know about the threatened rain forest of the Amazon or the giant tortoises of the Galapagos, where can we best make an educational contribution? The best we can say at the moment is that we are acutely aware of these problems, and are making, within the limits of a very strict budget, a few attempts to find some answers. The production of this new 'Guide' is, of course, just one of these!

In facing future needs, the Cambridge Garden has several advantages. Firstly, it has space to develop on an attractive site which is surprisingly near the City centre but not unduly threatened, either by marginal development (though this naturally causes concern) or by atmospheric pollution (though the lichen flora of the whole of East Anglia is significantly impoverished). Secondly, it has inherited from the past a remarkably sound structure and layout, with all the advantages which a continuity of general policy can produce. Thirdly, it is endowed with a sizeable,

though not inexhaustible, private bequest in the shape of the Cory Fund which has made important developments possible in the last thirty years. Lastly, and perhaps most importantly, it holds together amenity, horticulture and botanical science in a way which makes it the envy of many visitors from other Institutions where fragmentation of the enthusiasm for plants into isolated compartments is a regrettable fact of life.

## Chester Zoo

### HOW THESE GARDENS WERE CREATED

Chester Zoo was founded by the late Mr. George Saul Mottershead in 1931; at this time the Zoo and Gardens comprised 9 acres. The Gardens were developed over a period of years and now cover approximately 150 acres, with a further 400 acres of farmland. The animals and birds are exhibited in natural surroundings wherever possible. In some instances, flower borders act as a barrier to keep visitors a safe distance from the livestock. Many of the larger lawns situated around the Zoo are used as picnic areas.

During the period 1955-1975, the Gardens developed more rapidly, several greenhouses were built and additional staff employed. 80,000 plants, propagated in the Zoo nursery, are required to fill all the flower beds in the Zoo. Bedding is changed at the end of May/early June and again in October, at the end of the summer; some of the larger flower beds require as many as 2,000 plants.

The Gardens are an integral part of the Zoo and attract almost as many visitors as do the animals. Many Horticultural Societies make a point of visiting Chester Zoo every year....

Although most plants flower in the Spring and Summer, one will always find

something in bloom in the garden in every month of the year. At Chester Zoo most of the indoor animal houses are planted with shrubs, pot plants and stage orchids. Not only do the plants enhance the appearance of the houses but they help to disguise the natural smell of the animals.

The Tropical House is our speciality and many varieties of variegated foliage plants can be seen throughout the year....

RBG, Edinburgh

#### WHAT IS A BOTANIC GARDEN?

The primary function of a botanic garden is botanical and horticultural research, especially the accurate identification and classification of plants (known as plant taxonomy). The garden, the glasshouses and the herbarium (a collection of preserved plant specimens from all over the world) are reservoirs of plant material for that research. Plant studies frequently demand a knowledge of the source of plant material and therefore botanic gardens try to grow plants of known wild origin. 'Behind the scenes' at Edinburgh there are large collections of research plants, not all of great ornamental value but from which are selected some of the more attractive specimens which will be seen displayed both in the glasshouses and in the garden itself. In addition plants of economic value or of especial biological interest are on show in various parts of the garden.

A botanic garden could not function without a comprehensive reference library and at Edinburgh there is one of the richest collections of botanical books and periodicals in the world with over 75,000 volumes augmented by an extensive archive of prints, photographs, cuttings and manuscripts. This library is housed in the herbarium building which

also contains about 1½ million preserved plant specimens and provides accommodation and laboratories for the scientific staff. Training is another function of some botanic gardens including Edinburgh: in addition to horticultural, scientific and administrative staff, the garden employs some 42 student gardeners who attend a three-year course in amenity horticulture leading to the award of a diploma....

### ROCK GARDEN

Although the Rock Garden was begun in the closing years of the 19th century, it was totally rebuilt between 1908 and 1914 using a specially selected conglomerate rock from the slopes of Ben Ledi, near Callander, in Perthshire and, for the moister areas, a sandstone from Dumfries.

The spaces between the rocks provide suitable habitats for plants from many mountainous parts of the world which are traditionally, but often incorrectly, thought to provide all 'rock garden plants'. High mountain or 'alpine' plants are to be found in great numbers within the confines of the Rock Garden (and in the Alpine House, ...) but also present are representatives from very varied environments from hot Mediterranean shores to cold permafrost regions of the Arctic....

### Glasgow (City)

#### No. 7 ECONOMIC PLANTS (TROPICAL)

This house contains plants which yield products of commercial value - food, medicines, timber etc. The plants are labelled to give brief information on the products and on the plants themselves. Among the most familiar are Cocoa (Theobroma cacao), Coffee (Coffea spp.), Pineapple (Ananas comosus), Sugar Cane (Saccharum officinarum), Rice (Oryza sativa) and Cotton (Gossypium spp.).

The flowers of the cotton plant are rather like mallow flowers and the fruits (boles) open when ripe to reveal the cotton wool, or floss, surrounding the seeds. There are numbers of other plants from which fibres are obtained, for example Jute (Corchorus spp.) the stems of which yield the fibre used in coarse bags and matting, and Kapok (Ceiba pentandra), the floss of which is used for stuffing cushions, lifebelts etc.

In this country pineapple and banana are the best known tropical fruits but there is a wealth of others which are not generally exported to Britain. The Mango (Mangifera indica), is the principal fruit of India and other parts of Tropical Asia, where it is used for dessert and in making chutney....

In addition to fruits, Tropical America is the source of many other economic plants such as Para Rubber (the chief commercial rubber) and cocoa. Many medicinal plants also come from there. Quinine, for example, is prepared from the bark of Cinchona spp. and is now grown in many other tropical areas for use in the treatment of malaria. The leaves of Erythroxylon coca yield Cocaine, the well known anaesthetic, while the roots of the small plant Cephaelis ipecacuanha give Ipecacuanha, a product used in many proprietary medicines.

Modern medicine depends very largely on synthetic substances but it is interesting to note that a number of plants have been added to the Materia Medica in recent years. One of the most recent is Catharanthus roseus which has been used in the treatment of certain forms of cancer. The roots of Rauwolfia serpentina have been used in Indian medicine for centuries. They yield "Rauwolfine" which is used to treat hyper-tension. Cortisone, used in the treatment of rheumatoid arthritis, was prepared from Strophanthus sarmentosus in 1949; it has since been produced from Yams (Dioscorea spp.).

Also in this house are a number of dye plants....

Among other spices, Pepper is the most important. Black Pepper is produced by grinding the dried fruits including the husks, while White Pepper is produced from the same plant, Piper nigrum, by removing the husks before grinding....

## Harlow Car Gardens

### THE HISTORY AND DEVELOPMENT OF

#### THE GARDENS

In 1948 the Northern Horticultural Society started to make a garden at Harlow Car. In the words of the first Chairman, the late Lt. Col. Charles H. Grey. D.S.O., F.L.S., it was to be a "Northern Wisley". The Society was formed in Manchester in 1946 by a group of horticulturists with the object of helping gardeners to contend with the more difficult growing conditions in the northern half of the country. The main aims of the Society were:

1. To establish a Trials Ground where the garden value of plants could be determined.
2. The distribution to members of a Journal entitled The Northern Gardener.
3. To provide a Library.
4. To give advice to members.
5. To hold lectures and demonstrations.

Various sites for a Trials Garden were considered and eventually the invitation of the Harrogate Corporation to take a lease of land at Harlow Car, one mile from the centre of Harrogate, was accepted. The site comprised some forty acres of land.... Divided by a stream, it is an exposed situation with a cold, heavy loam soil typical of much of the north of England; the soil is extremely acid, varying between pH 4.8 and pH 5.6. About twenty acres

of additional land has been acquired since, and some of it has also been developed. At an altitude of 500 feet it is a challenge to any gardener, and we can truly say that if a plant grows well at Harlow Car it should be hardy enough for most parts of the north....

#### Vegetable Sanctuary

Conserving old vegetable varieties is an urgent necessity in view of recent E.E.C. regulations which exclude many kinds and make them illegal to catalogue or sell commercially. The vegetable sanctuary retains many of the old varieties for future use by plant breeders and as a living museum of our historic vegetables, many of which were cited in literature and are of tremendous interest to students and school children. Apart from our own varieties, peasant kinds from European countries within the community are also in danger and a selection of these are also conserved in the sanctuary. Although not strictly vegetables, the rhubarb varieties have gone into decline and Harlow Car maintains a collection of seventy different kinds, a selection of which will be seen growing adjacent the vegetable sanctuary....

#### RBG, Kew

The Gardens come under the Ministry of Agriculture, Fisheries and Food and contrary to popular belief, their primary purpose is not to serve as a public park, but as a scientific institution. An important function of the various Divisions is to assist in the accurate identification of plants from world-wide sources. The Gardens act as a centre for the distribution of economic and decorative plant material and as a quarantine station. Gardeners trained at Kew have worked all over the world for the last 200 years or so.

### The Diploma in Horticulture Course

At present 20 students are selected each year for the Horticultural Course leading to the Kew Diploma. The course extends over three years and includes practical work in the Gardens as well as instruction in the laboratory, drawing office and lecture theatre....

Kew is increasingly involved in conservation, with thousands of species of plants all over the world threatened with extinction. Some of those in danger are carefully grown in the Gardens or their seeds are stored in the Seed Bank situated at Wakehurst.

In addition to the Living Collections and Administration there are four other Divisions:

#### The Herbarium

The Herbarium is housed in the large block of buildings to the right of the Main Gate. The collection of dried and pressed plants numbers between 4 and 5 million specimens and is one of the largest in the world. It is not open to the public, but bona fide students and research workers may study the collections on application.

#### The Library

Also housed in the same building is the Library which ranks as one of the best and richest botanical libraries in the world with over 120,000 volumes and extensive collections of archives, illustrations, maps, etc. It is available only to bona fide students, on application.

#### The Museums

The Museums' extensive reference collection of economic botany material is one of the finest in the world. The collections are used for research, education and display purposes.

#### The Jodrell Laboratory

This Division undertakes research on



the anatomy, cytology, biochemistry and physiology of plants, the last section being at Wakehurst Place.

Further information on the work of these Divisions may be found in the orientation display area in the Orangery....

#### Wood Museum

The Wood Museum is housed in part of Cambridge Cottage, which was presented to the Gardens by King Edward VII after the death of the last Duke of Cambridge in 1904. It is approached through Cambridge Cottage garden. The interior of the building has been remodelled to make it suitable for a museum, but the outside is unchanged except for the removal of a narrow, first-floor balcony.

The ground floor exhibits include planks of woods, mainly from tropical Commonwealth countries, with their various uses explained. Woods from British-grown trees (though not necessarily native species) are displayed along a corridor, with softwoods, from gymnosperm trees (mostly conifers), to one side, and hardwoods, from broad-leaved trees, to the other side. There are also some very fine examples of inlay work and a variety of wooden objects including a cannibal's club and eating bowl. A section from the trunk of a Wellingtonia or Giant Sequoia, Sequoiadendron giganteum, is near the entrance....

The first floor is devoted to past and present uses of timber including paper, chipboard and hardboard manufacture....

## Leicester University

The central, roughly north-south axis of the Garden (Hedgerow Walk) follows the line of an old hedgerow and some of the trees, e.g. the Field Maple (Acer campestre) and the Ashes (Fraxinus excelsior) still exist today. Several English Elms (Ulmus procera) which also belonged to this hedgerow but which contracted Dutch Elm Disease during the epidemic of the 1970s, were felled between 1975/6. A second hedgerow ran roughly east-west through the length of the Summerhouse Bed to the Limestone Garden (then the site of a small pond), and from there on eastwards through the Spinney and beyond. A third hedgerow followed a route from Hedgerow Walk eastwards through Hastings House. The solitary oak (Quercus robur) on the lawn of the Knoll had the company of two large English Elms until 1975/6,.....

By 1967/8 ... the present character of the Garden had begun to take shape. Current developments and management are directed towards fulfilling more effectively the Garden's roles in the areas of research, education, conservation and amenity.

## Liverpool (City)

Botanic Gardens have existed in Liverpool since 1803 when a ten acre site was opened two miles from Edge Hill. The venture was the result of the efforts of William Roscoe, who was a close friend of Sir James E. Smith, the founder of the Linnean Society of London.

The 1803 garden was one of the first ventures of its kind in the world and drew students from every part of the country. Ships captains brought plants from the Americas and Asia to grace the large conservatories built by Roscoe and his fellow enthusiasts.

Indeed, they brought more than plants - the rock garden, a distinct novelty at that time, was largely constructed from foreign stone which had been used as ballast in ships returning to Liverpool.

In 1841, a year after the Government had acquired Kew, Liverpool Corporation took over the responsibility for the Edge Hill Garden. One hundred years later the glasshouses were wrecked by the Luftwaffe.

The City of Liverpool Botanic Garden is now located at Harthill and Calderstones Park. This park was once the estate of shipping magnate Charles McIver. The visitor will find many items of absorbing interest in the glasshouses and in the exterior features of the Botanic Garden.

One of the most unusual and interesting of these features is the Trough and Sink Gardens section, located between Houses 2 and 3....

Many alpine plants, especially those which require dry conditions and sheltered positions, can be grown in troughs and in the examples on display, many informal arrangements incorporating tufa rock outcrops can be seen....

## Manchester (City)

### FLETCHER MOSS BOTANICAL GARDENS

#### DIDSBURY, MANCHESTER

The gardens and playing fields were officially given to the City early this century by the late Alderman Fletcher Moss. The location and southerly aspect of the rock gardens has made it possible to create a haven of botanical beauty for the professional and amateur gardener and also generally for the town dweller. Protection from cold winds allows many specimen trees and shrubs to be grown. The garden contains many uncommon alpines, bulbs, screes, with

aquatic and marginal plants around the natural pond and water features.

View the heather garden, peat garden - containing miniature conifers and rhododendrons - the alpine house and explore the wild garden, containing colchicums, rose species and many other natural varieties endemic in Britain and Europe.

Many varieties of the plants and shrubs are labelled and for the keen botanist the names are in Latin. An information board displays the names of the 'plants of the week' - something to see throughout the year.

The Parsonage is detached from the rock garden and is an enclosed garden containing the Orchid House. The main feature are the Cymbidiums flowering from Christmas until May. Camellias, Chusan Palms, Mulberry Tree, Lavender borders, Rhododendrons and other trees and shrubs, mainly for 'autumn colour' complete the collection. 'Natural order beds' offer students the opportunity to further their knowledge....

#### WYTHENSHAW HORTICULTURAL CENTRE

WYTHENSHAW PARK, WYTHENSHAW ROAD,

WYTHENSHAW, MANCHESTER

The Centre offers the public an opportunity to see how the total 'plant stock' is propagated and grown in the glasshouses prior to being used in the City Parks and civic buildings.

The extensive glasshouses also contain the 'Charles Darrah' Cactus collection recently transferred from Alexandra Park.

The outside areas offer display plots and a 'plant trial area' where practical demonstrations and talks will take place throughout the year about bedding, vegetables and specialised subjects.

## Ness Gardens, Liverpool University

The topography of the site is typical of the Wirral Peninsula with sandstone promontories protruding through glacial drift. The undulating site is in itself a great asset in the development of a garden, giving scope to create vistas and features on the hillsides which may be viewed from some distance. The variety of soils is also an asset....

There were three main ornamental features in the original scheme, each arranged in compartments surrounded with shelter plants. There was also a fruit garden, a vegetable garden and a range of plant-houses. The amenity areas were open to the public and the walk to 'Bulley's Gardens' became a popular outing for Wirral residents. A. K. Bulley died in 1942 and in 1948 his daughter, Miss A. L. Bulley, presented the whole estate, with a generous endowment to the University of Liverpool, to be kept as a botanic garden, 'as a practical and fitting tribute to the memory of her father'. One condition of her gift is that the policy of opening a specified area of ornamental ground to the public should be continued.

The Gardens had been completely neglected in the Second World War and when hostilities ceased, the Head Gardener, Mr. J. Hope (who should normally have retired in 1939), began with two assistants to push back the encroaching wilderness. The changing role of the Gardens and the importance of making maximum use of mechanical equipment led to a programme of redevelopment which began in 1956-57 when the fruit and vegetable gardens were cleared. The steady growth of shelter trees presented opportunities to plan on a bolder scale. Now it was possible to include vistas and the creation of the Heather Garden on the south-west slope of the hill has provided access to one of the finest views across the Dee to the Clwyd Hills. Development work has carried on steadily over the years and new features have been added with the intention of providing colour and interest for all seasons of the year.

THE THREE GARDENS

The Botanical Gardens of Oxford are three in number. They have a purpose in common - to improve our understanding of plants and of the pleasures and uses they give us. But in origin and character they differ.

First, there is the BOTANIC GARDEN, founded in 1621 and still maintained to exhibit the whole range of flowering plants in the world, the results indeed of higher plant evolution.

Secondly, there is the GENETIC GARDEN, founded in 1954 in continuation of an earlier experimental garden and designed to illustrate the processes of evolution actually taking place in nature and in cultivation today.

Thirdly, there is the NUNEHAM ARBORETUM, founded in 1830 and taken under the management of the Botanic Garden in 1962. It is designed to display the most splendid trees and shrubs and woodland plants that can be grown in England.

C. D. DARLINGTON

J. K. BURRAS

Emeritus Professor  
of Botany.

Superintendent.

THE GENETIC GARDEN

This experimental garden, one acre in extent, is situated at the edge of the University Parks, north of the Observatory. It is open in university working hours. Its purpose is to show the process by which evolution is known to be occurring in flowering plants. The groups of plants are therefore arranged in relation to problems of immediate interest for teaching and research as follows:

## I. SPECIES, HYBRIDS, AND CULTIVATED PLANTS

Particular genera are taken to illustrate natural variation among their species and show the changes which give rise to new species. The examples chosen also illustrate the origins of cultivated plants: grains and vegetables, as well as fruits and flowers....

## II. BREEDING SYSTEMS

Species are kept going by systems of breeding which are genetically controlled, sometimes to ensure outbreeding and sometimes to sustain inbreeding. The simplest is where male-sterile plants are mixed with hermaphrodites, as in mints, marjorams, and plantains....

## III. VARIEGATION

Plants with leaves patched or striped have been brought together in the Botanic Garden since the time of Morison for their scientific as well as their ornamental interest, and our present collection is probably the largest in the world. Here representative examples are arranged according to the different causes of the variegation which are now known....

## IV. PROBLEM PLANTS

Our problem plants are botanical and horticultural curiosities many of which provide objects of research or exercises in teaching. The largest group are the plant mixtures which are of three kinds: sexual hybrids, graft hybrids, and chimaeras....

Probus Gardens, Cornwall

(1) PROBUS GARDENS

AND RURAL STUDIES CENTRE

A GARDEN THAT'S DIFFERENT

PROBUS GARDENS are probably unique in Britain, with over six acres of permanent demonstrations illustrating a wide variety of gardening methods, planting displays, and the results of modern techniques and research....

(2) Cornwall Education Committee

COUNTY DEMONSTRATION GARDEN

and

CENTRE FOR RURAL STUDIES

PROBUS

GUIDE

Purpose of the Garden

The Centre has been established to illustrate in the form of permanent demonstrations and planting displays, a comprehensive range of garden practices, plant utilisation and the results of modern gardening techniques and research.

It is hoped that the Centre would help visitors:

1. To improve their gardens thus assisting them to utilise their soil and surrounds to their best possible potential.
2. To provide an opportunity for individuals, members of committees, architects, planners, and others to study the use and potential of ornamental plants for the purpose of improving the landscape of housing estates, villages and towns.



3. To draw attention to the close association which exists between plants and medicine (e.g. herbs), history and geography, (e.g. exploration of new countries, plant collecting) and the problems associated with the study and understanding of the Countryside.
4. To provide a Centre at which demonstrations, courses, conferences and exhibitions can be held.
5. To serve as the County's propagation Centre at which plants can be raised and despatched to education establishments throughout the County for planting and teaching purposes.....

(3) SCHOOL VISITS (All Ages)

to the

RURAL STUDIES CENTRE

and

DEMONSTRATION GARDEN

at PROBUS

The facilities at the Centre are of great educational value in supplementing the many aspects of Rural/Environmental Studies and Primary School gardening carried out in schools.

Children can personally explore, observe and study in pleasant and stimulating surroundings.....

These facilities can be used

- a) to promote an understanding of children's relationship to their environment, both natural and created, with particular reference to their dependence on plants.
- b) to develop an awareness of how to utilise the soil and our surrounds to the best possible potential.

- c) to emphasise the need for responsible attitudes towards the conservation of our natural environment.
- d) to develop an appreciation for living things.

### SOME OF THE MANY DEMONSTRATIONS

#### PERMANENTLY ON VIEW

DEMONSTRATION HALL - Classroom facilities and display area. Used for wet weather programme when necessary.

TRIAL PLOTS - ways of utilising the soil to its maximum potential to produce more healthier vegetables.

HISTORICAL GARDEN - a collection of plants, demonstrating when they were brought into this country, in historical sequence from different parts of the world.  
(Encompasses geography as well.)

CHILDREN'S NATURAL SCIENCE AND ACTIVITY GARDEN - includes many diverse aspects, e.g. farm crops; pond life; weather studies; the usefulness of plants.

FRUIT GARDEN - a display of all types of fruit grown in this country.

VEGETABLE GARDEN - a display of all the different types of vegetables and how they are grown productively.

ENVIRONMENTAL STUDIES AREA - this area contains a nature trail and provides the opportunity to observe and study wild plants, insects and birds in their natural habitat.

GREENHOUSE DISPLAY AND PROPAGATION HOUSE - ideas on greenhouse gardening - their usefulness and potential also demonstrating methods of propagating plants, and a collection of world crops of economic significance.

BEEES - Demonstration Hive. Apiary visits can only be made under supervision (arranged beforehand).

HERBS - medicinal and culinary collection.

Over 50 different Demonstrations....

## Westonbirt (Forestry Commission)

The Arboretum is maintained primarily as a scientific collection of trees and is also used for education, both vocational and non-vocational. The Silk Wood Trail with its 'teacher pack' guide on sale at the Westonbirt Visitor Centre is designed for students, but its attractive route has found favour with the general public who have a little more time to spare and an eagerness to learn more about trees....

Management of the Arboretum is the responsibility of the Forestry Commission Research and Development Division and the Director of Research who is advised by the Westonbirt Consultative Committee which includes members with expertise in botany, horticulture, arboretum management and the local countryside. The design and layout of planting within the Arboretum is undertaken, with Consultative Committee approval, by the Arboretum staff. Major developments concerning visitor management and recreation are planned by the Forestry Commission Design Branch and carried out by civil engineering and estate staff from the South West England Conservancy of the Forestry Commission....

Visitors are regarded as very important because they are representatives of the general public for whom ultimately all our research with trees is carried out. For example, what point would there be in discovering the ultimate garden shade tree if there were no gardens and no people requiring shade? The product of the Arboretum is scientific knowledge, the place of work is the Arboretum itself and for us every day is an 'open day'. Our objective is simply to show off to our visitors just what we have here and to provide them with sufficient amenities to make their visit comfortable. Because so few people are employed at Westonbirt it is necessary for us to impart information largely through display, trails, publications and labels as opposed to personal guidance.

THE OBJECTS OF MANAGEMENT ARE:

To establish, maintain, perpetuate and extend a collection of authentically documented trees and shrubs.

The needs of Silviculture and Arboriculture are to be met by researching the phenology, morphology, mensuration and taxonomy of the collection.

To promote education on tree matters, for a wide range of intellectual levels, using whichever media is suitable within the resources available.

To make the collection publicly available, and where possible to provide aesthetically pleasing features within the framework of the foregoing objectives.

To provide an atmosphere and administration wherein public enquiry can be sympathetically and efficiently answered.

Yorkshire Museum Botanic Gardens

YORKSHIRE MUSEUM

BOTANIC GARDENS

L I V I N G   S C U L P T U R E

A GUIDE TO THE TREES

[This collection contains many commonly-found trees and shrubs, together with some rare specimens. The five most notable are listed below:]

Metasequoia glyptostroboides, Hu & Cheng

Sorbaria tomentosa, Rehd.

Crataegus pinnatifida, Bunge

Aralia chinensis, L.

Ailanthus altissima, Swingle

The following illustrations, from the official guides, are reproduced here as another aspect of publicity by the gardens. In this context they are interesting as examples of the image that the gardens wish to present of themselves. (The originals of Nos. 4, 6 and 8 are in black and white, the rest are in colour.)

#### National

1. Edinburgh Royal Botanic Garden: Rock Garden Pond.
2. Kew Royal Botanic Gardens: Palm House with spring bedding.
3. Westonbirt Arboretum (Forestry Commission): the memorial sarsen stone on Mitchell Drive.

#### University

4. Cambridge University Botanic Garden. [Cover of leaflet.]
5. Ness Gardens (University of Liverpool): a late-summer scene in the Heather Garden.
6. Oxford University Botanic Gardens: The Botanic Garden as figured in Loggan's Oxonia Illustrata, 1675.

#### Municipal

7. Glasgow Botanic Gardens: Tree ferns.
8. Sheffield Botanical Gardens: Sheffield Botanical Gardens, 1970.

Edinburgh Royal Botanic Garden:

Rock Garden Pond.



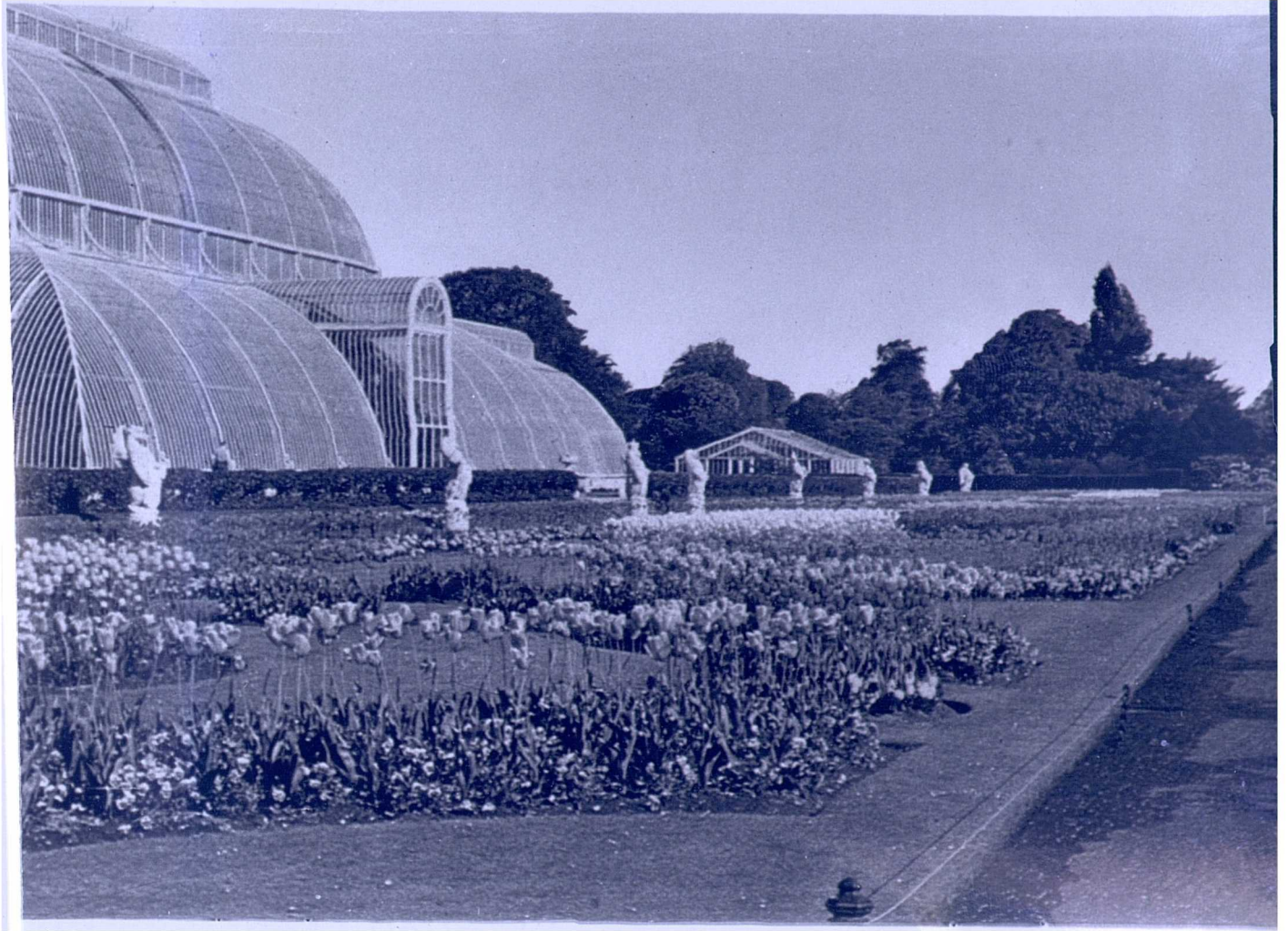




**Edinburgh Royal Botanic Garden:**

**Rock Garden Pond.**





**Westonbirt Arboretum (Forestry Commission):  
the memorial sarsen stone on Mitchell Drive.**



**Cambridge University Botanic Garden:**

**[view of Garden shown on front of folding  
leaflet].**







**Ness Gardens (University of Liverpool): a  
late summer scene in the Heather Garden.**



Oxford University Botanic Gardens:  
The Botanic Garden as figured in  
Loggan's Oxonia Illustrata, 1675.





Glasgow Botanic Gardens: Tree ferns.

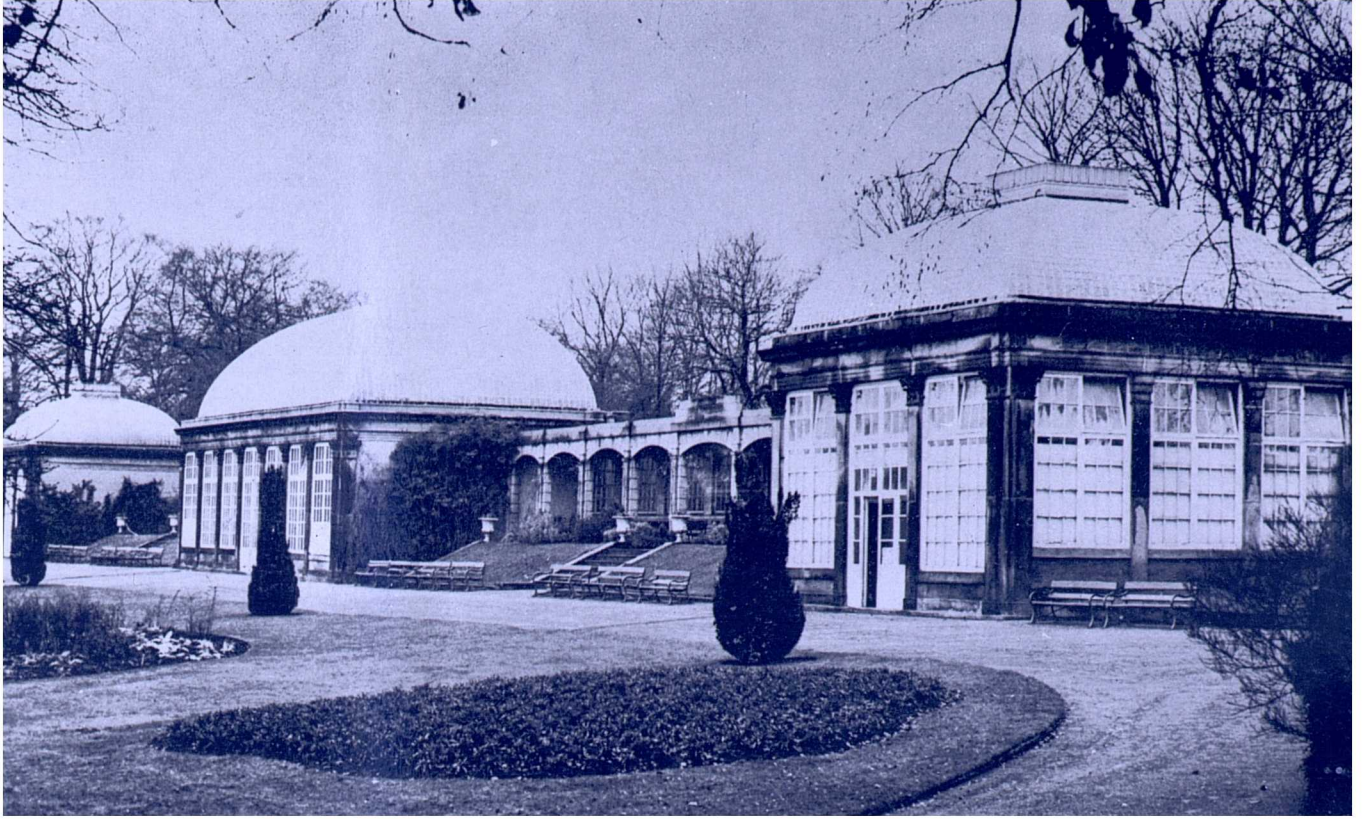






**Sheffield Botanical Gardens:**

**Sheffield Botanical Gardens, 1970.**



## **Chapter 10**

## Chapter 10

### FUNCTIONS OF GARDENS - THE PROBLEM OF OVERLAP

This chapter considers the extent of duplication between the functions of gardens and of other organizations, probably often arising from the development of bodies not present when the gardens were started. Such a consideration does not appear to have been attempted previously.

One aim of this thesis is to identify those functions of modern British botanical gardens which they alone carry out at present, and for which they are likely to be responsible in the future. The order in which the functions are considered is the same as in Chapters 3-8.

Some points discussed here are also mentioned elsewhere, but this section aims to collect together all material relevant to the overlap of functions.

#### Teaching and research

##### a) Teaching

The botanical garden forming part of a University Department of Botany carries out today the same functions as in the past, providing plant material and facilities for the instruction of undergraduates. The academic study of botany is normally in a university and leads to a degree; other institutions are not involved at this level of study. This function of (academic) botanical

gardens emerges, therefore, as one not found elsewhere, and there is no overlap with other institutions.

Training in horticulture may be through a degree course, or can be undertaken at a College of Agriculture and Horticulture, at Kew RBG or Edinburgh RBG, Wisley, or Threave (National Trust for Scotland). Universities are therefore not the only places offering this training, although they play an important part in the education of garden staff at higher levels of qualification.

b) Research

Research is an integral part of the work of the academic staff and research personnel of a university, and obviously appropriate facilities need to be available. Indeed, provision of plant research facilities is indispensable to the activities in a department of botany.

Other organizations, however, undertake similar research work. Colleges of Agriculture and Horticulture, for example, carry out original research in various subject fields, some projects being not dissimilar from those undertaken in a university department.

The Experimental Horticulture Stations (EHSs) of MAFF undertake advanced work in plant breeding and the study of plant diseases, especially as related to the needs of farmers and growers. The Agricultural and Food Research Council (AFRC) is also responsible for research projects.



Such work may be attached to a University Department of Botany, as at Sheffield, where an AFRC unit is permanently based, using the facilities of the University's Experimental Botany Garden. The Unit of Comparative Plant Ecology (NERC) is also based at Sheffield, in the Department of Botany. NERC's Institute of Terrestrial Ecology undertakes a wide range of research related to the environment and vegetation. The Forestry Commission, under the auspices of MAFF, is responsible for research, particularly on conifers, both commercially and scientifically. Much research of great significance is also undertaken at non-university gardens. Kew RBG and Edinburgh RBG are notable examples. The RHS gardens at Wisley and Chelsea Physic Garden are the setting for work of botanical and horticultural importance.

Many organizations simultaneously carry out research in these fields; this need not detract from the value of any of their contributions. Many of the bodies mentioned above did not exist until this century; interaction between such bodies and gardens, however, may have beneficial results for all.

Brief mention only is made of several institutions in this section; some of their work is later discussed in more detail, e.g. under the heading 'Economic botany'.

Remarks in the present section do not apply in general to municipal gardens, since research and formal teaching functions are not normally part of their work. Exceptionally,

a municipal botanical garden may provide facilities for a neighbouring university, if the latter does not have its own garden.

A sample list of research projects in progress is given in Chapter 3.

### Economic Botany

Research projects which seem at first glance to be purely academic can have definite economic implications; it is not easy, therefore, to avoid re-stating in this section some points already made.

Kew's reputation in the history of economic botany is well-known. By work carried out in its own gardens and by its influence on botanical gardens overseas, Kew has acquired unique status. Sponsorship by Kew of plant-hunting expeditions, including searches for potentially useful plants, is part of a role not only historically important but currently of equal significance.

Kew is unique. As a rule, botanical gardens do not concentrate on economic botany in this way, though progress may be made through their research projects.

There are, however, bodies making this work their primary objective. They range from state-administered organizations such as the Forestry Commission, working on increased production of better quality timber, to commercial organizations specializing in particular products.

The herb garden was once an important part of everyday life. Modern British botanical gardens include one, if at all, as an interesting feature and for public information. Production of herbs is, of course, carried out by commercial growers and by smaller herb farms. A search for potentially useful medicinal plants was formerly undertaken at Cambridge UBG by a member of ICI's staff, working at the Garden with material supplied by Cambridge University. The attempt to discover new herbal remedies is sometimes thought to be pursued with insufficient effort. It is an area where academic institutions, through research, and commercial organizations both have important roles. Interaction between them needs to be encouraged as an urgent priority. Commercial organizations need to aim for financial profit, whereas universities are usually concerned with fundamental issues (although current economic pressures are changing this situation somewhat). For this reason, overlap of their activities may not be significant.

In Chapter 4 (Economic Botany) the material is divided into two parts: medicinal, culinary and other domestic uses of plants, and, secondly, the economic uses of plants, e.g. staple food crops and, with trees, industrial and commercial uses. These aspects originated, of course, from different types of garden. In the modern context of the present chapter, this distinction has not been maintained.

To summarize the situation with respect to economic botany: some British botanical gardens have herb gardens

and some have collections of economically useful plants. Where such collections occur, however, their purpose is usually for instruction and interest, either for students or for the public, and can be considered as a part of the education function.

Specific research on medicinal properties of plants is usually carried out by financially-motivated organizations, though an important part may be played by academic research on basic issues.

For plants as economic resources, the main responsibility rests in silviculture with the Forestry Commission and other bodies concerned with timber production, and in agriculture with the Ministry of Agriculture and AFRC. Research carried on at universities and colleges of agriculture and horticulture makes an important contribution.

In this area the responsibilities and functions of the different organizations emerge as complementary. (Public information about the need for research on this subject is a part of the function of public information and education.)

The growing of flowers and fruit commercially, and the choice of the best varieties, is economic as well as horticultural. It is discussed in Chapter 5 (Horticulture).

### Horticulture

Horticulture is a basic function; without it no garden could be created or maintained. It is a function

shared by botanical gardens with gardens of all types. It is important to consider whether some aspects of horticulture are relevant especially to botanical gardens.

As botanical gardens are in the care of experts they naturally maintain a high standard based on professional skills. In this they are not unique. If the garden is easy of access and open to the public, it can show how plants may be grown to the best advantage. In this context, the work of the National Trust is notable as an example in horticulture and general garden maintenance. The Trust also acts in an advisory capacity on horticultural matters to other garden organizations and to the public. A good garden centre or commercial nursery may offer the same kind of help to its customers.

Growth and acclimatization of exotic species are aspects of horticulture ranked as important ever since plants from overseas began to reach Great Britain in quantity. This work is also carried on, as in the past, by enthusiastic amateurs, whose efforts in sponsoring plant-hunting expeditions and in cultivating the resulting plants have made a major contribution to our modern gardens.

In earlier years, the importance lay in the fact that botanical gardens, at least those specially founded for this purpose, were open to the public. In great private gardens, the plants were usually seen only by the owner, family and friends. This distinction is now almost gone, since most large gardens welcome the public,

often in considerable numbers, on at least some occasions during the year. They may also allow in television cameras, so that their collections become accessible to a great many viewers. Economic necessity may be one of the main causes of this changed attitude, though owners interviewed on television express genuine pleasure in showing their gardens to the public, pleasure which is the hallmark of the enthusiastic and knowledgeable amateur gardener.

Botanical gardens sometimes have, as a feature, model gardens where the public can see plants suitable for their own gardens in the local area. This is a service not found in other types of garden; nurserymen, of course, will give informed advice. It is helpful, however, to see plants growing in a garden setting. This public advisory service is the responsibility of a municipal rather than a university garden; it can only be provided in a garden regularly open to the public. The provision of such model gardens verges on the public information, education, and recreation aspects of botanical gardens and is mentioned again in that context.

For experimental horticulture, the province of academic rather than municipal gardens, the remarks made under the heading of Research are relevant. Research carried out in the gardens of universities, and colleges of horticulture, makes a valuable contribution to horticultural advances.

Important bodies in this respect are the Experimental Horticulture Stations of MAFF, the gardens of the Royal Horticultural Society at Wisley and of the Northern Horticultural Society at Harlow Car, Harrogate. The valuable work of private gardeners must be remembered; hybridization leading to new garden plants is frequently connected with the activities of knowledgeable amateurs.

### Amenity

Where healthy plants are growing there is always some degree of amenity; whether in the wild or in cultivation, plants are usually attractive. As with horticulture, this function is one which botanical gardens share with other gardens. The purpose here is to consider whether botanical gardens have a special kind of amenity to offer to visitors.

In the nineteenth century, public-spirited individuals and some local authorities were instrumental in creating public parks for working people. Those who spent a long week deprived of fresh air could thus enjoy well-earned recreation out of doors. Today, increased leisure and general mobility, in the era of the motor car, have changed the picture completely.

There is, however, a definite need for 'peaceful' places in urban areas. For this, botanical gardens are especially valuable, provided that they can retain the quiet, restful atmosphere often associated with them.

Active leisure is important, particularly for younger people, perhaps, but there are many other parks and localities where such activities can be sited, leaving the 'peaceful' corner for those who appreciate that more than any other facility.

In the last programme of a television series called In Search of Paradise (Channel 4, 1983), it was suggested that botanical gardens in the future could serve an invaluable purpose, that of providing beautiful oases in the polluted urban scene which our cities may display. If this is to be so, it is a sad reflection on use of our resources in developing the environment. It would be much more agreeable to think that botanical gardens will be an additional attraction in a pleasing urban setting.

There has never been such a wide range of gardens for the public to visit as at present. With the fine examples in the care of the National Trust, and an ever-increasing number of private gardens open to visitors, it cannot be said that botanical gardens have any monopoly of amenity. This does not make their contribution any less important, however. Where botanical gardens are situated within easy access of town centres, they offer a place where peace and beauty can be readily enjoyed.

They also have a special atmosphere, resulting from the combination of scientific work and amenity; for this reason they appeal to the public because they are seen to be 'different'.



It is particularly important, therefore, that botanical gardens should make every effort to retain this 'special' atmosphere which is unique. If they attempted, in order to increase their popularity, to become more like public parks and gardens (of which so many good examples exist), they would then lose the asset which is a major attraction for visitors. Those who have no personal interest in the scientific side of a garden's work still find it interesting to know that such work is being carried out.

These remarks apply to municipal botanical gardens. In university and college gardens, even when regularly open to the public, the situation is somewhat different. They have a clear commitment to scientific research, an integral part of their existence and the basic reason for it. In 'academic' gardens it is a case of deciding how far to provide public amenity in addition to research projects. This is solved in different ways at different places.

University botanical gardens occupy a position more complicated than that of many other institutions. They are not research stations, whose position is clear-cut. Nor are they pleasure gardens only, like many other gardens. The dual function, well underlined by the sub-title of the official book about Kew, Gardens for Science and Pleasure, is both a strength and a challenge. It can cause difficulties, and doubts about objectives, especially when cost-effectiveness is much in mind. As the reason

for the gardens' unique place in the life of the community, it is a source of problems, but also a great opportunity.

Public information and education services;  
public recreation facilities

Useful information is acquired by simply walking round an interesting garden and 'standing and staring'. This is true of any good garden open to the public. A printed guide or leaflet about special features is a considerable help; this is usually provided by botanical gardens and sometimes by other gardens. At Melbourne Botanic Gardens in Australia a stock of leaflets is left at the entrance, so that visitors not wishing to keep them permanently can leave them on the way out - an economical idea.

A service which visitors to botanic gardens expect is that the plants will be clearly labelled, an important help to keen amateur gardeners.

A genuine interest in plants is in the gardening tradition in this country. The serious, if fashionable, interest shown in newly-discovered exotic species led to the foundation by Botanical and Horticultural Societies of botanical gardens throughout Great Britain. Many have now disappeared but some remain. The botanical gardens were middle-class institutions, restricted to members of the society responsible for them. Today, where they still exist, they are open to everyone. With the exception of Birmingham, and this has a local authority grant, they

are now administered by the relevant local authority.

Public information can be acquired without great effort, in many cases. Private gardens open to the public, whether for financial reasons or for charity, usually leave the visitor to look round at leisure. An attempt to provide regular, organized information services for the public seems to be left to botanical gardens. In some of them, school classes are welcomed and advised, gardeners' question sessions are arranged, and competitions and shows of local specialist plant societies are accommodated. This is, therefore, an activity in which there is no real overlap with other institutions.

An outstanding example of such public provision is the Demonstration Garden at Probus near Truro, run by the Education Committee of Cornwall County Council (described previously). This is not a traditional botanical garden, but its work is much appreciated; this is proved by the demand shown for the facilities offered there.

The information and advisory services that botanical gardens offer to the public are an important part of the contribution that they make to recreation facilities within the community. One form of 'passive' recreation consists simply of walking round a garden, and perhaps sitting down from time to time. This enjoyable leisure pursuit can, of course, be carried out in any suitable

garden, not necessarily botanical.

Botanical gardens offer other attractions. Inexperienced gardeners, especially newcomers to the district, find the model gardens helpful in deciding what to grow in their own gardens.

Gardening advice can, of course, also be obtained by listening to radio programmes on gardening topics. These programmes may be national or local; some also answer listeners' questions. Advice is available on television, with garden programmes presented by experts who can give practical demonstrations.

Much information is available from the wide range of books published in a constant stream, from elementary to specialized. Another source of information is provided by the many gardening magazines. Experts who take part in radio and television programmes are frequently also contributors to journals. This source is clearly not a modern one; gardening magazines were popular with their readers in the nineteenth century.

Keen amateur plantsmen find in a botanical garden many points of interest. They can admire tender plants, in glasshouses, which they may have little chance of growing, can study the condition of plants which they are already growing, perhaps not satisfactorily, and find new plants not yet considered for their own garden.

So far, attention has been given to the facilities

offered by botanical gardens to visitors who are already gardeners, whether beginners or experts. An important potential part of their recreation provision works in another way. A casual visit to a botanical garden, perhaps accompanying friends, may spark off a latent interest, leading to the choice of gardening as a hobby. (Many hobbies seem to begin almost accidentally.)

Two aspects emerge: gardening, as a hobby, needs constant information, which the gardens are well-equipped to provide, and the provision of interesting material may lead visitors to a new hobby.

### Conservation

The functions of modern British botanical gardens discussed here have been traditional ones. Plant conservation in the current sense is a more recent concept. With this function - considered by some to be the most important that a botanical garden can undertake now and in the future - the situation relative to other organizations is complicated.

Plant conservation has led to the development of various bodies, some devoted to a special aspect of the problem. In all areas, botanical gardens are constantly mentioned, as a present and potential source of help in an urgent situation.

To give a picture of the different bodies involved means taking in turn the elements in the plant conservation

situation: wild plants, both those native to Great Britain and those from overseas, and garden plants, including some older varieties of fruit and vegetables.

Authorities in botanical gardens are not agreed about the category of plants most important to conserve. Whatever the priorities, in this function it is not a problem of overlap between botanical gardens and other institutions, but of collaboration. There is much to be done urgently; the efforts of all available bodies, statutory and voluntary, are needed.

Some curators prefer to concentrate on British native wild plants, within the setting of wild plant conservation in Europe. The problem in Great Britain, partly because the flora is not as rich as in some other European countries, is not on a particularly large scale. The situation as a whole is monitored by the Threatened Plants Unit of IUCN, with its small secretariat based at Kew. The Threatened Plants Unit was set up by the European Sub-Committee of the Threatened Plants Committee of IUCN.

In Great Britain, measures have been taken, especially by the Wildlife and Countryside Act, 1981, to protect wild plants. By this legislation, picking wild plants is forbidden and some habitats have been preserved by the creation of reserves, though, in the view of many, not enough. Some species have already been lost; it is hoped not to lose any more of the endangered wild plants in Great Britain.

Such results depend for success on constant effort. The NERC plays an important role in the situation, in some cases setting up conservation schemes based at botanical gardens. RSNC is active in promoting public awareness. 17-27 May 1986 was named 'Wild Flower Week'. A wildlife garden was made at Stoke Garden Festival and there was a display of wild flowers at the Chelsea Show 1986.

The ways in which botanical gardens in Great Britain can share responsibility for wild plant conservation seem to be as follows:

- 1) Active participation by monitoring rare plants in the wild, in their habitats, in line with modern thinking which urges conserving a habitat, with its own special character, including all the forms of life within it. As the national botanical association, BSBI has a close interest and involvement in such activities.
- 2) Where a habitat cannot be preserved, or where a species in it has become dangerously scarce, botanical gardens can rescue the plants and give them a home in the Garden, even though the original conditions cannot be exactly reproduced. Soil may be similar, and climate, but interrelationships with other forms of life are not the same. Projects have been carried out, collecting seed from endangered plants, and when the resulting plants are grown sufficiently, returning some to the original

habitat. Stocks are usually kept, as a safety measure, still growing in the Garden. Seed can be stored in a seedbank for the future. Growing plants in botanical gardens, rather than in the wild, is now regarded as an emergency measure.

3) A collection of local wild plants, rare and common, can be an interesting feature for visitors to a garden. It can also play an effective part in educating the public in the need to leave endangered plants untouched in their habitats. By helping people to identify plants, the garden helps to enlist their aid in the work of conservation. It also gives them a chance to see plants so scarce that they are not often found, even by local people. Botanical gardens are well suited to carry out this function.

4) Some curators believe that botanical gardens in Great Britain should play a bigger part in growing endangered wild plants from other parts of the world, especially from tropical areas, as already mentioned. The point can only be decided in the light of local circumstances. Accommodation suitable for tropical plants exists in some gardens on such a scale that they could be housed without serious difficulty. Where suitable glasshouse accommodation does not already exist, the cost of installing it for conservation purposes may be prohibitive. The cheapest and best place to conserve wild plants is in their



country of origin, where this is practicable.

There is no duplication of effort in the conservation activities of botanical gardens mentioned above, relating to wild plants. Where these activities are carried out at all, it is by botanical gardens rather than by other institutions; NERC, RSNC and BSBI are closely connected with the work.

For rare plants inside nature reserves, the Nature Conservancy Council (with the Countryside Commission) are responsible in the case of National Nature Reserves and the relevant County Naturalists' or Wildlife Trusts for local reserves.

5) Garden plants, fruit and vegetables

In efforts to conserve garden plants, botanical gardens can and do play an important part. Some curators, in fact, consider that garden plants have greater priority in the conservation policy of botanical gardens than wild plants.

The organization of the scheme for garden plant conservation does not lie with botanical gardens, however; the NCCPG, set up as an independent body by the RHS, co-ordinates these activities. In this case the gardens take an important part, alongside other gardens such as those of the National Trust and those in private ownership. The scheme is intended to be as wide-ranging as possible, the

contribution of each participating garden is equally valuable, whether a public or a private property. This does not make botanical gardens any less useful overall.

There were earlier attempts to assemble a list, or lists, of special collections of garden plants, with locations (the basis on which the present-day scheme functions). Reference is made to earlier work on these lines in the bibliographical section of Chapter 8. This work also had conservation in mind and so was arranged in a similar way.

The NCCPG's National Collections scheme has already been discussed (Chapter 8).

There is no overlap between the part played by botanical gardens and that of the gardens of the NT and private owners. By the nature of the scheme each garden participating has a different responsibility. One of the objects is that the best use should be made of available resources by avoiding duplication of effort.

#### Fruit and vegetables

Fruit and vegetable growing is not usually the concern of botanical gardens in Great Britain.

The reasons behind the threat to some older varieties of fruit, especially apples, and to some vegetables,

have been mentioned (Chapter 8). EEC regulations and changes in food fashion are the two main causes. Fruit and vegetables are, however, included in the NCCPG scheme. A keen worker for the preservation of older varieties has been Lawrence Hills of the Henry Doubleday Research Association (founded 1958) at Braintree in Essex. In addition to garden varieties, Lawrence Hills also campaigns for the re-discovery and preservation of native wild vegetables, sometimes the ancestors of modern culinary varieties. He has appealed through the press for botanists within reach of the coast to search for such plants, so that they can be preserved. Their value in future plant breeding experiments is clear, since they add to the gene pool. This reason, urged by botanists for conservation of individual species, applies to plants both wild and cultivated.

### Conclusion

Does unnecessary overlap of functions exist between modern British botanical gardens and other institutions? Areas of activity are evident where botanical gardens and other institutions carry out similar, but not identical, work. The approach is usually different, so that overlap does not appear wasteful. The fact that more than one body performs a particular function can, indeed, be

advantageous; co-operation and exchange of relevant information reinforce the work of each one. The English tradition favouring a variety of organizations rather than centralization may be beneficial in this context.

## **Chapter 11**

## Chapter 11

### SHEFFIELD BOTANICAL GARDENS

Sheffield is not, perhaps, a city immediately associated by strangers with the thought of gardens. Many visitors are surprised to find that reality is quite different from their imaginary picture.

A better-known fact is that Sheffield is surrounded by a countryside of great beauty, especially on the western side. The area has many large country houses and gardens, open to the public. The most famous is Chatsworth, with a magnificent formal garden beneath the main façade, a great park providing its own landscape and a wooded hillside giving shelter for the house and garden. A few miles away, but entirely different in style, is the terraced garden of Haddon Hall, where the roses make an unforgettable impression on summer visitors. Hardwick Hall, near Sheffield, once, like Chatsworth, a home of the Cavendish family, is famous for its association with Bess of Hardwick. The gardens have fine traditional herbaceous borders and a noted herb garden (now in the care of the National Trust).

Easily accessible from Sheffield are Nostell Priory, near Wakefield, Kedleston in the south of Derbyshire and Clumber Park in the Dukeries, where the wooded gardens still remain although the house no longer exists. These are a few examples of important gardens in this part of the country; there are many more. The variety of styles

is also interesting.

Such gardens, easily reached from Sheffield, encourage citizens and visitors to indulge in the popular leisure occupation of garden-visiting. They provide an important addition to the amenities of the city.

For an industrial area, Sheffield has an unusually high proportion of land within its boundaries devoted to public gardens, parks and open spaces. This is an aspect which the visitor often finds particularly unexpected. Gardens vary from large grounds such as Whirlow Brook Park to small spaces, some in the city centre, and include the Botanical Gardens, now under local authority administration.

Sheffield Botanical Gardens were founded by a private society which held its first meeting in 1833, the gardens being opened in 1836, at a time when a number of such gardens were being created in England. Almost all have disappeared over the years; the Gardens at Sheffield are an example of the few that remain.

#### Gardening at Sheffield: historical account

Before the foundation and history of these Gardens are mentioned, it is of interest to give some description of gardening at Sheffield in the nineteenth century. The town - it was then a town - had a reputation as a place where gardening was a strong popular interest. Sheffield's tradition as a town of gardeners still applies today.

Until the mid-nineteenth century, Sheffield remained

a comparatively small, compact place, the countryside coming close to the town centre. One of the main shopping streets in the present city is called 'The Moor'.

Naturally, the rich industrialists during the Industrial Revolution and later years built large houses surrounded by extensive grounds. The gardening reputation of the town, however, was especially based on the 'garden plots' of the workers. Living in small houses near to their work, or in houses where they carried on their craft, they had no room for gardens adjacent to their homes. There were, however, some areas, on what was then the outskirts of the town, where 'garden plots' were available, the equivalent of the modern 'allotment' or 'leisure' gardens. After a long day's work indoors, men did not mind walking considerable distances to reach their garden plots. Their interest was not only of a utilitarian nature. Accounts describe them returning from the plots with fine bunches of garden flowers. They also took a keen interest in the plants which they chose to grow and in new varieties that became available. This well-informed attitude to horticultural matters was, of course, found throughout the country, but is not often associated with Sheffield which may not come to mind, historically, as a 'town of gardeners'.

The popularity of the garden plots continued until the later nineteenth century, when the housing needs of a rapidly growing population caused land given over to these



gardens to be used for building. It was a serious disappointment to the keen gardeners who had formerly cultivated them.

Sheffield Botanical Gardens, first opened in 1836, were one example in a trend which led to the creation of such gardens. (The number of botanical gardens under local authority management, as compared with the number attached to universities and other educational establishments, is now very small.)

The history of Sheffield Botanical Gardens is well described in an official booklet entitled The Botanical Gardens: a brief history. Published in 1970 by Sheffield City Recreation Department, it is uniform with another booklet, a guide to the Gardens as they are today. The latter, The Botanical Gardens: Guide to the Gardens, was issued in 1971, also by the Recreation Department. (It has been reprinted since first publication, to meet the continuing demand.)

It is not the purpose of this study to give a detailed history of the Gardens, but a few points of particular interest may be mentioned. Following a public meeting in June 1833, the Sheffield Botanical and Horticultural Society was formed. The official history, mentioned above, notes:

... Robert Marnock of Regent's Park, London, was appointed to design the Botanical Gardens and to act as its first curator. The design for the Pavilions was chosen ... in an architectural competition ....

... although the first prize of £10 was awarded to Robert Marnock, the design of the winner of the second prize of £5, Mr. B. B. Taylor, the then City Architect of Sheffield, was used as the basis for the construction of the Pavilions....

These impressive glasshouses are in the style of Paxton. It is often said that they were actually designed by him, since they are certainly in the tradition that he made famous. In fact Sir Joseph Paxton did assist in the judging of designs for the pavilions.

Robert Marnock had worked at Regent's Park in London. He edited one of the two horticultural magazines issued at Sheffield in the nineteenth century, the Flori-cultural Magazine. (The other publication, edited by Joseph Harrison, was entitled the Floricultural Cabinet. Harrison later left Sheffield to become a market gardener at Downham Market in Norfolk.)

Sheffield Botanical Gardens remained in the possession of the first Sheffield Botanical and Horticultural Society until 1844, when they were taken over by the trustees appointed by the second Society, following financial difficulties experienced by the first. In 1898 the property was transferred to the Sheffield Town Trust. In 1951 the City of Sheffield acquired them on a 99-year lease, to be maintained by the Parks (now Recreation) Department.

After some years when they were mainly thought of as a quiet retreat, rather like other parks in the city but

more peaceful, their function changed under Corporation management. They are in the care of a full-time curator and now provide an enterprising botanical and horticultural service described in the following paragraphs.

The Gardens, covering an area of 19 acres (7.7 ha.), are situated near to the City centre, a few minutes away by car, and easily reached by bus. The main entrance, in Clarkehouse Road, is marked by an impressive stone archway. Inside this entrance the visitor finds the three glasshouses, the largest in the centre flanked by two others originally joined to it by elegant glazed corridors. The centre pavilion now houses an interesting collection of birds. The eastern pavilion has a series of wall-tanks displaying tropical fish. The west pavilion has sometimes been used for a collection of tender plants. (This is a garden where it has been decided to include some animals and birds to interest visitors. At Chester Zoo an animal-plant combination exists, in the opposite direction; a display of tropical plants has been created as a background to the animals, the original attraction. At Sheffield, the birds and fish are housed in an orthodox aviary and aquarium, as described above.)

At Sheffield Botanical Gardens, the inclusion of birds and animals continues an earlier tradition. In one corner of the grounds is an old bear pit, long disused, dating back to the time when bears were a favourite visitor attraction. Outside zoos, bears are now rarely found on show. They have been kept in bear pits for special reasons

in a few places, as at Bern, in Switzerland.

The glasshouses in Sheffield Botanical Gardens are set at the highest part of the grounds. From the broad walk running in front of them, the land slopes down, towards the valley of the River Porter, with another entrance at the lower boundary of the gardens. Various features attract the visitor; these include a rock garden, heath garden, an enclosed rose garden, a long herbaceous border, an interesting collection of conifers and a woodland area. The AGM (Award of Garden Merit from the RHS) Borders are of interest to keen plantmen. The Demonstration Garden is for educational purposes. Dwarf conifers are grouped in a bed, collections of plants specially suitable for local gardens are grown, and a section laid out, deliberately, in the traditional Victorian style of bedding. Greenhouses (not open to the public) are situated at one side, in a less frequented part of the grounds.

At weekends especially the Botanical Gardens are a much-frequented local attraction both for gardening enthusiasts and more casual visitors. They are deliberately free of restrictions, so that family groups can walk and sit on the grass, and children can play. Many people who visit the Gardens certainly come to enjoy the beautiful, peaceful surroundings. Sheffield has many attractive gardens and parks; the Botanical Gardens, near to the City centre, have a restful atmosphere of their own, combined with a variety of interesting features. The mixture of peace, beauty, interest, and information, if desired, seems

to be the essential characteristic of a public botanical garden of this type.

When the Gardens were founded, the object was the same as in other towns where such gardens were created at a similar time. It was: to provide a suitable home for some of the many new plants reaching Great Britain from plant-collecting expeditions overseas, and to offer amenity combined with scientific information. For amenity alone these nineteenth-century gardens would not have been founded. Unlike public parks opened in towns at the time, they were not intended as places where working people could get some fresh air and exercise in their few hours of leisure after a long working week.

Interest in scientific knowledge may have been partly a current fashion, but it was genuine. The newly-arrived plants were interesting, often beautiful, sometimes strange. They could not be filmed in the wild and shown on television as they are today. Illustrations appeared in magazines, but the only way to see them growing was in a botanical, or perhaps a private, garden.

Amenity remained, however, an important element of the garden. Amenity seems to be a natural part of the English attitude to gardens and gardening. In Sheffield Botanical Gardens it has always had an important place. Regular visitors have favourite sections, perhaps the rock garden, or cedar lawn, but the general design makes a pleasing whole from the different parts, encouraging visitors

to go from one area of the Garden to the next.

In a municipal Garden, open to the public, it is natural that amenity horticulture plays a major part in the activities. Other, more specialized, facilities can now be mentioned.

### Demonstration Garden

Many visitors to the Botanical Gardens are keen local gardeners; for their benefit the Demonstration Garden is maintained, including plants found to be particularly suitable for the area. Soil, aspect and weather vary widely in the district, partly owing to the hilly nature of the city, with many slopes and valleys. Sheffield is not usually considered as a specially favourable part of the country for gardeners. Like other northern districts, it has a late spring and early autumn, delaying gardening activities for some weeks compared with the South. Disadvantages can, however, be exaggerated; a visiting speaker, at a winter gardening talk, organized by the Botanical Gardens, once stated that he had found plants flourishing in Sheffield which were considered unreliable at Bath. For gardeners in the city, it is an advantage to see a collection of garden plants which have been tested and found to be at least reasonably reliable for the amateur. This is not a unique service for a botanical garden to provide, but it is carried out effectively at Sheffield. The demonstration area is divided into two halves; one is laid out as a suburban garden, the other as a leisure garden or model allotment on the Continental pattern.

### Specialist societies

The Demonstration Garden, offering information to a section of the public, those with gardens or allotments who want to make them as successful as possible, is not intended for the most expert gardeners. The latter are the specialists who concentrate their efforts on one particular species such as fuchsias, roses, or delphiniums. These enthusiasts are frequently members of the local branch of a specialist society. The Botanical Gardens offers these societies a service in the form of hospitality, a place to hold their shows, in suitable surroundings, which adds to the attraction of the event for the public. For the Botanical Gardens it is desirable to be seen to have this link with the most specialized groups in the local gardening community, a relationship of benefit to everyone. It is particularly appropriate for a municipal Garden, funded by the local authority and aiming primarily at service to the community and to visitors to the city. (This aim does not preclude involvement by municipal gardens in national and international schemes, for instance in plant conservation.)

### Advisory services

Don Williams, the present Curator of the Gardens, has found unusual ways of encouraging the public to use the services available. Calling himself 'The Plant Doctor', he gives a series of talks on common diseases and troubles affecting garden plants, and recommends remedies.

In the same role, he holds 'Plant Surgeries' to which members of the public can bring houseplants in need of skilled attention (as they would take a sick animal to the vet). To increase the sense of occasion, the Curator wears a white coat. With the audience seated in a group, he discusses individual plants that have been brought, and suggests the best treatment for them.

#### Plant exchange scheme

An effective way of disposing of surplus material, and at the same time acquiring specimens not already being grown, has been arranged. This takes the form of 'swap shops', to which people can bring spare plants, receiving in exchange a plant of their choice from the available selection at the Gardens. There is a certain financial advantage for the Botanical Gardens in acquiring plants by this means, but the main advantage must be the goodwill produced, and the fact that the exchange brings people to the Gardens who might not otherwise visit them.

#### Interpretative Centre

An 'Interpretative Centre' has been made in the grounds, where talks and other activities take place. This is the main focus for indoor activities involving the public.

#### Publicity: press and radio

Opportunities for publicity available through the local press and radio station have been used imaginatively.



Notes, usually with photographs, appear in local newspapers. An interesting occasion at the Gardens is usually reported and illustrated, or a seasonal picture showing a beautiful plant, or a general view of the grounds is published. This encourages the public to go and look for themselves. Since the local morning newspaper, Morning Telegraph, ceased publication in February 1986, outlets for publicity in print are reduced. The Curator speaks regularly on local radio, on special occasions, and in a 'Gardeners' Question Time' programme for listeners' gardening problems; he offers seasonal advice on work in gardens, depending on local weather circumstances, and mentions matters of general garden interest.

### Publications

The two main publications issued by the Botanical Gardens have already been mentioned: the account of their foundation and history, and the guide to the grounds.

A list is produced each year, entitled 198- in the Botanical Gardens. In the form of a small folded card, it gives the dates of talks and other activities arranged by the Gardens, as well as functions such as exhibitions of specialist plant societies.

A duplicated sheet has been prepared by the Recreation Department listing services that the Gardens offer to the local community.

For the professionals rather than the public, seed lists are prepared (and exchanged with other botanical gardens in the usual way).

The former Director of Recreation, A. L. Winning, a well-known plantsman, was a regular contributor to professional journals, as well as a participant in horticultural meetings and conferences. He was, as his successor still is, ultimately responsible for the administration of Sheffield Botanical Gardens, and the other municipal gardens and parks in the city.

### Conservation

As far as the National Collections Scheme (NCCPG) is concerned, Sheffield Recreation Department is responsible for the Diervilla collection.

### Research

These are municipal gardens; there is therefore no academic research function.

### Municipal botanical gardens

The number of botanical gardens in Great Britain administered by local authorities is so small that their activities are of special interest. Sheffield has been chosen as an example. Nationally, it is not as well-known as the municipal gardens at Glasgow or Liverpool. Locally, it is considered by the public as a definite amenity.

Regular activities such as the 'swap shops' for

plant exchanges, and the 'plant surgeries', for advice from the Curator, have been well publicized, with photographs, in the local press. The occasional incident, of human interest, or, as already mentioned, an attractive seasonal view of the Gardens also appears.

The public are regularly reminded to visit the Gardens, to take visitors there from out of town, and generally to think of the grounds as 'their' Gardens.

### Sample Survey

In Chapter 13, an account is given of a survey by means of a short questionnaire. This was distributed to a group of people, to discover public views on the functions of a modern botanical garden. Although no reference was made, deliberately, to the local Gardens, it seems likely that the standard of informed comment received is a tribute to the Sheffield Gardens, since these are the Gardens that local people naturally know best.

The picture which emerges of Sheffield Botanical Gardens is that of an institution run on innovative and informal lines, taking a significant part in the life of the community. The services provided are well-used and appreciated.

### In the Gardens: categories of visitors

Informal enquiries, on a number of occasions, amongst acquaintances of different ages and with different interests have produced the following list of categories of visitors

to Sheffield Botanical Gardens. Numerically the visitors in each group vary with the time of year, e.g. no school parties during the holidays, but perhaps more family groups. Category (d) probably contains the largest number overall. (For a different point of view, cf. the list made by Herr Gustav Schoser, Director of the Palmengarten, Frankfurt-am-Main (Chapter 14).) For all the following groups, the reasons for visits come under one of three headings: information, education, recreation.

- (a) Family parties: parents and [young] children enjoying an outing in pleasant surroundings, at least sometimes going to see the birds and the fish in the glasshouses.
- (b) School parties led by a teacher: educational visits.
- (c) Experienced amateur gardeners examining particular kinds of plants, or taking part in a tour or advisory session conducted by the Curator; members of local specialist plant societies attending exhibitions, together with non-members who have similar interests.
- (d) Visitors with general garden knowledge, looking at seasonal displays and getting ideas for their own gardens; retired and elderly people enjoying peace, quiet and perhaps a degree of companionship

(the Gardens provide a friendly setting);  
non-local visitors, alone or with a host.

- (e) Visitors to special events organized by the Gardens or by other bodies, e.g. Friends of the Earth, who have their own plot; visitors to exhibitions not directly connected with the Gardens, e.g. art displays.

### Gardens today

As successors to the gardens founded in the nineteenth century for the benefit of a fairly small number of people, present-day municipal botanical gardens are catering for the community as a whole. This point is stressed by A. L. Winning in his preface to the leaflet The [Sheffield] Botanical Gardens: a brief history.

New municipal botanical gardens are not often created. Exceptionally, a new garden may appear, as at Ventnor, where the town has taken over the garden originally started by the late Sir Harold Hillier.

### Sheffield Botanical Gardens on television

Sheffield Botanical Gardens became better known outside the city when they were the subject of a programme in the 'Calendar Calling' series on YTV on 1 August 1983.

The programme included an interview with Don Williams, the Curator, pictures of the herbaceous border - an important feature in the grounds - a talk with a teacher in charge

of a school class, and a short chat with an elderly couple sitting in a peaceful corner. The latter were visitors from London and said that they always came to the Botanical Gardens when they were in Sheffield, they enjoyed it so much.

This programme was an example of the enterprise shown by the Director of Recreation and the Curator of the Gardens. Advantage is taken of traditional means of communication, such as the local press, and of modern facilities of radio and television.

The YTV 'Calendar' visit to Sheffield was repeated about a week later. Mr. Williams, the Curator, had noticed that the lupin plants were being damaged by a sudden attack from giant aphids. He has spoken regularly on local radio, with gardening advice; on this occasion he issued, through the local press, a warning to gardeners in the area about this new menace to lupins. Attracted by the incident, the 'Calendar' reporting team returned to Sheffield and on 9 August an interview with Mr. Williams was shown during the regular 'Calendar' programme. He demonstrated the effect of this insect pest by showing specimens of healthy and damaged plants.

Publicity requires a flair for seizing on such topics, which have a certain dramatic element and attract public attention. Well used, television plays an informative part in modern life. It is now such an established part of everyday life that it has to be taken into account

by people in public institutions if they wish to reach the potential audience.

### Sheffield Recreation Department

Sheffield Recreation Department is a large active department, engaged in a wide variety of activities. Other gardens and parks in their care have interesting plant collections, although the Botanical Gardens site is clearly the most specialized. There are advantages, however, in being part of a larger organization. The possibility of exchanging horticultural information is one; this includes the opportunity for a botanical garden to offer expert advice to horticultural colleagues as well as to the public.

### Vandalism

Vandalism is an unfortunate reality in modern botanical gardens, as in the community generally. Sheffield Botanical Gardens have been prompt in using up-to-date counter measures. One problem is how to prevent unauthorized entry to the gardens by climbing over perimeter walls, which are fairly low at some points on the boundary. The defence against this is to paint the vulnerable stretches of wall with a harmless but non-drying light green paint, guaranteed to become attached to the hands and clothing of an intruder. The paint is extremely difficult to remove; the process involves lengthy scrubbing and is a deterrent to anyone, probably outside opening hours, intent on theft or on causing damage to plants or

buildings. The deterrent effect was increased by publicizing this precaution in the local press. This served the dual purpose of warning off potential vandals and of providing publicity for the Gardens.

### Change in Sheffield Botanical Gardens

The importance of change, a key theme in this study, is exemplified by Sheffield Botanical Gardens. The Gardens in 1836, restricted to subscribers and catering for their scientific interests, were a different place from the modern institution. Within living memory the Gardens have changed from a quiet retreat, not widely visited, to a centre for the community. Current activities have research and conservation connections, together with the provision of much-needed recreation facilities. These are quite different objectives from the original ones of the founding Society; they set the Gardens today firmly in the context of community life.

### Historical notes

The importance of gardening at Sheffield, for ordinary people, in the nineteenth century, has been stressed. Although not directly connected with the Botanical Gardens, it is relevant as a background to the present-day local enthusiasm for gardening, as important now in the city as ever.

Some interesting extracts are included here from R. E. Leader's book Reminiscences of Old Sheffield. They



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deal with aspects already mentioned, such as the existence of many garden plots, proof of the prevalence of this hobby amongst manual workers who, after a heavy day's work, walked to their gardens in the evening, during their brief leisure.

It is not claimed, of course, that Sheffield is unique amongst industrial towns in this respect, but it is a notable example.

## CHAPTER VII

### OLD SHEFFIELD GARDENS

Present - Messrs. Twiss, Leighton,  
Everard, Wragg, Leonard  
and Johnson.

We were all sitting, one charming and warm evening, in the cosy summer-house of our friend Twiss. It was not in the garden attached to his residence, for he dwelt in the recesses of a dingy town, with a melancholy grave-yard for his outlook. But he was old-fashioned enough and wise enough to stick to the traditional Hallamshire custom of keeping a small garden-plot out in the suburbs, to which he could retire in the intervals from business, in which he could delight his horticultural soul, and, above all, which gave him an object for a walk after the toils of the day. It was a treat to see him in the fading twilight of a summer night, wending his way back to his sooty brick dwelling, laden with rural spoils, with which to enliven it - a huge "posy" of lupines and sweet-williams, and pinks, of cabbage-roses and pansies, and other good old English flowers, now despised and rejected, in obedience to the "bedding out" mania, for masses of scarlet geraniums and yellow calceolarias. Nor was he above bearing through the

crowded streets products of even a humbler kind - big-hearted cauliflowers or juicy lettuces, or large-hearted cabbages.... Of course, being in the country - so to speak, though we were by no means out of the reach or out of sight of the smoke - our talk was of country things. One told how his grandfather, a great garden-smith, used to delight to get away from his shop to his little plot down Bramall lane way - a walk among the hedges and through pleasant shady lanes; and another remembered being sent, in 1825, with a message to Montgomery, who had retired from his sanctum upstairs in the dingy Hartshead - over the coal place, and with depressing outlook on to brick walls and dilapidated roofs - to refresh himself for a time among the polyanthuses and daffodils of his garden, between Glossop road and Leavygreave....

The town in those days was literally surrounded with groups of neatly-partitioned gardens. The late Mr. Edward Baines (M.P. for Leeds from 1834 to 1841) was accustomed to remark that the multitude of small, nicely-kept gardens in its suburbs was a characteristic of Sheffield, in which it was in advance of any other large town we knew. Look which way you would, or go in what direction you would, there they were....

"When all the ... gardens were in existence," said Mr. Wragg, "I believe one out of every three working men had a garden, which he cultivated more for pleasure than profit. This was far better than his present gambling propensities; but further, there were not a few instances in which the working man's garden assisted him to clothe his family, or to pay off debts, unavoidably contracted, by the sale of the fruit from his pear or apple trees. Now, there are no such places for a working man to resort to in his spare time, except for those who are members of some Land Society outside the town. It is said he may resort to the Library, or peruse his book at home; that he can amuse himself by holding communication

with the great men of past ages;  
but all such talk is a delusion.  
Bodily toil and mental discipline  
will not go hand in hand, or blend.  
The garden plots remaining are,  
alas, but few;....

Leonard: Yes, they are fast being  
engulphed by the omnivorous builders;  
and the robberies to which they are  
exposed are a great discouragement  
to the enthusiastic amateurs who  
compete at pink shows, or dahlia  
contests, or who strive to raise  
gigantic gooseberries, to be weighed  
at Florists' Inns, and celebrated  
with a supper. Let us hope that  
this annihilation of garden allotments  
does not indicate that the healthy  
delight in floriculture that has  
always been a characteristic of  
Hallamshire is dying out. You may  
still see the grinder returning from  
a pop visit to his little country  
delight, laden with early spring  
rhubarb, or with roots of celery,  
according to the season of the year;  
and freehold building societies  
have altered life so much to give  
working men an opportunity of having  
their homes standing in their own  
gardens, which is not only healthier  
but handier....

James Levick, the ivory merchant, of  
Pinstone street, was a well-known  
dahlia grower. He raised from seed  
a dahlia which was named "Levick's  
Incomparable," the beauty of which  
was that the petals were tipped with  
white in so peculiar a manner that  
many persons supposed they were sub-  
jected to some chemical process.  
But this peculiarity was not at all  
of regular occurrence; and many  
growers, disappointed by obtaining  
flowers without the white tips, poured  
out their woes in the "Floricultural  
Cabinet," then published by Mr. Ridge,  
in King street, and conducted by Mr.  
Harrison, Lord Wharncliffe's gardener.  
They besought Mr. Levick to give them  
details of cultivation, and in reply,  
he could only say that the flowering  
was very eccentric, sometimes he  
produced the flowers with tips and

sometimes without; and Mr. Paxton, having one year obtained most beautifully tipped blooms, set a large quantity the next year in most conspicuous places, and had not a single bloom tipped. The secret seemed to be to check a too luxuriant growth of the plant. Mr. Levick also produced a handsome crimson dahlia - Commander-in-Chief - which was honoured with a coloured engraving in the work named. Mr. Thomas Tyson, who kept the "Fountain", in Coalpit lane, was a distinguished florist, and a man evidently much respected by his brethren, for "his funeral was attended by the florists of the town, who strewed his coffin with a profusion of most beautiful flowers."....

Hanging Bank Gardens, when in existence, were notable for the number of those tenants who exhibited gooseberries at shows ("berry showers"), the chief of whom, and the most successful, was the late Robert Green. He resided in one of the houses, probably built by himself or a former tenant, since it is not the work of a mason. He had another garden lower down, but one or two others intervened, and up a walk nearer where the stream of water ran from the Water Company's dams. From his success as an exhibitor of gooseberries, he obtained many copper kettles as prizes. When the time of exhibiting was about to take place, his garden had to be watched from the Saturday night to Monday morning to prevent his trees being stripped....

### Visit of Garden History Society

The Garden History Society chose Sheffield as the venue for the annual conference held from 21-24 July 1983 - a tribute to the interest of the city and its region from a gardener's point of view.

Their programme included several excursions to places out of town, such as Nostell Priory, near Wakefield. The visitors also heard, according to Garden History, Autumn 1983, a 'lively talk' by the Curator of Sheffield Botanical Gardens and had 'an interesting visit'. Features which particularly attracted their attention there were the Victorian garden, designed according to a different pattern each year, with modern varieties of Victorian flowers, and the patch of traditional cornfield maintained by the Friends of the Earth, where they noted the presence of corncockle. They were also interested to hear about the service to local schools, including the provision of plant material, for use in lessons and for design purposes in art schools, and the maintenance of nature tables. These are sometimes in parts of the city where the children have no direct contact with wild plants.

The visit to Sheffield BG was unfortunately cut short by bad weather, but the report notes that the visitors were able to shelter in the 'Paxton' pavilions.

The conference was held in the same year as the 150th anniversary of the first decision about the foundation of the Gardens. (Work was not completed and the Gardens opened to the public until 1836.)

Anniversary celebrations were held at the Gardens

on Sunday 29 June 1986. These included demonstrations of the history of lawn-mowers, and events for children. On this special occasion, the Botanical Gardens had a 'live bear' in the old bear-pit; the part was played by a member of the staff wearing an animal costume. The Friends of the Gardens prepared a display of old maps, showing the Gardens and the surrounding district.

### Reference Material

- 1) City of Sheffield Recreation Department.  
The Botanical Gardens: Guide to the Gardens  
(1971)

The official guide to Sheffield Botanical Gardens is a small booklet, clearly planned, under 27 section heads. It contains no illustrations, but the folded cover opens out to provide a helpful plan of the grounds. This guide was first issued in July 1971, and has been reprinted as required.

The lack of detailed historical information is explained by the existence of the history (No. 4 in the present section). The History is now, unfortunately, out of print.

The guide is divided into descriptive paragraphs, numbered in the same order as on the plan on the cover. The list of headings indicates the scope of the booklet,

and of the Gardens. It is as follows:

<u>No.</u>	<u>Section</u>
1	Main Entrance, Clarkehouse Road
2	Victorian Garden
3	Children's Play Area and Legume Border
4	Rock Garden
5	Heath Garden
6	Main East Lawn
7	West Lawn
8	A.G.M. Collection
9	Thompson Road Entrance
10	Sorbus Lawn
11	Woodland
11A	Peat Garden
12	Cedar Lawn
13	Copse Shrubberies and Malus Lawn
14	Rose Garden
15	South of France/Bear Pit Garden
16	Bear Pit and Entrance
17	Birch Hill
18	Brocco Bank Entrance
19	Clarkehouse Walk
20	Main Pavilion/Aviary
21	East Pavilion/Aquarium/Colonnade
22	West Pavilion/Plant House
23	Nursery
24	Demonstration Garden
25	Apprentices' Plots
26	Bottom Lawn
27	Long Wall Borders

2) Other publicity material

Sheffield Botanical Gardens have other written publicity in addition to the official guide. Examples are given below:



a) 198- in the Botanical Gardens

This is an annual, free, publication, issued as a small folded card. Following a brief introduction is a calendar of events for the current year, including shows of specialist societies. It also includes the addresses of these societies, a useful feature.

b) A free one-page handout, describing some of the activities of the Garden, including services provided for schools.

c) Material written for journals and newspapers

Opportunity has been taken to publicize the Gardens in professional journals. For example, in Parks and Recreation (as it was then called) May 1979, there is a brief annual report on the work of the Gardens during the previous year.

Material appearing in the local press has already been mentioned.

3) Garden History Autumn 1983

An interesting view of the Gardens is given in Garden History (Autumn 1983). As mentioned earlier, the annual conference of the Garden History Society was held in Sheffield from 21-24 July 1983. During their stay they toured the grounds, as already stated.

The observations of these garden experts are of considerable interest. An extract is quoted below from the journal:

... A lively talk on Sunday morning by the Curator of the Sheffield Botanic Garden prepared us for an interesting visit. The Victorian garden is designed with a different pattern every year and is stocked with modern varieties of Victorian flowers: pink petunias and fuchsias with an edging of clipped pyrethrum and pale lobelia. The Friends of the Earth have a little patch of cornfield - borage has crept in by mistake but the corncockle is a welcome sight. Schools send in requests, for example 'Duckweed, as much as possible!' Nature tables are provided, often in districts where the children are unable to provide any plants of their own, and help is given as much on the artistic side - by providing plants for schools of design - as on the scientific. Unfortunately our visit was curtailed by a thunderstorm but we were able to shelter under the domed glass roofs of the 'Paxton pavilions'.

4) City of Sheffield Recreation Department.

The Botanical Gardens: a brief history (1970)

The official history, in the same small upright format as the guide to the gardens (No. 1 in this section), is well-researched and attractively presented. The illustrations consist of a reproduction of the Botanical Gardens in 1849 and two modern photographs, of the Pavilions and of the Bear Garden. The history is currently out of print. Most of the literature relating to Sheffield Botanical Gardens is historical in scope. It is included in the present chapter, since Sheffield is considered here in more detail than other gardens included in this study.

- 5) Law, John. Catalogue descriptive of the habits and peculiarities of some of the rarest and most interesting plants now growing in the conservatories at the Sheffield Botanical Gardens (1847)

This catalogue and the following one (No. 6) are of interest in connection with the early period in the history of Sheffield Botanical Gardens. John Law was the second curator of the Gardens. He is described in the official history of the Gardens as 'an eminent botanist who developed and extended the collections of plants and trees'. The two plant lists are called 'comprehensive'. They 'were widely distributed throughout the British Isles and today have become "collector's pieces" in the botanic sphere' according to the same source.

- b) Law, John. Catalogue, descriptive and historical, of the rare and interesting plants, now in the conservatories and pleasure grounds of the Sheffield Botanical Gardens (1849)

The fact that this catalogue and the one above were compiled and printed is evidence of the serious interest taken by local citizens in 'their' Botanical Gardens. The cost of printing such volumes was not as prohibitive as it would be today. At present, expense is a serious barrier in the case of a publication which will soon be dated.

- 7) Lemmon, Ken. Botany by citizens' request.  
Country Life 14 April 1983, pp 920-1

The 150th anniversary of the foundation of the society responsible for Sheffield Botanical Gardens, in 1833, led to the publication of historical articles in 1983. This account by a well-known Yorkshire garden writer is authoritative and readable; the illustrations are well chosen.

- 8) Carder, Jan. The Sheffield Botanical and Horticultural Society Gardens (1982). Sheffield Society for the Encouragement of Art, Sheffield Art Report, 1982, pp 3-12

This is a much longer, more detailed, account than item 7. Jan Carder includes a carefully researched study of the beginning of Sheffield Botanical Gardens. The author, an art historian, describes in detail the layout of the grounds and design of the buildings. An extract from this account is given below. Jan Carder quotes two interesting passages from the [Sheffield] Telegraph, adding a note of her own.

'I saw that most gorgeously beautiful of all water lilies with its enormous leaves and gigantic flowers, named the Victoria Regia, twice in bloom when I was a child and I have never seen one since. People came from long distances to see it. It was one of the best advertisements Sheffield ever had... The Victoria Regia was so precious that children were not allowed into this particular hot house unless accompanied by an adult. The necessary heat of

this house was overpowering. After a few minutes one was nearly overcome. The gardeners got used to it. A rose show was held nearly every year. It was open to all England. Sheffield workmen competed in large numbers....'

'It was often stated over 50 years ago that John Ruskin asserted that the finest working class gardeners were in Sheffield. John Ewing, curator for 35 years, played a great part in this - he not only gave them valuable information and advice, but actually gave them lots of cuttings from rare plants.'

This tradition of demonstrations and horticultural advice is still an important aspect of the running of the Botanical Gardens today. One cannot help wondering to what extent the working classes were able to use the gardens in the nineteenth century. Admission was limited to shareholders and annual subscribers, except for special fetes and galas when entry was still sufficiently expensive to be exclusive.

- 9) Leader, R.E., Ed (1876). Reminiscences of old Sheffield, its streets and its people, 2nd ed.

This book, now more than a century old, is still a valuable source of information about the history of Sheffield, especially in the nineteenth century. A series of relevant extracts is reproduced in the first section of this chapter. The book does not deal with the Botanical Gardens; its usefulness for this topic lies in the information about the history of gardening at Sheffield.

The Reminiscences are in the form of reported

conversations between a group of friends, exchanging recollections of life in the town as they remember it. Details are given of the many 'garden plots' where flowers and vegetables were grown after a long day's work, and the popularity of the annual shows of flowers and [goose] berries are stressed by the speakers. The importance of recording such details of social history, while eye-witnesses are still available, is increasingly recognized nowadays; modern facilities offered by films and tapes were not at the disposal of the speakers recorded in this volume. The written account is, therefore, all the more important.

**Chapter 12**

## Chapter 12

### BOTANICAL GARDENS IN BRITISH 'TWINNED' TOWNS - ANY INTERACTION WITH THEIR EUROPEAN PARTNERS?

The modern scheme by which a town in one country has official links of friendship with a town abroad is known as 'Twinning'. The idea was developed in the years after the Second World War, in the hope of creating friendships between groups and individuals, leading to international goodwill.

Official friendships between towns in different countries have existed in the past; the present arrangement, however, is on a larger scale than any earlier links. When a town decides to implement a twinning arrangement, a suitable foreign town is sought, the local authority carries out the initial formalities, and a friendly association can then develop in various ways. The resulting contacts may be mainly formal or informal, depending on the wishes of people in the two places. The towns usually have an important common factor, e.g. both are industrial cities, ports, or cultural centres.

Visits are then exchanged, usually between parties of civic leaders and perhaps between parties of young people, and sports teams. An important object of the scheme, however, is to unite people in the two towns who have in common some interest or hobby, such as sport or music. As gardening is such a popular hobby in many European countries today, it seemed essential to try to discover



whether any links exist, based on this interest, which directly involve botanical gardens in Great Britain.

It was therefore decided to distribute a questionnaire, asking for details of any formal collaborative arrangements existing between the botanical gardens of twinned towns, in cases where both have a botanical garden. In September 1982, copies of a questionnaire and covering letter were sent, under the auspices of the Department of Botany of the University of Sheffield, to 27 addresses in cities and towns in Britain which, according to the official list of Twinnings, had an official European partner town. The difficulty with such international friendship schemes is that some flourish over the years, while others slowly lapse, but are not so reported and remain in the list.

Of the 27 enquiries, 21 returns were received, a most satisfactory response of 77%. No closing date was set for the return of the replies, but most were sent back very quickly. Many directors and curators also wrote helpful accompanying letters, enclosing informative printed material about their gardens.

The opportunity was taken to ask recipients to place in order of priority, if possible in percentage terms, the main functions carried out by their gardens.

A copy of the questionnaire is given at the end of this chapter.

The reason for including only cities and towns with

a European twinned town (the twinning scheme is worldwide) is that gardens in temperate zones are more likely to have similar conditions for carrying out the functions particularly of concern in the enquiry, i.e. those activities involving the public. The fact that, as European partners, the towns are nearer geographically also means that regular reciprocal visits are easier to arrange.

From the returned questionnaires, it is clear that the full potential value of the twinning scheme, in respect of gardens, has not been exploited. No regular collaboration between twinned towns, based on their respective botanical gardens, exists at present, between places in Great Britain and their twinned towns in other parts of Europe. There are, of course, scientific and professional contacts. A few gardens mentioned the distribution of seed lists; these are not restricted in mailing to a twin town but are widely circulated.

In one case (Sheffield), the Director of Recreation paid a visit to the botanical garden of Sheffield's twin city, Bochum, in the Ruhr. This was, however, during a visit as a member of a civic party, and had no special significance for any collaborative schemes. Mr. A. L. Winning, then Director, afterwards wrote an account of the Bochum (University) Garden in the professional journal, Parks and Recreation.

One or two gardens, e.g. Probus Demonstration Gardens,

near Truro, and Cardiff Parks, mentioned that they had prepared displays forming part of horticultural exhibitions in their twin towns. These are interesting examples of international contact, but do not constitute a close relationship which it was thought possible the returns of the questionnaires might show between some twinned towns. Although the enquiry did not produce evidence of flourishing reciprocal gardening contacts involving botanical gardens in Great Britain and in Europe, the questionnaire exercise is seen as useful.

The high percentage of completed returned questionnaires provides sufficient material to give a reliable picture of the situation. Although the latter is somewhat disappointing, the lack of any substantial collaborative arrangement, up to now, does not preclude the possibility in the future. Twinning arrangements continue to develop in towns where the scheme flourishes.

Links based on a common interest in gardens and gardening could, of course, be forged between groups of enthusiasts in twinned towns without the participation of botanical gardens. This may already have taken place in some towns.

Botanical gardens have become more international in outlook during the last decade, probably through realization of shared conservation problems. The national gardens, Kew and Edinburgh, have always been involved in botanical matters worldwide; these remarks do not apply

in their case. Other British botanical gardens now come increasingly into contact with their foreign counterparts through international conferences. It is the view of some curators that the process has not yet gone far enough. The main purpose of these contacts has been co-operation in conservation schemes, but the meetings have provided an opportunity to discuss other common interests, including the provision of education and leisure services for the public. It seems a way in which botanical gardens could promote closer relations amongst people of different countries, if they could take advantage of the public interest in gardening and plants which is widespread throughout Europe. By exchanging views with professional colleagues from a foreign town, by welcoming visitors to their town from the 'twinning' one, and by publicizing the hospitality that they have provided, they could become part of a scheme with the important aim of international peace through goodwill based on friendships. It is not possible for individuals, or groups, to become friendly with whole countries; they can get to know a few people. This is the great advantage of the 'twinning' scheme, though it is not necessary for the arrangement to be a formal one. The principle of twinning, or 'partnership' as it is known in the German Federal Republic, enjoys a great deal of support there. It is interesting, however, that the towns of the historic Hanseatic League still feel strongly influenced by their old rules, which enjoined friendly relations with all

other ports abroad but no special individual relationship with any one place. For this reason they have preferred not to be formally 'twinned' with a foreign town and have chosen instead a similar but less official arrangement. The towns in this northern part of Germany could prove to be particularly interesting and important in sharing horticultural experiences, as far as this country is concerned, since climatic conditions in some parts are fairly similar to our own. Bremen, for example, has an important botanical garden and a colourful Rhododendron Park. The garden includes a collection of local wild plants, the 'Heimatsflora' intended to show the public what they can find in the region and so help them to identify plants that they see on excursions.

It would be rewarding to think that the 'twinned towns' questionnaire described in this chapter had contributed a little towards forming links between staff of botanical gardens, and between members of the local communities, in places involved in a partnership. Some comments received in replies to the questionnaire give grounds for encouragement. As regards the functions of botanical gardens, however, the different views of directors and curators are almost as many as the individuals.

It was evident from the replies that horticultural collaboration, between the botanical gardens of two towns, was a concept not previously considered in any depth. A few correspondents felt that the serious needs of world plant conservation were so urgent that these should take

priority, leaving no time for such activities as the twinning scheme. Others, although not envisaging immediate action to implement an official link between gardens, were in favour of such a form of international collaboration. Several expressed interest, and goodwill towards the investigation. One curator stated that he would like to implement a more positive twinning arrangement concerning the gardens, *if the necessary time and money were made available.*

The most encouraging replies were those affirming that the curator intended to take further action as a result of the suggestion in the questionnaire. The appreciation expressed for the idea was welcome.

An interesting aspect of the returned questionnaires was that approval of the garden-twinning suggestion was shown as much by curators of University botanical gardens as by those in municipal gardens. This was, perhaps, surprising. Twinning is an arrangement undertaken by a local authority, usually a city or town, though sometimes a county. It was likely, therefore, that it would be to municipal gardens, provided by a local government department, that visitors from a twin town would be taken, and that such gardens would show most interest in the idea. Some University botanical gardens are also open to the public, of course, and here considerable emphasis is placed on public relations. Cambridge University Botanic Garden and the Ness Gardens of Liverpool University are good examples. Since University gardens are primarily

a part of their University, their links with the local community, though friendly, are not usually as close as those of municipal gardens. It proved, however, to be from University gardens that the most encouraging comments were received; some affirmed that they intended to take further action on the suggested link. This showed a generous willingness to consider a new idea on its merits.

The possibility of establishing some horticultural link between 'twinned' towns in Great Britain and their European partners is discussed in this chapter. Whether a link could be connected with the respective botanical gardens, or not, it seems that interest in plants and gardening is sufficiently widespread amongst people in European towns for such a scheme to be worth consideration.

Planting a tree is traditionally a way of commemorating important occasions, e.g. visits by important strangers. The Morning Telegraph, 20 April 1983, gave the follow-up to such an event. The Mayor of Bochum, Sheffield's German twin town, returned for another visit (his first visit was made in 1976) in April 1983. Sheffield maintains active official relationships with its twin towns; this event, however, was not a civic but an individual one. During his second official visit, the Oberbürgermeister went back to a local sweet factory (Bassetts') where he had planted a German ash tree on his first visit. He was particularly keen to inspect the progress of this tree

and was delighted with its growth. He was reported in the local press as exclaiming 'fantastic' when he saw how tall it had become.

### Reference material

#### 'Twinning' material (with relation to botanical gardens)

No literature has been found specifically dealing with relationships between botanical gardens in twinned towns. No formal relationships seem to have existed.

Occasionally a horticultural event links twinned towns. At Chelsea Flower Show 1985, Torbay Parks Department devoted their annual floral exhibit to a tableau of 'The Pied Piper of Hamelin', in honour of their German twin town.

An example of general twinning activity is described in the official Swansea guide, from which an extract is quoted below. (This city's account sets out clearly the aims of the scheme.)

Twinning links exist with Mannheim in Germany and Ferrara in Italy, and, more recently, contacts have been developed with Pau in the South of France. The Mannheim association dates back 25 years and strong connections have now been forged. The general aims of twinning links are to foster international friendship and understanding by regular exchange visits. Numerous clubs, associations, professional bodies, choirs and schools have now established relationships with



their counterparts in Mannheim, Ferrara and Pau. The City of Swansea Twinning Association was set up in 1974 to promote twinning activities and to act as a focal point for the movement, fully supported by Swansea City and West Glamorgan County councils. Membership is open to anyone interested in twinning on an individual or organisational basis....

(Official Guide to Swansea, July 1983.)

Town twinning schemes were represented at the National Garden Festival 1986 at Stoke-on-Trent. Theme Garden 18, the 'Lincoln-Neustadt Twin Towns Garden' included features typical of both places, e.g. 'Roman' remains for Lincoln and wine vats for the German wine town. Such collaboration may be indicative of a trend towards increased liaison between botanical gardens of twinned towns.

For twinning arrangements generally, the responsible body in Great Britain is the Joint Twinning Committee of the Local Authority Associations of Great Britain. This organization issues two publications which give useful information on the structure of the scheme.

- 1) Joint Twinning Committee of the Local Authority Associations of Great Britain. Places in Partnership: list of twinings (1981)

This publication, updated from time to time, gives a clearly arranged list of towns in Great Britain with their foreign twin towns. (Twin towns vary in number from

one to as many as four or five.) In addition, background information is given about the purpose of the scheme.

An extract from the Foreword is given below.

A twinning may be a formal or informal arrangement between a local authority and community and an overseas counterpart. It can be between villages, towns, boroughs, districts, counties or regions, and can be organized by a local authority or by a properly constituted community twinning association. It may be set up initially to develop exchanges of specified groups, e.g. schoolchildren and young people.

For the purpose of this list, a twinning is defined as a recognised special relationship between two local authorities and communities, within which the organisations and citizens in the two places have an opportunity to come to know and understand each other, develop friendships and exchange visits. A twinning is recorded where there is such an arrangement, be it formal or informal, and where exchanges have been established and are planned to continue.

2) Twinning News: review of the Joint Twinning Committee of the Local Authority Associations of Great Britain

This publication of the Joint Twinning Committee appears twice a year. As the title suggests, it is a newsletter, covering events taking place. Some are arranged under the towns (there is always an alphabetical section), and some under the type of activity. A note on a ceremony from Pangbourne is quoted as an example of the contents (Twinning News, No. 20, September 1983, p 3):

Pangbourne/Houdan

Pangbourne sealed its French connection at a ceremony in the town in May. It is expected that families, societies, clubs and school children will all benefit from this new association. There was also a tree-planting ceremony to mark the occasion.

Questionnaire

1. Are you in contact with the botanical garden in your 'twin town'?  
YES/NO
  
2. If you are, is it by means of (comments welcome):
  - (a) visits (in either direction)?  
(Give approximate dates of visits if possible.)
  
  - (b) correspondence?
  
  - (c) exchange of publications?
  
  - (d) any other means?
  
3. Do you consider that the interaction between your garden and theirs has been of appreciable significance to either of them?
  
4. If you do, could you give me any details of collaboration and resulting developments?  
(All comments will be welcome.)
  
5. Have you any regular procedure for publicizing your garden and your collaborative arrangements?
  
6. Is there any other information which you think would be relevant to this study?
  

\* \* \* \* \*

7. How do you currently rate the relative importance of the following functions in your garden? If possible, give a rough indication by percentage.
  - (a) Recreation and amenity
  
  - (b) Education, teaching and research
  
  - (c) Conservation

Please return to Miss E.C. Gilberthorpe,  
12 Stumperlowe Mansions,  
Stumperlowe Lane,  
Sheffield, S10 3QQ.

## Chapter 13

## Chapter 13

### PUBLIC VIEWS ON BOTANICAL GARDENS - A SAMPLE SURVEY

The questionnaire considered in Chapter 12 was addressed to professionals involved in the management of botanical gardens in Great Britain. A limited enquiry of a different kind was undertaken in January 1983, in an attempt to elucidate the attitude of the public to botanical gardens; in particular, it was hoped to discover what functions 'the man in the street' thought the gardens should be performing.

To represent the community, three groups of staff at the Central Library in Sheffield were chosen. They varied so widely by age, length of professional experience, seniority, and general background interests, that it was thought they could be considered a moderately small but fairly representative sample of the public.

Mr. R. F. Atkins, then Director of Sheffield City Libraries, readily gave permission for the survey. The librarians in charge of the three Divisions involved were helpful in the distribution and collecting of the forms.

In Chapter 11, in describing the Sheffield municipal Botanical Gardens, reference was made to this survey. The existence of these gardens at Sheffield made it a suitable place for this enquiry. It means, however, that the participants may be familiar only with a municipal botanical garden. (The University Experimental Botany Garden is not

regularly open to the public.)

Enquiry forms were distributed to the staff of the Central Lending Library and the two Reference Library Divisions; the combined staff was 76. The wording consisted of one main question, with an opportunity for a 'nil return'. A copy of the form is reproduced here:

A 'botanical garden'. What do you think its work should be?  
(Not more than 20 words, please.)

If you have no views on this subject please write No views.

76 enquiry forms were, therefore, distributed. The number completed was 43, representing a 56% return.

No indication was given about the kind of reply hoped for, but the length of the answer was restricted to 20 words so that the answers could be given as brief notes. The only request made was that replies should be written quickly, not after long deliberation. These conditions would, it was hoped, make participation in the survey easy and quick.

The object was to ask people who were not actually visiting a garden at the time; such visitors would presumably have an interest in the subject.

Only two papers were marked 'No views', so that the number of full answers was 41, almost 54%. (It had been arranged that replies should be anonymous, typed, or printed by hand if preferred.) A message had been given, through the three Divisional Librarians to their staffs, that 'nil' returns would also be helpful and welcome. (It was later realized that those involved may have decided, if they had 'No views', that it would be preferable not to complete a questionnaire.) The two 'No views' forms came one from each of two Divisions. (Questionnaires were studied in separate groups for this purpose, though there was no clue to the identity of any individual.) Thus a questionnaire not completed may be taken to be the equivalent of 'having no opinion'. The real total of those having 'No views' could be counted as a maximum of 35 (2 returned slips so marked, and 33 not returned). This amounts to 46% of the whole. The proportion of fully completed forms is then found to be higher (almost 54%). In fact, a larger number of informative answers was received than originally expected. Replies show an interesting range of views, and a thoughtful approach to the subject. It was suggested, in Chapter 11, that the existence of the local public Botanical Gardens may have contributed to this.



The answers have been analysed as follows: each form has been studied and a point counted, under the appropriate heading, whenever a particular function is mentioned. Marks are recorded in the first section for mention of those functions of botanical gardens discussed in this study. Other ideas and suggestions are counted separately, and have been studied carefully for the light that they throw on the views of participants. This part of the survey seems equally important; the ideas represent either what the individual thinks the gardens are doing, or what he thinks they should be doing.

The results of this analysis of the forms are set out below. The material contained in the replies has been given in the same order of functions as that in which the functions are discussed in this study. Category 7 contains suggested functions not perhaps usually thought of as primary objectives of a British botanical garden.

If the same function is mentioned more than once on a slip, it is counted once only in the analysis. Functions merge into one another in the replies, as they do in reality. For this reason it has not been simple to analyse the slips, as it is not easy to separate the functions in the study. In the replies, horticulture overlaps with amenity, for example, and public information and education with conservation.

Survey - Functions of botanical gardens

Relative importance (on points score) of the functions

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	<u>Teaching &amp; research</u>	<u>Economic botany</u>	<u>Horticulture</u>	<u>Amenity</u>	<u>Public information, education, recreation</u>	<u>Conservation</u>	<u>Other functions</u>
	(T) (a)						
	(R) (b)						
	6	-	28	23	28	8	6
291	9						

It is of interest to look in detail at the ideas, from six replies, which have been included in Category (7). They fall into three groups; the original wording is as follows:

(7)

- a) Service to park keepers
- b) Cultivation of new species
- b) Try to develop new strains
- b) Research and development of new species
- b) Development of new strains of plants
- c) Where plants can be found/bought - information

- a) An advisory service specifically to park keepers is perhaps not a usual function of a botanical garden. In a municipal context, both are part of the local Recreation or Parks Department, so it is likely that exchanges of information take place amongst staff specialists. These could be informal rather than officially organized. The idea that a botanical garden can provide a valuable advisory service to professional horticulturists and the public is, however, valid and correct. This is a thoughtful suggestion.
- b) The four comments listed as b) are similar. The writers probably have in mind new cultivars for commercial horticulture. This would not usually be a function of a botanical garden, though an important activity at Wisley, and regularly carried out at Experimental Horticulture Stations, commercial nurseries and in some private gardens.

c) It may be doubtful whether botanical gardens could necessarily supply information on the commercial availability and location of particular plants, though they might be able to do so. Rare plants are not always readily available for sale. (This comment is interesting and original, however.)

Some garden owners now grow and sell their own specialities to the public. Botanical gardens have an important opportunity here, which some of them are already taking. It need not involve them in competition with commercial nurserymen, but provides a useful service to keen amateur gardeners, as well as being good for public relations. Plants so bought provide a lasting souvenir of a visit to a botanical garden. The idea of selling specialities of the garden has already been mentioned here, in connection with the promotion of public contacts. It can form part of the important work of maintaining, perhaps in new ways, good relations with both the local community and with visitors.

This survey proved to be interesting and productive in that it shows quite clearly that in the view of the general public the three chief functions of a botanical garden are a) horticulture, b) education and recreation, and c) amenity. Conservation rated less highly, but nevertheless was recognized as an important function in the returns.

## **Chapter 14**

## Chapter 14

### GARDENS NOW AND IN THE FUTURE - POSSIBLE DEVELOPMENTS

A clear, consistent picture, applying to all botanical gardens in the 1980s, would be a satisfying conclusion to this enquiry. Such a picture does not emerge, however, because the gardens themselves are so varied in type.

In the preceding chapters, an account is given of the main functions carried out by the gardens at present. To reach some general conclusions about the functions and their relative importance, now and in the future, it is necessary to consider why the situation is so complicated.

One important factor is that botanical gardens are not all of the same type, falling by status into four main groups: national, university or college, municipal, and private gardens.

#### National gardens

The two great national gardens, Kew and Edinburgh, are in a separate category in many ways; they are not representative of other botanical gardens. The historical importance of Kew and Edinburgh is widely known, their work in promoting plant-collecting expeditions and in growth and acclimatization of plants from overseas forms part of national and international plant history. Kew and Edinburgh still belong, perhaps more than ever, to

the international botanical world; they will undoubtedly act as leaders also in future developments affecting botanical gardens in Great Britain. With a long history, they are equally an important part of the modern scene.

Kew has been featured in several television programmes. A book, edited by <sup>F</sup><sub>A</sub> Nigel Hepper, Royal Botanic Gardens, Kew: gardens for science and pleasure (Hepper, 1982) is evidence of a wish to provide information for the public as well as the specialist. The training offered to students of horticulture at Kew and Edinburgh has a high value professionally and the resulting qualifications are widely recognized.

#### University and college gardens

The botanical gardens (sometimes called experimental botany gardens) of universities, and colleges of horticulture, are an integral part of the parent institutions. This does not mean that they are not involved - indeed as some of them are - in provision for the public also. It is important, however, to remember their main allegiance to the academic institution. University and college gardens form the largest group of botanical gardens in Great Britain. They vary considerably, some having a research garden adjacent to an amenity area whilst others, as at Oxford, have a separate garden for research purposes. Some 'academic' gardens are regularly open to the public, some only occasionally, and some not at all.

An assessment of the current relative importance of the functions of modern British botanical gardens, to themselves and to the community, is attempted later in this chapter. In 'academic' botanical gardens the basic function is, clearly, teaching and research.

#### Local authority gardens

Municipal gardens, of which there are only a few, vary from the very large, such as those at Glasgow and Liverpool, to smaller areas, but they usually have horticultural collections of importance. Some are the descendants of gardens founded by private societies in the nineteenth century; at Ventnor the garden is recent and was taken over by the town from the late Sir Harold Hillier, who created it.

#### Private gardens

Present-day private botanical gardens are few. At Birmingham the Garden is actively involved with public facilities. Chelsea Physic Garden, which has for centuries been a private establishment, now opens to the public for a short time each week, this opening dating from April 1983.

#### Aims and functions

Clearly, no set of aims or functions can be appropriate throughout such a varied range of gardens. The variety will doubtless remain. No single list of priorities can be expected to apply to all gardens, as far as



their present and future functions are concerned. A system which allows of variety for different groups is a typically English tradition. National and international collaboration is necessary for conservation schemes, but flexibility of outlook amongst British botanical gardens is certainly an advantage.

### Functions

A connection may sometimes be found between the priority given to a function in gardens and their date of foundation, especially strong, perhaps, for older botanical gardens, founded at widely varying times and for different reasons. The origin of each main function is indicated here in the relevant chapters. Modern botanical gardens are the descendants, not of one institution only, but of several. This factor of tradition also complicates an assessment of their present role and importance.

Gardens attached to monasteries and convents were filled with plants grown for culinary and medicinal use; they were practical gardens. Plants grown in 'academic' gardens, where students of medicine could learn to recognize them, and their value as drugs, were also collections with a practical purpose.

At the time when such gardens were transferred, as often happened, from the Medical School to the Professor of Botany, a change of attitude was taking place. The

arrival of a large number of exotic species resulted in an upsurge of scientific interest in plants. Scientific investigation was replacing utility.

Acclimatization, work in which Kew has always played such a great part, can be an important stage, when considering the cultivation of plants grown for their usefulness, actual or potential, as food, drugs, and as economic commodities.

Nineteenth-century privately-founded gardens emphasized the scientific aspect, motivated by amateur and professional interest. The many new plants being brought from overseas awoke enthusiasm amongst keen botanists and gardeners.

Modern botanical gardens in Great Britain are the successors to these traditions. They also have new functions, for example conservation and educational and leisure provision for the whole community.

Amongst the objects of this study is an attempt to discover how far the older functions are still relevant, how important the newer functions seem to be, and, consequently, the significance of the role that botanical gardens in Great Britain are playing now and can be expected to play in the future.

Change: an important factor

Botanical gardens are certainly changing; they form part of a changing world. The increasing speed of

change in modern times affects botanical gardens, as it affects other institutions. Change has mixed effects; sometimes the stage which brings problems also supplies the solutions. Present high labour costs would make the maintenance of large gardens, public or private, almost impossible. New horticultural equipment, however, and new machinery, allow a small workforce to carry out tasks which once occupied a much larger staff. (The consequent loss of employment is not a topic to be discussed here.) A valuable book on making the best use of new techniques in efficient garden maintenance is Tom Wright's Large gardens and parks (Wright, 1982).

The Directors and curators of botanical gardens in Great Britain are giving considerable thought to their modern role. Concern about responsibilities, and about making maximum use of available resources, is proved by speeches at conferences and by articles and letters in professional journals.

Professionals may sometimes have difficulty in judging the importance of their own activities, and on occasion may even underestimate them; this is the advantage which an interested outsider has. Not personally involved in botanical gardens as a professional, the onlooker sees many valuable aspects of their work, and feels freer to express admiration for achievements, whereas the professional may concentrate on unfulfilled aims.

Botanical gardens have a long history, probably

originating in ancient China, where they combined amenity with utility. This mixture has thus existed right from the beginning. An institution of great antiquity, they have survived, or perhaps more accurately have reappeared, through centuries. Old institutions which continue to exist for long periods seem to have a chance of surviving, though not inevitably. Where they do survive, of course, it is by adapting to change. If they overlook the importance of this, or remember it too late, they risk losing their relevance.

Later in this chapter, the functions of modern botanical gardens in Great Britain are considered as a whole, and their relative importance. The widely differing views of professional botanists and horticulturists involved in their management need to be remembered. An indication of their opinions about British botanical gardens at the present day emerges from the returned questionnaires and accompanying letters received during the 'Twinned towns' enquiry, in autumn 1982 (see Chapter 12). Directors and curators of British botanical gardens fairly regularly write and speak in public about their views.

When the 'Twinned towns' questionnaire was sent out, a question was included inviting recipients to put in order of importance several different functions. This question and the replies are discussed below.

Some particularly helpful curators gave extra

information in accompanying letters.

Priorities: relative importance of functions as seen  
by some directors and curators

The 'Twinned towns' questionnaire (Chapter 12) has a question with wider implications. Question 7 asks:

'How do you currently rate the relative importance of the following functions in your garden? If possible, give a rough indication by percentage.

- a) Recreation and amenity
- b) Education, teaching and research
- c) Conservation'

27 questionnaires were distributed. 21 replies were received and of these 15 writers completed Question 7 in one form or another. Thus, rather more than half the forms sent out were completed for Question 7. Of forms returned, slightly under three-quarters answered this enquiry. Individual replies are analysed below.

Questionnaires were sent only to gardens in places, usually towns or cities, where, from official information, a 'twinning' scheme appeared to exist. This selection of gardens excluded some major ones situated not in towns but in the country, for example, Ness Gardens on the Wirral. For large gardens, however, an official guide usually exists indicating policy concerning priority of functions.

The information received as a result of Question 7 throws light on the views of some of those responsible for

botanical gardens in Great Britain. The fact that these gardens are not necessarily the best-known gives added interest to the replies. The wide range of opinions was, perhaps, predictable; it illustrates the variety of attitudes and, therefore, activities in British botanical gardens today. Some curators preferred to send an accompanying letter, setting out the situation in their own garden, or to enclose their official guide, or sometimes both.

Curators were asked, if they could, to give their answer to this question in percentage terms. Some did so; others chose a general reply such as 'very important' to describe the significance of a particular activity in the work of their garden. The fairly small number of replies in this section, and the variety of ways in which answers were given, however, make it difficult to quantify the results.

The main point that emerges, perhaps, from the returns is the wide divergence of views held by curators, and of emphasis in the work of the gardens. These replies reinforce the point made already about differences in activities, at different places; it is not inappropriate that such variety exists, in fact it appears a definite advantage.

Conservation figures as a 'very important' function, as would be expected. (It is possible that somewhat different meanings are applied to the word 'conservation'.)

For the reasons given above, precise tabulation of the results of this question is difficult. Some general trends are, however, of interest, and significant for this study.

- a) In six gardens, amenity appears as the main preoccupation.
- b) In five gardens, education, teaching and research are apparently the main function.

Conservation is not given as the (sole) first priority by curators of any institutions. Recreation and amenity, and education, teaching and research, are given as equal first priorities by two gardens; recreation and amenity, and conservation, by one garden; and all three groups of functions equally by one garden.

Questionnaires of this kind yield information in more than one way. The hesitation shown by those replying to the question of priorities of function is interesting, as evidence of the complexity of the subject, even for the individuals most closely involved.

Priorities: relative importance of functions as seen by some directors and curators

	<u>Recreation &amp; amenity</u>	<u>Education, teaching and research</u>	<u>Conservation</u>
Birmingham B & H Society	70%	30%	A natural result of our being in existence
Bradford City	90%	10%	-
Bristol University	90%	5%	5%
Durham University	Highly	Highly	Highly
(Harlow Car) Harrogate Northern Hort. Society	40%	40%	20%
Hull University	20%	80%	Of prime importance but at the moment labour and money shortage prohibit any major developments
Leeds University	-	95%	5%
Leicester University	2nd	1st	3rd
	All very close		

/Continued.....



Priorities: relative importance of functions as seen by some directors and curators  
(continued)

	<u>Recreation &amp; amenity</u>	<u>Education, teaching and research</u>	<u>Conservation</u>
Liverpool City	40%	40%	20%
Probus (Cornwall C.C.)	-	85% (no research)	15%
Sheffield City	50%	30%	20%
York (C.C.)	40%	20%	40%
Dundee University	20%	70%	10%
Cardiff City	Very important; the botanical garden at Roath Park contains 3,500 roses in variety	Limited	Low
Swansea University College	60%	30%	10%

Gardens giving highest priority to recreation and amenity (a)

Birmingham Botanical and Horticultural Society  
Bradford City  
Bristol University  
Sheffield City  
Cardiff City  
Swansea University College

Gardens giving highest priority to education, teaching and research (b)

Hull University  
Leeds University  
Leicester University  
Probus (Cornwall C.C.)  
Dundee University

Gardens giving equal priority to recreation and amenity (a) and education, teaching and research (b)

(Harlow Car) Harrogate, (Northern Horticultural Society)  
Liverpool City

Gardens giving equal priority to recreation and amenity (a) and conservation (c)

York C.C.

Gardens giving equal priority to recreation and amenity (a) and research (b) and conservation (c)

Durham University

### New factors

In studying botanical gardens, it becomes clear that new factors are having a noticeable effect on these gardens today.

### Conservation

One of these, an important one, is plant conservation. It is fairly recently that conservation, in the sense of rescuing endangered species, has begun to play a major part in botanical gardens in Great Britain. Some professional botanists and horticulturists consider that it is not yet taken seriously enough. They feel that the need is so urgent that no time should be lost. Some fear that it is already almost, if not definitely, too late for such action. Various views are given elsewhere in this study. (The following remarks refer only to the conservation of wild plants. Conservation of scarce garden plants, a matter for national rather than international schemes, is included in the discussion on conservation later.)

Reference may usefully be made to the dates of a few key events. (The main assessment of the conservation function in gardens is made later in the chapter. Conservation here is considered as one of the elements responsible for change in botanical gardens today.) European Conservation Year was 1970. There were plenary sessions of IABG in 1975 and 1981. Two Kew Conservation

Conferences were held in 1975 and 1978, followed by the Cambridge Conference in 1980.

Plant conservation measures were due, if not overdue; the machinery involving British botanical gardens was set up as a consequence of these landmarks, in comparatively recent years. The need for co-operative action in conservation led to these conferences. The conferences provided an opportunity for international discussion of other aspects of botanical gardens' work as well.

#### International contacts

Scientists, international in outlook, have maintained connections with colleagues abroad at most times. These conferences, however, were the first real opportunity for those responsible for botanical gardens to meet and exchange ideas over a wide range of topics. The opportunity was seized by the participants, who found the resulting discussions valuable. This international relationship will presumably grow stronger in the future.

#### International community relations

It would seem a welcome development if horticultural links at community level could be encouraged also. Schemes have not, so far, been arranged under the 'twinning towns' partnerships, but it appears to be a way in which botanical gardens could help to promote international goodwill.

## Influence of television

Another important influence on the work of the gardens comes from the media, especially perhaps colour television.

The effect is not always what would have been expected. It might have been thought that the many programmes about wild plants, famous gardens, and gardening skills would lessen public inclination to visit gardens, including botanical gardens. In fact, the effect has proved to be the opposite. When a garden open to the public is featured in a TV programme, the number of visitors rises strikingly. People undoubtedly like to go and see places that they have watched on television. (Foreign holidays are advertised by films with scenes in the countries. This would not happen if it did not encourage viewers to visit the country themselves.) Visitors to botanical gardens may not experience the same surprise as earlier generations at the sight of exotic plants; they may have seen them in a colour film on television. There is pleasure, however, in studying a living plant already seen on film. There is a sense of recognition, too, in finding, in a garden, a plant seen during a holiday abroad growing in the wild. Visitors with this background of television and foreign travel are likely to be better informed and more interested in the plants in a botanical garden.

Another way in which television helps gardens to

provide a valuable service to the community is in the case of the handicapped. To the housebound, the elderly, and others not able to make a personal visit, a television programme offers an opportunity to enjoy plants in their own environment. This is a service not restricted to botanical gardens, but that does not detract from their contribution when a programme is filmed in their grounds.

These three factors: conservation, closer international relationships and the influence of television (especially colour television) must all affect the future objectives of botanical gardens.

#### Economic influences

The gardens have to be practical institutions; there are important changes affecting the 'means' by which they try to attain their objectives, as well as the 'ends' in view. As institutions or, more often, part of a larger organization, they are subject to economic difficulties affecting life in the country generally. A series of informative articles on botanical gardens in Great Britain, by Grenville Sheringham, was published in GC & HTJ magazine (1982). In his comments he refers to the view that funding is easier to obtain, at a time of financial stringency, if a botanical garden is open to the public. This is a difficult question; the solution must presumably depend on the individual circumstances of a garden, its purpose and priorities. Undue pressure to

open seems undesirable; a factor may be the extent to which amenity is a priority. Where there is public funding, a need exists to consider public accountability which may involve some freedom of access. Chelsea Physic Garden, closed to the public for centuries, decided to allow the public access for a few hours each week, starting in April 1983.

Another practical problem, mentioned earlier, is the high cost of labour; the solution is sought, where possible, in new equipment and machinery permitting working methods which require fewer staff.

Botanical gardens, then, are centres for a variety of activities, sometimes including advanced scientific research as well as public information, education and recreation provision, and conservation. Basically, they are places where important plant collections are grown, needing constant care and attention. Considering the factors mentioned above, it is inevitable that British botanical gardens are a changing world.

An assessment of the current role of botanical gardens in Great Britain, and their prospects in the future, is now attempted. Each of the main functions identified is considered, following the order in which they are discussed in the thesis.

It is important to isolate those functions for which botanical gardens have the sole responsibility, i.e.

those which would not be carried out if botanical gardens did not undertake them. The functions of botanical gardens in relation to the activities of other organizations are discussed in Chapter 10 (Functions of gardens: the problem of overlap).

The following paragraphs give a summary outlining the situation.

#### 1. Teaching and research

The teaching of students of botany and horticulture, to degree level, is carried out only at academic institutions. A botanical garden or experimental botany garden, with living plant collections, is essential for this purpose, in addition to the dried plant material of a herbarium. Postgraduate research for higher degrees is also essentially an academic function. (Other types of research can be, and are, undertaken elsewhere, at the establishments of NERC, for example.)

Teaching and research are jointly the basis of university life; they are so interdependent that it would be most undesirable to have a situation in which they were separated. For teaching and research of this type, university and college botanical gardens are essential.

#### 2. Economic botany

Work on the medicinal value of plants may be undertaken in botanical gardens, in the course of various research



programmes, but it is by no means a prerogative of these gardens. (It would apply only to academic and not municipal gardens, in any case.)

Herb gardens have been created in some gardens; where this has been done, however, the object is usually to produce a feature of interest rather than a practical collection. (The National Institute of Medical Herbalists (founded in 1864) maintains a botanical garden where students following a 4-year course of training learn to recognize plants and are instructed in their potential medicinal use.)

Economic botany has not usually been a main function of botanical gardens in Great Britain, with the exception of Kew and Chelsea Physic Garden. The work carried out at Kew in the past, and still continuing there actively today, is of national and international importance. The work of Kew and the influence exerted by its directors on botanical gardens in other countries is widely known. The development of plants as staple foods, and for other commercial uses, has affected the course of history. Kew's importance in this respect is treated in Lucile Brockway's book, Science and colonial expansion: the role of the British Royal Botanic Gardens (Brockway 1980).

Research of this type, apart from Kew and Chelsea Physic Garden, is usually undertaken in research institutions rather than in botanical gardens.

### 3. Horticulture

The many aspects of horticulture - from plant collecting and acclimatization to cultivation and distribution of plants and seeds - make this an extremely important, indeed basic, function of a botanical garden. Plant-collecting expeditions of great importance have been organized by Kew and Edinburgh. Plants discovered in many parts of the world and brought back to this country have been successfully cultivated in botanical gardens, as a result of expeditions undertaken by groups of enthusiasts, and by individuals. This function, again, is not unique to botanical gardens. Important additions to the range of available plants have been made also through sponsorship by owners of great private gardens. (Work of great value in hybridization has, of course, also been carried out by the owners of such gardens and their staffs.)

This private activity does not, however, lessen the importance of the contribution which botanical gardens have made in the past and continue to make to plant acquisitions. Some botanical gardens were founded, as already mentioned, mainly to grow exotic species.

Horticulture is an essential function of a botanical garden; by its existence, a garden is automatically engaged in horticulture.

#### 4. Amenity

The earliest known botanical gardens, in Ancient China, were a combination of amenity and utility. Amenity has therefore been a factor in botanical gardens since their beginning. It may be claimed that it is implicit in the term botanical garden.

Amenity features largely in many other types of garden, such as the properties of the National Trust, and many private gardens. This does not, however, detract from the amenity offered in botanical gardens. Differences may emerge when the comparative importance of amenity is discussed at professional meetings, if amenity is seen as an alternative to scientific research or utilitarian objectives, but these functions are not mutually exclusive.

Man's dependence on plants is frequently reiterated at present. The media play a big part in this publicity. Of the many uses of plants, some were better known to our ancestors than to us. Richard Mabey's interesting short book, Plants with a purpose, describes a variety of uses for plants, apart from their obvious value as food (Mabey 1977). 'People need plants' is a slogan of modern British plant conservation. A section on 'Amenity' must stress the human needs, from plants, that are not purely practical. People need beauty, peace and time to be quiet; especially, perhaps, in the environment of a busy city. In this respect, botanical gardens can make a valuable contribution,

particularly if they are easily accessible in an urban area. Since they do not cater for active recreation as public parks do, they are likely to have the atmosphere of tranquillity most needed.

These remarks apply, of course, to municipal gardens and to those university gardens open regularly to the public where amenity is an important function. (Botanical gardens not open to the public, but restricted to members of a university or college, also of course serve an amenity function.)

5. Public information and education services;  
public recreation facilities

New technology has resulted, for many members of the community, in increased free time and earlier retirement. The trend seems likely to continue (the leisure being sometimes unwelcome because it arises from unemployment). In this situation there is an opportunity, indeed a necessity, for people to find new interests if time is to be spent profitably. Gardening, garden-visiting, and growing houseplants are among the most popular leisure pursuits in this country.

Botanical gardens, with the associated professional expertise, can give valuable help in various ways, by demonstration garden plots, by talks and advisory sessions. If they keep in close touch with local specialist societies, they can play an important part in the life of the community.

These are normal functions of municipal botanical gardens, and in some respects of university gardens open to the public. Community activities of this type are not the function of other types of garden open to the public, though these may offer valuable horticultural advice; they may also offer assistance indirectly through the example of plants well grown.

### Conservation

Plant conservation, the most recent major function of botanical gardens, is sometimes given as a complete justification for their existence, now and in the future. The needs of conservation, to protect and preserve both wild and garden plants, are important and urgent; it would be unfortunate, however, if these considerations were to displace entirely the older and still valid functions of botanical gardens.

It would probably be accepted that the botanical gardens of Great Britain are the best centres from which to monitor the flora of special areas and to grow, where necessary, collections of endangered plants. The project need not necessarily be at the expense of a university. Two schemes, funded by NERC, operate in the University gardens at Cambridge and at Newcastle-upon-Tyne.

How far botanical gardens in this country can make a contribution to the rescue of threatened tropical floras depends on several factors. The availability of existing suitable accommodation for tropical plants is a major

consideration. Finance is another essential consideration.

There is agreement that wild plants, in this country, are best provided for when they are protected in their own habitats, under natural conditions. Such conditions are not easy to reproduce, even in a local garden.

Similarly, the best protection for tropical floras is considered to be within their own countries, where the climate suits them. To create ideal conditions in a temperate country is an expensive matter.

For garden plants, botanical gardens can also have an important role. They are not unique in being able to accommodate garden plants or scarce vegetables. The scheme arranged by the National Council for the Conservation of Plants and Gardens, under the auspices of the RHS, includes many groups, consisting of interested bodies, and owners of private gardens, a mixed system in a typically English tradition. Conservation needs must be tackled quickly; some curators believe that the task is not being carried out as rapidly as it should be in such serious circumstances.

#### Environment - outlook gloomy?

The future for plants in the science fiction film 'Silent Running' (discussed in Chapter 8, Conservation) is not cheerful. The Earth is shown as uninhabitable for plants (though not, apparently, for human beings) and the remaining specimens of plant life survive in a complex

of domes, where the 'forests' continue to flourish - the remains of Earth's vegetation.

Other concepts used in connection with a possible future role for botanical gardens are not particularly heartening. To describe them as a 'Noah's Ark' for endangered species is to suggest an overwhelming flood of disaster elsewhere. To call them 'oases' of peace and calm is also to indicate a surrounding desert of noise and discomfort. It must be hoped that the reality will not be as disastrous as these gloomy pictures suggest.

#### Looking to the future

Experts working in modern British botanical gardens have given much thought to future developments in the gardens' functions.

Amongst the articles and papers within the period specially considered here (i.e. from 1970 to 1982) one of the earliest was written by Professor J. Heslop-Harrison, as Director of Kew RBG, in the Journal of the Kew Guild, 1971. The article is entitled 'The Prospect Ahead'. (It is mentioned in the reference notes.) It contains far-sighted observations about the future of Kew. Professor Heslop-Harrison identifies, in the first part of his article, the wide range of activities already taking place there: public amenity and education; maintenance of the plant collections and seed bank; horticultural training for students; identification, advisory, quarantine, and other services on a worldwide basis; scientific research;

plant introduction and some applied horticultural research. He then suggests developments for the future, under two heads: 'public' Kew and the Kew of the scientist. For the public he envisages the need for (a) attractions extended over a wider season and (b) new building (which has already been carried out). In scientific areas, he considers aspects of experimental taxonomy and approaches to 'omega' taxonomy, as well as plant husbandry.

Finally Professor Heslop-Harrison indicates several desirable developments with national implications: the need to build up plant genetic resources in the country; an active national policy for 'plants of economic, amenity and scientific importance'; co-ordination in dealing with plant collections; establishment of a national gene bank.

Ideas such as these have been repeated and debated in the years since this article, which showed a keen recognition of the problems which would concern botanical gardens, especially Kew, in the future.

Some interesting thoughts on the future role of botanical gardens were expressed by R. L. Shaw, of Edinburgh RBG, in a paper given at the First Kew Conservation Conference of 1975. Drawing attention to changing circumstances, and the need for reconsideration of the gardens' aims and objects as a result of them, he urged his listeners to study Professor Heslop-Harrison's article, mentioned above. Mr. Shaw sympathized with those confused about the aims that they ought to be pursuing, especially



about the relative importance of functions in the gardens.

Living institutions are in a state of constant change, but change that occurs at a moderate speed is usually preferable to sudden upheavals. As an example of ordered progress, in May 1982 it was announced that administrative changes at Kew RBG were being considered. Unlike some changes these were generally welcome; their object was to give greater autonomy to those in charge at Kew, allowing them to make important decisions with more independence, without the delay caused by the need for outside approval.

### Television

Throughout this study, emphasis has been given to the importance of television as a medium for information, and, therefore, publicity about the gardens. Television enables gardens to carry out some functions remotely, but effectively. With high quality colour pictures, gardens of many types have become a successful subject for programmes. Garden-visiting is already a much-practised national hobby. The armchair traveller and the armchair sportsman have now been joined by the armchair garden-visitor. As far as botanical gardens are concerned, this means that their functions of amenity, public recreation and information, and conservation education, are not limited to personal visitors to the grounds; this fact adds considerably to the importance of the work that the gardens carry out for the public.

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## Chapter 14

### Literature notes

In this chapter some bibliographical material is mentioned earlier, in the first part. In this section, comments and certain references can, however, be suitably included, as relevant to this final chapter.

Items discussed earlier in Chapter 14 illustrate some basic points about literature on future aspects of the topic. On the outlook for British botanical gardens, books could not be expected to prove a useful source. Delay involved in book production is of less importance in historical subjects, much more so when the topic involves future developments. R. L. Shaw's address 'Future: integrated international policies' (1975) underlines the importance of conference proceedings as a literature source. The proceedings are available for consultation at any time, and incorporate the thinking of experts. Scientists expect to find up-to-date information, as a rule, in journals rather than in books. The same applies in arts and social science subjects, if recent, or future, developments are in question.

J. Heslop-Harrison's 'The Prospect Ahead' is an example of material published in a specialized, though not strictly a scientific, journal. (It is, as already mentioned, particularly interesting because of the comparatively early date of the article.) The author, writing as Director of Kew Gardens, naturally published some of his

ideas in the Journal of the Kew Guild, expressing as early as 1971 views which would only be fully considered several years later.

A note by Jane Wynn about the administrative developments at Kew (mentioned above) was entitled 'Kew Gardens: changes ahead' (1982), published in Nature (13 May 1982), an example of general periodicals which provide a useful source of information.

Between the fairly restricted readership of the Journal of the Kew Guild and the above note in Nature is a range of useful (non-specialized) periodical literature. Relevant articles are cited at appropriate points in this study.

#### Institute of Horticulture

A development with considerable importance for institutions connected with gardening was the formation of the Institute of Horticulture. The following extracts are quoted from an article in The Garden, July 1984, pp 273-4:

##### THE INSTITUTE OF HORTICULTURE

It was fitting that Lord Aberconway, should chair this momentous meeting as the RHS initiative for such an Institute had been taken while he was still President of the Society. In his opening remarks, Lord Aberconway said that horticulture was one of the few professions which did not have an Institute. However, it was needed more today than ever

before with an industry so diverse,  
varied and meeting new challenges....

During the open session, it became clear the majority of those present were in favour of a broadly-based horticultural Institute. The importance of professional status and standing was emphasised if the new body was to gain recognition and ultimately a Charter. The President of the Horticultural Education Association, Dr. Winifred Dullforce, reinforced the view that the horticultural profession was wide and diverse, covering commercial production and marketing of fresh fruit, vegetables, flowers and nursery stock, environmental horticulture, sports facilities, landscaping and leisure provision. Being based on both science and economics, good managers and technicians must have a knowledge of machinery, equipment and chemicals, yet the essential feature was the "miracle of science - the plant". Horticulture was an advanced technology with specialisms but requiring a unified voice, purpose and intent ....

Representatives from Scotland and the University sector were equally enthusiastic, calling for a qualifying body and seeing horticulture as a distinct and unified profession....

The Council of Europe produced the first List of rare, threatened and endemic plants in Europe in 1977.

Dr. S. M. Walters devoted an Editorial in Naturopa (No. 31, 1978) to this publication. He writes:

The publication of the 286-page List of rare, threatened and endemic plants in Europe (Council of Europe Nature and Environment Series 14, 1977) represents an important achievement,

and one of which the many European botanists who voluntarily collaborated in its formulation may feel justly proud. The urgency and gravity of the problems facing plant conservation in Europe are, however, such that we cannot afford to be complacent. The "List" is not an end in itself, but merely a tool to be used by and with governments and private organisations and individuals to plan practical action....

I want to conclude by listing what we, as conservationists concerned to protect the flora and vegetation of Europe, must see as urgent tasks. Now that we have the basic floristic information we must:

1. urge the organisations responsible for nature conservation in our own countries to give priority to the protection of those rare and threatened species listed as still occurring within their country by the creation of nature reserves, the enactment of appropriate legislation, the education of public opinion, and in any other way;
2. support the efforts of international bodies to continue the effective co-operation demonstrated in the production of this List, and in particular the scientific co-operation necessary to refine and enlarge our knowledge of the ecology of rare species in their natural habitats, so that we know how to protect them;
3. press for rapid progress towards a system of effective nature reserves for Europe which contain within them as many as possible of the listed rare and threatened species. It is essential to remember that we can ultimately only protect species by protecting the habitats in which they occur.

S. M. WALTERS.

Naturopa, No. 31, 1978.

## Kew Gardens

To complete the picture of British botanical gardens, the words of Professor E. A. Bell, Director of Kew RBG, are quoted from an interview with Michael Young (reported in The Times 'Saturday' number of March 30 - April 5 1985). Replying to a question about the relevance of a botanic garden in the modern world, he says:

Kew is a reservoir of living plant material and a dry and live data base for research. Our primary role is scientific but we have a traditional role, too, to identify economic plants and to pursue taxonomy.

## Botanical gardens in the community

In conclusion, it can be fairly claimed that botanical gardens have indispensable functions in the degree-level teaching of botany and horticulture, in academic research, and in responsibility for conservation of the flora of Great Britain, as well as very important functions in horticulture, amenity, public information and education, public leisure activities, and in conservation of scarce garden plants. By fulfilling such important purposes at present, and with many opportunities in the future, botanical gardens are

making a valuable contribution to the life of the community in this country, and, sometimes, to the botanical world overseas.

With their dual responsibility, for scientific work and for the provision of amenity, they continue to be, as in the past, unique institutions.

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## Bibliography

## BIBLIOGRAPHY

- ALDRIDGE, D. (1981). The Monster Book of Environmental Education. Geo Books, Norwich.
- ALLABY, M. (1985). Macmillan Dictionary of the Environment. Macmillan, London.
- ALLABY, M. (ed) (1986). The Oxford Dictionary of Natural History. Oxford University Press, Oxford.
- ALLABY, M. (1986). The Woodland Trust Book of British Woodlands. David and Charles, Newton Abbot.
- ALLEN, D.E. (1986). The Botanists: a history of the Botanical Society of the British Isles through a hundred and fifty years. St. Paul's Bibliographies, Winchester.
- ANDERSON, P. and SHIMWELL, D. (c 1981). Wild Flowers and Other Plants of the Peak District. Moorland Publishing, Ashbourne.
- BAINES, C. (1986). Sow wild. BBC Wildlife. January 1986, pp 31-34.
- BAINES, C. (1986). The world of wildflowers. Practical Gardening. June 1986, pp 43-5 and 47-8.
- BALLARD, P. (1983). An Oasis of Delight: the history of the Birmingham Botanical Gardens. Duckworth, London.
- BARTH, F.G. (1985). Insects and Flowers: the Biology of a Partnership. George Allen and Unwin, London.
- BATEY, M. (1982). Of Oxfordshire Gardens. Oxford Polytechnic Press, Oxford.
- BATEY, M. (1982). Oxford Gardens: the University's Influence on Garden History. Avebury, Amersham.
- BEAN, W.J. (1970-80). Trees and Shrubs Hardy in the British Isles. 4 vols. Murray, London.

- BELLAMY, D. (1979). Botanic Man. Hamlyn, London.
- BICHARD, J.D. and McCLINTOCK, D. (1975). Wild Flowers of the Channel Islands. Chatto and Windus, London.
- BISGROVE, R. (1985). Liverpool: IGF 1984.  
The Garden. January 1985, Vol. 110, Part 1, pp 19-25.
- BOARDMAN, R. (1981). International Organization and the Conservation of Nature. Macmillan, London.
- BRAZIER, A. (1979). The English Garden. Library Association. Public Libraries Group, London. (Reader's Guide No. 19).
- BRICKELL, C.D., VOSS, E.G. and KELLY, A.F. (eds) (1980). International Code of Nomenclature for Cultivated Plants - 1980. IAPT, The Hague.
- BRIGGS, M. (1980). The Guinness Book of Wild Flowers. Guinness Superlatives Ltd., London.
- BRITISH LIBRARY. SCIENCE REFERENCE LIBRARY.  
Periodicals on Botany Held by the SRL. British Library, London. Current copy.
- BROCKWAY, L.H.(1980). Science and Colonial Expansion: the Role of the British Royal Botanic Gardens. Academic Press, London.
- BROOKS, A.V. and KNIGHTS, I. (1984). Review of plant troubles 1980-1983. The Garden. March 1984, p 115.
- CARDER, J. (1982). The Sheffield Botanical and Horticultural Society Gardens. Sheffield Art Report. Sheffield Society for the Encouragement of Art, pp 3-12, Sheffield.

- CARSTAIRS, I. (1984). Wild Yorkshire and Humberside.  
Yorkshire Wildlife Trust, York.
- CHAPMAN, A. (1985). The Countryside and Wildlife for Disabled People. The Royal Association for Disability and Rehabilitation, London.
- CHINERY, M. (1986). The Living Garden: a Practical Guide to Attracting and Conserving Garden Wildlife. Dorling Kindersley, London.
- CHINERY, M. and TEAGLE, W.G. (eds) (1985). Wildlife in Towns and Cities. Newnes Books, Feltham.
- CLAPHAM, A.R., TUTIN, T.G. and WARBURG, E.F. (1981). The Excursion Flora of the British Isles. 3rd ed. CUP, Cambridge.
- CLAPHAM, A.R., TUTIN, T.G. and WARBURG, E.F. (1962). The Flora of the British Isles. 2nd ed. CUP, Cambridge.
- CLARKE, E. and PERRY, C. (1985). English Country Gardens. Weidenfeld and Nicholson, London.
- COLE, L. (1980). Wildlife in the City. Nature Conservancy Council, London.
- Compendium of University Entrance Requirements for First Degree Courses in the United Kingdom. Association of Commonwealth Universities, London. Published annually.
- COOK, J.G. (1968). ABC of Plant Terms. Merrow Publishing Co. Ltd., Watford.
- COOMBES, A.J. (1985). Collingridge Dictionary of Plant Names. Newnes Books, London.
- COOPER, G. and TAYLOR, G. (1986). The English Herb Garden. Weidenfeld, London.

- COUNCIL OF EUROPE (1979). Convention on the Conservation of European Wildlife and Natural Habitats. (European Treaty Series No. 104). Council of Europe, Strasbourg.
- COUNCIL OF EUROPE (1978). Resolution (77) 6 on the Conservation of Rare and Threatened Plants in Europe. Naturoopa 31, p 22.
- CROMPTON, G. (1981). Surveying rare plants in eastern England in The Biological Aspects of Rare Plant Conservation, SYNGE, H. (ed), pp 117-124. John Wiley and Sons, Chichester.
- DESMOND, R. (1979). Physic and botanic gardens in The Garden, HARRIS, J. (ed), pp 129-135. Mitchell Beazley, London.
- Dictionary of Gardening (1951-56, 1969). Royal Horticultural Society, London. [5 volumes including supplement published between 1951-1956; supplementary volume published in 1969.]
- DOBSON, F.S. (1979). Edible and Medicinal Plants. Jarrold, Norwich.
- DONY, J.G., PERRING, F. and ROBB, C.M. (1974). English Names of Wild Flowers. Butterworths, London.
- DU BOULAY, S. (1985). The Gardeners. Hodder and Stoughton, London.
- EAGLE, R. (1981). Herbs, Useful Plants. British Broadcasting Corporation, London.
- ECOLOGICAL PARKS TRUST. Report. [Annual publication.] Ecological Parks Trust, London.
- EMERY, M. (1986). Promoting Nature in Cities and Towns: a practical guide. Croom Helm, Beckenham.

- ENGLISH TOURIST BOARD. Visit an English Garden.  
English Tourist Board, London. Current copy.
- European Garden Flora (1984-). Royal Horticultural Society and Cambridge University Press. [To be published in 6 vols. Vol. 2 published 1984, Vol. 1, part 1, 1986.]
- EVERETT, T.H. (1980/2). The New York Botanical Garden Illustrated Encyclopedia of Horticulture.  
10 vols. Garland Publishing Inc., New York.
- FITTER, R. and A. (1985). The Wild Flowers of Britain and Northern Europe. 4th ed. Collins, London.
- FITTER, R. (1986). Wildlife for Man: how and why we should conserve our species. IUCN, Species Survival Commission.
- FLETCHER, H.R. (1970). The Royal Botanic Garden, Edinburgh. Her Majesty's Stationery Office, Edinburgh.
- FLINT, R. (1985). Encouraging Wildlife in Urban Parks. London Wildlife Trust, London.
- FORD MOTOR COMPANY (1986). On the Verge of Life. [Video.]
- FORSYTH, A. (1983). Yesterday's Gardens. Her Majesty's Stationery Office, London.
- FREETHY, R. (1986). Woodlands of Britain. Bell and Hyman, London.
- FRODIN, D. (1985). Guide to Standard Floras of the World. Cambridge University Press, Cambridge.
- GARDEN HISTORY SOCIETY (1983). [Annual conference at Sheffield, 21-24 July, includes an account of a visit to Sheffield Botanical Gardens, by JENKINS, M. and SMITH, E. STAMMERS -. Garden History, Autumn 1983, pp 8-10.]

- Gardens of Britain (1978-79). Batsford, London.  
 [A set of six volumes which cover the different regions of England. A companion volume, by P. Verney, describes the gardens of Scotland.]
- GARRARD, I. and STREETER, D. (1983). The Wild Flowers of the British Isles. Macmillan, London.
- GILMOUR, J. and WALTERS, M. (1985). Wild Flowers. (New Naturalist). Collins, London. [First edition, 1954.]
- GLEDHILL, D. (1986). The Names of Plants. Cambridge University Press, Cambridge.
- GODFREY, L. (1984). Paradise in Birmingham. Amateur Gardening. 25th August 1984, pp 20-21.
- GREEN, B. (1981). Countryside Conservation: the protection and management of amenity ecosystems. George Allen and Unwin, London.
- GREENOAK, F. (1985). God's Acre. Orbis Publishing Ltd., London.
- HARRIS, J. (ed) (1979). The Garden: a celebration of one thousand years of British gardening. Mitchell Beazley, London.
- HARRISON, J. HESLOP- (1971). The prospect ahead. Journal of the Kew Guild, pp 44-50.
- HARROD, J. (1986). Wild flowers come into the fold. The Field. 24th May 1986, p 57.
- HARVEY, J. (1981). Mediaeval Gardens. Batsford, London.
- HEISER, C.B. (1985). Of Plants and People. University of Oklahoma Press, Norman, Oklahoma.

- HELLYER, A. (1975). A first step towards preserving valuable garden plants. Garden History. Autumn, 1975, Vol. 3, Part 4, p 44.
- HEPPER, F.N. (1981). Bible Plants at Kew. Her Majesty's Stationery Office, London.
- HEPPER, F.N. (1982). Royal Botanic Gardens Kew: Gardens for Science and Pleasure. Her Majesty's Stationery Office, London.
- HESSAYON, D.G. and J.P. (1973). The Garden Book of Europe. Elm Tree Books. Hamish Hamilton Ltd., London.
- HILLIER and Sons (1981). Manual of Trees and Shrubs, 5th ed. David and Charles, Newton Abbot.
- HYAMS, E. and MacQUITTY, W. (1969). Great Botanical Gardens of the World. Nelson, London.
- INTERNATIONAL COUNCIL ON MONUMENTS AND SITES. U.K. ICOMOS HISTORICAL GARDENS COMMITTEE (1979). A Preliminary and Interim List of Gardens and Parks of Outstanding Historic Interest. ICOMOS.
- INTERNATIONAL DENDROLOGY SOCIETY. Yearbook 1966- Annual publication. International Dendrology Society, London. Cumulative index published, covering 1966-1979.
- International Directory of Botanical Gardens (1977). 3rd ed. International Association of Botanical Gardens, Vancouver.
- INTERNATIONAL UNION FOR CONSERVATION OF NATURE. THREATENED PLANTS COMMITTEE (1983). List of Rare, Threatened and Endemic Plants in Europe. 1982 edition. Council of Europe, Strasbourg.



- INTERNATIONAL UNION FOR CONSERVATION OF NATURE.  
 THREATENED PLANTS COMMITTEE (1977).  
List of Rare, Threatened and Endemic Plants in Europe. Council of Europe, Strasbourg.
- JERMY, A.C. (ed) (1978). The Atlas of Ferns of the British Isles. BSBI and British Pteridological Society, London.
- JOHNSON, H. (1979). The Principles of Gardening. Mitchell Beazley, London.
- JOINT TWINNING COMMITTEE (1981). Places in Partnership: list of twinings. Joint Twinning Committee, London.
- KENT, D.H. (1967). Index to Botanical Monographs. Academic Press, London.
- KERRICH, G.J., HAWKSWORTH, D.L. and SIMS, R.W. (eds) (1978). Key Works to the Fauna and Flora of the British Isles and Northwestern Europe. Academic Press, London.
- Kew Magazine, The, incorporating Curtis's Botanical Magazine. Vol. 1 - 1984-  
 Royal Botanic Gardens, Kew, in association with Collingridge.
- KILLINGBECK, J. (1985). Creating and Maintaining a Garden to Attract Butterflies. National Association for Environmental Education, Walsall.
- KING, R. (1985). Royal Kew. Constable, London.
- KING, R. (1976). The World of Kew. Macmillan, London.
- KOPPELKAMM, S. (1981). Glasshouses and Winter-gardens of the Nineteenth Century. Granada, London.

- LANCASTER, R. (1984). In Search of the Wild Asparagus.  
Michael Joseph/Rainbird, London.
- Landscape Design, April 1986. [Number devoted to  
Stoke-on-Trent National Garden Festival.]
- LAUNERT, E. (1981). The Guide to Edible and Medicinal  
Plants of Britain and Northern Europe. Hamlyn,  
London.
- LAW, J. (1847). Catalogue, descriptive, of the habits  
and peculiarities of some of the rarest and most  
interesting plants, now growing in the conservatories,  
at the Sheffield Botanical Gardens. Printed by  
Robert Leader, Independent Offices, Sheffield.
- LAW, J. (1849). Catalogue, descriptive and historical,  
of the rare and interesting plants, now in the  
conservatories and pleasure grounds of the Sheffield  
Botanical Gardens. C. Mitchell, Red Lion Court.
- LEADER, R.E. (ed) (1876). Reminiscences of Old Sheffield,  
its Streets and its People. 2nd ed. Leader and  
Sons, Sheffield.
- LEMMON, K. (1983). Botany by citizens' request: the  
150th anniversary of Sheffield Botanical Gardens.  
Country Life. 14th April 1983, pp 920-921.
- LEMMON, K. (1983). Harlow Car Gardens. The Garden.  
March, 1983, pp 85-90.
- LEON, C.J. and LUCAS, G.L. (1982). Can we preserve our  
flora? Naturopa, No. 42, p 21.
- Liverpool '84: International Garden Festival, 2nd May-  
14th October 1984: Festival Guide. Brunswick  
Printing and Publishing Co. Ltd., Liverpool.
- LOUSLEY, J. (1969). Wild Flowers of Chalk and Limestone.  
(New Naturalist). Collins, London.

- LYTE, C. (1983). The Plant Hunters. Orbis Publishing, London.
- MABEY, R. and GREENOAK, F. (1983). Back to the Roots. Arrow Books, London.
- MABEY, R. (1977). Plants with a Purpose: a guide to the everyday uses of wild plants. Collins, London.
- MACLEOD, D. (1982). Down to Earth Women. William Blackwood, London.
- Macmillan Guide to Britain's Nature Reserves (1984). Macmillan, London.
- MARTIN, W. Keble (1965). The New Concise British Flora in Colour. Ebury Press and Michael Joseph, London.
- MARVELL, A. (1979). The Complete Poems. Penguin, Harmondsworth.
- MASON, J. (1984). Chelsea's four acres of physic. New Scientist. 19 April 1984, pp 40-41.
- MATTHEWS, P. and MATTHEWS, M. (1984). Teddy Edward's Garden Souvenir. Brunswick Printing and Publishing Co., Liverpool.
- McLEAN, T. (1981). Medieval English Gardens. Collins, London.
- MELLANBY, K. (1981). Farming and Wildlife. (New Naturalist). Collins, London.
- MITCHELL, A.F. and WESTALL, A.W. (eds) (1972).. Bedgebury Pinetum and Forest Plots. 4th ed. Her Majesty's Stationery Office, London. (Issued by the Forestry Commission.)
- MITCHELL, A.F. (1972). Conifers in the British Isles. Forestry Commission Booklet No. 33. Her Majesty's Stationery Office, London.

- MITCHELL, A.F. (1974). A Field Guide to the Trees of Britain. Collins, London.
- MOGGRIDGE, H. (1984). Schools competition theme gardens. The Garden. March 1984, pp 108-110.
- MOORE, D.M. (1982). Flora Europaea Check-list and Chromosome Index. Cambridge University Press, Cambridge.
- MORTON, A.G. (1981). History of Botanical Science. Academic Press, London.
- NATURE CONSERVANCY COUNCIL (1984). Nature Conservation in Great Britain. 2 Vols. Nature Conservancy Council, London.
- NATURE CONSERVANCY COUNCIL (1979). Nature Conservation in Urban Areas: Challenge and Opportunity. Nature Conservancy Council, London.
- 1985 United Nations List of National Parks and Protected Areas (1985). United Nations, prepared by IUCN.
- 1979 in the Sheffield Botanical Gardens (1979). Parks and Recreation. May 1979, p 27.
- NORTH, R. (1986). The Real Cost. Chatto and Windus, London.
- Official Guides to Botanical Gardens. [These guides are revised and reissued fairly frequently, so details of publication are not given here. The current edition is normally in print, a copy being obtainable from the Garden.]
- OLDFIELD, S. (1986). Beware the Botanicals. BBC Wildlife. January 1986, p 35.
- OPEN UNIVERSITY and COUNTRYSIDE COMMISSION (1985). The Changing Countryside.

- OPEN UNIVERSITY and COUNTRYSIDE COMMISSION (1985).  
The Countryside Handbook.
- OZENDA, P.G. (1982). The vegetation map. Naturopa,  
42, pp 22-23.
- PEAK PARK JOINT PLANNING BOARD (1980). Wild Flowers  
in the Peak National Park. Peak Park Joint  
Planning Board, Bakewell.
- PEARSALL, W. (1971). Mountains and Moorlands.  
(New Naturalist). Collins, London.
- PEPLOW, E. and PEPLOW, R. (1984). Herbs and Herb  
Gardens of Britain: a comprehensive guide.  
Webb and Bower, Exeter, in association with  
the Herb Society.
- PERRING, F.H. and WALTERS, S.M. (eds) (1976).  
Atlas of the British Flora. 3rd ed. Botanical  
Society, London.
- PERRING, F.H. and WALTERS, S.M. (1971). Conserving  
rare plants in Britain. Nature. Vol. 229,  
5th February 1971, pp 375-377.
- PHILLIPS, B. (1985). Rare plant gardening. Homes  
and Savings (Halifax B.S. magazine). Autumn,  
pp 31-32.
- PHILLIPS, R. (1980). Grasses, Ferns, Mosses and Lichens  
of Great Britain and Ireland. Pan, London.
- POLLARD, E., HOOPER, M.D. and MOORE, N.W. (1974).  
Hedges. (New Naturalist). Collins, London.
- PREST, J. (1981). The Garden of Eden: the Botanic  
Garden and the Re-creation of Paradise. Yale  
University Press, Yale.
- RATCLIFFE, D.A. (1977). A Nature Conservation Review.  
2 Vols. Cambridge University Press, Cambridge.

- RAVEN, J. and WALTERS, M. (1956, reprinted 1984).  
Mountain Flowers. (New Naturalist).  
Collins, London.
- REISIGL, H. (ed) (1980). Blumenparadiese und  
Bötanische Gärten der Erde: herausgegeben  
unter Mitarbeit zahlreicher Botanischer Gärten  
und namhafter Botaniker. Pinguin-Verlag,  
Innsbruck and Umschau-Verlag, Frankfurt-am-Main.
- RICE, G. (1983). The ornamental garden. Practical  
Gardening. September 1983, pp 10-13.
- ROBINSON, W. (1983). The Wild Garden. Century,  
London. [Reprint - first published in 1870.]
- ROSE, G. (1982). The garden that lets nature in.  
The Sunday Times. 16th May, p 47.
- ROSS-CRAIG, S. (1948-74). British Plants. 8 Vols.  
Bell and Hyman, London.
- ROTHSCHILD, M. (1986). Sowing the flowers back into  
fields, 25th January, pp 32-33, and Flowers for  
pleasure and profit, 1st February, pp 30-31, and  
Flowers from a foreign field, 24th May, The Field.
- ROUSSEAU, J.J. (1979). Botany: a Study of Pure Curiosity.  
Michael Joseph, London.
- ROYAL BOTANIC GARDENS, KEW. List of Periodical  
Publications in the Library. Her Majesty's  
Stationery Office, London. Current copy.
- ROYAL HORTICULTURAL SOCIETY (1977/8). The Gardens of  
Britain. 5 Vols. Batsford, London.
- ROYAL HORTICULTURAL SOCIETY (1979). Wisley, the First  
100 Years. Royal Horticultural Society, London.
- ROYAL SOCIETY FOR NATURE CONSERVATION (1986). Wild Flowers  
on the Verges. Royal Society for Nature Conservation,  
Nettleham.

- SALES, J. (1980). West Country Gardens. Alan Sutton, Gloucester.
- SANECKI, K.N. (1979). Discovering Gardens in Britain. Shire Publications, Aylesbury.
- SATCHELL, J.E. (1976). The Effects of Recreation on the Ecology of Natural Landscapes; based on a preliminary report by P. R. Marren. Council of Europe. European Committee for the Conservation of Nature and Natural Resources, Strasbourg.
- SAVILLE, D. (1982). Walled Gardens: their planting and design. Batsford, London.
- See 4: News from Channel 4. Riverside Press, London. Published in January, April and September.
- SHEFFIELD CITY RECREATION DEPARTMENT. The Botanical Gardens: a Brief History. Sheffield City Recreation Department, Sheffield.
- SHEFFIELD CITY RECREATION DEPARTMENT. The Botanical Gardens - Guide to the Gardens. Sheffield City Recreation Department, Sheffield. [Current copy.]
- SHEFFIELD CITY RECREATION DEPARTMENT. Guide to the Sheffield Show. Annual Publication, Sheffield City Recreation Department, P.O. Box 151, Meersbrook Park, Brook Road, Sheffield.
- SHEFFIELD CITY RECREATION DEPARTMENT. 198- In the Botanical Gardens. Annual Publication. Botanical Gardens, Clarkehouse Road, Sheffield.
- SHEFFIELD CITY RECREATION DEPARTMENT (1981). Sheffield Botanical Gardens. Unpublished leaflet. Sheffield City Recreation Department, Sheffield.
- SHEFFIELD UNIVERSITY LIBRARY. Flora and Related Works in The University of Sheffield Library. Sheffield University, Sheffield. [Current copy.]

- Shell Guide to Gardens (1977) (ed) Arthur Hellyer.  
Heinemann, London.
- SHERINGHAM, G. (1982). [Series of six articles on the functions of contemporary British botanic gardens, published irregularly during 1982.] GC and HTJ: the horticulture and amenity weekly.
- SHREEVE, D. (1982). The First Conservation Annual.  
Granta Editions Ltd., Cambridge.
- SHREEVE, D. and ROCKMAN, C. (1984). Conservation Annual.  
2nd ed. Conservation Foundation, London.
- SILVERTOWN, J.W. (1982). Introduction to Plant Population Ecology. Longman, London.
- SIMMONS, J.B., BEYER, R.I. and BRANDHAM, P.E. (eds) (1976). Conservation of Threatened Plants: Proceedings of a conference entitled "The Functions of Living Plant Collections in Conservation and Conservation-Orientated Research and Public Education", held at the Royal Botanic Gardens, Kew, from the 2nd to the 6th September, 1975. Plenum Press, New York and London [for] NATO Scientific Affairs Division.
- SMITH, A.W. and STEARN, W.T. (1972). A Gardener's Dictionary of Plant Names. Cassells and Co., Eastbourne.
- SMITH, G. (1985). Geoffrey Smith's World of Flowers.  
BBC, London.
- STAFLEU, F.A. and others (1978). International Code of Botanical Nomenclature, adopted by the Twelfth International Botanical Congress, Leningrad, July 1975. Regnum Vegetabile. Vol. 97, pp 4, 5, 7.
- STAMP, Sir D. (1974). Nature Conservation in Britain.  
Collins, London.



- STEARNS, W.T. (1983). Botanical Latin. 3rd ed.  
David and Charles, Newton Abbot.
- STEARNS, W.T. (1981). The Natural History Museum at  
South Kensington. Heinemann, London.
- STEELE, R.C. and WELCH, R.C. (eds) (1973).  
Monks Wood: a nature reserve record. The Nature  
Conservancy/Natural Environment Research Council,  
Monks Wood, Nr. Huntingdon.
- STEVENSON, V. (1985). The Wild Garden. Windward,  
Leicester.
- Stoke-on-Trent 1986 National Garden Festival: official  
guidebook, May 1st - October 26th 1986. B & M  
Publications (London) Ltd.
- STUART, D. (1983). Cultivar conservation. The Garden.  
January 1983, pp 23-25.
- STUNGO, R. (1982). National reference collections.  
The Garden. December 1982. Vol. 107, Part 12,  
pp 472-474.
- SUKOPP, H. and WERNER, P. (1982). Nature in Cities.  
Council of Europe. European Committee for the  
Conservation of Nature and Natural Resources.  
Strasbourg.
- SUMMERHAYES, V. (1985). Wild Orchids of Britain.  
(New Naturalist). Collins, London.
- SYNGE, H. (ed) (1981). The Biological Aspects of Rare  
Plant Conservation: proceedings of an international  
conference held at King's College, Cambridge,  
14-19 July 1980; convened by G. Ll Lucas (et. al.)  
and sponsored by the Linnean Society of London and  
the Botanical Society of the British Isles. John  
Wiley and Sons, Chichester.

- SYNGE, H. and TOWNSEND, H. (eds) (1979). Survival or Extinction: proceedings of an international conference on the practical role of botanic gardens in the conservation of rare and threatened plants, held at the Royal Botanic Gardens, Kew, 12-17th September, 1978. Bentham-Moxon Trust, Kew.
- SYNGE, P.M. and JOHNSON, H. (1978). Plant conservation in 1978. International Dendrology Society Yearbook 1978, pp 17-32. International Dendrology Society, London.
- TANSLEY, A.G. (1949). Britain's Green Mantle. Allen and Unwin, London.
- TAYLOR, J. (1985). Collecting garden plants. The Garden. September, 1985, pp 406-8.
- TIMLER, F.K. and ZEPERNIK, B. (1978). Der Berliner Botanische Garten: seine 300-jährige Geschichte vom Hof- und Küchengarten des Grossen Kurfürsten zur wissenschaftlichen Forschungsstätte. (Berliner Forum 7/78). Presse- und Informationsamt des Landes Berlin.
- TOMASELLI, R. (1978). Why and wherefore of botanical gardens. Naturopa, 31, pp 37-38.
- TRIST, P. (1983). An Ecological Flora of Breckland. E.P. Publishing. London.
- TUTIN, T.G. and HEYWOOD, V.H. et al. (1964-80). Flora Europaea. Cambridge University Press, Cambridge.
- Twinning News. Biannual publication of the Joint Twinning Committee of the Local Authority Associations of Great Britain, 65 Davies Street, London.

- UNIVERSITY COLLEGE LONDON. ECOLOGY AND CONSERVATION UNIT (1984). A Nature Conservation Strategy for the U.K.: an independent view. (Discussion papers in conservation No. 38). University of London, London.
- VERNEY, P. (1976). The Gardens of Scotland. (The Gardens of Britain). Batsford, London.
- VICKERY, R. (1984). Plant Lore Studies. Folklore Society, London.
- WALTERS, S.M. (1979). Education in the modern botanic garden. The Garden. September 1979, pp 374-379.
- WALTERS, S.M. (1978). The List of Rare, Threatened and Endemic Plants in Europe. Naturoopa, 31, p 3.
- WALTERS, S.M. (1981). The Shaping of Cambridge Botany. Cambridge University Press, Cambridge.
- WEBB, N. (1986). Heathlands. (New Naturalist). Collins, London.
- WELLS, D.A. (1981). The protection of British rare plants in nature reserves in The Biological Aspects of Rare Plant Conservation Proceedings of a conference held at Cambridge in 1980, SYNGE, H. (ed), pp 475-480. John Wiley and Sons, Chichester.
- Wildlife and Countryside Act (1981). Her Majesty's Stationery Office, London.
- WILLIAMS, J.T. (1974). An Index of the Living Plant Collections in the British Isles. Bentham-Moxon Trust, Kew.
- WILLMOTT, P.K. (1982). Scientific Greenhouse Gardening. E.P. Publishing, London.
- WILSON, R.W. (1974). Useful Addresses for Science Teachers. 2nd ed. Edward Arnold, London.

Wisley handbooks. [Series of guides to camellias, conifers, orchids, rhododendrons, etc.] Cassell and Royal Horticultural Society, London.

World Conservation Strategy (1980). International Union for Conservation of Natural Resources, UNEP, WWF and UNESCO.

WORLD WILDLIFE FUND (1984). The IUCN/WWF Plants Conservation Programme 1984-85. Fifth occasional paper in the series based on the World Conservation Strategy. World Wildlife Fund U.K., London.

WRIGHT, T.W.J. (1982). Large Gardens and Parks: maintenance, management and design. Granada, London.

YOUNG, M. (1985). Hives of a growth industry. The Times. 30th March, p 29.

ZANDER, M. (1979). Woody Plant Catalogue. [Inventory of rare plants being compiled in National Trust properties.] National Trust. Autumn 1979, p 10.

NOTE:

The following entries are included as an example of the scientific material available from online sources. (Each entry is reproduced here in the form used in the printout.)

Aksenova, N.A. (1981). The arboretum of the Botanical Garden of the Moscow State University. Byulleten' Glavnogo Botanicheskogo Sada No. 122, pp 46-49.

Anderson, E. (ed.) (1981). Annual Report of the Desert Botanical Garden, 1980/81. Desert Botanical Garden Inc., Phoenix, Arizona.

Catalano, M. (1979). Botanical gardens in Italy. Agricoltura e Ambiente 1,2. pp 21-33.

- Fitch, T.M. (1978). Curatorial management of historical landscapes. Ekistics (Historic Preservation Division, Graduate School of Architecture and Planning, Columbia University, New York) 45, 271, pp 284-289.
- Hepper, F.N. (1977). The practical importance of plant ecology in arid zones. In Drought in Africa, 2. African Environment Special Report No. 6, pp 105-106. International African Institute, London, and RBG Kew.
- May, A.P. et al. (1979). Interpretive facilities and programs in Australian botanic gardens. Australian Parks and Recreation May pp 14-31.
- May, L.W. (1978). The economic uses and associated folklore of ferns and fern allies. Botanical Review, New York, 44, 4. pp 491-528 (review).
- McKiernan, G. (1978). Desert gardening: desert plants and their cultivation. An annotated bibliography. Council on Botanical and Horticultural Libraries, Inc. Plant Bibliography No. 1. Lisle, Illinois.
- Schwartz, D. (1978). Edible wild plants: an annotated list of references. New York Botanical Garden Council on Botanical and Horticultural Libraries, Inc. Plant Bibliography No. 3. New York.
- Zeven, A.C. (1980). Botanical gardens, public parks, road sides, historical gardens, historical arable fields, nature reserves and private gardens as genebanks of cultivated crops. Instituut voor Plantenveredeling, Wageningen, Netherlands. Miscellaneous Papers, Landbouwhogeschool Wageningen, No. 19, pp 433-438.

(DIALOG File 50: CAB Abstracts)

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