THE EDINBURGH NATURAL HISTORY SOCIETY

NEWS-LETTER

[No. 1]

1965

On the 2nd of October 1915 Mr. A.B. Steele was the leader of a fungus foray to Arniston. Exciting information? — No. Though nothing spectacular is recorded as having been found during this meeting it is, however, the last record that we have in the 'Transactions of the Edinburgh Field Naturalists' and Microscopical Society'. Now, exactly 50 years later, and under the new name of the 'Edinburgh Natural History Society' we see the start of a new publication.

Transactions would now be costly to produce, and their value probably not great. The committee of the Society has decided that a 'News-letter' would serve to summarize the work of the Society and keep members informed of what is being achieved. It is hoped to give short notes on both the winter and summer meetings, and to encourage members of the Society to write short articles on their interests in Natural History. This first News-letter aims at showing the diversity of interests to be found in the Society.

This News-letter should be for all members of the Society, whether they be on the committee, aspire to be on the committee, or are content to be normal or junior members. Such a publication as this will certainly fail if it does not receive support from the members. Members can contribute in two ways. If they are interested in writing a short article the editor would be pleased to hear from them. In this News-letter we have a "General Notes" section, and this is where all members can actively participate. If you see anything that interests you, or which will interest others, please write it down and send it to the editor, or give it to a member of the committee. When, for example, was the Cuckoo first heard in the Lothians in 1965, or has a Red Admiral butterfly been seen by anyone? Please bear this in mind - this section is for you.

Finally, I should like to thank the many members who have helped me and contributed to this News-letter. Special thanks are due to Mr. D. Wells and to Dr. W.J. Guild and Mr. G. Finnie of The Edinburgh School of Agriculture who have made possible the high quality of reproduction of the News-letter whilst keeping the cost at a minimum.

Michael B. Usher.

A HISTORICAL INTRODUCTION

Our Natural History Society of Edinburgh may be compared to a stream which has been formed by the confluence of two main tributaries. One of these arose in 1869, the other in 1881, and they flowed along more or less parallel courses until they united in 1921 to form our present "Edinburgh Natural History Society". By 1969 the Society may celebrate its centenary, and it will be noticed that the separate Societies occupy approximately the first half of the century and the combined Society the second half.

We know more about the older Society which was at first called the "Edinburgh Naturalists' Field Club", and which was founded in 1869 "for the practical study of Natural History in all its branches". Only field meetings in the summer months were held at first, but after some time the need for indoor discussions and lectures was felt and these were held in the winter months. Microscope work was also an increasing indoor interest in those days and formed a recognised section of the Society's work. In 1881 they began to publish Transactions, and shortly after this the name of the Society was changed to the "Edinburgh Field Naturalists' and Microscopical Society", which it retained till 1921. The Transactions continued till 1915, and bound copies survive today.

The Society's programme was comprehensive, including not only the fundamental subjects - Geology, Botany and Zoology - but also Microscopy, Archeology and Astronomy, plus a little Photography and Meteorology. Always in thos early days the lectures were illustrated by the lantern (the magic lantern of our schooldays). This was at first operated with gas but later with electricity. Excursions took them all over the Lothians, including afternoon and evening meetings as now. Occasionally whole day trips (e.g. Queen Victoria's Birthday) took them to such places as Tentsmuir or St. Abbs. Methods of transport are seldom mentioned until we reach the 1920s, but we assume that in the early days it was mostly by trains or horse-drawn vehicles - not to mention Shank's pony.

Regarding organisation of personnel (Office bearers, Council members, etc.) these are similar to our own since ours are based on theirs, and lists of the names are in the Transactions. The majority were drawn from the professions. In early days arrangements of lectures etc. seemed to be haphazard - from month to month - no syllabus being drawn up. The Secretary posted billets monthly informing members about the next lecture or excursion. This older Society apparently had no syllabus till after the 1921 Union.

The younger Society was called the Scottish Natural History Society, and was founded in 1881. It was more academic, with the backing of University professors and staff. These included Prof. J. Cossar Ewart (Zoology), Prof. Jas. Giekie (Geology) and Prof. James Trail (Botany).

From about 1897 a syllabus was issued in the form of a pamphlet of

8 to 12 pages. This included a list of officers and councillors similar to the other Society, lists of summer field meetings and winter lectures, and a list of referees in the three subjects Geology, Botany and Zoology, to which members restricted themselves. There was also a full list of members, who were called "fellows". The academic year began in March (the other Society began in October, as with us), and the syllabus covered a whole year from March to the following February. It published Transactions for only four years, 1898-1902, and these have survived as have also three copies of the syllabus, for 1897, 1915 and 1920. A book of photographs also survives from the period 1898-1902 and shows very interesting groups of ladies and gentlemen. Most of the latter are in top hats or bowlers and the former in leg-of-mutton sleeves, long skirts, and voluminous hats - all photographed during excursions.

Limitation of space will allow only the briefest mention of three outstanding events in the early modern period (following World War I) as detailed in the minute book for the years 1919 to 1929, which fortunately survives.

Firstly, the combined meeting of the two Societies (held in the Goold Hall, 5 St. Andrew Square) on 6th October 1921, at which a Resolution to unite "was carried by acclamation" and the present name of the Society decided upon. The separate winter and summer syllabus dates from this period, as does also the Constitution and Rules which we use today. Secondly, the establishment of the Duddingston Loch Bird Sanctuary in 1923 was on the initiative of certain members of the Society. Lastly, the highlight of the inter-war period was the publication by the Botanical Committee (Miss Isabel Martin M.A., Convener and Editor) of the "Field-Club Flora of the Lothians" in 1927 - and a second edition in 1934. They received congratulations and thanks for this fine piece of work.

J. Milne, President.

WINTER LECTURES 1964/1965

The series of winter lectures was held in St. Thomas of Aquins School where, thanks to the kindness of the Director of Education, we are priviledged to have the use of the beautiful hall. Attendance at the meetings has been about one third of the total membership of the Society.

At the close of business of the A.G.M. in October the President gave an account of the Botanical Congress held in Edinburgh, and the Secretary and the Assistant Secretary showed a number of coloured pictures.

Mr. Michael Usher, member of the Society, spoke at the following meeting. His subject "Insects of the Edinburgh Area" was most note-worthy from an educational standpoint. He illustrated the various classes of insects with blackboard diagrams, and an exhibition of specimens and slides.

Dr. Henry Tod, President of the Scottish Rock Garden Club, addressed the Society at the December meeting on "Plant Hunting in the Rocky Mountains". His was an interesting account of a botanical expedition through the Eastern and Prairie States to Montana and Wyoming, from there via the Continental Divide to the Nevada Desert; then to the Rio Grande and the Colorado Rockies. This journey crossed the Continental Divide several times by the high passes. Rocks of high magnesium content in Red Canyon were found to give rise to some plant species with sky blue foliage.

At the January meeting Dr. Roy Watling, Secretary of the Botanical Society, dealt with the Higher Fungi. His talk concentrated on the larger commoner species which could be encountered within the neighbourhood of Edinburgh. Dr. Douglas Baker of the University Department of Zoology gave an account of the University of Edinburgh Expedition to Madagascar in 1963 at the February meeting. He spoke of the quest for the Great Water Shrew, Limnogale mergulus, an aquatic insectivore. Other projects included studies of Cicada, the identification of Cicada species by song, and the collections of many lower forms of animals.

Mr. Lea MacNally, Gamekeeper of the Culachy Estate, Fort Augustus, gave a splendid talk on "Birds of Prey" at the March meeting. He showed many colour photographs of eyries, and told the members of his personal watchings and recordings at these sites. In his own intimate way the speaker dealt with breeding cycles, nests, eggs, clutch sizes, incubation periods, food and many other topics. The winter programme was concluded with, a successful Members Night. Contributions came from Mrs. W. Robertson, Mr. I. Sime, Miss N.F. Henderson, Mr. J. Ritchie, Mrs. E. Farquharson and Mr. M.B. Usher.

At short notice a meeting was arranged on 21st October 1964, at which Captain E.A.S. Bailey, the Scottish Regional Officer of the World Wildlife Fund, was to have spoken. A car accident unfortunately prevented his attendance, but his place was taken by Mr. W. Lonie of Paisley. A collection of £14 was taken for the W.W.F.

W.A. Hall, Honorary Secretary.

SUMMER EXCURSIONS 1965

In May the Society broke new ground and spent an interesting week-end at Otterburn in Northumberland. One could have spent a day in the beautiful grounds of Otterburn Hall where we stayed, but we enjoyed joint outings with members of the Natural History Society of Northumberland and Durham. It is always a good thing to meet with other similar societies when opportunity allows, and many happy associations were made when, on the Saturday, we visited Hulne Park near Alnwick and were privileged to have with us Lord Howick. Hulne Park stretches from the Cheviots to the gates of Alnwick. Here we saw many common birds and several species of warbler in the woodlands, and watched dipper, and pied and yellow wagtail by the side of the river Aln which flows right through the Park. Sunday was devoted to walking near Falstone village and the Kielder Valley, and here many of us saw pied flycatcher and redstarts occupying nest boxes put up in the forest area by the Forestry Commission. On the way home on the Monday we stopped in Craster village and walked to Dunstanburgh Castle where, on the cliffs below the castle, large numbers of sea-birds were nesting.

Our visit to the Isle of May in June had to be cancelled because of bad weather. Nevertheless we spent a pleasurable day visiting Loch Leven and Lindores Loch where there was much to interest the botanist and the ornithologist. The afternoon was spent near Tayport, at Tayfield, the home of Dr. John Berry of the Nature Conservancy, who personally conducted us through the beautiful grounds of his home and where we saw at close quarters, his fine collection of wildfowl.

In July, many members of the Society visited the Nature Reserve at Tentsmuir, and under the guidance of Mr. Len Fullerton, part-time warden of the reserve, saw much of interest - mainly botanical. Tentsmuir had a reputation in the past for its great colonies of terns and eider duck - but this is now a relic of its past glory. These birds have been trying to re-establish their colonies but with little success because of the depradations of carrion crows. We did see the nests and eggs of both common and arctic terns but the colony is very small compared with what it was several years ago. Botanists in the party were interested to see the lovely grass of parnassus, the coral root orchid and sea milkwart to mention only a few. Tentsmuir is an outstanding area for the study of coastal sand erosion and the subsequent stages of plant colonisation.

Space does not allow me to mention in detail any of the other outings, but in closing I would like to take this opportunity of expressing my personal thanks to all those who have led outings during these last months.

Nora F. Henderson,
Assistant Secretary.

NATURE CONSERVATION

It is a fact that more species of mammals and birds have become extinct in the last 40 years than in the previous 100 years, and more species have become extinct in the last 100 years than in the previous 1000 years. In some cases this was because the species could not adjust or adapt themselves to changes in their environment inevitably brought about by the advance of civilisation. There are one or two species of birds, e.g. the Whooping Crane, whose numbers had reached a dangerously low threshold without man's interference, but in the majority of cases the extinctions have been brought about by the unbridled expression of man's destructive impulses, and by the needless destruction of habitats. Thus there was a complete failure to observe any principles of conservation, made so necessary by the advent of the shotgun and rifle.

The threat to wildlife in the 19th century was unrelenting by land and sea. For example, the fur-bearing seals of the Behring's Sea had by the 1880s reached such a dangerously low level in numbers, that it became necessary to reach an international agreement for a close season, to which Great Britain became a signatory after some protracted negotiation. Thus in section 1 (3) of the Act passed in 1891 "to enable Her Majesty to make special provision for prohibiting the catching of seals in the Behring's Sea by Her Majesty's subjects" we read: "If a British ship is found within Behring's Sea having on board thereof fishing or shooting implements or seal skins or bodies of seals it shall lie on the master or owner of such ship to prove that the ship was not used or employed in contravention of this Act." At last some foresight was being displayed, even if to protect commercial interests, and principles of conservation were being applied.

Conservation measures came too late to save the Passenger Pigeon of America from extinction, which a hundred years ago was present in such countless millions that it darkened the very sky when on migratory flight. Today it is the wildlife of Africa that is most gravely threatened. The World Wildlife Fund has been set up in time, we hope, to forestall such a tragic happening, and to direct its resources to the areas of the greatest need. The W.W.F. is active in Europe, having arranged the purchase of the Coto Doñana to preserve the Imperial Eagle. There is a Scottish section of which Captain E.A.S. Bailey, D.S.C., R.N. is Organiser. An Edinburgh branch was formed in January 1964, and the E.N.H.S. is represented on the Committee.

It was long felt that it was necessary for some body to be set up that was specifically concerned with the threat to Scottish wildlife. Beginning with the Norfolk Naturalists' Trust, founded in 1926, there are County Naturalists' Trusts to-day in every English County. On the initiative of Sir Charles Connell, chairman of the Nature Conservancy, steps were taken to establish a Scottish Wildlife Trust, and in April 1964 this was officially set up as the Scottish Wildlife Trust Limited. One of its main objects is "to take all appropriate measures to conserve the fauna, flora, and all objects of natural history interest throughout Scotland..... to establish, own, maintain and manage wildlife sanctuaries." It was thought that, owing to the unbalanced distribution of the population in Scotland, Naturalists' Trusts could best be organised on a regional basis. A Lothians branch of the S.W.T. has been set up, on whose committee there serve four members of the E.N.H.S. One of the functions of such a branch is to make

a survey of the Sites of Special Scientific Interest within its area, and thus seek to forestall any possible damage that may be caused (in many cases unwittingly) by "development". The S.W.T. seeks to supplement the work carried out by the Nature Conservancy (established by Royal Charter in 1949) in a wider context.

The E.N.H.S. has set up a conservation sub-committee in the realisation that an interest in the various branches on natural history cannot be separated from an interest in conservation. If members know of any areas of ecological value whose continued existence as such is threatened we shall be glad to forward such information to the appropriate body, the S.W.T.

As for the present-day situation I cannot do better than conclude with a quotation from "Wildlife in America" by Peter Matthiessen: "Fortunately the tide of destruction is ebbing, and the tide of conservation is coming in. Yet we are far from the point where the momentum of conservation is strong enough to arrest and roll back the tide of destruction especially with regard to our vanishing animal life".

George Carse.

THE ELDERBERRY.

The Elder, Sambucus nigra, is very common around Edinburgh, but yet I have never seen the fruits being picked. It is hoped that this paragraph might stimulate a gastronomic interest in this very tasty fruit.

Elderberry and Bramble jam: Cook $3\frac{3}{4}$ lbs of elders in $\frac{3}{4}$ pint of water until soft, and sieve. Cook $3\frac{3}{4}$ lbs of brambles in the strained pulp until soft. Add 6 lbs of sugar, stir until dissolved, and boil rapidly until setting point is reached.

Elderberry and Apple jelly: Boil equal quantities of elderberries and apples separately with just sufficient water to cover the fruit. Strain the juice, and add $\frac{3}{4}$ lbs of sugar per pint of mixed juices. Boil rapidly till setting point is reached.

Elderberry Wine: One gallon of excellent wine can be prepared from 2 lbs of elderberries. For recipes and instructions consult "Home made Wines, Syrups and Cordials", published by the National Federation of Women's Institutes (first published 1954).

BADGER SURVEY OF THE EDINBURGH AREA

During the past year a start has been made on the badger survey of the Edinburgh area, under the auspices of the Mammal Society of the British Isles.

There has been no previous survey with which to compare records, although Evans in the Mammalian Fauna of the Edinburgh District (1892) gives fourteen scattered references throughout the Lothians. Miss Baxter and Miss Rintoul in the Fauna of the Forth Area (1935) give rather more place names where badgers have been seen, trapped or shot, but the majority of references are for the end of last century. Amongst the most interesting records are those of Charles Campbell, who described the Dalmeny colony in 1897, and the Corstorphine Hill colony in 1904, both articles being published in the Transactions of the Edinburgh Field Naturalists' and Microscopical Society.

By the end of the first year thirty setts had been located and fully recorded, and the approximate positions of twenty to thirty more have been noted and will be recorded during the coming year. The completed records have been returned to the Mammal Society, but duplicate records have been kept for future reference. Setts are also being marked on 10 Km square Ordnance Survey maps ($2\frac{1}{2}$ in. to the mile), so that in the future the sites of these setts should be quickly found with the aid of the appropriate maps and records. These maps and records are available to any member of our society who wishes to see them.

It is known that badgers were introduced to Dalmeny Park twice during the 1890s having become extinct in the area, and so far the survey has been attempting to cover the spread from these introductions along the sides of the River Almond and the Buchtlin Burn to Corstorphine Hill, along the Gogar Burn and throughout the Gogar and Ratho areas. Setts in these areas are never far apart, usually being within half a mile of each other, and fifteen are within the city boundary. The majority are probably less than thirty years old judging by information obtained from farmers and gamekeepers, but frequently where no history is available and the sett is of considerable size one presumes the age to be greater. Of the thirty recorded setts, 7 had over 20 entrances (though not all were being used at the same time), and 20 had 8 or fewer. Excluding the very large setts four entrances was the average for the remainder. Some of the very large setts could have started as two or three separate ones placed quite close together, which through constant enlargement lost their separate identity, and became continuous with each other.

While working on the survey a note was made of those setts that were frequented by foxes. Foxes were the sole occupants of four of the smaller setts which badgers had temporarily vacated, and they were in joint occupation of two of the larger ones. Furthermore, in this same area only one fox den was found which did not have the appearance of being primarily a badger sett. It seems probable therefore that foxes will not dig for themselves in an area that is plentifully supppied with badger holes. It

also means that frequently badgers are blamed for poultry killing that is the work of foxes. Several complaints of this nature were followed up, and a careful search of the area made, poultry remains usually being found outside a fox-occupied hole within a quarter of a mile. Two accusations, however, were well founded for one badger was caught inside a henhouse and shot; another was watched by torchlight while it devoured a bantam!

This dual occupation of setts is of considerable importance to poultry farmers and gamekeepers who sometimes find that they cannot keep down the number of foxes when there are too many badger holes in the area. Around Edinburgh there has been a fair degree of control, one third of the setts having been closed at some time during the past three years. Most of these have been re-occupied within two years. Strangely enough, Corstorphine Hill is one area where foxes do not use the badger setts. Any information regarding the foxes there would be most gratefully received.

It is interesting to read that is was for the benefit of the foxes that badgers were introduced to Dalmeny Park to reduce the incidence of disease, particularly mange. Now that the badgers have provided plentiful holes and the foxes are healthy, foxhunting has ceased so close to Edinburgh and the badger is now in trouble for having done his job too well!

The sites chosen for the setts are varied, but most are in belts of trees on riverbanks or between fields, usually on sloping ground and often at the junction of a sloping bank with a level field. All have had a reliable water supply within half a mile and usually much nearer. One sett has been dug in an old ash dump and another has spread into a refuse dump. One small one has been obliterated by building operations, and a large one near-by has suffered gross damage and loss of cover but so far has not been deserted. Two more have been badly damaged by digging and have been deserted meantime. All have very good natural cover except for one in the middle of a sloping field where cattle are usually grazing and there is no cover whatsoever within fifty yards.

Considering the proximity of many of the setts to busy roads, it is surprising that there have not been more toad deaths. In fact it is only occasionally that badgers are seen on the roads in the headlights of a passing car.

During the coming year it is anticipated that additional information will be added to the area already mapped, that the Currie and Balerno areas already partially covered will near completion. A start has been made on the area immediately south of Edinburgh where badgers had become extinct last century when "----through the accidental circumstance of a gravid female escaping from the kennels at the Inch, in the spring of 1883 they were again introduced to the district. So soon as --- badgers had been seen at Edmonstone --- Sir John Wauchope gave orders for their preservation." (Tom Speedy in Craigmillar and its Environs. (1892)).

Elizabeth Farquharson.

THE LOTHIANS WILD ORCHIDS

Orchids are universally acknowledged to rank amongst the most singular and most modified forms in the vegetable kingdom. So said Charles Darwin, and if the word singular is construed to mean eccentric or strangely behaved no truer statement could have been made. During the last 40 years I have met botanists who have found the wild orchids very difficult: it was this very difficulty that whetted my appetite and led me to study things orchidaceous. After doing two years research on Dactylorchis purpurella I came to regard these flowers not as eccentric but as highly interesting and fascinating. I remember being introduced to the "Curly-Doddies" of the country people 60 years ago, and even after the passage of so many years the old love still holds.

In the Lothians we have none of the rarer orchids, but we do have the two Butterfly Orchids. The larger of these, Platanthera chlorantha, is a very striking flower. It is not too plentiful, but the best colony is near Haughhead, Balerno, and nearby I have found it at the edge of the Water of Leith. The smaller species, P. bifolia, is less frequent. The Fragrant Orchis, Gymnadenia conopsea, perhaps the daintiest of all our wild orchids, occurs in the same district. Indeed it was in what was known as the "Moor field" that I collected nine different orchids in 1937, including the rare bi-generic hybrid Orchigymnadenia heinzeliana (Dactylorchis fuchsii X Gymnadenia conopsea), a plant that I first collected near Ninemileburn in 1934. At one time the Fragrant Orchis was seen at its best at Lonely Bield, Carlops, but the colony was sadly depleted with so much grazing. The white form, flore alba, used to occur at the same place. Quite near to the fragrant orchis colony one could find the little White Hill Orchid, Leucorchis albida, but it doesn't show up every year.

In the woodlands Neottia nidus-avis is usually found under the pines, and Goodyera repens continues to flourish although somewhat less frequently than it did. The best colony of this species was at Bolton Muir in the pre-war days of the old wood. It's a sweet little orchid bearing a resemblance to Spiranthes. Another orchid of the woodlands, Epipactis helleborine, with long spikes bearing flowers of green and purple, is not plentiful: it is perhaps seen at its best at Dalmeny. Althouth the Tway-blade, Listera ovata, also occurs in woods it resorts to all kinds of habitats. It even occurs on spent shale, producing extremely robust spikes. On the same formation, however, a very small form with pale green flowers is also found, which is caused by some restricting influence of the soil.

Members of the Society who have been on the outings to Aberlady and Dirleton will remember the Frog Orchid, Coeloglossum viride, another rather dainty little orchid and a species which one is always glad to see. It is not too frequent.

In the Lothians we have one species of Orchis, the early O. mascula,

and three species of Dactylorchis, D. purpurella, D. incarnata and D. fuchsii, and the sub-species D. maculata ssp. ericetorum. Of these the most common is D. fuchsii, and O. mascula is the least common. The Little Purple Orchid, D. purpurella, is not particular as to habitat, since it can be found in the woodland, on the roadside, or even in water. The Luffness orchids - D. incarnata - are very well known.

The broad lipped D. maculata ssp. ericetorum, which is seen at its best among Sphagnum, flourishes on Balerno moor. With regard to this orchid Dr. Vermeulen once asked if I would go so far as to make two distinct species, one Orchis elodes and the other O. ericetorum. At that time (30 years ago) I suggested O. elodes var. ericetorum, since the type species was purely bog-loving, and very robust in such localities. In association with Polytrichum communis and Calluna vulgaris, on a limestone formation, there was a very puny form of the same species. Here was a case of calcifuge changing over to a calcicole. This example serves to illustrate the "strange behaviour" of at least one of our wild orchids.

W. Handyside.

GENERAL NOTES

It is regretted that very few general notes have been collected this year, but it is hoped that this section will be enlarged in the future. All records here refer to 1965.

Ornithologically, Mr. R.W.J. Smith records that the easterly winds in mid-August have brought over a lot of Scandinavian waders. He saw 2 Spotted Redshank, 6 Ruff, 2 Little Stints, 2 Green Sandpipers and a Temminck's Stint at Aberlady and Tyninghame. Strong winds and high seas caused some damage amongst the terns at Aberlady. Mr. M.B. Usher records seeing tern's eggs lying in the drift line there in late June. Mr. Smith is working on the Great Crested Grebe and Duck census and the Common Bird census, and reports that a new Seabird Group is emerging.

There are a number of botanical reports. Mr. W. Handyside reported the fine displays of Potentilla tabernaemontani (Spring Cinquefoil) and Helianthemum chamaecistus (Rock Rose) on Arthur's Seat. At Leith Docks the usual Polygonum lapathifolium (Pale Persicaria) occurred and a fine colony of Melilotus officinalis (Yellow Melilot) and Reseda lutea (Wild Mignonette) was seen. A double-flowered form of Chelidonium majus (Greater Celandine) was found at Levenhall; a white flowered form of Geranium pyrenaicum (Mountain Cranesbill) was seen at Hallyards; and

Cichorium intybus (Chicory) cropped up at Portobello. In East Lothian, Mr. Usher records a 'clump' of 16 spikes of Listera ovata (Greater Twayblade) at Aberlady, and Mr. Handyside reports only two plants of Ligusticum scoticum (Lovage) at Dirleton. An interesting record is that over 30 plants of white heather (Calluna vulgaris) were found in an area 50 yards square on Castlelaw Hill. White heather is also frequent within the Edinburgh city boundary on Caerketton Hill.

Migratory insects seem to have been uncommon. The Silver Y moth became frequent during August. The only Red Admiral Butterfly reported was seen near the Wolf Craigs, Pentlands, by Mr. Usher on the 19th September. Members may be interested to know that the spider Silometopus incurvatus has occurred at Long Niddrie. The description of the female of this rare species is based on this material and is now in press.

Mr. Hall states that records of Reptiles and Amphibia are required from all areas of Scotland. If members do have records would they please contact him.

The Secretary also reports that the Society's membership stands at 355. This can be compared with 208 in 1915, and about 150 during the 1940s. The coming winter session promises to be interesting. After the A.G.M. in October Miss Robertson will be speaking about the West Indies. Mr. Tom Weir is "Looking at Scotland" in November, and two Nature Conservancy officers, Mr. J. Grant Roger and Mr. R.N. Campbell, are speaking in December and February. Professor J.N. Black will address the Society in January. A Conversazione in the Royal Scottish Museum will be held in February. Looking ahead, National Nature Week 1966 will be from Saturday 23rd April till 30th April. The theme will be "Living with Nature".

THE FORTH ISLAND BIRD COUNTS

The islands of the Forth offer a remarkable variety of sea-bird habitat and species. Two of these islands - the Bass and the May - are well known and visited regularly by many people, but less information is available for the others. It was to try to rectify this lack of balance that it was decided, in 1959, to organise a yearly visit by E. N. H. S. members to some of the other islands to ascertain what sea-birds were present and the changes, if any, in their populations.

The most exciting thing about our counts is that there are spectacular changes. The outstanding example is surely that of the Lamb. In 1955 the only breeding birds were 2 pairs of Shag, some Eider and lots of Herring Gulls. On our latest visit in 1965 the Shags had increased to 128 pairs. Newcomers were Cormorant with 177 nests, 116 nests of

Kittiwake, 4 pairs of Razorbills, at least 20 pairs of Guillemots, one pair Fulmar and several pairs of Lesser Black-backed Gull. The reasons for this increase are uncertain but possibly some of it is due to the lessening of human predation. Whatever the cause it will be of interest to follow events in the years to come.

We are mainly concerned with five islands. In Inner Forth Inchmickery is low-lying, very small and choked with ruined Nissen huts and concrete buildings while Inchkeith is large with steep slopes and cliffs and lots of luxuriant vegetation. The East Lothian island of Craigleith is similar to Inchkeith while Fidra shares the honour of 'tern breeding-site' with Inchmickery. The terns on Fidra are on low-lying grassy rocks but the island has a variety of habitats including good cliffs. The Lamb is merely a large rock angling from the sea and ending abruptly in a steep cliff face.

The Cormorant colony on the Lamb started off in a small way in 1957 with five nests. There was no previous satisfactory record of Cormorants ever having bred in the Forth and it was hoped that the colony would survive. In 1959 Craig Tait and the writer landed from a two-man canoe and counted 44 nests. Two years later there were over 100. In June of this year the total had jumped to 177 nests and one wonders when this tremendous upsurge will lose its momentum. It is interesting that the Cormorant does not breed until its fourth or fifth year and it would be 1963 or '64 before any major contribution to the colonies strength could have come from its own offspring.

During the last decade the number of Shags has increased enormously in the Forth and this is reflected in our counts. There were some 35 pairs on the Lamb in 1959 and a "seething slum" of 128 nests on our latest count. A very interesting site on Craigleith was noted in 1961 when three nests were discovered near the centre of the island among a labyrinth of heavy jumbled rocks. This is apparently a successful venture inland as the number had risen to 38 by 1965. An even more exciting record this year was of a Shag with a complete (but empty) nest on Inchkeith, the first record for the Inner Forth Islands.

The most spectacular view on our island trips is from a low-lying promontory on Fidra through the superb rock arch towards the mainland. On the north face of this arch the rock is sheer and was completely devoid of birds until 1964 when 2 pairs of Kittiwakes bred. From past experience one might expect a steady increase here and this year we found at least 12 nests on this cliff. This is the third Kittiwake colonisation we have recorded in seven years. On our 1959 canoe trip there were 15 nests on the Lamb and this shot up to a peak of about 115 in 1963. Last year numbers were similar and, as the cliff is a small one, it is unlikely that there can be any further substantial increase. The first colony on the Inner Forth Islands was started in 1961 with one pair on the cliffs below the North Horn on Inchkeith. With 41 nests this year this colony appears to be doing very well. An interesting follow-on of these

colonisations is that, when the Kittiwakes have become established on a cliff, they appear to attract other species of sea-bird. This has happened on the Lamb and on Inchkeith and we may anticipate a further spread of the auks perhaps into the Inner Forth.

That delightful little sea-parrot, the Puffin, has bred for many years on Craigleith which was its main site in the Forth. In the last few years however it has come back to the May in spectacular numbers and there has been a corresponding rise on Craigleith with counts of 500 offshore compared to the 75 of 1959. Even more interesting is the spread to the Inner Forth where the lush soil of Inchkeith provides excellent digging for nest holes. Single Puffins have been seen for a few years but there were 10 inshore in 1965 and an egg was located in one of three burrows on a slope adjacent to the Kittiwake colony.

The east face of Craigleith always presents a challenge. The tiers of Guillemot-covered ledges and the hundreds of Kittiwake nests glued on to the smallest projection are difficult enough to count without the added discomfort of a bobbing boat. Counts tend to be approximations and it is only the bigger changes that are apparent. Guillemots have doubled in numbers since 1960 and there may have been 500 pairs in 1965. Razorbills are much less numerous but thriving with perhaps upwards of 50 pairs. Both these species have become established on the Lamb in the last few years.

The terns are the most difficult group to count. A walk round Inchmickery sends up thousands of screaming birds of three species presenting a counter's nightmare. Only the Sandwich Tern co-operates as the large egg is easily identifiable. This is also our most erratic tern as shown in the counts. From 700 pairs in 1959 the combined Fidra/Inchmickery counts rose to 1100 in 1961. There was a crash next year with only 200 pairs - there is some evidence that the bulk of the others went north to breed at the Ythan - and since then only 300-350 have bred. The Roseate colony probably numbers around 500 pairs but a much improved counting technique is necessary before these can be separated from the Common and Arctic Terns.

The latest addition to our island fauna is the Great Black-backed Gull. This magnificent scavenger has probably bred for the last three years but proof, in the shape of a single chick on Craigleith was not obtained until 1965.

The success of the counts is due entirely to the support of our members. Trips are not always uneventful. The moment of truth comes with the step from the heaving boat to the slippery rock and some of our members have surprised themselves by their rock-climbing activities. We look forward to more excitements and pleasure in the years ahead.

R.W.J. Smith.

U F A W

The Universities Federation for Animal Welfare

While UFAW does not concern itself specifically with wild animals or conservation much of the activities of the Edinburgh Branch has been associated with these subjects, in the hope that a better knowledge of animals and birds will lead to a more humane attitude towards them. To this end some of the meetings of UFAW in the winter and spring terms deal with British birds and mammals, how the laws relating to them are framed, and about their breeding and other activities. Every summer (weather permitting) a small group of members lands on the Bass Rock or the Isle of May to study and photograph the bird life.

Over the period 1962 - 64 the most spectacular activity of UFAW, of which most people will have heard at least something, was the clearing of vegetation and mud from the Marl Loch at Aberlady. Initially this pond was completely covered with a raft of dense vegetation, when the Aberlady Bay Committee decided that a stretch of open, fresh water was desirable - UFAW volunteered the man-power. With the help of the Nature Conservancy, East Lothian County Council, Council for Nature, two large companies (Crudens and Carmichaels) and numerous individuals two large open tracts of water were established on the loch. Significantly, the first breeding record for Mute Swans on the reserve was made on the Marl Loch in 1965. Unfortunately, UFAW has not found a project to take the place of the Aberlady efforts, but with luck the Lothians Wild Life Trust may be able to suggest something in our line.

Finally, though we are a University Society, anybody interested in a meeting's topic will be made welcome. Our first meeting next session is Walt Disney's film "Vanishing Prairie" on Thursday 21 October in the Royal (Dick) Vet. College.

K. Holt.

FORTH - SHORE FAUNA SURVEY

The survey has been carried out over the last 6 or 7 years and has been restricted to three districts (Port Seton, Joppa and Trinity), though other districts have been visited and finds recorded. A survey of micro-organisms has also been carried out in the Trinity district, and has proved successful. It is hoped that, at a later date, this type of survey will be carried out at the other two districts. It is not proposed to give a list of the finds

in this report, but to give an outline of what is happening to the fauna on the shores of the Forth near Edinburgh.

Port Seton: Some 30 different types of animals have been recorded from off the rocks and in the pools behind the baths. It is worth noting that over the last few years the mussel bed has decreased in size, yet whelks, green crabs, obelia and various types of marine worms have become more plentiful. Whether the building of the new power station at Cockenzie has had anything to do with this or not is hard to say. It has also been noted that fauna has vanished from behind the baths, and this may have been caused by the installation of an oil-fired boiler for heating the plunge (slight oil pollution).

Among some of the interesting common finds have been Sea Cucumbers, Sea Slugs, Brittle Starfish, and Dog Fish eggs.

Joppa: This is a very delightful spot in the spring, when one can find hosts of things in the rock pools. Bivalves and Molluscs over the past few years have become plentiful. I think that this is due to the heavy pollution of that part of the coast by sewage from Edinburgh and waste matter from the various mills on the River Esk. It is interesting to note that the Dog Whelk has increased in number by 40% (11 per square yard) over the last 4 years, and there has also been an increase in the Hermit Crabs by 12% (7 per square yard) over the same period.

Trinity: A most interesting place with a slightly different type of fauna and most certainly a wide variety of small life. Again I think that this is due to pollution and also because the shore is shale.

We have not yet found fish eggs, but Molluscs are to be found in plenty.

In the next report we will endeavour to include complete lists of our findings, district by district.

Geoff. S. Wright.

FRESHWATER FAUNA

The country around Edinburgh abounds in a variety of freshwater habitats, many of them practically on our doorsteps and each one varying not only in its fauna and flora but in the variety of countryside and scenery of its setting.

During the past few years, outings of the Society have taken us into the Pentlands to visit Loganlea and Glencorse reservoirs and the burns that run into them; to the canal between Sighthill and Ratho; to Dunsapie Loch in Queen's Park; and back to the Pentlands to visit the shores of Threipmuir and Harlaw reservoirs.

At certain times of the year most of the bodies of water are teeming with a variety of small animals, and at almost any other time a dip of the net, or a look at the undersurface of a stone, will produce some interesting animal. Over the range of easily accessible habitats it is possible to find a wide assortment of animals. For example, there are stonefly and mayfly larvae, net-building and case-carrying caddis worms, the larvae of various flies from midges and mosquitoes to crane-flies, snails and limpets, sand-hoppers, water-fleas, flatworms, roundworms, leaches and a host of other creatures.

Not all of these are to be found in the same place or at the same time, but, as in most other fields of natural history, part of the pleasure of going into the field lies in knowing where and when to look for the common and the uncommon species, and in finding out what part is played by each member of the varying communities.

D.H. Jones.

NOTES ON THE KEEPING OF TOADS

Over a period of 20 years I have kept representatives of all the various species of amphibians which were at one time to be commonly found in the Lothians. My stock at the moment is limited to three common toads which have been in my possession for the last nine years. Some recorded facts in regard to these fascinating creatures may not be without interest.

1) Their Longevity. It may not be realised that the life-span of a batrachian is anything up to 13 years, though I suppose that in the state of nature very few even come anywhere near this age. They do not reach maturity till they are five years old, and the percentage of tadpoles that survive the larval stage and reach maturity must be very low indeed. The toads that I have at present are at least twelve years old.

2) Their diet. The insect and other forms of life to be found in a small garden is sufficient to supply all their needs. The toad can live on a diet of earth-worms, millipedes, centipedes, wood-lice, caterpillars, and is particularly fond of a diet of ground beetles (large and small) to be found under large stones. It is only on occasion that one will devour a devil's coach horse beetle; most often having snapped up one it will be discarded. Normally toads will only eat prey that is moving, but I had one toad that would snap up flies from the window-pane when held in the hand, and then from doing that would eat bits of meat and even sponge cake stuck onto the pane - exceptional, and possibly an example of the conditioned reflex. One might also mention the different approach to its prey by the frog or the toad; the frog tends to jump after a beetle, whereas the toad tends to run after it, and is less impulsive in its movements.

3) Hibernation. It is important to see that in their hibernation quarters toads are well covered with leaves, and that there is a sack round the vivarium so that the frost cannot penetrate to where they are lying burrowed in the mud; if it does it is fatal to them. If the weather is mild they will remain active till the end of October. Once they have begun to hibernate they usually remain torpid till some date in March, though they make a temporary re-appearance if there should be a spell of mild winter weather.

George Carse.

THE

EDINBURGH

NATURAL HISTORY SOCIETY

NEWS-LETTER

1966

This year the Newsletter of the Edinburgh Natural History Society is appearing in the same form as last year. After printing our first Newsletter many members of the Society expressed their satisfaction with the ideas behind it, and with the Newsletter itself. In fact, and I am slightly sorry, there has been no word of criticism. Nevertheless, changes will occur next year as there will be a different Editor.

It is a pleasure to be able to announce that Dr. John Marshall is to take over the Editorship. He is mainly interested in Botany, and will be known for his National Nature Week talk on "Doorstep Ecology". His address is the same as mine - University of Edinburgh, Department of Forestry and Natural Resources, 10 George Square, Edinburgh 8.

Could I please ask for more short notes of general interest next year? I am most grateful to members of the Society who sent notes in this year, both before and after I sent out a small batch of postcards. The interesting feature of the notes received is that nearly every set of notes had some reference to butterflies. Perhaps entomology - the study of insects - is again on the surge in Edinburgh.

Finally, I would like to thank everyone who has helped me in the preparation of Newsletter 1966. I would particularly like to thank Dr. W. J. Guild and Mr. G. Finnie of the Edinburgh School of Agriculture for printing the Newsletter, and Mrs M. J. Swinton who has willingly undertaken the typing.

Michael B. Usher.

Post script.

Since writing the Editorial, Dr. Marshall has accepted an appointment in Australia, and he regrets that he will not be able to take over as Editor. I would like to thank him for his help in the preparation of this Newsletter, and to wish him well in Australia.

The Society must have an Editor if the Newsletter is to continue. If you would like to take on the job, or if you know of anyone who would, could you please contact me?

M.B.U.

A HISTORICAL INTRODUCTION - Continued.

The Editor has asked me to bring Dr. Milne's history of the Society up to the present date, which is the reason for the present article. From the 6th of October 1921, up to which date Dr. Milne brought his history to the present time during a considerable part of which period I have been a member of the Society, changes have of course taken place, but not in our constitution or rules (except to a minor extent). The chief changes are here recorded not so much for the benefit of present members most of whom have seen them happen but for the instruc: tion of members now hovering on the verge of majority, who, round about 2000 A.D., may like to have in front of them a note of these changes as they appeared to the older members in 1966. These chief changes have been in our place of assembly, in the character of our activities and of course in the personn: el of the Society.

First, for many years meetings used to be held in a rather small room forming part of the Royal Scottish Geographical Soc: iety's premises in the Synod Hall. During the years of war, and for some time afterwards, this was ample, but the Society's mem: bership which declined while the Second World War lasted, started to increase after that War's end, ultimately reaching a size which made a resort to ampler surroundings inevitable. After various lodgments, we came to rest, though perhaps not perman: ently in an excellent room of St. Thomas of Aquin's School in Chalmers Street. Here the floor space suffices to accommodate our larger audiences the School is centrally situated and con: venient in most respects. How is it being used and how do the Society's present winter activities differ from those of, say, fifty years previous? The number of winter lectures, seven or so, remains much the same as formerly but the presentation of these has altered considerably. In earlier days, despite the invention of the "magic lantern", slides did not invariably accompany a lecturer's observations. This was a practice that came into much fuller operation later on and after, say 1930, most speakers exhibited slides, usually of their own making from their own photographs and all of the size $3\frac{1}{4}$ inches square, and all in monochrome (with the rarest exceptions). The inven: tion of the "miniature" camera and, more recently, of the modern colour film, has altered all this. Nowadays all lectures are illustrated by a showing of miniature colour slides. These are usually excellent in quality though not as formerly process: ed by the photographer. The Society has had excellent lec: turers in its own ranks, but it has had many superb contribut: ions from outsiders such as Dr. Feaver from Aberdeen with a magnificently illustrated account of wild nature in the United States and Mr. Lea McNally, the game-keeper who showed out: standing/

outstanding talent in his presentation of the case for birds of prey and the very find photographs which he had taken.

If there is one addition to the Society's activities which has perhaps given more pleasure than anything else, it has been in the character of the summer excursions. Numerically these re: main much the same as in earlier years, but in 1958, a new phase was entered on. This was the holding of excursions involving a week-end stay of usually three nights in a region unapproachable in a single day. Can I (and those who shared its delights) ever forget the thrill of our first week-end spent at the time of an Edinburgh Spring Holiday at Aviemore? Aviemore,readers of 2000 A.D. may be interested to know was a vastly different place in A.D. 1966 and a vastly better place, I am prepared to prophesy. For some of us, it meant a first sighting of crossbills, crested tits, Capercailzie and a (belated) flock of waxwings. Also (for the more energetic party able to climb Cairngorm) the finding of a golden eagle's nest with one egg. Later excursions introduced us to Glencoe, Crinan, Birnam, Newton Stewart (the energetic con: tingent there climbing the Merrick), Arnside, and other places, the Osprey, Sclavonian Grebe and Peregrine in their nesting haunts, the Vernal Squill, the Bird's eye Primrose, the Green-winged Orchis, the Adder's-tongue fern, and other uncommon plants.

The supposed austerities of scientific investigation on these week-endings were alleviated by the pleasurable social contacts members were able to make with one another. I hope the Editor will allow me to insert here that I can think of at least three happy marriages between members which eventuated as a result, it would appear, of these social occasions. Here I quote the hope expressed by a President sixty years ago that "new members should feel they "(were) entering a brotherhood or sisterhood in which they would "find kindred hearts beating in sympathy with their own". An admirable sentiment which 2000 A.D. will probably echo as heartily as does A.D. 1966 - even although it may not always have the conse- quences reported as above.

Personnel - has changed and will continue to change as the years advance, of course. Here I should like to insert a refer: ence to qualities pre-eminent in the early days of my own member: ship - the kindness and helpfulness of the older, more experienced members. The Society will, I have no doubt, show similar qualit: ies in the future as I like to think my own older contemporaries presently exhibit. I would like to make special reference to those, no longer with us, who rendered the Society very great ser: vices indeed - Mr. A. A. Pinkerton, Secretary for many years, Mr. Bruce Campbell, Treasurer for almost as long a time, and Mr. Andrew Stenhouse, a singularly gifted, charming and helpful member of Council. There were many others. I salute them all in respect: ful - and affectionate - memory.

The/

The future? The love of Nature will continue to inspire new and enthusiastic devotees. I speak of "the love of Nat: ure" which is much more than an interest purely scientific, otherwise Wordsworth's reference to "those barren leaves" would be pointless. The love of Nature which brings us into a realm more magical than that of every art (music perhaps excepted) - will we under its influence continue to look at lakes and peaks and lonely shores and butterflies and birds and flowers with the same unfailing delight always? Some of us will, a few perhaps, but the few will have to battle for their inheritance. The enemies of Nature in this year 1966 (is it still "Anno Domini" in the minds of contemporary man?) are legion. Unless they are fought as they must be - what then of Nature and of Natural History Societies and in the long run - of Man? The year 2000 ("A.D." we hope) will know the answer.

P. W. G. Gunn.

WINTER LECTURES 1965/66

A successful series of winter meetings were held in the hall of St. Thomas of Aquin's School. At the A. G. M. in October Mr. Derek Wells took office as President, in succ: ession to Dr. Milne. One of our members, Miss J. E. P. Rob: ertson, gave an interesting illustrated account of her visit to the islands of St. Vincent and St. Lucia in the West In: dies. The well-known naturalist, climber and journalist, Mr. Tom Weir, addressed a capacity audience at the November meeting on "Looking at Scotland". Mr. Weir, with the aid of a magnificent collection of his own colour slides, took us through the length and breadth of Scotland, visiting many well-known and not-so-well-known places in the Highlands, Is: lands and Lowlands at all times of the year.

Miss E. P. Beattie is a well-known Botanist member of the Society, and at the December meeting she addressed us on "A Comparison between the Flora of Scotland and Norway", giving us an interesting account of a visit made to Norway in 1963. Her lecture was illustrated with a splendid sel: ection/

selection of her own colour slides. Very much in the minds of naturalists at the moment is the effect of chemicals on wild life. This was the subject chosen by Professor Black, of the Chair of Forestry and Natural Resources at Edinburgh Univ: ersity at the January meeting. After a general survey Prof. Black gave an account of an examination of possible factors involved in the decline in fertility of the Golden Eagle in the Scottish Highlands. This illustrated how a scientific invest: igation of the effects of toxic chemicals is pursued.

A "Conversatione" was held at the beginning of February in the Royal Scottish Museum, by courtesy of Mr. Waterston of the Natural History Department. Mr. Waterston and members of his staff conducted members through the taxidermy department, where the preparation of skins was demonstrated. The reference store of birds and insects was made available. At the close of the meeting light refreshments were served in the cafeteria adjoining the Lecture Hall.

The "Seals of North Rona" was the subject of a talk by Mr. Niall Campbell of the Nature Conservancy, at the February meeting. With the aid of some fine slides and a film Mr. Campbell gave an account of a visit made to North Rona by the Conservancy for the purpose of counting and branding the young seals. This proved a most interesting evening as many of our members had visited the large grey seal colony on the Farne Islands.

Nora F. Henderson. Secretary.

SUMMER EXCURSIONS 1966

The opening of this years summer programme coincided with the start of another National Nature Week. For this our Society joined with the Edinburgh Geological Society and the Botanical Society of Edinburgh to arrange a programme of six outings. On the whole these were favoured with good weather and the response from both non-members and members was gener: ally very good. As on the occasion of the previous National Nature Week, the shore at Joppa was a favourite excursion for the younger ones and even in the restricted area left to the party by an unfavourable tide, their interest and enthusiasm were/

were well rewarded.

As a consequence of the week's activities the society not only fulfilled its proper function in a national event, but also made many new friends and some new members.

Our usual summer activities began with an outing to the Lomond Hills led by the Honorary President, Mr. Gunn, and they have continued with excursions to places both old and new. Among the former, the ever-popular Island Bird Counts and the Shore Fauna surveys have been continued by Mr. Smith and Mr. Wright, respectively, and outings to the Hirsel and to the Farnes once again attracted many particip: ants. Among the 'new', it has been very pleasant to wel: come two of our younger, enthusiastic members as leaders of ornithological outings and some professional leaders from outside the society. Moth-hunting with Mr. Pelham-Clinton (Royal Scottish Museum) , a fungus foray with Dr. Watling (Royal Botanic Gardens) and an introduction to small mamm: als by Mr. East, (Nature Conservancy) were not only very instructive, but extremely enjoyable.

Perhaps not quite so enjoyable at the time, but cert: ainly a most memorable outing for fourteen members of the society was the day spent at the mercy of rain, wind and cloud above Tala reservoir. Abandoned by the bus in this wilderness, it soon became apparent whose clothing was waterproof only in name - and also who were the more ex: perienced in coping with such conditions. Certain 'sen: ior' members of the party disappeared quite early in the proceedings, reappearing from various sheep shelters some five hours later, comparatively fresh, warm and dry.

Unfortunately, that was not the only outing of the season to be marred by the weather and I believe that many members have had their clothing, (but not their spirits) well and truly damped on more than one occasion. However, we can only be optimistic for next season and hope that among repeats of other spoiled outings Mr. Wells and Dr. Milne may succeed in having their outing to Arthur's Seat at the third attempt.

The weekend excursion this year was made to Kirkcud: bright and our thanks are due to Professor Bell for acting as leader. Despite some wet and windy weather the weekend was a success for those who went. However, from the point of view of the Society, and from financial considerations, it was far from successful because so few people attended and therefore the coach had to be hired at a considerable loss.

Many/

Many people have co-operatived in the preparation and exe: cution of this programme of outings and I would like to express my thanks to them all, not only to those who led and instructed, but also to those who followed and learnt.

David H. Jones,
Asst. Secy., Summer Excursions.

GENERAL NOTES - 1966

The notes that have been sent in this year have often in: cluded references to butterflies, and it istherefore with in: sects that this summary is started. Reports of the Painted Lady butterfly on June 18th have been made by Mr. R.W.J. Smith (6 on Fidra), Mrs E. Hamilton (4 feeding on wild thyme at Aber: lady) and Mr. W. Handyside (2 on Aubretia flowers at Black: ford Hill). Mr. M.B.Usher saw 3 of these butterflies on Bass Rock on 25th June, and a number of them around Edinburgh in early September. The June specimens must have migrated to Scotland, and the late summer ones are from eggs laid in June. Only one Red Admiral, on September 3rd, was seen by Mr. Usher at Aberlady.

Mrs. Hamilton saw the first Small Tortoiseshell on April 2nd, and during the summer these have been abundant on thistles at Aberlady. Mr. W.B.Grubb has sent records of all butter: flies seen by him since 1957. He has seen the Common Blue and Small Copper infrequently in recent years, but both species have occurred on Arthur's Seat this year. The Small Copper is also recorded from Blackford Glen. Mr. Grubb records that the Meadow Brown was numerous on Arthur's Seat in mid-July, and Mr. Usher found groups of three butterflies commonly sitting on thistle flowers. This year the Dark Green Fritillary has been seen in the Lothians. Mr. Grubb asks if anyone has seen the Peacock recently.

There are plenty of records of birds. Mrs. W. Robertson describes how, in the Moorfoots, she saw a well-grown young Curlew "freezing" in a tussock until she slipped her hand under it. There are a number of first hearings or sightings. Mrs. Hamilton heard the Chiffchaff behind Newbattle on April 24th, and Mr. Usher heard the Cuckoo in Boghall Glen on April 30th, and the Corncrake on May 7th. At Flooerston, Andrew Ramsay saw the Wheatear on March 19th, and the Ring Ousel on March 26th. He records that at Roslin the Sand Martins arrived on/

on March 31st, House Martins on April 19th, Swallows on April 11th and Willow Warbler on April 23rd.

During the winter, Mrs Hamilton saw 40-50 Bramblings feeding amongst stubble in a field lightly dusted with snow by Newbattle Woods on January 18th. By the 24th there were 10-15 feeding in the wood itself. Andrew Ram: say records a Grey Phalarope, 2 Red-necked Grebes, and 2 Slavonian Grebes at Aberlady in the first week of April. Douglas Baty records as "old news" the occurrence of the Courser at Aberlady during the winter. Also at Aberlady, David Bartholomew saw a Black-throated Diver on the Marl Loch in mid-June. The N.E. wind of August 13th and 14th brought a crop of Scandinavian Waders. Mr. R.W.J. Smith records Wood Sandpiper at Aberlady, and Curlew Sandpiper, Spotted Redshank and 55 Ruff on flooded fields at Tyning: hame. Also at Tyninghame, he records that in May and June there was an escaped Chilean Flamingo.

The Pentland Hills have been keenly watched by Andrew Ramsay. For the first time for a number of years a pair of ravens have built a nest, and by March 13th one bird was sitting on 6 eggs. Sadly, these disappeared between 19th and 26th March. Andrew has also noted 6 Pintail and 27 Shoveler on Threipmuir Reservoir in April, Sparrow Hawk, Merlin and 2 Crossbill on April 3rd at Glencorse Reservoir; large flocks of Fieldfares and Redwing in the pines at Glencorse in April; and a female Gadwall on Blackford pond on April 30th.

In the Firth of Forth, off Fidra, Mrs Smith records shoals of the combe jelly, Beroe cucumis, after east winds on June 18th.

Mr. W. Handyside provided some interesting plant records, remarking on Potentilla tabernaemontani, Filipendula vulgaris, and Geranium sanguineum in Holyrood Park. He records dense masses of Veronica filiformis, an introduced plant, from many places around Edinburgh, and concludes that this species is increasing. At East Linton Impatiens parviflora and Parietaria diffusa were seen. The Marl Loch at Aberlady has also proved interesting with a fine display of flowers of Utricularia vulgaris. This species and Hippuris vulgaris are colonising the cleared parts of this Loch.

The flowering times of Silene acaulis have interested Dr. J. Marshall and Mr. Usher. The species was coming into flower on the Island of Rhum on May 12th. At between 2500' and 3000' in Glen Clova it had finished flowering on July 17th. On this day no flowers were seen/

seen, but one flower only of Saxifraga oppositifolia was found. However, on July 19th on Ben Lawers Silene was at the height of its flowering season, and many flowers of the Saxifraga were also found.

Mr. Handyside sadly records that Coronilla varia no longer exists at Loanhead due to ground clearance. This was the main station in the Lothians for this vetch.

A short note from Mr. Tweedie. At the A.G.M. in October he was presented with a V.H.F. radio by Dr. Milne, in recognition of his long service (about 17 years) as the Society's Hon. Treasurer. He wishes to thank all subscribing members for this presentation.

Finally, the Editor would like to thank people who have sent in short notes. He would be very pleased if far more were available next year so that this section can be more int: eresting, and perhaps reflect more of the Natural History 'finds' in the Lothians.

WALKING IN SCOTLAND

The opening of the Highlands of Scotland to the walking public is a fascinating topic and in it scientists played a considerable part.

Professor John Hope of Edinburgh was, in the 1760's, making efforts to imcrease knowledge of the plant life of Scotland. He obtained a grant with which he was able to finance several botanical tours by James Robertson. The manuscripts of Robertson's tours of 1767 and 1771 are in the National Library1. The scripts are in a large-size copper-plate handwriting, are easy to read, and full of interest. Robertson had many difficulties to face - in: accurate maps, wild weather, and primitive accommodation. Thus, he says "In examining this tract of desert between Diebidale and Strath Oykell I wandered three days all alone till night-fall, scareely knowing whither I went. The night I was obliged to pass in one of the miserable huts, which ill compensated the fatigues of my lonely strayings/

strayings thro' the day. I was obliged to live among peo: ple whose language I did not understand". He was in Strath Dearn at the time of a village wedding, "Having learned there was to be a wedding and that the people were now assembled in the bride's house to wash her feet, I re: solved to go thither. When we entered the bride's house the company, far from resenting our intrusion, gave us a hearty welcome, placing us in the best seats, and where there was least smoke.... The house was lit by chips of fir dug out of the mosses and full of rosin....

"Before the Bridegroom came the company was abundantly dull but when he entered and gave a bumper or two of usquebaugh to each, a smile was lighted up on every face. The Fiddler was ordered to strike up. The dancing, cheer: ed by repeated bumpers of usquebaugh, continued till 6 o'clock in the morning when the company sat down to break: fast on a mess of the bowels of a sheep minced together and swimming in butter. After this followed curds and cream, then cheese, and last of all, usquebaugh"

"About half past 7 the company set out for the church, which was nine miles distant. The Bride, dressed in a tar: tan gown, a linen apron, a linen neckerchief, a large cap from which dangled two broad tails that reached almost the middle of the back, and a tartan plaid, went out first... The bridegroom followed next dressed in a blue bonnet, short coat, tartan kilt and tartan hose, with brogs. I was very much surprised to see the bridegroom put a sixpence in his right shoe, but was informed that he would walk to church withit, for the important purpose of defending him from witchcraft.... When the company set out one of them fired a gun, and the same thing was repeated in passing every village. The villages returned the salute..... After the ceremony, when the bride came out of the church, the gun was fired over her head, and the company, having refreshed themselves in a public house, returned homewards. Meanwhile in a barn three rows of benches were laid ... The wedding company arrived about 8 o'clock at night, every man leading a woman, and the brideman conducting the bride. They went directly to the barn, where the Bride's mother waited with a quantity of bread and cheese, pieces of which she threw over the Bride's head as she entered the door. These pieces were collected and eaten by the attendants. The supper consisted of boiled mutton and broth prepared in three large pots, which stood on one fire. The broth had no vegetables except oatmeal a large piece of butter, put into each pot about ten minutes before the broth was taken off the fire, covered the surface with oil..... The entertainment was given by the new-married couple, but afterwards the company paid for all their liquor.

Of/

Of this they were by no means sparing, for some of them drank at least two bottles of undiluted whiskey...".

Astronomers were not long behind the botanists. The transit of Venus was observed from the summit of Ben more in 1769. in 1774 Maskelyne, the astronomer royal, constructed an observatory on Schiehallion and spent four months there; his work must be regarded as one of the corner stones in the theory of gravitation.

Another script[2] deals with a tour made in 1758 by William Burrell. He visited Edinburgh; he ascended Ben Lomond; he makes clear that not all dishes were to his liking, "I was forced to taste Scotch Chicken Broth, bad enough to poison a Hottentot".

A bulky script[3] records a tour made by the Rev. James Bailey in 1787. He gives a very detailed account of the ascent of Ben Nevis, "The ascent of Ben Nevis is so exceedingly formidable, that our good friend the Lieutenant was well aware of the necessity of availing himself of the guides, as well as a detachment of soldiers from the Fort to carry our liquors and provisions". The ascent and descent are described with a wealth of hair-raising detail until they arrived back at the Fort after an absence of 13 hours. Bailey does not lack a little self congratulations, "The circumstances of our having had perseverance to accomplish and ascent of more than fourteen hundred yards perpendicular, and into a region of eternal frost, we thought we might, with some propriety consider as an instance of no ordinary resolution".

No walker can get far without maps and some of the present Ordnance Survey maps of Scotland are indeed magnificent productions. What an effort lies behind them! We can trace them back to Colonel William Roy, who came to Scotland in Cumberland's army in 1745. He was charged with a general survey of Scotland in 1747 but this work suffered many interruptions. Later in 1783-87 he collaborated with French surveyors to determine by triangulation the relative positions of the observatories at Paris and Greenwich, and accurate surveying might by this operation be regarded as having come into being. After his death in 1790 the work of the survey fell mainly on Captain Mudge and was confined to the south of Britain. The first account of the work of the Trigonometrical Survey was published in 1811, and it is at this time we encounter Major General Colby.

Colby was born in 1784 and was educated at the Royal Military Academy at Woolwich. He became Second Lieutenant in 1801 and was appointed assistant to Captain Mudge in 1802. His career nearly ended in 1803. Whilst trying an old pair of/

of pistols one burst in his hand, shattering his hand and mak: ing a fearful indent in his skull. His hand was amputated but he recovered and became Mudge's principal and most vigorous assistant. Colby was engaged on the survey of Scotland over the period 1813-1820. One of his assistants, Major R. W. Dawson, has left a detailed account[4] of the work which they did in 1819, after establishing a permanent camp at Corry: habbie (2563 ft.) in Banffshire in June.

The weather then was as unreliable as now for on Mon: day, 28th June "A tremendous storm of hail came on and cov: ered the ground several inches in a few minutes. The hail: stones were large and conical, with smooth bases and striated sides. The hail continued till about one o'clock; after which snow fell for an hour or so, and then sleet and rain. We were forced to be out shovelling the hail and snow from the tents while the storm lasted, and when gone the men set-to snow-balling one another as a means of warming them: selves". Colby was mainly occupied in looking for trian: gulation points. In the 22 days from Tuesday, 29th June - Wednesday 21st July, he covered 513 miles along the east coast of Inverness, Ross and Caithness. After one day's rest he was ready on Friday, 23rd July to commence a stat: ion hunt to the W. and N.W. in which he covered 586 miles in the 22 days to 14th August. Here is the first day, "Our first halting-place was to be Grant Town, at a dis: tance of 24 miles... and Captain Colby having, according to his usual practice, ascertained the general direc tion by means of a pocket compass and map, the whole party set off, as on a steeple-chase, running down the mountain-side at full speed, over Cromdale, a mountain about the same height as Corrie Habbie, crossing several beautiful glens, wading the streams which flowed through them, and regard: less of all the difficulties that were not absolutely in: surmountable on foot.... Arriving at Grant Town in about five hours and a half we dined there, and proceeded after: wards along the valley of the Spey, by the high road, to the Aviemore Inn to sleep. The distance travelled by us that day was calculated at 39 miles". The second day of 40 miles by Pitman, and over the summit of Cairn Derig to Garviemore was no less strenuous, and good food was by no means certain. When they arrived at Cluny Inn "The tail-end of a salmon was produced for our supper, but it was so stale that we were unable, even after our long walk, to eat it, and we thankfully partook of a mess of oatmeal-porridge with goat's milk; after which upon three or four wooden chairs, placed as evenly as the earthen floor would permit, and with out knapsacks for pillows and our short walking-cloaks for a covering, we settled ourselves to rest for the night". Certain of their complaints will be echoed by the modern walker, "Those/

"Those who have traversed the mountains on the western coast of Scotland in the autumn, may be familiar with the effect produced by the bites of midges, which swarm there at that season.... our arms, necks, and faces were covered with scar: let pimples, and we lost several hours' rest at night from the intense itching and pain which they caused. Even at the inns we had frequently to smoke over our meals to drive these in: sects away".

Camp was struck on 29th September after a farewell feast, "The chief dish on such occasions was an enormous plum-pudd: ing. The approved proportions being a pound of raisins, a pounds of currants, a pound of suet to each pound of flour; those quantities were all multiplied by the number of mouths in camp. Every camp kettle was in requisition for mixing the ingredients, a canvas tent-lining was converted into a pudding-cloth, and a large brewing-copper was borrowed to boil it in; the pudding was suspended by a cord from a cross-beam to pre: vent its burning, and it was kept boiling for four and twenty hours - a relief of men being appointed to watch the fire and maintain a constant supply of boiling water": Naturally the feast ended by drinking Success to the Trig!

The remaining event of the century cannot bedealt with in this short article, but perhaps the climax was reached on 21st May 1898, when the Rev. A. E. Robertson became the first person to have ascended all the mountains in Scotland over 3000 feet (the so-called Munros)[5]

[1]National Library of Scotland, MS 2507, MS 2508

[2]National Library of Scotland, MS 2911

[3]National Library of Scotland, MS 3295

[4]J.E. Portlock, Memoir of the Life of Major General Colby, London 1869

[5]Tom Weir, The Scots Magazine, 1964 80, 452.

F. Bell

A WOODLAND CENSUS

The morning of the 26th May 1966 was sunny and warm. There was a light easterly air. The wood was filled with peace and the quiet cadences of Willow Warblers. Two Wrens shouted defiance at each other in loud song and the monoton: ous chirp of a Spotted Flycatcher's song called attention to it in the 'dark wood'. A Blue Tit disappeared down a hole in a rotten stump of tree a foot above the ground, where a quick look disclosed a nest full of downy young. This app: ears to be a favourite site as there was a similar nest less than a hundred yards off. Three Whitethroats chased in a tremendous excitement display at the nettle clearing. A pair of Bull-finches were calling softly and feeding on Elm fruits.

We first heard then saw a cock Blackcap high in the trees feeding on insect larvae-and still singing gloriously. Later two of them chased and sang furiously. A small dove which passed swiftly over, round and back proved to be our first Collared Dove. There was a Garden Warbler which sang loudly and showed itself briefly above a thick tangle of Bramble and wild Rose,and the handsome, swaggering, roguish Magpies confident yet wary rolled across the grass. This was the seventh visit of 'our' wood this year.

The Haveral Wood lies some half-a-mile north-east of Loanhead. It is about 200 yards wide, a quarter of a mile long and a little under twenty acres in area. In 1964 my wife and I began a census of singing birds in the wood as part of the Common Bird Census study organised by the Brit: ish Trust for Ornithology.

The basic idea behind the study is that a bird will on: ly sing when in or near its territory. At each visit to the wood we plot, on a new tracing of a 25 inch to the mile map (tracings and map supplied by B.T.O.) the position of every singing bird. After some twelve or fifteen visits all the records of any one species are transferred to a sep: arate tracing (a species map). The song-posts tend to be concentrated in groups on the map, every group representing one singing cock, and we can determine the number of singing cocks in the wood with a surprising accuracy.

The wood itself is a varied one, with an underlying strata of pure sand and some shingle and clay. It lies in a small valley with a tiny burn flowing down the middle. The wood was originally cut down during the 1914-1918 war leaving only an odd big tree, and has been allowed to regrow/

regrow on its own. A lot of the growth is from the old stumps giving a coppicing effect of perhaps 6 or 8 spindly 'trunks'. There has also been a fair amount of regenera: tion. The trees mostly form a closed canopy from 20-50 feet high and include Sycamore, Elm, Beech, Oak, Ash, Lime, Birch, Rowan, Willow, Elder, Hawthorn and odd Spanish Chestnut and Wild Cherry. In spring the moister floor is a carpet of Wood Anemone and there is a profusion of Lesser Celandine, Wood Sorrel and Golden Saxifrage. In two well defined areas without tree cover the effects of previous human disturbance are at their most prominent in the late summer when they be: come a jungle of dense Nettles, Rose Bay Willowherb and Hog: weed.

Several years ago a pair of Roe Deer frequented the Wood but the operations of a sandpit, which devoured a southern scrubby outshot of the wood, seem to have frightened them off. Rabbits are on their way back after a virtual disappearance and Hares are often seen, particularly in spring when the fields pro- vide little cover. The Badger finds the sand ideal for digging and there are several setts among the brambles and on the steeper slopes. Foxes are only occasionally seen but fairly regularly smelt. The Weasel is the other resident mammalian predator living on the numerous, but unidentified, small rodents.

The severe Winter of 1962/63 was a bad one for the birds. In 1964 we looked in vain for Woodcock - one of the worst hit species. The following year, however, we were delighted to get one roding at dusk, grunting and squeaking as it display-flighted down the valley on slow stiff wings. Its mate was sitting on 4 eggs among a patch of ivy below the thick Hawthorn bush which held the Magpie's nest. A pair of Coal Tits came in that same year and Great Tit numbers doubled to two pairs. Blue Tits rose from 5 pairs in 1964 to 8 pairs in 1965 and Song Thrush from 6 to 8 pairs. All of these birds had suffered during the bad winter and this sort of census can chart both the damage done to our common birds by severe weather or such detrimental factors as toxic poisoning, and the rate at which the differing species recover their normal numbers.

In 1965 there were some 125 singing birds of 23 species in territory. Most of these birds were paired and breeding which means that there were just under 250 adult birds in something under 20 acres or an average of about 6 pairs to the acre (an acre is roughly 70 by 70 yards). The most common birds were Chaffinch with 15 Territories, 14 each of Robin and Hedge Sparrow, 13 Willow Warbler and 12 Blackbird. Each species is evenly distributed throughout the wood. The territories of different species overlap as each takes a different food from the environment and they do not compete.

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In early 1966 partial disaster came when the sandpit spilled over into part of the wood leaving a raw expanse of sand covering some two acres and flanked by a tangle of splintered and dead trees. Some youngsters built a 'hut' with dead branches - just next to the Woodcock patch and the Magpie nest. Both species fled the area. However the more open shrubby look has attracted a pair of Redpoll so we are partially recompensed. The other new bird in 1966 is the Blackcap which has remained although we have no way of knowing whether a female ever arrived.

Several other birds have been seen. Long-tailed Tit and Tree Creeper winter and may yet breed. Kestrel nest on an adjacent wooded knoll and often fly over. The Sparrow Hawk, on the other hand, used to be seen regularly but is now a fairly rare bird in Midlothian. Fieldfare are reg: ular in winter and we have seen one as late as June. On one beautiful April evening, with a cold clear sky, we watched a flock of these handsome birds restlessly calling and flying about, then suddenly take purposeful wing out to the north-east, higher and higher until lost in the dis: tance. Their next landfall would certainly be somewhere in Scandinavia.

A census such as this gives a new angle to bird-watch: ing. As we have gained an intimate knowledge of the wood so we have an increased appreciation of the way woodland birds live. Each species occupies a distinct niche in the habitat. Fierce competition occurs only within the species. By holding a territory and proclaiming and defend: ing it by song, actual fighting is kept to a minimum.

We (along with another 200 census workers throughout Britain) hope to return to our individual territory next spring. The combined results lead to a more precise under: standing of the requirements of our common birds. Facts and figures are necessary if legislation is to be altered in the interest of conservation.

R. W. J. Smith.

WHY GEOLOGY?

The naturalist sometimes wonders, as he sees his friend the geologist disappearing with his hammer into an apparently unattractive quarry, what makes him take an interest in this somewhat scientific hobby. The answer may perhaps be that geology gives him free rein to the Sherlock Homes instinct which is present in all men - and few men have been long married with: out finding that the ladies also have an interest in detective work. The would be sleuth is, however, baulked by finding that bodies do not lie about as commonly as the green paper-backs would have us believe, and the police seem to think that the investigation of the cause of death is their prerogative. They are strangely allergic to helpful amateurs. In geology, however, there are bodies galore - the stroy of the Achanarras fish bed might be titled 'The Case of the Twenty Thousand Dead Fish'. There are problems for everyone to solve.

Devotees of Sherlock Holmes will remember that he consider: ed the available clues in conjunction with his vaste store of knowledge and drew deductions which provided the solution to the case. The famous Geologist Hutton, who lived in Edinburgh two hundred years ago, combined the deductive approach with the fruitful idea that the present is the key to the past; the physical forces now shaping the earth's surface must have been active in the past, and produced the same results. When we find rounded pebbles in a conglomerate (or 'pudding stone') we may presume that theywere water worn like the present day stones on a beach or stream bed. The sands and muds now being deposited by the rivers around our coasts are represent: ed in the geological record by sandstones and shales, and the structure of modern dunes is to be found in the red sandstones of Mauchline and Penrith. The glaciers of Switzerland carve out U-shaped vallies with grooved rock surfaces, and produce heaps of broken and ground up rock. When we find these feat: ures widely distributed in Scotland we realise that our coun: try must once have been covered by a vaste sheet of ice. This method of comparison of old and new may be applied to the study of fossils. A sea urchin from chalk is not very different from the purple heart urchin of our seas (not coffee bars). Such details as the pores in the test for the tube feet and the knob-like processes on which the spines are art: iculated go very much further back in time. Certain bivalve shells have features which indicate that their occupants live by burrowing in the ooze: similar fossil shells are to be found, still in the burrowing position, in the shale which represents the mud of two hundred million years ago. The animals we are studying may have become totally extinct long ages ago, but comparison with the nearest modern phylum may still prove illuminating. There are no trilobites to-day: but/

but they are something like crabs and crabs shed their skins as they grow. We might expect that the trilobites did like: wise, and we find that not only were their skins shed, but they had special planes of weakness along which they could split with ease.

Although many characteristics of the various genera persisted over long periods of time, steady variation in species did occur. This was noticed by William Smith, an English civil engineer, who noted that fossils found in rocks of the same age were always similar. Any one layer could be assigned to its proper position in the pile of rocks provided that it contained a sufficient number of suit: able fossils. Using this information, Lapworth, working in the neighbourhood of Moffat on fossils called Graptolites, was able to show that portions of the Border rocks had been turned completely upside down by the folding of the layers.

By using inductive methods, Hutton was able to show that certain rocks, previously thought to be precipitates from the ocean, had been formed in a molten state as the result of heat, and there is now no doubt that Arthur's Seat is the ruined remains of an ancient volcano, and the Salis: bury Crags are a layer of molten rock squeezed between the layers of already existing sandstones. Since these early observations every resource of Science has been used - Phys: ics, Chemistry and Seismology in particular have aided the geologist, and knowledge of radioactivity has given him fairly accurate estimates of the time scale of geological events. The coal which many of us used to burn may have been formed in swampy forests two hundred and eighty million years ago.

Scientific investigation is providing the geologist with ever increasing knowledge of the evolution of living genera, and of the environment in which they live. The evolution of life is a complicated subject studied mainly by specialists, but environment is a matter which concerns us all and which we can all observe.

The breakdown of rocks by weathering agents provides the nourishment on which all life depends. The minerals brought down by rivers and streams are used by minute forms of plant life which are the starting point of many food chains. On land, breakdown of rocks provides both the soil in which plants grow, and the minerals on which they feed. The relationship between the plants and the soil is, however, a very complicated one. In the millions of years that have elapsed since the land plants moved in from the sea they have evolved so that there is a species suited to every niche in the environment. They have gone in for special: isation, and few succeed over a wide range of conditions. Where/

Where the soil cover is thin the plants reflect exactly the outcrop of the rocks beneath. This may be seen in the Caenlochan Nature Reserve, where the plants are grouped according to the limestones, serpentines, and other rocks on which they grow. On the Bishop Hill, in Fife, a layer of shale burnt by an intrusive dike of igneous rock provides a home for a large colony of the moonwort, or "bunch of grapes fern"

In Scotland the ice which covered the country some twelve thousand years ago has left a thick cover of clays, sands, and ground rock, which gives an approximate picture of the strata below. Areas of red soil, beloved of the potato grower, are above red sandstones, some of which were once desert dunes. Other rocks have been ground down to give clays and loams of varying consistencies. In ancient days, also, the sea level was much higher than it is now, and beaches, shell beds and deposits of clay were left, which are much in evidence in the Forth Valley. Once more these have their characteristic assemblage of plants, animals and birds. The geologist includes these deposits in his studies and also the small areas of new land formed by the deposition of sand and mud in our estuaries. He notes with interest at Tentsmuir the advance of the acid loving plants at the expense of those that prefer lime as the shell content of the sand becomes leached out or used up. But the geologist is interested also in the general features of the landscape; he studies the forces that raise the mountains and carve the vallies; the hard rocks of the hills and the soft ones of the gentle straths. The vertical jointing of the rocks is reflected in cliffs around our coasts, and the horizontal bedding in the convenient shelves on which thousands of our sea birds nest.

The distribution and activities of the world's most destructive species, Home sapiens, are closely tied to the underlying geology. His dwellings and industrial buildings tend to be on the newer and softer rocks, while the hard old rocks of the Highlands and Islands remain largely unwanted. He opens quarries and mines for useful stones and minerals, and makes waste heaps and dumps that are unsightly but are a refuge for many species. He builds reservoirs where the rocks are waterproof, - and sometimes where they are not - and draws water from rocks that have joints and pores. A ring of breweries near Edinburgh marks the outcrop of the Upper Old Red Sandstone, from which they get the 'hard' water that they require. The rocks are truly a foundation on which all Natural History is built, and all naturalists should have at least a nodding acquaintance with the science of geology.

I. Sime.

DOVECOTS

Dovecots are numerous in East Lothian, for the County consists mainly of arable land, and arable land was necess: ary to grow crops on which pigeons fed. This is why there are so many of these interesting buildings still to be seen to-day.

In the 18th century every feuar and land owner had his dovecot. Pigeons were easy to keep and easy to catch. However, the occupants of these buildings became too numer: ous, and were taking such a heavy toll upon grain crops, that in 1617 an Act was passed restricting the building of new dovecots to certain proprietors. The Act cannot have been strictly enforced as the majority of the East Lothian cots were built after the passing of the Act! In these days farming was primative compared with present day methods. Except for a few breeding cattle and sheep, all livestock was killed off in October and November. The meat was then salted down and this meant that until the following summer the only meat that was available was salted. By keeping pigeons, the owners of the dovecots were assured of having a change of diet. This was the only fresh meat available during the winter months and in fact the tender, fresh meat of the pigeon was considered a delicacy.

In the early 18th Century farmers becan to grow root crops, and by growing these they were able to obtain a store of food upon which they could feed stock during the winter, and thereby provide fresh meat all the year round. Grad: ually the necessity for keeping pigeons came to an end.

Dovecots were usually built a little apart from the main buildings - and were built to last, their walls often being three or four feet thick. This is why many dove- cots have survived, while the castle and mansions to which they belonged have been reduced to rubble. Our oldest type of dovecot is the circular type (Fig. 1), and good ex: amples of this type can be seen to-day at Prestonpans and Dirleton Castle, and within our own city boundary at Corstor: phine, there is an excellent example.

During the 17th century the dovecots built were mostly rectangular (Fig. 2) with lean-to roof and crow-stepped gables and in the Lothians we have fine examples at Pencait: land, Tantallon Castle and at Pilmuir. At Pilmuir the dove: cot contains stone boxes for over 1,000 birds.

When wandering through East Lothian take time to have a close look at some of these beautifully designed and con: structed small buildings. I have only been able to mention a few of the better known dovecots.

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In closing, I wish to acknowledge my indebtedness to Miss May Laing who kindly sketched the drawings which illustrate this article.

Nora F. Henderson.

FORTH ISLAND BIRD COUNTS 1966

	1.	2.	3.	4.	5.	6.
Fulmar (s)	0	233	0	14	1	48
Cormorant (n)	0	0	0	0	193	30
Shag (n)	0	0	0	0	117	85+
Oystercatcher (p)	1	1-2	0	c6	0	0
Ringed Plover (p)	0	0	0	2-3	0	0
Great Blackback Gull (p)	0	0	0	0	0	1
Lesser Blackback Gull (p)	0	*	0	0	10+	*
Herring Gull (n)	c45	*	180	*	*	*
Kittiwake (n)	0	75	0	31	117	*
Common Tern (p)	**	0	0	*	0	0
Arctic Tern (p)	1+	0	0	*	0	0
Roseate Tern (p)	**	0	0	c20	0	0
Sandwich Tern (n)	315	0	0	0	0	0
Razorbill - offshore (b)	0	6	0	0	0	60
- on cliff (b)	0	0	0	0	24e	c40
Guillemot - offshire (b)	0	20	0	0	0	c1200
- on cliff (b)	0	0	0	0	64e	c350
Puffin - offshire + cliff (b)	0	40	0	11	0	c200

The Islands are 1 - Inchmickery, 2 - Inchkeith, 3 - Eyebroughty, 4 - Fidra, 5 - Lamb, 6 - Craigleith. The letters after species names are (b) - birds, (n) - nests, (p) - pairs, (s) - sites. Other symbols are * - present in good numbers, ** - several hundred, e - eggs.

R.W.J. Smith.

Fig. 1.

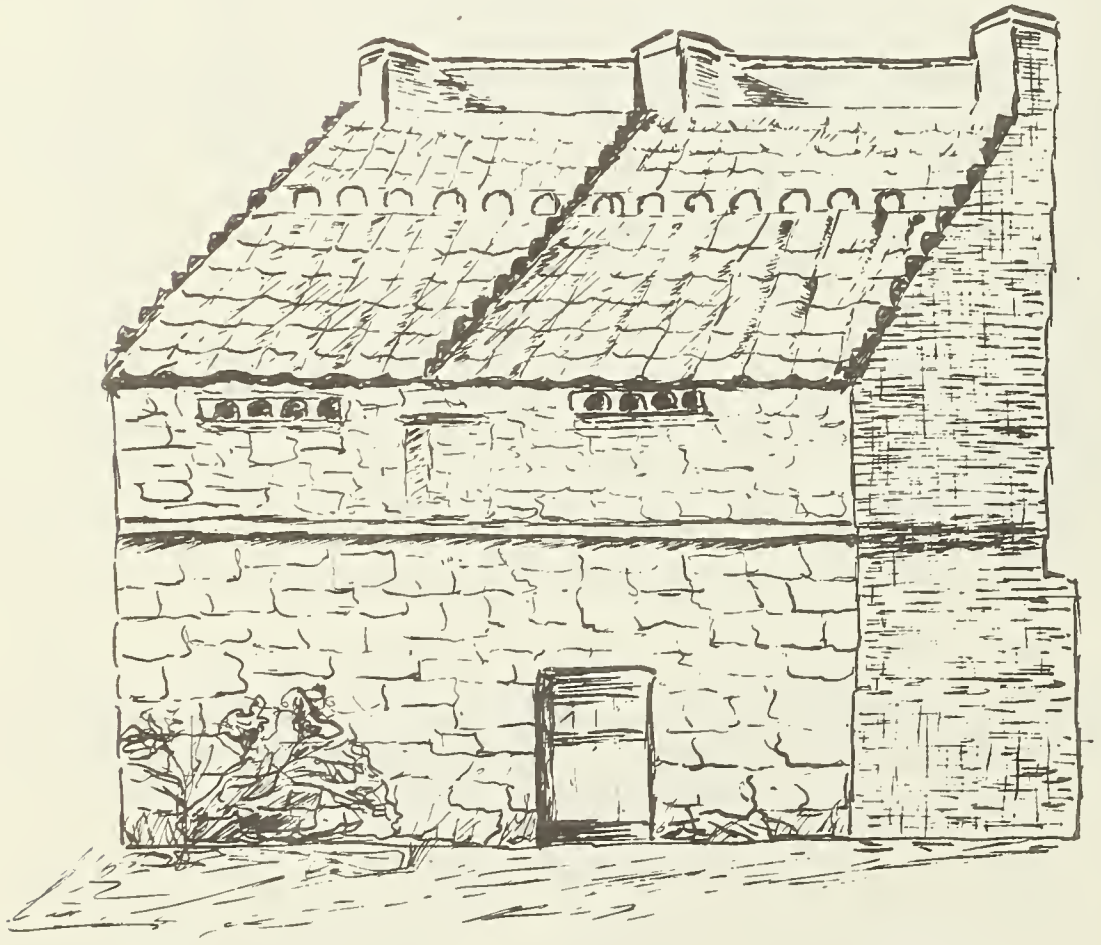

Fig. 2.

THE BADGERS OF STRATHBROCK

I have spent many daylight and evening hours in the last four years locating and watching over the many badger setts in the Broxburn/Uphall area of West Lothian. It is therefore my hope that this short article dealing with some of the aspects of badger watching will be of interest to all, particularly those who have not had their first view of a badger. Patience and silence at the sett are the basic techniques of the good observer, who experiences the thrilling sight of these fine mammals at close range.

The population and distribution of badgers within the area are points that I hope to establish in time, for even in the Broxburn/Uphall area one cannot have absolute knowledge of every occupied sett. However, within a two mile radius of the town there are 22 known setts, which gives a population of about two pairs of badgers to every square mile. I rate a still higher population for the Linlithgow and Bathgate vicinities where terrain is much more favourable.

Evening emergence from the sett is at most times a fairly lengthy process. Acute in senses of hearing and of smell badgers are cautious to reveal themselves until they are fully satisfied that all is well above ground. During operations outwith the sett they frequently stop to listen and to test for scent. The behaviour of a badger family at play, the only occasion when all caution seem to be lost, is remarkable in these creatures that are normally so careful.

The best months for observation are late July and August when the days are drawing in. Cubs are 4 - 5 months grown, and the adults have got over the extremely cautions "young in the sett" stage. In this period Badger may be observed above ground in good daylight, sometimes as early as 1½ hours before sunset. Digging, bed carrying, scratching, cleaning, playing and a host of other operations can be watched.

Setts in the Strathbrock area are generally small, with at most 3 or 4 holes. Setts with more than 4 holes are regarded as large. Setts of 2 holes are not uncommon, and I know 2 setts with 1 hole, but these small setts tend to be cubless. The setts are of 2 basic types, the Woodland or "covered", and the Grassland or "open". The degree of hill slope and proximity to water would appear to be more important factors to the "open" sett than/

than to the "covered".

Though "open" setts are easier to observe the badgers of "covered" setts tend to emerge sooner. The study of emergence times in an area possess some interesting problems. The badger who emerges early tends to remain so for at least the major part of the season, but the factors which contribute to this early activity remain obscure. Noise factors, e.g. the proximity to traffic, are profitably used in field craft of approaching and watching a sett. It is much easier to approach and watch a sett beneath a rookery or near to a busy road than to study an isolated sett. Badgers can also be "human" conditioned. I have watched at a number of places at 3 yards from the emergence hole with considerable success. One must, however, be down wind and remain absolutely silent and still. I am sure that inspite of limited vision an adult badger is quick to detect a foreign shape within its territory. Badger will at times be quite curious about an object within its terr: itory and will investigate, with timidity, what is there. At such times the watcher is in for one of the biggest thrills of badger watching. When one comes face to face with an adult badger it requires some nerve to stand ones ground in complete stillness and silence, even until the badger touches you.

The badger/fox and badger/fox/rabbit cohabitation of the same earth, using the same holes, are features requir: ing much further study. In this area 40% of badger earths are used by foxes for "cubbing out" purposes. The fox cubs are seen playing about the setts in the month of May, though by mid-June they have moved away to other ground. The reason may be that as the badger family grows larger they become less tolerant of the foxes. The badgers start the sweeting out of the sett, which possibly does not suit the foxes, happy to live in a slum.

Whilst badger watching, one becomes adept at the coun: try crafts like tracking. One sees other dusk creatures, the roe deer, fox, bat, woodcock, tawny and long-eared owls and the night flying moths. The noises of the night in early spring are ample reward even if nothing is seen.

One could not have foreseen, at the demise of the shale-oil industry in West Lothian some 6 - 7 years ago, the pres: ent trend of industrial and urban expansion. The rate of growth is probably best realised when one considers that in the past 9 years some 60 industrial concerns have established factories in the county, the Forth Road Bridge has been built, and Livingston New Town is being developed. In spite of all this the badger, fox and roe deer do in fact appear/

appear to be on the increase. This is due to such fac: tors as fewer people employed in farming, and on estates in game keepering and other management duties. There are fewer cases of shooting, trapping, poisoning or digging out of setts, and I do feel that people have come to real: ise the absolute necessity of preserving our wild life. It is pleasing to see that planners of Livingston New Town are not only retaining existing woodlands but have done con: siderable planting of both soft and hard woods.

When so much is heard now-a-days about the ill effects of agricultural chemicals upon our wild life, the badger story in West Lothian is bright. The greatest danger in the area both now and in the future lies in the loss of habitat due to increasing human pressure. In this res: pect we must hope that the County Council and those who are engaged in town and county planning will use our countryside well.

W. A. Hall.

DUNFERMLINE NATURALISTS SOCIETY

This year we asked the Dunfermline Naturalists if they would like to add to our Newsletter. Their Sec: retary sent the following account of their visit to the Isle of May.

Nearly 30 members of the Society visited the Isle of May on Saturday 11th June, setting out in foggy con: ditions which cleared somewhat on reaching Anstruther. Two boats were waiting here, and by the time the landing was made on the Island there was brilliant sunshine.

From the boats Solans, Oystercatchers, Puffins and Razorbills were noted as well as a seal. There were birds by the thousand on the Island, all busy nesting, and, because human intrusion is almost unknown on this lonely spot, all could be observed at comparitively close quarters. Most of the terrain seemed to be occ: upied by Herring gulls, which is a pity as most other birds fight a losing battle. The Gulls' fluffy babies were most attractive and did not seem to mind being handled and photographed. Oystercatchers and Puffins seemed to be doing well enough, but no Terns were seen. Mr. Stewart, an Anstruther boat owner, said these birds had/

had been ousted from the May and now occupy Fidra on the East Lothian coast. The other great ternery at Tentsmuir, near Leuchars, was destroyed by the R.A.F. a few years ago, so now Fife is practically without this most remarkable migratory bird.

Probably the most remarkable sight on the May was a single Chaffinch, a bird of the hedges. Here no hedges exist, and amongst the thousands of sea birds it was most obvious. Other birds that were seen included Cormorants, Shags, and several families of Eider duck.

Mrs. Stewart, the Hon. Secretary, concluded by thanking the leaders, and by saying that a similar article appeared in a local paper. She also sent details of Roscobie quarry, which the Dunfermline Naturalists have found to be geologically very interesting.

A CONTRIBUTION TO THE FLORA OF THE ISLANDS OF THE FORTH - Part I

The following lists of plants growing on the various Islands of the Forth were compiled in the course of a single visit mainly in early June 1966. Inchcolm and Inchgarvie were visited in August 1966; the Bass in July 1964, while several visits have been paid to Cramond Island in 1965 and 1966 since the first list was made in May 1962. There is no doubt that future visits will add more species to the lists and it is hoped that members of the E.N.H.S. will do so. Ideally there should be at least two visits during the season, one in late spring and one in late summer.

The flora on all the Islands falls into four main groups:- (a) the maritime plants, (b) the plants constituting the grassy turf, (c) weeds and ruderals - these are mainly brought in my birds, a few by man and, on the larger islands weeds of cultivation found in and around the garden and (d) garden escapes or survivals. The growth is usually extremely luxuriant owing to the well manured soil as most of the Islands are well tenanted in the nesting season by sea birds. The flora of the Isle of May has been so thoroughly investigated and so well written up by Dr. W. J. Eggeling of The Nature Conservancy, Edinburgh, that there was no point in visiting it for this survey.

The/

The nomenclature is that of the Second Edition (1962) of the Flora of the British Isles by Clapham, Tutin and Warburg. Within the families, the genera and species are arranged alphabetically. Some critical species have still to be determined.

I wish to specially thank Mr. R.J.W. Smith for had it not been for his Forth Island Bird Counts, our knowledge of the flora of most of these islands would still be very sketchy as the expense of hiring a boat would have proved prohibitive. I also wish to thank the following members of the E.N.H.S. for their help with the survey:- Miss L. Campbell, Mr. J. Caryle, Mrs Coopland-Julian, Mrs E. McDonald, Mrs R.W.J. Smith, Mrs C. Stewart and Dr. M.Thomson.

INCHGARVIE

Inch is a common prefix in Scottish topography. Literally it signified an islet. The term is sometimes also used to denote level pastures lying along our river banks.

Between the two Queensferries the Firth of Forth suddenly contracts into a narrow gut of little more than a mile in breadth, and near the middle of this passage lies the small island of Inchgarvie, "The Rocky Isle". Previous to the erection of the Forth Bridge this rocky islet stood like a sentinel guarding the entrance to St. Margaret's Hope. The Island was once a place of considerable historical interest, particularly during the reigns of the later Jameses, Mary and Charles I. John Dundas obtained a grant of it from James IV in 1491. He built a castle on it for the protection of vessels trading in the Forth. The castle was an ordinary peel tower with the usual means of defence and it ranked in the same category with those of Tantallon, Dunbar and Dumbarton. Later it reverted to the Crown and functioned as a State prison for 150 years until the purchase of the Bass. Eventually it was razed to the ground, the debris being taken to make concrete ballast for the caissons of the Forth Bridge. Inchgarvie is the keystone of the gigantic network of steel of the bridge which has an extreme length of 8296 feet. It was opened on the 4th March 1890 by H.R.H. Prince of Wales.

Inchgarvie is about five furlongs in circumstance and it belongs geologically to the Trap formation, a species of igneous rock, common to all the Islands of the Forth. Terns once nested on it but they have deserted it as it is overrun by rats from the Bridge. A few garden plants, which were introduced during the last war, still linger on.

7. POLYPODIACEAE

Dryopteris dilatata (Hoffm.) A. Gray, Broad Buckler. Very

146. GRAMINEAE

Agropyron pungens (Pers.) Roem. & Schult. Sharp Sea Couch-grass. A. repens (L.) Beauv., Couch. Abundant. Aira praecox L., Early Hair-grass. Common. Dactylis glomerata L., Cocksfoot. Common. Festuca ovina L., Sheep's Fescue. Common. F. rubra L., Red Fescue. Abundant. Holcus lanatus L., Yorkshire Fog. Abundant. Lolium perenne L., Rye-grass. Common. Poa annua L., Annual Meadow-grass. Abundant. Puccinellia maritima (Huds.) Parl., Sea Poa. Abundant.

INCHMICKERY

The rocky islet of Inchmickery stands 48 feet above the water. It lies midway between Inchcolm and Cramond Island and about a mile and a quarter from either. Its name is derived from the Gaelic innis na bhicaire, the "Isle of the Vicar" probably because it was once the abode of some church worthy connected with Inchcolm. It was once remarkable for its valuable oyster bed but it became impoverished through over-dredging. It is now largely covered with fortifications which are rapidly falling into a ruinous condition.

14. RANUNCULACEAE

Ranunculus repens L., Creeping Buttercup. One large patch.

17. MALVACEAE

Lavatera arborea L. Tree Mallow. Once grew on the Island but has been extinct for many decades.

20. GERANIACEAE

Geranium robertianum L., Herb Robert. Rare.

21. CRUCIFERAE

Cochlearia danica L., Danish Scurvygrass. Frequent. C. officinalis L. Scurvygrass. Frequent.

30. CARYOPHYLLACEAE

Cerastium semidecandrum L., Little Mouse-ear Chickweed. Frequent. Sagina procumbens L., Procumbent Pearlworth. Common. Stellaria media (L) Vill., Chickweed. Common

34. CHENOPODIACEAE

Atriplex hastata L., Hastate Orache. Common

51. PAPILIONACEAE

Lotus corniculatus L., Birdsfoot Trefoil. Frequent

66. ONAGRACEAE

Chamaenerion angustifolia (L.) Scop., Rosebay Willowherb. Common.

75. UMBELLIFERAE

Heracleum sphondylium L., Hogweed. Common

79. POLYGONACEAE

Rumex crispus L., Curled Dock. Common

80. URTICACEAE

Urtica dioica L., Nettle. Abundant

115. RUBIACEAE

Galium aparine L., Cleavers. Frequent.

116. CAPRIFOLIACEAE

Sambucus nigra L., Elder. A few bushes.

120. COMPOSITAE

Cirsium arvense (L) Scop., Creeping Thistle. Common. C. Vulgare (Savi) Ten., Spear Thistle. Frequent. Senecio vulgaris L., Groundsel. A few plants. Taraxacum offic: inale Weber, Common Dandelion. A few plants.

146. GRAMINEAE

Dactylis glomerata L., Coltsfoot. Common. Festuca rubra L., Red Fescue. Abundant. Poa annua L., Annual Meadow-grass. Common. Poa trivialis L., Rough Meadow-grass. Common. Pucc: inella maritima (Huds.) Parl., Sea Meadow-grass. Frequent. Holcus lanatus L., Yorkshire Fog. Abundant

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THE LAMB

The rocky islet of the Lamb is 79 feet above sea level and is almost equidistant from Fidra and Craigleith. It forms part of the parish of Dirleton. The vegetation on the top is mainly Festuca rubra L., the other species grow: ing in sheltered hollows and ledges.

21. CRUCIFERAE

Cochlearia/

Cochlearia danica L., Danish Scurvygrass. Abundant on rocky ledges. C. officinalis L., Scurvygrass. Abundant in hollows.

34. CHENOPODIACEAE

Atriplex hastata L., Hastate Orache. Abundant.

79. POLYGONACEAE

Rumex crispus L., Curled Dock. A few plants in sheltered hollows.

80. URTICACEAE

Urtica dioica L., Nettle. Abundant in sheltered hollows

120. COMPOSITAE

Senecio vulgaris L., Groundsel. 1 plant in 1965: none in 1966. Sonchus oleraceus L., Smooth Sow-thistle. A few plants in rock crannies. Tripleurospermum maritimum (l) Koch ssp. inodorum (L.) Hyl. ex Vaarama, Scentless Mayweed. Quite a dense stand in a sheltered hollow.

146. GRAMINEAE

Festuca rubra L., Red Fescue. Dominant grass and also the dominant vegetation of the exposed surface of the top of the islet. Poa annua L., Annual Meadow-grass. Common.

Elizabeth P. Beattie.

THE EDINBURGH NATURAL HISTORY SOCIETY

NEWS-LETTER

1967

EDINBURGH NATURAL HISTORY SOCIETY

1967-68

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EDITORIAL

The task of the new Editor has been made much easier because of the generous help received from Dr Michael Usher who so successfully pioneered the present series of the Edinburgh Natural History Society's News-Letters, and from all the contributors to this year's publication.

Contributions have been received in greater numbers than had been expected, so that some are inevitably and regretably held over.

It had been suggested that it would be useful to cover, in successive News-Letters, different areas of interest in the vicinity of Edinburgh. The theme for the present number is the natural history of the Queen's Park, Arthur's Seat and the three lochs. Authoratative articles have been received which are of great interest today and it is hoped that they will be found valuable to the naturalists of the future. Miss Beatie's welcome paper on the flora of Cramond Island continues her interesting series. Mr D.C. Malcolm's paper on the soils of the Queen's Park is apposite and especially welcome.

The Council and the Editor are anxious to obtain articles from the younger members and although we have some this year, we would hope for more in future years.

The Editor is grateful and records his thanks to all who have contributed to this number, to the many willing helpers, to the Council, not least to Mr G. Finnie for his invaluable help in producing the News-Letter 1967.

W.A. Fairbairn

SOILS of ARTHUR'S SEAT, EDINBURGH

D.C. Malcolm

The factors which control the development of soils are climate, vegetation, topography and time. On Arthur's Seat the most important influences have been the parent rocks and the topography.

The different rocks give rise, by weathering, to materials in which the more soluble substances have been dissolved out and particles broken up into small sizes. This rock debris is invaded by plants and soil animals which add the organic matter that changes it into a soil. Depending on the original rock type the resulting soil is more or less fertile.

When the ground is steep there is a tendenoy for immature soils to be washed down forming colluvial deposits on the lower slopes. The upper slopes are thus being constantly denuded to the benefit of the soils below which obtain a continuous supply of mineral matter. This natural process or erosion can be speeded up dangerously if the vegetation which stabilises the slope should be damaged or destroyed by fire, or excessive rainfall, ending with mass soil movement.

The effect of glaciation, in which the ice moved from west to east, was to scrape all the loose deposits of soil material from the exposed side and to leave patches of boulder till in the "lea" of the harder rocks. This "crag-and-tail" land form is clearly seen at several points in Edinburgh (Blackford Hill and the Castle Rock), as well as Arthur's Seat.

The effects of these various processes are readily discernible in the Queen's Park and have given rise to several main soil types.

1. Soils of the upper and steeper slopes :

   These soils are usually low in organic matter and tend to dry out very rapidly. They range from shallow sandy loams over bedrock to barely stabilised screes as at Salisbury Crags or above Hangman's Knoll. In places they are subject to active gully erosion, as below the summit on the west side.

2. Soils of the middle slopes :

   The clay content of these soils is generally higher than in the first group. They therefore drain more slowly and can support a denser vegetation cover. On the eastern slopes above Dunsapie Loch, there is an admixture of sandy, glacial material giving greater soil depths. This led to their being cultivated when part of the Wester Duddingston Farm, as witnessed by the old terracing.

3. Soils of the valley bottoms and flat areas :

   These soils are obviously moister still and tend to be either alluvial in origin overlying deposits of glacial till as around Holyrood and Duddingston, or in Hunter's Bog. They show the accumulation of organic matter at the surface which is typical of imperfectly drained soils. The peaty deposit is /

3. Contd. :

is quite marked at Hunter's Bog where the mottled colouration of the underlying soil can also be seen. This is due to the presence of reducing conditions from a lack of oxygen in the soil pores.

Fertility, in terms of plant nutrition, is good throughout the whole area but in some places the rapid drying of the soils after rain through evaporation, leads to the formation of high salt concentrations at the surface and even efflorescent deposits. Many of the rocks are rich in calcium thus possibly giving rise to soils of high pH and poor availability of some nutrients such as iron.

To summarise, the ecological importance of the Arthur's Seat soils lies in the very free drainage of most of them and the high base status due to their derivation from predominantly volcanic rocks. The result has been the development and survival of a flora which contains several markedly calcicolous plants and a wide range of other species.

PLANT LIFE on ARTHUR'S SEAT

Michael B. Usher

It is impossible in so short a space to describe all the plants growing in Queen's Park. This brief account will endeavour to highlight some of the ecological relations of a few of the more interesting plants of Arthur's Seat itself. The botanical richness of the area can be judged by the fact that 128 species of flowering plants and ferns are included in the list for Arthur's Seat and the Crags in Miss Isa Martin's Field-Club Flora of The Lothians. The plants of the Duddingston Loch bird sanctuary have been described by J. Grant Rodger in the Transactions of the Botanical Society of Edinburgh, vol.39, part 2, pp212-15(1961).

Perhaps the most interesting of all the plants is Lychnis viscaria, the Red German Catchfly. The B.S.B.I. map shows only 9 squares in Britain where the plant has been found since 1930. On the rocks of Arthur's Seat, fully exposed to the afternoon sun, a few plants of this Catchfly can be seen. The flowering stems - none were seen in 1967 though the plants are growing - are about a foot high, and are crowded with purple-red flowers. The stems are purplish and are very sticky below each node. The plant obviously grows in warm habitats where the small quantity of soil washed into crevices in nutrient-rich rocks provides a "hitch" that other plants have not colonised.

But the rocky places have other species that I feel are more spectacular than the Catchfly. Anyone who walks the upper road at the end of April or early May might be surprised at a Cinquefoil in flower. Look again ! This is not a common species, but is the Spring Cinquefoil, Potentilla tabernaemontani. The botanists must /

must have missed this as it is not recorded on the B.S.B.I. map for the Edinburgh square ! The flowers of this Cinquefoil are larger and a brighter yellow than the flowers of the Tormentil, Potentilla erecta. As the season progresses the Cinquefoil is joined by two other yellow flowers - the Wall Pepper, Sedum acre, and the Rock-rose, Helianthemum chamaecistus. The Stonecrop is, of course, a very common plant, but the Rock-rose is confined to areas that are warm, and rich in nutrients. In Southern England the Rock-rose is a very characteristic plant of the chalk downs, but in Scotland it is common where the basalt rocks occur. In Ireland the plant is almost absent, even in habitats rich in nutrients.

Two more plants of the rocky areas need to be mentioned. If, like me, you know Arthur's Seat and then visit the Pennines you are in for a disappointment. Minuartia verna, the Vernal Sandwort, is a plant renowned from the Pennines, and many photographs of it have been taken either on Ingleborough or Pen-y-Ghent. In the Pennines it is certainly an attractive plant. But them come up to Scotland. The B.S.B.I. shows only 7 squares with this species north of the Border. The plant on Arthur's Seat is no longer just attractive - I consider it to be the most attractive wild flower that grows there. The tiny cushions with up to 30 white flowers, spotted with pinkish stamens, are a sight that is well worth seeing in June. The final plant of the rocks that I want to mention is a fern, the Forked Spleenwort, Asplenium septentrionale. This is a small and very insignificant fern, but nevertheless it is extremely scarce in Scotland, being recorded from only 6 squares on the B.S.B.I. map. It is a dark greenish brown colour, and has long thin leaves that are forked near their ends.

The grasslands around Arthur's Seat provide a habitat where many species of plant flourish. Nearly every year there is a good crop of elderberries, and now and again you can see people picking these for some culinary use. The gorse, or whin, grows so thickly in some areas that part of the grassland is inpenetrable. On the south and south-west facing slopes, areas that are warmer and dryer since they face the afternoon sun, there are many species more characteristic of Southern climates. Particular amongst these are the Soft Trefoil, Trifolium striatum, and the Viper's Bugloss, Echium vulgare. The latter plant was well known to herbalists - the spotted stem and nutlets shaped like a snake's head invoked the "Doctrine of Signatures" that determined that the plant was "a good remedy for the bites of vipers and other venemous beasts". On this uncertain basis the plant was used as a prophylactic: it had to be taken before one was bitten by the snake !

Two of the grassland plants are particularly interesting. The first is the Dropwort, Filipendula vulgaris. Like its relative the Meadow-sweet, the plant has a panicle of very many, sweetly-smelling, cream flowers. On some of the dryer grassy slopes of Arthur's Seat the Dropwort is quite common. The second plant is very much scarcer - indeed if you don't know where to look it would be almost impossible to find. It is the Maiden Pink, Dianthus deltoides. The attractive little pink flowers would certainly look fine if picked, or if dug up and removed to a garden. This is probably one reason for its being scarce on Arthur's Seat, and is one reason why I am deliberately not saying where it is. I first found it about dusk one evening in July, and the sight of a number of these little flowers with petals folded up for the night was impressive.

The /

The plants mentioned by name in this account are but a few of the plants to be seen on Arthur's Seat. In some ways it is only a first step to read about them - real enjoyment only comes when they have been seen growing naturally in the field.

INSECTS of the QUEEN'S PARK

E.C. Pelham-Clinton

The hills and outcrops of rock which are such a feature of Edinburgh make this city one of great interest to the entomologist. Steep rocky slopes and vegetated cliffs provide places relatively free from human disturbance in which a variety of insects can survive, some of them species most uncharacteristic of cities. It is doubtful, for instance, whether the White-line Dart moth (Euxoa obelisca), normally a species of remote sea cliffs, is to be found in any other city in the British Isles.

The Queen's Park includes a good share of such rocky areas, a large area of relatively grassy hill land and the most interesting area of Duddingston Loch and its adjacent marshes and woodland. It has long been known as a collecting ground for insects. Records from Salisbury Crags, Arthur's Seat and Duddingston form the major part of the only comprehensive list of the Lepidoptera of Midlothian so far published (Lowe, H.W. and Logan, R.F.(1852), "The Lepidopterous insects of Midlothian", The Naturalist (B.R. Morris) 2: 121-128, 141-149), Logan being a resident of Duddingston. The changes which must have occurred in the intervening 115 years are disclosed by a study of this list, which includes a number of species that one would be very surprised to find nowadays: for instances both the Elephant Hawk-moths (Deilephila elpenor and D.porcellus) are recorded, from Salisbury Crags and Arthur's Seat respectively - both species still occur in Scotland but not in those localities and probably not in Midlothian.

Of the species of the rock faces one of the most notable is a small moth, Caryocolum viscariellam discovered by Logan and described by Stainton in 1855. Its larva was found in the young shoots of the Red German Catchfly (Viscaria vulgaris) which still grows in the less accessible places: perhaps the moth is still there too, but it is no longer necessary to climb the rocks to look for it as it has been found since breeding in the shoots of Red Campion (Melandrium rubrum) in several other places.

By way of introduction to the more gentle slopes the history of another small and obscure looking moth should be told. In March 1850, Logan captured some tiny moths amongst grass on Arthur's Seat and sent them to Stainton for identification. Stainton thought they were new and named them Elachista consortella. Later other entomologists decided that they were only small specimens of the abundant species E.nigrella and consortella was forgotten. In 1951 Mr John Bradley of the British Museum (Natural History) discovered in the west of Ireland a small Elachista which he correctly identified as E.exiguella, a species previously only known from Germany.

I later discovered this same species exiguella at South Queensferry and recorded it as new to Scotland. Now Mr Bradley has made the surprising discovery that consortella and exiguella are the same species (quite distinct from nigrella), so we find that our "discoveries" were forestalled by Logan and Stainton a hundred years earlier and Elachista consortella is re-established in the British List with Arthur's Seat its type locality - by such fumbling and protracted efforts does our knowledge gradually increase ! Like its close relatives the larva of Elachista consortella no doubt lives inside the leaves of grasses, but this has yet to be discovered.

At one time one of the most well-known insects of Arthur's Seat was the Scottish race of the Brown Argus butterfly (Aricia agestis artaxerxes) which was first discovered there. It was later found to be widely distributed in Scotland but more abudant on Arthur's Seat than anywhere else. Naturally many collectors went there for it and specimens used to be taken by the hundred: however by 1869 it had completely disappeared and has not been seen there since. Even if collectors had been less rapacious it is doubtful whether this colony could have survived the heavy sheep-grazing that has apparently devastated its foodplant, Common Rockrose (Helianthemum chamaecistus) since those times. An artaxerxes colony of the size that was reported 100 years ago could not have existed on the small quantity of Rockrose still present and grazing now removes all the young shoots that would bear the eggs and larvae of the butterlfy.

Grazing has evidently been responsible for much of the loss of butterflies and moths from Arthur's Seat. The Grayling butterfly (Eumenis semele), a grass-feeder, was reported by Lowe and Logan as abundant there, but where is it now ? It is far easier to eliminate most species than to re-establish them but it is probable that even a slight relaxation of grazing pressure might enable some species to return. Some species are able to make use of changing conditions and arrive apparently from nowhere to take possession of favourable temporary habitats. Thus the Small Copper butterfly (Lycaena phlaeas) several years ago suddenly became abudant when its food-plant sorrel (Rumex acetosa) increased on the north-east slopes on the bare ground following the burning of whin.

Although grazing reduces the number of plant-feeding species others take advantage of it. Arthur's Seat is a well-known locality for the dung-beetle Aphodius paykulli. In summer this beetle remains underground, but from November to February larvae and adults are to be found in numbers in sheep-dung and apparently continue to feed even under snow.

Duddingston Loch and its surroundings are much richer in species than Arthur's Seat but in spite of the magnificent reed-beds, old willows and the great variety of trees and shrubs one cannot point to many notable species. The woodland is particularly disappointing: part of the reason is the extensive planting of exotics - the Snowberry (Symphoricarpos rivularis) and Cornus stolonifera thickets, for instance, are of little entomological interest: another reason is that flooding must reduce the numbers of those species that pass the winter on or under the ground. Possibly the reed-beds are of relatively recent origin - otherwise it is difficult to explain why the Crambid moth Chilo phragmitellus, a common southern species, should be plentiful in the reeds of the Tay estuary but absent from Duddingston. The /

The loch itself has some interesting species, the caddis-fly Agrypnia pagetana for example: this is a southern fen species that probably reaches its northern limit here. Breeding at the edges of the loch is a rather beautifully marked species of biting midge, Culicoides duddingstoni, discovered and named by Kettle and Lawson in 1955. The species has since been found in similar situations in the south of England. It is not one of the species that bites man, but those are unfortunately also present !

Insects are elusive creatures and cannot always be observed and listed at will, so it may be that much remains to be discovered in the extraordinarily varied country of the Queen's Park. Much more collecting was undertaken there in former times than recently. We need up-to-date information on this most interesting area - who will provide it ?

MEMORIES of DUDDINGSTON BIRD SANCTUARY and HOLYROOD PARK

Robert Smith

For thirteen years I wandered almost daily about Duddingston Bird Sanctuary and Holyrood Park and at least part of my reason for writing this short article is in the hope that I may be fortunate enough to pass on to others who are interested, something of the contentment and peace to be found in that square mile of the Earth's surface by way of the study of its flora and fauna.

When thinking of Holyrood Park there are twenty minutes of a foggy evening that leap into my mind. I heard the squeal of a rabbit and knew it was being attacked. I approached with insufficient care and saw two stoats run from their prey and leave the half-grown rabbit lying along giving its last feeble kicks. I retired a little into the fog and waited a minute or two to see if the stoats would return to their kill. As I watched a rabbit flashed past me with a stoat in pursuit. Soon I heard the rabbit squeal and this time I approached the scene more cautiously and saw a stoat struggling to carry a half-grown rabbit, who appeared more bulky than itself. It was conveying its prey through a mat of grass and over somewhat uneven ground. Its method was to grip the rabbit behind the ears and then laying its own body parallel with that of its prey, it lunged up and forward, both the stoat and the rabbit being clear of the ground for an instant. They fell in a heap, sometimes the stoat on top, sometimes the rabbit.

Each time the stoat came to a small rise in the ground it left its prey and ran to the nearest high point. It looked all round and each time fixed its beady black eyes for an instant on me as if it felt none too sure I meant it no harm. Then without further waste of time it got on with its work. The whole drama lasted about twenty minutes, then the stoat ran into a hole in a bank only a little wider than that of a rat. The last I saw was the dead rabbit disappearing jerkily into the hole.

While /

While it is the dramatic incident that gives colour to any picture of nature, it is the day to day observations that imparts to it its depth, so let me say here that during all the years that I walked about "the Park", as I always thought of it, hardly a day passed unless the fog was very thick, on which I saw less than twenty species of birds. For example, on the 9th July 1951, I saw thirty species, they were; Carrion crow, starling, linnet, house sparrow, yellow bunting, reed bunting, skylark, meadow pipit, pied wagtail, blue tit, mistle thrush, song thrush, blackbird, wheat-ear, hedge sparrow, swallow, house martin, swift, kestrel, mute swan, mallard, pochard, tufted diver, great crested grebe, little grebe, blackhead gull, lesser blackback, moorhen, coot, and pheasant.

By no means is bird watching all humourless drama; there are touches of comedy every so often. One afternoon I was standing on the Queen's Drive near a point I always thought of as the rock garden because of the many plants that grew just there. There were Bloody Cranesbill, Ladies' Fingers, Viper's Bugloss, Arenaria verna, and many others as well as two not visible from the road, but which I had climbed to look at on many occasions; they were Henbane and Forked Spleenwort. On this particular afternoon I was watching spotted flycatchers darting after their prey with three hundred rooks and jackdaws wheeling overhead in a noisy frolic, when a young man of about twenty five approached. "What's wrong ?" he asked, "Some of the rocks threatening to fall ?" No, I replied, I'm just watching the birds. "Oh" he said, "and what are all those big black yins flying about up there ?".

One morning in May I saw four domestic hens peck a young blackbird to death at the Wells O' Wearie. It was the distressed calling of the parents that attracted my attention. I was too far away to intervene but was well placed to see. A domestic hen was pecking viciously at a young blackbird that was lying on the ground. As I looked three other hens ran to the spot and the young bird became a struggling bundle of feathers with four hens hammering at it. When the blackbird lay still, as it did several times between efforts to escape, the attack ceased, and the hens stood around it motionless like human mourners at a new grave. When the chick made the slightest movement in an attempt to get to its feet and escape, the vicious hammering started all over again. At last when it had struggled four or five feet towards the cover of a hedge the young bird went down once more and it didn't move again.

Partly because of pressure of numbers on the available nesting sites around Duddingston Loch, but perhaps also because of an excessive growth of waterweed in the year of which I am writing, a number of the pairs of the coots of Duddingston Sanctuary made islands on which to nest.

On the 6th of May as I sat in a hide watching a wild duck bring her brood of ducklings across the loch and, what was very unusual, being accompanied with two drakes, the family reached a point where it trespassed on the territory of a nesting coot. When a coot does this sort of thing and is attacked by the outraged guardian of the nest, it usually flies away or dives and swims away. The wild duck, being unacquainted with the coot rules of procedure when attacked, rose from the water, flew over the coot, then wheeling at once and while still in the air stabbed and pulled viciously at the feathers on the coot's back. The two drakes made a hurried retreat at the first sign of trouble. The coot finding himself attacked in this uncootly /

uncootly fashion, fled, and as he did so he uttered a long series of querulous invective. I imagine it rankled in his cootly mind that in his own territory he should have the misfortune to encounter a barbarian duck who, instead of sitting up on its tail and indulging in a little boxing according to the ancient cootish custom, should rise lightly from the water and in a most unheard of fashion, attack him from behind.

I am beginning to feel a little uneasy that I should have so few figures in this little essay so I shall insert one or two here from the last report I sent to the Ministry of Works when I retired.

As usual the corn buntings have roosted in the reedbed in large numbers every night during the winter. The number roosting during the winter months is certainly not less than three hundred and may very well be four hundred or more. In the evening of the 28th of March two hundred and twelve were seen perched and singing towards the top of one willow tree, preparatory to settling down in the reedbed for the night.

On the 20th of April 1951 the swans of Dunsapie made a nest among the rushes at the south end of the loch, and laid five eggs. They were all stolen. The pen then left Dunsapie and retired deep into the reedbed at Duddingston, where she remained in the seclusion and semi-shade of the tall vegetation for two complete days. During the daylight hours at least she hardly moved at all. On the 3rd of May she returned to Dunsapie.

This voluntary retirement of the swan brought back to mind the old method of the henwife in the days when there were too many broody hens about. She imprisoned them in a coop partially covered with a sack in some shady corner about the farm, believing that such treatment hurried them back into a condition for laying eggs.

Whether what the swan did was an illustration of much the same method carried out instinctively, I don't know, but the facts are that having come out of the reedbed on the 3rd of May she started to lay a second clutch of eggs at Dunsapie on the 16th. On the 20th of May there were four eggs in the nest and on the 24th incubation started

At midday on the 26th of May the pen was contentedly incubating her four eggs. At four in the afternoon all was in ruin. Some wantons had stoned the birds from their nest and stolen their eggs. The ground all around was littered with stones and the pen could only walk with difficulty.

CRAMOND ISLAND

Miss E.P. Beattie

Cramond was an important Roman station. It has been identified as Alaterva. It lay on the great military road which ran westward from Inveresk along the coast of /

of the Forth. The name is said to be derived from Caer, a fort, and Almond. At the mouth of the Almond on a craggy eminence, once stood a fortification called by the Britons Caer Almond, or the castle on the Almond. Hence the designation Cramond.

Cramond Island is a small islet off the mainland, and barely a mile north-east of the village. It is, however, only an Island at full tide. The part of its shore that is permanently touched by the wave is a place called "Binks" at its northern extremity. At every other point the islet is at low water connected with the mainland by extensive cockle sands which fill up the bay between Granton and Hound Point.

Cramond Island is one-third of a mile in length, with a surface area of about 19 acres. Originally it formed part of the Estate of Barnton. The present proprietor is the Earl of Rosebery. A great portion of the surface is arable and produced good pasturage for farm stock. Near the centre of the Island is the Homestead, now in ruins. This Island used to be famour for its oyster-beds, but these have long ago been destroyed through over-fishing.

7. POLYPODIACEAE

Athyrium filix-femina (L.) Roth, Lady Fern. Very rare.

Dryopteris dilatata (Hoffm.) A. Gray, Broad Buckler. Very rare.

D. filix-mas (L.) Schott, Male Fern. Very rare.

Pteridium aquilinum (L.) Kuhn, Bracken. Abundant.

11. PINACEAE

Larix decidua Mill., European Larch. Planted - seedlings.

Pinus sylvestris L., Scots Pine. Planted.

14. RANUNCULACEAE

Ranunculus acris L., Meadow Buttercup. Frequent.

R. bulbosus L., Bulbous Buttercup. Frequent.

R. ficaria L., ssp. ficaria, Lesser Celandine. Infrequent.

R. repens L., Creeping Buttercup. Frequent.

19. PAPAVERACEAE

*Papaver somniferum L., Opium Poppy. A few on disturbed ground in 1962. Not seen sinoe.

21. CRUCIFERAE

Arabidopsis thaliana (L.) Heynh, Thale Cress. A few plants.
Capsella bursa-pastoris (L.) Medic., Shepherd's Purse. Not common.
Cardamine flexuosa With., Wood Bitter Cress. Infrequent.
C. hirsuta L., Bitter Cress. Infrequent.
C. pratensis L., Lady's Smock. Infrequent.
Cochlearia danica L. Danish Scurvygrass. Infrequent.
C. officinalis L. Scurvygrass. Frequent.
Lunaria annua L., Honesty. A few plants have persisted since 1962.
Sinapis arvensis L., Charlock. Two plants.

30. CARYOPHYLLACEAE

Arenaria serpyllifolia L., Thyme-leaved Sandwort. Frequent.
Cerastium atrovirens Bab., Dark Green Mouse-ear Chickweed. Frequent.
C. holosteoides Fr., Common Mouse-ear Chickweed.
C. semidecandrum L., Little Mouse-ear Chickweed.
Sagina maritima Don., Sea Pearlwort.
S. procumbens L., Procumbent Pearlwort.
Silena dioica (L.) Clairv., Red Campion. Rare.
S. maritima With., Sea Campion. Common.
Spergula arvensis L., Corn Spurrey. Only a few plants.
Stellaria graminea L., Lesser Stitchwort. Frequent.
S. holostea L., Greater Stitchwort. Infrequent.
S. media (L.) Vill., Chickweed.

34. CHENOPODIACEAE

Atriplex hastata L., Hastate Orache. Abundant.
A. laciniata L., Frosted Orache.

39. GERANIACEAE

Erodium cicutarium (L.) L'Herit., Common Storksbill. Rather rare.
Geranium molle L., Dovesfoot Cranebill. Rather rare.

43. ACERALEAE

*Acer pseudoplatenus L., Sycamore. Probably planted but not now naturalised.

51. PAPILIONACEAE

Lathyrus pratensis L., Meadow Vetchling. Rare.
Lotus corniculatus L., Birdsfoot Trefoil. Common.
Ononis repens L., Rest Harrow. Rare.
Trifolium dubium Sibth., Lesser Yellow Trefoil. Rare.
*Trifolium hybridum L., Alsike Clover. Infrequent.
T. pratense L., Red Clover. Infrequent.
T. repens L., White Clover. Common.
Ulex europaeus L., Whin. Rare.
Vicia cracca L., Tufted Vetch. Rare.
V. lathyriodes L., Spring Vetch. Very Rare.
V. sativa L. ssp. angustifolia (L.) Gaud. Rare.

52. ROSACEAE

Filipendula ulmaria (L.) Maxim., Meadowsweet. Rare.
Malus sylvestris Mill. ssp. mitris (Wallr.). Apple. Planted.
Potentilla anserina L., Silverweed. Infrequent.
Prunus domestica L., Plum. Prob. Planted.
Rosa rugosa Thunb., Japanese Rose. Probably planted.
Rubus fruticosus L., Bramble.
R. idaeus L., Wild Raspberry. Infrequent.
R. latifolius Bab. Only near house.
Sorbus intermedia (Ehrh.) Pers. Cut-leaved Whitebeam. Planted and seedlings.
Spiraea salicifolia L., Willow Spiraea. Planted.

54. CRASSULACEAE

Sedum acre L., Wall Pepper. Frequent on dry rocks.

55. SAXIFRAGACEAE

Saxifraga granulata L. Meadow Saxifrage. Two colonies.

56. GROSSULARIACEAE

Ribes nigrum L., Black Currant. Planted - escapes.
R. sylvestre (Lam.) Mert. & Koch, Red Currant. Planted.

75. UMBELLIFERAE

Anthriscus sylvestris (L.) Hoffm., Cow Parsley. Infrequent.
Conium maculatum L., Hemlock. Abundant.
Conopodium majus (Gouan.) Loret., Pignut. Frequent.
Heracleum sphondylium L., Hogweed., Common.
Myrrhis odorata (L.) Scop., Sweet Cicely. Two Plants.
Torilis japonica (Houtt.) DC. Hedge Parsley. Frequent.

79. POLYGONACEAE

Polygonum aviculare L., Knotgrass. Rare.
P. convolvulus L., Black Bindweed. Rare.
P. persicaria L., Spotted Persicaria. Rare.
Rumex acetosa L., Sorrel. Frequent.
R. acetosella L., Sheep's Sorrel. Frequent.
R. crispus L., Curled Dock. Abundant.
R. obtusifolius L. ssp. obtusifolius, Broad-leaved Dock. Infrequent.

80. URTICACEAE

Urtica dicica L., Nettle. Abundant.

81. ULMACEAE

Ulmus glabra Huds., Wych Elm. Planted.

87. CORYLACEAE

Corylus /

Corylus avellana L., Hazel - 1 bush, probably planted as it is near the garden.

89. SALICACEAE

*Populus x canadensis Moench. Planted. In garden. One or two small trees.
Salix caprea L., Goat Willow. Probably planted, in garden.
S. fragilis L., Crack Willow. Probably planted, in garden.
S. viminalis L., Common Osier. Probably planted. One or two small bushes.

95. PLUMBAGINACEAE

Armeria maritima (Mill.) Willd. ssp. maritima, Sea Pink. Common.

98. OLEACEAE

Fraxinus excelsior L., Ash. Planted.

103. BORAGINACEAE

Myosotis arvensis (L.) Hill., Common Forget-me-not. Frequent.
M. ramosissima Rochel, Early Forget-me-not. Infrequent.
Symphtum x uplandicum Nyman. Blue or Russian Comfrey. Introduced.

105. SOLANACEAE

Hyoscyamus niger L., Henbane. 12 plants in pasture opposite house in 1962.
1 plant in disturbed ground near pier in 1965.

106. SCOPHULARIACEAE

*Cymbalaria muralis Gaertn., Mey. & Scherb., Ivy-leaved Toadflax. On walls of house and garden.

Digitalis purpurea L., Foxglove. Infrequent.
Euphrasia officinalis L. Eyebright. Common.
Odontites verna (Bell.) Dum. Red Bartsia. Rare.

111. LABIATAE

Galeopsis tetrahit L., Common Hemp-nettle. Infrequent.
Lamium album L., White Dead-nettle. Infrequent.
L. purpureum L., Red Dead-nettle. Infrequent.
Stachys sylvatica L , Hedge Woundwort. Uncommon.
Teucrium scorodonia L., Wood Sage. Abundant.
Thymus drucei Ronn., Wild Thyme. Common.

112. PLANTAGINACEAE

Plantago coronopus L., Buckshorn Plantain. Not common.
P. lanceolata L., Ribwort. Frequent.
P. major L., Great Plantain. Infrequent.
P. maritima L., Sea Plantain. Rare.

113. CAMPANULACEAE

Campanula rotundifolia L., Harebell. Common.

115. RUBIACEAE

Galium aparine, L., Cleavers. Common.
G. cruciata (L.) Scop. Crosswort.
G. saxatile L., Heath Bedstraw.
G. verum L., Lady's Bedstraw.

116. CAPRIFOLIACEAE

Lonicera periclymenum L., Honeysuckle. Infrequent.
Sambucus nigra L., Elder. Abundant.

120. COMPOSITAE

Achillea millefolium L., Yarrow. Common.
Arctium minus Bernh. ssp. pubens. Lesser Burdoch (Bab.) J. Arenes. Several plants.
Artemisia vulgaris, L., Mugwort. Several plants.
Bellis /

120. Continued.

Bellis perennis L., Daisy. On paths.
Carduus acanthoides L., Welted Thistle. Frequent.
Centaurea nigra L., ssp. nigra, Hardheads. Frequent.
Chrysanthemum leucanthemum L., Gouans, Ox-eye Daisy. Frequent.
C. vulgare (L.) Bernh., Tansy. Rare.
Cirsium arvense (L.) Scop., Creeping Thistle.
Hieracium flagellare Willd. 1 plant by plant in 1965.
H. vagum Jord., Common.
Matricaria matricarioides (Less.) Porter, Pineapple Weed. Frequent.
Scorzonera hispanica L. Several plants. Planted.
Senecio jacobaea L., Ragwort. Abundant.
S. sylvaticus L., Wood Groundsel, Infrequent.
S. vulgaris L., Groundsel. Infrequent.
Solidago serotina Ait., Canadian Golden Rod. Garden survival.
S. graminifolia (L.) Elliot., Canadian Golden Road. Garden Survival.
Sonchus arvensis L., Field Sow-thistle. Common.
S. asper (L) Hill, Prickly Sow-thistle. Rare.
S. oleraceus L., Smooth Sow-thistle. Infrequent.
Taraxacum laevigatum (Willd.) DC., Red-fruited Dandelion. Rare.
T. officinale Weber, Common Dandelion. Common.
Tripleurospermum maritimum (L.) Koch ssp. inodorum (L.) Hyl. ex Vaarama. Common.
Tussilaga farfara L., Coltsfoot. Common.

133. LILIACEAE

Endymion non-scriptus (L.) Garoke, Wild Hyacinth. Infrequent.

136. JUNCACEAE

Juncus gerardii Lois, Saltmarsh Rush. 1 colony.
Luzula campestris (L.) DC, Field Woodrush. Common.

145. CYPERACEAE

Carex hirta L. Hairy Sedge. Rare.

CRAIGLEITH

Craigleith is a small, round islet lying about a mile due north of North Berwick to which it belongs. It is steep on all sides and rises 168 feet above see level. Once rabbits abounded. The vegetation is particularly lush. Except for the maritim plants, the other species are mainly ruderales and have been brought in by birds. Gulls feed on the mainland and roost there at night. Starlings have been the means of introducing the Elder.

20. FUMARIACEAE

Fumaria muralis ssp. boraei (Jord.) Pugsl. A few plants.

F. officinalis L., Common Fumitory. A few plants.

21. CRUCIFERAE

Capsella bursa-pastoris (L.) Medic. Shepherd's Purse. Rather rare.

Cochlearia danica L., Danish Scurvygrass. Abundant.

C. officinalis L., Scurvygrass. Abundant.

Raphanus raphanistrum L., Wild Radish. Abundant.

Sinapis arvense L., Charlock. Common.

Sisymbrium officinale (L.) Scop., Hedge Mustard. Not Common.

30. CARYOPHYLLACEAE

Silene maritima With., Sea Campion. Abundant.

34. CHENOPODIACEAE

Atriplex hastata L., Hastate Orache. Abundant.

37. MALVACEAE

Lavatera arborea L., Tree Mallow. Abundant.

79. POLYGONACEAE

Rumex acetosa L., Sorrel. Abundant.

R. crispus L., Curled Dock. Abundant.

R. obtusifolius L., ssp. obtusifolius, Broad-leaved Dock. Frequent.

80. URTICACEA

Urtica dioica L., Nettle. Abundant.

U. urens L., Small Nettle. Unfrequent.

106. SCROPHULARIACEAE

Veronica hederifolia L., Ivy-leaved Speedwell. Rare.

115. RUBIACEAE

Galium aparine L., Cleavers. Uncommon.

116. CAPRIFOLIACEAE

Sambucus nigra L., Elder. Abundant.

120. COMPOSITAE

Arctium minus ssp. pubens (Bab.) J. Arenes, Lesser Burdock. Several plants.

Senecio vulgaris L., Groundsel. Frequent.

Sonchus cleraceus L., Smooth Sow-thistle. A few plants.

Tripleurospermum maritimum (L.) Koch ssp. inodorum (L.) Hyl. ex Vaarama, Scentless Mayweed. Common.

146. GRAMINEAE

Dactylis glomerata L., Cocksfoot. Frequent.

Festuca rubra L., Red Fescue. Abundant.

Holcus lanatus L., Yorkshire Fog. Abundant.

Hordeum mirinum L., Wall Barley. Frequent.

Poa annua L., Annual Meadow-grass. Common.

FORTH ISLAND BIRD COUNTS 1967

R.W.J. Smith

	Inch-mickerry	Inchkeith	Fidra	Lamb	Craigleith
FULMAR (Sites) -		270	24	1	min. 40
CORMORANT - -				206	13
SHAG - -				132	min. 90
EIDER - -	N	14	6	1	2
OYSTERCATCHER -	1		Ca 5		
KITTIWAKE - -		143	56	126	Ca 570
COMMON TERN -	N		) Ca 50		
ARCTIC TERN			)		
ROSEATE TERN -	N		Ca 5		
SANDWICH TERN -	300				
RAZORBILL (Birds on Cliff)		0		5 eggs	Ca 30
Do. (Birds on Sea) -		12			Ca 46
GUILLEMOT (Birds on Cliff)		0		87 eggs	Ca 650
Do. (Birds on Sea) -		50			Ca 315
PUFFIN (Birds) -		62	4 (1 egg)	1	Ca 400

Unless otherwise indicated, figures represent pairs or nests.

"N" means present in numbers.

EXCURSIONS /

EXCURSIONS - 1967

Preparing an excursion programme for the Edinburgh Natural History Society reminds me of Ophelia making up her posey in Hamlet: "There's rosemary, that's for remembrance; and there's pansies, that's for thoughts"; except that in my case it is "Duddingston Loch, that's for ornithology; Arthur's Seat, that's for geology" - and so on. These last lines are not strictly true, of course, because a single branch of natural history cannot be studied to the exclusion of all others. One interest may predominate in each area, but all are inextricably linked, the rocks with the soil and the flora, the plants with the insects and birds and so forth.

We, in Edinburgh, are fortunate in having nearby, not only a great variety of interesting places to visit and study, but we also have a body of able and willing people who are kind enough to pass on to us their specialised knowledge of the district. Many of them are members of the society but we also benefit from the help given to us by people on whose time we have no claim, in Edinburgh and neighbouring counties.

For these reasons, my task of preparing the excursion syllabus is made much easier, and last season, as a result, we had a particularly full programme. There were, in fact, 49 outings which had 27 leaders and in addition, our recently departed president, Mr Wells, organised a week's holiday in East Anglia.

A number of the outings were part of surveys, some of which are carried out every year, although others have been instituted this year to help newcomers to natural history surveys, understand the value of recording seasonal changes in one area.

Any newcomer to natural history, venturing on our outings in April and May will no doubt have changed his hobby to an indoor one; it was almost uncanny how regularly Wednesday evenings and the weekends were wet. During the latter part of the season we have been much more fortunate and for once we can say that it has been a good summer - one to remember. Let us hope that next year will be equally good and will enable us to renew our acquaintance with many old haunts and enjoy visiting fresh territory further afield.

To those who have helped me in so many ways with the preparation and execution of this programme I should like to offer my sincere thanks.

EAST ANGLIA 1967

D.A.I. Baty

Five members of the society were fortunate enough to spend the last week of June in Norfolk, where Derek Wells had arranged a full itinery of visits to areas of special interest. Centred in Fakenham, our venues were confined to reserves in the northern /.

northern half of East Anglia, which were mainly owned or managed by the Nature Conservancy of the Norfolk Naturalists' Trust, and on each occasion a warden or guide accompanied us.

Our first full day was spent at the Breckland ("break-land") Heaths around Thetford, where Artemisia campestris (Field Southernwood), Silene conica (Striated Catchfly), Erigeron acris (Blue Fleabane), Silene otites (Spanish Catchfly), Carlina vulgaris (Carline Thistle) and the rare Veronica spicata (Spiked Speedwell) were of special note. At one site, the devastating effect of rabbits was being studied, and here the party had a good view of a stone-curlew, as well as numerous turtle doves and red-legged partridges. The rest of the day was spent in the Battle Area at Stanford, a large stretch of Breckland with an interesting variety of plant and bird life.

Another hot, sunny, day saw us off to Scolt Head Island, which is noted for its large colony of common and sandwich terns. A leisurely afternoon was spent examining the maritime flora on Scolt, amongst which three species of Sea Lavender, Limonium vulgare, L. humile, and L. bellidifolium, Eryngium maritimum (Sea Holly), and Ophrys apifera (Bee Orchid) were seen.

At our first stop on the Wednesday, a small wood, Monotropa hypopithys (Yellow Bird's-nest) was a good find among a rich variety of chalk-loving plants. The morning was spent in the fenland area of the Bure Marshes, an extensive nature reserve, which produced Osmunda regalis (Royal Fern), Cicuta virosa (Cowbane), Calamagrostis canescens (Purple Smallreed), a swallowtail butterfly, a good variety of warblers and one coypu.

After lunch, at Hickling Broad, we all bundled into the warden's boat for a tour of the reed-beds. We visited two of the hides, from which great-crested grebe, Canada goose, shoveler, teal and gadwall were spotted, as well as several bearded tits.

The Thursday was devoted to looking at two commons of the bracken - heath type in north-west Norfolk, the Nature Trail at Sandringham, and a glacial gouge valley through chalk, near Hunstanton. This last area proved to be the most interesting, its beech-clad sides affording ample cover to many species of birds, especially turtle-doves and the ever-present yellowhammers, while its chalk flora included Poterium sanguisorba (Salad Burnet), Hippocrepis comosa (Horse-shoe Vetch), Lithospermum officinale (Gromwell) and Salvia horminodes (Wild Clary).

Our last day began with a preview of the Holkham National Nature Reserve, an area of about 4,200 acres of coastal marshes and dunes and 5,500 acres of sand and mud flats, on the north coast. This area serves as an important refuge for wintering wildfowl. Lunch was eaten at an Iron-age fort at Warham, which now boasts a fine chalk flora, and Orobanche minor, var. compositarum (Lesser Broomrape) was found near this locality.

An ornithological afternoon was spent at the Clay Marshes, during which the party had good sightings of bearded tits, reed and sedge warblers, and a pair of flamingos. Exciting views of a fine cock red-backed shrike made a fitting close to the day and to the week.

I would finally like to express our thanks to all who led and instructed so interestingly, and to Dr George and Derek Wells for organising such a splendid week.

WINTER MEETINGS 1966-67

Miss Nora F. Henderson

A successful series of winter meetings was held in the hall of St. Thomas of Aquin's School. At the close of business at the A.G.M. in October, Mr Tom Huxley of the Nature Conservancy, addressed the meeting on "Conservations in a changing Landscape". With the aid of colour slides, and taking the Loch Leven Nature Reserve as a classic example, Mr Huxley illustrated some of the problems of nature conservation. At the next meeting in November, the speaker was Dr Charles Waterston of the Royal Scottish Museum, already well known to many members of the Society as an eminent geologist and racy lecturer. The subject of his addresswas "Edinburgh on the Rocks". In an interesting and stimulating address Dr Waterston outlined the geological history that has led up to the shape of the city which we know today, and illustrated his talk with colour slides and drawings. "Scotland's Butterflies and Moths" was the subject chosen by Mr Pelham-Clinton of the Royal Scottish Museum, who is a member of council of our Society. This was a fascinating address. Mr Pelham-Clinton reviewed how the geographical distribution of butterflies and moths was governed mostly by food and climate. The various species had become specialists and so would only exist under certain favourable conditions. The January meeting was addressed by Mr Chris Mylne, the well-known bird photographer, who gave an interesting address, illustrated by beautiful colour slides and the film "A Water Bird's World". The first part of the evening was devoted to the showing of transparencies depicting many Scottish scenes and illustrating the art of photographing birds in their natural surroundings. Then Mr Mylne showed the magnificent colour film which dealt primarily with the breeding cycle of the great-crested grebe. Remarkable shots were obtained of the elaborate display of this bird, including the "weed dance" filmed in colour for the first time in Britain.

"A Botanist in Sarawak" was the title chosen by the botanist Mr B.L. Burtt, of the Royal Botanic Garden, when he addressed the February meeting. Mr Burtt was botanist in a party which visited the heavily forested country of Sarawak - a country where progress on foot is very slow. Most of their travelling had to be done by boat which enabled them to penetrate up the wide estuaries and rivers. Mr Burtt showed many slides of plant and animal life, and also photographs of village life in this little-known country.

The winter programme was concluded with a members night. Contributions were made by Mr Usher, Mr Sime, Miss Henderson, Mrs Robertson, Mr Bedford and Mr Smith.

MISCELLANEOUS OBSERVATIONS

Lapland buntings (E.L. Hamilton)	Aberlady	-	-	1966 Nov.14
Sandwich terns (D.A.I. Baty)	Cramond Is.	-	-	1967 Apl. 4
Chiffchaff (E.L. Hamilton)	Newbattle	-	-	Apl.23
Willow Warbler (E.L. Hamilton)	Melville Cas.	-	-	Apl.23
Swifts (E.L. Hamilton)	Eskbank	-	-	May 6
Albatross (Reported)	Bass Rock	-	-	Jne. 3
Snow goose (R.W.J. Smith)	Fidra	-	-	Jne.10
Puffin egg (R.W.J. Smith)	Fidra			
Grasshopper warblers (D.A.I. Baty)	Saltoun	-	-	Jne.17
Pied flycatcher (K. Herbertson)	Inchkeith	-	-	Jne.18
Crossbills (12) (D.A.I. Baty)	St. Abbs	-	-	Jly. 8
Woodcock (D.A.I. Baty)	Cramond Is.	-	-	Jly.7-Aug.6
Small Tortoishell (E.L. Hamilton)	Dalkeith	-	-	1966 Oct. 2
Red Admiral (E.L. Hamilton)	Dalkeith	-	-	Oct. 11,16,17,28
Small Tortoishell (E.L. Hamilton)	Dalkeith	-	-	1967 Apl.16
Meadowbrown (D.A.I. Baty)	Cramond Is.	-	-	Aug. 6
Common starfish (850) (D.A.I. Baty)	Cramond Is.	-	-	Mar.29 Apl.23

One of the most interesting ornithological records in the Firth of Forth during this century has been the occurrence this year of the Albatross in the vicinity of the Bass Rock from at least early June, until, it is recorded, about the end of September. It was present at the Bass at the beginning of June, although a small party of our members unfortunately failed to see it on 4th June, yet the lighthouse keeper had observed it a day or two previously.

The Albatross belongs to the Thalassidromidae, the Petrels and Shearwaters - of the family Diomedeidae. In T.A. Coward's The Birds of the British Isles, Vol.3, third edition 1940(-1947), it records simply "one wanderer from Southern Oceans" for the Black-browed Albatross, (Diomedeidae Melanophris).

THE EDINBURGH NATURAL HISTORY SOCIETY

NEWS-LETTER

1968

EDINBURGH NATURAL HISTORY SOCIETY

1968

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E D I T O R I A L

Continuing with the theme that successive News-Letters should cover sites of interest in the Edinburgh region, Corstorphine Hill has been selected for the current year: although covering a relatively small acreage, it is one of considerable interest from different points of view. Corstorphine and its Hill have a long history Some maintain that a Roman road ran near the Hill, to the well-known fort at Cramond. The name seems to have been first recorded about 1130 as 'Crostorfin', changing in time, to 'Crorstorfin' and to 'Corstorphyne' in the 16th century; it is believed to have originated from Torfin's crossing. In the Timothy Pont survey in the Gerard Mercator Atlas of 1630, as reprinted in 1632, the position of 'Korftorphin' ('f' as old 's') Hill is shown; in those wonderful maps of the Military Survey of Scotland, 1747 - 1755, the 'Roy' maps record 'Corstorphin Hill', 'Craigcrook' and 'Corstorphin Muir' to the west, as well as 'North Barntoun' and 'Murray Field'. The historic and well-known family of Forrester held the barony from 1376 to 1698 In 1885 Corstorphine Hill and other ground was put up for sale by public roup and was sold to a private individual. The Zoological Park was acquired just before 1914. By 1936 the City had acquired some 30 to 40 acres which were made open to the public. In 1961 it was recorded that the Edinburgh Corporation had purchased 93 acres which were allocated to the Public Parks Department. Since then Corstorphine Hill has been enjoyed by many because of its commanding position overlooking a region of outstanding beauty and unrivalled landscape, because of the beauty of the woodlands and flowers, its birds, insects, mammals and other treasures, and not least for its recreational facilities.

In order to have a record of the various interests, we are pleased to have papers on Corstorphine Hill at the present time on the mammals, the botany, the entomology, the woodlands and a personal historical note on the Hill since the beginning of the century.

It was felt that it would be interesting and valuable to have a paper on rock gardens in the Edinburgh area, and Dr. Tod of the School of Agriculture, Edinburgh, was asked to contribute as a guest writer; this he has done, producing a welcome and a most helpful paper, for which we are most grateful.

The numerous natural history interests on the Hill point to the desirability of some form of protection on the area. It might be possible, for instance, to fence off small areas where interesting birds, insects and small animals might live and breed undisturbed, and where the flora might also be conserved, in an area which is rapidly becoming more restricted and where, therefore, it is more difficult for animal and other life to exist. Much has been done by the Society in the past to create and add to the interest in natural history of the

Edinburgh region. Planning, as so ably demonstrated by Dr. Michael Usher, (now on the staff of the Department of Biology at the University of York), in his management plan for Aberlady, is essential in these days of violent change in our way of life, particularly in the suburban sites round Edinburgh.

I wish sincerely to thank all those who have contributed to this number. Our special thanks, from the Society as a whole, again goes to Mr. Gordon Finnie for his invaluable help in the production, so well carried out, of our News-Letter for 1968.

W. A. F.

The Larger Mammals on Corstorphine Hill

There can be few areas within the City boundary offering greater recreation facilities throughout the year to so many people as Corstorphine Hill, yet causing so little inconvenience to the wildlife living there. Thousands visit the Zoological Park annually; two golf courses on the lower slopes are in constant use; local scouts and guides are out in force on summer evenings; many dogs are given their daily walk in the woods, and with the increase in housing in the surrounding area the Hill has become a popular playground for children and teenagers.

Under these conditions it is perhaps worth noting what is happening to some of the mammal populations on the Hill. During the past thirty years the main changes for them have been increased disturbance due to the greater number of people using the Hill, reduction in foraging area as the neighbouring areas are taken over for housing, and consequent upon these two factors there is restriction of movement. A less obvious change is the steady reduction in the natural water supply of the area.

Increased disturbance has never been a threat to the grey squirrels. The wild population originated from escapes from the Zoological Park and the present population is mainly concentrated in and around that area where disturbance is at its greatest.

Foxes are less frequently seen than in the past, possibly due to a reduction in numbers but more likely due to decreased activity during daylight hours. Increased disturbance could also account for the present population tending to favour the areas around the top of Barnton Quarry, and the disused quarry at Boraston Knowe.

Disturbance seems to have had little effect on the density of badgers for the setts here are more numerous than in any other area in the Lothians. The animals adopt rather later times of emergence here than in similar wooded areas nearby, but this has not yet been fully confirmed. For no apparent reason, during the past few years, badgers have deserted setts in the quieter woods behind Ravelston House which may in part account for the rapid increase in setts on the Hill during the past five years. These now extend from ground overlooking the Queensferry Road, to fields behind Scotus Academy and to within the Zoological Park.

It is not known what effect the reduction in feeding area has had on foxes but one suspects that any loss due to loss of farm land has been made up for by scavenging in gardens and rubbish tips. There has been no encroachment on the squirrel feeding area. Badgers cannot have suffered much from the loss of land when large areas such as the grounds of Ravelston House remain virtually unused.

Restriction of movement during daylight has already been referred to. However, each year the Hill becomes more like an island in a sea of housing and each year it becomes more difficult for venturesome creatures to leave the area by traditional routes. Badgers have been seen near Craigleith Junction and one wonders if the disused railway lines may be the travel routes that they are turning to.

The natural water supply has been decreasing steadily for many years. The upper half of the Bughtlin Burn now runs underground; drainage has dried out other areas such as the field below Craigcrook Castle. Quarries at Ravelston and Boraston Knowe are being filled in by the Corporation. Foxes in future may have to go further afield to drink. Badgers are nowadays considered to be independent of water supply but would this still pertain in times of drought?

In the years to come when housing makes greater demands on land in the Cammo and Barnton areas, Davidson's Mains and Ravelston, one hopes that Corstorphine Hill will remain the area of interest it now is and where on a fine evening one can hear the incongruous mixture of ice-cream vans playing tunes and woodcock flying overhead.

Elizabeth Farquharson.

Corstorphine Hill Woodlands

Corstorphine Hill, which lies some two miles to the west of central Edinburgh, rises to a height of 520 feet and is surmounted by Clermiston Tower which is over 70 feet in height, and from the top of which a magnificent view can be obtained in all directions. The Hill is approximately one and a half miles from north to south and half a mile from east to west; the Edinburgh Zoological Park lies on its southern slopes. On its western slopes it consists, geologically, of intrusive igneous rocks of the Carboniferous period and on the eastern slopes of calciferous sandstone measures of the same epoch. The whole was covered by the Forth glacier (of the recent Ice Age), which moved towards the east-north-east at this point, in the direction of the Isle of May. Much of the hill and the adjacent plains are covered with boulder clay. The soils vary in depth from shallow in the vicinity of exposed parent rock and light soils, to deep fertile clay loams over the calciferous sandstone on the eastern slopes.

It is interesting to think that the natural tree vegetation might have consisted of alder, willows and some birch in the low-lying wet areas at the base of the hill; there would be ash and alder on the moister sites, changing possibly to ash, birch, lime, aspen and hazel on the moist soils, giving way to ash and oak of the moist oak wood; this, in turn, would merge into dry oakwood, probably with sessile oak, which grows quite well today on the drier western slopes, birch, gean, rowan, hazel and hawthorn would occur too. It is probable that on the more sheltered sites on the higher slopes, Scots pine, birch, gean and possibly juniper might have occurred, as does the latter on the north-east slopes of the Pentland Hills at the present time.

The woodlands today consist largely of hardwood species and it is fairly certain that these were for the most part planted in recent times; there are a few conifers including Scots pine, mostly on the dry shallow soils on the exposed west slopes and on the crest, and ill-shaped because of the exposure; there are larch too, some of which are large, noble specimens, while there are also some yew. The hardwoods respond to the greater depth and increased fertility of the hollows on the western and southern slopes, while on the east the fertile sites and the deep fissures support well-grown sizable stands of very good hardwoods which are probably insufficiently appreciated.

At the present time the best and most striking of the hardwoods include sycamore, beech, lime, elm, sweet and horse chestnut, and both sessile and pedunculate oak, neither of which, however, is very striking; good oak could be grown without difficulty on the correct sites: amongst the smaller species occur rowan, whitebeam, birch, hawthorn, willow and elder. It is interesting that there is a fair amount of naturally regenerated ash, beech, sycamore, birch and hawthorn, which show distinct possibilities in the rehabilitation of the woods. It is worthy of note too that a small number of clearings have been fenced and planted with groups of mixed species, including sycamore, ash, horse chestnut, larch and spruce, an excellent plan which it is sincerely hoped will be continued for the sake of amenity and recreation now and in the future, following, as far as possible, the natural tree vegetation for the various significantly different sites. These woods, like all woodland, require care, maintenance and management so that they may continue to be a treasure in the few remaining woodlands in the vicinity of Edinburgh.

W.A.F.

Rock Gardening in the Edinburgh Area

Edinburgh, with its many hills and slopes, to say nothing of its windy climate, is perhaps unusually suited to rock gardening. One can make a rock garden on a level site, but it is very much easier to make a good-looking one on a slope. A slope also gives much better drainage which rock plants usually prefer and, coming from the high hills, they will tolerate strong winds - in fact, often benefit from them.

Unless the ground has been heavily limed in the past, most of the soils in and around Edinburgh are on the acid side of neutrality so that a wide range of plants can be grown. That somewhat tricky plant, Gentiana acaulis, which in many places will grow strongly, but will not flower, behaves itself well on the west and south sides of the town, though in other parts it is frequently temperamental. This was shown in a preliminary survey carried out by the Scottish Rock Garden Club's Members in the area, but these findings need to be very much expanded to give

By way of contrast, the Saxifrage family, mossy and encrusted alike, flourish, growing well and flowering freely and the rather more difficult group of Kabschia saxifrages, at least the easier ones, also grow happily and flower well. The Potentilla tribe from the prostrate P. verna to the shrubby P. fruticosa will give a very long period of bloom in various shades from orange-reds through yellows to creams and whites.

Where the soil is lime-free, dwarf rhododendrons, particularly those of the Lapponicum group grow and flower freely forming dense little twiggy bushes fairly covered with flowers in purples, reds and yellows. Our climate is rather too cold and damp for many of the dwarf Japanese azaleas (also, of course, rhododendrons) - at least in the writer's experience - but the long-flowering Helianthemums, the sun roses, give a gay show of a very wide range of colours over a very long flowering period. In fact, they grow so strongly and so well that they need a trim over each year after flowering to keep them from becoming too wide-spread and straggly.

The Helianthemums are not in the least fussy as to soil, but the lovely autumn-flowering Gentians, such as Gentian sino-ornata, Gentian macaulayi and Gentian 'Inverleith' need a lime-free soil with enough peat added to the soil to keep it from drying out and to keep it acid. They provide some of the most magnificent blues that can be grown in the garden and late in the season at that, from September to the onset of really hard frost.

The "mossy" Phloxes from North America flower from about late spring to high summer - if there is any! - in shades from white through pinks and purples to blues but they - again in the writer's experience - must have a hard exposure to sun and wind to flower freely. If they do, they can so cover themselves with flowers that hardly any of the needle-like leaves can be seen.

Oddly enough, some of the distinctly "tricky" New Zealand alpines do well in our area. They are usually plants for the specialist but for some obscure reason the white New Zealand Gentians, such as saxosa and corymbifera, though short-lived grow and flower well and set good seed. Also some of the normally awkward cushion plants like Pygmaea and some of the carpeters like the less-impossible species of Raoulia will do well in the open rock garden.

Taken all in all, the Edinburgh area is a good one for rock gardening - which is probably the reason that the Scottish Rock Garden Club started here some 34 years ago and now has spread its membership quite literally all over the World.

Henry Tod.

Summer Excursions 1968

As I write these lines the 1968 programme of summer excursions is rapidly drawing to a close. It was unfortunate for those who joined the outings in the early part of the season, especially in April and early May, that spring once again failed to appear at the appointed time. Not only were the flowering plants and the birds behind schedule, but people's pleasure in the outings was occasionally marred by chill winds, haar and rain. However, later on in the season there have been many sunny days to help us forget, in part at least, the cold spring. Some time, in one of the coming years, we shall no doubt be fortunate enough to have an early spring again.

One feature of this year's programme has been the increased number of joint outings. Besides a 'return engagement' with the Newcastle Naturalists (this time to a lovely area south of the Border) and a visit to the Ayrshire coast with the Andersonian Naturalists of Glasgow, four excursions in the Lothians have been held jointly with the Botanical Society of Edinburgh and with the Lothians and East Stirlingshire Branch of the Scottish Wildlife Trust.

The Chairman of the latter organisation led a party of the Society's members on an ornithological excursion near Torphichen and the Secretary of the Botanical Society will once again, with his infectious enthusiasm, be leading a 'fungus foray' in October. Three lecturers from Edinburgh University, Dr. Myerscough, Dr. Newey and Dr. Harper, and Dr. Waterston of the Royal Scottish Museum, have also given generously of their time and energies to lead excursions. Dr. Newey's outing is to demonstrate in the field some of the work about which he talked at last October's meeting.

Despite a chill wind, grey skies and, to one car-driver, the nerve-racking negotiation of some very rough roads, a number of our members enjoyed a visit to the Tentsmuir Nature Reserve and Morton Lochs in Fife. For those to whom this was new territory there was a tremendous amount to see and learn under the friendly instruction of Mr. Len Fullerton. Unfortunately the strong onshore winds and high tides had upset the nesting terns, but at Morton Lochs, as a compensation, some of us were fortunate enough to see from the hide part of the courtship 'dance' of the Great Crested Grebe. Our only regret was that there was not more time to allow us to stay longer.

We had, as in previous years, some difficulties in alternately filling a 30-seater coach or finding enough cars to take all the non-car-owners who wished to go on private car excursions. We hope that one solution will be the further use of an 11-seater mini-bus which we have hired on two occasions and which seems to have provided members with a comfortable ride at a reasonable cost.

It is unfortunately impossible here for me to thank individually all those people who have contributed to the preparation of the programme of summer excursions. Many whose names do not appear in the list of leaders have offered advice and suggestions, others have in addition led excursions and passed on their knowledge and enthusiasm to others. For all their efforts I would like to say a sincere, personal 'thank you'.

David H. Jones.

The Flora of Corstorphine Hill

Corstorphine Hill is so densely wooded on all sides except the west, that the ground flora is mainly restricted to the spring months when the trees are still leafless or the expanding young leaves are still too small to cut off the light. Then the woodland floor is colourful with Lesser Celandine, Dog's Mercury, Wood Anemone, Wood Sorrel, Wood Violet, Greater Stitchwort, Wild Hyacinth and Red Campion. Primroses, until comparatively recently, were not infrequent on the western slopes of the Hill, but it is doubtful whether any still remain. London Pride was introduced many years ago and whether the Lesser Periwinkle, which occurs in abundance in the same area, was also once introduced is hard to say for so often in Scotland this plant has been introduced into shrubberies and policies. It is interesting that the delicate white-flowered Climbing Corydalis can still be found more or less in the same area from which it was first recorded more than two centuries ago.

On the more open, heathy, western side of the Hill are to be found Gorse, Broom, Foxglove, Heath Bedstraw, Tormentil and colourful patches of Sheep's Sorrel and Wavy Hair Grass. A much later flowering plant is the Enchanter's Nightshade which occurs in some abundance on the north side of the Hill. Our four common ferns, the Golden Male Fern, the Male Fern, Lady Fern and the Broad Buckler Fern still continue to flourish. We must consider ourselves most fortunate that despite nearby housing schemes some 160 different species of flowering plants can be found either on or adjacent to the Hill, and some abundantly so still. Fortunately its rarer plants are rather tucked away and not everyone knows where to find the Cuckoo Pint, the Spurge Laurel and perhaps the most astonishing of all, a relatively large colony of the Common Spotted Orchid, possibly the only one within the city boundary. Steps will have to be taken to protect this colony.

There is no doubt that the Hill was once covered with much more alder, willow, hazel, birch and Scots pine than there is today, possibly before the Horse Chestnut, Sweet Chestnut and Sycamore were introduced and grew up to cast such dense shade. Everyone knows that the Horse Chestnut,

Aesculus hippocastanum, has no connection with the Sweet Chestnut, Castanea sativa, except for a similar fruit. Botanically they are quite apart. The name of the Horse Chestnut may be derived from the German Ross Kastanie meaning 'coarse', not 'horse' chestnut - horses leave it severely alone. Even Linnaeus excelled himself in choosing a scientific name for it as he called it Aesculus, meaning 'good to eat' which it isn't; and added as a specific name the spurious Graeco-Latin adjective hippo-castanum which despite its classical sound is a bad translation of 'horse chestnut'. The Americans call this tree 'buckeye', because the white patch on the brown seed recalls the eye of a deer. Our common Horse Chestnut came to us from Greece about 1576 when seed was sent from Constantinople to the botanist Clusius in Vienna and since then it has been extensively planted throughout Europe and elsewhere for its showy blossom. The Red Horse Chestnut, Aesculus carnea, arose in the nineteenth century as a chance hybrid between the common Horse Chestnut and the American Red Buckeye, Aesculus pavia. Nurserymen increase it by grafting on a common stock.

The Sweet Chestnut was probably introduced into Britain by Roman legionaries since it formed one of their staple rations, the nuts being ground into a most nutritious meal called pollenta. Even today chestnuts remain the staple diet of the peasants of many of the Mediterranean islands, such as Corsica, Sardinia and Sicily. Although seeds are found in this country they are much too small to be of any use as food. The Sweet Chestnut may be native in the south of England for its charcoal has been found associated with ancient flint flakes in Kent, dating from the dawn of the Christian era.

The Sycamore, Acer pseudoplatanus, has been grown in Britain since Roman times. Again the name is a misnomer being an attempt to render into English the Graeco-Latin word syco-morus, a 'fig-mulberry' mentioned in the Bible. The two trees have nothing in common except the shape of the leaf. Leaf shape has also caused confusion with the planes of the genus Platanus which is called 'sycamore' in America, whereas the sycamore is called 'plane' in Scotland. Again Linnaeus didn't help very much when he gave the sycamore the specific name of pseudoplatanus or 'false plane'. An odd thing about the Sycamore is that the seed-leaf is tinted green with chlorophyll even while it lies coiled up within the little seed, and before it has become exposed to light. The black spots often seen on sycamore leaves are not natural, but represent areas damaged by the rust fungus Rhytisma acerinum. The black spots do not occur on sycamores in cities, for this fungus is very susceptible to sulphur in the atmosphere. Occasional trees show a beautiful curly-grain or ripple figure, and these are prized for veneers for decorating furniture, and for 'fiddle-back' patterns on fiddles.

Elizabeth P. Beattie.

Corstorphine Hill and Its Wild Life Changes

I first set foot on Corstorphine Hill sixty-five years ago when it was all private property and I was a juvenile trespasser, mostly when the wild rasps were ripe. Forty years or so ago, the summit ridge and its covering woods became public property and access was unrestrained. The woods largely remain and you may still enjoy solitary walks, except at the week-ends, and tokens of the wild remaining in part. But the changes have been great. Bordering fields, erstwhile haunts of corn-crake, partridge and lapwing, (the first I last heard here about 1933) are now filled with bungalows or council houses. The marl-pits on the Craigcrook-Davidson's Mains road, have been filled with rubbish, and wild duck, coot, moorhen, little grebe, reed bunting and sedge warbler, which all nested there, have vanished. Only the three pine trees which marked this once delectable spot remain to indicate its whereabouts. A small quarry water-filled and on the hill-top was drained, and so the inhabiting newts lost a home.

All the above are losses, and there are more to record. Any gains? Yes, the badger, a relatively new-comer, is well established and the fox has its lair. Grey have alas! replaced the red squirrels. I can think of no ornithological gains, though I have observed both Green and Greater Spotted Woodpecker, unknown sixty years ago. I found the Garden Warbler's nest in 1926; the bird went a long time ago and more recently the Wood Warbler followed it. The Whitethroat I failed for the first time this year to note, although it may still nest. The same applied this year to the Spotted Flycatcher, but it probably does remain. The Redstart (as I was reliably informed) nested about 1900 - I have only once seen it on the Hill. The tawny owl may still be found, but its numbers have certainly declined. Jackdaw, Magpie. Carrion Crow still hold their own, the last especially. A determined effort to wipe out the Rook in Corstorphine appears to have been successful, although I think it may have nested recently in the trees at the Zoo.

Ten years ago, there were at least three stations for the Common Primrose on the Hill. One was in a corner of Murrayfield Golf Course, one was near the Hillwood estate lodge, now knocked down, one on a private piece of ground adjoining the Golf Course. The first two stations no longer support a single specimen. The Lesser Periwinkle was spread over a large part of the wood east of the Scott memorial; it remains, as does a small clump of the Wild Arum. If I may be allowed to include the woods north of the Queensferry Road as part of the ridge - two losses are much to be deplored. Close to Davidson's Mains there was a fine colony of Spotted Orchid; not far away was a group of Giant Bell-flowers. These are all gone. I suppose the casual and ignorant wanderer through the woods has much to be blamed for, but the more serious botanist is not guiltless in the matter. Can no restraint be placed on

actions which, whatever their causes, have the practical effect of destroying much that in its entirety represented a thousand forms of beauty, much of which our descendants will not be permitted to enjoy?

P. W. G. G.

Firth of Forth Island Bird Counts - 1968

1968 is the tenth year of our island bird counts. It is interesting to compare the 1959 with the 1968 figures for some of the species counted. Cormorants have steadily increased and have multiplied fivefold from 44 to 240 nests. Kittiwakes have colonised two new islands and the numbers have jumped from just over 400 to 1,100 pairs.

On the Farne Islands disaster struck the Shags in May of this year, many birds dying and others leaving their nest-sites after eating fish poisoned by an alga. Fortunately the Forth birds were not affected. The Lamb population went up by 15 per cent to 159 nests from 1967; there were 35 in 1959.

Sandwich Tern numbers seem to be on an upward trend again with 405 nests (300 in 1967) all on Inchmickery. The Fidra Terns are all but gone with only a dozen or so Common Terns weaving rather forlornly overhead - and two broken eggshells on the ground. The Eider and Oystercatcher too, and even the Herring Gulls, are having a very thin time there. The presence of rats could have just this effect but the Pest Control Officer could find no trace of these animals on the island. Whatever the cause, Fidra's glory as a bird island has been sadly dimmed.

The most exciting seabird news of 1968 was undoubtedly the return to the Bass of the Black-browed Albatross. Other titbits of our island year were the 3 Manx Shearwaters which crossed our bows as we returned from Inchkeith. More unusual perhaps was the Drake Tufted which flew, with a long line of Guillemots, past Craigleith. Non-seabird records of interest are the empty Carrion Crow's nests on Inchkeith and Craigleith; the three Reed Bunting territories, with adults carrying food, noted on Inchkeith and the reports of a Corncrake (on the latter island) which spent at least the whole of June there.

The counts are as follows:-

	Inchmickery	Inchkeith	Fidra	Lamb	Craigleith
Fulmar		uncounted	28	1	40
Cormorant ..				240	
Shag				159	80
Great Black Back					1
Kittiwake ..		163	83	153	700
Sandwich Tern ..	405				
Razorbill (sea)		1x			35x
(land)				10	25
Guillemot (sea)		17x			500x
(land)				90	900x
Puffin		43x	15x		400x

In the above the Fulmar figures are 'sites', those followed by an 'x' are birds, all others are pairs or nests.

R. W. J. Smith.

Direction Finding by the Cuckoo

The Cuckoo, Cuculus canorus, is the well-known harbinger of spring and of summer to come, but whose parasitic habit of egg laying makes it not altogether popular. The members of the cuckoo family are shy; they are usually not readily observed, thus making their study all the more rewarding. The bird is grey with horizontal grey and white narrow bands on the lower chest; it has sharp pointed narrow wings and long tail feathers. It is found in all manner of country throughout the British Isles during summer, but favours woodlands, plantations and their edges, commons and even stretches of treeless country. It is polyandrous and the egg is generally laid singly in the host nest, usually that of the smaller bird.

A rather unusual personal observation on the highly developed reactions of a particular cuckoo may be of interest and perhaps of value to the ornithologist.

Some few years ago I had climbed the hills to the south of Nairn to a forest area consisting of Scots pine and larch which had suffered from windblow, so that the trees were somewhat sparse on the ground in certain places. On reaching the crest of the hill I found that the southern edge of the wood was quite close; I went over to near the margin where the pine were scattered and sat down about ten yards from the boundary fence with my back to a pine and with one half left and a second half right of me. Open grazing ground sloped away in front of me southwards to a valley and a small stream about a mile away; over to my right, at about 400 yards, was a promontory of the wood where there had been heavy wind damage so that only isolated pine and larch remained.

I had been seated for some minutes when I heard a cuckoo and, half in earnest, I started a series of cuckoo calls, halting at short intervals. The challenge was accepted and after a number of calls had been exchanged, I saw the bird silhouetted clearly at about 40 feet from the ground on a dead branch of the outermost Scots pine in the wood promontory almost due south from me. As I watched the cuckoo flew about 100 yards to the west towards the thicker portion of the wood and I saw it perch on an open-branched larch, again about 40 feet up, so that I could still see it at approximately 300 yards, small as it was at that distance.

The exchange of calls was renewed and by then I was quite serious in seeing if I could get the cuckoo to come in search of the intruder in his territory. After what seemed to be three or four minutes, I was interested to see it take off from the larch and flying progressively lower, coming hurtling towards me at speed and on a perfectly direct line. Within seconds it was reminiscent of seeing an aircraft coming straight at one; the cuckoo rapidly became larger, coming dead on target (I was still seated on the ground), till it was about 15 feet from the edge of the wood and about 6 feet off the ground when, presumably seeing me, it banked and swerved violently away and along the fringe of the wood.

It was obvious that the cuckoo had taken a most accurate cross-bearing in two dimensions, having also pin-pointed my actual position at the base of the pine where I had remained without moving. Whether the cuckoo's move from the original pine to the larch was deliberate or not is conjectural, but the accuracy of its attack on the cross-bearing, its uncanny assessment of elevation to the point from which I had called, and finally the speed with which it approached, were astonishing.

It seems probable that the position of a rival or of a possible intruder on the cuckoo territory is as near as possible pin-pointed, certainly on occasion, by a clever, if instinctive, piece of direction finding and quite accurate assessment of the actual point of origin of the call.

W. A. Fairbairn.

Insects of Corstorphine Hill

In contrast to the Queen's Park, described in the 1967 News-Letter, relatively little is known of the insects of Corstorphine Hill. As mentioned in the article on the Queen's Park, we have many old records of butterflies and moths from that area in a paper by Lowe and Logan (1852, "The Lepidopterous Insects of Midlothian", The Naturalist (B. R. Morris) 2: 121-128, 141-149). R. F. Logan lived at Duddingston, but Dr. W. H. Lowe lived at Corstorphine and contributed records to the list from Corstorphine Hill and Balgreen. Of the species in the list which are specially mentioned from Corstorphine Hill none is very remarkable, and most could probably be found today. However, a rather surprising feature is the number of species associated with pine: of these it is doubtful whether the Geometrids Semiothisa liturata (Tawny Barred Angle) and Eupithecia indigata (Ochreous Pug) still occur in Edinburgh. Perhaps at that time there was more pine on the Hill than there is now. A few other moths in the list, Eupithecia linariata (Toadflax Pug) (on Linaria), Stenoptilia bipunctidactyla (on Scabiosa succisa), Odezia atrata (Chimney-sweeper) (on Conopodium majus) and Euxanthis hamarna (on thistles) suggest that there was also more ungrazed open ground.

The Coleoptera volume (the only one published) of "Entomolgia Edinensis" by James Wilson and the Rev. James Duncan (1834) gives another interesting clue to the state of the Hill over a century ago. From Corstorphine Hill are recorded two handsome bright red weevils, Attelabus curculionoides (now known as A. nitens) and Apoderus avellanae (now A. coryli), both hazel species. There is hardly enough hazel on Corstorphine Hill nowadays to support a colony of either of these species. This fact leads me to a thought which is relevant when trying to assess the entomological possibilities of such an area as Corstorphine Hill. Although insects are small, many species need large spaces for survival. A plant-feeding species that is well adjusted to its surroundings is not found wherever its foodplant grows, feeding on every single plant, but is distributed in small local concentrations: then if in one of these areas the species is eliminated by parasitism, predation or other causes, there are other centres nearby from which the area can be re-colonised. Therefore, a species that is confined to a particular foodplant is unlikely to survive for long on a few plants well isolated from others; so, on Corstorphine Hill hazel, alder and willow (although at least three species of the latter grow there) are not widespread and do not have many of their particular species.

But the woods of Corstorphine Hill cover a large area and should, therefore, be a valuable refuge for many forms of insect life, particularly those associated with the plant species that are widespread on the Hill.

The most important of these is oak, which supports a greater number of insect species than any other British tree. Most of the oak-feeding Lepidoptera have a continuous distribution in the British Isles, but with ranges extending further north in the west than in the east: such species as the beautiful Noctuid moth Griposia aprilina (Merveille-du-Jour) are found nearly everywhere where oak grows (and this is recorded from Corstorphine) but others such as Biston stratarius (Oak Beauty) and Orthosia cruda (Small Quaker) are equally common 50 miles away to the west and yet are not recorded from Edinburgh: it would be interesting to discover whether these also occur on Corstorphine Hill.

The pine, beech, wych-elm, lime and sycamore of the Hill have fewer species, but even sycamore in Edinburgh has the very striking yellow-spotted Tortricid moth Pammene regiana on mature trees and no doubt on this Hill: its larva feeds on sycamore seeds and pupates on the trunks under loose bits of bark. I say 'even sycamore' because this tree has very little else on it in Scotland and because few plants will grow underneath it. The combination of sycamore, beech, lime and horse-chestnut on the eastern slopes of Corstorphine Hill has been most detrimental to the ground flora and there is little to choose for entomological unproductivity between the sheets of Holcus mollis (creeping soft-grass) that have invaded parts of this area and the bare ground of the more heavily shaded places. A little thinning (particularly of sycamore!) would be beneficial here. Last winter's great gale removed a number of trees exposed to the west. It is to be hoped that some of this fallen timber will be left for a few years - many species of beetles would make use of it. Tidiness is, of course, the curse of public parks - many are as devoid of insect life as the neighbouring streets - and it is a fine thing to see impenetrable thickets of brambles and great clumps of nettles (foodplant of Small Tortoiseshell, Red Admiral and Peacock butterflies) in this one! Some other "weeds" are useful if they do not occupy every space as Chamaenerion angustifolium (Rose-bay Willow-Herb) tends to do: as elsewhere this plant supports on Corstorphine Hill the smart little moth Mompha raschkiella whose larva makes yellowish-green blotches in the leaves.

This article will be seen to be a confession of ignorance about Corstorphine Hill. No insects of exceptional interest have ever been found there, but it may be that much remains to be discovered.

E. C. Pelham-Clinton.

Miscellaneous Observations

Galium X pomeranicum (hybrid between Lady's Bedstraw (Galium verum) and Great Hedge Bedstraw (Galium mollugo)). Near Newbigging Mill, Lanarkshire.

Crown Vetch (Coronilla varia). Near Aberlady. A large colony seen.

Wood Vetch (Vicia sylvatica). Three small patches seen near Longniddry.

Marsh Orchid (Dactylorhiza incarnata). Seen by the Water of Leith, near Balerno.

Douglas Baty

Common Twayblade (Listera ovata) and Butterfly Orchid (Platanthera sp.,) flowered this summer on the east side of Gladhouse Reservoir. The latter has not been seen there by this observer in the last ten years. Its reappearance might well be related to the cessation of grazing in the area which, unfortunately, has now been ploughed and planted with young conifers.

R. W. J. Smith

THE

EDINBURGH

NATURAL HISTORY SOCIETY

NEWS-LETTER

CENTENARY YEAR — 1969

THE EDINBURGH NATURAL HISTORY SOCIETY

1969

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E D I T O R I A L

The fact that 1969 is the centenary year of the Edinburgh Natural History Society makes it an outstanding landmark in its history, an outline of which is recorded by the President. It is with considerable pride that one looks back on the now shadowy figures whose enthusiasm for natural history led them to form a nucleus of people interested in that fascinating field with its numerous disciplines. Many, past and present, have given wonderful service to the Society and to these we are truly grateful.

It is with pleasure and pride that we reproduce the recorded good wishes from the sister societies and from the Lord Provost of Edinburgh; to all we record our grateful thanks.

The Society had earlier decided that the Hermitage of Braid should be made an area of special study this year and we have been fortunate in the diverse and most interesting excursions, the notes on which are, unfortunately, restricted in this News-letter because of lack of space. A wealth of field notes has been submitted and since it has proved impossible to include them in toto, it has been decided that the whole will be filed by subjects for permenant retention so that they may form an historic record for future reference and study.

Equally interesting indoor lectures, recorded by Miss Henderson were held during the year. The Society is beholden to specialists in their own subjects, who although sometimes non-members, have kindly given their services in both fields.

We had stressed how much contributions were wanted from the younger members of the Society; we are now rewarded by a most interesting and promising article from George and Tom Bell who are Junior Associate members. Their note on Bolton Woods is included with the hope that other young members will be encouraged to contribute in the future.

We are happy to receive a paper from Dr. Michael Usher on the management of nature reserves. This is of fundamental and therefore of real importance in our land use and in the method of perpetuating areas, by reservation, for the future security, not only of wild life, but the media in which natural history in all its branches can be studied. With the present day stress on the land by a rapidly increasing population, and urban areas spreading alarmingly, legal reservation and correct management have become of real and of paramount importance. Dr. Usher's paper is thus opportune and most welcome.

The editor is grateful for the support of Council, to all those who have contributed articles and notes and finally to Mr. Gordon Finnie and his assistants for the printing of the News-Letter 1969, in the Centenary of the Society.

MESSAGE FROM THE LORD PROVOST

ON THE OCCASION OF THE CENTENARY OF THE EDINBURGH NATURAL HISTORY SOCIETY

I am very glad indeed to have this opportunity of being associated with the Centenary Celebrations of the Natural History Society. Edinburgh is fortunate in having many cultural and philosophic Societies which meet the needs of the citizens. That the Edinburgh Natural History Society can trace its antecedents back to 1869 is evidence of a long and substantial interest.

I wish your celebrations every success and hope your Society will long continue to flourish.

James W. McKay,
Lord Provost of Edinburgh.

The Botanical Society of Edinburgh sends greetings and cordial congratulations to the Edinburgh National History Society on the celebration of a hundred years of active participation in the progress of natural knowledge.

Since its formation your National History Society has been one of the leading organisations in Scotland for the instruction of amateur naturalists.

The Botanical Society of Edinburgh look forward with confident hope to the continued progress of a Society which has earned the gratitude of many.

Roy Watling
Hon. General Secretary
Botanical Society of Edinburgh.

The President and Fellows of the Edinburgh Geological Society are happy to extend their heartiest congratulations to the Edinburgh Natural History Society on the occasion of the centenary of its formation. They are proud to think that the two societies have been closely associated in many of their activities during these 100 years, and are confident in the hope that the Natural History Society will continue to flourish in the future.

D. C. Greig

Hon. Secretary

29th August, 1969. on behalf of the President of the Society.

My memories of the E.N.H.S. date back to the late twenties when, as a small boy interested in birds, I was introduced to the Society by a tall gaunt dentist with a stiff butterfly collar - the late J. Kirke Nash who wrote 'The Birds of Midlothian' (1935). He lived near me in Inverleith, and I recall being rather upset when he refused to believe I had seen a Lesser Redpoll in the Botanic Garden. It was then a scarce species and had never been seen there before! It was at these early meetings that I met all the great stalwarts of the time : the Chairman, Professor James Ritchie, and the genial portly figure of the Secretary, Allan Pinkerton. It was there too that I met Surgeon Rear-Admiral J.H. Stenhouse who first aroused my great interest in Fair Isle as a bird migration station. Then there was that truly remarkable naturalist, David Hamilton, and of course the indestructable Peter Gunn who is happily still with us.

I personally owe a great dept of gratitude to the Society for the stimulus it gave me as a youngster, and I join with many others in congratulating it on its centenary celebrations.

George Waterston

Assistant Director (Scotland), R.S.P.B.

I am glad to send a message of good wishes to the Edinburgh Natural History Society on reaching its first Centenary. It has a fine record and I am especially grateful for the support afforded to this Trust when it was formed a few years ago.

Charles G. Connell

Chairman of Council, Scottish Wildlife Trust.

The Edinburgh Natural History Society

1869 - 1969

"The Edinburgh Naturalists' Field Club was instituted in 1869 for the practical study of natural history in all its branches. For a number of years the work of the club was carried on by a series of field meetings only, held during May, June and July. At the Annual General Meeting of the Club in November 1879 it was agreed to hold evening meetings which met with a large measure of success."

These opening sentences of Volume One of the Transactions published in 1881 tell us something of the Society's development, the pattern of lectures and excursions, to which it largely conforms today. A certain amount of microscopical work was carried on and this was recognised a few years later, by the adoption of the title Edinburgh Field Naturalists and Microscopical Society. Thus the Society continued to be known until the merger with the Scottish Natural History Society in 1921, when the present title was adopted. Until 1915 lengthy and well bound volumes were published, recording all the activities of the Society both indoor and outdoor. The exigencies of the 1914-18 War brought the publication of the Transactions to an end, and it was not until 1965, with the appearance of the annual News-Letter that the practice was resuscitated.

The Scottish Natural History Society was founded in 1881, while, like the other society it had a syllabus which included field meetings and lectures (which at first continued throughout the summer), its emphasis might be described as slightly more academic. Throughout its independent existence it had among its office-bearers a galaxy of scientific talent, as the names indicate - Professors J. Cossar Ewart, Chair of Natural History, James Geikie, Chair of Geology, both of Edinburgh University, James W.H. Trail, Chair of Botany, Aberdeen University, and Dr. B.N. Perch the geologist.

Many of the places to which we resort today for our field meetings were well trodden by our forebears, who likewise were assisuous in seeking out the most suitable areas of exploration such as Balerno, Penicuik, Tents Muir, Coldingham, St. Abbs, Hermitage and Aberlady Bay. With the ease of transportation we have been able to follow a more ambitious programme and visit such places as Farne Islands, Cairngorms, Newton Stewart, Castle Douglas for week-end excursions, at various times in the last twelve years. This years' series of summer excursions, an exceptional number, have been outstandingly successful.

It was on 6th October, 1921 that the two societies came together at a meeting in the Goold Hall to form the present form of the Society. With a flourishing membership of approaching four hundred, and with unquenchable enthusiasm, we look forward with confidence to the second century of our existence.

George Carse

Winter Meetings - Session 1968/69.

The winter meetings this session have been held in the Y.W.C.A. Hall, 7 Randolph Place, Edinburgh, on the last Wednesday of each month from October to April.

Following the Annual General Meeting in October, one of our own members, Mr. I. Sime, gave a very interesting illustrated talk on "Two Naturalists go Camping". This talk gave us some very practical advice on camping generally, including the pre-planning of the holiday and the use of light-weight equipment. Mr. Sime mentioned some of the advantages of being a camper - particularly the ability to penetrate and stay in more remote places. Altogether this talk was most persuasive propaganda for a camping holiday. The lecturer at the November meeting was Mr. B.W. Ribbons of the Department of Botany at Glasgow University. Mr. Ribbons gave a most informative and interesting talk on the plant life to be found in "Pyrenaica" which was the title of his talk, illustrated with a fine selection of colour slides. The lecturer had spent some time in the Pyrenees area - the first week at the mountain resort of Gavarnie where one could step from one's hotel right into a wonderful natural flower garden. The other week had been spent in the lower-lying valleys near the Spanish frontier where, too, the country was like a vast botanic garden. At the December meeting, Mr. P.W.G. Gunn, Honorary President of the Society, gave a talk on "A Naturalist in Austria and the Dolomites". This talk covered three holidays which Mr. Gunn had enjoyed in the 1960's. The Dolomites were to be recommended primarily for the breath-taking scenery of this area, and this was demonstrated by the beautiful slides which were used to illustrate the talk, which also covered central and eastern Austria, where many interesting birds and flowers were to be seen.

At the first meeting of 1969, Dr. Elsie Conway spoke on "The Sea-shore: between and below the Tides". She is an eminent marine bioligist and is President of the Andersonian Naturalists of Glasgow. Dr. Conway gave a fascinating account of her subject, illustrated by slides demonstrating the various points she was making and supplemented by a selection of specimens showing the various uses to which the extracts from sea-weeds could be put. For it was of sea-weeds that Dr. Conway was mainly concerned - those plants which grow at the land edge where it meets the sea, and affected by the rise and fall of the tides. Dr. Roy Watling, a senior officer at the Royal Botanic Garden, Edinburgh, and a leading mycologist in the United Kingdom, addressed the February meeting on "A Naturalist, his Head in the Clouds, his Feet in the Snow". Dr. Watling based his address on observations made and photographs taken on a sojourn in the North American Continent at the invitation of the United States Government to explore the possibilities of a "fungi" industry in Michigan. He described a period spent in a densely forested area and the various hazards of collecting specimens there, where travel was difficult and at times impossible. In March Mr. George Waterston spoke on "conservation in

the 1970's", which is to be observed by Naturalists as European Conservation Year. He outlined some of the problems facing naturalists. Already about 5000 acres of land were lost to industry alone every year. There were rapid changes in agricultural techniques: there was the problem of more leisure, more cars, more people invading the countryside; it was impossible and undesirable to discourage people from going into it. Mr. Waterston showed some slides illustrating the destruction caused by man pollution of rivers, rubbish dumps and oil pollution of the sea-shore to mention only a few, and then he went on to illustrate some of the projects sponsored by the R.S.P.B.

Our members' night is always an interesting evening, and at the last meeting in April several members showed their own colour slides, and one member gave a demonstration of how to make ornithological notes by drawing your own birds, using the basic egg-shape tilted in various directions! This was indeed a delightful talk.

Nora F. Henderson.

Why Manage Nature Reserves?

by Michael B. Usher

WHAT DOES THE TERM 'natural resource' or 'renewable resource' mean to you? When we use the word 'resource' we tend to think straight away of our coal mines, of North Sea gas, or perhaps of the capital available for some enterprise. But most of these are expendable - having mined a coal seam and used the product there is none left. The amount of North Sea gas is finite, and the day will come when all of it has been used up. These resources I will term the 'expendable resources'.

The real natural resources of our country or county are those which are renewable. The vegetables growing in your garden are a resource and with care you can grow them, and so can your descendants. There are, I feel, five distinct classes of renewable resource that concern anyone interested in biology. These can be listed as: (i) Agriculture; (ii) Forestry; (iii) Fisheries; (iv) Wildlife; (v) Public Recreation.

Although the role of a Natural History Society is concerned primarily with the fourth of the listed categories, it must also be concerned with the fifth. As there is an increase in the population there is an increasing wish among the general public to get 'away from it all' - out into the countryside;

on the shore, in the woods, on the hills. As there is an increase in education there is an increasing wish among the general public to seek and find knowledge. With these two parallel increases it is not surprising that the quest for knowledge is directly linked with the countryside, with local history, with archaeology, geology, speleology, and with biology in general.

Perhaps at this point it is useful to break a train of thought and see what has been published recently. Recently, by order of the House of Commons, the Countryside Bill was published (H.M.S.O. 4s. 6d.). This gives considerably wider powers to various authorities to cope with the increasing recreational use of the countryside. Later an interesting text book on the renewable resources was published (Ecology and Resource Management, by K. E. F. Watt, published by McGraw-Hill at £6 15s. 6d.). This book looks at fundamental ecology, and from this ecological basis considers the theory and models for optimal management of resources.

The Forestry Commission published booklet No. 21 - Public Recreation in National Forests: A Factual Study, by Dr. W. E. S. Mutch (H.M.S.O. 9s.), a study of the recreational needs of four large forest areas.

What, then, is the role of a nature reserve? Should it be an area of ground, fancied by local naturalists, with a fence all round? Should it be an area where you are forbidden to pick flowers or collect tadpoles? Should it be an area which is so protected that mortals dare not tread for fear of stepping on a daisy? Or, should it be an area which contains some rare or exciting species? I hope you have answered "No" to the last four questions. But, there is a grain of truth within each. A reserve is, of course, an area selected by the local naturalists and specialists for conservation, but it need not be fenced in or enclosed. True, the picking of flowers and destruction of plants and animals is often frowned upon since these should remain to be enjoyed by all members of the Society or general public. True, the very name 'Reserve' implies a degree of protection, and many of our rare species are rare because their habitats have been destroyed by the advance of our civilisation. Not just one, but all of these criteria and more are required to define a Nature Reserve.

But definition is not enough. We must consider the ecological balances of our area. I take as an example some changes which took place at the end of last decade and early this decade on the first Local Nature Reserve established in Britain, Aberlady Bay in East Lothian. The farmers were delighted when myxomatosis decimated the rabbit population of the county. But now we know the toll on wildlife. There were no rabbits to graze the tall growing plants, and due to lack of light many of the smaller flowering herbs were pushed out from areas where they flourished, and are now absent or very scarce. It is thought that the rabbits nibbled the young, tender shoots of the Sea Buckthorn, but now the edges of clumps of this bush are advancing at two to three feet per year.

Many of the nesting birds, the Redshank, the Dunlin, the Lapwing and the Ringed Plover, have decreased in numbers to about a third of their original strength. Waders are known to prefer nesting in situations where they can see over the top of plants surrounding the nest. The plants are now so high that the bird, if it nested, could not see over. These problems on the Firth of Forth are similar to those being faced by the Yorkshire Naturalists' Trust at Spurn. Perhaps we should encourage visitors to spurn the rabbit and pick large bunches of Sea Buckthorn.

Other examples of the ecological changes due to fencing can be quoted. Sheep graze the slopes of Old Winchester Hill in Hampshire in order that the orchids can bloom. There would be a decrease in the numbers of the orchids if the grass in which they grow was allowed to grow tall. It has been suggested that fencing of Saxifraga hirculus, the Yellow Marsh Saxifrage, would conserve the few plants remaining in part of the British Isles. But experimental work has shown that the plant is 'swamped' by its tall growing neighbours, and would soon die out if this were done.

What lessons can we learn from these observations? One very important lesson is clear. It is no use trying to save a particular species or concentrating a lot of effort into a small area. We must conserve the whole ecosystem. An 'ecosystem' is defined as being the sum of both the abiotic (climate, geology, soil) and biotic (plants, animals and micro-organisms) factors of an environment. To do this we must have sufficiently large tracts of ground to operate as reserves, and we must resist as strongly as possible any influence that would nibble away at our reserves. But then we come to the first problem of management.

It is quite possible for one man to know about the geology, or the birds, or the mammals of a reserve. But to manage it he must know about the sum of the abiotic factors, and also all of the interactions between these groups of factors. Who is there, for example, who could with certainty say that he knew all about the insects of any one Nature Reserve?

The Yorkshire Naturalists' Trust faced this problem very early on by appointing a Management Committee for each Reserve. Indeed, the Trust's notes for the guidance of Chairmen of Management Committees states "The Chairman is asked to submit the names of local members of the Trust, who have special knowledge of the Reserve ..." The Management Committee thus formed is asked "To keep notes of the flora and fauna known to be present in the Reserve so that, in the course of time, very complete lists will be available.

This starts the study of the parts and putting them together to make a whole. But members come, and members go. A long while ago foresters realised that a plan of operations was vital. This was known sometimes as a Management Plan and more recently as a Working Plan. The Nature Conservancy similarly has a plan for each of its Reserves, and it is my belief that Trusts will decide that written plans will be best for some or all of their Reserves. But what is a Management Plan? It can be divided into four parts, and it is convenient to discuss each separately.

The first part is descriptive. This sets out the specialist studies of the Reserve. It starts with general information on geographic position, ownership, boundaries, and any rights or privileges held by the Managers or by others over the Reserve and in particular reasons for establishing the Reserve. Another chapter is usually rather long, as this describes in detail the topography and physiography of the area, the main drainage systems, the geology and soils, the climate, the vegetation communities and their associated animals, the other animals, the history of the area with an emphasis on the pattern of land-use up to the declaration of the reserve and the value of the area from an amenity point of view.

The second section is very short, and, I have found, the most difficult to write. This is a statement of the Objects of Management. These vary from Reserve to Reserve, and also with the administrative body. The Yorkshire Naturalists' Trust have objects of management associated with a policy of conservation throughout the county of Yorkshire. Other possible objects could be considered under such headings as education, research, amenity or recreation.

The third part is prescriptive. This sets out the way the Manager or the Management Committee will endeavour to realise the Objects of Management. Sections of this part of the plan deal with the Division of Responsibility for realising the Objects, with priorities, a time schedule and finance, and with any recommendations concerning wardening. Provision should be made for progress reports (Chairmen of Management Committees are often required to submit a yearly report on their Reserve). Finally, the authorship of the plan is given.

The fourth sections contain the appendices. These are usually the species lists for plants and animals. Included here are copies of such documents as the agreements or bye-laws relating to the Reserve.

Thus, a plan is made up. The period of operation is usually for five or ten years, and so a certain amount of flexibility is required in order that recent developments can be reflected in slight changes of management. The preparation and operation of one of these plans goes a long way to ensuring the continuing effective management of a reserve. During the years that lie ahead, the increased leisure time available will be reflected by an increased demand for the countryside. Protection of areas with a fence is known to be useless, and so we need an inspired policy of conservation, based on sound management of the conservation areas.

ISLAND COUNTS 1969

With the big number of gulls only the numerical order is possible. Unless otherwise stated all figures are of pairs or nests.

Points of interest this year are that, on Inchkeith, a Razorbill was sitting at the North Horn on a nest site, although there was no egg. This species has not bred in Inner Forth and this could be the start of colonisation. Also off Inchkeith there was a Black Guillemot a rather unusual seabird so far up the Forth. We have had reports of a 'white' Puffin on Craigleith in previous years and saw this bird for the first time this year. There were some smudges on the face and the primaries were dark but, otherwise, the bird was white. Several of us were able to 'snap' the bird so there will be a few slides to show on Member's Night. Some of the indefatigable younger members occupied their spare moments by finding nests of such species as Linnet and Reed Bunting on Inchkeith; and one oldster found a House Sparrow's nest with blue eggs on the north side of the Bass.

The counts were as follows:

	Craigleith	Lamb	Fidra	Inchkeith	Inchmickery
Fulmar (sites)	23	1	31	317	
Cormorant	2	150			
Shag	84	141			
Oystercatcher			5-6	3-4	1
Great Black-backed Gull	1				
Lesser Black-backed Gull	250-300	c5		100-1000	
Herring Gull	1000-10000	100-1000	c100	100-1000	c50
Kittiwake	544	110	88	187	
Razorbill	28	16		(1)	
Guillemot	620 birds	97			
Puffin	410 birds	2-3 birds	2-4 birds	80 birds	
Common Tern			150		100-200
Arctic Tern			25		
Roseate Tern			50		50?
Sandwich Tern					46

R. W. J. Smith

TWO UNUSUAL FINDS

Natural History is a large and varied subject, and when doing field work there is always the chance (and hope) that you may be lucky enough to find something new or unusual. Even when just going for a country walk you may sometimes stumble across the unexpected as in the following instances.

Barn's Ness (S.E. of Dunbar) offers good turf to walk on along the sandounes beside the shore. On a day in October 1958, after parking our car near the small bay, we followed the track towards the lighthouse. As we approached the latter, a large bird flew in from the sea and quickly disappeared behind a distant ridge. We followed and searched but could not find it, and so returned and resumed our walk. After one and a half hours we returned to the car, and there was the bird we had been looking for, feeding on a patch of fresh green grass, not more than 30 to 40 yards from our car. We had no difficulty in identifying it - without glasses - as a Barnacle Goose. We took the utmost care not to disturb it, and on leaving half an hour later, it was still grazing peacefully.

Our second find was also at Barn's Ness - also in October but ten years later - 1968. When doing the same walk, about 300 yards south of the lighthouse, lying on the grass, about six yards from the edge of the sandoune we saw a heap of what looked like common mussel shells, but in a broken condition. There were about four dozen of them, bluish white in colour. Closer examination showed that each individual was about $1\frac{1}{4}$ to $1\frac{1}{2}$ inches long, and fully $\frac{1}{2}$ inch broad, and the so-called "shell" consisted of five sections (or calcareous plates), two lateral ones on each side (the sides being flattened), and one curved piece forming a sort of Keel, and along with connective tissue binding them all together. Two or three specimens showed a protruding part, like a short stalk, $\frac{1}{2}$ to 1 inch long. Six pairs of limbs were also visible in some on pushing aside one of the side plates. We took some specimens home, and with the aid of reference books soon concluded that these were Goose Barnacles, also known as Stalked or Ship's Barnacles. This conclusion was confirmed by the Staff at the Museum. Along with Acorn Barnacles (abundant on our rocky shores), and Crabs, Lobsters, etc., they belong to the large Animal Division known as ARTHROPODS. There are some five species of these Goose Barnacles all belonging to the genus Lepas - this one, the commonest, being Lepas anatifera. They occur round our shores and may be attached not only to ships but to pieces of drift wood on which they get washed up.

In conclusion it may be asked - why do they get the names Barnacle Goose and Goose Barnacles? To quote Sir C. M. Yonge - "Barnacles were for long ages a mystery to men. One of the most interesting of mediaeval myths grew up around them, namely that the Stalked Barnacles (Lepas species) grew on trees and engendered what are still known as Barnacle Geese. The Myth took many forms which the interested reader will find recounted in E. Heron-Allen's

"Barnacles in Nature and in Myth". The mystery of the true nature of Barnacles survived these myths. Even the great Cuvier was baffled and classified them as Molluses.

The truth came from the unexpected person of John Vaughan Thompson, an army surgeon at that time stationed at Cork where he was deputy Inspector-General of Hospitals. He devoted his leisure to the study of Marine Life and in 1830 published obscurely at Cork his "Zoological Researches and Illustrations", now recognised as a classic work. After studying the development of the Common Shore Crab he made a similar study of Barnacles, discovering that their larvae live free and active in the sea, and most significant of all, that they are typical Crustaceans. The final change of form (metamorphosis) is the most striking, when the young Barnacles cement themselves head downwards to a hard surface, develop a protective casing of limy plates, and then employ the appendages used by other Crustaceans for locomotion, as a kind of cast net for collecting finely divided food particles from the water."

This is a good example of how the true classification of various animal species has only been solved when the development or life history, especially the early stages, has been fully investigated, and laid bare.

References

1. C. M. Yonge: The Sea Shore (New Naturalist Series) and Collin's Fontana Library pp. 40/43.

2. J. Barrett and C. M. Yonge: Collin's Pocket Guide to the Sea Shore pp. 92-93 and Plate VI.

3. Philip Sheet: Shell Life on the Seashore (Faber) pp. 161-164.

J. M. Milne

Some Notes on Hermitage of Braid and Blackford Hill

I have been acquainted with the Blackford Hill - Hermitage of Braid area for as long as I can remember and the wonder and beauty of it still draws me to it as much as ever. Not only is this part of Edinburgh celebrated in song and story, but it is of remarkable interest from a geological, ornithological and botanical point of view; little wonder that the two parent societies made regular pilgrimages to this area.

Fulsome reference is made to the Hermitage of Braid and the history surrounding it, in Grant's 'Old and New Edinburgh'. For a long time the house was occupied by the Skelton family, one of whom Miss May Janet Skelton, was a member of the Scottish Natural History Society in the 1890s. To recall the many memories of this area would take up much room, and I shall content myself by recalling certain matters of ornithological interest that seem to stand out.

The late F.A. Luigi, who for years daily frequented the Hermitage, published a list of the species he had observed at the Hermitage between 1938 and 1951 - 62 in all. To mention but a few of the more unusual species that he lists, I can recall how they stand out in the memory. My first view of the kingfisher was in December 1939: it was not until October, 1943 that I again sighted it between Liberton Dams and the Hermitage, and it remained on this stretch of water for more than three months. I noted how this species, in accordance with its invariable habit, always went under the bridges, no matter how close to the water, they were. Another day I remember well in seeing the green woodpecker in the Hermitage in April 1952 at a time when this species was beginning to extend its range north across the Border, and it was here that its first appearance in Midlothian was recorded. It has been recorded in subsequent years; in 1957 a pair were observed regularly alternating between the Hermitage and Blackford Hill, but there is no record of their having nested, probably due to disturbance; this year a single bird has been present. Among the smaller species the following have been recorded in the Hermitage - wood warbler (occasional), garden warbler (one was heard in May of this year), goldcrest, bullfinch and goldfinch; also of note is a small colony of tree sparrows. I found the nest of a stock dove in a hawthorn tree in June, 1934, but I doubt if any nest there now. In winter fieldfares, redwings and waxwings have been recorded.

The kestrels that visit the Hermitage are probably the pair that this year nested at Blackford quarry where they reared three young, and may well be the pair that for some years nested at Corbies' Crag. A pair of Barn Owls were noted as nesting at Blackford quarry in 1936 by A.D. Watson. In October, 1964, just when the collared dove was establishing itself throughout Britain, I was interested to see several alighting behind the hen-run at Blackford Glen Dairy farm and their number eventually totalled twenty-four. There are several pairs of dippers to be seen between the Hermitage and Liberton Dams, though whether any of them nest successfully, one would not like to venture an opinion.

On the Blackford Hill slopes beside the Braid Burn there seemed to be a wealth of bird song this summer; willow warbler, redpoll, whitethroat and linnet were there to enliven the scene. The birch plantation beside the Pond is a suitable habitat for the redpoll which, all over the country, appears to have been more numerous than usual. Particularly gratifying was the presence of a family of long-tailed tits on the Hill this year. For two months in the winter of 1959 a water rail was regularly seen near the allotments beside Blackford Pond (where there is a spring and small area of marsh). It may be the same bird that was seen in 1960 in a reed-fringed area, (now removed), on the Braid Burn between the Hermitage entrance and the Blackford quarry.

It might also be mentioned that the fox, the badger and roe deer have been recorded within the Hermitage in recent years, and if one report be accepted, an otter.

These are but a few memories that come flooding back about the Hermitage - Blackford area, (still as unspoilt as when Scott wrote his immortal lines in 'Marmion'), an area as remarkable as ever for its wildlife and natural history interest.

G. C.

Wednesday, 20th August, 1969

Hermitage of Braid and Blackford Hill

Leader, Dr. G. H. Mitchell.

Before proceeding from the West Gate of the Hermitage of Braid, Dr. Mitchell described the geology of the area.

ROCKS.

The rocks outcropping in this district are lavas and tuffs belonging to the Lower Old Red Sandstone Period and are about 350 - 400 million years old. The rock sequence is as follows -

Blackford Hill Andesite. (lava)

Tuff. (volcanic ash)

Braid Hills Trachyte. (lava)

Subsequent earth movements displaced and faulted the rocks from their original attitude, leaving them with a northerly dip.

GLACIATION.

During the last glacial epoch, which took place about 20,000 years ago, the area was covered by a thick mantle of slowly moving ice which originated in the Highlands. This cap of Highland ice which in this part of Scotland was moving in an easterly direction, modified the topography and drainage system of the district by its erosive action.

With the amelioration of the climate, the ice sheet began a northwards retreat. The ice did not make a steady retreat but halted several times. Each halt had a definite effect upon the landscape.

After his introduction, Dr. Mitchell led the party over the area pointing out the features which make up the geological story of the district.

WEST GATE - HERMITAGE OF BRAID.

The West Gate marks the approximate site where Northerly retreat of the melting ice cap was temporarily arrested. The melt waters rapidly cut out a deep drainage channel which is now occupied by the Braid Burn which had previously flowed in a Northerly direction.

As we walked eastwards along the burn side, we observed the broad, gently sloping valley gradually narrow into a gorge. Due to the speed of erosion by the melt waters, the walls of the gorge became disturbed and unbalanced. This resulted in large scale slumping. The massive blocks of slumped Trachyte can be examined at either side of the path.

RUSTIC BRIDGE - EASTWARDS.

At the east end of the gorge, just past the Rustic Bridge, the valley broadens out again. On the North side of the path is a high crag formed of Blackford Hill Andesite, below which is a steep scree slope. On the gentler south slope of the valley can be seen a step like profile. The smooth upper part of the step was formed by ice erosion and the lower part of the step cut out by melt waters.

BLACKFORD HILL - OLD QUARRY.

On the north side of the path, a short distance east of the Rustic Bridge, we examined the now disused quarry.

The rock is fresh and well jointed dipping, to the north. In the veins which cut across the Blackford Hill Andesite, we extracted samples of the minerals Chalcedony and Jasper.

AGASSIZ ROCK.

At the entrance to the quarry stands the Agassiz Rock. In 1840, Louis Agassiz, the famous Swiss geologist studied the grooves on the cliff face and shallow cave below and pronounced them to have been made by the work of land ice. Dr. Mitchell pointed out that these grooves could also be interpreted as having been caused by earth movement or undercutting by glacial melt-waters.

CORBIES' CRAG.

Leaving the quarry we retraced our steps to the Rustic Bridge and ascended the path to the right. The path marks the outcrop of Tuff which separates the Blackford Hill Andesite from the Braid Hills Trachyte. Because of its relative softness, the Tuff has been eroded, possibly by a short lived glacial melt-water channel.

On the east side of the path can be seen the steep face of the Corbies' Crag which demonstrates a crag and tail feature caused by the advancing ice.

TOP OF BLACKFORD HILL.

Climbing to the top of the hill we were able to see clearly the geological and other features of the surrounding area.

Dr. Mitchell then gave a short account of the geology of the Edinburgh district.

TUFF BED - SOUTH OF BLACKFORD POND.

In the small quarry at the side of the path we examined the bed of Tuff which lies below the Blackford Hill Andesite.

At this point the excursion was concluded and Mr. I. F. Sime gave a vote of thanks to the leader on behalf of the party.

George Bell.

Evening meeting to Hermitage led by Dr. P. Harper

June 18th, 1969

Some twenty members turned up, on a cool and sunny evening to study the grasses of the area. Dr. Harper described briefly the diagnostic features in the identification of grasses and specimens from meadow, woodland and marsh habitats were collected and identified.

Species found were:-

Meadow fescue (Festuca Pratensis)

Perennial Rye-grass (Lolium Perenne)

Annual Poa (Poa annua)

Wood Poa (Poa nemoralis)

Smooth-stalked Meadow-grass (Poa pratensis)

Rough-stalked Meadow-grass (Poa trivialis)

Cocksfoot (Dactylis glomerata)

Crested Dog's-tail (Cynosurus cristatus)

Oat-grass (Arrhenatherum elatius)

Yorkshire Fog (Holcus lanatus)

Tufted Hair-grass (Deschampsia caespitosa)

Meadow Foxtail (Alopecurus pratensis)

Marsh Foxtail (A. geniculatus)

Sweet Vernal-Grass (Anthoxanthum odoratum)

(Partial list only. Time did not permit an exhaustive study of the area).

This interesting evening ended with a visit to the Corporation nursery ground where seedling specimens of common weeds were identified; discussion followed on the germination of weeds in newly turned ground, their possible length of life underground and the importance to agriculture of their speedy identification and extermination.

E. Hamilton

A Look at the Spiders of the Woods of the Hermitage of Braid, Edinburgh

Collecting in the woods of The Hermitage of Braid from 1960 to 1961 I found only 19 species of spiders, though many more species are regularly seen amongst the grass and on the gorse bushes of Blackford Hill. One of the most interesting woodland habitats is the loose bark covering dead trees. In this habitat the most common spider is Ciniflo fenestralis, and the closely related species C. similis can sometimes be found, but I have always found it to be uncommon. These spiders grow to 1/3 inch long, and they live in small scrappy webs constructed of bluish silk. They are easily recognised with their dark brown colour, and abdomen yellowish in front, with two black marks, each like a thickened 'F', upside-down and back to back.

Also common on tree trunks are three species of spiders which have only six eyes (only twelve out of Britain's 600-odd species of spiders have less than eight eyes). These species are Oonops pulcher, Segestria senoculata and Harpactea hombergi. Oonops is very small and a pale pink in colour, whilst Harpactea is a little larger and a pale muddy colour. Segestria grows over 1/4 inch long, and has a characteristic 'Adder' zig-zag pattern in brown on a

stone-coloured abdomen. All three of these species can be found living in small silk cocoons. The sixth species to be found under loose bark is Cryphoeca sylvicola. This is a very ordinary little brown spider, with indistinct yellowish V-shaped markings on its abdomen. Careful examination with a magnifying glass will show that its spinnerets, from which the silk comes, are jointed.

Within the wood two kinds of spiders' webs can be seen. One is the orb web, a circular structure with radii of strong silk and spirals of sticky silk. Under the microscope the sticky silk can be seen to be a thread of fine silk with regularly spaced round sticky droplets. Watch a spider spinning a web, and you'll see that after laying each single section of the spiral the spider plucks it with a leg, and releasing it quickly results in the arrangement of the droplets. The two species in the wood are Meta merianae and Zygiella x-notata. The webs can be told apart easily since Meta spins a web with the spirals widely seperated, whilst Zygiella leaves one radius free from viscid threads. Careful examination shows that this free radius leads to the resting place of the spider. The Zygiella webs abound on buildings in the area, whilst Meta webs should be sourt around the banks of the Braid Burn.

The other form of web is the sheet web. If the bases of the trees are examined irregular triangular sheets will be seen, with a tangle of threads both above and below the sheet. It is thought that flying insects hit the threads above the sheet, fall, hitting other threads, until they reach the sheet. The spiders can often be seen on the underside of the sheets, and they are stimulated by the movements of the falling prey. The stunned prey is grasped by the spider through the sheet, is parallysed and eaten. The commonest species around the tree bases is a small cream and black spider, Lepthyphantes minutus. Other species spinning this form of web, sometimes between fallen leaves, are L. zimmermanni, Bathyphantes concolor and Agyneta conigera. Another species of spider in the same family, Savignia frontata, is very common, and is an aeronaut. This little black spider lets the gentle air currents of warm days carry a silk thread aloft. When the thread is long enough the spider lets go, and is carried through the air. On Autumn days field and lawns in Edinburgh can be covered by the silk of the aeronauts, made obvious by the dew.

There are other interesting species to be found. The wolf spider, Lycosa tarsalis, is a large brown spider to be found near the woodland boundary. It runs very fast and has large eyes near the front of the head- two features of use to it when it is hunting its prey. Another hunting spider, sometimes to be found in a silk cocoon in a dried up leaf on the ground, is Clubiona compta. This spider has a reddish brown abdomen, paler in the front with a central red stripe, and with dark and pale bars on the posterior half. On bramble leaves an interesting little spider, Theridion ovatum, can be found in June and July. This spider is polymorphic, since the abdomen can be plain yellow, yellow with a pair of carmine stripes, or more or less plain carmine. The spider can be found in folded leaves with its egg cocoon wrapped in blue silk.

One spider that is sometimes seen walking over grass is the crab spider Xysticus cristatus. This sttractive little spider has a dark brown cephalothorax (head and thorax) with a wide central light patch which contains a dark wedge-shaped mark. The abdomen contains a pattern of brown and cream bars. The spiders are unusual since they can walk backwards and forwards as well as sideways. The spin no obvious webs and hunt their prey.

Two species of jumping spider can be found. Only rarely have I found Euophrys eratica walking over low vegetation, whilst Salticus cingulatus is common on posts. These spiders have a very broad, flat front to their heads, and have huge eyes. Euophrys is very small, and is covered with hairs that form a pattern of brown colours. Salticus is known as the zebra, since the abdomen is covered in black and white hairs forming an obvious stripy pattern. Two species of Salticus occur in and around Edinburgh. S. cingulatus is associated with posts and tree trunks, whilst S. scenicus is very frequent on the walls of houses and other sunny places (e.g. the concrete blocks along the East Lothian coast).

The full list of the spiders that I have found in the woods of the Hermitage of Braid follows. I would always be very pleased to identify specimens that have been collected from this habitat by members of the E.N.H.S.

DICTYNIDAE

Ciniflo fenestralis (Stroem)

C. similis Blackwall

OONOPIDAE

Oonops pulcher Templeton

DYSDERIDAE

Harpactea hombergi (Scopoli)

Segestria senoculata (L.)

CLUBIONIDAE

Clubiona compta C.L. Koch

THOMISIDAE

Xysticus cristatus (Clerck)

SALTICIDAE

Salticus cingulatus (Panzer)

Euophrys erratica (Walckenaer)

LYCOSIDAE

Lycosa tarsalis Thorell

AGELENIDAE

Cryphoeca sylvicola (C.L. Koch)

THERIDIIDAE

Theridion ovatum (Clerck)

ARGIOPIDAE

Meta merianae (Scopoli)

Zygiella x-notata (Clerck)

LINYPHIIDAE

Savignia frontata (Blackwall)

Agyneta conigera (O.P. Camb.)

Bathyphantes concolor (Wider)

Lepthyphantes minutus (Blackwall)

L. zimmermanni Bertkau

Michael B. Usher
2nd May, 1969.

Bolton Woods

On a recent visit to Bolton Woods we observed two interesting animals. Bolton Woods contains both coniferous and deciduous trees many of which were blown down during the gale of 1968. The large holes left by the roots of the fallen trees soon fill with water in wet weather. It was in the mud round the edge of one of these water holes that we found signs of the first animal. These were the dainty hoof-prints of Roe deer. Following the tracks along a path we could see where the deer had leaped over a fallen tree trunk and had left skid marks in the wet mud on the other side. Later while standing quietly observing a starling, George spotted a Roe-deer crossing the path about 50 yards behind us. We were able to watch it for only a brief moment before it disappeared into the woods again.

The second animals were seen shortly before lunch. Tom saw a movement at the top of a Scots pine. On examining the tree top through binoculars, a Red squirrel was seen running along the branches. We were able to observe it for about 5 minutes before it leaped to another tree. We examined the ground beneath the trees and found evidence of its feeding habits. Scattered over the ground were dozens of pine cones from which the seeds had been eaten leaving only a chewed core.

The local gamekeeper told us later that there are about 25 Roe-deer in this area. He also told us that the Red squirrel is the only kind found in Bolton Woods.

George and Tom Bell
Junior Associate Members.

Garth Weekend

Friday, 18th April - Monday, 21st April

Leader, Mrs. R.W.J. Smith

This was basically a do-it-yourself weekend. Transport was by private cars and more than enough car seats were offered to accommodate all the non-car owners who applied. Accommodation was booked by the members themselves and use was made of Fearnan Hotel, Coshieville Hotel, the Youth Hostel at Garth, an Aberfeldy boarding house and Alistair McLeod's cottage at Fearnan.

Friday evening's run up in good weather provided several sightings of roding Woodcock for our particular car load.

Saturday was a day of most unseasonable, though welcome, heat, sunshine and stillness. Some of the party climbed Schiehallion and others meandered on the lower slopes where several lizards were seen. Good views were had of Hen Harrier, Buzzard, Kestrel, Raven, Ring Ousel and Ptarmigan. There was still a lot of snow lying and we were interested to see several flies of the 'Greenbottle' nature on the snow. A tiny spider was found on the summit cairn.

Sunday, by contrast, was dull, cold and showery, but this did not prevent one of our party being out early on Drummond Hill where she found Willow Warbler and Redstart. Our convoy of cars travelled to Kinloch-Rannoch and along the south shore of Loch Rannoch. The small lochs and marshes east of Kinloch-Rannoch yielded a Short-eared Owl, Mallard, Tufted Duck, Goldeneye, Wigeon, Teal, Goosander, Redshank, Snipe, Golden Plover and Little Grebe. There was a Black-headed Gull colony in that area and we saw our first Sand Martins. Near Kinloch Rannoch a pair of Jays and 6 Bullfinches made a brief appearance. The passengers in the first few cars had a fine view of a hen Capercaillie just by the roadside. A Redwing was feeding where we parked the cars.

Up through the fringe of the Black Wood of Rannoch the party walked to Loch Monaghan and Loch Finnart. Rain failed to dampen the spirits of the enthusiasts who were rewarded by views of Goosander, Red-throated Diver and displaying Greenshank that were obviously in territory. There was too, the excitement of an Osprey - looking nest in a typical 'dead tree' osprey site, in the loch. A Heron rose from nearby but the nest might well just have been a Crow's one. Several Blackcock were seen on the return journey.

Monday was very cold and windy and heavy rain alternated with persistent drizzle. During the forenoon the party visited the Fortingall Yew tree and the nearby Standing Stones, one with fine Cup and Ring markings on it. After a welcome hot coffee in the hotel the party broke up, some to continue their holiday further north, the rest to make for home by various routes. Ours led by Kenmore and the concentric circles of Standing Stones at Croftmeraig, to the Birks of Aberfeldy where we found a first class Nature Trail matched by its accompanying booklet.

There were 19 persons with 7 cars taking part in this outing.

Betty Smith.

Slateford to Juniper Green - via Old Railway Line

Wednesday, 16th July, 1969

Leader, Mr. G. Bell

Meeting at the entrance to Craiglockhart Dell, thirty members made their way through the wood-lands which once formed part of the old Redhall Estates. Stopping at an old bee-hive shaped summer house built in red sandstone, we

observed that the ceiling was set with shells of Pecten spp. Continuing our walk passed the derelict farm buildings on the other side of the Water of Leith, we joined the railway line and began our excursion in earnest.

The railway line was opened in 1874 by the Caledonian Railway Company for both goods and passenger services. Starting at Princes Street Station, the line ran Westwards stopping at Hailes Halt, Colinton, Juniper Green, Currie and Balerno. A branch line looped West to Ravelrig Junction and on to Midcalder. This whole section is now closed and the line lifted. Passenger services to Balerno were withdrawn in 1943 and the goods services withdrawn some twenty four years later. In the early days, the line was kept busy with various industries which included three paper mills, one tannery, one saltworks and two stone quarries. The river and railway track lie along the backbone of the valley, the track crossing and recrossing the water several times along its route. The Kenleith Paper Mills, now closed, was the largest industry in the area visited by us. About one hundred and fifty years ago these mills employed over three hundred workers. At one time in the more primitive days the Kenleith Paper Mills also brewed beer, a rather unusual combination. In these early days a number of small industries were carried on. These included a barley mill and a number of small snuff mills. One of these snuff mills was owned by the well known public benefactor, James Gillespie about whom the witty motto - "Wha wad ha' thocht it, That noses had bocht it?" - was quoted. This referred to the small fortune amassed by him from the sale of snuff. Another of these small industries was responsible for the manufacture of the first bank notes produced in Scotland. All these industries took advantage of the twisting route taken by the river as can be seen by the many mill lades and weirs situated at the river elbows.

At present the old track provides an interesting route for the walker who has an eye for natural history in all it's aspects. To those interested in local history and industrial archeology, the route offers a wide scope for study.

Recently, the Scottish Wildlife Trust in co-operation with the local Resident's Associations, have persuaded the local Authorities to adopt in principle, the establishment of an amenity walkway along the old railway track. The main difficulty so far, is financial and it is to be hoped that this will be overcome in the near future. The walkway would provide a welcome amenity for a generation already suffering from the steady urbanisation of the countryside.

George Bell.

Fresh Water Flora and Fauna

Brief Notes on an Excursion to the Hermitage

The excursion was led by Dr. D. Mills who gave members a short introduction to the fresh-water habitat, its flora and fauna, with particular reference to the inter-dependence of the living organisms - the food chain from algae through invertebrates to the carnivores, fish, etc.

Samples were taken from the Braid Burn from two points fairly near the West Gate, from slow and fast stretches of water, then examined and identified. Some of the commoner specimens found were as follows:

Hog Louse (Asellus)
Caddis larvae (Order Trichoptera)
Midge larvae (Chironomus)
Flat Worms (Planaria)
May-fly nymphs (Baetis)
Leech (Class - Hirudinea)
River Limpet (Ancylus lacustris)

Dr. Mills then demonstrated a method of catching fish for research work, by passing an electric current of 600 volts across an area of stream. Within a few minutes, four concussed brown trout were caught by this technique. One specimen was measured; it was 86 grams in weight, 18.5 cms. long and aged three; it was then tagged. One scale was retained by Dr. Mills for accurate age determination by counting the annual rings, comparable to that of the tree section method. Another specimen was retained for examination, while the others were returned, somewhat reluctantly, by the junior members, to the burn. The fish's external anatomy was then explained, followed by a dissection to reveal the internal anatomy and in particular the food contents of the stomach, mostly small Caddis larvae, a few midge larvae and the wing of a beetle.

This stimulating evening was concluded by Dr. Mills answering many members' queries which ranged from methods of doubling trout and salmon populations in streams, to the feeding of Golden-eye ducks.

Douglas Baty.

The Union Canal - Fresh Water Fauna.

28th June, 1969.

Mr. A. Whilde, who submitted a thesis on the Canal in his Honours year at the University, led us on this occasion and demonstrated how he had carried out his research work. He had a mud-sampling grab which was spring loaded and required considerable care and expertise to operate successfully. Using a boat and a rope stretched across the Canal he obtained mud samples at different depths. Each sample had the mud washed out on a sieve and the residue was examined for the animals it contained. Meanwhile some members of the party sampled the water with nets and others examined animals found among and on the pond weeds, handfuls of which were placed in water in a 'pie-dish' for this purpose. It was obvious that there were far greater of species among the plants and in the water than in the mud and that the mud-loving fauna became fewer at greater depths. The leader explained that this was largely due to the shortage of oxygen in the mud. The few animals that can live under such conditions have

evolved efficient means of respiration. The 'blood-worm' larvae of the midge has haemoglobin which accounts fot its red colour and this haemoglobin enables it to make good use of the limited oxygen.

Some pond-weeds and many of the animals were identified, but it soon became apparent that it would require many visits to make a list of all the species occurring in this rich and unique habitat.

We learned that parts of the Canal are destined to be piped and covered over. It is regrettable if this wonderful aquatic habitat should be destroyed because of planning authorities are not made aware of its wildlife and amenity value. (About 20 members attended this outing)

Betty Smith.

Edinburgh Natural History Society Meeting

Despite heavy rain the N.H.S. meeting at the Edinburgh Zoo on 1st June, 1969, was attended by about thirty people, including many junior members. We were met by Mr. Gilbert Fisher, the Director, who led us to the water-fowl enclosure, where we sheltered beneath the trees while he told us about some of his friends who were resident there. Possibly one of his greatest sources of pride is the free-flying colony of night herons, who choose to live in the grounds, and who can be seen, like large fruits, in the trees near the sea-lions.

From the birds we continued on to the enclosure for the pygmy hippos where the female has accepted the no-feeding rule and goes on quietly browsing while the male rushes forward eagerly opening his large mouth for yet another disappointment.

Then we went to the Cassowaries, where we heard the dramatic story of the successful hatching of the eggs, closely followed by the escape of the chicks thro' the wide mesh of the wire, the alarm of the father, who is an excellent nursemaid, then the happy ending with the successful rearing of these rare birds.

It would be impossible here to list all the interesting inhabitants whom we met but perhaps the highlight of the morning was our visit to Scrap, the beautiful Cheetah who likes people, and whose loud purr spoke for us all when the sun came out.

L. Campbell.

Saturday, 7th June, 1969.

St. Abbs

Leader, Dr. Elsie Conway - Department of Botany, Glasgow University

Joint outing with the Andersonian Naturalists of Glasgow and the Botanical Society of Edinburgh

On her last excursion with us before leaving Scotland to take up a visiting teaching appointment in Canada, Dr. Conway led a party of forty-five along the coast from St. Abbs Harbour to Coldingham Bay. About fifteen of the party were from our Society.

From the rocky outcrop at the mouth of the harbour, Dr. Conway discussed the zonation of seaweeds and lichens and the factors which control it. The harbour area is a good example of an exposed northern coastline subjected to regular wave pounding. The rocks most exposed were patchily covered with a shrubby growth of Dulse and Carrageen. In the more sheltered spots grow the larger and more fully developed Fucoids. In the high level brackish pools grow the bright green Enteromorpha intestinalis and the red Corallina officinalis. These last two species dry white in the dry summer months and regain their normal colour with the autumn rains. On the cliffs grow the lichens of which the yellow Xanthoria parietina is a typical species.

Leaving the harbour, the party followed Dr. Conway Eastwards along the rocky shore to Coldingham Bay where the outing terminated. Dr. Conway was thanked by our members for her outing which was made doubly interesting because of the lecture she gave to our Society on Wednesday, 22nd January this year.

Mr. I.F. Sime obtained information on the geology of the area from the Geological Institute, Edinburgh. This stated that we had been working amongst volcanic rocks intruded into the Silurian and Old Red Sandstone rocks which appear to the North and South of the area. The Old Red Sandstone strata lie unconformably on top of the Silurian. This is to say, the angle of the rocks to the horizon is different.

A number of the more notable seaweeds were identified by Dr. Conway; the list is filed for future reference.

George Bell.

Sunday, 8th June, 1969

Pease Dean

Leader, Mr. J. Cousens, Department of Forestry - Edinburgh University

Joint outing with The Botanical Society of Edinburgh and the Scottish Wildlife Trust.

After meeting at Cockburnspath, the party of fifteen made their way by car to Pease Dean. Speaking on the Pease Dean wood, Mr. Cousens said that it is one of the finest of its kind in this part of the country. The main point of interest in the area are the many fine trees of both Sessile and Pedunculate Oak. Originally, the wood was planted with Sessile Oak and although a large number Pedunculate Oak were later planted as replacements, there has been little hybridisation between the two species. Mr. Cousens then led us down the steep side of the valley to the burn which we followed down - stream for a short distance. We then clambered up over the loose scree of weathered Silurian shales and then retraced our steps to the road by the side of which we had lunch.

After lunch we travelled to Dowlaw Farm O.S. grid.ref. 856702. where we left the cars and made our way to a small copse about a half mile to the West. Here we listed plants and rested by the waterfall over which the Dowlaw Burn flows. Following the burn we walked along the West side of the Dowlaw Dean. The sides of this valley display spectacular formations of rock belonging to the Silurian Period. The strata have at some time in the past undergone great stress with consequent faulting and folding. One striking section has the appearance of what can be best described as a 'faulted jam roll'. The view from the cliff top at the mouth of the valley affords a giddy seascape with hundreds of sea birds wheeling below. After retracing our steps to Dowlaw Farm we had tea.

Mr. Cousens was thanked by the members of our Society for hisefforts which made the outing so successful.

A list of plants identified by the party is retained for reference purposes.

George Bell.

Tyninghame Sands

August 2nd, 1969

A dull day with a haar blowing off the sea, visibility down to about 30 yards and frequent showers adding to the overall dampness. However, despite the grey conditions it was mild and not sufficiently unpleasant to deter a party of eight members from examining the fauna and flora of the rocks and rock pools.

On the particular reef that we looked at, much of the surface was covered by a carpet of tiny mussels, all of them probably the common mussel, Mytilus edulis, and where gaps occurred in this cover they were filled by Acorn barnacles (Balanus balanoides), or by common limpets (Patella vulgata). However, at the highest point on the reef there were larger areas where only some tufts of the Chanelled Wrack (Pelvetia canaliculata) and black lichens survived.

On the shoreward side of the reef, tufts of green Enteromorpha sp. and Porphyra umbilicalis were very noticeable. The latter is an edible red alga and the presence of both species in quantity suggests that there is some fresh water drainage affecting the area, probably seepage through the sand from behind the dunes and cliffs. Another 'indicator' species is Fucus cerancides which frequents brackish water in estuaries and one plant which was believed to be this species was found among the Bladder Wrack (Fucus vesiculosus) and Spiral Wrack (F. spiralis) which were common on the upper and middle shore. Ascophyllum nodosum, the Knotted Wrack, was not noticed and the Serrated Wrack, Fucus serratus was quite difficult to find.

On the lower part of the shore, in gullies and pools the oarweeds, tangles or Kelps as they are variously called were growing thickly. The two Laminarias, L. digitata, with its smooth, oval stipe, and L. hyperborea with its rough, round stipe, were mixed with Alaria esculenta which is one of the few brown algae to have a 'mid-rib' to its frond. Two pieces of red alga with this leaf-like characteristic were picked up from the tide-edge. They were Phycodrys rubens and Delesseria sanguinea and had probably been growing below the low tide-level. Near low water many other red algae were growing either as epihytes, for example Rhodymenia palmata on Laminaria hyperborea, or on the open rocks such as, Gigartina stellata, Chondrus crispus, (which feels like wet rubber bands) and the two species of Laurencia, L. hybrida and L. pinnatifida. The latter two species were only just beginning to regenerate after dying away and were therefore sometimes difficult to identify, although the flat fronds of L. pinnatifida generally distinguished it from the fir-tree like growth of L. hybrida.

Without listing all the seaweeds that we found I should also mention Halidrys siliquosa, which occurred in practically every pool; a rather unpleasant-looking, bladder-like brown seaweed called Leathesia difformis, growing generally on the pink coralline alga Corallina officinalis, and Desmarestia aculeata, a long, fine-fronded brown seaweed. Another type of calcareous red alga, 'Lithothamnion' was common in rock pools growing as a thin encrustation over the surface of the

rocks. Many smaller species, not identified with any certainty in the field were also found in this habitat.

In addition to their rich flora, these rock pools also contained a very varied fauna for us to examine. In one of the deepest pools there was a shoal of fish, each one about four or more inches long. Despite considerable effort with nets and splashing by the party they managed to elude capture and remained unidentified.

Gastropod molluscs were common, not only in the pools, but also in the bottom of the gullies of the lower shore, especially the common Periwinkle, (Littorina littorea) and the Dog Whelk, (Nucella lapillus). The egg cases of the latter were also found in large numbers, laid on ledges of rock near to low-water. In similar positions the Crumb-of-bread sponge (Halichondria panicea) was quite common and in nearby crevices and in tidal pools on the lower shore there were some very large Dahlia anemones (Tealia felina). The Beadlet Anemone (Actinia equina) was frequently found either on the open rock or beside small pools and runnels. They were all reddish-brown in colour.

Bodies of the edible crab (Cancer pagurus) and live specimens of the Shore crab (Carcinus maenas) were frequently found. A mating pair of the latter, with the male some 3 to 4 times the size of the female, was found in one pool and in returning them we nearly ended their honeymoon by putting them too close to a huge Dahlia anemone which promptly engulfed some of the male crab's legs. Quite a strong pull was needed to free them from the anemone's grasp.

A most attractive mollusc of the lower shore that I must not neglect to mention is the Blue-rayed limpet (Patina pellucida) which lives on the fronds of Laminaria spp. and grazes on the surface tissues of the plant. Another non-coiled mollusc that was surprisingly easy to find in some places was one of the Coat of Mail shells or Chitons. Among the coiled colluscs there were many Rough Periwinkles (Littorina saxatilis), especially the microscopically small ones that live among the barnacles, and one or two flat-topped Periwinkles (Littorina littoralis) and a Chink shell (Lacuna vincta).

A Sea mat (Membranipora membranacea) was growing very strongly on some plants of the red alga Gigartina stellata on the lower shore. One tube worm, (possibly a small Audouinia) without its tube, a green ragworm (Eulalia viridis), a starfish (probably Asterias rubens) and various other things could be added to the list of 'sightings', while there were many, many more that either we didn't see, or didn't have time to examine. A few short hours round low-tide is not long enough to look at the tremendous diversity of life that can be found on a small area of rocks, but it does mean that there is plenty left to search for and look at next time.

D. H. Jones.

Field meeting at Easter Inch Moss, near Blackburn, West Lothian

17 May, 1969

Leader - E. C. Pelham-Clinton

This joint meeting with the Scottish Wildlife Trust was attended by about 25 members of both organisations. The day of the meeting was fine but with a cold north wind which kept insect activity low, so that not many species were seen. However it was a delight to see Emperor moths (Saturnia pavonia) and a few white butterflies (Pieris spp.) on the wing after the previous spell of cold easterly weather.

The moss is an extensive area of deep peat bog surrounded by birch and sallow scrub and bordered on the south side by a strip of more basic marsh and wet grassland in which the Greater Butterfly Orchid (Platanthera chlorantha) has a flourishing colony. The area is due for 'development', but the parts of the moss which include the rarer plants are to be preserved. The other plant specialities are Sundew (Drosera rotundifolia) and Wintergreen (Pyrola minor). These three plants were all seen at the meeting though none were in flower.

The moss also supports a colony of the Vapourer moth (Orgyia antiqua), nowadays a rare species in the Lothians. Three batches of eggs were found at the meeting, but of two batches kept only one proved to be fertile. Over fifty of the larvae which hatched were reared on birch and when nearly full grown on 14 July were liberated at the moss.

J. Carlyle.

The Hermitage Woodlands

The woodlands of the Hermitage, with its varying topography, have provided enjoyment and relaxation to many in recent years since, in fact, it was taken over by the Town some 30 years ago. They now consist of four distinct ages, the oldest being over 175 years, the next some 100 years or so, the next consisting of naturally regenerated sycamore about 20 years and finally, recently created, small clear fillings the resulting gaps having been fenced then planted with sycamore, ash and birch. The gorge created by the ice towards the end of the last Ice Age and the wide deep valley formed by the melt waters from the Ice present an interesting study. The soils vary from deep heavy clays in the valley, to shallow, less fertile soils in the upper slopes. The ancient climax woodland vegetation must have included oak, ash, lime, wych elen, alder, willow, hazel rowan, elder, probably scotspine and others as part of this old Lothian forest contemporary with the old Caledonian forest recognised even in Roman times.

Beach, sycamore, horse chestnut, sweet chestnut, larch and spruce were introduced at varying times; it should be realized that the woodlands of today are artificial, although some natural regeneration is seen.

At the present time the trees are mostly broadleaved, with an ever-decreasing number of conifers such as Scotspine, Norway spruce and larch. At the West Gate there is an interesting series of older oak, including the sessile, pedunculate and turkey oaks. Their presence with the fine specimens of sycamore, lime, beech, elm add to the majority of the woodlands, while species like silver birch, rowan, holly, horse chestnut and sweet chestnut add still more to the beauty of the area. It is a matter for regret that little care had been given to woodlands in the first half of this century, but now the Town, as owner, has most wisely, been engaged in their rehabilitation, it only remains to maintain and expand the young groups to give them more light and warmth, so that they may form nuclei of future beautiful woodlands to be enjoyed for many decades to come. The woodlands are valuable in giving beauty, enjoyment and relaxation to the public while, not least, they help to retain the soil on the steep slopes, which can so easily be eroded so quickly beyond hope of recovery.

W. A. F.

Avocets at Havergate and Minsmere - 1969

Towards the end of April there were over 50 avocets at Havergate Island and it was reported that a few may have remained throughout the winter; there were also some avocets at Minsmere, understandably, perhaps less attractive to these birds in being less secluded.

It was a cold wet morning in April when we set out from Orford for Havergate Island and after a trip of about 30 minutes we were ashore on the quiet secluded island, and being welcomed by the volunteer bird sanctuary watchers; thereafter the whole atmosphere brightened considerably.

The bird watching huts were soon reached and within minutes, the first of the avocets, surely amongst the most dainty, well groomed and attractive of birds, was seen at a distance of ten yards, an unforgetable sight. It and a few others were feeding with the typical side-sweeping of the bill in a shallow channel of moving water. A little later a female was joined by the male and both displayed. On different occasions avocets flew past the window of the hide at a distance of six feet. The avocets whether on the ground, in the water or in the air, with their black and white plumage and the up-turned bill, together with their history in Britain, make them a fascinating study. In a second hide we were able to see a sitting bird, presumably the female, later joined by her mate and, when the nest became visible, it was just possible to

see one egg; both fed in the vicinity for a little then the female returned to the nest. It was interesting to note that before approaching the nest, she flicked one leg and then the other apparently to remove any wet, cold mud from the small partially webbed feet, a performance repeated at the nest immediately before settling; this seemed to be a rational, instinctive reaction and essentially practical.

The Minsmere sanctuary was visited in the late afternoon and in bright sunshine; this was equally rewarding, some half-a-dozen avocets being seen on the mire, but at a greater distance than at Havergate. One was seen sitting on a nest on one of the islets, which have numbered boards most useful for directing other watchers on to a particular island.

One was inclined to feel that an effort to introduce avocets to the Solway flats might meet with some success, bearing in mind that the avocets have been known to visit Ireland; there seems to be no reason why they might not accept suitable conditions in carefully selected areas in Scotland.

The visits to Havergate and Minsmere made me grateful for the opportunity of seeing such interesting birds, and for the wonderful efforts of the Royal Society for the Protection of Birds.

W. A.F.

THE EDINBURGH NATURAL HISTORY SOCIETY

NEWS-LETTER

1970

THE EDINBURGH NATURAL HISTORY SOCIETY

1970

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Dr. W. A. Fairbairn

THE EDINBURGH NATURAL HISTORY SOCIETY

NEWS - LETTER

1970

E D I T O R I A L

The hundred and first year of the Society's existence is important since it is known and will be remembered as European Conservation Year 1970, the outcome of the meeting at Strasbourg of representatives of some twenty European countries to consider the management of the environment in Europe. The outcome of the Conference was the Declaration, the Conference declaring:

1. Rational use and management of the environment must have high priority in national government policy and be adequately financed. Clear ministerial responsibility must be established for the planning and use of land and other natural resources and the conservation of nature.

2. Policies should be strengthened or introduced to control pollution of air, water and soil and internationally agreed standards for those purposes should be devised as soon as possible.

3. Legislation and regulations introduced to safeguard the environment and its quality should be harmonised to the extent necessary at European level.

In the United Kingdom 50 exhibits and about 75 events were arranged for the ECY 70, the majority on a national basis. This Society with the Conservation Societies in Edinburgh and the Lothians, arranged jointly a programme of field outings and indoor meetings all of which were open to the public. The participating organisations included the ENHS, the Royal Society for the Protection of Birds, the Scottish Ornithologists' Club, the Scottish Wild Life Trust, the West Lothian County History Society and the Young Ornithologists' Club, all of which co-operated in providing events of interest in the field.

There is no doubt that with the publicity given to pollution, both in this country and on the Continent, the public are becoming conscious, most tardily, of the dangers of pollution of the air, land and water. European Conservation Year 1970 has pointed out the frightening and disastrous consequences of ignoring conservation. One feels that the Society has done much over long years to demonstrate the value of conservation within its proper limits; we trust that this will continue to be an integral part of its policy. The real danger lies in theorising on conservation and on pollution; it is easy to talk and to plan, it is harder to act; much is yet required to render this land ours unspoiled for the generations of the future.

With commendable foresight the excursion committee of the Society chose the Union Canal as the theme and venue for the 1970 field excursions; these produced a fascinating series of outings both on our own and in combination with other societies. Thus major articles are included in this number, on the history of the Union Canal and excursions in its vicinity. Our Society excursions, thanks to painstaking work, which is gratefully acknowledged, on the part of the Excursions' Committee, have been as rewarding as ever.

The News-Letter is maintained with the assistance, not only of the Society members, but with the generous help of others who kindly give us facilities to visit areas not always open to the public, of others who give of their time and energy in leading certain of our field meetings. We are grateful to Dr. D. H. Mills of the Department of Forestry and Natural Resources of the University of Edinburgh; to Mr. J. Howdle and to Mr. B. Skinner for information on the history of the Union Canal; to Dr. Peter Harper of the School of Agriculture of Edinburgh University, for providing valuable information; to all of those we record our grateful thanks.

We again ask young members to contribute articles or notes; the former appeal is already answered and a portion of the News-Letter is reserved as the Junior Associates' section.

Finally we record grateful thanks to Mr. Gordon Finnie and his assistants for the printing and binding of the News-Letter. We would also thank all those who have so generously given time and energy in contributing to this number, and to the series of excellent field notes, which thanks to the kindness of Mrs. E. Hamilton, are filed and retained for permanent record.

The editor much regrets that space does not allow of including more of the field notes.

EDINBURGH NATURAL HISTORY SOCIETY CENTENARY DINNER

G. Carse

The history of our Society was recorded in the last News-Letter, and to celebrate the hundred years of its existence a Centenary Dinner was held at the University of Edinburgh Staff Club, on 8th November 1969. One hundred and four persons in all were present, including official guests belonging to kindred organisations. Before the commencement of the Dinner the members attending were received by the President. This done, the Company took its place in the well-appointed room set aside for the occasion.

After dinner the President called upon Mr. Christopher Mylne, the chief guest of the evening to propose the principal toast to the "Edinburgh Natural History Society". He congratulated the Society on attaining its centenary, and spoke of the development that had taken place during that period and of the heightened interest that was shown in all branches of natural history. He paid tribute to the E.N.H.S. as one of the organisations that had played its part in bringing this about and emphasised the need for continuing vigilance in the matter of nature conservation, never more urgent than to-day. He concluded with a reference to European Conservation Year, 1970, and explained how our Society could contribute towards the success of this Year. Habitats were never more threatened than to-day, and it was essential that public interest in nature conservation should be stimulated. Dr. W. A. Fairbairn replied on behalf of the Society, and from his practical experience in forestry both at home and abroad, laid further emphasis upon the urgency of conservation, and the saving of habitats. The toast to "Our Guests" was proposed by Professor Frank Bell (President from 1959-62) who referred to the happy relationship that existed between our Society and the other organisations represented at the dinner, which included the S.O.C. the S.W.T. and the Botanical Society of Edinburgh. Mr. William Brotherston, Chairman of the Lothians Branch of the Scottish Wild Life Trust replied on behalf of the guests, and emphasised how even in his own lifetime there had been a heartening and mainfold increase of concern for and interest in nature conservation. At the close of the gathering Dr. Roy Watling presented to the President, who received it on behalf of the E.N.H.S. a beautifully and artistically inscribed parchment scroll recording the congratulations of his Society. Other guests were Mr. J. H. B. Munro, (Chairman of the Edinburgh Branch, S.O.C.) and Mr. R. A. Cairns ('Eskdale' of the 'Evening News'). The chairman also made reference to the presence of Sir Charles Connell, chairman of the Scottish Wildlife Trust, remarking that he was probably the member of longest standing, having been proposed for membership in October 1921 at the time of the merger of the two parent Societies.

For this highly successful occasion our grateful thanks are due to all who by their efforts and hard work made it possible; Mrs. Elizabeth Farquharson who was the Convener of the Committee that organised the Centenary Dinner; Miss Henderson, who handled the applications for and the printing of the tickets; Professor Bell, Convener of the Centenary sub-committee; Miss Patricia Wilson and Miss Lorraine Campbell, members of the Catering Committee; Mr. W. A. Hill who also helped with the organisation and by no means least, Mr. Edwin Tweedie, our Treasurer, who looked after the financial side of the arrangements. If there are any others whose mention may have been inadvertently omitted, let them realise that they are also gratefully included in a collective vote of thanks for the outstanding success of a most memorable occasion.

CENTENARY LECTURE BY TOM WEIR

G. Carse

As part of the Centenary Celebrations a lecture was delivered by Mr. Tom Weir, the well-known naturalist and mountaineer, at the Pharmaceutical Society Hall, York Place on 7th March, 1970. As with the Dinner all tickets were sold well in advance of the occasion.

For the Lecture Mr. Weir prepared a new series of slides and theme entitled "A New Look at Scotland". As expected, the slides and lecture came up to the high standard that we have come to associate with a speaker of Mr. Weir's standing. The slides included scenes from the Highlands, botanical and ornithological highlights in the speaker's career, and even a picture of a pine marten taken at Beinn Eighe Nature Reserve. The speaker emphasised that he must exert all our efforts to preserve those areas and habitats of Scotland unsurpassed in their beauty and an essential part of our environment, from spoiling pollution and destruction. At the end of the lecture Professor Bell who was in the chair thanked Mr. Weir, a well known personality to match a memorable occasion, for delivering this unforgettable Centenary Lecture.

We are indebted to the Pharmaceutical Society who so kindly gave our Society the use of the Hall, and to Professor Bell who made the necessary arrangements and the initial approach to Miss Henderson and Mr. Tweedie who ably conducted the financial arrangements.

After the lecture an enjoyable social gathering was held in the Council rooms.

WINTER MEETINGS 1969-70

Miss N. F. Henderson

During this Centenary Year the winter meetings, except for the special lecture given by Dr. J. Morton Boyd, have been held in the Y.W.C.A. Hall in Randolph Place, Edinburgh each month from October to April. The two social occasions arranged as part of the Centenary celebrations are reported elsewhere in this News-Letter.

Following the A.G.M. in October, Mr. D. Heppell of the Royal Scottish Museum, gave an interesting illustrated talk on "SHELLS AND MAN". Shells had been used by early Man for decorative purposes, perhaps the favourite for personal use had been the cowrie shell - its significance sometimes being that of a charm against the "evil-eye"; sometimes as an erotic symbol. Strings of cowries were also used as money by coastal tribes of the Pacific and indeed they still indicate their wealth in this way to-day. Many shells were depicted on modern currency and stamps. Oyster beds had been common round the coasts of Britain and in Dickens' time oysters had been the food of the poor. These shells were irradescent inside, and the most common shell of this kind was the "mother of pearl" oyster, once cultivated off the coast of the Sudan for the making of pearl buttons.

Mr. P. W. G. Gunn, Hon. President of the Society was chairman at the Centenary Lecture delivered by Dr. J. Morton Boyd of the Nature Conservancy, in November. Dr. Boyd chose as his subject "THE SCOTTISH WILDERNESS, PAST, PRESENT AND FUTURE". He started by saying there were still in Scotland to-day areas of country with the quality of wilderness which for various reasons we were concerned to preserve. The stuff of which Scotland, especially the Highlands, was made - regions which gave little support to life - its wet and windy climate - had made for vast expanses of desolation with small green oases on pockets of limestone or slate. This was what gave quality to her landscape. In this urban age it was important that such open areas should be preserved so that people could go there for refreshment of the spirit. The conservation of the wilderness was a job for expert technology, and this was the task with which the Nature Conservancy was charged. The first question was what should be conserved? Obviously everything could not be - so the Conservancy had to choose the best of what we had inherited from the past.

Starting with a slide of the "Bone Cave" high up a cliff face near Inchnadamph, in which were found, preserved for thousands of years, bones of bear, lynx and reindeer, Dr. Boyd showed photographs of areas where once there had been forest but now there were no trees (Moor of Rannoch), and others where the old forest still existed, notably on islands on lochs (Loch Lomond), and on steep slopes and gorges. These together with such surviving stands of old forest as that above Loch Maree; the green areas of ash woodland near Kishorn and the relic of oakland at Letterewe, the Conservancy were concerned to preserve and to encourage. And with the woodlands went the plants of the semi-wilderness - plants such as the orchids, Grass of Parnassus, the Scottish primrose and the purple saxifrage to name only a few; animals such as the red deer and birds like the red-necked phalarope, the black-cock and the golden eagle.

Looking at the present and to the future, one had to realise that, with the urbanisation and increased mobility, more and more people would want to get into the countryside. Many of these would only want a place to view a pleasant landscape; others would seek refreshment in real solitude. By planning and management all these had to be catered for, so that the countryside would not be destroyed and so that special areas were kept where Man must not tarry.

Dr. Boyd closed his Lecture by showing a beautiful series of slides of St. Kilda.

"PLANTS AND ANIMALS OF THE MARITIME ANTARCTIC" was the title of the talk given by Dr. C. H. Gimingham of Aberdeen University, at the December meeting. Antarctica was a land of great beauty as yet unspoiled by Man. There were many areas round the edge of the continent that were free of snow in the summer, but the climate got very severe as one went south. The Faulkland Islands, for instance, were rather like Shetland, with sheep farming the main occupation, but the flora included less than 100 different species. South Georgia had a sub-arctic climate and there were only 27 species in the flora. This was, by the way, the farthest range of the albatross. South of this was the iceberg region, and the South Orkney Islands, where the British Antarctic Survey Team was based, had an arctic climate. Here, though there was quite a lot of green cover in summer, there were few species in the flora - a flowering grass and a cushion plant, as well as mosses and lichens. Dr. Gimingham showed slides and a film of the various species of penguins, seals and birds to be found in the area.

At the January meeting, Mr. P. M. Brown, Senior Field Officer with the Department of Agriculture, and a specialist on rodents, spoke on "PEST CONTROL". He first showed a film made for the city of Hamburg, demonstrating the destruction and health hazards that could be caused by rats. He then went on to discuss methods of controlling vermin by the use of traps, wire-netting, and chemical repellants. To supplement this talk, Mr. Brown had a display of photographs and of the various types of traps used by his department.

The next two meetings were of botanical interest. In February Mr. D. M. Henderson of the Royal Botanic Garden gave a talk on "AROUND THE WORLD OF BOTANIC GARDENS". He told how he had decided to visit botanic gardens all round the world to get a general picture of what they were doing and why. In the early days such gardens had been centres of medicine, agriculture, and horticulture. Some of these early objectives were now removed to specialised institutes such as Forestry Research Units, and the gardens were now largely taxonomic institutes providing, in addition, collections of plants from all over the world for reference and for public enjoyment.

He had managed to see two springs, first in the northern hemisphere and then in the southern hemisphere. Thanks to the great hospitality and co-operation of the directors of the different Botanic Gardens, he had seen

a tremendous lot and travelled from Edinburgh to eastern Canada, Vancouver, Hawaii, Japan, Malaya, Eastern Australia, New Zealand, South and East Africa, and arrived home in December. All had their special points of interest or climatic advantages and all had their different problems. Mr. Henderson illustrated his remarks with fine slides of the many gardens he had spoken about. After 7 months' travel he had concluded that there could be no model or ideal garden but each must fit into its own natural context.

The subject at the March meeting was "A BOTANIST IN NEW GUINEA" and was given by Mr. P. W. Woods of the Royal Botanic Garden. He described some of the regions he had visited during two collecting expeditions in 1962 and 1968. He was in New Guinea to collect as much living material as possible in addition to herbanium material, and his collecting had been done at heights over 5000 ft. when the temperature at nights could drop to freezing point. New Guinea was a land of mist and mountain with a coastal swamp, dense rain forest, frequent earth tremors and vegetation from the tropical to the alpine. It was a land of people who had not changed for hundreds of years. The central highland area was the most densely populated and here it was mostly grassland, much of the forest having been destroyed by repeated burning. The speaker showed many slides of the plants and trees and of some of the animals and birds to be found there.

The April meeting was devoted, as usual, to members' night. Those participating included Mrs. R.W.J. Smith, Mr. E.C. Pelham-Clinton, Mr. R.W.J. Smith, Mrs. W. Robertson and Mr. W. Hall.

THE EDINBURGH AND GLASGOW UNION CANAL

George Bell

Without ceremony, on the 11th May 1822, the first barge to make the entire passage along the canal docked at the Port Hopetoun basin in Edinburgh with the rather unexciting cargo of flagstones quarried at Denny. Though the cargo was unexciting, the event certainly was, for during the preceeding thirty years a controversy had raged as to whether the canal should be built at all. The main idea behind the canal proposal was to lower the price of Edinburgh's coal by bringing supplies from the Monkland coalfield in north Lanarkshire. The story of the Union Canal is an intriguing one and contemporary documents reveal much of the social as well as the technical problems encountered during its construction.

The first firm steps towards the building of the canal were taken in January 1793 when, at a meeting in Edinburgh, John Ainslie and Robert Whitworth Jnr. were commissioned to survey possible routes. Four routes were suggested, all of them going from Leith to the Clyde at Broomielaw. After some years a fifth route was proposed by John Rennie. This route lay more to the north than the Ainslie - Whitworth line. The Napoleonic Wars unfortunately intervened this time and the project was shelved once more. In 1813 the project was resurrected with a new route proposed by Hugh Baird the civil engineer,

who proposed dropping the Leith to Lothian Road lock ladder and proposed taking the canal via Ratho, Linlithgow and Falkirk where it would join the Forth and Clyde Canal by a lock ladder. Eventually, with the support of the Forth and Clyde Canal shareholders, the Hugh Baird line was adopted and in June 1817 the Union Canal Bill was passed by Parliament. The way was now open for the construction to begin.

The motto selected by the Union Canal Company was DERUPTIONE CONJUNGO which means - by tearing apart to join together. This is literally what happened. Work was started at the Edinburgh end in March 1818 with Hugh Baird as the resident engineer. The 31½ miles of waterway were divided into 33 lots and three construction firms shared the bulk of the work. The overall dimensions of the canal were, length - 31½ miles, breadth - 40 feet narrowing to 15 feet at bridges and aqueducts with an average depth of 5 feet. By constructing the canal along the 240 foot O.D. contour line, the need for all but the terminal locks was eliminated. The water level is maintained from Cobbinshaw Loch and the River Almond with a feeder burn joining the canal at the Almond aqueduct. There are three aqueducts, the Slateford, the Almond and the Avon. Thomas Telford was associated with the planning, design and construction of the aqueducts and used experience gained during the construction of the Pontcysyllte aqueduct over the River Dee near Llangollen. At Glen village stands a major engineering achievment in the shape of the Black Hill Tunnel; not part of the original plan, it was excavated because the landowner, through whose estate the canal was to pass, objected that were the canal to follow the contour around the hill passengers and workmen would be able to look into his house.

While some local labour was used in the construction, the work force was made up mostly of itinerant Highlanders and Irish navvies. These men were not looked upon with favour by the local gentry who often demanded compensation from the Canal Company for the inconvenience and damage caused by these workmen. The contractors had to cope with labour troubles and there were reports of riots amongst the men. The canal however, can be truly regarded as a lasting monument to the ingenuity of the engineers and the muscle power of the workmen.

By December 1822 the canal was fully operational and it was not long before the Company observed that the main traffic flow was from the west to Edinburgh. The coal traffic was growing and soon the haulage rates were reduced to 1d per ton per mile. As the trade continued to grow, a coal basin was constructed and named Port Hamilton. While the main traffic was in coal, a thriving passenger service became established. The passage boats, whose design was based on those of Dutch boats, were built with the comfort of the passenger in mind. A typical example of a passage boat was the Flora MacIvor, launched in March 1822. The accommodation consisted of sitting rooms, sleeping cabins and steerage. Fares current in 1822 for the journey between Edinburgh and Glasgow were - steerage 5/- and cabin 7/-. Passengers of the cabin class could relax and read a specially prepared guide book describing the scenic beauties of the canal whilst they were towed towards their destinations.

Soon, unfortunately, this honeymoon period ended as the passenger services began to feel the growing competition from stage coach services. The pressure of competition steadily increased as the railways established themselves. With the opening of the Edinburgh - Glasgow line in 1843, the passenger service began its rapid decline. In spite of experiments with barges hauled by steam tugs, and with reduced fares, the passenger services were withdrawn in 1848.

Over the next few years much negotiation and intrigue went on between the canal companies and the railway company. The outcome was that the three companies were swallowed up by the North British Railway Company in 1865. Attempts to revitalise the canal trade were unsuccessful and in spite of reduced tariff rates, the downward spiral continued and by 1933 all traffic had ceased. In 1947 the canal was nationalised and in 1965 it was denavigated.

Since its closure continual attempts have been made to have the canal filled in and in some places this has actually happened. However, the greater part of it still exists with most of the original buildings intact. The three aqueducts, the tunnel, the stables complex at Woodcockdale and the basin at Slamannan are still fairly well preserved. Most of the bridges are in good repair and the mechanical lifting bridge at Gilmore Park has recently been listed as a relic worth preserving. On the 6th December, 1969 a symposium on the Union Canal resulted in arousing considerable specialist and public interest in the conservation of the canal. It is intended that a recall conference be held as soon as possible. Experience on other restoration work has shown that it is generally far cheaper to rehabilitate a canal than to fill it in. Landscaping soon turns an eyesore into a public asset.

The potential of the Union Canal as a place of recreation and education is vast. Recent surveys have highlighted the canal as being a source of permanent visual history. Additionally the Union Canal provides artists, fishermen, rowing clubs, tiddler guddlers and last but not least naturalists, with a venue of diverse and absorbing interests. The canal, if connected up with the old Slateford - Balerno Railway track, would provide the citizens of Edinburgh with a direct walkway from the town centre to the Pentland Hills.

This is European Conservation Year and the signs are that officialdom may just be leaning in our favour. We may yet be as successful in overcoming present day vested interests as was the Union Canal Company one and a half centuries ago.

I am greateful to Messrs. J. Howdle and B. Skinner for permission to use the information from their valuable paper on the Edinburgh and Glasgow Union Canal and also to Dr. D. H. Mills of the Department of Forestry and Natural Resources of Edinburgh University, for information obtained from the paper on the Union Canal Survey.

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FIRTH OF FORTH ISLAND BIRD COUNTS - 1970

R. W. J. Smith

The colonisation of the small Forth Islands by several species is reaching an interesting stage.

New Kittiwake nest sites on Craigleith and Lamb must now be difficult to find. On the former, numbers are stationary and on Lamb the slight decrease on the main cliff, due to pressure of increasing Guillemots, is balanced by some new nests on rather improbable sites. On Fidra the increase of 16 nests has been achieved entirely by the new colonisation of the 'Castle'. The main pressure has switched to Inchkeith where the population has almost doubled since last year. This island cannot accommodate this sort of increase indefinitely and the question is - where next?

Similarly the Shags on Lamb which have been increasing at roughly 10 pairs per year, shot up by 35 pairs this year. Sites are becoming less suitable and we may anticipate that Fidra and/or Inchkeith will be next in line for colonisation. Guillemot numbers on Craigleith have shown little change in recent years but on Lamb, with a 40 per cent increase this year, they are spreading more and more to the flatter rocks between the Shags' nests. Fidra or Inchkeith may well get their just wave of colonists in the next few years. Razorbills have this year taken the plunge and bred on Inchkeith - the first record for Inner Forth. Once the psychological barrier to breeding on a new island is broken, others of the species readily follow.

The results of the 1970 Island Bird Counts are as follows:-

	Inchmickery	Inchkeith	Fidra	Lamb	Craigleith
Fulmar		363	28	1	48
Cormorant				220	3
Shag				194	104
Gt. Bl. Back					1
Kittiwake		342	104	116	550
Common Tern	150		400-500		
Arctic Tern			ca 50		
Roseate Tern	2		ca 100		
Sandwich Tern	3		201		
Razorbill		2		10	35
Guillemot				135	650 birds on cliff
Puffin		80 birds			800 birds on sea & land
	155	787	883-983	676	2191

Unless otherwise indicated all figures refer to sites (Fulmar), nests or pairs.

NOTES ON FIELD PRINTING TECHNIQUES

Iain Robb

A few years ago I successfully carried out field trials of foot-printing techniques, of small mammals, on the National Coal Board estate of Whitehill in Midlothian. The animals involved in the trials were the bank vole (Clethrionomys glareolus), the wood mouse (Apodemus sylvaticus) and weasel (Mustela nivalis). Greatest success was obtained with a smoked-paper technique.

The habitat was a strip of young larch (Larix leptolepis) and Scots pine (Pinus sylvestris) which stretched from the Dalkeith-Leadburn road up to the edge of Cauldhall Moor. It had been planted on the site of an older mixed deciduous wood, the stumps of which were still present and provided excellent cover for the small mammal population. Quite often these rotten stumps were apparently kicked out and broken. This at first puzzled me and the number of roe deer droppings lying around, suggested that deer may have been responsible. However, the solution was provided one morning when I had the exhilarating experience of watching a great spotted woodpecker at work, carefully excavating grubs from the stumps. The area was quite rich in bird life and apart from partridge, pheasant and red grouse, because of its proximity to the moor, blackcock often roosted in some of the older trees.

The techniques of foot-printing have been developed in an effort to overcome some of the problems of assessing population density and movement by normal 'trap - mark - recapture' methods in which many species appear to have considerable proportions of the population that are 'trap-shy'. Continual trapping also inhibits the natural freedom of the animals and, in the case of small rodents, often leads to a high number of deaths.

Apart from the actual foot printing trials, the method of anaesthetizing the animals with ether prior to toe-clipping, afforded me an unusual opportunity of observing the behaviour of weasels in the field and helped to confirm my opinion that those little mammals are almost fearless.

After the animal had been handled (weasels were seldom anaesthetized for longer than 60 seconds) it was allowed to recover in a special cage into which it had been lured by means of a dead laboratory mouse. These mice, which were almost as large as the weasels, gave off a pungent odour that most humans could smell at several yards and I would be surprised if the weasels could not smell them at a distance of several hundred yards. That the weasels found them most palatable may be illustrated by the following, rather interesting, event that I witnessed.

As on each previous occasion I stood, motionless, at a distance of about 6 yards from the recovering weasel. He left the cage, slowly, still under the influence of the ether; half staggered, half ran, along a field drain for twenty yards, then stopped. Climbed up on to the bank and

appeared to reflect for a moment. Then in a deliberate manner he circled back to the cage, passing within a few feet of my still motionless figure, and re-entered the cage despite the fact that the smell of ether was still present inside. Seconds later he re-appeared carrying the enormous body of the mouse which he slowly dragged up the field drain until lost to sight.

With regard to the actual foot-printing trials, I should perhaps conclude by stating that clear and recognisable foot-prints of individual wood mice and bank voles were obtained by allowing the animals to pass through "runs" which contained strips of smoked paper. The technique would appear to hold considerable promise and is probably worth following up.

In the case of weasels, the low posture of their body invariably swept the smoked paper clean and consequently no successful foot prints were obtained.

DUDDINGSTON LOCH BIRD SANCTUARY

George Carse

Over the past year Duddingston Loch has featured much in the news. A threat to its integrity and continued existance as an effective bird sanctuary was posed by the Corporation proposal to build two new schools in Cavalry Park, and re-zone the 12 acres at Bawsinch for playing-fields. A public inquiry was held in July 1969 lasting six days in which it was my privilege and onerous duty to appear for the E.N.H.S. as one of the objectors to the proposal. I called three witnesses to testify to the value of Duddingston Loch as a Bird Sanctuary, not only for bird-watchers, but for the public generally, and their evidence must have been vital to the whole course of the Inquiry. They were Mr. P.W.G. Gunn, our Honorary President, who was concerned with its establishment as a Bird Sanctuary in 1925, and whose memories and experience of it stretched back for sixty-six years; Mr. D.R. Anderson, the Honorary Warden, who, week in and week out, for twenty-seven years has kept watch and ward; Mr. Alasdair Anderson a member of the Council of the S.O.C., and of the S.W.T. Duddingston Loch Committee, an expert on wildfowl. Each emphasised that if Duddingston was to be a viable sanctuary then the 12.7 acres at Bawsinch must remain as an essential buffer zone between the area of public usage and the nesting area; otherwise for example, the large concourse of wintering pochard, amounting to several thousands, would probably become permanent absentees owing to inevitable disturbance; all other factors apart, this would be detrimental to the public benefit. The other wildlife objectors were the S.O.C. and the S.W.T. represented by Sir Charles Connell, who was the main spokesman for that group of objectors and with whose clearly-stated submissions in his closing speech identified ourselves; the Duddingston Preservation Society, who concentrated on principles of planning and amenity, and called to its aid such experts on planning and landscape as Professor P.E. Johnson-Marshall and Professor G.B. Oddie. The finding of

the Reporter, Mr. M.T. Wilson, M.B.E. was that only one school should be built on Cavalry Park, and that the proposal to re-zone 12.7 acres at Bawsinch (the field adjoining the Loch, and an integral part of the Sanctuary) be not approved, and thus was in favour of the objectors. The Secretary of State endorsed the Reporter's finding, and thus the strenuous efforts of those, who fought long and hard to preserve the integrity of Duddingston as a Bird Sanctuary, and save it from possible destruction, were amply rewarded. A significant victory for those who believe in the essential place of nature conservation in a properly planned society, in this European Conservation Year, 1970.

The decision to contest the proposal to detach Bawsinch from the Sanctuary (at any rate that would have been the effect), and the result of the Inquiry appear to be fully in keeping with the clearly expressed wishes of the donor, Mr. William Hardington Askew of Ladykirk, who in 1923 purchased Duddingston Loch and its environs from Sir William Dick-Cunyhgham, and then conveyed it as a gift to the nation through the then Commissioner of Works (now the Minister of Public Buildings and Works), so that its amenity might be preserved, and for use as a bird sanctuary. Bawsinch must now become officially part of the Sanctuary, and I am sure in bringing this about the E.N.H.S. will want to play its full and proper part.

Another indication of the importance of Duddingston in the environmental and ecological scheme of things was the visit there, on 23rd July of His Royal Highness, The Prince Philip, Duke of Edinburgh, accompanied by Sir Charles Connell and Mr. D. R. Anderson.

Saturday 23rd May 1970 - LOCH LOMOND

A treasured possession of ours is a copy - third edition, 1847 - of the Andersons' Guide to the Highlands. We like it for its informative character, but we are more than moved by its lyrical passages. Like this:- "Loch Lomond. It may be questioned whether a lacustrine expanse so magnificent, so lovely and so entirely perfect is anywhere to be seen". The 23rd of May 1970 following a "retarded"Spring, was warm and brilliantly clear when forty, members and friends, of the Society descended from a 'bus at Balmaha to greet the "lacustrine expanse" adorned as it was in all the splendours of Spring. Seven halcyon hours for all of them.

Most of the forty elected to cross to Inch Cailleach there to follow a "nature trail". A few decided to ascend a near-by peak but five members banded together to explore the alders, oaks and birches which border the Loch north of Balmaha. These were richly rewarded. Bird life abounded, chaffinches predominant but willow warblers were everywhere too. Other warblers - there were only one of each, the wood warbler, the chiffchaff, the whitethroat, and the garden warbler. The rich outpourings of this last finest songster (is the blackcap really better?) were a delight. There were a few cuckoos but only one goldcrest and one redpoll were heard to sing. Tree pipits - there were four of these variously distributed but all

singing from topmost tree-branches. No rarity in the lot, but when "Earth's crammed with Heaven and every common bush afire with God", may we not find exaltation in what is common and universal - and beautiful?

Flowers - again no rarities, but unravaged nooks lit by brightest primroses and innumerable beds of greater stitchwort whitening the forest floor - all provided delight. From the naturalist's point of view, the best find was that by the President, a slow worm wriggling on the highway. This Mr. Carse, good man, carried to a safer asylum in the woodland deeps. So ended one sunlit day of Spring by the bonny banks where, unlike a case with which we are all familiar, we hope we may be privileged to meet again.

P. W. G. G.

PROFESSOR FRANK BELL

It is with regret that members of the Society have said farewell to a distinguished fellow-member. This is Frank Bell, D.Sc., Ph.D., F.R.S.E., Professor of Chemistry at Heriot-Watt University from 1950 until his retirement in 1966, who has now left Edinburgh to reside near the two members of his family in Western England. Professor Bell's hobbies were described by him as "walking and field club activities". It was because of these that early in his sojourn here he joined the Edinburgh Natural History Society. His qualities were quickly recognised and he was soon elected to the Council of the Society. By 1959, when a new President fell to be appointed, he was its obvious choice. His three years of office revealed his ability to arbitrate in disputed matters with conspicuous fairness; foibles were regarded benignantly, the flicker of a kindly smile lightening the face of a man in whom good sense and good humour were united to win entire respect - and affection. May he and Mrs. Bell be privileged to have a happy retirement with frequent possibilities of recourse to whatever near-by countryside is available for their enjoyment.

P. W. G. G.

NATURE RUMMAGE EVENINGS

15th April and 22nd July

The object of these outings was to encourage participants to use their eyes more and not just see the things they knew. Small, easily hand led numbers attended and it was felt that benefit was derived. Both areas, a part of Corstorphine Wood and the walk from Bonaly Tower to Howden Glen and back had been surveyed earlier. The former was more compact, but the latter provided a good walk, stiff exercise and lovely scenery. On both outings badger setts were examined, and interest ranged over mammals, birds, insects, trees, plants, fungi and "activities". In Howden Glen we had an account presented of the Reindeer Cave and gazed at the fissure where it once existed. There was enthusiasm and good fellowship and it was a pleasure to lead these parties.

C. P. Rawcliffe

ROTHBURY EXCURSION

May 15th - May 18th 1970

Twelve members of the Society attended this Spring excursion. It was a great success, due largely to the excellent organisation put in by Mrs. Hamilton and Mrs. Stewart.

The outing proper started on Saturday May 16th with a visit, in company with the Newcastle Natural History Society, to Hulne Park Alwick. We went as far as Hulne priory. In the well-wooded policies there was a wealth of bird life, 46 species reported, including 9 warblers viz:- grasshopper warbler, sedge warbler, blackcap, garden warbler, whitethroat, lesser whitethroat, willow warbler, chiffchaff and woodwarbler. The high spot for most was the sighting of an Osprey, seen in flight and perched. Seen that is by all except three who had to be content with a close view of a marsh tit feeding a fledgeling. Botanically the outstanding feature was the identification of some good specimens of Mountain Currant RIBES ALPINUM.

A heavy thunderstorm cut short our visit and hastened our return. On Sunday morning 9 members went to the Cragside Gardens where the bird life was much as at Hulne Park, though less prolific. The other 3 went gowk hunting and were lead such a dance before the bird was seen it was to be wondered who was the cuckoo. There was compensation in the shape of a roadside greyhen seen closely from the car. Later, at a picnic spot this trio found a willow warbler's nest C/5 and an elver swimming up the Aller Burn. Just after lunch the two parties met, fortuitously, and went to Holystone. Here there was some nice birding with tree pipits and tree-creepers, whinchats and a cuckoo. After tea (note how well we looked after

ourselves) we walked as far as the Lady's Well and saw where Bishop Paulinus in the 7th Century had baptised 3000 Northumbrians. On the way back, in the meadow, we found a pair of yellow wagtails which obligingly allowed close approach.

For our last day, May 18th, we chose to keep together and to visit the Breamish Valley. This took us to Ingram where we met John Hope, Chief Warden of the Cheviot Nature Reserve. We visited his excellend Information Centre and some saw inside the old church with its Saxon Stone carvings. We went up the dale by car and then walked to Linhope Spout, a 20 ft. cascade. En route we were overtaken by 90 Newcastle schoolchildren but not before one of our party had found a small adder about 12 ins. long. This specimen of "Un Udder" was seen by almost every child. Bird life had thinned but the gardens and plantations formed reserves and about 20 species were in the immediate vicinity, plus typical hill birds. This is a lovely valley and a visit is urged on anyone who can find time to turn off the A697. After tea at Wooler we went our several ways prepared to admit that once again E.N.H.S. had offered a wonderful excursion.

C. P. Rawcliffe

EUROPEAN CONSERVATION YEAR 1970

Field meeting to the Union Canal on June 27th organised by the Edinburgh Natural History Society

Mrs. E. M. Smith

Members of the E.N.H.S. conducted parties of the public along the towpath from Harrison Bridge to Kingsknowe. The heavy rain ceased in the afternoon and despite grey weather between forty-five and fifty people were shown the canal and some of the recreational and educational activities possible along its banks.

Mist obscured the many fine views and the groupings of trees, water and buildings were not seen to advantage, making it an unsuitable day for sketching and photographs, but there were several groups of pond dippers fishing in the canal for the water is pure and clean; Miss A. Deans had a group of pupils from Boroughmuir School; a party from George Heriot's School Natural History Society were busy near Allan Park and, a little further on, a party of Society members could be seen plying their nets. The visitors showed great interest in the variety of fresh water fauna caught; these in turn form food for fish and it is interesting to note that the best fishing stretches lie within the city boundary; there are at least six species, including one, the Leather Carp, which is not known to occur anywhere else in Scotland.

Fishing, then, is yet another activity possible on the canal; so, too is rowing and several crews from George Watson's rowing club were to be seen out practising. Several other rowing clubs also use the canal.

So it was hoped to show the citizens of Edinburgh how the Union Canal could be used, its towpath providing a pleasant walk - in fine weather - along which to linger and enjoy the varied life of hedgerow, wayside and water - all this within our city. Surely it is an asset to be preserved and improved? This was the unanimous view of the symposium on the Union Canal held in Edinburgh University on December 6th 1969 and one which our society heartily endorsed.

E. Hamilton

Following the above account, the lists below recorded, List A by Mr. A. LINDLEY and List B by Miss Rosemary HARPER and Mr. I. GAULD, are gratefully acknowledged; so also is the list of specimens recorded in the junior section by the BOROUGHMUIR pupils under Miss A. DEANS.

(Editor)

A. List of fresh water fauna caught on 27th June, 1970.
(Mr. A. Lindley) Allan Park foot-bridge.

Tadpoles, probably of the common toad BUFO BUFO

Snails
(LIMNAEA TRUNCATULA (dwarf pond snail)
(" PEREGER (wandering snail)

Insects
(NONONECTA (water boatman)
(TRICHOPTERA (caddis fly) larvae
(CHIRONOMIDAE (midge) larvae

Arachnids - water mites (HYDRALLMELLAE?)

Crustacea - CYCLOPS
DAPHNIA (water flea)
ARGULUS FOLIACEUS - fish louse
OSTRACODA?
GAMMARUS (fresh-water shrimp)

Flatworms - POLYCETIS NIGRA

B. Canal - Fresh Water Fauna - 27th June, 1970
(Rosemary Harper and Ian Gauld) Allan Park region.

Mollusca

Limnaea pereger - Wandering snail

Linmaea stagnalis

Egg masses of both these species found on reverse of Potamogeton leaves.

Planorbis sp. - Ramshorn snail

PHYLUM PLATYHELMINTHES

Planaria Lugubris - common flat worm

Planaria alpina - grey flat worm

Phylum Arthropoda

Branchiopoda Daphnia pulex
Simocephalus sp.

Copepoda Cyclops sp.

Gammarus

Asellus - Water Hoglouse

Insecta

China Mark Moth larvae

2 spp. Caddis fly larvae (Ephemeroptera) one with sand grain case, other with vegetation as casing.

Eggs of damsel fly.

Vertebrata

Amphibia - Tadpole of common toad, Bufo

Rosemary Harper
and Ian Gauld

THE EDINBURGH NATURAL HISTORY SOCIETY

Evening outing to Blackford Hill on April 29th to study bird song

Conditions for bird song were very good; the north westerly wind had dropped, the temperature had risen and the sun shone. Some twenty-three members met at the Blackford Pond entrance and walked slowly round the hill to the Hermitage entrance; from there they returned over the hill and back to the pond.

The following birds were seen and heard:-

Willow Warbler	Yellowhammer	Crow	Starling
Treecreeper	Reed Bunting	Pigeon	Lark
Lesser Redpoll	Dunnock	Jackdaw	Wren
Blue Tit	Robin	Linnet	Moorhen
Coal Tit	Chaffinch	Mute Swan	Mallard
Great Tit	Thrush	Sparrow	Pochard
Long-tailed Tit	Blackbird	Bullfinch	Coot
Greenfinch			

E. H.

E.N.H.S. outing to Union Canal at Glen village, Falkirk and points on the canal to Avon aqueduct on Saturday afternoon, April 11th, 1970, led by Mr. J. Howdle, Esk Valley College, Dalkeith, to study features of industrial archaeological interest

Some thirty members of the Society including five junior members, as well as several members of the Saltire Society set out from Glen Village to explore the western end of the canal. Mr. Howdle outlined the history of the canal then led the party to the Black Hill Tunnel, looking first at Bridge 61, known locally as the "laughing and greeting" bridge on account of the two stone carved faces, one smiling, on the east side, and the other scowling, on the west side of the bridge.

The nearly mile long Black Hill Tunnel is cut through rock and has a cobbled towpath, bordered by what remains of a wooden hand rail, along its northern side. Inside it is wet in parts with steady drips falling from the roof; through the years there have formed stalactites and it was possible to examine by torchlight the many striking "curtain" formations clustered on the rocky walls. In the roof itself are two ventilation shafts; periodically, to clear the air, fires were lit in the tunnel and the shafts were opened, thus causing a strong draught of air to be drawn in from both ends of the tunnel.

At the western end, where the party emerged, White Butterburr (Petarites albus) was coming into flower at the base of the crumbling shale banks. Some local boys had joined the party and acted as guides through the willow scrub back to the village; they still use the canal for sculling.

From there the party drove to the old Slamannan Railway Basin where, on the stonework, scrapes can be seen, made by the tipping of pig-iron from trucks to barges.

The Avon aqueduct is one of three on the Union Canal, the others being at the Almond and Water of Leith rivers; all three were designed and built, along with the canal, from 1817 to 1822, and are unique of their kind in Scotland. Mr. Howdle mentioned the social life of the time, too. Picnic and Sunday school parties would sail by barge to this spot from the nearby towns; booths were set up where sweets could be bought; now a stage stone remains and the old aqueduct where the water flows in an iron channel. The aqueducts are considered to be in need of repair. What of the Future? Do we preserve the canal for twentieth century recreational uses, such as sailing and fishing, as has been done in the south, or do we let them be swept away by modern developments?

After thanking Mr. Howdle for this stimulating commentary the party then dispersed to have a quick tea-break, taken in the shelter of wall or car from the bitterly cold wind, before driving back to Edinburgh.

E. H.

Evening outing to the Union Canal at Allan Park to Study Fish, June 3rd, 1970.

This meeting, attended by fourteen members, was led by two students of the Department of Forestry and Natural Resources. Mr. M. Halliday and Mr. T. Aldoori. They demonstrated a method of catching fish for research by fishing with an electrically charged net from a dinghy towed slowly along the canal. Catches were few but by the end of an hours fishing four concussed pike and one perch were brought ashore.

The external anatomy of the pike was then explained followed by a dissection to reveal the internal anatomy. The stomach of the pike under examination was empty; it was four years old and small for its age. Mr. Aldoori pointed out that the size of pike is related to the surface area of the water; in the canal they are slow growing and do not attain any great size. Roach, too, are slow growing in the canal where they feed on detritus with little nourishment; but in waters where there is more bottom fauna (e.g. mollusca), they grow fast.

This interesting meeting, which by now had attracted several young fishermen in the neighbourhood, closed with further question on the conditions for growth which fish require and the five specimens were retained for further examination.

E. H.

Evening outing on July 8th to the Union Canal to study wild flowers.

About fifteen members met at Harrison Bridge and, led by Mrs. E. Hamilton, started their walk under a darkening sky and to the sound of rolling thunder. Heavy rain then drove the party to shelter under the next bridge.

Here some aspects of the canal were discussed, in particular the cleanliness of the water and the variety of fauna and flora to be found in it. When the rain slackened the party continued their walk and found many specimens of common wild flowers to identify. Unfortunately heavy rain again made shelter desirable but not before a large clump of Yellow Loosestrife (Lysimachia vulgaris) had been spotted and identified near Meggetland Bridge.

There the outing broke up and members made for shelter and home as quickly as possible.

E. H.

EUROPEAN CONSERVATION YEAR 1970

FIELD NOTES FOR THE UNION CANAL

By E. M. Smith

This is the field meeting to the Union Canal on 27th June organised by the Edinburgh Natural History Society.

Members of the E.N.H.S. are happy to conduct parties of the public along the towpath to Kingsknowe.

You are invited to see for yourself what this unique waterway has to offer by way of outdoor activity. In the light of what you find out today we ask you to consider the value of the Canal to the city dweller in terms of the quality of his life.

Construction Completed in 1822, the Union Canal is a unique monument to Hugh Baird, the engineer who planned and designed it, Thomas Telford who was responsible for the aquaducts and many thousands of Highlanders and Irish navvies who laboured for five years, to construct it.

Burke and Hare The notorious body-snatchers were part of the Irish labour force though their unholy alliance did not start till some years later.

Fountainbridge The iron lift-bridge here is of a unique design and is of a later date than the original stone bridges to be seen at Meggetland and Kingsknowe. Some of the canal water is used by industry, one of the principal users being the Rubber Works. This usage brings in a revenue that more than covers maintenance costs. It also helps to cause a very slow flow of water from west to east. The feeder burn comes from the River Almond at Almondell.

Thirty miles on the level Stretching from Lochrin in Edinburgh to Greenbank in Falkirk, the canal passes through the City of Edinburgh and the counties of Midlothian, West Lothian and Stirlingshire. Throughout its length the towpath provides level walking as the canal was constructed all on the 240 ft. contour. A unique feature of the canal is the tunnel near Falkirk, a complication brought about by the objection of the local land-owner to the close proximity of the working class. This tunnel is the earliest transport tunnel in Scotland.

Pollution It may come as a surprise to Edinburgh citizens that the canal water is chemically and biologically very pure.

Fishing Regular clearance of the pond-weed and dredging of the silt maintains suitable conditions for particular plant and animal communities. You will have the opportunity today to see for yourself some of the many different kinds of pond life found in the canal. These in turn form food for fish and it is interesting to note that the best fishing stretches lie within the city boundary. There are at least six species, including one, the Leather Carp, which is not known to occur anywhere else in Scotland.

The bridges The original stone bridges over the canal are built to a standard design and each has its serial number on the key-stone. The canal narrows at the bridges and grooves cut into the walls show where the tow-ropes pulling the barges rubbed against the stone wearing it away. The Meggetland foot-bridge shows this feature clearly.

Water-birds The Coot is a sooty black, rather portly water-bird with a white neb and forehead. It may be seen swimming into cover. A feathered fisherman, the Little Grebe or Dabchick, feeds on Sticklebacks and you may glimpse one before it dives or you may hear one whinnying. Swan numbers have dropped considerably since 1961 when four pairs of Swans nested within the city boundary and reared twenty-two cygnets. Near Allan Park, where beds of the Greater Water Grass encroach on the canal you may see a Moorhen chugging across the surface with its characteristic jerky movement and a flash of its white undertail feathers.

Flowers and fruits No pesticides or herbicides contaminate or destroy the hedgerow, towpath and canal plants and animals. Brambles and Rasps in season refresh the walker and Elderberries and Haws in profusion provide good feeding for Thrushes and Blackbirds. Marsh and wayside flowers produce a riot of colour in summer.

Boating Several rowing clubs use the canal. Its narrowness is a dis-advantage for turning but just before the bridge over the Slateford road an old passing place for barges serves this purpose. Here the pond-weed is not completely cleared and a marsh community of plants flourishes.

Bonny Prince Charlie rested here A plaque is set in the wall of the concrete bridge that carries the canal over the Slateford road. It tells that in 1745 Prince Charlie's army halted near this spot, at Gray's Mill, prior to the occupation of Edinburgh.

Slateford aquaduct Since 1962 the aquaduct has been closed to pedestrians on the grounds of the expense of maintaining it in a safe condition. This has been a serious blow to Edinburgh towpath walkers, contributing to the decrease in public usage. We have been granted permission to cross the aquaduct to-day and you will notice the railway bridge running alongside and the Water of Leith and the main road to Longstone beneath the aquaduct. An iron trough carries the water over the aquaduct. Here and at Prince Charlie's bridge notice the guard timbers.

Redhall Park Near the aquaduct the canal runs close by the Lanark road and affords distant views of the Pentlands. Across the railway lies Redhall Park, a pleasant place with recreation facilities and toilets. There are some fine Red-flowered Hawthorns in the park. Access is down a short steep path just past where the railway bridge crosses the canal. By the same path but then doubling back through a tunnel beneath the canal brings one out on the Lanark road.

Kingsknowe The twists and turns of the canal provide an ever-changing scene. Beneath the road bridge at Kingsknowe one glimpses a tree-shaded peaceful-looking stretch, all too soon giving way to progress in the form of the Wester Hailes development. Worn stone steps at the road bridge beside the station give access to the road. By crossing the railway and continuing up the road alongside the golf-course you reach the Lanark road at Kingsknowe club-house. Going in the opposite direction you will reach Longstone.

What of the future? Further out from Edinburgh parts have been infilled and some other parts are being culverted. At a recent Edinburgh University symposium there was unanimity for the opinion that the canal should be preserved and improved. Exciting ideas were put forward incorporating a through walk-way, landscaping, seats, a field-study centre, nature trails, camping and toilet facilities, improved facilities for coarse fishing and an overall planned system of conservation. We think this would be a wonderful contribution for European Conservation Year. Don't you agree?

Acknowledgements The Edinburgh Natural History Society wishes to express its appreciation of the support and co-operation of many private individuals and organisations including Edinburgh University Department of Forestry and Natural Resources, Inland Waterways Board, Edinburgh Salt Water Specimen Hunters, George Watson's College Boating Club, Boroughmuir School, George Heriot's School Natural History Society, Edinburgh Photographic Society, et alia.

JUNIOR SECTION

A VISIT TO THE ISLAND OF INCHCAILLOCH

On Saturday 23rd, of May, this year we visited Loch Lomond with the Society. At the small harbour of Balmaha we hired a boat called the "Margaret", for our party of twenty six, to take us to the island of Inchcailloch. This island is a nature reserve owned by the Nature Conservancy. The name Inchcailloch is Gaelic and means "Island of Old Women". This came about because St. Kentigerna was buried in the small burial ground and a group of old women, possibly nuns, lived there thus keeping the Saint's name alive. She lived in the early 8th century.

After landing we ascended a steep path which led to a clearing in the wood, there we had lunch. While we were resting Mr. Mitchell, the warden, came to speak with us. He kindly offered to conduct us on a tour of the island. The warden led us along the Nature Trail and pointed out several interesting natural history facts.

We were told that the usual mammals found here were mainly shrew, weasel, grey squirrel, and roe and fallow deer. The deer swim across from the shores of the surrounding islands and in winter when the loch is frozen they walk over the ice. The wild flowers are numerous and include violets, primroses, marsh marigolds and Germander Speedwell. Many birds can be both seen and heard such as bullfinch, chaffinch, and woodpecker.

We then climbed to the highest point of the island via a stairway made from old railway sleepers. This stairway was constructed with the help of local Boy Scouts. Once we reached the viewpoint we had a lovely view of the surrounding countryside and the hills in the distance including Ben Lomond. Our path now led downwards to Port Bawn, the official camp site of the island.

A short distance from Port Bawn we passed over the Highland Boundary fault. This geological fault runs through the island and separates the two main types of rock found here. On one side of the fault there is conglomerate and on the other serpentine.

The final place of interest we visited was the old burial ground mentioned above. The foundations of an old 12th century church can still be seen. Tombstones of many decades are still standing and the last interment was in 1947. After a break for tea we boarded the "Margaret" and returned to Balmaha. This was an unusual outing and the weather was perfect.

George and Tom Bell,
Junior Associates.

UNION CANAL FIELD DAY

By Boroughmuir Pupils
(under Miss A. Deans)

27th June, 1970

The following list of species was found by the Boroughmuir pupils on the Union Canal at Harrison Road Bridge.

SPONGILLA FLUVIATILIS, a fresh water sponge contains larvae of SPONGILLA FLY.

HYDRA VULGARIS, Slendra Hydra

PLATYHELMINTHES	- DENDROCOELUM LACTEUM
	- POLYCELIS NIGRA
ANNELIDA	- LUMBRICIDAE species
	- HIRUDINEA - HAEMOPSIS SANGUISUGA
CRUSTACEA BRANCHIOPODA	- DAPHNIA PULEX
OSTRACODA	- various species
COPEPODA	- CENUS CYCLOPS common
	BRANCHIURA ARGULUS FOLIACEUS
	MALACOSTRACA ASELLUS
	GAMMARUS PULEX

ORDER		HEMIPTERA
	INSECTA	NOTONECTA
		CORIXA
		GERRIS species
ORDER		MEGALOPTERA - ALDER FLY
ORDER	COLEOPTERA	Water beetles - various
"	TRICHOPTERA	Various families largely CADDIS flies
"	DIPTERA	CULEX - gnat
		CHIRONOMUS - midges

ARACHNIDA-HYDRACARINA - various species

MOLLUSCA GASTROPODA - many species LIMNAEA STAGNALIS common

LAMELLIBRANCHIATA PISIDIUM species

FISH GASTEROSTEUS ACULEATUS (THREE-SPINED STICKLEBACK) and PIKE

THE

EDINBURGH

NATURAL HISTORY SOCIETY

NEWS-LETTER

1971

THE EDINBURGH NATURAL HISTORY SOCIETY

1971

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THE EDINBURGH NATURAL HISTORY SOCIETY

NEWS - LETTER

1971

I N D E X

EDITORIAL

Now that our eyes are being directed towards the Continent, more naturalists may be in the position to become interested in field studies on a wider and grander scale than possible hitherto; this is no bad thing and it may also bring about a greater appreciation of our British heritage.

On Continental travels the geologists will have a wider field in which to study the parent rock formations and the drift geology, while those interested in geography in its wider sense, can review the land form, the mountain chains, erosion and land use, from the urban conglomerates to the farm plot and patch of woodland of the small farmer. The botanists may have the flora from the fringe of the Arctic glaciers, the tundra and the conifer clad taiga, to the beaches of the sub-tropical Mediterranean. The zoologists too, may enjoy the study of vertebrates and invertebrates which are little known in Britain or do not occur here. There are numerous species of birds which, common on the Continent, do not reach our shores, or are only on occasional migration or on accidental visits; these include the egrets, bee-eaters, some of the kingfishers, the hoopoe and the spectacular golden oriole, to mention only a few. Some of the species we had formerly, until they were exterminated or driven out, may be seen, such as the black kite, in areas where they are still common. The duck, geese, herons, storks and others which migrate to Europe each summer can be observed, while some of the rarer African migrants can be seen in areas like Camargue at the mouth of the Rhône. Some may enjoy the opportunity of the field study of prehistoric man in Europe and his migratory routes to the British Isles; it seems it is not generally recognised that the study of man and his activities is a part of natural history; as the ecologists stress, he is only too concerned with the integration of land, plant life and animals, including man himself.

We are grateful to a host of keen observers for contributions, some of which are of unusual occurrences. One of the aims of the News-letter is to widen our interests in the inaptly called, applied sciences. In this number we are particularly grateful to Dr. J. M. Caborn of the University of Edinburgh for his important contribution on the climate of the Edinburgh region, which includes the Cramond precincts (wherein lay our project area for the year); this paper will make for the greater understanding of the natural history and ecology of our region and will also be of value to investigators in later decades.

We regret that because of mounting costs it has been impossible to include all the contributions received, but contributors will be glad to know that all papers and records received are filed and retained with care, for future reference.

Last but by no means least, we record our special thanks to Mr. Gordon Finnie and his assistants for the meticulous printing and binding of the News-letter.

WINTER MEETINGS 1970/71

A successful series of winter meetings has been held in the Y.W.C.A. hall at 7 Randolph Place, Edinburgh. Following the A.G.M. in October, Mr. J. Murray of the taxidermy department at the Royal Scottish Museum gave an interesting talk on "TRAINING BIRDS OF PREY". The training of birds of prey was a sport dating back 4000 years and was carried on today as it was in the beginning. It was a blood sport in which the bird was flown to kill, but death was always instantaneous. Originally it was a means of filling the larder. There were four types of hunting birds - the falcons such as the peregrine and gyr-falcons; the true hawks such as the sparrow-hawk and gos-hawk; the buzzards, which tended to be lazy; and the eagles which were very intelligent but were fierce and limited to flying in a wind because of their great weight and wing spread. In Central Asia, eagles were still flown as guards for sheep flocks against wolves and foxes. The actual training of a bird was a lengthy process, but fairly simple and straightforward. One had to gain the bird's confidence and supply it with food. One had to introduce it to all the disturbing influences it might meet, such as noisy traffic, and then to fly it - firstly attached to a leash and then without - and finally one had to train it to kill. Training a falcon took a great deal of time and patience. One had to have a suitable house and garden (where there were no pets around!) and to use a gloved hand against the talons and grip of the bird. Equipment used consisted of a pair of "jesses" - the soft leather thongs round each leg which secured the bird to the owner; a hood, wearing which the bird was in darkness and would sit quiet, and two bells, one attached to each leg. These bells, made of Indian brass, could be heard at distances up to a mile and kept the owner in touch with his bird. Mr. Murray showed excellent slides of many trained birds including merlins, kestrels and peregrines, and finally produced his own live specimen - a beautiful adult female goshawk from Sweden.

Mr. R. W. J. Smith, one of our own members, gave a talk on "BIRDS IN GREECE 1968" at the November meeting, illustrated with a fine set of his own slides. Mr. Smith journeyed to Greece with his wife towards the end of April, and en route through France, Austria and Yugoslavia, at their camping sites and notably on telephone wires alongside the roads, they say many migrants that had not as yet reached the British Isles, such as blackcaps, nightingales, and whinchats, and spring flowers such as cowslips were evident. In Greece many species were sighted as they journeyed - tree-sparrows, spotted fly-catchers, and serins, but they had concentrated their watching at three localities - on the lake-sides where many species of duck and waders were seen; on the lagoons along the northerly coastline where avocets, Kentish plover and practincole were seen; and in a valley running from the coast to near the Turkish border, where sub-alpine and scrub warblers were seen, and - Egyptian and Griffon vultures were viewed, circling the front of a cliff. Before leaving Greece they had visited Delphi to view the famous amphitheatre and had found a Rock Nuthatch nesting in an old wall.

Mr. G. D. Fisher, Director-Secretary of the Edinburgh Zoological Gardens, an old friend of our Society and well-known to most of our members, gave a delightful talk at the December meeting, entitled "ANIMALS MY COMPANIONS".

Mr. Fisher contended that the only way to know animals as individuals, to get any insight into their make-up was to study them in confinement, where one could see the same animal again and again. Illustrated by many fine slides, he recalled many of the interesting animal characters, past and present, with whom he had become intimately acquainted in the course of his work. The penguins for which Edinburgh Zoo was world famous, had started with birds brought from the Antarctic by Salvesen's, the whalers. 1919 was the date of the first bird to be hatched in the colony and reared in captivity. Now all replacements were home-bred as Salvesen's whalers no longer go to the Antarctic. Reference was made to other individual species such as the elephant seal which had grown prodigiously since its arrival as a six-month old cub; the polar bears, the most dangerous animals in the Zoo; the two little brown bears, and the many young animals, some of them considered generally to be unfriendly, whom Mr. Fisher had hand-reared and made friends with.

"A BOTANIST IN AFGHANISTAN" was the title, chosen by Mr. I. C. Hedge, of the Royal Botanic Garden, for his talk at the January meeting. He had undertaken this expedition to collect specimens of the flora of Central Asia for the herbarium in the Botanic Garden. Afghanistan is a land-locked land of high mountains and desert, and had been, until recently, difficult of access, and so offered exciting opportunities to the botanical collectors of whom there had been none since the days of the pioneers in the nineteenth century. Because of its land-locked position it had many endemic genera some with a great concentration of species. The range of the Hindu Kush was the spine of the country and in the north-east where the rainfall was high, there were great forests and a wealth of vegetation; in the lower country to the south and west where rainfall was sprase and the nomads moved their flocks of camel, sheep and goats, the vegetation had been devastated and there were great areas of desert. As a result of the journeyings quite a number of new species had been found. Amongst the many beautiful slides that Mr. Hedge showed, were views of the different types of habitat, and the different species to be found therein, including giant hog-weed, species of conifers, and rhododendron.

A fascinating lecture was given at the February meeting by Miss Esmé Speakman, well-known as a traveller and climber of international experience and repute. Her subject was "SURTSEY - THE FORBIDDEN ISLAND". and it was illustrated with a very fine selection of slides. Miss Speakman began by quoting from Thorenson's authoritative book on Surtsey, a Danish shipper's account of a submarine eruption off the Icelandic coast in 1783, which could very well have described the birth of Surtsey in 1963. Iceland lies astride a great volcanic ridge running up the Atlantic. One third of the country is covered in lava. It had great volcanic craters, basalt crags, pools of seething mud, a natural hot water supply from the geysers, and at the same time, glaciers. In the shallow seas around its coasts there have been many eruptions from time to time, islands have appeared and disappeared; and it was one such eruption, first spotted by fishermen as a curious smell and then as flasher of fire in the early hours of a November day in 1963, that finally created Surtsey. By 11.00 a.m. that day the eruption column was 12,000 ft. high and by 3.00 p.m. it stretched upwards for four miles. By evening the

seas were actually breaking on something, i e the tephra falling back into the sea had built up an island - a long island, which by the second day was 33 feet high. The sea breaking right into the Volcanic rents caused great columns of steam to rise, but there was very little noise. After a week, the wind became changeable and the island became round in shape afterwards to be broken down by heavy seas to a horse-shoe shape. The explosive period lasted till the end of March, 1964, and then early in April, molten lava overflowed from the crater, ran down to the sea and, in solidifying, built up a hard collar of rock which protected the soft tephra hills inside. This continued for about a month. When it stopped the island had quite a few visitors. Then the lava flow started again in July and continued till May 1965, and it was then that the Surtsey Research Society was formed and the island was forbidden to all but scientists. From this description of the history of the island, Miss Speakman passed to an account of her own stay on the island in the summer of 1968, when she and a friend, against all odds, obtained permission to visit Surtsey, and in the end spent five stormy days there. She described the hut that was built to house visiting scientists. Many birds, including kittiwakes, had visited the island also flies and butterflies of different kinds. Two mosses, one green and one red, had established themselves and were growing well. The island's name was derived from 'Surtar' - the god of fire - and 'ey' meaning island.

At the March meeting, Mr. A Littlejohn, who had spent much of his life in Africa, and now taught at Bush House near Edinburgh, spoke on "ENVIRONMENT AND FOOD OF SOME AFRICAN ANTELOPES". Africa is a large continent whose terrain ranged from desert to rain forest. Large area are inhabited by the tsetse fly which was inimical to man and his domestic animals, and so in these areas indigenous animals had had the best chance of survival. Antelopes are selective feeders and so one could find, for instance, Oryx, which eat seed heads, Springbok which like young green leaves, and zebra which crop grass, all living happily together. Some antelopes are only found in certain areas such as the Blisbok of the Orange Free State, and the giraffe antelope of North Kenya, but others such as the Impala are found all over Africa. The largest antelope of all, the Eland, is widely distributed. It is a browser as well as a grazer, eating grass in the wet season and trees and shrubs in the dry season. It has been successfully domesticated, from African stock, by the Russians who used it for milk supply. Its flesh was very palatable and a very realistic view of its value as a domestic animal was being taken in Rhodesia. Very fine slides were shown of many of the African antelopes, including Waterbuck, Impalas, Wildebeest, Dik-dik, and many others. Mr. Littlejohn concluded with a pictorial account of a journey he had made recently from Nairobi to the Cape, visiting on the way many National Game Reserves and parks, and photographing much of Africa's fauna and flora.

The April meeting was, as usual MEMBERS' NIGHT when the following persons showed a selection of their own slides, Miss O. Torrance, Miss E. L. Bell, Mrs. R W. J. Smith, Mr. J. Baines, and one of our junior members, David Collier. There were also several exhibits including an extensive collection of shells from Hampshire by Mr. I. Sime; bird feather mounts by Mr. C. P. Rawcliffe; biological record cards of various groups of animals and plants by R. W. J. Smith and a collection of several moths collected the previous

evening in a mercury-vapour light trap in West Lothian by Mr. E. C. Pelham-Clinton.

Nora F. Henderson

CRAMOND AND ITS VICINITY

Early dwellers in the Cramond area called the settlement Caer Amon or Caer Amond - the fort on the Almond, at the mouth of the river forming a natural shelter and harbour, as it does today.

Some maintain that there has been a village of Cramond from Roman times but the archeologists record food vessels, copper and bronze axes belonging to the period 2,000 to 1,000 B.C. having been found on both sides of the lower river; there are apparently no finds for the period 1,000 to 100 B.C., while the area between Corstorphine Hill and Arthur's Seat produced traces of burials, bronze hoards and other remains for that period; the crossing of the Water of Leith at the present day Dean Village, was almost certainly used at that time.

The Romans came to the Cramond area about 142 A.D. and recent excavations have added to our knowledge of this period. The garrison is believed to have been about 960 strong, which, it is estimated, would require some 200 acres of ground to provide the food requirements. The local woodlands would be exploited also to provide fuel for cooking, washing and heating purposes, while the tree and shrub growth in the immediate vicinity of the fort would be felled to provide a clear field of view. The Roman occupation would probably have had a greater impact on the area than the local people, whose village of timber and stone buildings, lay to the east of the fort on the site of which stands the Parish Church. We have little knowledge of the area during the Pictish regime except that the fort and village were still inhabited in the 4th century, and that the local people were Christians by the 6th century. By the 11th century Queen Margaret and Malcolm III and their retinues were journeying regularly from their royal residence in Edinburgh Castle to their favourite residence at Dunfermline, crossing the Forth by the regular ferry service at the Queen's Ferry, crossing the Almond a little to the south of the present day village, and where, it is said, Saint Margaret's illuminated Prayer Book, now in the Bodleian Library, was lost and found again.

Today Cramond is recognised as a suburb or Edinburgh, but there is still much to see in the region, on the Almond, along the coast, on the shore line, on Cramond Island and the other islands of the Forth. Great efforts are being made by the Cramond community to preserve the amenities of their area.

The Cramond area lies above the sedimentary calciferous sandstones. There is a dolerite ridge running more or less north and south to Snab Point, to the east of which lies the Eagle Rock with its so called Roman Eagle, while the hard, durable dolerite forms the whole of Cramond Island. The region was glaciated at the end of the last Ice Age and is largely covered

by boulder clay; large boulders carried down by the ice are still visible at different points along the coast, while river terraces along the Almond and raised beaches along the coast are readily recognised.

The climate is a maritime one so it is less extreme than some of our inland regions. The area is sheltered to a certain extent by the higher ground lying to the south-east, south and south-west, and by the woodland vegetation in the vicinity: it is, however, exposed to the west and to the northerly winds; gale damage occurs at irregular intervals. Temperatures are not extreme with relatively mild winters and cool summers; the average rainfall is about 28 inches and snow rarely lies. The climate and length of the growing season of about 195 days have, of course, their effect on the flora and fauna.

The natural vegetation before its exploitation by early settlers would be the Lothian mixed deciduous woodland (as opposed to the Caledonian Scots pine - birch forest), with scattered, stunted trees and shrubs on the higher ground with its shallow, infertile soils; the trees would consist of oak, Wych elm, lime, ash, aspen, willows, rowan, birch and hazel with associated shrubby species, while beech, sycamore, sweet chestnut and others were introduced at a later date; exotic leaf trees and conifers have been introduced in recent times.

There is a wealth of fauna and flora in the Cramond vicinity with its woodland and fields, and on Cramond Island, with its expanse of sand and mud of the Drum Sands which become extensively exposed at low tide. There is a host of sea birds, - the waders, gulls, duck and geese amongst others, in smaller numbers of certain species than even a decade ago. On a recent Society excursion from Cramond to Queensferry, the Arctic Skua (Stercirarius parasiticus) was seen harrying gulls in its usual predatory and parasitic fashion, in order to obtain disgorged food; eleven skuas had been seen on an earlier excursion. There is also a number of the smaller birds in spite of the increase of the human population, the decrease of natural vegetation, the use of poisonous pesticides, the increase of traffic and of roadmaking, the destruction of banks, hedges and of hedgerow trees in the interest of so-called improvement. There are, however still roe deer in the nearby woodlands and badgers (for which gates have been made in plantation fences), in suitable soils, continuing, as in many cases elsewhere, over the centuries.

It is fervently to be hoped that interesting plants can be protected and perpetuated and that the equally interesting animals and birds can have in this area, something of sanctuary in, for them, an ever increasingly difficult and dangerous world.

The writer records his thanks for data obtained from the informative booklet "Cramond" published in 1966, as it says "to provide a quick briefing for the interested visitor"; the excellent information produced by a number of specialists in their own subjects provides a booklet which is recommended to all who would wish to add to their knowledge of this interesting area.

W. A.F.

EDINBURGH'S CLIMATE

R. L. Stevenson felt that Edinburgh had "one of the vilest climates under heaven ..... downright meteorological purgatory in the spring", a reference to the raw, "haar"-laden, easterly winds which often extend into early summer and ruin the promise of warmth and sunshine. Reputations like this are hard to refute and statistical averages are never very convincing for the non-meteorologist. These averages would show, however, that sunshine duration (1,384 hours annually at the Botanic Garden; 1,330 hours on Blackford Hill) compares very favourably with London figures and even more favourably when one considers the latitudinal difference. They would also show that the rainfall of 25 to 27.5 ins. (except on the elevated, southern outskirts) is low, relative to the United Kingdom average; that although summer temperatures are cooler than in the south of England winter temperatures are appreciably moderated by the strong maritime influence and, in consequence, are remarkably free of the severe fluctuations frequently experienced in the south. But, undoubtedly, Edinburgh is open to the prevailing westerly and south-westerly winds, as well as to those from the north and east.

Averages, however, besides being unconvincing, disguise the fluctuations in the day-to-day or year-by-year weather, which may be of particular interest to the field naturalist. Climate and weather are like the dry-stane dyke and its constituent stones; merely describing the average size, shape, colour or texture of the stones cannot convey an adequate picture of the wall. Yet, the wall or the climate provides an overall frame of reference against which the daily or annual variations can be assessed. But, even here, it would be wrong to regard the climate as a fixture: climate itself is subject to change. H. H. Lamb has shown that the second half of recent centuries tends to experience a more rigorous climate than the first half and that there has been a marked decline in the dominance of the mild, oceanic south-westerlies since the 1920's. The inevitable result of this decline is an increase in the proportion of northerly and easterly directions, the latter reflecting a strong continental influence. When this type of circulation holds sway, eastern Scotland can suffer from cool, moist summers and a shortened or less effective growing season and Edinburgh residents need no reminder of recent examples. Judging from recent records, it would appear that "spring" has been later than usual, or slower in warming up, whilst Octobers have seemed to be getting warmer. Whether these are trends or merely fluctuations is a matter for speculation.

Although one can revile the Edinburgh climate or enthuse about the spells of brilliantly clear days to be expected in most Junes, or about the long fine spells which tend to be a feature of autumn, or about the relatively mild, "open" winters, the variation in local climates in a city which rises from the sea to 600 ft. (an upland environment) is considerable. It is these local climates which provide great ecological interest - an interest which can also include the comfort of residents.

Change in elevation introduces additional complexity as regards temperature. Built-up areas commonly create a "heat island" effect, especially at

night, but Edinburgh's situation, its topography and degree of ventilation combine to make this effect less apparent than in many cities. Although one can apply the usual "rule-of-thumb" method of deducting 1°F from mean monthly temperatures for every 300 ft. increase in altitude, this can obscure the significant effects of elevation. The latter affects the values of maximum temperatures very little, only their duration, but has a greater influence on minimum temperatures. Low-lying parts of the city are warmer by day than the more breezy, upland areas but are colder by night and more liable to frost on still nights. An extreme value to illustrate this is the 20°F difference in minimum temperatures between Turnhouse and Blackford Hill which was recorded during the 1965-6 winter. But it is the spring temperatures which seem most important; the slow rise in temperature after winter, when the sun's altitude is low and the sea still cold, can be further retarded by exposure and high rates of evaporation. Late springs have become more noticeable in recent years, even after mild winters.

Cold, dry easterly or north-easterly winds are a regular feature of the Edinburgh spring, checking the resumption of plant growth. Later in the year, especially in late summer or early autumn, these same wind directions, when associated with slow-moving depressions in the North Sea, produce the most prolonged and heaviest downpours in the city. Floods, however, are extremely rare in Edinburgh. Spring and summer droughts are more frequent although, on average, only 160 days per year are "dry". These droughts have a profound effect on vegetation, especially on clay soils and sloping ground. Arthur's Seat and the Braids can turn a Californian brown, belying the reputation of the cold, wet North.

Edinburgh's weather, although running only rarely to extremes, provides plenty of variability, often with rapid changes in temperature during winter. The wind direction is the key to our understanding of weather and climate, since this determines the source of the air which it brings. Consequently, one can distinguish characteristic situations: the south to south-west depressions brining maritime tropical air from the Azores; westerly winds with maritime polar air from Canada or the western Atlantic; the squally north-westerlies with cold, polar air; unstable, showery air from the north and north-east; continental air, hot in summer but extremely cold in winter, brought by easterly and south-easterly winds; and the quiet conditions of the anticyclones, during which summer skies may be clear but those in winter only very occasionally. Grey skies, due to sheets of stratocumulus cloud, are typical of winter anticyclones. These changing patterns, if unpredictable in themselves, allow at least one certainty: that Edinburgh's climate and weather will continue to provide a good talking point.

J. M. Caborn

CRAMOND SHORE - GEOLOGY

Leader - Dr. C. D. Waterston - Royal Scottish Museum Edinburgh

Joint Meeting with the Edinburgh Geological Society Held on Wednesday, 24th June, 1971

The purpose of this meeting was to examine features of geological interest between the ferry at Cramond and a point some six hundred yards west of Snab Point. The following is an outline of the geology of the area based on a short talk given by Dr. Waterston at the start of the excursion.

Basic Geology

The rocks outcropping locally are mainly sedimentary and belong to the Lower Oil Shale Group which places them in Early Carboniferous times; thus giving them an approximate age of three hundred and forty million years. A number of volcanic intrusions also occur in the form of sills. The sedimentary members are made up of a rhythmic succession of coal - shall and mudstone - sandstone - fireclay - coal. These beds can be thought of as the pages of a book, each page describing the environmental conditions of the area at the time of deposition. Subsequently, the beds were buried beneath thousands of feet of sediment, were arched and faulted by earth movements and eventually re-exposed by erosion. This erosion is, of course, still taking place. The beds as now exposed, show a general dip to the west, the result of the earth movements earlier in their history.

Glacial

The local coastline is mantled by raised beach deposits and the leader went on to discuss this subject. Although there is some difference of opinion regarding raised beaches, there is no doubt that these deposits are the result of fluctuations between land and sea levels, since melting of the last major ice sheet some ten to eleven thousand years ago. With the vast volume of water released from the melting ice cap the sea level, relative to the land, rose. Then, with the weight of ice released, the previously depressed land mass rose slowly to readjust itself to approximately its preglacial level. Most of the raised beach deposits occur between twenty five and one hundred feet above the present sea level and are composed mainly of boulders, sand and a variety of sea shells. Some of these shells from the hundred foot raised beach are now only found in northern climes thus giving some indication of the climate during these early postglacial times; others in the twenty five foot raised beach indicate that the climate optimum was reached at that time and conditions are now colder than they then were. It is interesting to note that many of Scotland's best known golf courses are built upon these sandy, well drained deposits. After this introduction, Dr. Waterston led the party along the coast, stopping at the localities listed below to demonstrate their geological significance.

Intrusive Sills at Cramond Ferry and Cat's Craig

These sills are formed of a type of analcite - bearing dolerite known as teschenite, which as with most igneous rocks, is hard and resistant to

erosion. The first of these sills forms the prominent ridge upon which the ferry cottage is built. The second sill occurs three hundred yards to the west and forms a long ridge lying at right angles to the path. Cramond Island, which lies about a mile offshore is a sill of the same rock type.

Eagle Rock

On the beach, about three hundred yards westwards, stands a prominent outcrop of brown sandstone known locally as the Eagle Rock. Our attention was directed to the conspicuous current bedding exhibited on it. Current bedding occurs in deltaic deposits due to changing current directions and can be used as a right way-up criterion. Well developed iron ribs can also be seen, running through the sediment.

Sediments between Eagle Rock and Snab Point

The sediments outcropping on this stretch of shore contain a variety of plant fossils. Mr. I. F. Sime extracted a piece of sandstone which bore the impression of a giant club moss Lepidodendron. This grew in these parts during Carboniferous times.

Intrusive Sill at Snab Point

At this point, a third sill, this time composed of a quartz - dolerite is exposed, overlying a bed of shale which has been baked hard by contact with the sill.

Golf Course at Dalmeny House

Dalmeny House and golf course are upon a typical raised beach deposit. The locality is also noted as being the possible site of the preglacial mouth of the River Almond. As the glacier retreated, it left behind it a thick coating of glacially eroded material known as boulder clay. The boulder clay modified the landscape, filling in river valleys and often diverting the rivers which had once occupied them. The rivers were thus compelled to find alternative routes to the sea. The opinion was held by the late Mr. Cadel, that the ancient Almond must have flowed northward from Carlowrie between the two prominent ridges of dolerite on either side of Craigiehall entering the sea close to the site of Dalmeny House, as this is the only part of the coast line where there is a break in the continuous exposure of rock at high water mark. Although no test borings have been made it is estimated that the buried channel could be two hundred feet in depth.

At this point the meeting terminated and the party retraced their steps along the footpath to the ferry. On returning to Cramond, Dr. Waterston was thanked by Mr. A. D. McAdam, Hon. Secretary of the Edinburgh Geological Society. A total of forty five members from both Societies attended this meeting.

George Bell

References

Various papers by H. M. Cadell.
Various Geological Survey publications.
Edinburgh Geology, an Excursion Guide.

FIRTH OF FORTH ISLAND BIRD COUNTS - 1971

R. W. J. Smith

The 1971 counts show a continuing increase of many species. Kittiwake nests have increased by some sixty on each Fidra and Inchkeith and the latter island may soon displace Craigleith as the third largest colony in Forth. Fulmar sites on Inchkeith have gone up by 20 percent in 1970. This island holds more Fulmar than all the other Forth colonies combined. Cormorants on the Lamb have reached a new peak of 280 nests (previously 240).

Since the start of the counts in 1969 every seabird except shag (terns excluded) has colonised at least one island. This year has seen the break-through for the shag with a pair breeding on Fidra for the first time. The shags are sadly overcrowded on Lamb and there will probably be a rapid increase on Fidra now that the first difficult colonisation step has been taken and a new 'tradition' started.

The major disappointment is Inchmickery. For several years no terns have been fledged there and this year only a very few common terns were present. When the island was made an R.S.P.B. reserve the numbers of terns ran into the thousands including several hundred pairs of Roseate Terns. Now, as a reserve, it is a disgrace to the good name of the R.S.P.B. The main trouble is probably that the numerous Herring Gulls have displaced the terns. A subsidiary cause is that rank grasses and nettles have spread through the finer grasses and the vegetation is now too thick for the terns to nest.

Herring Gulls - and to a smaller extent Lesser Black Backs - have now become a major pest on the Forth Islands. At the beginning of this century there were only a handful but now there are probably upwards of 20,000 pairs of Herring Gulls breeding in the Forth. Terns have been displaced from many of the islands and their last two strongholds are being invaded. They have practically gone from Inchmickery. Fidra lost its light-house keepers when the light recently became automatic. The keepers harassed the gulls in various ways over the years. Unless action is taken soon, it will be a matter of a very few years before the gulls completely dominate the island.

Fortunately a remedy, albeit a rather drastic one, is available in the form of a narcotic. This, spread in carefully measured quantities throughout a gull colony, would give a highly efficient and quick acting 'kill'. With reasonable care there is no danger to other species of bird or other forms of life. What is needed is a planned five to ten year programme to cover all the Forth islands aimed at reducing the breeding gull population to a few hundred pairs, eliminating them entirely on selected islands.

The results of the Firth of Forth Island bird counts for 1971 are as follows:-

FIRTH OF FORTH ISLAND BIRD COUNTS - 1971

	Inchmickery	Inchkeith	Fidra	Lamb	Craigleith	Eyebroughty
Fulmar		431	46	2	47	
Cormorant				280		
Shag			1	196	94	
Mallard	1					
Oyster Catcher	1	4	5			
Great Black-Backed Gull					1	
Lesser Black-Backed Gull	2	100+	circa 5	4	circa 400	
Herring Gull	100	500+	60+	250	several 1000's	162
Kittiwake		407	164	125	450	
Common Tern	circa 10		300-400			
Arctic Tern			20+			
Roseate Tern			100			
Sandwich Tern			300			
Razorbill		4		6+	28	
Guillemot		45 offshore		200 nests	700 on cliff	
Puffin		110			600+	

The main difficulty is that of public relations. The interested public must be informed of the damage caused by the big gulls due to their population explosion during this century. The pressure on other 'desirable' species, such as the Eider duck and terns, is well known but the effect on island vegetation is just as pronounced. Fidra has a wonderful show of Thrift while neighbouring Craigleith has none, being largely covered with the weeds of cultivation brought over by the gulls. Unless something is done soon this wealth of Thrift will wither away under the weight and mess of the increasing Herring Gulls. Adequate control measures now will help to restore a more natural and characteristic plant community to the islands.

CRAMOND - 1971

Several visits have been made to the Cramond area this season. Our purpose was to examine the wild life in profile and to introduce the neighbourhood to members who did not already know its charm and variety.

Two visits were made to the wooded banks of the River Almond from Cramond bridge upstream to Craigiehall; one was led by Mr. J. Carlyle on the evening of May 26th and, despite the rain, some seventy species of flowering plants were found; these included Spring Beauty (Claytonia perfoliata) and Pink Purslane (Claytonia alsinoides), much fine Leopard's-Bane (Doronicum pardalianches) and Meadow Saxifrage (Saxifraga granulata). A search was made for the Bird's-nest Orchid (Neottia nidus-avis) which had been found under a beech tree near the path in the previous year, but it was not to be seen.

The other visit on June 9th, led by Mrs. E. Hamilton, was for the study of bird song; as well as the common woodland species a Blackcap was heard singing; a Moorhen's nest with the bird sitting, was observed near the river and two parties of ducklings, accompanied by two Mallard were also seen.

Our visit to Cramond Island on July 24th, led by Mrs. P. Bell and Mr. D. Jones, turned out differently to what we expected - in the words of the youngest member of the party, aged five years, "We had an adventure". An extra quick tide, backed by a strong east wind, curtailed our study of shore fauna and flora and extended our visit by some hours; this time was spent, more or less cheerfully, in the rain, bird watching, plant hunting and trying, unsuccessfully, to dry clothes in an old fort; some interesting birds were seen; out in the Firth were several Gannets and Kittiwakes, a Fulmar and eleven Arctic Skuas; on the west shore were several common waders, amongst them, a flock of over eighty Turnstones: while on the island, Skylark, Wren, Song thrush, Blackbird, Willow Warbler, Dunnoch, Greenfinch, Lesser Redpoll and Reed Bunting were seen.

E. Hamilton

UNEXPECTED ENCOUNTER

The 1st July was a glorious warm summer evening and we'd hurried down to Aberlady to see the Caspian Terns we'd heard about. (We didn't see them of course). At about 6.00 p.m. however, we were still full of optimism and I was striding along the path towards the sandpit when I heard a scream. I froze immediately and waited for a repetition of the sound to try to locate the source. The grasses waved and a frog jumped onto the path, followed by a large black shrew with white under parts. The water shrew rushed at the frog, made a quick nip and ran away. The frog leapt and landed. Again the shrew rushed after it, bit it and bolted off a couple of feet or so. This series of events was repeated several times, the shrew screaming the while. Any part of the frog seemed to be bitten though I thought the shrew was trying latterly to bite the frog's head. The bites caused no visible bleeding. The shrew and the frog appeared to have about the same body size. Having seen

my frantic hand signals, the rest of the family had caught me up by this time and saw the final act - the shrew dragging off the frog into the long grass. We disturbed the shrew; it ran off and we examined the frog. It now seemed incapable of movement. I'd watched the hunt for approximately three minutes at a distance of about fifteen feet.

According to the Handbook of British Mammals it is "known that injected secretion of sub-maxillary glad will kill small rodents swiftly .... earthworms were partially paralysed when treated to quick bites along their length; also large snails attacked at foot and soon cleaned out, presumably by paralysis of muscles".

Regarding food "Records of many aquatic invertebrates (snails, crustaceans, insects) and of larger species, fish and frogs. On land probably eat much same as other species with addition of larger prey, perhaps even small vertebrates".

Elizabeth M. Smith

THE THREE DIMENSIONAL APPROACH OF THE CUCKOO

A few years ago when on a forestry excursion to the Cawdor woodlands I decided to visit the conifer clad Ord Hill which overlooks the Moray Firth and from the top of which one looks south towards Lochindorb and the Cairngorm Mountains. The trees consisted then, of fairly close grown Scots pine and larch with occasional leaf trees. On this particular morning having reached the crest of the Ord, I sat down in the wood at the base of a pine about eight yards from the fence on the edge of the wood and looking eastwards across open grass heath. After a short time I heard the call of the Cuckoo (Cuculus canorus), and soon saw it on a bare branch of an ancient and isolated Scots pine about 600 yards away and somewhat to my left. I then imitated its call and imagined I had it responding; a few minutes later it flew across my front and to the right for about 300 yards, and alighted on an open crowned, branchy larch at about 50 feet from the ground, 400 yards away.

I now started calling in earnest and soon had an answering call. What seemed to be some seconds later, from my position on the ground, inside the wood, I saw the cuckoo take off flying directly towards me, then to my surprise, I realised that from a height of about 50 feet from the ground, it was coming directly at me, coming down quite steadily to my seated position and getting quickly larger and larger; so direct was the line of flight that it looked like a dive bombing aircraft coming in to the attack; then having come down to about four feet from the ground and five feet from the fence on the edge of the wood, it spotted my seated figure and swerved violently to my left and away. No surveyor working from a base line 300 yards long, (as did the cuckoo), and given two angles could, using a theodolite, have pin-pointed the intersection of the ground more accurately than did the cuckoo. The bird had accurately judged the line of my position from the Scots pine and had then, deliberately it seems, flown to the larch and

only then accurately determined, not only the intersecting line on two dimensions, but perfectly assessed on a third dimension, from a height of 50 feet from the ground the position of the called at two feet from the ground level, and from a distance of 500 yards away; again no surveyor using the professional Dumpy Level could have determined the final point more accurately.

It therefore seems reasonable to assume that the cuckoo has the ability to determine the actual position of a rival or an intruder on its territory; being polyandrous and brood-parasitic with the individual cuckoo parasitising only one species, it seems possible that it will use this ability to find, if it does not at first see, the host bird whose nest it is about to invade, use, and thus paratise, in order to ensure the continuation of the species. This might conceivably be another of the secrets of this incredibly clever, wide spread family, the Cuculidae.

W. A. Fairbairn

UNUSUAL BEHAVIOUR OF A SNOW BUNTING

Three members of the Society including the writer were staying for a weekend at a Guest House at Aberfeldy at the beginning of May with Mrs. L. Jamieson, who pointed out a Snow Bunting (Plectrophenax nivalis) which had been associating with house sparrows since it arrived at the end of October in 1970. We had many close views of the bird and were told that the bunting started joining the sparrows at their daily feed put out by the lady of the house. Mostly it kept to itself except at feeding times but in early May seemed particularly interested in the sparrows' nesting operations.

I have since learned from Mrs. Jamieson, who is a keen naturalist, that it did actually enter and leave the same hole as one of the sparrows at a point under the eaves, but disappeared about the end of June; she is sure that it did not fly away but was possibly run over or killed by a cat. Snow Buntings normally leave for colder northern areas about March; since it survived the winter unharmed, the supposition is that it may have left for its usual summer habitat.

Our party exploted the length of Glen Lyon and saw three herds of red deer each averaging 100 head, two herds being on the mountain slopes and the third across the road leading to the small dam. We drove through the herd at 2 m.p.h., turned and came back through them again. Birds seen during the weekend included two golden eagles, several buzzards, a male woodcock with the female and young, as well as several sandpipers.

H. S. Hughes

BUTTERFLY MYSTERY

Recently, when on a ramble in Selkirkshire, we explored the attic of a disused cottage. Scattered over the floor were hundreds of small tortoise shell butterfly wings. Though the wings were intact, we were mystified by the absence of bodies. What had happened to them? One member of our party

was of the opinion that the bodies had been eaten by birds or bats. This we thought unlikely for there was no sign of droppings and the only entrance to the attic was through a small broken window about four inches square. We also felt that had the bodies been eaten by these creatures, the wings would have been tattered. Our conclusion was that this could have been the work of insects or mites.

Still unsatisfied, we decided to write to the Press but the replies were not very helpful. Finally we visited Mr. Pelham-Clinton at the Royal Scottish Museum and asked for his opinion. He thought that wasps were responsible. Often, when there is a late autumn, foraging wasps have been known to eat the bodies of a collector's specimens and leave the wings. It is possible that this is the fate which befell the hibernating butterflies in our story. This opinion was supported by a bee keeping ENHS member who told us that wasps often treated the bodies of bees lying outside the hives in the same manner.

George and Tom Bell
Junior Associate Members

BIRDS AND MAMMALS IN THE HERMITAGE OF BRAID

The Hermitage is one of the best known places in Edinburgh for garden birds, and these may be seen in abundance any day. There are, however, a number of others less frequently seen. Kestrels have bred on or near the Blackford Hill for well over five years and sometimes hunt over the Hermitage. The first stockdove I heard there was on May 30th, 1965. I saw up to three birds on three subsequent occasions on the hill that year, and though I suspect they breed both in Blackford Quarry and the Hermitage, I have not found a nest. Tawny owls have been there as long as I can remember, presumably breeding, and swifts gather in greatest numbers in the fortnight around midsummer. I have heard dreen woodpeckers - on June 20th 1966 and March 25th, 1967 and seen them on several other occasions on the hill, and I believe breeding in the Hermitage was confirmed in 1968. A pied woodpecker was drumming in the Hermitage on April 14th, 1965, and on September 14th, 1966 one flew between the Hermitage and the hill. Only once have I seen a pair there, in 1965 or possibly earlier. On November 15th, 1964, there were three Long tailed tits on the edge of the Hermitage by the rustic bridge; the first I had seen there. On February 19th, 1966 there were three inside the Hermitage amongst thick falling snow, and again three on February 23rd. In 1967 I saw them only round the Blackford Pond. The first redstart I came across was an immature cock on August 30th, 1965, just outside the Hermitage near Corbie's Crag. In 1966 a pair built a nest in a hole in an elder in almost the same position, but the seven eggs were eaten, probably by a stoat or mouse. In 1967 I found at least five - possibly six or seven you being fed by both parents just west of Corbie's Crag, by the path at the foot of the hill, on June 24th. On July 4th they were still around, probably having bred on the edge of the Hermitage beneath Corbie's Crag. Of the warblers, the Witton warbler and whitethroat breed commonly in the Hermitage, while the Sedge warbler breeds in the Blackford Glen. In 1967 a Grasshopper warbler

sang on at least two occasions between the rustic bridge and Corbie's Crag and in 1966 a wood warbler sang in the Hermitage from May 25th to June 6th, and on May 29th 1965, a chiffchaff sang in the Hermitage. Spotted flycatcher, bullfinch, treecreeper, treesparrow, lesser redpoll and dipper can all be seen regularly, while goldcrests can sometimes be seen just outside the Hermitage on the hill. Grey wagtails occasionally visit the Hermitage, but February 23rd is the only record I have.

On March 29th, 1964 I timed the dawn chorus. The weather was cool, with a fine drizzle and slight breeze.

Jackdaw (single call)	4.20
Rook (single call)	4.20
Tawny owl	4.28 - 4.33
Blackbird (call)	5.14
Tawny owl	5.18
Blackbird (call)	5.39
" "	5.49
Robin (song)	5.57
Blackbird (song)	5.57
Song thrush "	6.04
Wren "	6.21
Wood pigeon (call)	6.21
Starling (song)	6.48
Dipper (call)	6.52
Magpie "	6.55
Chaffinch (call)	6.59
Chaffinch (song)	7.04
Great tit (call)	7.07
House Sparrow (call)	7.17
Dipper (song)	7.17

In 1966 I put up ten nestboxes over the eastern end of the Hermitage, three on the south side of the Brain burn, and seven on the north. Two were R.S.P.B. boxes, the other eight being made of $\frac{3}{4}$" tanalized cedar with inside dimensions of $4\frac{5}{8}$" x 6 x $9\frac{1}{2}$", similar to the Upton pattern but with only one thickness of wood for the front, the top half being hinged. All had holes of 1 1/16" diam. The previous year I put up one Upton pattern box and one Forest of Dean type with removeable lid, but neither had been occupied. In 1966 the Forest of Dean type was occupied by Blue tits, while the Upton type was knocked down by April 4th. Five of the boxes put up in February of that year were occupied by Blue tits, and a sixth that had had its entrance hole enlarged by a squirrel was occupied by starlings. Of the four remaining boxes, one was knocked down before the breeding season. Neither of the R.S.P.B. ones were occupied. Altogether three starlings and at least 36 blue tits fledged, not allowing for ones eaten in the nest. Average clutch size was 8.5 with a maximum of 11 and minimum of 6, for blue tits. Six blue tits died in the nest. The average height of a box was 14 feet, the most usual tree being sycamore. After the first broods, all the boxes were taken down owing to human interference.

Though I have seen stoats several times, I have never seen weasels either on the hill or in the Hermitage. Common shrews, moles, and grey squirrels seem plentiful and I once saw a water shrew, also a bank vole on one occasion.

D. M. White

SOME NOTES ON THE LYNE COVERING 15 YEARS

In 1956 the haughs opposite the cottage were covered with reeds and tussocks, and were a favourite haunt of curlews; the ploughed fields were the nesting sites for two pairs of oyster-catchers and about 30 or 40 pairs of plovers.

The stream and clumps of willows sheltered water hens and mallards, and a pair of dippers nested for two years on the ruins of a stone support on the bank. Over the years the house martins increased their nests from 2 to 8, and as the stream channel has widened and deepened, a pair of sand martins nested last year in the bank.

Most years there are pairs of nesting

Reed-buntings (1 pair only)
Whin chats (" ")
Willow warblers
Blue-tits
Great tits
Coal tits - no nest or young seen
White throats - no nest seen.
Pied wagtails
Green finches (only seen 1 year).
Yellow hammers (" " 2 " s).
Robins
Wrens
Hedge-sparrows.
Thrushes (now increasing in number).
Blackbirds
Swallows
Starlings
Chaffinches

Visitors to the stream and garden, but not resident, include:-

1 pair kestrels
1 " very tame partridges
1 " terns (common?)
1 " red shanks
1 barn owl (came for about 3 years)
1 heron between '57-60.
1 " reappeared 1971. Why only 1 each time?

1 pair of wood warblers
1 goldfinch seen once only
1 red start
Also wood pigeons, rooks and jackdaws and an occasional cuckoo.

The kestrel was an interesting visitor - it roosted on the window sill in spring when the house was empty, but moved to the windowless wall when I came to stay, and it settled on the telephone cups. Finally, it joined its mate in the wood, and the pair hunted the fields regularly.

In the last few years, the most striking changes in the bird population have been in the numbers of curlews and plovers. The haugh was drained and cropped, and this year is again in pasture, but there are very few curlews or plovers. On the other hand there are increasing numbers of visiting black-headed gulls. The number of swallows was reduced to two pairs from 8 in the sheds, and I had one pair of house martins only, which built and deserted. For some years past, the martins have been badly harried by the sparrows, who took over and spoilt their nests, resulting in very late hatchings and departures in Autumn. Perhaps this, combined with two successive cold summers has caused the birds to go elsewhere?

The thrushes were very scarce, but this year their numbers have increased, as have also the blackbirds. The mallards have bred very successfully this year, but not the water hens.

As regards animal life, my most unusual visitors have been a mink for 2 days, a few years ago, an occasional roe deer, and most unwelcome of all, 2 brown rats. A stoat used to hunt the banks regularly, but I have not seen it this year. There are many field mice, shrews and moles. One interesting and fairly tame bank resident was a large water vole, who nested in the bank opposite the window. Unfortunately, she was attacked by 3 town fisherboys with sticks and stones and I just managed to rescue her in time, but she took fright and did not come back. The number of hares remains fairly constant, about 3. There are many hedgehog casualties on the roads in the vicinity, but only one stayed in the garden, and it did not survive the winter.

When the grass was long and damp, 2 frogs appeared in the garden, but disappeared when it was cut.

Plant Life

One of the most striking features in the rapid spread of red elders in the district. Fifteen years ago, there were very few bushes, but now they are growing well on some moorland, and also in a few cases on the roadside. The other is the widespread occurrence in the last few years of the Rosebay, both in Peeblesshire in my district, and on the Midlothian roadside and fields, towards Carlops. It is very attractive to look at, but I wonder if it will not soon spoil grazing and future crops, if steps are not taken to keep it within bounds.

It is sad to see the disappearance of so many hawthorn hedges, and trees, due to road widening and mechanical farming.

Janet E. P. Robertson

E.N.H.S. OUTING TO ARNISTON ESTATE, led by Mr. R. Walker of Middleton Mains, on Saturday, 5th June, 1971

Despite the cold grey weather, over twenty-five members met at the Lion and Elephant gate of the estate, near Gorebridge, where they were to enjoy as interesting and varied a woodland and riverside walk as can be found anywhere in the Lothians.

Over five miles were covered along the banks of the South Esk, here a clear, clean river where Dippers and Grey Wagtails breed; much bird life was to be seen, the breeding season being in full swing; from an old oak in the sheltered river valley came the lovely two part song of the Wood Warbler - first a repetition of a single note, increasing in speed and passing into a shivering trill, followed by several slower plaintive liquid notes; the bird was later watched for several minutes. Further on, where the track wound through fine old trees on the crown of the bank, a Tree Creeper's nest was spotted between a piece of loose bark and the trunk of a tree; it contained young nearly ready to fly.

The company picnicked on the banks of the river where it flows through parkland; there Spotted Flycatchers were to be seen flying up to catch insects. The familiar woodland and meadow flowers were blooming in profusion; of particular interest were the flower stalks of the Toothwort (Lathraea Squamaria) now withered, growing under a large yew tree. Deer tracks were found, Oak fern (Thelypteris dryopteris) and Golden Saxifrage (Chrysosplenium oppositifolium) noted; indeed, so much of interest was found that the party became somewhat scattered towards the end of the walk and ingenious junior members marked our path through the rich and varied woodland by placing twigs, in the shape of arrows at crucial turnings.

Mr. Walker already knows how much members enjoyed his company and his knowledge of the district on that afternoon; we would like as well to record our appreciation to Miss Dundas of Arniston for allowing us to visit the grounds.

E.H.

GLEN CLOVA WEEKEND, 2nd - 4th July, 1971

Glen Clova is one of the few places in Britain where there are small enclaves of rare arctic-alpine plants - one or two indeed grow only in or near Clova - and it was in the hope of finding and identifying some of these that an excursion to the area was arranged.

Twenty-four members joined it and made their various ways by car to the glen. On Friday evening a warm haze after a hot day softened the outlines of the hills at the head of the glen and Curlew were calling until after 11.00 p.m.; several members walked along the winding road to Braedownie and on its verges were found Fragrant Orchid (Gymnadenia canopsea) Spignel-Meu (Meum Athamanticum) Mountain Pansy (Viola lutea) and Melancholy Thistle (Cirsium Heterophyllum) - to name only a few.

But these were only a foretaste of what was to come - so, too was the leisurely comfortable stroll. Next day the party set out to explore a nearby glen; here the sides of the burn and the damp crevices between the rocks yielded much of interest, saxifrages, ferns, Alpine Meadow-Rue (Thalictrum alpinum) and Mountain Sorrel (Oxyria digyna); on the grassy slopes were Frog Orchid (Coeloglossum viride) and Scottish Asphodel (Tofieldia pusilla); further up, on drier rocky ground grew the Creeping Azalea (Loiseleuria procumbens). Most exciting of all were the rock ledges out of reach of sheep - and most humans. A few hardy enthusiasts managed to climb to the foot of these and gaze in delight at the colourful profusion of flowering Roseroot (Sedum rosea) Red Campion (Melandrium rubrun) Wood Cranesbill (Geranium sylvaticum) and the fine Yellow Milk Vetch (Oxytropis campestris); some seedling plants of these species were seen in the turf below but the all devouring sheep obviously prevented further growth. Young frogs were present here at over 2,000 ft and House Martins could be seen flying in and out of a cleft of rock.

On Sunday, mist covered the hills till nearly ten and a late start was made up the track to Loch Brandy. We were happy to have with us Mr. Ian Sime and Mr. Joe Carlyle. The botanists, their appetites whetted by the previous day's finds, were well to the fore and had all but disappeared up the scree below the beetling cliffs of the hill ahead when the sky darkened and heavy rain fell obscuring loch, hills and walley. When the rain slackened and visibility returned we watched four Peregrines, a family party, flying above a nearby hill as we ate a damp picnic.

Members then followed their different interests; some explored the loch side, some looked for birds and the plant devotees climbed to the foot of the damp crumbling rock ledges; this time Globe Flower (Trollius europaeus) was found amongst the Wood Carnesbill and Red Campion as well as the Blue Sowthistle (Cicerbita alpina); nearby were the tiny Alpine Willow-herb (Epilobium anagallidifolium) Hairy Stonecrop (Sedum villosum) and four species of Saxifrage; both Potentilla crantzii and Dryas octopetala L. must also be included. But time and weather permitted only a brief look at the rich and varied flora; soon we had to return to the valley, change into dry clothes and go on our separate ways after what had been an energetic and most rewarding weekend.

E.H.

E.N.H.S. OUTING TO ORMISTON AND PENCAITLAND, SATURDAY, 29th MAY, 1971

Twenty members met at Ormiston Cross and walked by an attractive field path starting at the old railway line, continuing over two meadows, through

a small wood and emerging in Pencaitland near the old parish church. They returned to Ormiston along the old railway line, visiting the Woodhall picnic site on the way. The object of the outing was to study birdsong and common wayside and woodland flowers; the weather, being warm and sunny was very good for the purpose; several experienced members were present and the not so experienced availed themselves of an enjoyable opportunity to widen their knowledge.

The birds sand well; in the small wood, at one point, Garden Warbler, Blackcap, Chiffchaff and Willow Warbler could be heard; Woodcock were seen by the burn and Sedge Warblers in the thickets by the old railway line. Some eighty species of wild flower were noted, including the Large Bitter-cress (Cardamine amara) and a fine stand of Guelder-rose (Viburnum opulus).

The Woodhall picnic site, a creation of the East Lothian County Council, is worthy of mention itself; here an old pit bing has been levelled, young trees planted and paths laid; benches and tables have been placed under existing trees and nest boxes put up; on the notice board was a nature bulletin informing visitors that the Garlic Mustard (Alliaria petiolata) growing freely there, was one of the food plants of the Orange Tip butterfly (Anthocharis cardamines); its caterpillars feed on the seed pods.

May all pit bings be so transformed and speedily!

E.H.

BADGER WATCHES - 1970

Wednesday, 5th August - Attendance 5

(Bangour)

Perfect weather conditions. Warm summer evening with very slight breeze.

Badger emergence 15 minutes following assembly. Very fine views of adults and cubs. 5 animals (perhaps 6) seen.

Badgers at play in woodland when we had to give up as darkness fell.

Monday, 17th August - Attendance 6

(Bangour)

Emergence shortly after our arrival at set and quite obviously badger had heard us and probably were catching scent of us in swirling wind conditions.

3 animals seen, all very cautious and not very active

Wednesday, 26th August - Attendance 10

(Bangour)

Badger had already emerged from set by the time we made our outing into woodland.

Badgers heard playing down by burn-side where there was far too much cover for us to see them.

The activity suddenly ceased as though family party knowing of our presence had moved away.

1 Badger heard paddling through burn.

1 Badger seen - Large Boar which bolted down hole. The same animal emerged after some minutes and quickly left the territory. This is the only animal that we saw.

W. Hall.

BADGER WATCHES 1971

The prevailing weather conditions over the latter part of July and the month of August has played havoc with the arrangements of these outings. Unfortunately, heavy rain and thunderstorms are not conducive to good badger watching which is, at the best of times, uncertain.

Wednesday, 28th July - Party of 7 assembled in Broxburn at 8.00 p.m. and proceeded to Bangour. Badgers were above ground on arrival at 8.30 p.m. and two cubs were seen. The party was split into two groups for there are two setts one on either side of the Broxburn above the General Hospital at Bangour.

Party A (4 members) saw 3 Badgers at 8.45 p.m. thereafter various noises until 9.00 p.m. Possibly animals moving from the set into the valley of the burn where there is very heavy cover.

Party B (3 members) - One member saw one badger only for very brief period in open woodland on the west side of the burn. Nothing further seen or heard.

We waited on till about 9.30 p.m. by which time it was too dark to see very much more.

Friday, 6th August A very heavy thunderstorm broke at 5.00 p.m. and heavy rain continued till about 7.00 p.m. Thereafter the weather cleared.

Mr. Kilpatrick, a new member of the Society, arrived in Broxburn at 7.30 p.m. by which time the rain had stopped.

We waited on for weather improvement and at 8.15 p.m. set out to Bangour.

Badger were above ground on our arrival at 8.30 p.m. 3 or 4 animals

were seen and very good views obtained of adults and cubs until 9.00 p.m. by which time it was too dark to see well.

Further outings

I am catering for a family party from Pencaitland on Friday 20th August. These are new Society members.

Other outings for members by arrangement before mid September may be managed.

Conclusions

An attempt has been and is being made to introduce this study to members. Some have seen badger for the first time.

When parties are large (more than 3) it is difficult to do any serious study.

We will continue with these outings in future years and next year propose to introduce some March watches, i.e. as the days are getting longer in the early spring.

I do think that these Badger Outings are a useful operation of the Society even if they are of an introduction to Badger type. Most people like to see things.

It might be a useful exercise to have a Badger Day - a sort of Conference cum outing (morning/afternoon) part indoor, part outdoor event. On this I am looking for ideas and thoughts.

W. Hall

OUTING TO TYNNINGHAME, JULY 10th, 1971

After lunch the geology of the shore and cliffs was examined. On the foreshore, a rocky outcrop was found to be of the lower beds of the Calciferous Sandstone Series, of Carboniferous age. The rocks had been cut by an intrusive dyke, also of Carboniferous age, which was of a basaltic composition. The lower exposures of the sandstones were unfortunately covered by the tide, these beds had been seen before lunch and were in places markedly reddened, and cut by small veins of quartz.

At the head of the beach, the cliffs were found to be another basalt intrusion, and the compact fine grained nature of the rock could be seen. At the base of these cliffs an interesting feature was observed, where an injection agglomerate had been intruded. At some time subsequent to the intrusion of the basalt, an iron rich magmatic fluid had been forcibly injected into the hardening basalt along the lines of weakness associated with the cooling of the basalt. This had caused fragmentation of the basalt

into rounded and sub-angular pieces, which had been carried along in the fluid. This had caused "bulging" in the main part of the basalt, which could be seen at the base of the cliff. As the fluid cooled, and reached its upper limit in the basalt, gas bubbles had escaped, and trails of small holes in the body of the basalt indicated where these gas bubbles had penetrated into the country rock.

At one point the effect of the injection agglomerate could be seen on the underlying strata, where beds of calciferous sandstone were contorted and hardened, with the reddened magmatic material running through them.

Walking along the beach to St. Baldred's Cradle outcrops of flat lying calciferous sandstones were observed, most of them had been hardened and enriched with iron (causing the reddening) and at one point the rocks had been heated to such a temperature that they had become brick.

In the cliffs at St. Baldred's Cradle, more massive outcrops of calciferous sandstone were seen, dipping seawards, and showing the feature of current bedding, indicating the direction in which the sand grains had been deposited in the carboniferous areas.

Another interesting feature of this cliff was a small fault, which caused the displacement of the rocks to the seaward side. The massive sandstones had been displaced dowwards, and thin more shaly sandstones at their base, could be observed higher up the cliff on the landward side of the fault.

On top of the sandstones was a raised beach deposit which contained shells of marine molluscs and boulders of an igneous rock which was notable for the aggregates of dark coloured minerals it contained. It was unfortunately not possible to determine where this rock had come from.

Rosmary J. Harper

A SURVEY OF THE MACRO-FAUNA ALONG TWO LINE TRANSECTS ON CRAMOND BEACH, MIDLOTHIAN

Melinda A. Paton

This survey was undertaken as a practical project, between August and November 1970.

The objectives of this study, were to compare the faunal components of two line transects, taken either side of a man-made barrier, from high water neap to extreme low water spring, and to ascertain the effects of different environmental factors on the faunal composition.

The intertidal region at Cramond has a north facing aspect and is divided into two distinct regions by the presence of a man-made barrier which runs due north between the mainland and Cramond Island. This barrier is composed, for the first 100 yards, of a breakwater, the remainder being

composed of large concrete stanchions and a concrete protected sewage pipe. To the east of the barrier lies a gently shelving, quartz particle, sandy beach, while to the west lies a beach composed mainly of silt and mussel beds.

Selected sampling positions were taken at the following tidal levels, high water neap (HWN), mean tide level (MTL), low water neap (LWN) and extreme low water spring (ELWS). No samples were taken at extreme high water spring because this level consists of dessicated sand. The effect of the barrier on tidal movements in this area is clearly marked by the differences in sediment composition on either side. The sandy beach to the east (transect X) is under the influence of the prevailing east to west tidal movements, and hence a well sorted beach results. The beach to the west side of the barrier, (transect Y), is more sheltered from the effects of tidal movements and is under the influence of the River Almond, which carries large amounts of silt and fresh water onto the beach.

Three samples were taken at each tidal level, (HWN, MTL, LWN and ELWS), along the transects. These were for salinity and pH determination, granulometric analysis, and faunal identification.

The numerical abundance of the different faunal components of each tidal position is illustrated in tables 1 and 2, in which the results are expressed in number/square metre.

TABLE 1 Transect X

			Tidal position			
Organism			HWN	MTL	LWN	ELWS
Decapoda	:	Crangon vulgaris	4	16		4
		Carcinas maenas				4
Amphipoda	:	Corophium volutator	56			
		Bathyporeia pelagica		56	112	
Annelida	:	Nereidae	12	24	16	56
		Arenicolidae	4			
		Terebellidae			24	
Lamellibranchiata	:	Macoma baltica	136	16		8
		Tellina tenuis			12	
		Cardium edule	16	8		
Gastropoda	:	Littorina littorea	12			
Pisces	:	Ammodytes lancea				16

TABLE 2 Transect Y

Organism			Tidal position HWN	MTL	LWN	ELWS
Decapoda	:	Crangon vulgaris	48			
Amphipoda	:	Corophium volutator	4000	2000	144	
Annelida	:	Nereidae	16	40	40	24
		Terebellidae	32			
Lamellibranchiata	:	Mytilus edulis		24	8	
		Macoma baltica	48			
Gastropoda	:	Littorina littorea		12	4	

From these tables the percentage relative abundance of each of the faunal groups was obtained.

The faunal composition was also expressed as a wet weight biomass estimate. A difference in the relative importance of the groups was noted. The amphipods, in transect Y, although numerically abundant, contribute little towards the total biomass. The lower numbers of lamellibranchs and annelids on the other hand are more important, contributing a far greater percentage toward the total biomass.

The distribution of burrowing animals on a shore will be determined by a number of environmental factors such as substratum, salinity, temperature, tidal level, etc. Animals which are euryhaline, eurythermous, and tolerate a wide range of substratum, will tend to be widely distributed. Animals which are more particular about the specifications of their habitat, will obviously have a far narrower range of distribution.

To estimate the effects of some of the above mentioned characteristics, measurements of salinity, pH and substratum composition were also taken.

By comparison of all results, it appears that the lemallibranch Macoma baltica does not tolerate soft muddy conditions. The localisation of the mussel Mytilus edulis appears to be due to the presence or absence of protruding rocks because this species requires a firm substratum to which it can attach itself by its byssus threads. The most abundant and widely dispersed polychaete family to be found in the survey area was the Nereidae, suggesting that these organisms are very adaptable to varying ranges of habitat. The decapod, Crangon vulgaris, was found only at HWN on transect Y and at all tidal levels on transect X, with the exception of LWN. The substratum of its habitat lies within the range of medium sand and fine sand and this organism has a limited tolerance to these factors. The distribution of the amphipod Corophium volutator, has been found, from other studies, to be due to the close proximity of both fresh and salt water.

The results obtained from this survey suggest that a well aerated, oxidised substratum, will normally support a larger macrofaunal community than a substratum which is anaerobic and reduced by bacterial action. The

mud flats (transect Y), which are essentially anaerobic a few centimeters below the surface, support a smaller macrofaunal biomass than the sandy beach, (transect X), in which the anaerobic layer is 30-50 cm., below the surface. The greater permeability of this sediment will allow for greater oxygenation. It is possible, however, that transect Y will support a larger microfaunal community than transect X and hence make up the deficit in biomass between them.

The difference in the nature of the sediments of Cramond beach is greatly influenced by the concrete barrier, which in turn, affects the silt deposition by the River Almond. The river will deposit large amounts of silt and fresh water onto the beach but the transference of these deposits across the barrier will be limited due to the action of the prevailing tidal movements. These movements are such that they will cause the silt to be retained to the west of the barrier only, leaving the eastern side relatively silt-free. This resulting sharp contrast of sediment within a narrow distance, instead of a gradation over a larger distance, will have obvious effects on the types of organisms capable of colonising this region, by providing suitable habitats for some species but not for others. Examples of habitat specificity are shown by Cardium edule, Bathyporeia pelagica, Tellina tenuis, and Ammodytes lancea, which only occur on the sandy side, and Mytilus edulis, which only occurs on the muddy side.

FIELD NOTES FROM HADDINGTON

Snowdrops (Galanthus nivalis)and Winter Aconites (Eranthis hyemalis) occurring on the grass verge of a lane within 2 miles of Haddington. They are presumably garden 'throw-outs' or have been deliberately planted at some time in the past, and now form well-established patches.

Sweet Violet (Viola odorata) - two clumps, one beside a ditch or small burn, under trees, the other on a nearby grass verge. Whether both are naturally occurring patches or have been planted at some time in the past is uncertain.

Lathraea clandestina, an introduced plant, close relative of Toothwort, (Lathraea squamaria) has been found beside the Tyne. Known from further upstream in the past this unusual, brilliantly purple, leafless plant was found in two areas, one on either bank of the river, growing parasitically on the roots of a willow (Salix alba). (It is abundant, in the spring, in parts of the Botanic Gardens).

Bird's Nest Orchid (Neottia nidus-avis). A small clump of this unusual and rather drab orchid was found in a new locality, growing beside a footpath in a spinney, not under beech, which it frequently favours, but in the shade of a mixture of conifer and deciduous trees, including hazel, gean, oak and hawthorn.

Wood Mushroom (Agaricus silvicola). The pale lemon-yellow globes of this aniseed-scented, edible mushroom looked, for all the world, like a child's

ball thrown down among the grass of the roadside verge. A second group of the mushrooms was found among the undergrowth in an adjacent spinney.

Water shrew (Neomys fodiens). A specimen of this infrequently seen black and white shrew was found lying dead in the middle of an unfrequented lane. A small stream runs beside the lane and while the species may live most frequently beside running water they may spread to other habitats.

M.E. and D.H. Jones

ABBEY ST. BATHANS 1971

Saturday, 22nd May 1971.
By private bus at 10.30 a.m. from Edinburgh.

Full day excursion attended by 24-28 members. Fine spring day - perfect weather for this type of walk.

Purpose: To examine the Valley of the Whiteadder Water and its fine mixed woodland areas.

Approach was made via Blackerstone Farm off the moor road south of Abbey St. Bathans. Through the Retreat Woods to the Retreat House. Riverside footpath followed through to Abbey St. Bathans.

Features of the excursion - Early spring flowering plants and spring chorus of bird calls - e.g. Blackcap, Garden Warbler, Long Tailed Tit, Green Woodpecker and many other birds, together with a fine variety of spring flowers (without any rarities) were recorded. One thing in particular was the abundance of Red Berried Elder which does very well down here.

Abbey St. Bathans' House grounds were visited and we were met by the owner, Miss Gillon.

Further study of the Whiteadder and of the Monynut Water which joins it at Abbey St. Bathans is recommended. At all times when dealing with a party a private bus consideration must be given as to where the party is put down and later collected and where the bus is to park over the period. The side roads are isolated and peaceful but very narrow.

W. Hall

ANIMAL BREEDING RESEARCH FARM AT DRYDEN MAINS, AND ROSLIN GLEN

May 8th, Roslin
1971

The weather was fine and sunny and a large party of some 40 or 50 members took part in this excursion. As the party was so large it was easier to walk

the fields than to spend time inside the laboratories. Many unusual breeds of sheep were seen including Australian pinewood Merinos, Shetlands and previously feral Soays brought from St. Kilda.

After leaving the research farm we enjoyed a circular walk via Bilston Burn and viaduct, Roslin Glen and Roslin chapel. With the help of Mr. and Mrs. Bell about 56 species of wild flowers were identified. About 30 species of common birds were seen or heard, including both willow and wood warblers and what was for many, the first cuckoo. A young roe deer was also sighted by one of our junior members.

John Slee

ANIMAL BREEDING RESEARCH HILL FARM AT STANHOPE, PEEBLESSHIRE

June 26th, Stanhope

The weather was stormy with frequent heavy showers. Probably as a consequence of this and the distance from Edinburgh (some 32 miles) only about 12 members came. However they were rewarded with a most interesting day. Over 80 wild flowers were identified with the assistance of Dr. Thompson.

Due to there being two quite distinct habitats on this 5000 acre farm, the River (River Tweed) and the heather hill and moorland, there were also many species of birds to be seen, including oyster-catcher, redshank, lapwing, common sandpiper, grouse, heron, dipper, ring-ouzel and wheatear.

Alternatively soaked by rain and warmed by the run, the party nonetheless retired in good spirits after an enjoyable outing.

John Slee

COUNCIL MEMBERS

	Appointed
Dr. J. Slee	1968
Dr. J. Milne	1968
Mr. J. C. Dow	1968
Mrs. C. Stewart	1969
Mrs. E. Farquharson	1971
Mrs. E. McDonald	1970
Mrs. H. Miller	1970
Mrs. M. Watson	1970
Mr. H. Laing	1970
Mr. Ian Gauld	1970

Notes for Contributors to the News-Letter

1. Contributions should, if possible, be typed using double spacing and leaving a margin of two inches on the left hand side of the page.
2. One side only of the page to be used for typescript and manuscript.
3. In manuscript all proper names, place names, popular names and scientific names of flora, fauna and unusual inanimate objects must be recorded in block capitals.
4. Where references are recorded within a formal paper they should be quoted, with the date of publication, at the end of the paper.
5. The author's name should be recorded under the title in a formal paper and signed at its conclusion.
6. In the case of the field note, the author's name should be recorded at the end of the note and the signature added.
7. Contributions should be submitted to the editor before August 15th in any year.
8. All contributions are recorded permanently in the Society's care so that they may be available for future reference.
9. Contributions are particularly welcome from junior members.