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APPENDIX A - BOTANY

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APPENDIX A

An Outline of the Flora of the Neighbourhood of Godalming, in the County of Surrey; with brief Notices of the Geological Features of the District.

By J. D. SALMON, Esq.

In bringing the Flora of Godalming and its neighbourhood before the notice of botanists, it is necessary that the limits of the district should be clearly defined, and that the geological features which present themselves should be noticed: for the outline of the latter I have availed myself principally of Dr. Mantell's Memoir in Brayley's 'History of Surrey.'

Extent and Boundary. The tract of country about to be illustrated is comprised within a square, the sides of which are about eight miles in extent, having Godalming for the centre; every portion of the district is therefore within a moderate walk of the town.

The chalk ridge, well known as the Hog's Back, running east and west, has been taken in part as the northern boundary; a narrow slip of London clay on the north side of this range, is, however, included within the district, as affording an additional variety of soil. From the abrupt termination of the Hog's Back at Guildford, the northern boundary is continued along to Merrow Downs: from thence the eastern boundary passes by St. Martha's Chapel, and crossing the valley of Chilworth by the powder-mills, it skirts Blackheath to Shamley Green, is continued across the Wey and Arun canal to the junction of the Cranley and Horsham turnpike-roads, and follows the latter to Pain's Hill.

The southern boundary is taken hence in a westerly direction through the wealden clay, immediately at the base of the lofty range of hills commencing at Hascomb Beech, and terminating at Bowler Green, near Hindhead. From this point the western boundary is formed by an imaginary line through Cosford crossing Thursley Common to Elstead, and continued thence over Crooksbury and Puttenham Commons by Hampton Lodge, passing over the Hog's Back near Shoeland Farm to the commencement of the northern boundary.

Geological Features of the District. In noticing these, I commence with the northern limit, which is a termination of the London clay resting upon the chalk. I am not aware that any portion of the plastic clay is to be found within the limits: the Bagshot sand, which is so conspicuous, does not approach nearer than Romping Downs, about two miles distant. The principal feature is the beautiful chalk ridge called the Hog's Back, which scarcely exceeds half a mile in breadth: "This remarkable ridge of the North Downs extends from Guildford to a point about two miles from Farnham, and has evidently been produced by an upthrow of the chalk, and the breaking off of the southern portion of the curve. The inclined position of the remaining side of the flexure is seen at the western extremity of a large chalk-pit, between Guildford and Puttenham, where the strata dip towards the north at an angle of about 30. The upper beds are very white, with courses of the usual dark flint nodules; and a remarkable feature in this quarry is the distinctness with which the chalk is divided into masses approaching to a rhomboidal figure, by seams

oblique to the stratification; the angles of the portion thus formed standing out in the face of the cliff, like splinters in the shattered fracture of a crystal."

Descending its southern side we meet with a narrow stratum of fire-stone, which "forms a slight projection along the foot of the Hog's Back; the gale, a corresponding depression along its whole length," varying in breadth from a few hundred yards to a quarter of a mile, towards the eastward, opposite Littleton. Having passed this tract, we approach the principal stratum of the district, which is a portion of "one of the most extensive surfaces of the Shanklin sand in England. This sand rises rapidly in many places to a considerable elevation: at St. Martha's Chapel it equals or out-tops the chalk, though less than a mile from it horizontally." This character extends over a great portion of the district, presenting numerous acclivities, the most conspicuous of which are St. Martha's Chapel, already mentioned, Chinthurst Hill, heights around Godalming, Highdown Heath, Hascomb Beech, and the ridge of hills stretching thence by Burgate, Hambledon, Wormley and Barnacle Hill towards Hindhead, where an elevation of upwards of 900 feet above the level of the sea is attained.

The heights in the immediate vicinity of Godalming offer excellent sections of the Shanklin sand. Holloway Hill affords a good example of the strata, which are composed of loose sandy materials, and abound in large concretions of chert and of Bargate-stone, "a conglomerate of quartz-grains and pebbles, held together by a strong calcareous cement, which is hard and sparry, and much used for the purpose of building."

"The ferruginous concretions termed carstone are abundant on the Witley and Thursley Commons, and from being so compact as to ring under the hammer, are called clinkers by the quarrymen. This stone sometimes occurs in plates or flakes, more than a quarter of an inch in thickness, and curved so as to resemble portions of consecutive layers of petrified wood." It furnishes an excellent road-material; and gives that remarkable reddish hue to those roads which are Macadamized with this stone. Fragments of brown haematite, a kind of iron ore, occur in this district. There were anciently several iron-furnaces, of which the only memorials are four large ponds, called the Hammer Ponds.

The only remaining portion of the district to be noticed is that forming the southern boundary, and which is occupied by the clay formation of the northern limit of the thickly wooded weald of Surrey.

The General Aspect of the District. In many parts it is highly diversified with hill and vale. The town of Godalming stands on the high road to Portsmouth, and is pleasantly situated in a beautiful valley bordered by steep hills, the sides of which, for the most part, are richly clothed with ample foliage, rendering the surrounding scenery highly picturesque. This character extends more or less through the adjoining valleys towards Guildford, adding much beauty to the general scenery; and from the different eminences a series of splendid views is to be obtained. The Hog's Back commands a most extensive prospect. The view towards the southward presents a magnificent landscape; in the foreground, the undulating ridges of the various hills, interspersed with beautiful winding valleys, presenting to the vision a lovely and rural scene. Further on, the eye wanders over the whole extent of the weald of Sussex, rich in foliage, and only arrested to the

eastward by the bold and mountainous ridge of Leith Hill, which rises to an elevation of nearly 1,000 feet above the level of the sea. This splendid panorama is backed by the lofty outline of the South Downs, which border the English Channel and extend into Hampshire. "The most fervent pencil of picturesque enthusiasm would fail to depict in apposite colours the glorious prospects from St. Martha's Hill; on every side, a rich and almost unbounded view presents itself, intermingled with every charm which landscape scenery, in all its diversity of character, can exhibit. Towards the south the prospect extends across the weald of Surrey and Sussex to the South Downs and the sea; and on the north, the eye ranges over a portion of the valley of the Thames as far as the high chalk range of Oxfordshire near Nettlebed, from which the summit and chapel of St. Martha's are distinctly seen." (*History of Surrey*, v. 134). From other points the views are equally extensive, penetrating into the adjoining counties.

The extensive heaths, "though not unpicturesque, are wild and barren in their aspect, destitute of wood;" yet there are several large ponds, formed by the embankments across the valleys, the margins of which will afford much pleasure and gratification to the ardent botanist. "The surface is, in fact, to this hour, nearly such as it may be conceived to have been when first uncovered by the departure of the sea." The whole district is intersected with delightful valleys, through which run several rivulets, that flow into the Wey from various sources, amongst which is one that is rendered classical by the delightful author of Selborne. This, meeting the Blackdown stream at Headley, is joined by the Alton and Farnham branch, at Tilford-bridge, where they form a considerable stream. From this point the Wey proceeds in an eastwardly direction by Elstead &c., receiving in its course several small streams from the neighbourhood of Thursley and Witley, one of which takes its rise in the Devil's Punchbowl, from which source flows a delicious stream, as clear as crystal. The river, after passing by Godalming, from whence it is navigable by the addition of a canal, runs through a long line of pleasant meadows to Guildford, and in its progress receives the tribute of two additional streams, the Arun canal and the Tillingbourne, which add much to its importance; it ultimately falls into the Thames near Weybridge. According to Mr. Stevenson, "the waters of the Wey are of much less fertilizing quality than other streams in Surrey. This is attributed to the sandy country through which the Wey flows in the beginning of its course, and to the large quantities of sand which, after every heavy shower, are washed into the river from the steep hills near Godalming."

Localities of Plants. From the diversity of soil included in the foregoing sketch, it is evident that many of our rarer plants may be expected to be met with. The Flora of the district will be better elucidated under the three following divisions.

1. The first division This comprises the chalk and adjoining strata of London clay and gault, forming a large portion of the northern boundary. This district is rich in Orchidaceae and other calcareous plants. The extensive quarries at Compton and Wanborough will afford a rich treat to the admirer of this beautiful and interesting tribe of plants. *Orchis pyramidalis* (Pyramidal Orchid), *Gymnadenia conopsea* (Fragrant Orchid), *Listera ovata* (Common Twayblade), *Aceras anthropophora* (Man Orchid), and *Herminium monorchis* (Musk Orchid) may be found in this locality in the greatest profusion; *Ophrys apifera* (Bee Orchid) and *O. muscifera* (Fly Orchid) more sparingly.

The following interesting plants are found in this part of the district. On the face of the quarries, *Arabis hirsuta* (Hairy Rock-cress); on the sloping debris, *Reseda lutea* (Wild Mignonette), *Viola hirta* (Hairy Violet), *Rhamnus catharticus* (Buckthorn), *Anthyllis vulneraria* (Kidney Vetch), *Hippocrepis comosa* (Horseshoe Vetch), *Onobrychis sativa* (Sainfoin), *Poterium sanguisorba* (Salad Burnet), *Asperula cynanchica* (Squinancywort), *Phyteuma orbiculare* (Round-headed Rampion), *Thesium linophyllum* (Bastard-toadflax) and *Juniperus communis* (Juniper), in abundance. *Gentiana amarella* (Autumn Gentian) equally so upon the level surface, as is the case with *Carduus acaulis* (Dwarf Thistle) and *Carlina vulgaris* (Carlina Thistle); *Chlora perfoliata* (Yellow-wort) is occasionally met with. On the ridge, *Taxus baccata* (Yew) is abundant, many of the trees denoting a good old age. *Cineraria campestris* (Field Fleawort) has been found on a down towards the New Inn. *Lathraea squamaria* (Toothwort), Inwood copse, on the north side of the Hog's Back. *Monotropa hypopitys* (Yellow Bird's-nest) in some seasons is plentiful under the beech trees in a plantation overhanging the Compton quarry; in other seasons scarcely a plant is to be seen. Upon the lands forming the sloping portions of the Hog's Back, the following plants are generally distributed: *Pastinaca sativa* (Wild Parsnip), *Torilis nodosa* (Knotted Hedge-parsley), *Tragopogon pratensis* (Goat's-beard), *Picris hieracioides* (Hawkweed Oxtongue), *Specularia hybrida* (Venus's-looking-glass), *Linaria spuria* (Round-leaved Fluellen), *L. Elatine* (Sharp-leaved Fluellen) and *L. minor* (Small Toadflax), *Calamintha acinos* (Basil Thyme), *Galeopsis ladanum* (Red Hemp-nettle) and *Euphorbia exigua* (Dwarf Spurge). *Pyrus aria* (Common Whitebeam) cannot fail to attract attention by the snow-white under surface of the leaves, which are rendered very conspicuous by the slightest breeze of wind. *Clematis vitalba* (Traveller's-joy) trails over all the fences, in which also *Viburnum lantana* (Wayfaring-tree) and *Ligustrum vulgare* (Wild Privet) form a prominent feature upon divers portions of the chalk ridge. Several interesting plants are to be met with in an old discontinued chalk-quarry at the back of Losely Park. In addition to the several species of *Orchidaceae* before enumerated, *Scabiosa columbaria* (Small Scabious), *Helminthia echioides* (Bristly Oxtongue) and *Campanula glomerata* (Clustered Bellflower) abound; and in the field adjoining, I find *Petroselinum segetum* (Corn Parsley). In the woods at the foot of the chalk, principally upon the galt, *Silvaus pratensis* (Meadow Saxifrage), *Senecio tenuifolius* (Hoary Ragwort), *Primula vulgaris*, var. *caulescens* (Primrose), *Daphne laureola* (Spurge-laurel) and *Habenaria bifolia* (Lesser Butterfly-orchid); and in an arable field upon the sand adjoining, *Veronica buxbaumii* (Common Field-speedwell) plentifully. Prior's wood will afford many an interesting plant, amongst which may be noticed *Aquilegia vulgaris* (Columbine), sometimes with white flowers, *Orobus tuberosus* (Bitter-vetch) and *Serratula tinctoria* (Saw-wort).

The chalk-quarries round Guildford will amply repay investigation, and are rich in calcareous plants: in addition to those of the Compton and Wanborough stations will be found *Cichorium intybus* (Chicory), growing in the greatest profusion near St. Catherine's Hill; *Allium vineale* (Wild Onion) is located in one spot on the Stoke road; *Chenopodium olidum* (Stinking Goosefoot) will be found at the foot of an old wall in Quarry-street. *Isatis tinctoria* (Woad) grows in the greatest profusion, principally from the fissures on the perpendicular face of the chalk in the Shalford quarry; here also will be found *Reseda*

luteola (Weld); and towards St. Martha's Chapel *Brachypodium pinnatum* (Tor-grass) occurs in a disused chalk-pit.

In this neighbourhood Mr. Mill has recorded *Fumaria parviflora* (Fine-leaved Fumitory) and *Bupleurum rotundifolium* (Thorow-wax).

2. The central or great division is that which is occupied by the cultivated portions of the Shanklin sand, in which will be found the following rare or local plants. *Smyrniolum olusatrum* (Alexanders), by the side of the Shalford road, opposite the park-paling. *Dianthus plumarius* (Pink), in the greatest profusion on an old wall in Shalford-street, and on the wall of Westbrook Park. *Saponaria officinalis* (Soapwort) in a hedge-bank near St. Martha's Chapel. *Corydalis claviculata* (Climbing Corydalis), sparingly on St. Martha's Hill, amongst the trees. This delicate plant is abundant in a withy-bed below Perrydean field (Thorncombe-street), also in a wet coppice at Hambledon Heath. Mr. Mill records *Listera Nidus-avis* (Bird's-nest orchid) as growing "in a heathy wood between Guildford and St. Martha's Chapel." *Hyoscyamus niger* (Henbane), by the road-side against Stone-bridge wharf, by no means a common plant. *Cyperus fuscus* (Brown Galingale), on the margins of Peat pond, on Shalford Common. *Impatiens fulva* (Orange Balsam); by the sides of the Tillingbourne at Chilworth this beautiful exotic is naturalized, growing in the greatest profusion, and is equally abundant by the sides of the Wey to its junction with the Thames. The river-sides and adjoining meadows offer a rich treat. The occurrence of *Stellaria glauca* (Marsh Stitchwort) in marshy meadows at the foot of St. Catherine's Hill, of *Cuscuta europaea* (Greater Dodder) in an osier-holt by the side of the Wey a little below Guildford, and of *Lepidium sativum* (Garden Cress) and *Barbarea praecox* (Winter-cress), upon the banks of the river, has been already recorded by Mr. Mill. *Nasturtium sylvestris* (Creeping Yellow-cress) is found by the river-side against Unstead-bridge, and in an adjoining meadow *Scabiosa Succisa* (Devils'-bit Scabious), which also occurs towards Hurtmore Bottom, and near Mungrove. *Chrysosplenium alternifolium* (Alternate-leaved Golden-saxifrage), intermixed with *C. oppositifolium* (Opposite-leaved Golden-saxifrage), on a wet hedge-bank near the bridge. There are several other stations for this beautiful plant, as the alder-car on Wood Farm, the Withybeds, in the Deanery meadows, &c.. *Medicago maculata* (Spotted Medick) grows on the towing-path near Catteshall-bridge, a situation in which I am unable to account for its appearance. In the common meadows will be found *Oenanthe silaifolia* (Narrow-leaved Water-dropwort), and in the ditches *O. crocata* (Hemlock Water-dropwort), *Alisma Plantago* (Water-plantain), *Sagittaria sagittifolia* (Arrowhead), *Butomus umbellatus* (Flowering-rush), and several species of *Potamogeton*, as *densus* (Opposite-leaved Pondweed), *pusillus* (Lesser Pondweed), *pectinatus* (Fennel Pondweed), *gramineus* (Various-leaved Pondweed), *perfoliatus* (Perfoliate Pondweed); and in that portion known as Salgaston, *Cardamine amara* (Large Bitter-cress) and *Menyanthes trifoliata* (Bogbean), which also occurs in a meadow higher up the river, and at Bom-moors, Compton. The boggy parts of Hurtmore Bottom will amply repay the labour of investigation. Here several of the marsh plants will be found; among others, *Thalictrum flavum* (Common Meadow-rue), *Ribes nigrum* (Black Currant), *Angelica sylvestris* (Wild Angelica), *Samolus valerandi* (Brookweed), *Triglochin palustre* (Marsh Arrowgrass), *Scirpus sylvaticus* (Wood Club-rush), and several *Carices*. *Gagea lutea* (Yellow Star-of-Bethlehem) is recorded in the 'Botanist's

Guide' as growing in a "meadow near Godalming." I have not been able to verify this information.

The woods surrounding Godalming are rich in botanical rarities. *Euonymus europaeus* (Spindle), *Cornus sanguinea* (Dogwood), *Campanula trachelium* (Nettle-leaved Bellflower), *Veronica montana* (Wood Speedwell), *Lamium galeobdolon* (Yellow Archangel) and *Ruscus aculeatus* (Butcher's-broom) are common. *Cardamine impatiens* (Narrow-leaved Bitter-cress) is abundant for the first two or three years after the clearing of the copsewood. *Turritis glabra* (Tower Mustard) is sparingly found in the coppices and hedgerows. The declivities of the woods with south and west aspects afford the rare *Carex depauperata* (Starved Wood-sedge); the only other station for this plant is Charlton, in Kent. On Frith Hill, *Lepidium campestre* (Field Pepperwort), *Dianthus Armeria* (Deptford Pink), *Astragalus glycyphyllos* (Wild Liquorice), *Sedum telephium* (Orpine) and *Marrubium vulgare* (White Horehound) are plentiful. In the corn-fields at the foot will be found *Thlaspi arvense* (Field Penny-cress), *Sisymbrium sophia* (Flixweed) and *Agrostis spica-venti* (Loose Silky-bent).

Upon the tops of the old walls in and about the town several plants have established themselves. *Corydalis lutea* (Yellow Corydalis) grows luxuriantly between Meadow and Farncomb, and sparingly in other situations. *Sedum album* (White Stonecrop) towards Crown-pits, with *S. reflexum* (Reflexed Stonecrop), *Saxifraga tridactylites* (Rue-leaved Saxifrage), *Centranthus ruber* (Red Valerian) and *Hieracium murorum* (Few-leaved Hawkweed agg.). *Erigeron acris* (Blue Fleabane) against the Vicarage, also *Linaria cymbalaria* (Ivy-leaved toadflax); this beautiful little plant is located in many additional situations.

Many interesting plants are distributed over the central portion of the district. *Lepidium smithii* (Smith's Pepperwort) sparingly upon Hascomb roadside, opposite the second milestone. *Erysimum cheiranthoides* (Treacle Mustard) in several corn-fields, principally in the direction of Unstead. *Cerastium aquaticum* (Water Chickweed) in wet situations against Spring Place. *Silene anglica* (Small-flowered Catchfly), abundant in Perrydean-field, Enton fields, &c., *Hypericum montanum* (Pale St John's-wort) and *Geranium lucidum* (Shining Crane's-bill) upon most of the hedge-banks; the former in great abundance in the direction of Crown-pits. *Rhamnus Frangula* (Alder buckthorn), Spring Place, an alder-car on Hambleton Heath; abundant in a wood near Compton, as stated by Mr. Mill. *Potentilla argentea* (Hoary Cinquefoil); this beautiful plant is by no means rare, and will be found upon the slopes near Mildens' Wood, also occupying various other situations on the tops of old walls and on hedge-banks. A fine tree of *Pyrus communis* (Pear) occurs in a thorny state in a fence upon Hasted Farm. *Pyrus aucuparia* (Rowan) is plentiful in the hanging woods at Burgate. *Bryonia dioica* (White Bryony), amongst hedges and thickets in several situations. *Dipsacus pilosus* (Small Teasel), sparingly in a lane near Busbridge Park leading from Holloway Hill, and in a withy-bed towards Mildens' Wood. *Lactuca muralis* (Wall Lettuce), upon the dry walls of Busbridge Park, in the direction of Hambleton. *Gnaphalium sylvaticum*, var. *rectum* (Heath Cudweed), has been found very sparingly upon the slopes towards Hurtmore; the same with *Iris foetidissima* (Stinking Iris). *Verbascum thapsus* (Great Mullein) and *nigrum* (Dark Mullein) are generally distributed in the different lanes. *Antirrhinum orontium* (Weasel's-

snout) is a common plant in the corn-fields at Hidestile Farm, Enton &c.. *Orobanche minor* (Common Broomrape) is abundant in most of the clover-fields; *O. major*, sparingly in a furze-field on Munstead Farm. *Verbena officinalis* (Vervain) at the foot of a wall against the bridge and other similar situations. *Salvia verbenaca* (Wild Clary) is plentifully distributed over the slopes near Milden's Wood and St. Catherine's Hill. *Pulmonaria officinalis*, var. *angustifolia* (Lungwort), occurs by the road-side at Milford, in all probability an outcast from the nursery-ground. *Chenopodium olidum* (Stinking Goosefoot), plentiful at the foot of a wall in Farncomb-street, against the chapel. *Polygonum dumetorum* (Copse-bindweed) appears to be by no means rare in coppices and hedgerows; it was first noticed in this vicinity by my friend Mr. Henry Bull, in an alder-car on Manor Farm. *P. bistorta* (Common Bistort) is abundant in a coppice at Tewsley, by the path-side. *Orchis morio* (Green-winged Orchid), heath on Hoe Farm towards Burgate-woods. *Epipactis latifolia* (Broad-leaved Helleborine), corn-field next Busbridge Coppice, opposite the pond at Thorncomb-street. *Carex pseudo-cyperus* (Cyperus Sedge) in an alder-car on Manor Farm, and Bom-moors, Compton. *Melica uniflora* is abundant upon most of the shady hedge-banks &c. *Viscum album* (Mistletoe) is abundant upon most of the fine old whitethorns in Peperharow Park, and in two instances it has established itself upon the Acacia. Several lime-trees in Losely Park present a remarkable appearance from the exuberance of this parasite.

3. The third division comprehends large tracts of barren heath, principally occupying the western and south-western portions of the district, rising in many places into arid elevations, while the plains and hollows afford boggy ground and extensive ponds.

Many delightful rambles may be made in these directions. Witley Lagg is rich in bog-plants: here may be found *Viola palustris* (Marsh Violet), *Drosera rotundifolia* (Round-leaved Sundew) and *intermedia* (Oblong-leaved Sundew), *Epilobium angustifolium* (Rosebay Willowherb), towering with its beautiful and conspicuous spike of rose-coloured flowers; the delicate and interesting *Wahlenbergia hederacea* (Ivy-leaved Bellflower) is found intermixed with *Vaccinium oxycoccus* (Cranberry), *Scutellaria minor* (Lesser Skullcap), *Narthecium ossifragum* (Bog Asphodel) and a plentiful supply of *Carices* (Sedges). The numerous morasses on Witley Common will offer similar plants, with the addition of *Hypericum elodes* (Marsh St. John's-wort), *Radiola millegrana* (Allseed), *Peplis portula* (Water-purslane), *Anagallis tenella* (Bog Pimpernel) and *Salix fusca* (Creeping Willow).

On the drier and elevated portions *Teesdalia nudicaulis* (Shepherd's Cress) and *Arenaria rubra* (Sand Spurrey) are plentiful. *Cuscuta epithimum* (Dodder) is frequently to be seen in tangled masses, profusely overrunning the *Ericae*, *Ulex nanus* (Gorse), &c.. *Anthemis nobilis* (Chamomile) is also plentiful, and its perfume is quite overpowering on a warm sunny evening; this plant also occurs upon Highdown Heath, in the vicinity of Pleck Pond, on the margins of which grow *Veronica scutellata* (Marsh Speedwell) and *Littorella lacustris* (Shoreweed), the latter in abundance. The moors skirting Witley Common on the north will afford, amongst other good things, *Carduus pratensis* (Meadow Thistle) and *Eriophorum vaginatum* (Hare's-tail Cottongrass). Upon the margin of Forked Pond, *Typha angustifolia* (Lesser Bulrush) is plentiful. *Arnoseris pusilla* (Lamb's Succory) abounds in a gravelly field behind the public house at the Hammer Ponds. The extensive

heaths in the direction of Thursley cannot fail to attract attention, and will amply repay the trouble of investigation. In the turf-pits will be found *Utricularia minor* (Lesser Bladderwort), *Rhynchospora alba* (White Beak-sedge), the *Eriophori* (Cottongrass), and a host of bog-plants. Elstead and Puttenham Commons are equally prolific. On the latter, at Cut-mill Pond, immediately bordering upon the parish of Godalming, the interesting addition of *Elatine hydropiper* (Eight-stamened Waterwort) to the southern Flora has been made by Mr. Walter Reeves, for I have no doubt "*Cuck* mills" is a misprint in the Annals and Magazine of Natural History' for CUT Mill, as this is within five miles of Farnham, and I can hear of no such place as CUCK Mills. This very rare plant grows plentifully here, accompanied by *E. hexandra* (Six-stamened Waterwort), and is invariably submerged, whilst the latter not only grows luxuriantly under the surface, but extends itself upon the sandy margins that are occasionally covered with water. On the margin of the same pond occurs *Limosella aquatica* (Mudwort), and in a deep morass under the park-paling of Hampton Lodge will be found *Potentilla comarum* (Marsh Cinquefoil) and *Malaxis paludosa* (Bog Orchid).

Omitting the mention of Phaenogamous plants of a less interesting character, I proceed in conclusion to notice the Cryptogamic productions of the district. And from the foregoing description of the geological features and general aspect of the country, it may be expected that this branch of the subject will prove equally interesting and extensive. With the exception however of the *Filices* and *Pteroides* I have hitherto been unable to devote the necessary attention to this division of the Flora for its satisfactory elucidation. I hope at some future period to be able to supply this desideratum.

The deep rich cuttings and damp woods and shady lanes are particularly favourable for the growth of several species of the *Filices*. Many of the commoner species grow in the greatest luxuriance, as in the case of *Polypodium vulgare* (Polypody), which completely covers the tops and sides of the hedge-banks, preferring to locate on the decayed stumps of trees, and is equally abundant upon the walls at Westbrook &c..

Polystichum aculeatum (Hard Shield-fern) and its variety appear to be equally distributed; the dingle towards Hurtmore is a favourable station, as is the case with Lovers' Lane, Farley Hill.

Lastraea thelypteris (Marsh Fern) occurs very sparingly at Hurtmore Bottom; hitherto I have only found it with barren fronds. *L. oreopteris* (Lemons-scented Fern) sparingly upon the extreme end of Witley Common, by the edge of a wood towards the Hammer Ponds: this beautiful fern grows in the greatest luxuriance in the Devil's Punchbowl at Hindhead. *L. filix-mas* (Male-fern) is very common in the shady lanes and coppices. The *Lastraea multiflora* of Newman grows luxuriantly in most of the wet woods. At Cosford, Westbrook, &c. it abounds at the foot of the alder-stumps and in other similar situations, whilst *Athyrium filix-foemina* (Lady-fern) generally prefers a more open situation, by the sides of ditches and water-courses that are inclosed with underwood. *Asplenium trichomanes* (Maidenhair Spleenwort) is very common upon the north sides of most of the old walls and bridges in the neighbourhood: on a damp hedge-bank at the back of Farley Hill, the fronds attain a great length. *A. adiantum-nigrum* (Black Spleenwort) abundantly in the same locality, and equally so in several others; it rarely occurs upon any of the walls

in this district. *A. ruta-muraria* (Wall-rue) is plentiful upon the garden-wall of Unstead House, and is found more sparingly in other situations. *Scolopendrium vulgare* (Hart's-tongue) will be found in the greatest exuberance in the dingle towards Hurtmore, where the variety with multifid fronds frequently occurs. *Blechnum boreale* (Hard-fern) is a common plant upon the barren heaths, preferring the sides of the moist ditches. Highdown Heath and Witley Common will afford this plant in the greatest perfection. *Pteris aquilina* (Bracken) is generally distributed over all the uncultivated ground. *Osmunda regalis* (Royal Fern) grows plentifully by the side of Forked Pond next Thursley Common, and sparingly upon Hambledon and Highdown Heaths: but to see it in perfection, the admirer of this elegant species must visit the Devil's Punchbowl, where the fronds attain a great height, and will convey the idea of a truly royal fern. Cattle do not reject the fronds of this species; those at Forked Ponds are annually eaten off by the stock. *Botrychium lunaria* (Moonwort) is evidently a rare species in this neighbourhood. During the summer of 1840, I found three plants opposite Pleck Pond on Highdown Heath, since which I have not seen a single specimen growing. *Ophioglossum vulgatum* (Adder's-tongue) appears to be equally scarce; a small patch occurs in the Compton chalk-quarries: a closer investigation on the north side of the Hog's Back will probably yield this plant abundantly. *Ceterach officinarum* (Rustyback) has been found very sparingly in two situations; my friend Mr. H. Bull first noticed it on Westbrook garden-wall, and a few days subsequently I discovered it on a wall at the Dairy Farm towards Farley Hill: with the exception of the station at Haslemere no other locality in this county has been recorded for this plant.

Lycopodium clavatum (Stag's-horn Clubmoss) is in great plenty on Highdown Heath, *L. selago* (Fir Clubmoss) very sparingly in the same locality, *L. inundatum* (Marsh Clubmoss) occurs abundantly in all the wet parts of the different commons.

Equisetum telmateia (Great Horsetail) is generally distributed in the wet parts of the hills; it is abundant upon the hedge-banks against Busbridge Park, in the direction of Tewsley: whilst *E. arvense* (Field Horsetail) appears to be more generally located higher up in the corn-fields which are inclined to be rather springy. *E. palustre* (Marsh Horsetail), in marshy meadows; at the back of Shalford, this species occurs abundantly in a wet meadow. *E. fluviatile* (Water Horsetail) is in most of the ditches, and will be found in the greatest perfection at Hurtmore Bottom, where the turf for fuel has been dug, also at New Pond, and one of the Hammer Ponds. *E. sylvaticum* (Wood Horsetail): this species I noticed for the first time last summer in a wood near Burgate, on the weald clay. *E. hyemale* (Rough Horsetail): Wanborough Wood very abundant, an interesting addition to the Surrey Flora.

(Note: Common names have been inserted into the original text)