

OBSERVATIONS ON DRUCE'S FLORA:

A SURVEY AFTER HALF A CENTURY

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NEARLY half a century has passed since Dr. G. C. Druce published *The Flora of Buckinghamshire*, during which time our county has seen vast changes affecting the countryside in many ways, some of which have had profound effects on certain sections of our flora. Changes in frequency of occurrence and distribution have been noticeable, not only to experienced field botanists, but to many townsmen and villagers who normally show little interest in wild life of any kind.

It is safe to assume that when a new *Flora* is published in a few years time there will not only be a number of species recorded which Druce failed to mention, but in all probability a number of new records for some of the less common plants. To account for this one must consider and compare the conditions under which Druce worked with those of the present period. Whereas it is now possible to travel from one end of Buckinghamshire to the other in less than two hours, in Druce's day travel mainly on horseback was of necessity very much slower and the number of field botanists engaged in active participation in field work was small in comparison with those of the present time, when field botany and natural history in general is undergoing a period of widespread popularity, assisted undoubtedly by radio, television, photography and the wide choice of excellent books catering for all levels of ability. It must be regarded as a commendable achievement on the part of Druce that he visited in the course of his research every parish in the county; it must be remembered also that his relatively slow means of transport had certain very obvious advantages over ours, taking him deeper into those tracts of country further from roads than the average motor-car driver is prepared to penetrate, for the car-owner always has to more or less retrace his steps over part of his journey to return to his vehicle.

However, from the author's field studies over a period of twenty years an attempt is made here to assess the reasons, or at least the more important of these, for some of the obvious changes which have affected our flora since Druce's day.

A number of plants which were, even half a century or more ago, regarded by Druce as very rare or local are considered (in the light of visits to the sites of their former whereabouts) later in this article, whilst factors affecting the flora of more or less distinct habitats are considered under their relevant headings.

Arable land (Cornfields)

A drive through the countryside in midsummer presents an appearance of

almost uniform greenness, changing towards harvest-time to varying shades of brown and gold according to the crop, with occasionally a misty mauve patch of creeping thistles in bloom or a splash of deep yellow sow thistles, yet many people can clearly remember the time when almost every other field would be a blaze of colour at the height of summer, a colour varying from one locality to another according to the species of wild flower responsible. To see weeds of the cornfield in their full splendour today one must visit the less developed areas of Europe, where agricultural practices have changed little through the centuries.

To understand the many factors involved with the decrease of many cornfield weeds one must consider the changes in farming methods and machinery that have taken place.

In the early years of this century much corn was still being cut with the scythe and even with the widespread use of the mowing machines the sheaves were still assembled and tied by hand with bands of straw. Seed was broadcast instead of being sown in rows and much seed was saved from the crop for sowing the following year or exchanged for other seed from perhaps a neighbouring farmer. All this meant that weeding was difficult, if even possible, ripe seeds of plants coming to maturity with the crop would be scattered during the cutting and handling, and seeds of locally common or dominant species would tend to be heavily dispersed in restricted areas. The development of the self-binder had little effect on the cornfield flora, as the sheaves still had to be carried, stooked and later carted to the rick after a period of drying in the field. Much seed would be shed during these operations and the early threshing machines allowed a certain amount of weed seed to pass through with the corn, so the effect of cornfield mechanization on the flora at this stage was minimal.

The first major blow to our cornfield flora was the passing of the Seeds Act in 1920, which laid down statutory minimum percentages not only of germination potential, but of purity, thus making illegal the sale of seed containing more than a stated amount of weed seed. Methods of seed cleaning and winnowing were improved and the amount of weed seed contained in any crop seed offered for sale became negligible. The regulations applied to imported seed as well as home grown thus drastically reducing those cornfield weeds which, although accepted as part of the country scene, were not native here, but originally were introduced with imported seed and to a considerable extent relied on further introductions to maintain a more or less permanent establishment here. Among the flowers in this category was the elegant Corn Cockle (*Agrostemma githago*) once a familiar cornfield weed, which is now quite rare. Druce mentioned it as locally common but decreasing; it was apparently common near Prestwood in 1940 and the author saw it there in 1962, but has failed to find it on subsequent visits. Another flower that has regrettably gone the same way is the beautiful Cornflower (*Centaurea cyanus*) last seen at Cublington in 1952. Although still a common flower, the field poppy no longer turns our cornfields red in summer, but is more likely to be seen along roadsides and on waste land, rubbish tips and such places, and the same position is true of the corn marigold (*Chrysanthemum segetum*). This is one of the weeds which may re-appear after

an absence of many years, when a field is ploughed up after decades of grazing. On being brought to the surface by the plough, seeds which have lain dormant for many years may germinate to provide an unexpected and spectacular display of colour. One such example occurred near Wing just after the 1939-45 war, where a field ploughed for the first time in many years became a glorious blaze of gold from end to end. A delight to the botanist, but not so to the farmer. Since then the species has occurred spasmodically in small quantity.

Other weeds of arable which have decreased markedly, especially in the last two decades, are annuals such as the Pheasant's Eye (*Adonis annua*) now so rarely seen, the Corn Buttercup (*Ranunculus arvensis*), the two *Fluellens* (*Kicksia elatine* and *Kicksia spuria*) and the once abundant Pimpernel (*Anagallis arvensis*). Two contributory factors are chiefly responsible for the decrease of these and other low growing cornfield weeds; with the combine harvester much corn is cut at a greater height from the ground than was usual with the binder, often leaving a stubble up to a foot in height, with the dwarf or prostrate plants untouched by the cutter blade. As such a tall stubble is difficult to plough in, the common practice is to burn the stubble together with quantities of unwanted straw and this means the destruction of a high percentage of the low growing annuals, together with much of their seed. The second factor has been widespread use of selective weed-killer sprays, to the effect of which many annuals are highly susceptible in the seedling stage when most spraying is carried out. Staggered germination allows some to avoid the effect of spraying, but these plants mature later with much greater competition from the crop plants and then may be decimated by autumn stubble-burning. Unfortunately spraying has become something of a habit at certain times of the year, and in many cases cornfields are sprayed even when lack of harmful weeds makes the operation completely unnecessary. It is indeed unfortunate that whilst some of our loveliest cornfield flowers are highly susceptible, some of our most pernicious weeds, such as the Knotgrass and the *Persicarias* are somewhat resistant and difficult to control, combining this fact with a potential for seed production on a massive scale.

Permanent grasslands

The number of old established grazing pastures has fallen drastically since the last war, with arable/short-term ley rotations affecting much of our farm land. This policy has an adverse effect on perennial grassland flowers, in particular the slower-maturing species such as the beautiful Green-winged Orchis (*O. morio*) and even such plants as the Cowslip and Bulbous Buttercup, both of which are highly susceptible to selective weedkiller sprays. Although the buttercups are still abundant they have obviously decreased in some localities and everyone must agree that cowslips are far less common as a plant of pasture land than in former years, being mainly confined to wet fields where ploughing is impracticable, whilst the green-winged orchis is now found in few of the localities where Druce saw it.

Downland species

Despite some ploughing up of old downland and a reduction in grazing by

sheep, it can safely be said that the flora of these regions has suffered less than that of the intensely farmed parts of the county, whilst efforts towards conservation and intense field studies have resulted in a number of additional sites for certain species being added to those of Druce. The permanence of established species in some sites is of considerable interest and among those worthy of mention are Meadow Saxifrage (*Saxifraga granulata*) known from a small area near the top of Ivinghoe Beacon fifty years ago and still present in the same place; the Large Autumn Gentian (*Gentianella germanica*) is still abundant locally in many of its old localities, although in some it is less common by reason of excessive competition from surrounding vegetation, following the massive reduction in permanent rabbit populations from 1954 onwards. Several new stations for this attractive flower have been discovered quite recently, one of the most notable being the Cheddington Hill site, discovered by the author in 1945. It is perhaps strange that Druce did not mention this plant as being found there, although he records the local and rare Tall Broomrape (*Orobanche elatior*) from the selfsame site, where he saw and recorded it for the first time in this country in 1898. It is still there, ten spikes appearing in 1968, some seventy years later. The first county record of the beautiful Pasque Flower (*Pulsatilla vulgaris*) was that made by Druce in 1904 and who described it later as very local. At the present time it can only be described as very rare, a position brought about by a combination of excessive picking, the removal of plants by misguided persons and perhaps most of all by excessive competition from surrounding vegetation. The plant still lingers in the Ivinghoe and Pitstone area, but must be regarded as one of our threatened species.

Bog, Marshland and Aquatic Plants

A number of species associated with these habitats have been badly affected during the last few decades, in particular those plants primarily associated with ponds and badly drained, marshy fields. Since the last war the supply of piped water to cattle drinking-troughs has gradually rendered the numerous small field ponds in many parts of the country obsolete, with the result that many have either been deliberately filled in or have had their water seriously polluted by reason of their becoming the last resting place of worn out motor cars, oil drums and even weed-killer tins, to the detriment of fauna and flora alike. Much marshy land has been drained and brought into agricultural production and in some parts of the county the extraction of underground water supplies has resulted in a permanent drop in the water table. These operations have resulted in a decrease in such species as Marsh Marigold (*Caltha palustris*), Lady's Smock (*Cardamine pratensis*), Large Bitter-cress (*C. amara*), and the beautiful Marsh Helleborine (*Epipactis palustris*). Perhaps the most delightful plant of water-meadows of this county which suffered a drastic reduction in numbers was the Snake's-head Fritillary (*Fritillaria meleagris*) locally known as the Frog-cup. Recorded in Druce as abundant at Ford near Aylesbury in 1861, it was seen there in great abundance in 1948, but a few years later the field was ploughed, virtually destroying the largest colony of this plant in Buckinghamshire, the sort of tragedy which, one hopes, will never be repeated. At the present time a few plants appear each year, although

several sites in the county are known. A similar colony in a field near Ledburn, unrecorded by Druce, suffered the same fate during the second world-war.

On a more encouraging theme, some of the very local plants of ponds and bog can still be seen in the sites where they were recorded well over half a century before. The local and rare Large-flowered Bladderwort (*Utricularia major*) known from a pond in Burnham Beeches prior to 1896, was blooming profusely, which is unusual for this plant, when the author photographed it in 1969, along with the Bogbean (*Menyanthes trifoliata*) first noted there in 1868 and still thriving.

Among the most striking marshland flowers to have persisted in the same locality for a great while the Loddon Lily or Summer Snowflake (*Leucojum aestivum*) is worthy of mention. First recorded in the county as far back as 1805, and described by Druce as local and rare, it is still present in a number of localities near the Thames in the Medmenham district, whilst almost at the opposite end of the county the Opposite-leaved Golden Saxifrage (*Chrysosplenium oppositifolium*) is probably just as abundant as it was when Druce saw it in 1889, in a remarkable area of boggy alder-fen where it grows with Black and Red Currant (*Ribes nigrum* and *R. rubrum*) in wooded country on the Bedfordshire border.

The tall, yellow-flowered Greater Spearwort (*Ranunculus Lingua*) has always apparently been regarded as a very rare and local plant in Bucks, only recorded with certainty from two sites by Druce. One of these is stated as "formerly in the R. Ouse near Stratford" (presumably Stony Stratford). Could this possibly be the origin of the present locality between Stony Stratford and Buckingham? In Druce's other site, marl pits at Aston Abbots, the plant was certainly extinct prior to 1940. The same site was almost certainly the one meant by Druce as the site of Bog Asphodel. His record for this plant gives the site as being marl pits at Aston Clinton and the plant recorded was by the Rev. T. Martyn. No likely site for the Asphodel exists at Aston Clinton, but as the Rev. Martyn was at the time Vicar of Aston Abbots, where the plant could well have existed, it does seem as if the latter site was the real one, although the Asphodel has long been extinct in that site.

Woodland

Woodland habitats have been less affected than others, although the discontinuation of regular coppicing has had an adverse effect on a few plants. Most of the characteristic plants of the Chiltern beechwoods are still present, probably little changed since Druce's time. Certainly the interesting and delicate looking Coralroot (*Dentaria bulbifera*) is still locally abundant near Amersham where it was first recorded in 1842, although it is gradually being threatened by the spread of urbanisation. It is an elusive plant in bloom, having one of the shortest flowering periods of any British plant, being at its best for about a week in mid-May. Our only local Wintergreen (*Pyrola minor*) is an attractive plant which has a record of long persistence in many of its localities. First recorded from Stokenchurch woods as long ago as 1696, it is still to be found there, as in most of the other localities recorded by Druce.

Although the number of known sites for the Green Hellebore (*Helleborus*

viridis) falls short of the records in Druce's "Flora", several other sites have been noted in recent years, the most spectacular being at Denner Hill, near Prestwood where more than fifty fine specimens were found by Miss Jill Hassell (later to become the author's wife) in 1950. More recently this striking plant was discovered near Hyde Heath by Mr. Bernard Picton, in 1967, evidence that even in the well botanised Chilterns new discoveries can still be made from time to time.

Railway banks and roadsides

These habitats often provide a safe haven for a fascinating variety of species and in recent years the cessation of usage of many miles of track has enabled numerous plants to colonize the permanent way. In the author's opinion these disused railways provide one of the most rewarding botanical hunting-grounds in the county, whilst the banks of a line still in use, provide, a few miles north-west of Aylesbury, an assortment of species which include a mass of the yellow-flowered *Tetragonolobus maritimus*, Dodder (*Cuscuta epithymum*), Yellowwort (*Blackstonia perfoliata*), Great Burnet (*Sanguisorba officinalis*), Zigzag Clover, (*Trifolium medium*), Dyer's Rocket (*Reseda luteola*), and several species of orchid, including Bee (*Ophrys apifera*) and Greater Butterfly (*Platanthera chlorantha*). Roadsides provided, in Druce's time, many notable plants and even at the present time, thanks to an enlightened and conservation conscious County Council, many of our loveliest roadside flowers are spared from cutting or spraying. In many places the Meadow Crane's-bill (*Geranium pratense*) brightens the roadside verges in mid-summer and even along new roads such as the Great Missenden by-pass the elegant spikes of Black Mullein (*Verbascum nigrum*) grow alongside the delicate blossoms of Musk Mallow (*Malva moschata*).

Introduced plants and casuals

On a number of introduced species recorded by Druce one or two deserve mention, as in the case of *Montia perfoliata* (*Claytonia perfoliata*). This was stated to have occurred on a wall at Little Brickhill Vicarage, obviously an uncommon plant, but one with the ability to reproduce rapidly by seed in environments favourable to its establishment, i.e. on light sandy ground, with only slight competition from other plants. For many years it has been locally abundant in many places around Great and Little Brickhill and at Leighton Buzzard. In 1947, after a firm of tree surgeons from Leighton Buzzard carried out work on trees at Aston Abbots a plant of *Montia* was noticed in a spot where they had worked; it thus appeared reasonable to assume that the seed had been transferred on their equipment or boots. Early the following year numerous seedlings appeared and subsequently the species became firmly established as a garden weed at Aston Abbots, defying successfully all attempts to eradicate it.

The Orange Balsam (*Impatiens capensis*) was stated by Druce to be spreading rapidly along the valleys of the Chess and the Colne; in the last four decades it has greatly extended its range and is now found along most of the waterways of the country; its ability to increase and extend its range rapidly

is a feature of the family to which it belongs, being shared by its close relatives, the pale yellow-flowered *Impatiens parviflora* and the tall and strongly scented Himalayan Balsam (*Impatiens glandulifera*) which often increases rapidly over limited areas for a few years and then dies out. This may be explained by the fact that the seedlings are easily killed by frost and as a high percentage germinate over a very short period of time it is quite possible for a whole colony to be exterminated by a late spring frost of exceptional severity. The species was very much in evidence near Quainton in 1969.

One attractive species unrecorded by Druce which is now only too common in the county is the familiar lawn weed, Russian Speedwell (*Veronica filiformis*) which although rarely producing seed is rapidly dispersed by readily-rooting fragments cut by the lawn mower, as Sir Edward Salisbury first pointed out. The increase of *V. filiformis* was studied by the author at Aston Abbots, where it was cultivated on a rockery in the Vicarage garden before 1938; from here it spread to an adjacent lawn, whence it was carried with grass mowings to a compost heap. Here it flourished and eventually fragments became established by various means in other gardens and ultimately as a field weed when material from a garden compost heap was used as a grassland top dressing.

During the last few years several alien species, not recorded by Druce, have been found in various parts of the county and these can be attributed to an interesting source of introduction. Quite recently, perhaps partly as a result of widespread publicity, the tremendous interest in and concern for the welfare of wild birds has resulted in widespread use of proprietary brands of wild bird food, containing a high proportion of imported seed, some of which gets carried and dropped by birds, or scattered in feeding places. This is the most likely source of such species as Fennel (*Foeniculum vulgare*), Good King Henry (*Chenopodium bonus-henricus*), Hare's-ear (*Bupleurum rotundifolium*), Prostrate Purslane (*Portulaca oleracea*), Cannabis sativa, *Calendula arvensis*, *Legousia speculum-veneris* and the rare Thorn-Apple (*Datura metel*). The latter, unlike its more widespread relative *D. stramonium*, may well be a relic of cultivation, as it was once a popular pot-plant.

Rare Plants and New Discoveries

A number of species described by Druce as rare have since become extinct in the county, whilst others, often as a result of conservation efforts, have managed to survive and even, in a few cases, to increase. Among plants considered extinct and then re-discovered, one of the best known is the Military Orchid (*Orchis militaris*), whilst one of the best examples of a rare plant surviving in a very limited area for an exceedingly long time is that of Asarabacca (*Asarum europaeum*) a fascinating and curious plant with waxy-looking purplish-brown flowers at ground level. Recorded by Rev. H. Harpur-Crewe prior to 1870 from a small copse near Halton, there are still a few plants remaining, one hundred years later! During recent years a number of exciting discoveries have been added to the county records; these include the very rare and elusive Spurred Coral-root Orchid (*Epipogium aphyllum*) one of Britain's rarest wild flowers, the almost equally rare Red Helleborine (*Cephalanthera rubra*) hitherto known only from the Cotswolds, the dainty Pink Purslane

(*Montia siberica*), a thriving colony of which was discovered by Mr. Walter Filby in 1967 and the Childling Pink (*Kohlrauschia prolifera*) found by Mr. Aubrey Woodward in 1968.

In conclusion, although one must regret the loss to our county of some attractive, and once common flowers and the continuing scarcity of others, the future of our wild plants, as seen by the author nearly half a century after the publication of Druce's *Flora of Buckinghamshire* is, as we enter the seventies, one of cautious optimism.

Note: The names of the flowers mentioned above have been standardised on Tutin Clapham and Warburg *The Flora of the British Isles*, First edition, 1952.