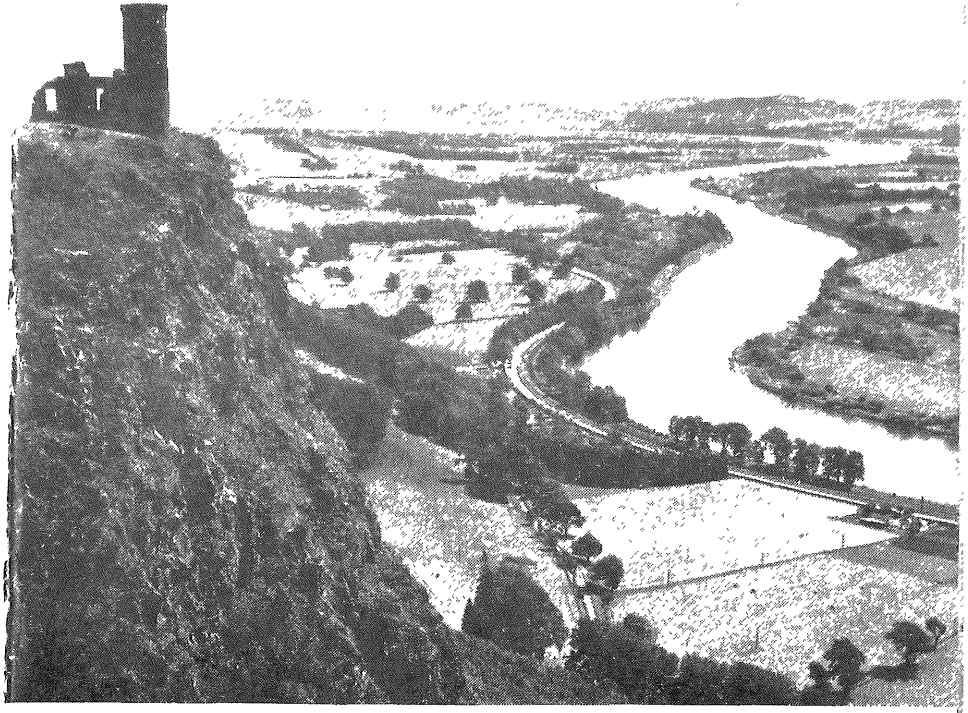
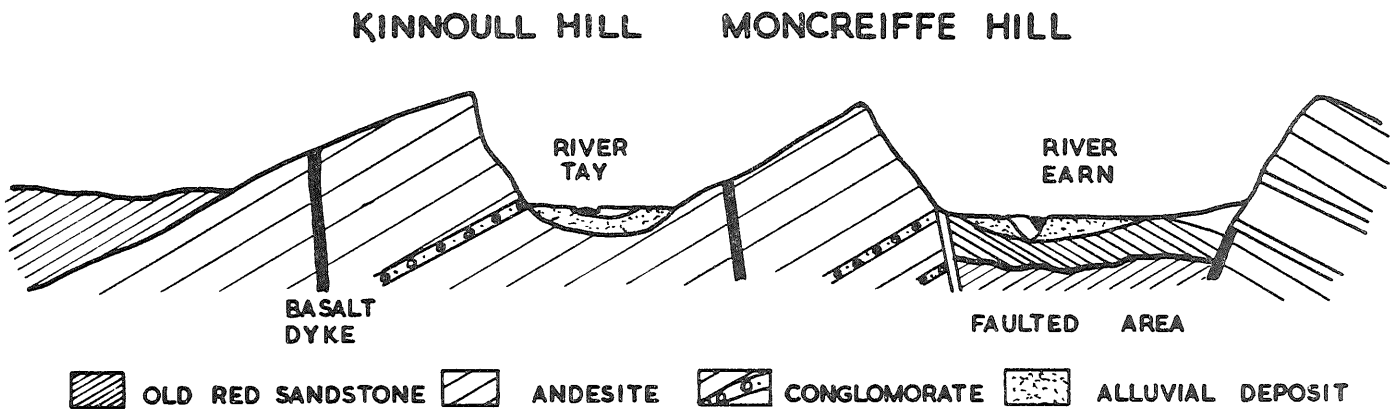


KINNOULL HILL NATURE TRAIL PERTH

PERTHSHIRE SOCIETY OF NATURAL SCIENCE

Price 6d


KINNOULL HILL
MONCREIFFE HILL
RIVER TAY
RIVER EARN
BASALT DYKE
FAULTED AREA
OLD RED SANDSTONE
ANDESITE
CONGLOMORATE
ALLUVIAL DEPOSIT

KINNOULL HILL NATURE TRAIL

Kinnoull Hill, which was gifted to the citizens of Perth by the late Lord Dewar on 10th September, 1924, attracts many visitors during the course of the year. It is hoped that this Nature Trail, by drawing attention to the great diversity of wild life in the area, will add to the interest and enjoyment of those walking on the hill.

The numbered sections in this booklet refer to the marker posts along the Trail and describe selected items of interest to be seen near each point.

Use the map as you proceed from post to post. The Trail is about a mile long.

Please leave everything as you find it so that others may share your enjoyment. **DROP NO LITTER AND START NO FIRES.**

Remember always that we hold our natural heritage in trust for future generations.

The Trail starts at the Lodge in Hatton Road.

Silver Birch trees (Betula pendula), recognisable by their whitish bark, cover this part of the hill and are self-sown, but the few Scots Pines in the foreground were planted. Blaeberry or Bilberry is abundant, and on

the slopes of the bank the Heather of Scotland or Ling is regenerating slowly. The development of this characteristic plant community of birch, heather and blaeberry depends on a number of factors, free drainage resulting in acid soil conditions perhaps being the most important.

The typical bird of this habitat in summer is the Willow Warbler. This small greenish bird, which winters in Africa, has a distinctive song - a rather plaintive series of notes trickling down the scale - which can be heard from April to June wherever a few birch trees provide the cover and insect food the bird requires.

Now follow the main path uphill to the right.

POST 1:

Near this post two tree stumps, set up previously as indicator posts, are of interest. They were Douglas Firs and the fact that the near one was cut when it was 19 years old can be determined by counting the annular rings which show the growth in girth each season. The holes are the work of Long Horn Beetle larvae which fed on the wood tissue until they finally emerged as adult insects.

The Douglas firs downhill were planted about 35 years ago. Their lower branches have been "brashed" or cut off by the forester, an operation which results in knot-

free timber and encourages grass to grow underneath. This species can best be recognised by the pendulous tapered cones on the upper branches. Some of these may be found on the ground, when the characteristic three-forked bracts may be seen.

POST 2:

At the foot of this post grows Schreber's Feather-moss (Pleurozium schreberi), golden-green when dry, and bright red stems under the green. It is very common on light well-drained soils and occurs all over the hill.

Parmelia physodes, a common grey leafy lichen, grows on the bark of the first tree by the path on the right. Its growth indicates that the level of atmospheric pollution is low considering the proximity of the city. A glance round will show that many trunks carry lichens.

POST 3:

The conspicuous flesh-coloured fungus species growing on this birch stump is a crust fungus (Peniophora sp.) The rough-leaved grasses growing in the damp hollow below the path are good examples of the Tufted Hair-Grass. The tussocks conserve the moisture even if the ground partially dries out in summer.

About 20 yards along the Trail, to the right, is a Sycamore tree which has had its leading shoot damaged when young. The damaged part has healed over and one of the

side shoots has formed the trunk instead. A plant of Ivy growing horizontally through the grass and forming part of the ground vegetation, is also climbing up the trunk by its adhesive rootlets, which can be seen clearly in the upper shoots.

Farther along the Trail, on the right, is a carpet of evergreen leaves formed by a low growing shrub called the Lesser Periwinkle which bears blue-violet flowers in May. While not certainly native to Britain it is now naturalised throughout the country.

POST 4:

This old Larch stump nurses representatives of three orders of the plant kingdom. The red-tipped lichen on the stump is Cladonia coccifera. The ferns round the base are Broad Buckler Ferns (Dryopteris dilatata). The young tree in the centre is a sycamore "maiden" sprouting from the winged fruit which had lodged here.

A little farther on and to the left of the path are some dark green cushions of the Common Hair-moss (Polytrichum commune). The prominent spore capsules may be seen at any time of the year, old dry ones from the previous season and young fresh ones of this season's growth.

POST 5:

In the hollow below is a hardwood plantation of

Beech, birch and sycamore. The dense summer canopy in woods of this type excludes the light and this, along with the persistent leaf litter, prevents most plants from establishing themselves. The difference between the ground vegetation here and in other places, where the dead leaves become more quickly incorporated in the soil, is striking. This absence of shrubs and ground vegetation limits the numbers and variety of breeding birds since many species are unable to find suitable nest sites. Where the proportion of beech is high, however, such woods attract large flocks of tits and finches, to feed on the plentiful beech mast, during the winter. Red squirrels also feed on beech nuts. They have a preference for woods where the trees are close enough together to allow them to travel for long distances without having to descend to the ground.

The daffodils here have been planted but they are naturalised British Wild Daffodils (Narcissus pseudonarcissus).

The formerly cultivated soil on the other side of the fence has attracted moles from the woods. Molehills dot the pasture and several shallow permanent runs cross the Trail.

POST 6:

Here you may find the Lesser Celandine in spring

and early summer. A small colony occurs under a sycamore tree by the path. The celandine has bright yellow flowers and is one of the many kinds of buttercup in Britain. It is a plant which is particularly well adapted to life under the shade of deciduous woodland. By producing its leaves very early in the year it is able to manufacture food, which it then stores in tubers underground, before the tree canopy shuts out the sunlight essential for photosynthesis.

The large trees by the path are at least 150 years old. Some of these will be identified farther along the Trail. Within the fenced area are clumps of birch, which regenerates most readily in the open, while on the bank under the old trees the sycamore is regenerating in the shade and shelter which it generally prefers.

Further along the Trail a Yew tree overhangs the path. Yews very readily produce new growth from any cut surface, as this specimen clearly shows. On the trunk, about 8 feet from the ground on the uphill side, is the roosting niche of a Tree-creeper. This inconspicuous little brown and white bird is aptly named. In its search for insect food it creeps up the trunk of one tree after another (always starting near the bottom) and makes a faint scratching sound as its claws grip the bark.

POST 7:

The large tree here, malformed at the base, is a Spanish Chestnut. It has large toothed leaves and a much-fissured bark. The swellings or calluses were induced by damage when the tree was young. On the north side, growing at the very base of the trunk where moisture running down is trapped, is the Common Thyme-thread moss (Mnium hordum). The general absence of mosses higher on the trunks of all the trees is evidence of low humidity.

The adjacent tree is a magnificent larch about 70 feet in height and must have been planted shortly after the introduction of this species to Scotland.

On and below the rocky outcrop behind this tree are several woodland plants, notably the Wood Sage with its wrinked leaves and cream flowers, the Wild Strawberry, the Wood Dog Violet (Viola riviniana) and two ferns, the Common Polypody on the rocks and the Lady Fern on the banks below. A few Foxgloves also grow here in most seasons.

Whin bushes have established themselves just inside the fenced area. Before turnips were introduced to Scotland this plant was used as cattle feed in the winter months, being crushed by an implement called a whin mill. The spines are nature's defence against

grazing animals.

Beyond the Holly tree and the Lilac tree there is a Silver Fir, a large beech, a Lime (Tilia x europaea) a sycamore and then another beech.

POST 8:

Farther along the Trail, and on its left bank, is a colony of Great Woodrush with tough strap-like leaves, a plant favoured by eagles as nesting material. There are, however, no eagles on the hill!

You may notice small holes towards the edge of the path. Those with tiny earth mounds are entrances to nests of certain ants, and solitary bees called Andrena. The simple scrapes with central holes are made by Digger Wasps, which are notable in providing their next generation with fresh meat in the shape of spiders, caterpillars and even small beetles. These are stung by the wasps and paralysed. When the wasp eggs hatch the young grubs feed on living food in the burrows. The very slender wasps are patterned in black and red. These bees and wasps are solitary in respect that the larvae do not become queens, drones and workers, but emerge as male or female bees to dig burrows and lay eggs like their parents.

Beside the yew tree near the path is a Whitebeam, a close relative of the Rowan. It may be recognised

by the white undersides of its leaves.

POST 9:

Here are two old Gean or Wild Cherry trees About twelve younger trunks on the knoll behind may be saplings seeded from the parent trees or they may have grown from the suckers which this species produces freely.

A roe deer track crosses the Trail 6 yards from the gean trees. Roe tend to stay in favourite spots and follow well defined tracks to their feeding grounds at dusk or dawn.

Passing along underneath the Norway Spruce trees you will walk over their spreading roots crossing the path. These show how these trees are striving to maintain a firm hold on the thin soil overlying the rock.

In this part of the hill Carrion Crows and Jays can often be heard and sometimes be seen. These two members of the crow family are unpopular with gamekeepers as their food includes eggs and young birds. They are both rather solitary in habit (unlike the related Rooks and Jackdaws) and both have harsh, unmusical calls, but they differ greatly in appearance. The bright pinky-beige, blue and white of the crested Jay are vivid in comparison with the sombre black of the larger Crow.

POST 10:

You now have the choice of continuing on the main Trail upwards over a rocky and rather dangerous path along the cliff top or forking left where an alternative, easier Trail proceeds by Posts 11a, 12a, etc. Those with young children or who wish to avoid the steepest section are advised to take the alternative route. (see page 19).

Two kinds of wild rose form the small thicket to right of the path. One has large hooked spines and pale flowers, the other straight slender spines and deeper flowers. The former is the Dog Rose (Rosa canina), the latter the Downy Rose (Rosa villosa). If you smell the leaves of both species you may detect another difference.

As you climb the main Trail the broad path becomes less grassy, the rocks outcrop and small particles of Agate or Scotch pebble may be found. These are dull red in colour and are an opaque kind of quartz. Please do not gather these here but leave them for others to see. They are not always so easy to find although the Sidlaws are particularly rich in this stone.

The way in which the Honeysuckle, on the left is twining clockwise round the small trees is typical of its normal manner of growth. In other parts of the hill, the forester by trimming it has encouraged the growth of a carpet of shoots which are seeking the support they need to grow higher and flower. Honeysuckle, like ivy,

only flowers and fruits when it can clamber up rocks or trees. The honeysuckle flowers are visited at night by moths, which are the only insects with tongues long enough to reach the nectar at the base of the flower tubes.

POST 11:

A slight detour to the right here takes you to a viewpoint overlooking the cliffs. On the lower slopes below the cliff are two plantations. The upper is of larch and the lower was originally planted with beech, but invading sycamores are now dominating the beech and are being allowed to grow instead.

The broken face of the cliff itself accommodates a considerable flock of Jackdaws. This species is unusually adaptable in its choice of nest site and may make use of holes in trees or buildings, as well as cliffs, and sometimes even nests in rabbit holes. Another bird frequently seen near the Kinnoull Hill cliffs is the Kestrel, the commonest small hawk in Scotland. It is easily recognised by the characteristic way that it hunts over open ground, hovering apparently motionless in the air as it scans the ground below for mice or voles.

POST 12:

The differences between heather (ling) and Bell

Heather can be studied closely here. Bell heather has larger, deep pink flowers and there are considerable differences also in leaf form and habit. The burnt pine stump immediately behind supports a small bracket fungus, with smooth underside, Stereum hirsutum.

PLEASE NOTE THAT THE CLIFF TOP IS DANGEROUS AND CHILDREN SHOULD BE KEPT WELL BACK FROM THE EDGE.

The similarity in shape between Kinnoull Hill and Moncrieffe Hill, both of which have steep south-facing escarpments contrasting with much gentler dip slopes towards the north, is clearly visible from here. Both these hills form part of the northern limb of the Sidlaw-Ochil anticline (see section on inside cover.) This formation was originally a continuous arch linking the two hill ranges until, as a result of faulting (geological fracture) the centre part or keystone dropped several thousand feet. This section now lies far below the Carse of Gowrie and the lower part of Strathearn.

The rocks forming Kinnoull Hill are over 350 million years old and are hard volcanic lavas called andesites. The tilt of the rock strata causes rain falling on the hill to follow the slope towards the north-west until it finally emerges as springs or seepage water which you may have noticed lower on the Trail. The cliff face, in consequence, is dry and

presents a very different habitat for wild life from the dip slopes which have been climbed. Not only are the plants exposed to the drying effects of wind, but in addition the rocks facing the sun for most of the day retain its warmth. These circumstances favour two types of plant: those which have penetrating roots to tap deep sources of moisture, e.g. the ivy and the Wild Wallflower and those which can store moisture in their leaves, e.g. the White Stonecrop (Sedum album). When the wallflowers' bright yellow flowers are not visible, it can be recognised by the grey-ish green leaves or long upright pods. The white stonecrop flowers in June and forms mats of red-tinted leaves. It is on record that a small piece of stonecrop was planted on a ledge in 1888 and has since spread the whole length and height of the cliff face.

Proceed uphill keeping to the inner path.

POST 13:

On either side of the path, thickets of Sloe or Blackthorn can be studied. This shrub forms impene trable coverts and provides shelter for seedlings of trees, for example larch and ash, which are thus protected from wind damage and graxing animals. As they mature these trees will eventually dominate the nursery in which they grew. On the right the honeysuckle, by its

clambering habit, renders the thicket even more impenetrable. Dense thorny thickets like these give protection from such predators as man fox and cat, to many small birds which nest near ground level.

POST 14:

This beech tree, very stunted in comparison with the fully mature specimens lower on the hill, (Posts 6 to 8) is dwarfed and bushy as a result of damage to its leading shoot and exposure to wind. Near the base of its trunk are some intriguing holes. They were caused by woodworm which, although we are more familiar with its effects in houses, is a naturally occurring woodland insect. It lives only in dead or seasoned timber.

The Crab Apple trees in this area are interesting examples of a native tree which is common in the south but does not occur much further north than this.

Where the rock outcrops on the other path, behind the marker post, part of the slow process of soil formation by weathering can be seen. Chemical decomposition and the physical action of frost and temperature changes together break down the exposed rock into progressively smaller particles. Common Thyme (Thymus drucei) with its small scented leaves and small purple flowers may be noticed here where it can take advantage of the basic minerals released from

the crumbling rock.

Turn left (north) to Indicator.

The fine natural sward here is not mown. The shortness and close texture of the grass is due to the grazing of rabbits and hares, extensive human foot traffic, the very thin covering of soil over the rock and exposure to wind.

If this turf were allowed to grow for centuries it would eventually form a thick dense mat of roots a foot or more in depth and relatively free from soil, stones or mineral matter. Such a mat was indeed stripped off and used by our forefathers as fuel before the introduction of coal and after the destruction of the earlier natural forest. Some houses in Perth have written into their feu charters the right to cut this "divot" or "feal" as it was then called, from Kinnoull and the neighbouring hills.

The Indicator provides a great deal of topographical information which it is unnecessary to repeat. From here, however, the position of Kinnoull Hill at the extreme western end of the Sidlaws can best be appreciated. The contrast is also afforded between the poor shallow soils of the hill itself and the deep fertile soils of Strathmore to the north, the Carse of Gowrie to the east and Strathearn to the west.

POST 15: DIRECTIONAL, TURN LEFT - NORTH TO INDICATOR

Proceed via Post 15 to Post 16.

POST 16:

The area of rock 30 yards to the right of the Trail and marked by a post shows several deep grooves running roughly north-west to south-east. These are glacial striae produced during the Ice Age when vast sheets of ice moved slowly across the land. At that time the whole of Strathmore was filled with ice to such a depth that it overtopped the ground on which you now stand. The scraping action of the boulders and debris carried by the ice resulted in this scoring of exposed rock surfaces.

The bare rock is now being colonised by lichens and mosses, and the first stage in soil formation by these pioneer plants is beautifully illustrated. There are too many kinds to name, but the more obvious large circular patches attacking the surface of the rock itself are species of Parmelia, one of which we have met with already. (Post 2). The small light yellow-green patches suggesting maps of indented coastline are named appropriately enough Rhizocarpum geographicum. The shrubby sponge-like lichens in the fissures are two kinds of Cladonia. The little blackish cushions of Fringe-moss (Grimmia trichophylla) with fine silver

hair points, can be easily recognised. Already among the mosses some flowering plants like the Early Hair-Grass are pointing to the next stage in development. Looking downhill, all the stages from grass cover through low growing shrubs like blaeberry and heather, larger areas of scrub, broom, whin and elder, to the mature forest can be traced. The grassy areas are criss-crossed with the tunnels of field voles and the tracks of brown hares.

POST 17:

A few yards from the Trail on the left a wind-blown birch tree exposes the shattered rock surface and the shallowness of the soil. Growing on the dead wood is one of the bracket fungi, Trametes versicolor, a species which seldom occurs on living wood.

POST 18: Directional

Turn right at the post and follow the path along past the next seat.

POST 19:

On the right is a grove of planted Scots pine about 35 - 40 years old. The wood is interplanted with hybrid larch. The bird population of this type of conifer plantation changes markedly as the trees mature. In very young plantations such typically heath-land species as the Skylark and Meadow Pipit are gradually replaced

by Yellowhammers, Linnets, Whinchats and Whitethroats - all birds which prefer plenty of thicket-like cover. By the time the trees are 8 - 15 years old, woodland birds such as Willow Warblers, Blackbirds, Chaffinches and Wrens have moved in. In still older plantations, like the one seen here, tits (especially Cole Tits) and Goldcrests become dominant. Dense stands of conifers also provide a safe refuge for vast flocks of Wood Pigeons.

POST 20:

Good examples of "witches brooms" occur on this birch tree. These twiggy growths which disfigure the tree are caused by the attacks of a mite or by a fungus. At the foot grows an Elder which, although small, is of considerable age. This bush shows the capacity of the elder to withstand a considerable amount of maltreatment. Near its roots grows the attractive Creeping Bugle with small "towers" of blue flowers in June.

POST 21:

Two old logs to the right repay investigation. The bracket fungus has been seen already (Post 17). Look for the black white-tipped Candlesnuff fungus (Xylaria hypoxylon) and underneath, in the damp and dark, the white soft plasmodia of a slime fungus (Myxomycete). The Norway Spruce shows congealed resin which has exuded from the branches which have been lopped off.

Resin was harvested for the caulking of ships prior to the introduction of pitch. The leafy branches carry numerous "pineapple" galls which look like cones but are in fact growths induced by an aphid (Chermis abietis). The true cones can be observed near the top of the tree and some may be found on the ground.

THE TRAIL CONTINUES DOWNHILL TO THE STARTING POINT.

Alternative Route from Post 10:

POST 11a:

Two birch trees, one on each side of the path, are particularly well grown and display the pendulous branches and small leaves typical of the species. It is frequently difficult to find fallen birch leaves because they are either blown away from under the tree or readily disintegrate. Their remains may, nevertheless, be searched for underneath those of the firmer leaves of oak, sycamore and beech. The catkins swaying in the wind are typical of flowers adapted for wind-pollination. In the marshy area to the right a little further on are plants of Marsh Thistle, Wild Valerian with ash-like leaves, and a species of Forget-me-not, amongst other wet-loving plants.

On the trodden path the Ribwort Plantain and Daisy establish supremacy over the dwarfed grass foliage by means of their flattened rosette form, but they are

unable to attain this end in the taller vegetation on each side.

POST 12a:

This is one stump of an older coniferous wood that once covered the hill. A large number of these stumps can be found in this area and their girth shows that the trees were quite old when they were felled. Conifers die when they are felled but broad-leaved trees like the oak often continue to grow from the stump. Examples of this regrowth of oak can be seen in this area suggesting some of these oaks may be hundreds of years old. If so they provide a living link with an earlier forest which in turn may have arisen naturally from the primeval forest that once covered the valleys and low hills over much of Scotland.

POST 13a:

This holly is a mature female tree. Its clusters of pinkish white flowers must be pollinated by insects carrying pollen from male trees before they will develop into bright red berries. That there are male trees in the vicinity is proved by the berries which have been observed in the upper branches.

A few yards farther on a bush of "Flowering" Currant (Ribes sanguineum), with pink flowers, has become established naturally. This shrub was

introduced into Britain from N.W. America by David Douglas of Scone. He was also responsible for the introduction in 1824 of the Douglas Fir, which was named after him.

After passing under a beech tree the path cuts between gently sloping banks with a shallow ditch on the right. By this ditch may be seen the broad leaves of Lady's Mantle (Alchemilla xanthochlora) named thus because of the form of the unfolding young leaves resembling the pleats of a cloak.

OTHER PERTHSHIRE NATURE TRAILS

There is a Nature Trail, open on Sundays from May 1st, at Kindrogan Field Centre, Enochdhu, Blairgowrie. The Centre, the only one of its kind in Scotland, runs courses in all aspects of Natural History including: Bird Watching, Wild Flowers, Trees, Toadstools, Mosses, Galls, Insects, Aquatic Life, Rocks and Minerals. Enquiries about Courses should be addressed to the Warden, Kindrogan Field Centre.

There are also two Nature Trails run by the National Trust for Scotland at Ben Lawers, near Killin and at the Hermitage, near Dunkeld.

The Kinnoull Hill Nature Trail was prepared by members of the Perthshire Society of Natural Science. This Society, which welcomes new members, arranges a winter lecture programme of general interest and also has sections meeting frequently in winter and summer for those especially interested in Archaeology, Botany, Ornithology and Photography. Enquiries regarding membership should be addressed to The Secretary, P.S.N.S., c/o Perth Museum and Art Gallery, George Street, Perth. The Society acknowledges with gratitude the assistance and support received from both Perth Town Council and Perth & Kinross Joint County Council in the laying-out of the Trail and in the publication of this booklet.

The Perth Museum and Art Gallery in George Street has on display collections of Perthshire birds, animals, etc. and additional botanical and other material is available for reference purposes to members of the Society. Both the Sandeman Public Library in Kinnoull Street and the Perth County Library in Rose Terrace carry a good range of books on Natural History. The following are especially recommended to those wishing to learn more about particular aspects of the subject.

RECOMMENDED REFERENCE BOOKS

The "Observer's Book" series and Collins "New Naturalist" series. Both cover a wide range of natural history subjects.

Bird Watching for Beginners by Bruce Campbell.

The World of Birds by James Fisher & R.T. Peterson.

A Field Guide to the Birds of Britain & Europe by R.T. Peterson, G. Mountfort & P.A.D. Hollom.

The Pocket Guide to British Birds by R.S.R. Fitter & R.A. Richardson.

Rocks & Minerals by Zim and Schaffer.

Collins Guide to Wild Flowers by Fitter and McLintock

Flora of the British Isles by Clapham, Tutin & Warburg.*

Know your Conifers by Hedler (Forestry Commission Booklet No. 15).

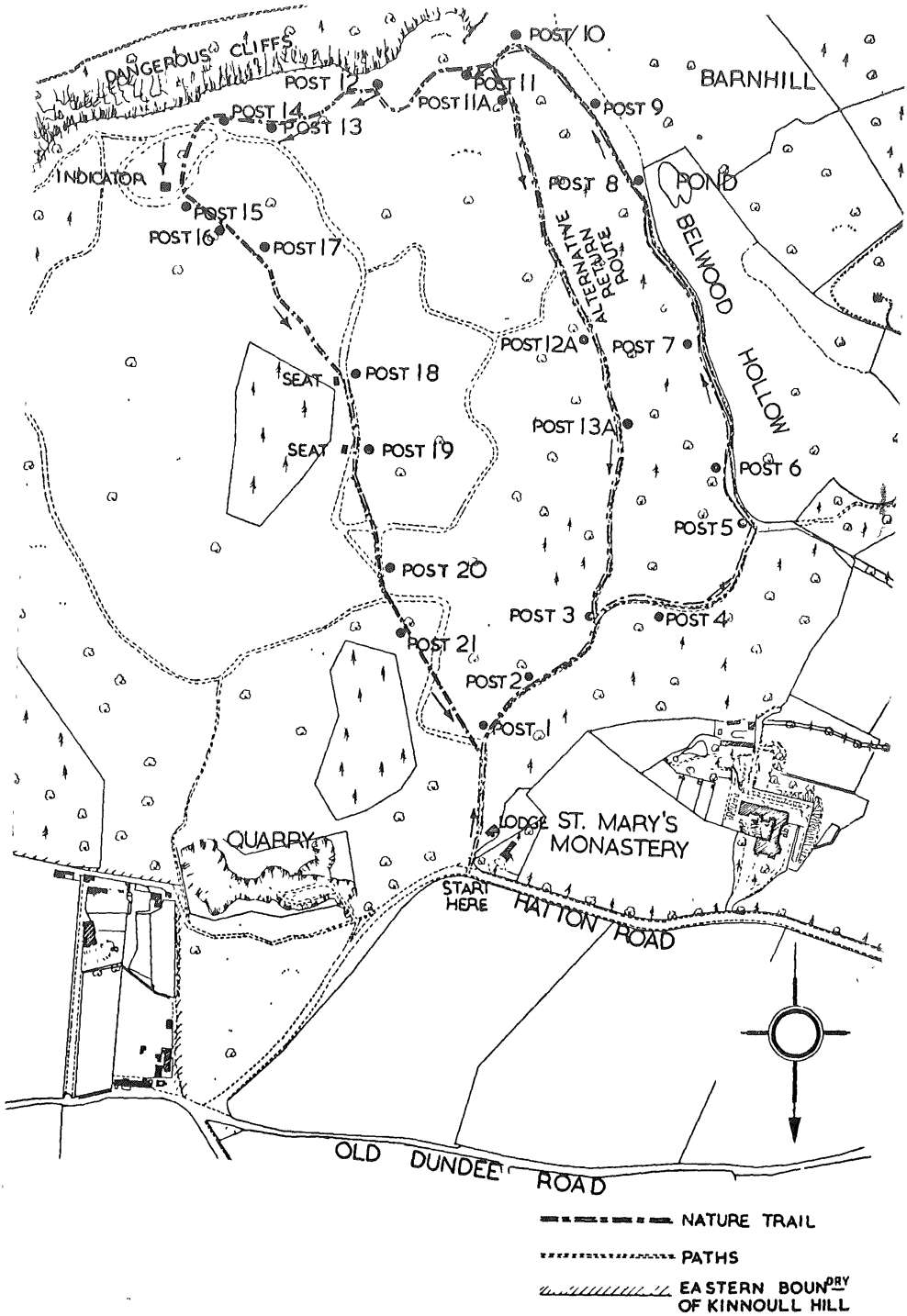
Collins' Guide to Mushrooms & Toadstools by Lange and Hora.

Grasses by C.E. Hubbard.*

The Kew Series, British Trees & Shrubs by Eyre and R.D. Meikle.

The Kew Series, British Ferns & Mosses by P.C. Taylor.

* more advanced books.


DANGEROUS CLIFFS
POST 10
BARNHILL
POST 12
POST 11
POST 11A
POST 9
POST 14
POST 13
INDICATOR
POST 8
POND
POST 15
POST 16
POST 17
ALTERNATIVE RETURN ROUTE
BELWOOD HOLLOW
POST 12A
POST 7
SEAT
POST 18
POST 13A
SEAT
POST 19
POST 6
POST 5
POST 20
POST 3
POST 4
POST 21
POST 2
POST 1
QUARRY
LODGE
ST. MARY'S MONASTERY
START HERE
HATTON ROAD
OLD DUNDEE ROAD
NATURE TRAIL
PATHS
EASTERN BOUNDRY OF KINNOULL HILL