

the Forth Naturalist and Historian

Volume 22

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back– Forth Rail Bridge, 1892

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THE WEATHER OF 1998

S. J. Harrison

Although very few weather records were broken during 1998, it was far from being an unexceptional year. The sequence of mild winter and early spring months continued, with the temperature in February reaching a remarkable 4°C above the long-term average. However, having encouraged the early emergence of buds and shoots, the weather then played the unpleasant trick of bringing a combination of killing frosts, heavy rain and snow in April. May promised a good summer ahead but this was not to be the case. The months June to August were cold and wet, and it was not until September that the weather eventually improved a little. A deluge then followed in October and November and there were widespread floods. On the whole 1998 was a cloudy, mild and rather wet year.

Temperature and rainfall values in the following refer to Parkhead II although reference is also made to the records from Bridge of Allan and Flanders Moss.

January Mild and very windy at first, becoming colder later

Scotland was almost obliterated by isobars on the weather map over the first four days and driving rain fell in strong to gale-force south-westerly winds. The 5th and 6th offered a respite from the wind and rain but the night-time temperature fell to -1.1°C (-2.3°C Bridge of Allan) by the morning of the 6th. There was another spell of wet and generally windy weather until the 12th but the wind was from the south, which resulted in high temperatures being registered over this period. The maximum temperature exceeded 13.0°C between the 9th and 11th. The wind slackened on the 13th but the weather was generally unsettled with spells of exceptionally dull and wet weather. The 17th was the wettest day of the month, registering a rainfall of 17.7 mm (19.8 mm Bridge of Allan). Cold Arctic air came to Scotland late on the 18th and light snow began to fall. The north of Scotland was affected by very heavy snow but in the Stirling area there was only a light dusting down to 150 m. Dull and much milder weather returned on the 21st but after the 23rd the weather became calm and clear with night frosts for much of the remainder of the month.

February Exceptionally mild but very wet at times

Winds remained relatively light and the skies relatively clear for the first two days. The grass minimum in Bridge of Allan fell to -5.7°C by the morning of the 3rd, but later in the day the wind began to freshen from the west, heralding a spell of wet and windy weather which persisted until the 16th. Winds were south to south-westerly and daytime temperatures exceeded 14.0°C on the 13th and 14th. Night-time temperatures were more than 10°C higher than the long-term average. Between the 12th and 16th the air temperature never fell below

a remarkable 10.0°C. There was an almost total cloud cover on most days and heavy rain fell in occasionally very strong winds. The Allan overtopped its banks on the 11th and the rain deposited a notable fall of Saharan dust on the 14th. Some sunny spells developed on the 16th but rain returned on the 19th. Cherry blossom was in bloom in Bridge of Allan by the 18th. Clearer weather moved in on the 21st and night temperatures fell towards freezing, reaching -1.6°C in Bridge of Allan by the morning of the 22nd. From the 23rd onwards the weather was generally rather wet and windy for the remainder of the month. During the afternoon of the 27th snow fell in cold Arctic air, which provided a thin cover of 1 cm on low ground by the morning of the 28th.

March Mild and generally quite dry

Cold weather continued for the first two days and heavy snow fell on the 1st in a bitter easterly wind. Heavy snow fell in gale force winds in northern Scotland which heralded the start of a very cold spell of weather. In central and southern Scotland the weather turned milder on the 2nd and the snow had disappeared from most of the Ochils by the 3rd. However, Arctic air was never far away and it brought more snow on the morning of the 5th. Sleet and snow again fell locally on the 6th and the daytime temperature reached only 4.1°C. By the end of the first week, conditions in the north of Scotland had become severe with many roads blocked and power lines down. The weather became warmer briefly on the 8th and 9th but rain fell in a strengthening wind on the 10th. Cold Arctic air then returned, with sleet falling on the 12th. The weather then changed for the better, reaching 15.0°C on the 14th and warm and sunny weather lasted until the 18th. Cloud cover then increased and the 19th to 24th were dull grey days with little wind. The weather remained unsettled for the rest of the month with occasional very blustery conditions.

April Cold and very wet at times

Heavy rain fell on the 2nd (19.7 mm), which had turned to snow by the 3rd in a strong easterly wind. On the 7th the weather was dull, damp and relatively mild but by the 8th Arctic air returned to Scotland bringing snow showers throughout the 9th, and more widespread snow later in the day. While the weather remained bright but cold in Scotland, with occasional snow flurries, England and Wales experienced a memorably wet Easter weekend with widespread floods between the 10th and 13th. The overnight temperature had fallen to -3.8°C by the morning of the 14th, and by the 15th the cold weather had moved south to affect much of England and Wales. Spells of rain and sleet persisted until the 16th when the cloud cover cleared and the daytime temperature managed to top 11.0°C on the 17th. The Arctic weather was replaced by unsettled weather from the west for the remainder of the month. Although there were a few sunny spells, the weather was generally cloudy with showers and longer spells of rain. Daytime temperatures over the latter part of the month were well above average. There were heavy hail showers on the 26th and a tornado was reported to the north of Glasgow later in the day. The last three days of the month were settled and quite warm.

May Warm and mostly dry

The first three days were sunny and quite warm, but under clear skies night temperatures fell and the last of the spring air frosts were recorded on the 1st and 3rd. There were light showers on the 4th which heralded the start of an unsettled spell. Rain fell in a south-westerly breeze over the following four days but by the 9th the weather had changed to pleasantly warm and sunny. On the 11th the weather turned dull with low cloud, and there were thunderstorms and some remarkably high temperatures across southern England. On the 16th the weather turned hot and sunny after early morning fog. The daytime temperature topped 20.0°C over four days, and exceeded 25.0°C in Bridge of Allan on the 17th, 18th and 19th. This brief glimpse of summer was interrupted on the 20th but the warm spell eventually continued until the 24th. Temperatures fell away quickly in a fresh north-westerly wind on the 25th and cold showery Arctic air dominated the weather for the remainder of the month and there was some late snow on the Scottish hills. There was continuous heavy rain on the last day of the month (10.9 mm).

June Cool and rather wet at times

Dull cloudy conditions gave way to sunny spells during the course of the 2nd. The 4th and 5th were sunny and warm days, but cloud and rain arrived late on the 5th, and the 6th was cold, dull and very wet (16.9 mm). There was further rain on the 8th and 9th, the 48 h total reaching 22.6 mm. Cold Arctic air then resulted in three cold days with sunny spells and heavy showers, some of which fell as hail. The weather improved a little from the 12th and, although the pattern of sunny spells and intermittent rain continued, the air became slightly warmer. After one more cold and wet day on the 15th, the weather began to improve gradually. The 17th was a bright sunny day, but cloud returned on the 18th and 19th. The daytime temperature topped 20.0°C between the 19th and 21st with variable amounts of cloud. This proved to be the only warm spell of the month. Unsettled weather took control again late on the 21st and the end of the month was dominated by intermittent rain in a fresh south-westerly wind.

July Warm at first, becoming cool and wet

The first seven days were generally warm and dry but there was a little light rain on the 4th. Daytime temperatures exceeded 20.0°C for the first four days. The weather became cool and damp from the 8th. There was a spell of continuous heavy rain on the 12th (16.4 mm) which was the coldest day of the month (13.4°C). The following few days were sunny and relatively warm, but rain returned late on the 16th (11.3 mm). The unsettled pattern continued until the end of the month, there being further very wet days on the 19th and 22nd, and measurable rainfall on every day except the 31st. Sunday the 19th was a particularly wet and windy day (20.3 mm). However, sunny spells became more frequent and prolonged towards the end of the month and the 31st was sunny and very warm (22.1°C).

August Generally warm, but cool at wet at times

The first two days were warm and dry but rain moved in from the west late on the 2nd. The weather remained dull and very unsettled up to the 7th which was dull and very wet (20.9 mm). After the 8th, the weather became warm and very humid, and the 10th was a particularly sticky day, reaching 24.1°C between short showers. After a foggy start to the 11th, unsettled, wet and windy weather persisted until the 16th. After a brief interlude of cool clear weather on the 17th and 18th, unsettled weather took over again on the 19th, and the 23rd provided yet another dull and wet Sunday, the temperature reaching only 13.5°C. The 24th saw a return to more settled weather and the days up to the 30th were sunny and, at times, quite warm. Under clear skies the overnight minimum on the 26th/27th fell to 3.5°C and the grass minimum reached 0.9°C in a first foretaste of autumn.

September Warm but a little unsettled

The month started dull and very wet, the 48 h rainfall total over the 1st and 2nd being 27.8 mm. The weather remained dull until the 6th, by which time former hurricane *Danielle* lay off the west coast of Scotland, where it lingered for the following three days. Heavy rain began falling late on the 7th and by the morning of the 10th another 19.7 mm had fallen. In the wake of the rain, the wind veered to a cool north-westerly and the days up to the 16th were dry and bright with excellent visibility. The wind became very strong for a while late on the 16th. The weather then became settled until the 23rd. There were warm sunny days, often after early morning mist or fog, and the temperature topped 20.0°C between the 18th and 21st. Dense fog refused to clear away on the 22nd, which was, in sharp contrast, dull and cold. The remaining days were cloudy and dull.

October Cool and exceptionally wet

There was a spell of dry but very dull weather over the first three days before the wind freshened easterly until the 6th. In the calm settled weather which followed, night temperatures fell, resulting in the first autumnal air frost by the 8th (-0.2°C). The settled spell was, however, short-lived as unsettled conditions moved in from the west at the start of what was to be a protracted wet spell, which lasted until the 27th. Winds were frequently strong, and rainfall was registered on all but one day. The 16th was an exceptionally wet day (21.9 mm; 29.3 mm Bridge of Allan) at the end of which the Allan was in flood. Hail showers fell on the 18th. Particularly stormy conditions reached the Stirling area during the afternoon of the 20th and by the morning of the 21st 46.3 mm of rain had fallen in Bridge of Allan in less than 15 hours, and the Allan was in flood again. The heavy rain returned on the 22nd (23.2 mm) and 24th (27.1 mm) and the Allan was in flood on both days. The unsettled wet weather seemed determined to continue, and the 26th and 27th were also wet and windy. Over the 12 days between the 16th and 27th a remarkable 130.9 mm of rainfall was registered at Parkhead (156.4 mm Bridge of Allan; 161.5 mm Flanders Moss) and it was no surprise that there was widespread flooding,

especially over the Carse. Although the wind remained fresh to strong from the south-west between the 28th and 30th, the rain became showery, much of which was squally and very heavy.

November Variable but generally rather wet

The weather on the 1st remained clear and bright with a sharp frost (-5.1°C) but rain fell on the 2nd and 3rd. The remnants of hurricane *Mitch* moved to the north of Scotland between the 8th and 9th bringing severe gales. There was some respite from the wind on the 10th and 11th before unsettled weather returned late on the 11th. Brighter weather returned on the 15th but night frosts returned, the minimum air temperature falling to -5.2°C by the morning of the 17th. The weather became wet and windy again on the 20th, but the daytime temperature reached 12.5°C on the 21st. Unsettled weather continued until the 28th when the Allan was again in flood.

December Very changeable with some very mild spells

The 1st and 2nd were cloudy and dull, the cloud base descending to low levels by mid-day on the 1st. A northerly airstream then became established and the 4th and 6th were very cold. Snow fell late on the 4th and lay for the next two days. The air temperature in Bridge of Allan had reached only -0.9°C by 14.00 h on the 6th, after an early morning minimum of -7.7°C (-6.8°C Parkhead). Unsettled weather swept in from the Atlantic on the 7th, marking an abrupt end to the brief cold spell. By the 8th the daytime temperature had risen above 10.0°C in a mild south-westerly breeze. Rain was then a regular feature until the 17th. Air temperatures were unseasonally high, exceeding 14.0°C on both the 13th and 14th. The wind turned to a cold easterly direction on the 18th, and by the 19th cold Arctic air had spread southwards across Scotland. Although sunny, the 20th and 21st were very cold, with frost at night. After the 21st unsettled weather with occasional sleet and snow persisted for much of the rest of the month. Showers on Christmas Day were associated with hail and thunder. Conditions became very stormy late on Boxing Day and by midnight the wind was gusting to storm force. There was widespread damage throughout Scotland and the Allan was in flood again on the 27th. Gales revisited on the 29th as the temperature increased very quickly in a mild southerly breeze, which unfortunately set off avalanches in the Scottish Highlands.

WEATHER NOTES

Noteworthy Scottish weather events during 1998

- **Storms of January** – gales and heavy rain affected most of the British Isles with winds gusting to more than 90 mph in exposed west coast locations. Tulloch Bridge (Lochaber) recorded 120 mm of rain over three days. By the morning of the 4th the wind had reached 115 mph at Mumbles Head near

Swansea, possibly the strongest this Century. There was widespread wind damage in Devon.

- **Snowstorms** 18/19th January – heavy snow fell throughout northern Scotland and many roads were blocked. Aberdeen and Kirkwall Airports were closed for a short time and power lines on Orkney were brought down.
- **Late snowfall** March 1st to 8th – Arctic air brought heavy snow to northern Scotland again. In Aviemore 21 cm of snow lay on the 2nd. At Carnbo (Kinross-shire) there were six falls of snow over the first two weeks of March, reaching a maximum depth of 11 cm

The Boxing Day storm

A storm hit Scotland late on Saturday December 26th and resulted in widespread structural damage, to buildings and a large number of mature trees. An intense low pressure passed to the north-west of Scotland which brought winds gusting to more than 100 mph (hurricane force) in some exposed locations, although gusts inland were of the order of 70 mph. The track and timing of the storm had been forecast by the Meteorological Office, who had issued severe weather warnings more than 24 hours beforehand. Pressure began to fall during Boxing Day and was falling rapidly by the afternoon. Most of the rain fell as the depression approached and had died away by the early hours of the 27th. The wind strength increased steadily and reached its peak in the wake of the depression. Between 23.00 and 23.30 h the average wind speed was 40 mph with gusts approaching 70 mph. Gusts, which are the damaging feature of strong winds, were in excess of gale force (39 mph or more) for 15 hours.

The wind observations used in the profile of the storm (Figure 3) were made at the newly established Flanders Moss weather station which is in a very exposed location, largely unsheltered by local buildings or vegetation.

The summer of 1998

Using the summer quality index developed at the University of Stirling, the summer of 1998 can be classified as 'poor'. The index value of -1.37 is the poorest since the summer of 1988 (-2.50). Over Scotland as a whole there is some evidence of a long-term upward drift in the quality of summers, expressed in terms of daytime temperatures and lack of rainfall. However, it must be borne in mind that in any such trend there will always be the occasional reversal, which was the case in 1998.

Index Values of Summers in Stirling

1988	-2.50	Very poor
1989	1.08	Good
1990	0.79	Above average

1991	-0.98	Below average
1992	-1.04	Poor
1993	-0.85	Below average
1994	-0.54	Below average
1995	3.48	Exceptionally good
1996	1.42	Good
1997	2.06	Very good
1998	-1.37	Poor

Temperature indices

Dr John Harrison has been awarded a contract, in collaboration with the University of Edinburgh, to develop a new temperature index which will play a central part in the assessment of the impacts of climatic change in Scotland. The work, which is funded by SNIFFER and managed by the Scottish Environmental Protection Agency will devise a new index along the lines of the Central England Temperature (CET) which is quoted widely as an indicator of ongoing global warming. When developed, the index will be updated regularly and will be available on the Internet.

Climatic change and winter heating requirements

An analysis is currently under way which converts the temperature observations taken at the University's climatological station (Parkhead) into 'heating day-degrees' below a fixed threshold. This is used widely in the management of heating requirements within buildings. The principal objective of the research is to assess what impacts recent climatic changes may have had on the energy requirements for the heating of buildings.

Flanders Moss (West Moss-Side) weather station

The establishment of this station supports the research into topoclimates currently being undertaken by Dr Harrison but is also the first phase of the development of a field site which can provide basic training to students in meteorological and hydrological observation practices. The excellent exposure of the site and its proximity to sites of ecological and conservation interests have already generated a demand for the data. The site is fully automated with intermittent manual back-up. A Davis automatic weather station and Grant Squirrel logger provide readings of wind speed and direction, ground surface temperature, and rainfall, plus air (wet and dry bulb), surface and soil temperature. A gauging station on the nearby Goodie Water will be installed during 1999 to monitor river discharges, which are partly tidal.

The University acknowledges with gratitude the cooperation of Kate and Steve Sankey, owners of West Moss-Side, who have provided the site and access to it.

Snow in Scotland, the impact of climatic change

Ongoing climatic change in Scotland and elsewhere will have considerable consequences for the geographical extent of winter snow cover and the location and persistence of snowbeds in the uplands. Work is ongoing at Stirling to quantify the long-term pattern of changes in snow cover in the uplands where such cover has considerable ecological and economic importance. In the absence of accurate snow cover observations for such areas, models of the relationship between snow cover and elevation are being developed which are used in GIS-based estimates of snow cover. Information on snowbeds or snow patches, many of which used to persist through the summer in the high corries, is sparse and relies on personal observations by mountain enthusiasts such as John Pottie and Adam Watson. It would appear that snowbeds are now disappearing completely over the summer, which exposes the surface and the vegetation to drought and heat stresses. It is highly likely that, should current climatic changes continue, the very distinctive habitats associated with snow beds in the Scottish Highlands will be lost.

Acknowledgement

This paper is based on Annual Climatological Bulletin No. 20 published by the Climate Laboratory of the Department of Environmental Science at the University of Stirling.

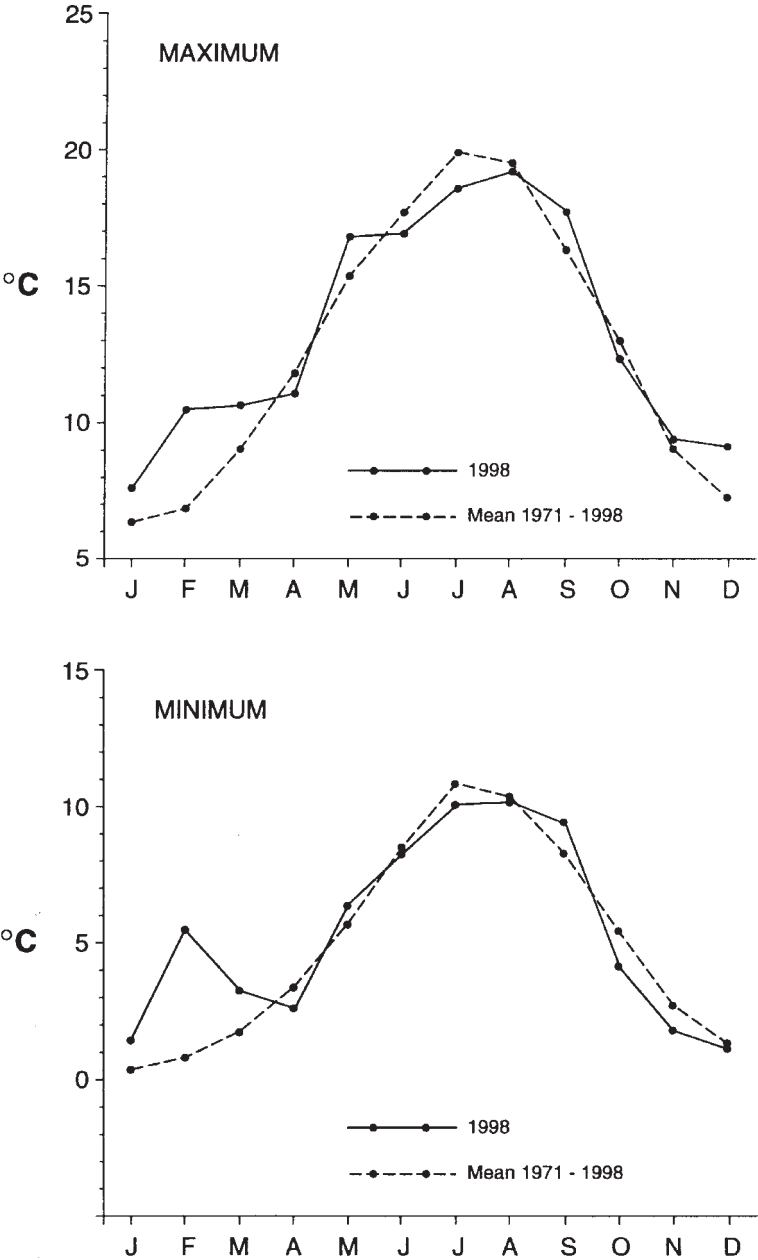


Figure 1 Monthly air temperatures (maximum and minimum) at Parkhead I 1998.

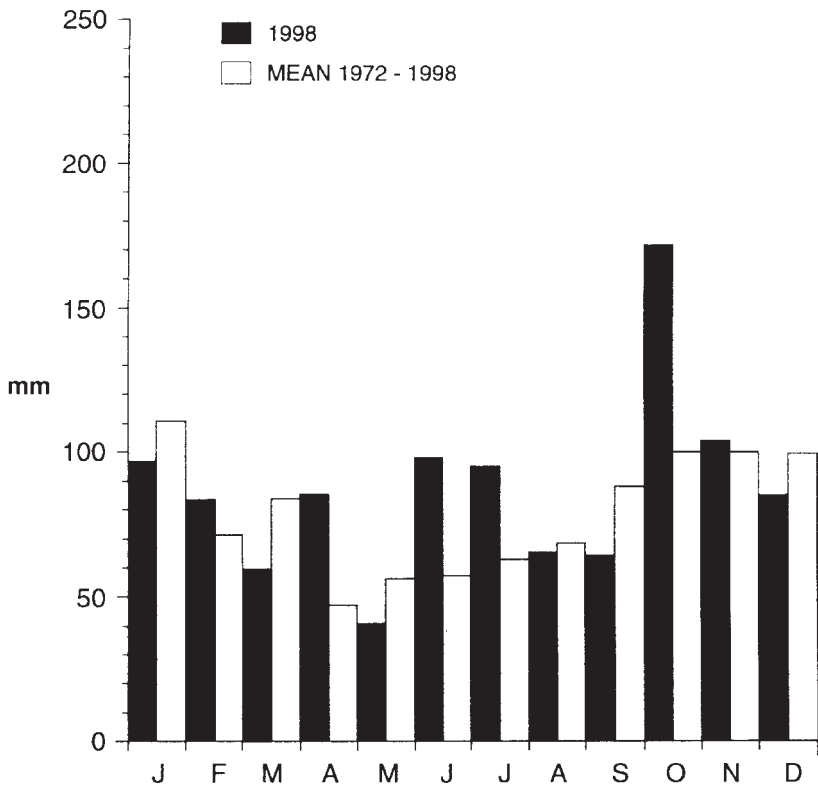


Figure 2 Monthly rainfall at Parkhead I 1998.

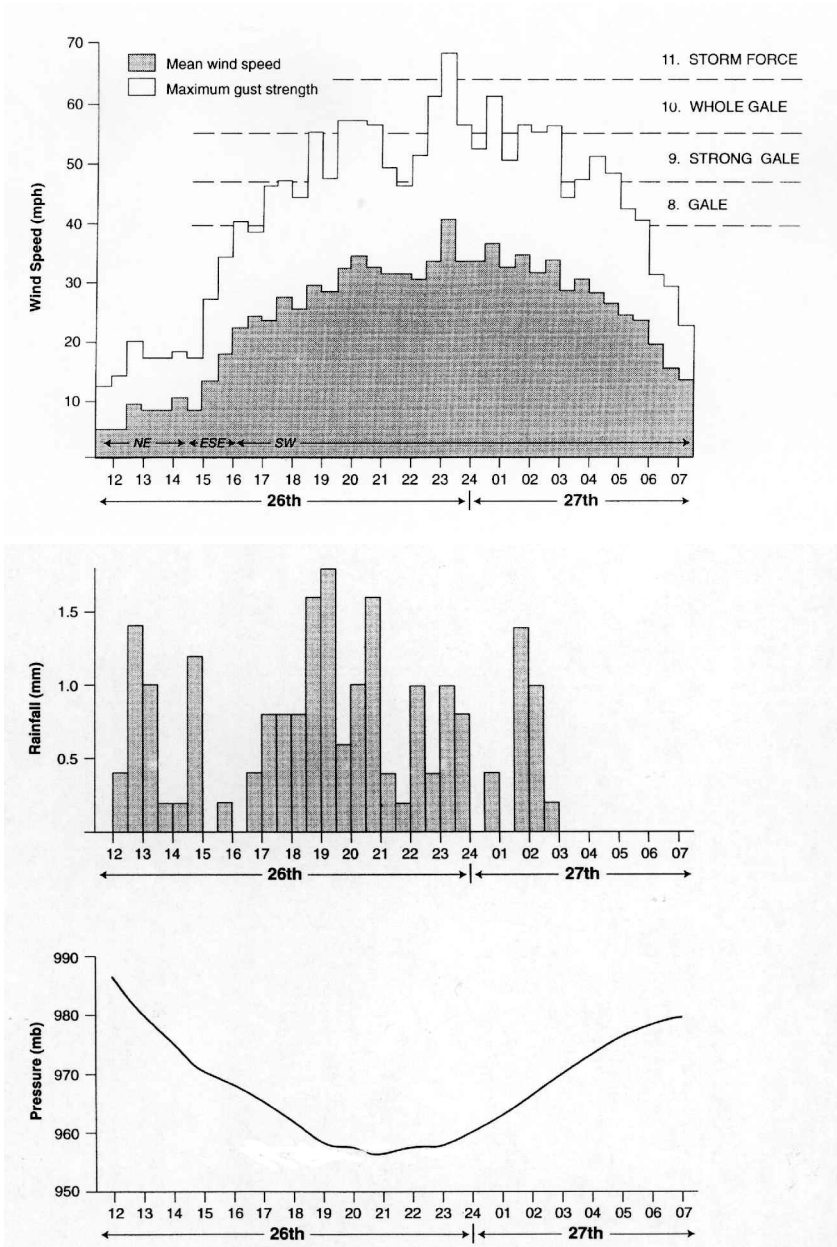


Figure 3 Profile of the Boxing Day storm 1998. Wind speed and rainfall observations from Flanders Moss (West Moss-Side weather station).

BOOK REVIEWS

The Forth Integrated Management Strategy: Promoting the Wise and Sustainable Use of the Forth. Forth Estuary Forum. 1999. 72pp. Forth Estuary Forum (FEF), 1 Cockburn Street, Edinburgh. ISBN 0.9529692.0.11.

Over the past five years this FEF voluntary partnership has thoroughly investigated the actual and potential problems confronting the Forth – its environment, people, communities, and organisations with both on and offshore responsibilities.

FEF here presents a strategy as a first-ever template for an integrated management approach towards conserving the estuary's future. This non-statutory Strategy is developed at the behest of the UK Government (UK Biodiversity Action Plan, DOE, 1994), and it contributes to the international conservation study/projects of the estuaries of the world.

A series of 'guidelines' and 'actions' for future use and management here address the many issues facing the Forth, and are presented within an integrated framework based on the Forum's 'Guiding Principles', a 'Vision', and a series of 'Objectives'.

The whole has developed from FEF study/discussion groups and their papers in these ten subject areas – Nature Conservation, Built and Archaeological Heritage; Landscape and Amenity; Tourism and Recreation; Information and Research; Awareness and Education; Economic Development; Fisheries; Marine and Coastal Pollution; Coastal Defence.

The Estuaries of Central Scotland. Coastal Zone Topics: Process, Ecology, & Management, volume 3: editors D. S. McLusky et al. Joint Nature Conservation Cttee (JNCC). 1997. 205pp.

Intended to be the successor to the RSE's symposium *The Natural Environment of the Forth (PRSE 193B 1987)* papers are on further progress and developments in hydrography, water quality, contamination, biological studies and conservation and management. Copies are available from Natural History Book Service, Wills Road, Totnes, TQ9 5XN, £25 plus £4 p&p.

FORTH AREA BIRD REPORT 1998

C. J. Henty

Fifty-four contributors appear this year, some sent notes direct to the Editor, others via the RSPB local group. The extensive use of record cards has greatly helped the compilation of notes by species. In addition, others have assisted in the wildfowl counts and the breeding birds survey. Red Kites are now seen regularly in the area but the special news is that two pairs nested successfully this year; Ospreys continue to do fairly well. Some massive flocks of Chaffinches were noted in the New Year whilst scarce migrants include a spring Red-Backed Shrike and in autumn a Marsh Harrier, Wryneck and two Great Grey Shrikes, but passage of the scarcer waders was no more than modest. A singing male Rosefinch reappeared this summer, presumably the same bird as last year and equally mateless.

The most remarkable single record was of a Pied-billed Grebe which was found on Airthrey Loch in June, this American vagrant stayed for several days but was not reported immediately, thus the three older birdwatchers on the campus were humiliated by having commuted repeatedly within maybe 100 metres of the bird without ever seeing it.

This report is compiled from a larger archive of records submitted to the local recorder under the national scheme organised by the Scottish Ornithologists Club. The area covered by the report comprises the council areas of Falkirk and Clackmannan together with Stirling, excluding Loch Lomondside and other parts of the Clyde drainage basin. Please note that we do not include the Endrick water, i.e. Fintry and Balfron. Records from Carron Valley Reservoir are published here but it is proposed that Clyde should cover all the forest south of the reservoir. Observations are not spread evenly being concentrated on the estuary and the Carse of Stirling, although the inland part of Falkirk and the extensive and often inaccessible hill area in the north of our area has had more attention than in past years

1998 was overall a cloudy, mild, and rather wet year. Early and mid January was wet and windy until a bright but frosty spell. February was almost continually mild, overcast and wet though at the very end an Arctic airflow caused snowfall, these last conditions continued in early March and then alternated with wind and rain. April maintained this pattern and hence was colder than usual. The middle of May was warm and sunny but led to unsettled weather through June with only brief dry and sunny spells. Early July was warm and sunny but there was soon domination by cool, wet weather. August showed an alternation of fine with unsettled conditions and this largely continued through September with a long fine spell midway. Early October was dry but dull, then became markedly wet and windy and this continued through November with only brief bright and frosty episodes. There were brief frosty and snowy spells in December but in mid-month it was

notably mild with much rain, the year ended with westerly gales and some flooding

The 1997 information on the breeding numbers of common species come from two studies of mapped territories. One is a Common Birds Census plot east of Doune, this is 87 Ha of undulating, dry-field farmland at about 70 m a.s.l, mixed pasture and winter cereal, which is referred to as "Doune CBC" in text. The other is a Waterways Birds Survey along 5 km of the R. Devon at Alva which has much damp scrub surrounded by mixed pasture and arable, referred to as "Devon WBS", or, for species that are not fully mapped, as "5 km of lower Devon". In addition the Breeding Bird Survey, based on transect counts, is now sufficiently extensive to calculate numbers of birds recorded per ten kilometres for several habitat types and these are regularly mentioned in the species paragraphs. Note that the "Urban" term includes suburban areas with large gardens. For less common species I can sometimes mention data in terms of the numbers of pairs or apparently occupied territories for particular locations. Several observers send in a list largely or entirely for their home locality, much of this information is not appropriate for these annual reports but it is valuable to have on record and I am keeping them in a special file. At the moment there are fourteen such lists referring to the whole district from Falkirk to Killin.

For many species the records sent in are very unrepresentative of their general distribution, this applies particularly to very common species or to those that are secretive or breed in inaccessible places. Readers can consult the the Check List published in the *Forth Naturalist and Historian* vol 15, but in addition I have in this report put, after the species name, a coded summary of general distribution – which often apparently contradicts the detailed records that are published for the year.

- B* - Breeding status, widespread (in more than five 10 km squares)
- b* " " " , local, scarce (in fewer than five 10 km squares)
- W* - Winter status, widespread or often in groups of more than ten.
- w* - " " " , local, scarce (local and usually fewer than ten in a group)
- P* - Passage (used when species is usually absent in winter, *P* or *p* used for widespread or local as in winter status)
- S* or *s* - a few species are present in summer but do not normally breed.

Thus *BW* would be appropriate for Robin, *B* for Swallow, *p* for Ruff and *SW* for Cormorant. No status letter is used if a species occurs less than every other year.

An asterisk (*) in front of the species name means that all records received have been quoted.

The SOC has pressed for a more systematic vetting of records of species that are unusual locally, this area now has an informal panel of five – C. Henty (Recorder), W. Brackenridge (Dep. Recorder), J. Crook (local SOC rep), A. Blair and D. Thorogood. The judging of national UK or Scottish rarities continues as

before, but we have produced for the upper Forth a list of species that are scarce locally and where the records need to be supported by either a full description or sufficient evidence to remove any reasonable doubt. This list and a background explanation have been circulated to a hard core of observers and can be got from the recorder at SOC meetings or by post. Any species which is a vagrant to the area, and most of those which are asterisked in this report, will come into this category.

The organiser for the inland waters part of the national wildfowl counts (WEBS), has made available an account of the results for 1998. These often contribute to the species accounts and there is also a separate summary which concentrates on localities.

There is an ever-increasing amount of information coming in: records on the standard species cards need only to be sorted and I would urge observers to use these wherever possible (putting several records for one species on a single card); records on sheets, whether written, hand-typed or computer-typed, need to be either retyped onto a computer database or cut and pasted onto species sheets. This is time consuming and the recorder can no longer do this systematically without extensive help from contributors; otherwise these records will be scanned on arrival and only those items seeming to be salient will be transferred to the database, all the original sheets will be kept on file but that information is very difficult to unearth and inevitably some uncopied records will in fact be important but remain hidden. Appeals for assistance will continue!

The following abbreviations have been used: AoT - apparently occupied territory, BoA - Bridge of Allan, c/n - clutch of n eggs, BBS - Breeding Bird Survey, CBC - Common Bird Census, CP - Country Park, F - Female, GP - gravel pit, J - juvenile, L. - Loch, NR - Nature Reserve, M - Male, ON - on nest, Res - Reservoir, SP - summer plumage, V - Valley, WBS- Waterways Bird Survey, WG - Wildlife Garden, Y - young.

This report has been compiled from records submitted by:

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RESULTS OF THE BBS SURVEYS FOR CENTRAL REGION.

(Based on a comprehensive summary by NB).

This year the bird report continues to make extensive use in the species accounts of results from the Breeding Birds Survey, these are in terms of the frequency of occurrence of a species along linear transects in several habitat types. In 1998 29 1x1 kilometre squares were surveyed, 6 more than 1997. Each square is visited twice in spring/summer, a total of two kilometres on a set route is walked per visit and all birds noted in 200 metre sections; a standardised habitat survey is done on another visit. In the main report I have presented selected results, calculated as birds per ten kilometres of habitat, for the major habitats where it is likely that the birds are breeding locally.

Each 200m section and the birds noted in it have been attributed to one of four major habitats - Mountain and moorland (=moor), Conifers (woodland + wood/moorland edge), Farmland, Urban/suburban. Broadleaved woodland occurs mainly as copses in farmland whilst conifer woodland includes both young plantations and mature woods

An average of 25 species were recorded per square, but with great variation from four on blanket bog to 43 on mixed farmland, numbers of individuals varied similarly from 24 to 686, average 276.

1998 contributors were: M.A., B.D.A., R.B., W.R.B., R. Bullman, D.J.C., Z.C., P. Crayton, R.C., R. Daly, D. Egerton, S. Easthaugh, S. Harley, A. Hibbert, C.J.H., P. McManamen, J. Nimmo, R. Osborn, L.O'T, S.S., A.T., J.W., K. Wilkinson, T.Y.

WILDFOWL REPORT (1996-97)

This report concerns the inland waters part of this area's Wetland Bird Survey (WeBS) organised by NB and is a condensed version of a fuller report by him.

WEBS is a monthly waterfowl census under the auspices of the British Trust for Ornithology (BTO) and the Wildfowl & Wetlands Trust (WWT), it runs from September to March inclusive. For this report 'wildfowl' includes divers, grebes, cormorants, herons, swans, geese (excluding Pink-footed and Greylag for which the WWT organises separate counts), ducks and rails

This report covers the area occupied by the new local government councils of Stirling, Falkirk and Clackmannanshire (the 'region'). In total, 102 still water sites, 101 km of river and 24.4 km of canal were counted by 45 counters.

Still Water Sites

Standing water in Central Region amounts to 7693 hectares or 2.9% of the area.

The following table consists of matched monthly data for total wildfowl on 14 sites in the top 25. Those sites holding fed Mallard have been excluded.

Month	1996/7	1997/8	1998/9
September	1583	1756	1494
October	2039	2454	2082
November	3235	3037	2633
December	3955	3396	2710
January	4477	3332	2599
February	2771	2940	2133
March	1646	1930	1338
Total	19706	18845	14989

This season's numbers are the lowest in 5 years, but this is largely due to low figures from Gartmorn Dam where the previous regular counter has left the district. If Gartmorn is excluded then the other waters gave the best season ever. Whether there has been a real relocation of birds needs to be checked in future seasons.

Turning to individual sites, the top ten along with monthly averages are listed below:- (previous season's figures in brackets)

	Site	Average
1. (2)	Gart Complex	433 (366)
2. (1)	Gartmorn Dam	350 (996)
3. (4)	Lake of Menteith	319 (267)
4. (3)	Airthrey Loch	295 (279)
5. (5)	Loch Earn	265 (206)
6. (7)	Blairdrummond Park	189 (162)
7. (12)	Vale of Coustry	182 (124)
8. (9)	Doune Ponds	158 (149)
9. (12)	L. Dochart-Iubhair.	150 (155)
10. (30)	L. Watston	113 (52)

The above table excludes sites where mallard are reared and released for shooting.

With the striking exception of Gartmorn most sites show modest increases with Lake of Menteith having the best results for 16 years.

Some indication of the degree of winter immigration by different species into the region can be got by comparing the September count as a percentage of the peak for that winter for each of the seasons 1997/8 and 1998/9. These figures are 74 % and 83 % for Mallard and 61 % and 87 % for Tufted Duck, both species with large Scottish breeding populations. However the September contribution for three ducks that are scarce breeders is much smaller – Wigeon 5 % and 10 %, Pochard 10 % and 7 %, Goldeneye 0.5 % and 0 %. Teal scores at 34 % & 23 %, this probably exaggerates the local bird contribution since there is significant immigration in September.

Linear Water Features: Rivers & Canals

This season all of the canals in the region were counted but the river length decreased slightly from 118 to 104 km. Overall there were on average 13.5 birds per Km.

The proportion of birds that use linear waters can be checked by taking the two maximum 1998 counts for Jan-Mar and Sep-Dec and comparing their sum with the grand total of similar maxima for all inland waters. Mallard (22%), Goldeneye (25%), Wigeon (28%), and Teal (30%) are all very similar; the river specialist, not unexpected, is Goosander at 63%. The difference between Moorhen (67%) and Coot (1%) is also consistent with general field experience. These figures come from two periods without prolonged frost, ice cover would certainly displace some species to the rivers such as the Forth around Stirling.

WEBS contributors to these data, additional to report list were: P. & M. Ashworth, B. Barker, M. Blunt, M. Cooper, S. Davies, P. Dearing, G. Diack, S. Easthaugh, M. Ferguson, M. Hardy, A. Hibbert, M. Kobs, D. Mason, R. Osborn, D. Series, D. Shenton, B. & C. Urquart, H. Weir.



Rare Pied-billed Grebe on Airthrey Loch, June 1999.

(K. Ranson)

SYSTEMATIC LIST

Codes – S, F and C indicate records from Stirling, Falkirk and Clackmannanshire “Districts”.

RED-THROATED DIVER *Gavia stellata* (b,w)

- F 1 Blackness 10 Jan & 2 on 21 Feb. 1 Bo’ness 2 Jan & 1 Nov. 3 Kinneil 25 Jan & 1 on 15 Feb. 2 Skinflats 31 Jan. 2 Kincardine Bridge 13 Feb & 1 on 14 Mar (DAC AS DMB AB GO DSF).
- S Trossachs: 2 on 12 Mar to 15 May & 1 to 26 Aug; 2 at 2nd site 26 Apr (DJC MA DOE). 1 Killin 1 Apr & 3 on 24 Jul (PWS).

BLACK-THROATED DIVER *Gavia arctica* (b,w)

- S Trossachs: 2 pairs on 2 lochs in breeding season, 1 nest failed & 1 had 1Y. 2 on 3rd site 7 Aug (DOE DJC). 1 G.Dochart 3 May (DAC).

PIED-BILLED GREBE *Podilymbus podiceps*

- S Adult Airthrey Loch 3,4, & 5 June (probably present to 7th).
K. Ranson detected, described and photographed the bird; the results were passed on to the British Birds Rarities Committee and the record accepted. This species is a rare vagrant from North America (24 UK records to 1997) and this is the first record for the area.

The bird was in size close to a juvenile Coot, larger than a Dabchick and with a relatively larger head and a thicker neck. The bird's rear end was blunt but the short tail seemed to jut upward at times rather than showing a rounded profile. The legs and spread wings were not seen.

The bill was stout, in colour – a very pale bluish-grey with a broad black vertical band across its middle. There was a distinct pale eye-ring. There was a well-defined black patch on the throat but this colour did not extend down the front of the neck. The underside of the tail was white. The rest of the plumage was greyish brown, the crown of the head, dorsal side of neck, back, and wings being slightly darker and more rufous than the flanks and what could be seen of the chest. The flanks appeared to be faintly barred.

The bird was seen only on the open water and was observed feeding and preening. It dived frequently in a conventional manner but was also seen to be able to submerge by apparently altering its buoyancy and sinking. It seemed to do this when disturbed rather than when feeding. On several occasions it surfaced holding unidentified material in its bill and once with a 2-3" roach which it swallowed. It did not seem to be particularly wary of humans and on one occasion KR was able to get to within 25 feet before it submerged as described above.

LITTLE GREBE *Tachybaptus ruficollis* (B,w)

- F Skinflats: max 3 on 29 Jan, last on 10 Feb (GO). Kinneil: max 3 on 11 Jan to 2 Mar & 3 on 19 Sep to 23 Dec (DMB AB AS DT). 2 prs with 3Y Falkirk (MA). 14 Drumbowie Res 8 Oct (NB).
C Pr Cambus Pools in Apr (WRB CJH). 17 Gartmorn Dam 20 Oct & 19 on 12 Nov (MC).
S At 7 sites in breeding season (DAC WRB PWS CJH DT). 9 L.Voil & 12 L.Dochart on 22 Sep (NB).

GREAT CRESTED GREBE *Podiceps cristatus* (b,W)

- 26 Forth Estuary in Nov (DMB).
F 100 Kinneil 25 Jan but few in autumn, 4 on 15 Jul & max 20 on 19 Sep & 23 on 1 Nov (AB DT DMB).
C 14 Gartmorn 3 Jan, 13 on 15 Mar (DAC MC).
S 3 Prs Carron Valley Res 17 May (WRB). 2 Lake of Menteith 11 Jan, 18 on 24 Mar (DAC). At 5 other sites in breeding season (PWS WRB CJH).

*FULMAR *Fulmarus glacialis* (p)

- F 1 Skinflats 5 Apr & 12 Sep (AB GO). 1 Kinneil 23 May, 4 on 1 Aug, max 6 on 15th, last on 19 Sep (DT).

GANNET *Sula bassana* (p)

- F 27 Juv ->W Skinflats 20 Sep, 1 on 4 Oct (GO DMB). 1 Juv Kinneil 4 Sep & 4 on 19th (left E) (AB DT).
S Flying W: 2 Juv Lecropt on 13 Sep & 9 on 14th (DT).

CORMORANT *Phalacrocorax carbo* (S,W)

WeBS max: 385 Forth Estuary in Jan & 153 in Sep (DMB). 125 inland in Nov (NB).

- F 172 Higgins Neuk 11 Jan (CJH). 51 Skinflats 6 Sep (MVB).
- C 115 S.Alloa roost 30 Jan & 155 on 20 Feb. 8 Gartmorn 1 Nov (AT).
- S 10 Airthrey 4 Mar (AT). 5 Kippen Muir Dam 4 Apr (DAC). 20 Lake of Menteith 25 Feb & 30 on 23 Sep. 20 L.Earn 27 Dec (NB). 11 Killin 2 Nov (PWS).

GREY HERON *Ardea cinerea* (B,W)

WeBS max: 26 Forth Estuary in Nov (DMB). 95 inland in Dec (NB).

- S 32 used nests Blairdrummond (Nyadd) 22 May (CJH). 22 Lecropt 18 Jan (MVB). 16 Lake of Menteith 25 Feb. 14 L.Earn 27 Dec (NB).

MUTE SWAN *Cygnus olor* (B,W)

WeBS max: 20 Forth Estuary in Nov (DMB). 242 inland in Oct (NB).

Colour ring sightings: Of 3 in a herd at Alva on 26 Oct (all ringed as cygnets): a Juv ringed Linlithgow on 16 Aug, also seen Cramond 29 Oct; Ad ringed Kirkliston, previously seen Hogganfield Loch on 2 Aug; Ad ringed Torness, last seen there on 19 Jan 97. Another bird, ringed as an adult at Cramond in 1992, spent 95-98 around Balloch

- F 12 Prs around Falkirk, 3 failed, rest reared 35 Juv (MA). 39 Forth/Clyde Canal 11 Mar, 29 Union Canal 6 Sep (NB JW).
- C 1 nest fledged 4 at Cambus. Pair bred Devon WBS. 20 Alva 14 May & 25 on 28 Dec (CJH). 38 Gartmorn 13 Feb & 22 on 7 Mar (MC DAC).
- S 6 sites, 7 Prs reared 22 Juv. Max 22 Lake of Menteith Jan to 28 Mar. 40 Kildean 7 Mar & 17 Lecropt on 23rd). (NB DAC AT CJH DJC).

WHOOPEE SWAN *Cygnus cygnus* (W)

WeBS max: 24 Forth Estuary in Nov (DMB). 101 inland in Mar (NB).

- F 24 Bonnybridge 20 Mar (AB), last, Ad Kinneil 26 Apr (GO). 1st of autumn 12 Skinflats 11 Oct & 52 on 1 Nov, then 33 Stenhousemuir 31 Oct; at Kinneil 11 flew W on 4 Nov & 18 on 7th (AA MVB GO AB DT).
- C 9 Gartmorn 3 Jan & 12 on 13 Feb (DAC MC). 13 Clackmannan 1 Nov & 30 Menstrie on 31 Dec (CJH BRT).
- S Widespread on highland lochs, also on Carse of Stirling - 53 on 22 Feb. Max L.Dochart 35 on 23 Mar, still 11 on 3 May & 1 stayed to 9 Jun (MVB NB PWS DAC). 13 L.Voil 26 Apr (DT). Autumn max 21 L.Dochart 23 Dec (NB).
On Carse of Stirling 1 might have summered on upper Forth (RC), otherwise 1st of autumn were 9 on upper Forth 30 Sep & 17 -> S Dunblane 13 Oct. Later counts low - 23 Drip Carse 20 Oct, 22 Blairdrummond Carse 6 Dec & 25 on 23rd (MVB DT per NB).
Counts of juvs in distinct herds gave: Spring 23% Juv. Autumn 18% Juv., rather similar to 1997.

PINK-FOOTED GOOSE *Anser brachyrhynchus* (W)

Considerable flocks reported throughout the lowland areas, in the absence of regular coordinated counts these are difficult to interpret. However, 2100 at Lecropt 20 Jan & 4000 Blairdrummond 21 Feb probably included the majority present since on the whole carse there were 4590 in 1 Mar & 3350 on the 15th. In April around Thornhill there were 3000 on 4th & 2200 on 18th.

In the east of the area there were 600 Slamannan 15 Feb & 440 Alloa Inch on 8th, the usual spring peak on the Inches was 1650 on 18 April, still 20 on 10 May and there were 300 Skinflats 24 Apr (AD DAC MVB DT DOE CJH DMB).

Very early autumn birds, like 1 Skinflats 3 September and 2 L.Macanrie on 13th, are suspected as having summered; the main arrival was later with birds heard

over Stirling and BoA on 22nd and Thornhill on 28th, 200 flying W at Kinneil on 26th & 350 at Skinflats on 30th. On 1st October 500 flew E at Doune when there were 600 at Buchlyvie, 800 there on 6th may be extra to 1600 at Thornhill since there were 2000 at Flanders Moss on the 7th; 3000 here on 25th was the maximum. 2245 Skinflats on 18th October were transient. Later flocks included 1000 Lecropt 28th November, 370 Thornhill Carse 9th December and 360 L.Watson on the 13th (DT CJH GO SS DAC DOE DMB TY).

BEAN GOOSE *Anser fabalis* (W)

F Around Slamannan 157 in Jan, 119 on 10 Nov & 100 on 26th (NB WRB).

*WHITE-FRONTED GOOSE *Anser albifrons* (w)

S 1 Slamannan 15 Feb (AD).

GREYLAG GOOSE *Anser anser* (b,W)

Substantial flocks were noted mainly on Drip carse with 400 on 28 February, 1250 15th Mar & 300 on 1st April. The max further north was 200 G.Dochart 21 March. 500 Fallin 16 February were unusual and might be the 600 at Clackmannan on 6 April (DR RC DAC HR PWS DOE JG).

The only possible breeding records were 4 at Earlsburn Res 17 May & 2 at Lake of Menteith on 30 July.

The 1st of autumn were 30 Killin 30 September. 1500 Drip Moss 20 October did not stay, since in November the only large counts were 250 L.Ellrig & 150 Larbert, plus, in the north, 140 Gart & L.Venachar and also 129 G.Dochart on 19 December. (PWS DT JN MA DOE NB)

CANADA GOOSE *Branta canadensis* (b W)

WeBS max: 60 inland in Mar (NB).

F Kinneil: 22 on 16 Aug left W, 15 ->S on 19 Sep; 14 on 21 Oct (MA DT).

C 12 Gartmorn 8 Sep (EH).

S 30 Blairdrummond Carse 21 Mar & 48 on 29 Aug (PWS DOE). 26 ->W Airthrey 7 Aug & 51 ->N Dunblane 20 Sep (MVB). In October: 45 Kildean 7th, 51 (with Greylags) Drip Carse 20th (biggest WEBS flock to date); 38 Lecropt on 8 Nov (D&B DT). 32 Gart 7 Sep & 23 on 25th. 8 L.Mahaick 13 Mar was return to breeding site. Pr Thornhill Pond from 17 Feb, 3Y on 24 May. Other spring pairs at L.Katrine, L.Ard, Lake of Menteith, Blackwater Marshes (1Y), G.Finglas (3Y), L.Dochart, Hutchinson Dam (NB DAC CJH DJC PWS WRB).

BARNACLE GOOSE *Branta leucopsis* (w)

F 5 Skinflats 30 Sep & 55 ->E on 3 Oct (GO DAC). 4 Slamannan 15 Feb & 2 on 26 Nov (AD WRB).

C Alloa Inches: 5 on 21 Mar & 7 on 18 Apr (DMB); 80 on 27 Sep flew SW, returned E (CJH DT).

S 1 Killin 4 Jan & 1 G.Dochart 21 Mar (PWS). 3 Blairdrummond 2 Jan, 1 Thornhill Carse 15 & 24 Feb (MVB DR), 2 Drip Carse 20 Oct & 1 Lecropt 28 Nov (DT). Birds often with grey geese flocks. 2 feral Cambuskenneth 12 Feb & 23 Sep (AT).

*BRENT GOOSE *Branta bernicla*

F 1 (dark bellied) Kinneil 16-29 Apr (GO AB AD).

SHELDUCK *Tadorna tadorna* (b,W)

F 36 Higgins Neuk 14 Mar (DSF). 245 Skinflats 5 Apr & 220 on pools 26 May (AB). Moulting flock at Kinneil totalled 4600 on 9 Aug; 1045 at Skinflats 6 Sep & 600 on 3 Oct (DMB MVB AB).

C 68 Tullibody Inch 30 Jan & 75 on 25 Aug (AT CJH). 2 pairs on Devon WBS 21 Apr to 16 Jun (CJH).

S 2 Cambuskenneth in Feb were highest up Forth (AT). 2 Blairlogie 18 Apr (DAC).

WIGEON *Anas penelope* (b,W)

WeBS max: 438 Forth Estuary in Jan (DMB). 1514 inland in Feb (NB).

- F Kinneil: max 350 on 4 Jan to 7 on 29 Apr; 25 on 11 Sep, 250 on 21 Oct & 285 on 26 Dec (DT AB GO). Skinflats: 19 on 30 Jan, last 3 on 24 Apr; 5 on 16 Jul, 25 on 3 Nov (BDA GO AB).
- C 548 Gartmorn 12 Feb (MC). 2 Pairs Cambus Pools 10 Apr, 3 (eclipse Ms) on 5 Jul (WRB CJH). 230 Alloa Inch 31 Jan (AT); 700 Tullibody Inch 26 Dec (DMB).
- S Gart Lochs (Cambusmore): 386 on 20 Jan, 2 on 24 Jun & 40 on 19 Aug, 290 on 18 Nov & 335 on 23 Dec (NB PWS DJC). No other large loch counts, more on the upper Forth between the Teith and Gargunnoch, max 294 on 22 Feb & 183 on 15 Nov (RC).

GADWALL *Anas strepera*

More sizeable parties (Ed).

- F 6 Skinflats 17 Feb, 2 on 1 Nov & 4 on 7th (AA MVB).
- C 2 Gartmorn 3 Jan to 7 Mar, max 6 on 2 Mar – followed Coot for weed scraps (DAC MC AT CJH). 7 (3M) Cambus Pools 4 Apr to 1M on 28th; M on 13 Nov (WRB CJH). 2 Tullibody Inch 12 Sep (DMB).

TEAL *Anas crecca* (B,W)

WeBS max: 1078 Forth Estuary in & 1179 in Nov (DMB). 962 inland in Dec (NB).

- F Kinneil: 310 on 27 Jan; 80 on 18 Oct, 755 on 1 Nov, 260 on 6 Dec & 300 on 13th. Skinflats: 343 on 11 Jan, 70 on 9 Apr, Pr on 3 May & 2 Jun, 4 on 4 Jul to 31 on 25 Aug. 280 Kennetpans 1 Nov (CJH DT DMB MVB GO).
- C Few on Inches, 46 Gartmorn Dam 14 Jan; 123 on 31 Dec (MC EH). 74 on Devon, Alva-Dollar, 6/9 Dec (GEL DJ). 127 Kersipow 28 Dec (NB). F+brood Blackdevenmouth Marshes 23 Jul (CJH) (1st proved for lowland Clacks).
- S max of 102 L.Laggan 28 Jan, 78 Hutchison Dam 28 Nov (NB WRB). 115 on upper Forth between the Teith and Gargunnoch 13 Dec (RC). Pr+3M Blackwater Marshes 13 Jun (CJH). Possibly bred Ashfield ponds (WRB).

MALLARD *Anas platyrhynchos* (B,W)

WeBS max: 619 Forth Estuary in Feb (DMB). 2670 inland in Dec (NB).

- F 175 Skinflats 15 Aug. 100 Kinneil 25 Jan; 106 on 21 Jun & 200 on 6 Dec (DT AB). 6 broods Larbert had 45Y (MA).
- C 18 AoT on Devon WBS, 22 in 1997 (CJH). 207 Gartmorn 26 Jan, 113 on Nov (AT EH).
- S 306 Airthrey 19 Jan & 393 on 7 Nov, 1st brood 2 Apr, 11 broods had 51Y (AT MK). 266 L.Watson 7 Sep (CJH). 291 on upper Forth between the Teith and Gargunnoch 6 Sep (RC). 243 on Forth, Forthbank-Teith 6 Dec (AT D&B). 282 Blairdrummond Safari Pond 23 Dec. About 1900 released at shooting sites around Dunblane. 2 pairs per sq Km Doune CBC (NB).

PINTAIL *Anas acuta* (W)

- F Skinflats: max 51 on 29 Jan, 47 on 14 Feb, 37 on 1 Mar, last 2 on 30 Apr; 5 on 6 Sep, 71 on 5 Dec. Kinneil: 24 on 24 Feb, last 2 on 16 Apr; 1st autumn on 12 Sep, max 20 on 12 & 17 Oct (GO AB MVB DT).
- C 1 Gartmorn 14 Jan & 31 Dec (MC DE). Pr Cambus 10 Apr & 1 on 30 Aug (WRB).
- S 1 Drip Carse 22 Feb (RC).

Area Summary

Jan	Feb	Mar	Apr	-	Aug	Sep	Oct	Nov	Dec
56	72	45	7		1	9	35	-	71

SHOVELER *Anas clypeata* (p)

- F 2 Prs Skinflats 10 & 12 Mar; 4 on 6 Sep (GO AB DMB). Kinneil: Pr 20 Mar & 27 Apr, M on 9 May; 3 on 25 Jul & 15 on 28th, last on 1 Nov (GO AB DT MA DAC JG DMB).

- C 2 Gartmorn 15 Mar (MC). 2 Cambus Pools 4 Apr & 2 Pr on 11th; 3 on 30 Aug (WRB CJH).
- POCHARD *Aythya ferina* (W)
WeBS max: 230 inland in Jan (NB).
- F 7 Kinneil 21 Oct (DT).
- C 55 Gartmorn 26 Jan (AT).
- S 35 Lake of Menteith & 26 L.Venachar 28 Jan, 20 N.Third Res on 17th. 18 L.Rusky 24 Mar; 34 L.Achray 19 Nov, 33 L.Ard 21 Dec (NB BO DAC).
- TUFTED DUCK *Aythya fuligula* (B,W)
WeBS max: 544 inland in Mar (NB).
- F 28 Black Loch & 25 L.Denny Res 1 Jul, 75 Black Loch on 7 Sep (NB). Several around Grangemouth May-June (GO AB).
- C 5 AoT on Devon WBS (CJH). 14 Cambus Pools 28 Apr (WRB). 232 Gartmorn 13 Feb & 100 on 11 Oct & 31 Dec (MC EH DE).
- S 34 Cambusmore 31 Jul (PWS). Winter counts low, max 52 Blairdrummond 26 Jan, 56 Lake of Menteith 28 Jan & 64 on 31 Dec (NB).
- SCAUP *Aythya marila* (w)
F Kinneil: max 3 on 23-30 May, 6 on 12 Sep. 1 Skinflats 30 May & 10 Jun, 1 on 26 Dec (DT GO).
- EIDER *Somateria mollissima* (w)
F 5 Carriden & 2 Bo'ness 15 Feb. Kinneil: 13 Mar to 9 May, max 8(6M) 25 Mar; 5(3M) on 7 Nov. M Skinflats 29/30 Apr; 3 Grangemouth 5 Dec (DMB GO DT MVB).
- *LONGTAILED DUCK *Clangula hyemalis*
F 1 F/Imm Little Denny Res 14 Dec (NB).
- GOLDENEYE *Bucephala clangula* (W)
WeBS max: 94 Forth Estuary in Feb (DMB). 454 inland in Mar (NB).
- F 43 Higgins Neuk 1 Feb (DSF). 15 Carronshore 8 Feb. 20 Skinflats 17 Mar, Pr 15 Jun & F summered; 36 on 7 Nov. 16 Kinneil 30 Jan, 11 on 7 Dec (AB GO AA DT CJH MA). 29 Black Loch 10 Feb & 16 on 10 Dec (NB).
- C 62 Gartmorn 13 Feb & 38 on 31 Dec (MC DE). 32 Kennetpans 13 Feb (CJH). 15 Cambus 1 Mar & M on 30 May (DMB DAC).
- S 60 on Forth at Stirling 23 Jan; 49 on 6 Dec (AT). 13 Carronbridge 23 Jan (MA). 66 Lake of Menteith on 28 Jan, 90 on 24 Mar; 57 on 22 Nov. 44 L.Achray/Venachar 23 Mar & 27 L.Ard, on 24th. 30 L.Dochart/Iubhair 24 Feb; 37 on 19 Dec (NB). One May report: F L.Dochart on 3rd (DAC).
- 33% M (n=128) in Feb/March.
- *SMEW *Mergus albellus* (w)
S L.Dochart/Iubhair: M on 24 Jan (displayed with M Goldeneye) & 1 Feb. M on 19 Dec (NB DT).
- RED-BREASTED MERGANSER *Mergus serrator* (B,W)
54 Forth Estuary in Feb (DMB).
- F 26 Skinflats 15 Feb. 21 Kinneil 31 Mar & 9 May (MVB AS GO). 25 Higgins Neuk 19 Dec (DSF).
- S In spring at L Arklet, L.Katrine. M on upper Forth at Arnprior 15 Nov (DOE DA). 2 Killin 22 Sep – late inland (PWS).
- GOOSANDER *Mergus merganser* (B,W)
WeBS max: 183 inland in Jan & Dec (NB).
- F 14 L.Ellrig 15 Feb (JN). 13F Skinflats 17 Sep. R.Carron: 14 (8M) at Bonny Water & 6 (4M) at Larbert on 6 Dec (MA).
- C 6 Cambus 4 Apr (WRB). 13 (3M) on Devon at Dollar 9 Dec (DE).
- S 11 Airthrey 19 Jan (AT). 19 Ashfield 15 Sep (AW). On Teith up to Doune: 48 on

20 Jan, 16 on 14 Nov (ZC); 18 below Callendar on 19 Mar (DJC). 29 on Forth, A91 to Teith, 6 Dec, 1st ad Ms of autumn 7 Nov (AT D&B). Total on the upper Forth, Arnprior-Gargunnock, 24 on 6 Dec (DAC DR SE).

In spring/summer noted in Trossachs at 5 sites Doune-L.Arklet, also Pass of Leny & L.Voil (DOE JW HR).

*RUDDY DUCK *Oxyura jamaicensis* (b)

C M Lake of Menteith 30 Apr (DAC).

RED KITE *Milvus milvus*

The RSPB/Scottish Natural Heritage re-establishment scheme continues with twenty more hand-reared birds being released this year, making a total of 57 since 1996. However, the special news is that two pairs nested and reared 5 young, these were wing tagged and one was seen at a roost in the English Midlands in November. The male of one of the breeding pairs had fledged in 1996 in Easter Ross whilst older released birds from our area were seen in winter of 97/98 in Galloway, Cork, Donegal, and Gloucester. The breeding birds and the majority of their young and of released birds winter locally and attend a communal roost. (From report by L O'Toole. Please try to note wing tag colours on any bird you may see, Ed).

Many records from Dunblane to Callendar, also 1 Aberfoyle 13 Apr & Lecropt 22 Oct to 5 Dec with 4 on 24 Nov (DT).

MARSH HARRIER *Circus aeruginosus*.

C Ad F Tullibody Inch 12 Sep (DMB).

HEN HARRIER *Circus cyaneus* (b, w)

One coastal record. 18 males and 14 Ringtails noted, omitting repeated records.

C 1 Blackdevonmouth 31 Aug (CJH).

S Many singles on Carse of Stirling 5 Jan to 8 Mar and 8 Aug to 29 Dec. Also on surrounding hill ground but only 1 record Apr-Jul, M Braes of Doune 28 Jun (DR DI SS RC WRB DJC DAC DOE NB BO SH CJH DT).

GOSHAWK *Accipiter gentilis*

Pair bred in area (per DOE).

S 1 L.Voil 26 Apr. 1 Lecropt 8 Nov (DT).

SPARROWHAWK *Accipiter nisus* (B,W)

Many records throughout area, including gardens at Bo'ness and Buchlyvie. Few noted in midsummer when it is presumably secretive. Breeding records from Skinflats, Doune CBC (GO AB DAC AS JW DJC PM MA NB et al).

BUZZARD *Buteo buteo* (B,W)

As breeding bird: widespread & increasing S, scarce C, no proof F

F 3 Torwood 29 Mar (AB). 1 Slamannan 7 Sep. Around Falkirk mainly Feb/Mar & Aug to Dec, max 3 Muiravonside Park 5 Aug; 2 Carron Glen 25 Apr, 1 Bo'ness 27 Jul, 1 Lathallan from 26 Jun (MA NB AS GO JW).

C 4 Tillicoultry 24 Jan. 1 Gartmorn 3 Jan & 2 on 7 Mar. 1 Clackmannan 5 Jan & 2 on 13 Sep. 2 AoT Devon WBS. (DAC JW CJH).

S In main breeding range to W & N, largest group was 6 Braes of Doune 1 Feb & 8 Mar; 4 pairs in 4 km (DJC DOE CJM DAC). 8 BoA 29 Aug (CJH). 7 Dumyat 25 Oct (DMB).

GOLDEN EAGLE *Aquila chrysaetos* (b,w)

S 8 territories checked, 6 occupied by pairs & 2 by singles. 4 successful reared 4Y (PSA). No records outwith highlands.

OSPREY *Pandion haliaetus*

F 1 Carron Dams 2 Apr, mobbed by gulls (MA).

S 1st seen 2 Apr, last 27 Aug (an injured bird, ringed on Tayside). Six pairs held territories of which 4 reared 8 young, in spite of prolonged summer rain (RSPB).

1 L.Dochart 29 Apr & 19/30 Jun. 2 Killin 8 Aug (PWS). 1 -> SW Kinbuck 2 Aug (DT).

KESTREL *Falco tinnunculus* (B,W)

Difficult to make significant observations, hence greatly underrecorded.

F Through year at Skinflats (GO).

C 2 AoT Devon WBS (CJH).

S 3 Prs Earlsburn 17 May (DOE). 9 Gleann a'Chroin 10 Aug (2 families) & 12 on 11 Sep; on 26 Aug a F was dropping prey for 3 juv, apparently hunt training (DJC).

MERLIN *Falco columbarius* (b?,w)

F 1 Skinflats 9 Sep (AB). 1 Kinneil 6 Sep & 21 Oct (DMB DT). 1 Higgins Neuk 6 Sep & 23 Oct (MVB DSF).

S 1 Doune 9 Jan (RHD). 1 L.Katrine 18 Feb (NB). 1 Cambusmore 26 Jan & 1 found dead 10 Apr. 1 in Callendar 5 May, 1 Stuc a'Chroin 7 Jul & a pair Gleann an Dubh Choirean 10 Aug (DJC). 1 Kippen 11 Nov (TY).

PEREGRINE *Falco peregrinus* (B,W)

F 4 coastal records Aug & Nov (DT).

C 2 territories checked, 2 pairs were successful rearing 4Y (PSA).

S 20 territories checked, 13 pairs & 1 single. 10 successful pairs reared at least 20 Y (PSA). The Aberfoyle pair raised 3y in public view on CCTV. On low ground Jan-Apr & Aug-Dec. 1 over Stirling 16 Jun. 1 with Blackbird prey at Brig o' Turk 23 Mar & 1 chased a Feral Pigeon into a Thornhill garage on 9 May. (DOE DR DAC DT DJC SS).

RED GROUSE *Lagopus lagopus* (B,W)

Generally under-recorded

S Max G.Finglas 12 on 28 Aug (also 6 noted dead by deer fence). 3 sites Sheriffmuir, max 13 on 13 Jan. 11 Touch Res. Jan & Dec. 20 Cringate Muir 29 Mar & 100 on 27th. Heard Flanders Moss 11 Dec. (DJC AD AT DOE DT SS).

*PTARMIGAN *Lagopus mutus* (b,w)

S 3 Ben Heasgarnich 4 May. Pr Ben Each 13 May. On Stuc a Chroin Jan, Sep, max 5 on 2 Dec (WRB MA DJC).

BLACK GROUSE *Tetrao tetrix* (B,W)

S Eight lek sites totalling 63 birds in Trossachs. 6 L.Voil 10 Dec. 22 (1F) Braeleny 20 Nov. 14 Braes of Doune (Cromlix) 11 Apr. 2M Carron Bridge 1 May. 6 found dead by G.Finglas deerfence. (DOE DJC DAC WRB).

CAPERCAILLIE *Tetrao urogallus*

S At two sites in L.Ard Forest, 2M on 2 Apr & 1M on 14 & 21st. F Menteith Hills 2 Apr (DOE). F (fence strike) G.Finglas 18 May (DJC). *Unusually open habitat, Ed.*

GREY PARTRIDGE *Perdix perdix* (B,W)

F 20 Kinneil 4 Jan & 14 on 13th (DT GO). 7 Grangemouth 4 Jan (JW).

C 2 AoT on Devon WBS. 9 Blackdevonmouth Marshes in Nov (CJH).

S 25 Forthbank 27 Jan (AT). 1 in Stirling garden 13 Jul (RJ).

*QUAIL *Coturnix coturnix* (b)

F 1 called Skinflats 30 Apr (DT).

PHEASANT *Phasianus colchicus* (B,W)

Abundant (usually by releases) on fields next to kept estates.

C Probably only 3 AoT on Devon WBS (approx. 1 km sq) (CJH).

S 10 AoT per km sq on Doune CBC, 14 in 1997 (NB).

WATER RAIL *Rallus aquaticus* (w)

F 1 Kinneil 13 Jan. Skinflats: From 27 Jan to 23 May, max 3 on 25 Mar (GO AB DT).

C Cambus Pools: From 4 Apr to 30 Aug, max 4 on 19 Jul (WRB). 1 Blackdevonmouth Marshes 13 Sep (CJH).

- S 2 Hutchison Dam 31 Jan & 28 Sep (WRB).
 *CORNCRAKE *Crex crex*
 F 1 calling Skinflats 15 & 16 Jun (GO BDA).
- MOORHEN *Gallinula chloropus* (B,W)
 WeBS max: 247 inland in Nov (NB).
 F 14 Skinflats 20 Jan. (GO). 3 Prs reared 16 Y on Forth/Clyde Canal (MA). Max on Union Canal 72 in 4 km 8 Nov (JW). 22 Callendar Park 6 Nov (AA).
 C Max 12 Cambus Pools in Jul-Aug (CJH WRB). 3 AoT on Devon WBS, as 1997 (CJH); 11 above Alva 30 Aug (GEL).
 S Airthrey: 21 on 19 Jan, 22 on 25 Oct. 10 Cambuskenneth 23 Jan & 11 on 7 Nov (AT). At Killin marshes from 24 Mar, 2Y seen 23 May (PWS).
- COOT *Fulica atra* (B,W)
 WeBS max: 247 inland in Nov (NB).
 F 23 Callendar Park 16 Feb (AA). 2 Prs Skinflats 25 Mar (GO). 3 Prs reared 8Y West Mains Pond (MA).
 C 2 Prs Cambus Pools 10 Apr (WRB). 567 Gartmorn Dam 26 Jan, much ice (AT).
 S Airthrey: 50 on 1 Feb, 31 on 25 Oct; 4 Prs with 12 Y 24 May (AT). 14 L.Watson 19 Jan & 13 Dec (CJH). 313 Lake of Menteith 29 Dec. 54 Gart 20 Jan & 63 on 25 Nov (NB DJC). Bred Ashfield, Thornhill, Cocksburn Res.
- OYSTERCATCHER *Haematopus ostralegus* (B,W)
 Spring return inland in February: Airthrey 2nd, Ashfield 4th, Doune 6th, Kippen Muir Dam 15th; also 150 Craigforth 8th (DMB WRB DOE DAC CJH).
 F 100 Kinneil 15 Aug (DT). 72 Higgins Neuk 13 Feb (DSF).
 C 7 AoT Devon WBS, 9 in 1997 (CJH).
 S 104 Gart 25 Feb & 165 Thornhill Carse on 28th (NB DR). In March: 200 Cambusmore GP on 24th, 600 Blairdrummond 21st; 300 Craigforth 22nd, 140 Ashfield (PWS DT WRB). 1 Gart 19 Dec (DOE).
 Breeding pairs: 5 Braes Doune (Severie), 13 per sq km Doune CBC (DOE NB). 5 in a young plantation Thornhill on 8 May (DJC).
- RINGED PLOVER *Charadrius hiaticula* (b,W)
 F 12 Skinflats 27 May. 29 Kinneil 6 Mar, 20 on 27 Jul & 33 on 5 Dec (GO MA DMB).
 S 3 Cambusmore 23 Mar (NB). 2 Carron Valley Res 15 Mar (WME). 2 Lower Earlsburn Res 29 Mar (DT). 2 Kinbuck 15 Mar, 3 Barbush GP 4 Apr & Pr on 18th (WME WRB).
- GOLDEN PLOVER *Pluvialis apricaria* (B,W)
 The small number of likely breeding records may indicate a reduction in range compared with twenty years ago. Inland passage noted in spring. Numbers high by estuary in late autumn.
 F 85 Larbert 20 Mar. Skinflats: 48 on 24 March; 1st of autumn 4 on 14 Jul, 32 on 11 Aug, 75 on 5 Sep, 580 on 1 Nov (MA GO AB MVB). 400 Kincardine Bridge 10 Oct (JG). 233 Bo'ness 4 Sep & 250 Blackness 23 Oct. 110 Kinneil 6 Dec (AS DT).
 S 25 Thornhill Carse 7 Feb & 80 (in BP) on 15 Apr (DAC). 20 Drip Carse 22 Feb, 185 on 1 Mar & 105 on 1 Nov (RC MVB). 50 L.Tay 6 Mar (PWS). Pr Ben Heagsarnich 4 May, 2 Stuc a'Chroin 7 Jul (WRB DJC).
- GREY PLOVER *Pluvialis squatarola* (W)
 F Few on estuary this year. Skinflats: 13 on 31 Jan; 1st of autumn 4 on 10 Aug, max 21 on 10 Oct, 9 on 5 Dec (DMB GO AB MVB).
- LAPWING *Vanellus vanellus* (B,W)
 5362 on Forth Estuary in Sep (DMB).
 F 233 Bo'ness 4 Sep (AS). Skinflats: 292 on 12 Jan; 90 on 7 Jul to 250 on 25th & 1840 on 6 Sep. Kinneil: 800 on 15 Feb; 150 on 1 Aug, 500 on 19 Sep, 605 on 26 Dec. 850 Kincardine Bridge 8 Oct. 331 Higgins Neuk 11 Jan & 452 on 19 Dec. 600

- Dunmore 18 Oct (GO DT MVB MA AB JG CJH DSF).
- C 214 Alva 11 Mar (GEL).16 AoT Devon WBS (CJH). 200 Cambus 15 Jul & 250 on 6 Sep; 740 Tullibody Inch 27 Aug, 2480 on 12 Sep & 1500 on 27 Oct (CJH WRB DMB DT).
- S Spring return to Ashfield 30 Jan (4 Pr nested 1Y reared), L.Venachar 10 Feb. Nested in young plantations at Kinbuck & Thornhill (4Prs). (WRB DJC). 8 pairs/sq Km Doune CBC, 7 in 1997 (NB). 35 AoT Braes of Doune (Severie) 28 Mar (DOE). 3 AoT Killin on 16 Jul (PWS).
- KNOT *Calidris canutus* (W)
- F Kinneil: 3000 on 4 Jan, 5500 on 11th & 4300 on 27th; 1 on 21 Jul, 80 on 11 Sep, 3800 on 5 Dec & 4000 on 19th. 5 Skinflats 11 Aug & 50 on 26th. (DT DMB CJH GO DT AB). 2 Higgins Neuk 1 Feb (DSF).
- C 1 Tullibody Inch 12 Sep (DMB).
- *SANDERLING *Calidris alba* (p)
- F 7 Kinneil 8 Aug & 1 Skinflats on 14 Aug (DT GO).
- LITTLE STINT *Calidris minuta* (p)
- F 2 Skinflats 6 Sep & 1 on 8th. 3 Ad Kinneil 25 Jul, Juvs from 6 Sep to 1 Oct, max 6 on 26 & 29 Sep (AB MVB DT DMB GO). 1 (probably 1st winter) Kinneil 5 Dec; seen with Dunlin, distinctive features described. Apparently 2nd winter record for Scotland (DMB).
- CURLEW SANDPIPER *Calidris ferruginea* (p)
- F 1st Kinneil 1 (adult) on 28 Jul, then Juvs from 6 Sep to 18 Oct, max 8 on 14 Sep & 4 on 23rd (GO DT MA DMB).
- Area Summary (half monthly)
- | Jul | Aug | Sep | Oct |
|-----|-----|-----|-----|
| 0 1 | 0 0 | 8 4 | 3 1 |
- DUNLIN *Calidris alpina* (b?,W)
- 7973 Forth Estuary in Jan (DMB).
- F Kinneil: 6000 on 11 Jan & 3000 on 15 Feb; 100 on 10 Aug & 1000 on 23 Dec. Skinflats: 1960 on 11 Jan, 300 on 27 Apr, mainly BP; 1st of autumn 7 on 9 Jul, 2475 on 5 Dec (DMB DT JG MVB AB GO). 560 Higgins Neuk 11 Jan & 450 on 20 Oct (DSF).
- S 2 Prs Earlsburn Res 17 May (DOE).
- RUFF *Philomachus pugnax* (p)
- F 1st Skinflats 6 Aug, max 4 on 11th & 14th, last 1 on 28 Nov. Kinneil: 4 on 1 Aug, max 5 on 11 Nov (GO DT AB JG MA DAC BDA).
- C 2 Blackdevonmouth Marshes 4 to 23 Sep (CJH WRB).
- Area Summary (half monthly)
- | Aug | Sep | Oct | Nov |
|-----|-----|-----|-----|
| 8 4 | 7 3 | 1 0 | 5 1 |
- JACK SNIBE *Lymnocyptes minimus* (w)
- F 2 Higgin's Neuk 1 Feb. 3 Kinneil 20 Jan, 2 on 18 Oct & 28 Nov, 4 on 6 Dec. 1 Skinflats 29 Nov. (BDA GO DT AB).
- C 1 by Devon at Alva 11 Oct & 4 on 6 Dec (GEL). 3 Blackdevonmouth Marshes 15 Nov & 1 on 13 Dec (CJH).
- S 1 Hutchison Moor 11 Apr (WRB).
- SNIBE *Gallinago gallinago* (B,W)
- Probably under-recorded in breeding season but may have decreased (Ed).
- F Kinneil 8 on 20 Jan; from 8 Aug, 19 on 6 Sep, max 20 on 6 Dec .1st Skinflats 11 Aug & max 15 on 9 Sep & 14 on 29 Nov. (GO DT DMB AB). Max Camelon (R.Carron) 18 on 2 Jan, 19 on 6 Sep & 21 on 8 Nov (MA).
- C 28 Gartmorn Dam 15 Mar (MC). Blackdevonmouth Marshes from 23 Jul, max 82

on 21 Aug & 29 on 15 Nov (CJH).

- S R.Forth: 17 Kippen 1 Feb & 17 Stirling 8 Mar (TY AT). Drumming in Apr-May at Glen Dubh (L.Ard), Kippen Muir, Glen Finglas, Cromlix Moor, Severie (17 on 29 Mar) (DAC WRB DOE). Autumn numbers not above 10.

WOODCOCK *Scolopax rusticola* (B,W)

Under-recorded (Ed).

- S/F Winter records at: L.Katrine, Braeval, Thornhill, Daldorn, Torrie, Plean, Larbert. 3 Brig o'Turk 19 May (DAC DT SS BDA DJC).

BLACK-TAILED GODWIT *Limosa limosa* (W)

- F Kinneil was the major site with Skinflats being significant August to October, site max was 154 Kinneil 1 Nov (GO DT DMB et al). After very few from May to early August, numbers built up to an autumn plateau of over 100 by early September. The apparent passage in late April is probably due to double counting of birds commuting from Kinneil to Skinflats.

Area Summary (half monthly)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Knnl	53 58	57 50	61 54	23 21	9 2		4 11	51 58	106 109	113 130	154	55 104
Skn	2		1	36 10	7	6 3	5 6	25 18	26 50	64 37		64
Area	53 60	57 50	62 64	23 57	19 19	6 3	9 17	76 76	132 159	177 167	154	119 104

BAR-TAILED GODWIT *Limosa lapponica* (W)

254 Forth Estuary in Jan (DMB).

- F Kinneil: 250 on 11 Jan, 270 on 3 Feb, last 1 on 30 May; 45 on 18 Oct, 150 on 23 Dec (DMB AB MA DT). 1st of autumn 1 Skinflats 10 Aug (GO).

- C 4 Kennetpans 11 Jan (CJH).

WHIMBREL *Numenius phaeopus* (p)

- F In spring from 21 Apr to 1 Jun, max 7 Skinflats 29 & 30 Apr. 2 on 13 Jun. 1st of autumn, 1 on 30 Jun, last 30 Sep (GO DT DMB AB MA BDA).

- C 11 Cambus 28 Apr (WRB).

- S 1 Lake of Menteith 13 May (RAB).

Area Summary (half monthly)

Apr	May	Jun	Jul	Aug	Sep
0 20	6 2	2 1	3 2	0 0	1 1

CURLEW *Numenius arquata* (B,W)

The March return is clear in inland records, and early return to estuary. Also contrast in breeding populations E & W of Callander (Ed).

873 on Forth estuary in Feb & 903 in Nov (DMB).

- F 164 Higgins Neuk 1 Feb. 504 Skinflats 15 Feb, still 38 on 26 May; 300 on 3 Oct. Kinneil: 230 on 5 Jul, 125 on 12 Oct. (DSF MVB GO AB DT). 105 Blackness 28 Jan, 65 Bo'ness 10-22 Jan (AS). Inland in winter: 155 Muiravonside 5 Jan & 72 Polmont 8 Feb (MA JW).

- C 3 AoT Devon WBS. 186 Kennetpans 8 Jan; 120 Tullibody Inch 27 Aug & 220 on 29 Dec, 215 on flooded stubble Clackmannan 1 Nov (CJH DMB).

- S 12 Buchlyvie Muir 24 Feb, 1 Benvane on 25th & 77 Gart on 28th (DAC DJC). 20 Killin 20 Mar (PWS). 43 L.Mahaick 13 Mar (NB). 15 AoT Cringate Muir 27 Mar, 20 AoT Severie on 29th & 10 Earlsburn on 17 May (DOE). 2 AoT on Doune CBC (NB). 3 pr Glen Finglas 22 Jun (DJC). 1 L.Venachar 27 Dec (NB).

SPOTTED REDSHANK *Tringa erythropus* (p)

- F 1 Skinflats 25 Mar to 3 May; 1 on 6 Sep & 2 on 8th. Kinneil: 1 from 2 Jan to 3 May; 1 from 6 Sep to 25 Dec (GO AB DMB DT DBA).

Area Total (half monthly)

Jan	Feb	Mar	Apr	May	-	Sep	Oct	Nov	Dec
1 1	1 1	1 2	2 2	1 1		3 2	0 0	1 1	1 1

REDSHANK *Tringa totanus* (B,W)

- F Skinflats: 775 on 11 Jan; 130 on 23 Jul, 250 on 8 Aug, 820 on 6 Sep. Kinneil: 1080 on 11 Jan; 150 on 15 Jul, 800 on 10 Aug, (MVB DT AB DMB JG). 55 Higgins Neuk 19 Dec (DSF).
- C 4 AoT Devon WBS (CJH).
- S Return to Forth (Thornhill Carse) 28 Feb, R.Devon (11) on 26 Mar, Gart on 23rd, L.Venachar & Killin 24th (DR NB PWS). 2 Pr Kippen Muir 17 Apr (DAC). 2 Prs Ashfield 19 Apr (WRB). 6 Prs Severie 21 Apr (DOE).

GREENSHANK *Tringa nebularia* (p)

- F 1 Skinflats 23 Apr to 30 May, 2 on 1 Jun & 1 on 30th; from 23 Jul to 11 Sep, max 6 on 15 & 26 Aug. Kinneil: 2 on May 30; from 15 Jul to 19 Sep, max 2, (AB GO DT BDA DAC AS).
- C Blackdevonmouth Marshes from 21 Aug to 19 Sep, max 8 on 6 Sep. 1 Kennetpans 6 Sep & 3 Tullibody Inch on 12th (CJH WRB DMB). 1 on Devon (Dollar) 7 Sep (DE).
- S 2 Thornhill 2 Sep (SS)

Area Summary (half monthly)

Apr	May	Jun	Jul	Aug	Sep
0 1	1 3	2 1	1 4	8 16	19 2

GREEN SANDPIPER *Tringa ochropus* (p)

Unusual number of wintering records

- F 2 Grangemouth (R.Avon) 1 Jan & 1 there to 11th; 1 nearby 25 Nov. 1 Polmont 3 Jan to 1 Mar (2), also 1 on 31 Dec. 2 Kinneil 31 Jul; 1 Skinflats 10 Oct & 2 on 31st, 1 on 5 Dec (JW AD MA GO BDA MVB).
- C 3 Blackdevonmouth Marshes 21 Aug & 1 Cambus on 24th (CJH).

WOOD SANDPIPER *Tringa glareola*

- F 1 Kinneil 11 Sep & 12, 18 & 21 Oct (DT).

COMMON SANDPIPER *Tringa hypoleucos* (B)

- Spring return in April: Kinbuck 19th, Doune 23rd, Killin (4) & L.Arklet 25th, Kinneil 26th, Glen Finglas 30th (WRB PWS DOE).
- F Kinneil & Skinflats: mainly 30 June to 15 Aug, max 6 on 29 Jul & late birds on 11 & 12 Sep (GO DT).
- C 3 AoT on Devon WBS (6 in 1997). 9 Cambus, in noisy flock, 8 Aug(CJH).
- S 2 AoT Doune CBC (NB). Summer AoTs: L.Iubhair, Earlsburn (4), L.Arklet (3), Blackwater Marshes (2), L.Venachar (3) (DAC DOE CJH DJC)

Estuary autumn totals :

Jul	Aug	Sep
9 9	14 3	2 0

TURNSTONE *Arenaria interpres* (W)

- F max 7 Kinneil 8 Aug (DT).

*ARCTIC SKUA *Stercorarius parasiticus* (p)

- F 1 Blackness 23 Oct (DT). A remarkably poor autumn, Ed

*GREAT SKUA *Stercorarius skua* (p)

- F 1 Bo'ness 19 May, mobbed by gulls (AS).

LITTLE GULL *Larus minutus* (p).

- F Skinflats: (mainly 1st summer birds) from 16 May to 16 Jun, max 5 on 21 & 24 May. 5 on 23 July. 1 Kinneil 5 Jul (DMB AB GO MA BDA DT).

BLACK-HEADED GULL *Larus ridibundus* (B,W)

- F 250 Skinflats (with 1st juv) 26 Jun, 770 on 9 Dec (AB AA). 206 Higgins Neuk 6 Sep (DSF).
- S 45 pairs at Ashfield colony in May (WRB). 50 at Thornhill colony 27 Apr (DOE DAC). 468 Alva 26 Oct (NB). 120 flycatching BoA 29 Aug. 1500 on new plough Drip Carse 21 Sep (CJH).

COMMON GULL *Larus canus* (B,W)

- F 565 (on flooded pasture) Slamannan 10 Jan; 304 on 5 Oct(NB).
 S 500 Cambusmore GP 24 Feb & 19 Aug (PWS). 20 Prs Kenknock, 10 Prs L.Arklet,
 15 L.Tinker (WRB DOE).

LESSER BLACK-BACKED GULL *Larus fuscus* (b,S)0

- Few mid-winter records, as usual; increasing nest attempts on roofs ; more stayed late into autumn.
 F 1 Kinneil 11 Jan (DMB). 3 Skinflats 9 Jan,11 on 20 Dec (GO). 1 Gartmorn 21 Feb (CJH-maybe spring return). Nested on roofs at Carronshore,10 Juv on 15 Jul (AB), also cairns at mouth of Carron, 3 Prs 13 Jun (DMB).
 C 120 AoT on Menstrie bond roofs 16 Apr, 5 young seen 9 Jul (CJH).
 S 1 Stirling 24 Jan, 1 Feb & 6 Dec (DMB DT AT). 123 (53 Juv) Cambusmore GP 17 Aug (DJC).

HERRING GULL *Larus argentatus* (b?,S,W)

- F 5200 Kinneil 19 Jan (CJH). 10 dead or dying (? poisoned) on 23 Sep (DT).
 C 12 AoT Menstrie bond roofs 9 Jul. 600 Alloa tip 5 Dec &1500 Tullibody on 16th (CJH KW).
 S 5800 on Fallin tip 14 Jan & 3000 on 18 Dec (CJH).

ICELAND GULL *Larus glaucoides*

- F 1 Ad Kinneil 19 Apr (M Kenefick).

GLAUCOUS GULL *Larus hyperboreus*

- F 1 (2nd or 3rd winter) Kinneil 4 Jan (DT).

GREAT BLACK-BACKED GULL *Larus marinus* (S,W)

- Highly under-reported (Ed).
 F 32 Skinflats 10 Oct (JG).
 S 3 Ad L.Coulter 7 Jan (NB). 2 Pendreich 25 Jul, around brood Oystercatchers (AT).

KITTIWAKE *Rissa tridactyla* (P,w)

- F 60 Ad Skinflats (estuary) 12 May. 18 Kinneil 23 May, 2 on 8 Aug (DT).

SANDWICH TERN *Sterna sandvicensis* (P)

- F 15 Skinflats 27 Jul (flew W, high) & 25 Aug (GO).

COMMON TERN *Sterna hirundo* (B)

- F 1st, 2 Skinflats 3 May, 43 on 4 Jul & 60 on 20th (GO AB CJH). 102 pairs Grangemouth Docks 13 Jun but only 10Y likely to have fledged (DMB).

*BLACK TERN *Chlidonias niger*

- F 1 Ad Skinflats 10 Jun (GO).

*GUILLEMOT *Uria aalge* (W)

- F Singles at Kinneil 25 Jan, R.Carron at Skinflats 31 Jan, Higgins Neuk 1 Feb, Kinneil 25 Apr (AB DAC DSF GO).

RAZORBILL *Alca torda*

- F 2 Kinneil 25 Jan & 1 on 15 Feb (AB GO).

FERAL PIGEON *Columba livia*

- F 500 Skinflats 15 Aug (DT). 150 Kinneil 19 Dec (CJH).

STOCK DOVE *Columba oenas* (B,W)

- Widespread in small numbers, surely much overlooked though BBS records only in farmland
 F 62 Kinneil 6 Mar & 40 on 8th (GO DT). 16 Larbert 4 Feb & 24 on 24th (MA). 20 Polmont 8 Feb (JW).
 C Probably 2 AoT on Devon WBS (CJH).
 S 68 Lanrick 11 Apr (DOE).

WOODPIGEON *Columba palumbus* (B,W)

Greatly underreported. BBS shows 48 per 10 km on farmland, 3x more than urban or conifer habitats (NB).

F 548 Skinflats 4 Feb (GO).

C 350 Glenochil 5 Jan & 300 Tullibody 2 Mar (CJH).

S 8 AoT per km sq on Doune CBC. 200 L.Voil 25 Nov. 300 Blairdrummond 23 Dec & 700 Lecropt on 31st (NB MVB).

COLLARED DOVE *Streptopelia decaocto* (B,W)

Greatly under-reported, but scarce away from suburbs and large farms (Ed)

F Vagrant to Skinflats, 3 on 1 May (GO).

S 2 Killin 8 Apr & 16 May (PWS).

CUCKOO *Cuculus canorus* (B)

1st records in April at Cocksburn Res 24th, L.Venachar (E) 28th, Dunmore 29th & G.Buckie on 30th (AT DJC).

BBS shows 1 per 10 km on farmland, 5 in conifers and 1 on moorland.

Spring/Summer records from Larbert, Dunmore, Earlsburn, Cromlix, Callander, G.Ample, G.Finglas, G.Dubh (L.Ard Forest), L.Arklet (MA DJC DOE WRB PM).

BARN OWL *Tyto alba* (b,w)

S At 5 sites Thornhill Carse, also Gargunnoch, Carron Glen, Ashfield, Dunblane, Kilbryde, L.Tay (DR DJC SS CW DOE WRB).

TAWNY OWL *Strix aluco* (B,W).

F Reported Grangemouth, Larbert (AS GO).

S Reported Arnprior, Airthrey, BoA, Dunblane, Drumloist, Callander, L.Voil (DAC AT DJC).

*LONG-EARED OWL *Asio otus* (b,w)

F Skinflats from April to June, 3Y in May (GO AB BDA).

S 1 Thornhill Carse (Frew) 6 Mar (DR). 1 Blairdrummond Carse 8 Dec (DOE).

SHORT-EARED OWL *Asio flammeus* (b,W)

F 1 Skinflats 22 Aug (GO).

S 3 N.Third Res 28 Mar (JW). 2 Cringate Muir/Earlsburn 4 Apr, 4 Prs 17 May (GO DOE). 1 Thornhill 1 Feb, 9 Aug & 15 Nov (SS). 1 Lossburn Res 28 Sep & 25 Oct (AT CJH). Braeleny-Arivurichardich 7 Jul to 31 Oct, 2Y seen 10 Aug, 7 birds 26 Aug (DJC DAC). 1 G.Finglas 26 Aug (MA).

SWIFT *Apus apus* (B)

1st records: Lake of Menteith (15) on 7 May, Doune & BoA on 8th, Callander (8) & Stirling (10) on 9th, Grangemouth (15) on 12th, Ashfield (6) on 13th (DOE NB DMB DJC DT GO WRB). Last August records 21 Grangemouth on 22nd, Airth & L.Ard Forest on 24th, Tullibody Inch on 27th (GO DMB CJH). 1 Ashfield 3 Sep (WRB).

S Max in July: 30 BoA 19th & 27th (AT CJH); 100 Stirling on 31st (DT).

KINGFISHER *Alcedo atthis* (b,w)

F 1 Skinflats Jan, Mar, Aug, Sep; 1 Kinneil 4 Sep & 25/28 Nov (GO AB DMB MA BDA). 1 on Avon at Grangemouth 11 Jan, 28 Jul & 20 Oct (MVB JW AS). 1 Higgins Neuk 24 Aug. 1 on Glen Burn (Falkirk) 16 Dec. 2 Pairs on Carron at Larbert all year, 2 Juv being fed 13 Jun (MA).

C 2 on Devon at Tillicoultry 28 Mar & 18 Apr (DAC) & noted down to Cambus Feb, Aug-Dec (GEL RN PD WRB AB CJH).

S 1 Killin 29 Mar (PWS). At two sites on Teith below Callander 10 Mar (DJC). 1 on Allan 21 Mar & 9 May, Pr on 19 Jul (CJH DOE M.Ferguson). 1 Kinbuck 8 Oct & 1 Cambuskenneth on 10th (AT). 1 Airthrey Sep to Dec (DMB MVB). 1 on Carron below Carron Valley Res 5 Dec (WRB BDA).

WRYNECK *Jynx torquilla*

F 1 Kinneil 12 Sep (GO AB DT).

GREEN WOODPECKER *Picus viridis* (B,W)

C Around Blairlogie Jun & Jul, 1 Mine Wood 25 Jul (DAC AT). 1st in 4 years on Devon WBS (CJH).

S 1 Plean CP Mar & May (AB).

GREAT SPOTTED WOODPECKER *Dendrocopus major* (B,W)

F 5 sites around Falkirk Jan to Nov. M Skinflats Jan & Mar. (JW AS MA AB GO).

S 8 sites from Aberfoyle to Braes of Doune and Balquhiddier (DAC DJC NB). 5 in 150m at L.Voil 15 Mar (AT).

SKYLARK *Alauda arvensis* (B,W)

BBS shows 32 on moorland, 10 in conifers, 9 on farmland and 10 in 'Urban'.

F Singing Kennetpans 13 Feb & Skinflats from 21st (AB). 50 Kinneil & 60 in stubble Larbert 6 Dec (DT MA).

C 11 AoT on Devon WBS, as 1997 (CJH). 30->W Cambus 11 Oct (DMB). 30 Menstrie 31 Dec (BRT).

S 3 AoT per sq Km on Doune CBC, 9 in 1997 (NB). 43 Forthbank 27 Jan & song 12 Feb (AT). 110+60 Blairdrummond Carse 1 Mar (MVB). 36 Thornhill 1 Mar & 50 on 11 Oct, 5 AoT (SS). 100 Lecropt 30 Nov & 5 Dec (DT). Singing males: 40 Cringate Muir 27 Mar, 30 Earlsburn 17 May, 30 Uamh Beg 13 Apr (DOE).

SAND MARTIN *Riparia riparia* (B)

1st records: 2 Cambusmore on 29 Mar (50 on 7 Apr), in April: 30 Airthrey on 1st, 50 Lake of Menteith on 4th (PWS DJC DMB DT).

F 18 Kinneil 27 Jul (GO) Possibly start of autumn passage, Ed.

S 98 nests Cambusmore 2 Aug (CJH). 10 nests Inverlochlarig 4 Jun (DOE).

SWALLOW *Hirundo rustica* (B)

1st records: 1 Cambusmore 29 Mar (DJC), 2 Lake of Menteith on 8 April (DOE), widespread arrival 18-24 Apr. Last mainly October: 22 Skinflats, 2 Airthrey & 1 Ashfield on 9th, Blairdrummond & Stirling on 21st (AB DMB WRB NB DT); 1 Cambus 13 Nov (CJH).

C 150 Tullibody Inch 27 Sep (CJH).

S 9 AoT per sq Km on Doune CBC, 7 in 1997 (NB). 500 Doune Ponds 27 Aug (DOE).

HOUSE MARTIN *Delichon urbica* (B)

1st records: Stirling & Airthrey (6) on 23 Apr, Lake of Menteith (5) on 25th, Ashfield on 26th (DT DMB DOE WRB). Widespread by 6 to 9 May. Early departure, 40 Dunblane 26 Sep, last 2 Airthrey 3 Oct & 6 Buchlyvie on 8th (MVBDMB DAC).

S 500 Lake of Menteith 31 May (DAC). 10 nests per sq Km on Doune CBC, back to 1994-5 average (NB). 10 Prs Inverlochlarig 4 Jun (DOE).

TREE PIPIT *Anthus trivialis* (B)

BBS shows 13 in conifers, 1 on moorland & farmland.

1st records: Kinneil 23 Apr, many in Trossachs on 24th, 3 Rhuveag on 26th. (GO DOE DT). Last L.Ard Forest 24 Aug (CJH).

S 20 singing L.Ard 11 May (DOE).

MEADOW PIPIT *Anthus pratensis* (B,W)

BBS shows 65 per 10 km in moor/conifer edge, 117 on moorland, & 7 on farmland.

F 27 Darnrig Moss 13 Feb (MA). Singing Skinflats 4 Apr (AB). 120 Higgins Neuk 6 Sep (DSF).

C 38 Blackdevonmouth Marshes 26 Aug, 160 on 31st, still 100 on 26 Sep, few later though 21 on 5 Dec (CJH).

- S 20 Killin 2 Apr (PWS). 45 migrants Ashfield & 36 at Cornton 11 Apr (WRB CJH). Passage through Doune CBC noted 22 Apr to 8 May (NB). 130 L.Watson 7 Sep (CJH). 200 Sheriffmuir 12 Sep, following a Hen Harrier (MVB).
- YELLOW WAGTAIL *Motacilla flava*
 F Skinflats: 1 on 29 Apr, thought to be Grey-headed (*thunbergi*) race (BDA GO). 1 on 6 & 9 Sep (GO AB).
- GREY WAGTAIL *Motacilla cinerea* (B,w)
 Only 7 January records and few after mid November except for 12 on the Devon Dollar-Menstrie 6/9 Dec (GEL PD DE). Widespread records from 21 Feb to 8 Mar suggest spring return.
 Still many traditional sites unoccupied W.Stirling (HR). 2 pair Doune CBC, 1st juv seen 13 May (NB). Summer records at 12 sites Stirling & Ochils. Family parties on R.Avon at Grangemouth & R.Carron at Larbert (JW MA).
- PIED WAGTAIL *Motacilla alba* (B, w)
 Noted at 7 sites Jan-Feb (DAC AT).
 F White Wagtails M.a.alba : At Skinflats from 24 Apr (10) to 3 May (2), max 20 on 27 Apr (DT AB GO); also 12 Alloa Inch (Clacks) 2 May (DMB).
 C 1 AoT on Devon WBS, 3 in 1997. 21 Blackdevonmouth 19 Jul & 20 on 23rd, 3 on 5 Dec (CJH).
 S 10 AoT per sq Km Doune CBC, 5 in 1997, 1st juv seen 5 Jun (NB). 25 Airthrey 3 Apr (AT). 45 Barbush 3 Sep (WRB).
- WAXWING *Bombycilla garrulus*
 F 1 Stirling 30 Jan to 12 Feb, 3 Bannockburn 16 Feb (DT BDA). 20 L.Katrine 6 Mar (per HR).
- DIPPER *Cinclus cinclus* (B,W).
 F 8 on Carron above Larbert 15 Feb & 6 on 12 Oct (MA).
 C Frequent on middle Devon, max 17 below Dollar 20 Oct (DE).
 S Average year W.Stirling (HR). 2 pair on Doune CBC (NB). 9 on Teith Callander-Deanston (DJC).
- WREN *Troglodytes troglodytes* (B,W)
 Under-recorded (Ed). BBS shows 63 per 10 Km in conifers, 20 on farmland & 17 in 'Urban'.
 F 1 on foreshore at Bo'ness 2 Jan. 12 Wallacebank wood 21 Feb (AS).
 C 16 AoT on 5 Km of lower Devon, 11 in 1997 (CJH).
 S 17 AoT per sq Km Doune CBC, highest ever; juv seen from 11 Jun (NB).
- HEDGE SPARROW *Accentor modularis* (B,W)
 Under-recorded (Ed). BBS shows 20 per 10 Km in 'Urban', 10 in conifers & 2 in farmland.
 C 7 AoT on 5 Km of lower Devon, 5 in 1997 (CJH).
 S 8 pair per sq Km on Doune CBC, 6 in 1997, Juv seen from 4 Jun (NB).
- ROBIN *Erithacus rubecula* (B,W)
 Under-recorded (Ed). BBS shows 38 per 10 km in conifers, 12 on farmland & 18 in 'Urban'.
 F nest building Bo'ness 30 Mar, feeding young 30 May (AS).
 C 6 AoT on 5 Km of lower Devon, 2 in 1997 (CJH).
 S 4 pairs per sq Km on Doune CBC, as 1997, 1st juv seen 1 Jun (NB). Autumn song at Airthrey from 6 Aug, sang at night on 18 Jan (CJH AT).
- REDSTART *Phoenicurus phoenicurus* (B)
 1st of spring 2M L.Ard 23 (DT). 1st autumn migrant Skinflats 16 Jul (BDA).
 S 45 nest attempts at Trossachs colony produced 230 Y (HR).
- WHINCHAT *Saxicola rubetra* (B)
 BBS shows 2 per 10 km in conifers, 2 on moorland & 1 on farmland.

- 1st records: 1 Thornhill 26 Apr; 3M Hutchinson Moor 2 May & 5 Menteith on 8th (DT WRB BDA).
- C 3 upper Glendevon 16 Jun & family party 6 Jul (DMB MA).
- S 6 Prs L.Arklet 14 Jun, 5 Prs Menteith 30 Jul (DOE).
- STONECHAT *Saxicola torquata* (b,w)
- F F Larbert 8 Mar (MA). 1 Fannyside 5 Oct & M Skinflats on 8th (AD AB).
- S In breeding season noted at 9 sites in Gargunlocks, Trossachs, Balquhidder. In late autumn also at Kippen Muir & wintered Thornhill Jan-Feb & Oct-Dec (DJC DOE DAC DT NB SS).
- WHEATEAR *Oenanthe oenanthe* (B)
- BBS shows 6 per 10 km, only on moorland.
3 Barbusch & 20 L.Ard Forest 8 April, Inverlochlarig on 10th; on estuary to 29 Apr. Other migrants, 7 Ashfield 7 Apr, Doune CBC 29 Apr to 8 May, 5 (Greenland race) Bandeath 3 May, 1 R.Devon (Alva) 14 May (WRB DOE DAC GO NB DMB CJH). Autumn migrants at Kinneil & Skinflats 29 Jul to 3 Oct; 3 Tullibody Inch 27 Sep, 1 Fannyside 5 Oct & 1 Sheriffmuir on 11th (DT AB JG CJH AD MVB).
- S 6 Prs L.Ard & 6 Prs L.Arklet 11 May, 5 Prs with Y Monachyle 18 Jun (DOE). 13 G.nan Meann (Finglas) 30 Apr (DJC). 1 Pr Kinbuck (low ground) (MVB).
- *RING OUSEL *Turdus torquatus* (b)
- S M Rhuveag 26 Apr (DT). 3 (2M) Monachyle Glen 18 Jun (DOE). 2 M singing Ben Each 13 May (MA).
- BLACKBIRD *Turdus merula* (B,W)
- BBS shows 106 per 10 km in 'Urban', 29 on farmland & 13 in conifers.
C 13 AoT on 5 Km of lower Devon, 8 in 1997 (CJH).
- S Singing Airthrey on 26 Jan (AT). 17 pairs per sq Km on Doune CBC, 13 in 1997, 1st juv seen 10 Jun (NB).
- FIELDFARE *Turdus pilaris* (W)
- Spring departure meagre, 98 Castle Cary 10 Apr & 150 Braes of Doune on 13th (250 on 29 Mar) (MA DOE).
Autumn arrival was late. 150 Glen Casaig 23 Oct, 100 Flanders Moss & 40->W Blackdevonmouth on 25th. Large parties widespread in November, max 600 Glen Lochay on 12th, 665 Glen Dochart on 15th, 400 Braeleny on 20th, 500 Glen Finglas on 21st & 500 L.Tay on 28th. Visible movement mainly to SW: 140 Kippenmuir 25 Oct, 200 Kinneil 7 Nov & 50 Duke's Pass on 24th. In December, max 200 L.Tay on 8th. (DJC DOE CJH PWS NB DT).
- C 90 Alva 16 Feb & 200 Gartmorn 2 Mar (NB CJH).
- F 58 Camelon 2 Jan (MA). 50 Skinflats 12 Dec & 70 Higgins Neuk on 19th (GO DSF).
- S 60 Callander on 5 Jan, 120 Lecropt on 24th, 250+300 Blairdrummond carse on 25th & 200 Braes of Doune on 31st; 86 Lecropt 1 Mar (DJC AD MVB DAC AT).
- SONG THRUSH *Turdus philomelos* (B,W)
- BBS shows 13 per 10 km in 13 'Urban', 10 in conifers & 5 in farmland.
Few in January - 1 Bo'ness, 2 Stirling, 4 Alva, 2 Gartmorn (AS AT). 1 Killin 14 Feb & Buchlyvie on 17th represent spring arrival (PWS DAC).
- C 3 AoT in 5 Km lower Devon, 2 in 1997 (CJH).
- S 1 AoT on Doune CBC (NB).
- REDWING *Turdus iliacus* (W)
- 1st of autumn 2 Braes of Doune 2 Oct, at Airthrey 4 on 6th & 60 -> W on 14th, 20 Invertrossachs on 10th. Large parties occasional from 14 Oct with 150 L.Macanrie on 14th & 200 ->SW on 25th. Few in November, 10 -> W Duke's Pass on 24th. (DOE MVB DAC DT CJH).

- F 63 Falkirk 28 Jan (MA).
 C 200 Gartmorn 2 Mar (CJH).
 S 250 Arnprior 11 Jan (DAC).
- MISTLE THRUSH *Turdus viscivorus* (B,W)
 BBS shows 4 per 10 km in conifers, 3 on farmland, 1 in 'Urban'.
 F Widespread in small numbers around Falkirk (AS MA JW GO).
 S 1 AoT Plean CP 20 Mar (AB). 20 Doune 4 Feb (DOE). 15 Airthrey 17 Jul (AT). 15
 ->SW, with Redwings, Kippenmuir 25 Oct (DT).
- GRASSHOPPER WARBLER *Locustella naevia* (b)
 F 4 Skinflats 23 Apr, 1 to 18 Jul (BDA GO AB DT). Singing birds at 2 sites
 Bonnybridge 27 Apr & 2 by Carron on 1 May, also Camelon, 2 sites Falkirk May-
 Jun (MA).
 C 1 AoT Devon WBS. 3 Cambus Pools 28 Apr to 24 Jul (CJH WRB).
 S 1 Thornhill 1 May, also Lake of Menteith, Gartur, Flanders Moss(2), Drip Carse,
 L.Doine (2), Inverlochlarig - feeding Y 17 Jun (SS RAB DOE DT BDA).
- SEDGE WARBLER *Acrocephalus schoenobaenus* (B)
 1st records April: 26th Kinneil, 28th Cambus, 30th Skinflats (GO WRB AB DT).
 Summer records widespread as far north as Inverlochlarig.
 C 50 AoT on Devon WBS, 54 in 1997; 20% of birds arrived by 2 May (CJH).
 S 3 AoT Doune CBC from 11 May, 1st juv on 25 Jun (NB). 5 AoT Thornhill (DOE).
- WHITETHROAT *Sylvia communis* (B)
 BBS shows 5 per 10 Km in 'Urban', 3 on farmland.
 1st records in April: 23rd Skinflats, 27th Kinneil & Doune (GO AB NB).
 C 9 AoT on Devon WBS (as 1997), 4 arrived by 2 May but 3 not till 14/24th (CJH).
 SWP 4 AoT per sq Km Doune CBC (NB). 4 AoT Dunblane 23 May (WRB). 5 AoT
 Doune (Inverardoch) 7 Jun (DOE).
- GARDEN WARBLER *Sylvia borin* (B)
 1st record 30 April at Arnprior, then in May: 2nd Polmont & R.Devon, 3rd Lake
 of Menteith, 8th Plean CP (DAC JW CJH WRB AB).
 F Bred at 2 sites Polmont (JW).
 C 8 AoT Devon WBS, 5 in 1997; 6 arrived by 24 May (CJH).
 S 4 AoT Ashfield-Dunblane 23 May (WRB). 5 sites Doune-Trossachs in Jun (DOE),
 records north to L.Lubnaig.
- BLACKCAP *Sylvia atricapilla* (B)
 Widespread as breeder but no records north of Trossachs (Ed)
 Winter records: M Doune 3 Jan, F Polmont on 17th, F Carronshore on 23rd; F
 Dunblane 24 Nov & 2 Dec, Ms at Airthrey 25 Nov (F on 16 Dec), Stirling on 28th
 & BoA on 29th, Polmont on 26 Dec (RHD JW DI DMB AB SD). 1st of spring, M
 in song BoA 25 Mar, main arrival in April, 24th Lake of Menteith, 25th Larbert,
 26th Skinflats (DOE JW GO). Last of autumn M Buchlyvie 24 Sep (DAC).
 F In summer at least 6 sites around Falkirk (JW).
- WOOD WARBLER *Phylloscopus sibilatrix* (B)
 Underrecorded
 1st records Lake of Menteith 30 Apr & Thornhill 2 May (DAC DT). 4 M
 Kinlochard 18 May (DOE).
- CHIFFCHAFF *Phylloscopus collybita* (B)
 1st records in March: Tillicoultry, Stirling (E) & Plean CP 28th, Stirling (W) 30th;
 then Larbert 6 Apr, Invertrossachs on 8th & Blairlogie on 12th; migrant at
 Devon WBS on 14th (DAC DT CJM MA DOE BRT CJH). Last, 1 Stirling 18 Sep,
 1 Airthrey on 10 Oct & 1 Ashfield on 11th (DT WRB MVB),
 F Widespread east of Falkirk (JW).
 S 3 AoT Plean CP 26 Apr (AB). 1 Aberfoyle 28 Nov (DI).

WILLOW WARBLER *Phylloscopus trochilus* (B)

1st record 1 Larbert 31 Mar, then in April: Bonnybridge & Stirling on 10th, Plean CP on 11th, Buchlyvie & Doune on 13th. Last, 1 Airthrey 24 Sep. (GO JM MA CJM DT DAC DOE DMB).

BBS shows 60 per 10 km in conifers, 24 in farmland, 38 in 'Urban' (NB).

C 17 AoT on 5Km of lower Devon, 14 in 1997 (CJH).

S 10 pairs per sq Km on Doune CBC, 9 in 1997 (NB).

GOLDCREST *Regulus regulus* (B,W)

BBS shows 40 per 10 km in conifers, 1 on farmland (NB).

Widespread in small numbers, max 27 Wallacebank Wood (Falkirk) 26 Jan (AS).

F Song at Skinflats from 21 Feb, birds at Kinneil 10 Feb & 3 Oct could be migrants (AB GO).

SPOTTED FLYCATCHER *Muscicapa striata* (B)

Under-recorded (Ed). Scarce in BBS, 1 per 10 km, only in farmland (NB).

1st records: in May, Pass of Leny 16th, Ashfield & L.Katrine 23rd (JW DAC WRB). Last, 3 L.Ard Forest 29 Aug (CJH).

S In summer 3 Prs Invertrossachs, also at 13 other sites, mainly Trossachs-Dunblane (DJC DOE DAC WRB). 15 (presumed family parties) in 1.5 km L.Ard Forest 31 Jul (CJH).

PIED FLYCATCHER *Ficedula hypoleuca* (b)

1st records: Balquhiddier (Rhuveag) on 26 Apr, Aberfoyle 8 May, Kilmahog 10 May (DT DOE JW).

S 62 nest attempts at Trossachs colony, 229 Y reared, (HR).

LONG-TAILED TIT *Aegithalos caudatus* (B,W)

F 14 Bo'ness 2 Jan & 15 on 29 Sep (AS). 5 Kinneil 10 Feb (GO).

S 28 Dunblane 21 Jun & 12 Jul (MVB). 16 BoA 13 Oct, 13 Lanrick 10 Mar, 15 L.Voil & 16 L.Doine 25 Nov (AT DJC).

COAL TIT *Parus ater* (B,W)

Greatly under-recorded (Ed). BBS shows 38 records per 10 km in conifers, 1 on farmland (NB).

F 35 Wallacebank Wood 26 Jan & 43 on 26th (AS).

S Transect frequencies per hour: 7 Achray Forest 20 Nov & 6 on 24th, 4.5 Torrie Forest 4 Dec (CJH).

BLUE TIT *Parus caeruleus* (B,W)

Under-recorded (Ed). BBS shows 25 per 10 Km in 'urban' squares, 31 on farmland & 17 in conifers.

C 7 AoT on 5 Km of lower Devon, 7 in 1997 (CJH).

S 9 pair per sq Km on Doune CBC, 7 in 1997, 1st Juv seen 17 Jun (NB). Occupancy good in Trossachs but only fair success (HR).

GREAT TIT *Parus major* (B,W)

Under-recorded (Ed). BBS shows 10 per 10 km in conifers, 14 on farmland and 9 in 'Urban' squares.

C 4 AoT on 5Km of lower Devon, 5 in 1997 (CJH).

S 4 AoT per sq Km on Doune CBC, 7 in 1997, 1st Juv seen 11 Jun (NB). Low occupancy in Trossachs & only fair success (HR).

TREECREEPER *Certhia familiaris* (B,W)

Under-recorded (Ed). BBS shows 1 per 10 km on farmland.

Recorded Jan-Mar from Bo'ness, Wallacebank Wood (5) & by Devon at Tillicultry (4) (AS DAC).

RED-BACKED SHRIKE *Lanius collurio*

F M by disused railway line Falkirk 22 May (MA).

GREAT GREY SHRIKE *Lanius excubitor*

- S 1 Flanders Moss 29 Nov (DR).
1 Carronbridge 5 & 6 Dec. Haunted a gorse patch on ridge, flew, with hovering, across river to edge of conifer forest in Dumbarton (DJ CJH).

JAY *Garrulus glandarius* (B,W)

- BBS records largely from conifers, 4 per 10km.
F All year at Torwood (AB) – continuous with range around Stirling (Ed). 2 Fannyside 5 Oct (AD).
S Recorded from some 22 sites from Buchlyvie to L.Voil; no records from north edge of Gargunnocks.

MAGPIE *Pica pica* (B,W)

- Its abundance around Stirling is not necessarily noted in the west and east of the area (Ed). BBS shows 27 per 10 km in 'urban' squares, 6 in farmland & 1 in conifers.
F 12 Bo'ness 2 Jan (AS).
C 3 AoT on 5 Km of lower Devon, 3 in 1997 (CJH).
S 11 Cambuskenneth 7 Nov & 24 Stirling on 23rd (DT), but roost numbers higher: 75 Airthrey 19 Jan, max 143 on 4 Feb, still 83 on 7 Mar (AT). 1 AoT on Doune CBC (NB).

JACKDAW *Corvus monedula* (B,W)

- An overlooked species, about 4 reports (Ed). BBS shows highest frequency in urban areas.
S 150 Callendar 13 & 17 Jan (DJC). Scores taking acorns at Airthrey 22 Oct (CJH). 5 pair per sq Km on Doune CBC, 4 in 1997 (NB). 1 at Lecropt 1 Mar was completely grey-brown except for a black face (AT).

ROOK *Corvus frugilegus* (B,W)

- Rookery counts: BoA(N) 79 in pines; BoA(S) 188; Myretoun 56; 55 Menstrie nursery (new in 1996). Total 378 (406 in 1997). 154 Gartmorn (CJH). 155 Wallacebank Wood on 21 Mar (AS – probably some nests still to be built, Ed).
S 2000, roost flight to S, BoA 1 Feb. Scores taking acorns Airthrey 22 Oct (CJH).

CARRION CROW *Corvus corone* (B,W)

- Possibly the most widespread species of all: BBS shows 40 per 10 km in 'Urban' squares, 64 in farmland, 27 in conifer & 12 on moorland.
F 1 Hoodie Kinneil 28 Mar (GO).
C 4 AoT on Devon WBS, 1 on 14 Apr possessed white wing stripes and a white rump (CJH).
S 5 AoT per km sq at Doune CBC (NB). 80 G.Casaig 22 Jun, mobbed Buzzard. Hoodies: 10 records (including hybrids) were from the usual breeding range N & W of Lake of Menteith (DJC NB DAC). Mixed flock of 43 Stuc a Chroin 11 Sep included 5 Hoodies – only 15 km WNW, 13 Balquhidder 28 Nov all Hoodies; 1 nearby feasted on rowan berries (DJC).

RAVEN *Corvus corax* (B,W)

- C 1 Mill Glen, Tillicoultry, 28 Jan (AT).
S 16 territories checked, 11 pairs & 1 single, 8 successful pairs of which 4 raised 12 Y (PSA). Successful tree nest Brig o'Turk. 14 G.Finglas 16 Feb & 22 on 15 Jul. 10 Stuc a Chroin area 25 Jan (DJC MA). Outwith of main breeding areas: 2 Carron Bridge 5 Dec (WRB). 3 Kippen Muir 25 Oct (DT). Over Airthrey Jul-Oct (AT DMB).

STARLING *Sturnus vulgaris* (B,W)

- Greatly underreported (Ed). BBS show most frequent in 'Urban' squares.
F 2200 Kincardine Bridge roost 19 Dec (CJH). 400 Slamannan 13 Feb (MA).

- S 12 AoT per sq Km on Doune CBC, 11 in 1996; fledglings from 1 Jun, 470 on cut silage field 5 Jun (NB).
- HOUSE SPARROW *Passer domesticus* (B,W)
 Under-recorded (Ed). BBS shows 50 per 10 km in 'Urban' areas, 23 on farmland.
- F 63 on grain spill by Avon S of Bo'ness 8 Sep (AS).
- S 15 pairs per sq Km on Doune CBC, 14 in 1997; fledglings from 2 Jun (NB). 20 Killin 14 Jun (PWS).
- TREE SPARROW *Passer montanus* (B,W)
- F 22 by R.Carron at Larbert 24 Feb & 15 on 12 Apr (MA). 2 Dunmore 10 May & 6 S.Alloa 1 Nov (SH MVB).
- C 6 Gartmorn 7 Mar (DAC). 30 + 18 Menstrie 31 Dec (BRT).
- S 60 Lecropt 7 & 18 Jan (MVB). 13 Drip Carse 15 Mar & 20 Thornhill Carse 7 Nov (NB DAC).
- CHAFFINCH *Fringilla coelebs* (B,W)
 BBS shows 150 per 10 km in conifers, 65 on farmland & 31 in 'Urban' squares.
- F 50 Kinneil 25 Jan (AB).
- C 11 AoT on lower Devon in May, 13 in 1997 (CJH).
- S 32 pairs per sq Km on Doune CBC, 28 in 1996 (NB). 2000 Kinbuck 1 Jan & 3000 on 25th; 1350 on 28 Nov & 2300 on 6 Dec. 2500 Doune (stubble) & 250 W of Buchlvie 26 Jan, 200 Braes of Doune 13 Feb & 700 Thornhill on 17th; Song at BoA on 12 Jan (AT) but still in flocks in April: 200 Callendar & 700 Lanrick on 11th, 150 Kinbuck on 19th (MVB CJH DJC DOE NB WRB).
- BRAMBLING *Fringilla montifringilla* (W)
 Very scarce late winter and autumn
- F 20 Kinbuck 30 Jan (MVB). 2M Larbert 30 Mar & 1 on 12 Apr (MA). M Skinflats 22-23 Apr (AB BDA).
- S M Balquhiddier 20 Jan & at Stirling 16 Apr. 1 -> SW Kippen Muir 25 Oct, 1 Ashfield on 6 Nov; in December 1 Carronbridge & Braes of Doune but 31 under beeches at Balquhiddier on 2nd (DJC RJ DT WRB BDA DOE).
- GREENFINCH *Carduelis chloris* (B,W)
 Underrecorded. BBS shows 47 per 10 km in 'Urban' squares, 6 in farmland & 3 in conifers.
- F Max 8 at feeder Bo'ness Jan-May & Oct-Dec (AS).
- S 4 pairs per sq Km on Doune CBC, 1st Juv on 30 Jun (NB). 100 Lecropt 2 Jan (MVB).
- GOLDFINCH *Carduelis carduelis* (B,W)
 BBS shows 2 per 10 km in farmland and 2 in 'Urban' squares.
- F 27 Bo'ness 4 Feb (AS). 20 Skinflats 4 Sep (AB). 50 Lathallan 10 Jan; 66 by Union Canal Polmont 6 Sep & 25 Nov (JW MA).
- C 4 AoT on Devon WBS, as 1997 (CJH). 21 Menstrie 6 Dec (BRT).
- S 2 pairs per sq Km on Doune CBC, as 1997 (NB). 30 Cambusmore 28 Feb & 36 on 8 Mar (DJC). 45 at 2 sites Kinbuck 6-7 Oct (AT), record flock of 300 on 31 Dec (MVB).
- SISKIN *Carduelis spinus* (B,W)
 BBS shows 53 per 10 km in conifers, 2 on farmland.
 In gardens at Bo'ness, Grangemouth & Stirling until late Apr or early May (AS GO RJ).
- F 2 Skinflats 20 Jun was unusual date (GO).
- C 75 in alders, R.Devon at Alva 5 Jan (CJH).
- S 250 in alders L.Chon 28 Dec (RAB).

LINNET *Carduelis cannabina* (B,W)

BBS shows 4 per 10 km on moorland, 3 on farmland & 13 in 'Urban'.

- F 70 Skinflats 30 Apr (AB). Kinneil:150 on 8 Mar & 355 on 31st; 200 on 18 Oct, 1500 on 6 Dec down to 400 on 28th (DT CJH). 134 Drumbowie 7 Jan (NB). 100 Camelon 30 Jan, 65 Larbert 3 Apr (MA).
- C 100 Alva 14 Apr (CJH). 300 Cambus 26 Sep (DMB).
- S 2 AoT on Doune CBC, 3 in 1997. 550 Lecropt 2 Jan, 60 Drip Carse 15 Mar. 600 Kinbuck 20 Sep, 100 Doune 2 Nov & 100 Braes of Doune on 15th (NB MVB DOE).

TWITE *Carduelis flavirostris* (b,W)

- F 5 Kincardine Bridge 22 Feb & 30 Kinneil 1 Nov (DMB).
- C 1 Glendevon Res 16 Jun (DMB).
- S Spring/summer reports from Inverlochlarig, Monachyle, Glen Finglas (14), L.Voil (DT DOE MA DJC). 40 Kinbuck 1 Jan & 15 on 19 Apr; 30 on 31 Oct to 400 on 31 Dec (MVB WRB). 40 G.Finglas 24 Mar (DJC). 30 Ben Dubhcraig 10 Oct (J.Gordon).

REDPOLL *Carduelis flammea* (B,W)

BBS shows 4 per 10 Km in conifers.

- F 8 Wallacebank Wood 26 Jan (AS.).
- S Spring/summer records from L.Dochart, Braes of Doune (PWS WRB). 36 L.Katrine 28 Dec (DAC).

COMMON CROSSBILL *Loxia curvirostra* (b,W)

BBS shows 5 per 10 km in conifers

- F 5 (4M) Howierigg woods 3 May (MA).
- S Widespread L.Ard Forest, G.Dubh to Invertrossachs, Apr-Jul & Nov-Dec, max 8 on 2 Apr (DOE PM CJH). 4 Inverlochlarig 1 Jul; 3 Carron Bridge 30 Nov (DT). Pair Buchlyvie 13 Apr (DAC). 6 Torrie Forest 4 Dec (CJH).

COMMON ROSEFINCH *Carpodacus erythrinus*

- S An adult male singing at Balquhidder 2 & 17 Jun, possibly for two weeks previously (DOE). *Possibly the same bird as 1997, Ed.*

BULLFINCH *Pyrrhula pyrrhula* (B,W)

BBS shows 4 per 10 km in conifers, 1 on farmland & 2 in 'Urban'.

Widespread in groups less than ten.

- F 21 Blackness 10 Jan (DAC).
- C 8 Tillicoultry 28 Mar (DAC).
- S 30 G.Ogle 7 Feb. In spring at Stirling fed on buds of Amelanchier, Hypericum (RJ). 8 Doune 4 Apr (DAC). 12 Killin 3 Nov (PWS). 14 L.Doine 28 Nov (DJC).

SNOW BUNTING *Plectrophenax nivalis* (W)

- C 17 Mill Glen (Tillicoultry) 28 Jan (AT). 3 Dumyat 15 Mar (PHancock).
- S Stuc a Chroin: 3 on 25 Jan & 5 on 29th, 2 Prs & M at 3 sites on 19 Mar; 12 on 2 Dec (DJC). A few G.Ogle, Balquhidder, Gargunnocks Feb & Nov; 2 Uamh Beg 13 Apr were late (DOE).

YELLOWHAMMER *Emberiza citrinella* (B,W)

BBS shows 7 per 10 km on farmland & 5 'Urban'.

- F 16 Skinflats 12 Jan (GO). 16 Higgins Neuk 1 Feb & 50 on 22nd (DSF DMB).
- C 10 AoT in 5 km on lower Devon, 9 in 1997 (CJH). 30 Gartmorn 16 Dec (PMA). 35 Menstrie 31 Dec (BRT).
- S 11 AoT per sq Km on Doune CBC, 10 in 1997, 1st Juv 8 Jun (NB). 60 Blairdrummond Carse 2 Jan, 35 Cambuskenneth 23 Jan. 30 Lecropt 18 Jan & 27 on 1 Mar (MVB RC AT). 40 Argaty (Braes of Doune) 13 Feb. 8 Prs Flanders Moss 19 Jun (DOE).

REED BUNTING *Emberiza schoeniclus* (B,W)

BBS shows 1 per 10 km in farmland, 2 in 'Urban' & 2 on Moorland.

C 10 AoT on Devon WBS, as in 1997. 5 singing Ms Blackdevonmouth Marshes
19 Jul (CJH). 30 Menstrie 1 Feb (AD).

S 2 AoT on Doune CBC, (NB). 21 Cambuskenneth 23 Jan (AT). 13 L.Katrine 18 Feb
(NB).

CORN BUNTING *Emberiza calandra*

No records.

Escaped Species

BLACK SWAN *Cygnus atratus*

C 1 Cambus 10 Apr (WRB).

MANDARIN DUCK *Aix galericulata*

S F/Juv at Airthrey 25 Jul, 28 Aug & 22 Sep (GO DMB). DMB notes that only
details of head pattern allows distinction from F Wood Duck.

RED-LEGGED PARTRIDGE *Alectoris rufa*

S 15 Callendar 10 Feb (DJC). Reports around Dunblane, max 40+20 Kinbuck
7 Nov (DAC).

BLACK-THROATED TIT *Aegithalos concinnus*

F 1 Polmont 10 Nov; with other tits in garden, a distinctive Himalayan species,
generally grey with rusty crown, black cheeks and bib separated by white, red
flanks (JW).

CARSE: RECORDING THE NATURAL HERITAGE OF CENTRAL SCOTLAND

Lesley Brown

In the 1960's and early 1970's the effects of human activities on the environment were becoming evident to both scientists and the public alike. Once common plant and animal species were becoming noticeably rarer. This realisation along with books such as Rachael Carson's *The Silent Spring*, sparked the public awareness of the steady decrease in, what is now called, Biodiversity and a renewed interest in the environment in general and environmental recording in particular.

The biological recording movement in Scotland started to gel in the mid-1970's prompted by both professional scientists and amateur naturalists, and eventually leading to the formation of the umbrella organisation Biological Recording in Scotland (BRISC). The creation of a dedicated Local Biological Record Centre (LRC) covering Clackmannan, Falkirk and Stirling had been evolving since the late 1970's and three years ago this LRC was called Central Area Recording System for the Environment, CARSE for short. CARSE is now a limited company and registered charity which operates a computerised database for recording all wildlife found in Central Scotland, i.e. – Stirling, Clackmannan and Falkirk Council areas, and is based in the Smith Museum in Stirling.

CARSE recently received a grant from the National Lottery Charities Board which has allowed us to employ a full-time Wildlife Records Officer on a three-year contract. The new Wildlife Records Officer, Lesley Brown, had previously worked with Biological Record Centres in Ayrshire and Renfrewshire. The grant has also enabled CARSE to become a more professional operation with new telephone and fax lines, an answering machine and a new computer. This should enable us to produce more and better reports and newsletters (1) and allow Email distribution to online members. It should also facilitate more efficient processing of records and the future use of Geographical Information Systems for map based referencing.

CARSE is involved with the local Biodiversity Action Plans (LBAPs) of Stirling, Falkirk and Clackmannan Councils. LBAPs are part of the implementation of the Rio Earth Summit Agreements and identify locally important Biodiversity and endangered species and habitats. We exchange information with statutory bodies, e.g. Scottish Natural Heritage, voluntary bodies, e.g. Scottish Wildlife Trust, Amateur Entomologists' Society and Butterfly Conservation, and with Ranger Services and other Local Biological Record Centres. We also support both local and nationally run environmental surveys.

In Spring 1999 CARSE launched a Wetland Wildflower Survey highlighting the species Cuckoo Flower, Ragged Robin and Yellow Flag Iris and their

wetland environments. We will be periodically spotlighting specific species and habitats to raise public awareness. Suggestions for future surveys are welcomed.

Cuckoo Flower *Cardamine pratensis*, also known as Lady's Smock, has lilac or white cross-shaped flowers between April and June. It is common in damp grassy places, often along drainage lines, low lying road verges, playing fields and other grassy areas. Cuckoo Flower is an important food plant for the caterpillars of Orange Tip and Green-veined White Butterflies. We are also interested in records of any butterflies seen. Folklore says bringing the plant into a house invites lightning strike and that it can cure scurvy.

Ragged Robin *Lychnis flos-cuculi* has very distinctive bright pink flowers with a raggedy, tattered appearance and is in bloom between May and August. This medium to tall plant is commonly seen in damp meadows and marshy places. It is often included in the seed mixes used for landscaping road verges and in wildlife gardens.

Yellow Flag Iris *Iris pseudacorus* is the common wild iris seen in Scotland. Its distinctive yellow flowers are seen from May to July anywhere water accumulates. This iris, unlike escaped garden varieties, likes having its feet in water and is particularly common in swamps, marshes, ditches and along drainage lines, generally in large clumps. Folklore says it can be used for liver problems and to protect against airborne pestilence.

In addition to running surveys, CARSE plans to organise training events open to anyone interested in learning about local natural history and biological recording. Subjects and dates are still to be arranged. Talks can also be arranged for interested groups.

We welcome records for all species whether common or rare. All information is used to protect and enhance the natural environment following confidentiality guidelines. Records are particularly needed from less populated areas, so any records from walkers and climbers are especially welcomed. Also needed are bird, invertebrate and fungal records.

Recording sheets and further information are available from Lesley Brown, Wildlife Records Officer, CARSE, c/o Smith Museum, Dumbarton Road, Stirling, FK8 2RQ, telephone 01786 446008, fax 01786 449160.

- (1) *Bark and Bite* is the newsletter and the fourth issue is Autumn 1999. The second AGM was held at the Smith on 24 August and followed by a presentation 'Taking the Mystery out of Invertebrates' by Craig McAdam of Amateur Entomologists' Society. The 100,000th biological record has recently been added to the database.

WALLACEBANK WOOD WILDLIFE RESERVE – 1986/99

Angus Smith

The Scottish Wildlife Trust (SWT) reserve at Wallacebank Wood, the location of the legendary gigantic hollow 'Wallace Oak' in which Sir William Wallace of Elderslie reputedly hid from the English soldiers after his defeat at the first Battle of Falkirk in July, 1298, has been well documented historically, but little or nothing has been written about its current status and the purpose of this article is to give an up-to-date account of what has happened to it in the last decade or so.

Wallacebank Wood (OS Grid Ref NS 847 847) is an ancient semi-natural deciduous woodland, extending to 16 ha (39.5 acres) situated on the east side of the A9 (T) road approximately one mile north of its junction with the M876 road in the Torwood area north of Larbert (Figure 1).

The wood is on fairly level ground and its central part is a fine example of lowland oak wood with relatively few non-native species. The predominant tree species is Oak (*Quercus*) of fairly even age; between 180 and 200 years. The non-native species, Beech (*Fagus sylvatica*), Sycamore (*Acer pseudoplatanus*), Larch (*Larix decidua*), Norway Spruce (*Picea abies*) and Scots Pine (*Pinus sylvestris*) are in distinct groups or scattered throughout the wood and were probably planted in the 1830's.

Glenbervie Golf Club are the owners of Wallacebank Wood and on 1st May, 1986 (at the instigation of Mr Forbes Howie who was then the Chairman of the SWT Falkirk Group and a director of the Golf Club) they entered into a 25-year agreement with the SWT to manage the wood as a Wildlife Reserve. At that time large areas of the wood were infested with Rhododendron species (*Rhododendron ponticum*), probably planted by a former estate owner some 70 or 80 years ago as cover for game. This was growing in thickly tangled areas extending in clumps up to 6 metres high by some 50 metres in diameter inhibiting natural regeneration of other species.

Members of Falkirk SWT group started work clearing the rhododendron and cutting out beech saplings in October 1986 and by 1997, with some assistance with locally based SWT Environment Teams over a two-year period, the rhododendron had been cleared and burned on site. It was found that by raking up and burning the leaf litter from the areas covered by the rhododendron regeneration of other species occurred within two or three years, while regeneration took considerably longer in areas not cleared of litter. Initially the stumps were treated with glyphosate when they were cut, but this was not totally effective in preventing regrowth and stools which are sprouting new leaves are being uprooted with the aid of a winch. Rhododendron seedlings germinating in the cleared areas are being removed as they appear.

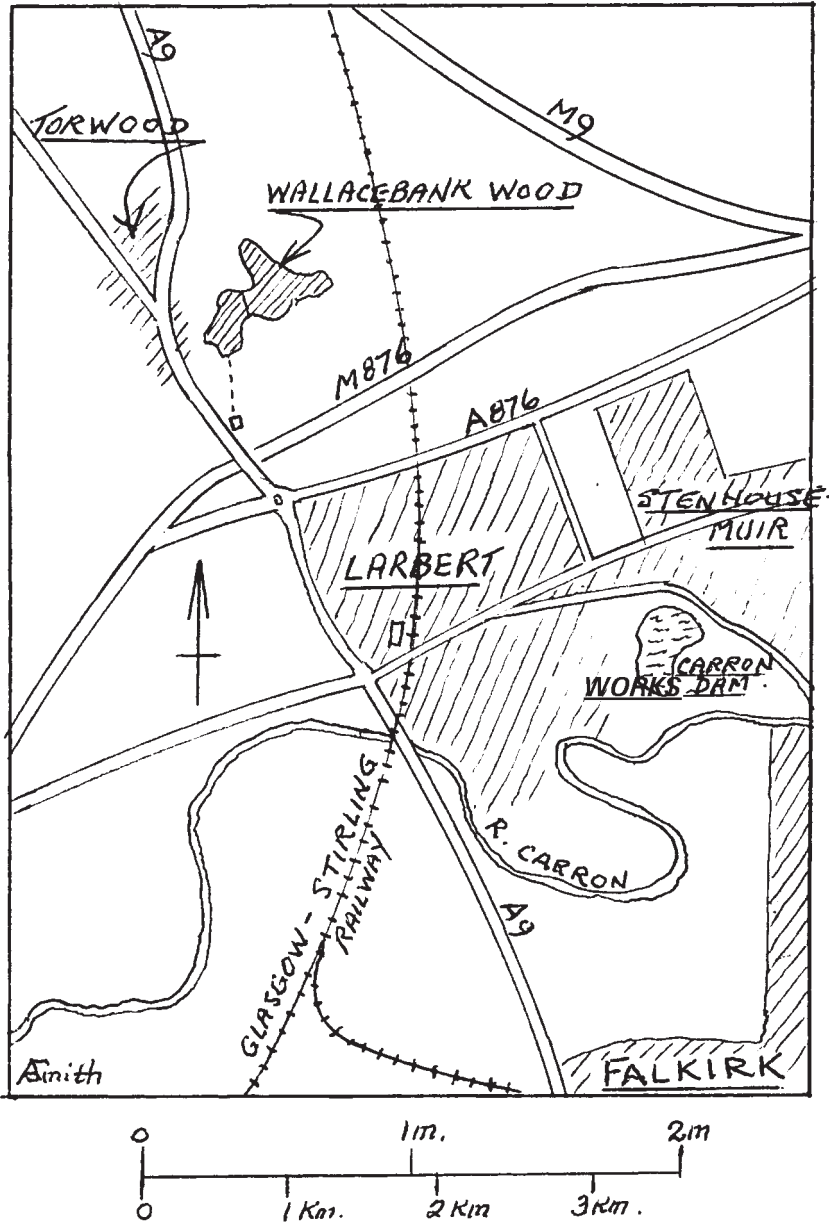


Figure 1 Wallacebank Wood.

Before work on the removal of the rhododendron started it appeared that all of the oak trees had been planted about the same time, but as clearing progressed it became obvious that a majority of the oaks in the north section of the wood had been coppiced. The stools of the original trees were some six metres in circumference (Figure 2) indicating an age in the region of 500 to 800 years – adding to the probability that “a hollow tree of gigantic proportions” did exist in the time of Wallace.

Shrubs in the reserve include Holly (*Ilex aquifolium*), Bird Cherry (*Prunus padus*), Elder (*Sambucus nigra*), Hawthorn (*Crataegus monogyna*), and Hazel (*Coryllus avellana*), all of which are well scattered throughout. Guelder Rose (*Viburnum opulus*) is found at the edge of the wood in one or two places. Yellow Flag (*Iris pseudacorus*), and Golden Saxifrage (*Chrysopenium alternifolium*) grow in a damp area at the west side of the north section of the reserve, where old drains appear to have collapsed or have been clogged up by the passage of time. Wood Millet (*Milium effusum*), which is considered rare in the Falkirk area, is abundant throughout the wood.

In spring and early summer the reserves' display of flowering plants is impressive, with Primrose (*Primula vulgaris*) found growing on the banks of the stream at the south end of the wood, Lesser Celandine (*Ranunculus ficaria*), Wood Anemone (*Anemone nemorosa*), Wood-sorrel (*Oxalis acetosella*) and Bluebell or Wild Hyacinth (*Hyacinthoides non-scripta*) in particular carpeting the ground. Dog's Mercury (*Mercurialis perennis*) and Wood Sage (*Teucrium scorodonia*) are abundant in various parts of the wood, as are Honeysuckle



Figure 2

(Angus Smith)

(*Lonicera periclymenum*) and Bramble (*Rubus fruticosus* agg). Greater Stitchwort (*Stellaria holostea*) is common throughout while Bugle (*Ajuga reptans*) and Wild Rose (*Rosa*) are less frequent. Foxglove (*Digitalis purpurea*) was one of the first plants to appear after clearance of the Rhododendron and it is now widespread. (A full plant list, the names of which have been checked against The New Consise British Flora, 1982, W. Keeble Martin, and Collins Guide to the Grasses, Sedges, Rushes and Ferns of Britain and Northern Europe, 1987, Richard Fitter and Alastair Fitter, is given in the Appendix.

Oak seedlings suffer from grazing by Rabbits (*Oryctolagus cuniculus*) and Roe Deer (*Capreolus capreolus*), but where there is open canopy selected seedlings are being protected by tree shelters or 'Tuley Tubes'. Acorns are collected and grown on by members of the local Group for subsequent planting in areas where fallen limbs of the older beech trees create openings in the canopy. Other native tree species, Rowan (*Sorbus aucuparia*) and Gean (*Prunus avium*) are also being planted in these areas to create a natural mix. This management regime will continue to create a varying age structure.

Rabbits in the reserve can be a problem on the golf course, but from time to time the population is decimated by recurring myxomatosis. Sightings of Weasel (*Mustela inalis*), Wood Mouse (*Mus sylvaticus*), Mole (*Talpa europea*), Hedgehog (*Erinaceus eropaeus*) have been reported and Stoats (*Mustela erminea*) are seen regularly, particularly in winter when they are in ermine. Badger (*Meles meles*) are not resident but, on one occasion during the summer of 1996 clear evidence of badgers visiting and digging up the nests of Bumble Bees (*Bombus* sp.) was found. Red Fox (*Vulpes vulpes*) occasionally den in the north section of the reserve where Roe Deer and Brown Hare (*Lepus capensis*) are regularly found. Grey Squirrel (*Sciurus carolinensis*) is abundant throughout. A report by the Golfcourse Manager in November 1998, of the presence of Mink (*Mustela lutreola*) gives grounds for some concern. It is a distinct possibility that the Mink may have been following and feeding upon Salmon (*Salmo salar*) Sea Trout or the conspecific Brown Trout (*S. trutta*) spawning in the small streams crossing the golf course, which eventually flow via the Pow Burn into the River Forth. It is to be hoped this animal's visit was, indeed, just a visit and it does not take up residence in the reserve.

Reported sightings of birds include Blackbird (*Turdus merula*), Dunnock (*Prunella modularis*), Jay (*Garulus glandarius*), Magpie (*Pica pica*), Woodcock (*Scolopax rusticola*), Goldcrest (*Regulus regulus*), Song Thrush (*Turdus philomelos*), Mistle Thrush (*Turdus viscivorus*), Spotted Flycatcher (*Muscicapa striata*), Starling (*Sturnus vulgaris*), Willow Warbler (*Phylloscopus*), Yellowhammer (*Enberiza citrinella*), Pied Wagtail (*Motacilla yarrellii*), Grey Wagtail (*Motacilla flava*), Long-tailed Tit (*Aegithalos caudatus*), Siskin (*Carduelis*), Redpoll (*Carduelis flammea*), and Swift (*Apus apus*) – flying over. Green Woodpecker (*Picus Viridis*) is seen regularly on the golf course and Barn Owl (*Tyto Alba*) hunts over fields on the east side of the wood. Buzzards (*Buteo buteo*) are also seen more frequently over the northern section of the reserve and Sparrowhawk (*Accipiter nisus*) can be expected at any time.

Breeding birds include Rook (*Corvus feugilegus*), with a rookery of upwards of 150 nests, Chaffinch (*Fringilla coelaba*), Robin (*Erithacus rubecula*), Blue Tit (*Parus caeruleus*), Coal Tit (*Parus ater*), Great Tit (*Parus major*), Tree Creeper (*Certhia familiaris*), Wren (*Troglodytes troglodytes*), all in fairly large numbers while Tawny Owl (*Strix aluco*) and Kestrel (*Falco tinnunculus*) have their own distinct nesting sites.

Lepidoptera were recorded by Dr C. W. N. Holmes, a member of the local group during 1987. The species then recorded includes only two species of Butterflies, Green-veined White (*Pieris napi*) and Meadow Brown (*Maniola jurtina*). During August, 1997, however, the author found Purple Hairstreak butterflies (*Quercusia quercus*) to be well established in several colonies throughout the reserve.

During monthly visits to the Reserve between November, 1986 and October, 1987, Miss S. I. Baldwin, Natural History Dept. Royal Museums of Scotland, recorded the Spiders found on the reserve. Seventy-seven species were recorded including one new to Scotland (*Cicurina cicur*) and eight others new to Stirlingshire (VC 86). This was fully reported in *The Glasgow Naturalist* (1991).

Access to the reserve, which is surrounded on two sides by Glenberrie Golf Course, must of necessity be controlled. The route into the reserve entails a walk of 500 metres and the directions given on the attached large scale map (Figure 3) must be closely adhered to. Care should be taken not to disturb golfers playing on the course. Dogs are prohibited. Parking is available for SWT members and visitors at the east side of the main Golf Club Car Park.

In July, 1999, the Scottish Wildlife Trust published a Reserve Leaflet for Wallacebank Wood, which can be obtained free of charge from the author or the Professional's Shop at Glenberrie Golf Course.

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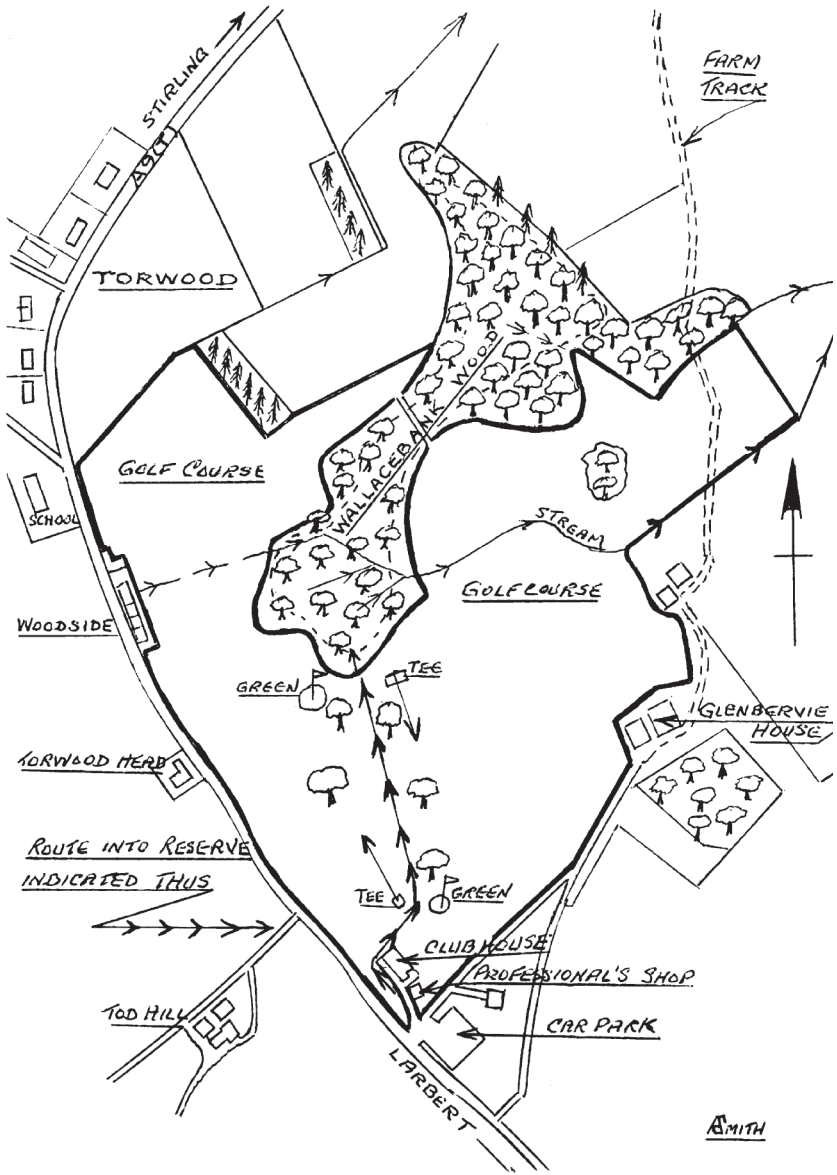


Figure 3

Appendix

SCOTTISH WILDLIFE TRUST FALKIRK GROUP

Wildlife Reserve

Plants recorded at Wallacebank Wood 1986/98

TREES & SHRUBS

Sycamore	<i>Acer pseudoplatanus</i>
Alder	<i>Alnus glutinosa</i>
Silver Birch	<i>Betula pendula</i>
Downy Birch	<i>Betula pubescens</i>
Hazel	<i>Corylus avellana</i>
Hawthorn	<i>Crataegus monogyna</i>
Beech	<i>Fagus sylvatica</i>
Ash	<i>Fraxinus excelsior</i>
Holly	<i>Ilex aquifolium</i>
Norway Spruce	<i>Picea abies</i>
Scots Pine	<i>Pinus sylvestris</i>
European Larch	<i>Larix decidua</i>
Aspen	<i>Populus tremula</i>
Gean	<i>Prunus avium</i>
Bird Cherry	<i>Prunus padus</i>
Blackthorn	<i>Prunus spinosa</i>
Elder	<i>Sambucus nigra</i>
Rowan	<i>Sorbus aucuparia</i>
Guelder Rose	<i>Viburnum opulus</i>
English Oak	<i>Quercus robur</i>

HERBS & GRASSES

Yarrow	<i>Achillea millefolium</i>
Sneezewort	<i>Achillea ptarmica</i>
Ground-elder	<i>Ageopodium podagraria</i>
Velvet Bent	<i>Agrostis canina</i>
Common Bent	<i>Agrostis capillaris</i>
Bugle	<i>Ajuga reptans</i>
Wood Anemone	<i>Anemone nemorum</i>
Wild Angelica	<i>Angelica sylvestris</i>
Sweet Vernal Grass	<i>Anthoxanthum odoratum</i>
Cow Parsley	<i>Anthriscus sylvestris</i>
Tall Oat	<i>Arrhenatherum elatius</i>
Harebell	<i>Campanula rotundifolia</i>
Lesser Knapweed	<i>Centaurea nigra</i>
Common Mouse-ear	<i>Cerastium fontanum</i>
Rosebay Willowherb	<i>Chaemerion angustifolium</i>
Golden Saxifrage	<i>Chrysosplenium oppositifolium</i>
Creeping Thistle	<i>Cirsium arvense</i>

Marsh Thistle	<i>Cirsium palustre</i>
Climbing Fumitory	<i>Corydalis claviculata</i>
Cocksfoot	<i>Dactylis glomerata</i>
Tufted Hair-grass	<i>Deschampsia cespitosa</i>
Wavy Hair-grass	<i>Deschampsia flexuosa</i>
Foxglove	<i>Digitalis purpurea</i>
Wild Hyacinth	<i>Hyacinthoides non-scripta</i>
Broad-leaved Willowherb	<i>Epilobium montanum</i>
Wood Horsetail	<i>Equisetum sylvaticum</i>
Large Hemp-nettle	<i>Galeopsis speciosa</i>
Common Hemp-nettle	<i>Galeopsis tetrahit</i>
Goosegrass	<i>Galium aparine</i>
Heath Bedstraw	<i>Galium saxatile</i>
Ground Ivy	<i>Glechoma hederacea</i>
Hogweed	<i>Heracleum sphondylium</i>
Yorkshire Fog	<i>Holcus lanatus</i>
Creeping soft-grass	<i>Holcus mollis</i>
Slender St. John's Wort	<i>Hypericum pulchrum</i>
Common Catsear	<i>Hypochaeris radicata</i>
Yellow Flag	<i>Iris pseudacorus</i>
Soft Rush	<i>Juncus effusus</i>
Nipplewort	<i>Lapsana communis</i>
Meadow Vetchling	<i>Lathyrus pratensis</i>
Honeysuckle	<i>Lonicera periclymenum</i>
Birdsfoot-trefoil	<i>Lotus corniculatus</i>
Greater Birdsfoot-trefoil	<i>Lotus uliginosus</i>
Heath Woodrush	<i>Luzula multiflora</i>
Hairy Woodrush	<i>Luzula pilosa</i>
Greater Woodrush	<i>Luzula sylvatica</i>
Common Cow-wheat	<i>Melampyrum pratense</i>
Dog's Mercury	<i>Mercurialis perennis</i>
Wood Millet	<i>Milium effusum</i>
Wood Sorrel	<i>Oxalis acetosella</i>
Reed-grass	<i>Phalaris arundinaceae</i>
Timothy-grass	<i>Phleum pratense</i>
Tormentil	<i>Potentilla erecta</i>
Primrose	<i>Primula vulgaris</i>
Meadow Buttercup	<i>Ranunculus acris</i>
Creeping Buttercup	<i>Ranunculus repens</i>
Downy Rose	<i>Rosa mollis</i>
Bramble	<i>Rubus fruticosus</i> agg.
Raspberry	<i>Rubus idaeus</i>
Common Sorrel	<i>Rumex acetosa</i>
Sheep's Sorrel	<i>Rumex acetosella</i>
Broad Dock	<i>Rumex obtusifolius</i>
Knotted Figwort	<i>Scrophularia nodosa</i>
Ragwort	<i>Senecio jacobaea</i>

Hedge Woundwort
Lesser Stichwort
Greater Stichwort
Common Chickweed
Devil's bit Scabious
Tuberous Comfrey
Wood Sage
White Clover
Stinging Nettle
Common Valerian
Germander Speedwell
Heath Speedwell
Tufted Vetch

Stachys sylvatica
Stellaria graminea
Stellaria holostea
Stellaria media
Succisa pratensis
Symphytum tuberosum
Teucrium scorodonium
Trifolium repens
Urtica dioica
Valeriana officinalis
Veronica chamaedrys
Veronica officinalis
Vicia cracca

FERNS

Lady Fern
Broad Buckler Fern
Male Fern
Bracken

Athyrium filix-femina
Dryopteris dilatata
Dryopteris filix-mas
Pteridium aquilinum

BOOK REVIEWS

Species History in Scotland. Introductions and Extinctions since the last Ice Age. Robert A. Lambert (ed), Scottish Cultural Press, 1998, 160pp. ISBN 1-84017-011-5. £14.95.

This fascinating review of the fortunes and misfortunes of various plants and animals in Scotland gives a clear insight into the impact of human societies over the last ten thousand years. Roy Dennis sets the scene with an appeal for greater tolerance for the reintroduction of some of Scotland's vanished animals and birds, notably the European beaver. The book then delves into the ancient past, examining the former distributions of woolly mammoth, aurochs (wild cattle), lynx and the like, from caves and other archaeological sites.

The more recent past is better recorded in the literature, and there are some extraordinary accounts of the intrepid hunters of great auks throughout the North Atlantic and up until very recently, of basking sharks off the Scottish west coast. These chapters reveal the excesses of our past greed and lack of concern, which unfortunately remain a problem for modern ecosystems and species.

As a contrast, the final chapter reminds us of some of the problems of species introductions, focusing on the severe impact of red deer and other species on the native fauna and flora of New Zealand. There are literally hundreds of references in these chapters to enable the enthusiast to follow up both the errors of the past and the problems facing our current flora and fauna.

W. R. Brackenridge

Glasgow Naturalist. 23 (4) 1999.

Loch Lomondside depicted and described, 2. Early maps and map makers. John Mitchell pp.2-8.

Scottish Insect Records for 1997. E. G. Hancock. pp.55-58.

Extension of the Ringlet butterfly's distribution in southern Lomondside. John Mitchell. p69.

THE ODONATA (DRAGONFLIES) OF THE FORTH AREA

E. M. and R. W. J. Smith

In 1905 William Evans, FRSE, read a paper with the above title to the Royal Physical Society of Edinburgh (Evans 1904-6). His account of the status of the various species 100 years ago makes an interesting comparison with present day knowledge. He recorded 11 species of dragonflies in 'Forth', all still present, with one recent addition.

William Evans, 1851-1922, was an enthusiastic field naturalist with a thorough knowledge of systematic botany and zoology. His work on local natural history spanned species from mammals to protozoa, and from flowering plants to fungi. He described several species new to science besides adding many to the British, and particularly to the Scottish, lists. Evans published over 100 papers on every aspect of Natural History. He was elected a Fellow of the Royal Physical Society in 1880 and a Fellow of the Royal Society of Edinburgh in 1884. In 1906 his Presidential Address to the Royal Physical Society was on "Our Present Knowledge of the Fauna of the Forth Area".

Calopteryx virgo: The Beautiful Demoiselle, a magnificent blue-winged damselfly of running waters, was recorded by Evans in 1896 and 1905 in the vicinity of Aberfoyle but not elsewhere in 'Forth'. There have been recent sightings in the same area and the distribution of this species appears to have changed very little. This is a damselfly that could well repay more study into its present breeding sites in the Aberfoyle district. Evans quotes Stewart (1809) that *C. virgo* occurred in the neighbourhood of Edinburgh during that period and that, in 1841, it was included in a list of insects in the parish of Dollar, in the *New Statistical Account*. It would appear that *C. virgo* was much more widespread 200 years ago than at present.

Lestes sponsa: The Emerald Damselfly occurs throughout 'Forth' in good numbers. Curiously the only record Evans personally had of this species in 'Forth' was of one in the Callander area although "... it is common ... (at) Dalmally ..." Evans collected *Ischnura elegans* at Aberlady between July and 9 August 1898 but did not record *L. sponsa* which is a late summer species. It is now extremely common there and would be difficult to miss. This species is now so widespread and numerous in 'Forth' that it is tempting to suggest that it has increased and spread greatly in the area in the last 100 years.

Pyrrosoma nymphula: Evans gives the Large Red Damselfly as "... widely distributed throughout the area and is still locally common." He correctly describes its habitat as "... the margins of peat pools, ponds and ditches ... (etc)." The status of this species (the only red damselfly in Scotland) seems still to be the same – common except on the eastern coastal sandy areas.

Ischnura elegans: The Blue-tailed Damselfly was "... widely distributed and common locally" 100 years ago. This is still true today of this small, rather

delicate-looking species. It is most plentiful in the thicker vegetation bordering ponds or by slow-flowing ditches and avoids the more open moorland or pools at higher altitudes. There was one year when, at Milkhall Pond SWT reserve in Midlothian, it was plentiful. After the following particularly hard winter the numbers at this reservoir, which is 260 metres above sea level, had noticeably decreased suggesting that its larvae may be susceptible to cold winters.

Enallagma cyathigerum: The Common Blue Damselfly is widespread and is our most plentiful damselfly. It prefers open water with floating vegetation such as pond-weeds for egg-laying, which it does under-water. It ranges from high-altitude waters to those at sea-level and can tolerate a fair degree of pollution. Its status has not changed since Evans' day. There are four different species of look-alike 'blue-black' damselflies in Scotland. *Enallagma* can be separated from the others as it has only one short black line at the side of the thorax. The other three are *Coenagrion* spp and have two short black lines on the side of the thorax. Only one of these, *C. puella*, occurs in 'Forth'.

Coenagrion puella: The Azure Damselfly is "... common in the greater part of England ... (but) appears to be a rare insect in Scotland" (Evans, 1904-6). His only record in 'Forth' was on 22 June 1886 at the Bush, near Roslin in Midlothian. In the 1970s one, a female, was caught on the Union Canal, Edinburgh and identified at the Royal Scottish Museum and described as a 'rarity'. However, in the following year, many dozens were present on the canal and, subsequently, it has been shown to be quite widespread in Fife, the Lothians and south Scotland, perhaps preferring waters with much greater plant cover than those frequented by *E. cyathigerum*. There has obviously been a steady movement north of this species particularly during the last 50 years. It is now recorded over much of 'Forth', spreading to Lochan Eabarach, Aberfoyle (John Mitchell, pers. comm.) and north to the head of Loch Lubnaig, Strathyre (Bayne 1985).

Aeshna juncea: The Common Hawker was the commonest of the larger dragonflies in 'Forth' in Evans' day and it remains so today. It is widespread, breeding in acidic and neutral ponds but not, usually, in the more alkaline pools of sandy shore-lines (although we have recorded this species breeding in the Culbin Forest). There has been no major noticeable change in distribution over the past 100 years.

Cordulegaster boltonii: The Golden-ringed Dragonfly has a strikingly coloured abdomen with black and gold rings. It is our largest dragonfly and is characteristically seen flying low over running water, usually hill streams. Evans noted it as locally common in such areas in Upper Forth and the Trossachs area but he did not record it in the lower Forth area. The distribution today is virtually the same.

Somatochlora arctica: The Northern Emerald is one of our more elusive dragonflies being restricted to forest bogs where it egg-lays in very shallow *Sphagnum*-covered bog-pools. Evans had no record of this species in Forth and this was the situation until 23 July 1994 when both male and female were seen

at a bog in Loch Ard Forest near Aberfoyle (Knowler and Mitchell 1994). It was proved to be breeding in 1998 when one was found emerging (Professor J. Knowler, pers. comm.) This was a considerable extension south of the known range of *S. arctica* in Scotland although breeding has subsequently been proved much further to the south in Kintyre. Drainage for afforestation and agriculture has probably damaged much habitat leading to fragmentation of suitable breeding areas.

Libellula quadrimaculata: The Four-spot Chaser. Although Duncan (1840) wrote that this species occurred at Duddingston Loch and the Pentland Hills, both in the Edinburgh area, Evans reported that it was seldom seen in that area in his time. His only relevant record was on 8 June 1895 when three were seen at a curling-pond near Drumshoreland, Linlithgow. In Upper Forth he stated that it was still locally common. The distribution has hardly changed over the last 100 years. In recent years the first Lothians breeding record was in 1998 when Greg Fitchett recorded egg-laying at Craigton Quarry, near Winchburgh, West Lothian (pers. comm.) An area of disused quarry had recently been scraped then abandoned. It subsequently flooded and started to vegetate producing the typical niche favoured by *L. quadrimaculata*. Unfortunately it is now rapidly becoming overgrown by False Bulrush which will make it unsuitable for this species. This does suggest that only the lack of suitable shallow waters and appropriate short vegetation prevents this species from returning.

Sympetrum striolatum: The Common Darter. Evans was familiar with *Sympetrum nigrescens*, the Highland Darter, in the west of Scotland. He collected a red dragonfly from the Callander area in the early 1870s but none were seen by him since then in that locality. The Highland Darter, confined to north-west Scotland, is very similar to, and is now considered as possibly a race of, the Common Darter which is widespread in England. Intermediate forms occur. Whether Evans' Callander specimen most resembled *S. nigrescens* or *S. striolatum* is unknown. Of even greater interest was Evans' discovery of *S. striolatum*, on 27 July 1901 beside a dry ditch at Luffness, East Lothian. About a fortnight earlier his wife had spotted a red dragonfly of similar size and appearance on the top of a tramcar in Morningside, Edinburgh. *S. striolatum* is well-known to be a migratory species. In the early 1970s Tommy Boyd discovered *S. striolatum* breeding at the Marl Loch, Aberlady, the first breeding record for this species in south-east Scotland. More recently it was found in Fife and in the last few years, at accelerating speed, this species has spread to many coastal localities eastwards as far as Coldingham Loch, north over much of Fife and at inland ponds throughout Mid and West Lothian and up into the Trossachs.

Sympetrum danae: The Black Darter (formerly *Sympetrum scoticum*) is our smallest dragonfly – average length 32 mm. It flies in late summer and autumn. The mature male is unmistakable being black with an Indian-club shaped abdomen and black legs. However females and immature males are yellow with black markings and look similar to female and immature males of

S. striolatum. This species is not uncommon throughout 'Forth' where the habitat is suitable. Acidic bog-pools in Lower and mid-Forth have strong populations. Evans reported that this species was common in Upper Forth but rare in the Edinburgh area. He himself recorded it in the Pentlands, Ochils, Lomonds and the Trossachs. Distribution today is little changed with perhaps an extension of range into a few suitable ponds in our towns.

Migrant dragonflies. The only confirmed record of a migrant dragonfly in 'Forth' is of two Red-veined Darters *Sympetrum fonscolombii* on the Isle of May on 17 August 1911, one of which was caught by W. Evans (Eggeling, 1956). This occurred during a major invasion of this species from Europe that year. In 1995 there was another large-scale influx into Southern England mainly involving the Yellow-winged Darter *Sympetrum flaveolum*. (Silsby and Ward-Smith, 1997). There was a further invasion in 1996 of many species including 4000 *S. striolatum* at Dungeness, Kent (Parr, 1997). This co-incided with a widespread increase and inland spread of *S. striolatum* in South Scotland.

One has to be aware of the possibility of assisted passage. One notable example was of the Emperor Dragonflies *Anax imperator* that emerged from a garden pond in Edinburgh. These would certainly have been accidentally introduced as eggs in aquatic plants from the south of England put into the pond two years previously (Smith, 1995). An unusual dragonfly in Fife flying out of a covered lorry just arrived from England and a Golden-ringed Dragonfly flying out of a railway tunnel in Princes Street Gardens, Edinburgh are other examples.

In 1996 the *Atlas of the Dragonflies of Britain and Ireland* (Merritt *et al.*, 1996) was published. This was the culmination of many years of dragonfly recording organised by the Biological Recording Centre, Monks Wood. This recording scheme and its successors have greatly encouraged interest in these insects providing detailed knowledge of distribution and habitat. Dragonfly recording is still going on and, since the publication of the Atlas, has resulted in innumerable new 10 km sq records, particularly in Scotland, still a very much under-recorded country. On behalf of Monks Wood and the British Dragonfly Society we would like to thank the many enthusiasts who have contributed records to the scheme. A thorough knowledge of distribution is a prerequisite of conservation. Further records should be sent to the Scottish Recorder for the Odonata Recording Scheme, Mrs E. M. Smith, 33 Hunter Terrace, Loanhead, Midlothian EH20 9SJ.

During the last 100 years the loss of ponds has continued mainly due to agricultural changes. However there has been a recent upsurge of interest in the creation of new ponds which has helped to restore numbers of the common odonata. Some species have increased in range, notably *S. striolatum*, *L. sponsa* and *C. puella*. Global warming may perhaps bring new species into 'Forth'. *Aeshna grandis* and *Aeshna cyanea* are possibilities.

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Figure 1. *Sympetrum striolatum* (Common Darter).

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PLANTS IN FALKIRK DISTRICT: AN UPDATE

W. R. Brackenridge

The following list is an interim update of the list published in a previous edition of the FNH (Stewart, 1988), and it is based on data gathered during recent 'Phase 2' site surveys by Keith Watson in 1994 and 1997 for Scottish Natural Heritage. These were mostly Wildlife Sites which were felt to require detailed survey by the Scottish Wildlife Trust, also some raised bog sites. It also includes records from W. Brackenridge, from 1991 to 1995 (referred to by WB). A large number of additional species, listed alphabetically by scientific name, have been located in the district. The identifications follow Stace (1991).

It should be noted that some of the places referred to may be subject to development (housing, etc.), however the diversity of species on recently-disturbed, or derelict sites around industrial areas, is highly significant. Although the semi-natural woodlands, wetlands and the Forth estuary and its environs will perhaps receive priority, such species-rich sites are of considerable interest. These 'new habitats' may be included in the drawing up of Local Biodiversity Action Plans (LBAPs) by Falkirk Council, as with other local authorities. The survey by Watson was a review of Wildlife Sites and to recommend other potential sites, to aid planning policy.

Many of the additional species are 'exotic' plants, which have escaped from gardens or parks, or have been dumped on roadsides and riverbanks. Some of these 'aliens', such as Giant Hogweed and Japanese Knotweed have spread considerably in the last decade and may now require control measures, whilst some native species of semi-natural (especially upland) habitats are declining because of the re-seeding of old pastures, afforestation and open-cast mining.

Those records referring to the Jupiter Wildlife Garden do not include the species introduced there since 1992, however several unusual or rare plants had already become established (Brackenridge, 1996).

The author would welcome further records of plants which are known to occur, which are missing from either Stewart's paper or the undernoted lists. All records are from 1994-97 unless otherwise dated.

Additional species

(I denotes garden escapes or other naturalised plants)

Agrostis gigantea (Black Bent) Rare : Carron Meander, West Mains Pond.

Alchemilla vestita ssp. *filicaulis* (a Lady's Mantle) : Rare : Braes Wood, Westquarter Glen.

Alnus incana I (Grey Alder) : Rare: West Mains Pond (but now widely planted and suckering).

Aruncus dioicus I (Buck's-beard) : Rare : Polmont Park.

Azolla filiculoides I (Water Fern) : Rare : Kinneil Estate (WB-1992).

- Berberis vulgaris* I (Barberry) : Rare : Polmont Woods.
- Botrychium lunaria* (Moonwort) : Rare : California North (WB-1986).
- Bromopsis inermis* I (Hungarian Brome) : Rare : Westquarter Burn.
- Buddleja davidii* I (Butterfly-bush) : Rare – overlooked : Polmont Station.
- Carex dioica* (Dioecious or Separate-headed Sedge) : Rare : Tak-ma-Doon Road.
- Carex muricata*, ssp. *lamprocarpa* (Prickly Sedge) : Rare : Bo'ness foreshore;
Jupiter WG (WB-1991).
- Centaurea montana* I (Perennial Cornflower) : Rare : Maddiston.
- Chaenorhinum minus* (Small Toadflax) : Rare : Craigbank Quarry (Avonbridge);
Jupiter WG (WB-1992).
- Cotoneaster horizontalis* I (Wall Cotoneaster) : Rare: Summerford.
- Cymbalaria muralis* I (Ivy-leaved Toadflax) : Rare (overlooked?) : Cleuch
Plantation.
- Daucus carota* (Wild Carrot) : Rare : Bo'ness Foreshore.
- Eleocharis quinqueflora* (Few-flowered Spike-rush) : Rare : Tak-ma-Doon Road,
South Torwood.
- Epilobium roseum* (Small-flowered Willowherb) : Rare : Cleuch Plantation.
- Euphorbia peplus* (Petty Spurge) : Rare : Carriden Woods.
- Fuchsia magellanica* I (Fuchsia) : Rare : Westquarter Burn.
- Geranium endressii* I (French Cranesbill) : Rare : Rumford East.
- Hedera hibernica* (Irish Ivy) : Local (overlooked): Carriden Woods, Hail Wood,
Polmont Park.
- Hesperis matronalis* I (Dame's Violet) : Local (overlooked?) : Wallacestone,
Rumford East; Bonny Water at Bonnybridge (WB-1995).
- Hieracium grandidens* (*Glandulosa* subsection) Hawkweed : Rare : Westquarter
Burn.
- Hippophae rhamnoides* I (Sea Buckthorn) : Rare : Bo'ness Foreshore.
- Knautia arvensis* (Field Scabious) : Rare: South Polmont, Bo'ness Foreshore; by
M9 east of Polmont (WB-1998).
- Leontodon hispidus* (Rough Hawkbit) : Rare : Bo'ness Foreshore.
- Ligustrum ovalifolium* I (Garden Privet) : Rare : Cleuch Plantation, Hallglen
Haven.
- Linaria purpurea* I (Purple Toadflax) : Rare: Craigbank Quarry (Avonbridge).
- Linaria repens* I (Pale Toadflax) : Rare : Jupiter WG (WB-1991).
- Lonicera pileata* I (Box-leaved Honeysuckle) : Rare : Cleuch Plantation.
- Lysimachia nummularia* I (Creeping Jenny) : Rare : Craigbank Quarry
(Avonbridge).
- Malva moschata* I (Musk Mallow) : Rare : Powburn Coast, Bo'ness Foreshore.
- Mentha x rotundifolia* I (Apple Mint) : Rare : Wallacestone.
- Nasturtium x sterilis* (Hybrid Watercress) : Rare (overlooked?) : West Mains
Pond.
- Orobanche minor* (Common Broomrape) : Rare : Jupiter WG (WB-1991).
- Ornithopus perpusillus* (Common Birdsfoot) : Rare : Jupiter WG (WB-1991),
Bonnyfield Quarry (Bonnybridge) (WB-1995).
- Philadelphus coronarium* (x *virginalis*?) I (Mock Orange) : Rare : Westquarter
Burn, Polmont Park.
- Plantago media* (Hoary Plantain) : Rare : Bo'ness Foreshore.

- Poa subcaerulea* (Spreading Meadow-grass) : Local : Braes Wood, Carriden Woods, Torwood Heath, Rashiehill Mire.
- Polygonum bistorta* I (Bistort) : Rare : Polmont Woods (WB-1993).
- Polygonum lapathifolium* (Pale Persicaria) : Rare (overlooked?) : Parkfoot Marsh.
- Populus x canescens* I (Grey Poplar) : Rare : Carriden Woods.
- Potentilla reptans* (Creeping Cinquefoil) : Local : Jupiter WG, Grangemouth Docks (WB-1991).
- Prunus lusitanica* I (Portuguese Laurel) Rare : Carriden Woods, Polmont Park.
- Rhynchospora alba* (White-beaked Sedge) : Rare : Sheilknowes.
- Ribes sanguineum* I (Flowering Currant) : Rare: Craigbank Quarry, Wallacestone, Maddiston.
- Rosa caesia* (Dog Rose – addition to *R. canina* group) : Rare: Summerford, Tippetcraig.
- Rumex longifolius* (Northern Dock) Local: Shortrig, Milnquarter, California North, Craigbank Quarry (Avonbridge), Wallacestone, Bo'ness Foreshore, Parkfoot Marsh.
- Rumex x arnotti* (Hybrid Dock) : Rare : Shortrig.
- Salix repens* (Creeping Willow) : Rare: Shortrig, Jawhills, Greyrigg.
- Scirpus sylvaticus* (Wood Club-rush) : Rare : Castlecary Glen.
- Scleranthus annuus* (Annual Knawel) : Rare : Bonnyfield Quarry (Bonnybridge) (WB-1995).
- Sisymbrium orientale* (Eastern Rocket) : Rare : South Polmont.
- Sorbus intermedia* I (Swedish Whitebeam) : Rare : Wallacestone, Bo'ness Foreshore.
- Spiraea pseudosalicifolius* I (Spiraea) : Rare : Hallglen Haven, Wallacestone, Seabegs Wood.
- Tritonia (Crocsmia) crocosmiflora* I (Montbretia) : Rare-overlooked? : Black Loch, Hallglen Haven.
- Tropaeolum majus* I (Garden Nasturtium) : Rare casual : Maddiston.
- Ulex minor* I? (Western Gorse) : Rare: South Polmont.
- Verbascum nigrum* I (Dark Mullein) : Rare : Bo'ness Foreshore.
- Veronica anagallis-aquatica* (Blue Water Speedwell) : Rare : Kinneil Kerse (WB-1992).
- Vicia tetrasperma* (Smooth Tare) : Rare : Jupiter WG (WB-1992).

Other sites found for scarce species since Stewart, 1988

- Alchemilla xanthochlora* (Pale Lady's-mantle) : Rare : Westquarter Burn.
- Anthyllis vulneraria* (Kidney Vetch) : Rare : Bo'ness Foreshore; Jupiter WG (WB-1991).
- Calamagrostis epigejos* (Wood Small-reed) : Local : Bo'ness Foreshore; Jupiter WG (WB-1991).
- Callitriche platycarpa* (Various-leaved Water-starwort) : Local: California Muir
- Calystegia sepium*, ssp. *pulchrum* I (Hairy Bindweed) : Local : West Mains Pond.
- Cardamine amara* (Large Bittercress) : Rare : Torwood Glen.
- Carex aquatilis* : Rare: Wester Drum (tentative identification).
- Carex disticha* (Brown Sedge) : Rare : Hall Wood.

- Carex hirta* (Hairy Sedge) : Local – overlooked : Hall Wood, High Bonnybridge, West Mains Pond, Westquarter Burn.
- Carex hostiana* (Tawny Sedge) : Rare : Braes Wood
- Carex laevigata* (Smooth-stalked Sedge) : Rare : Seabegs Wood.
- Carex pallescens* (Pale Sedge) : Rare : Avonbank-Birkhill, Braes Wood.
- Carex pulicaris* (Flea Sedge) : Rare : Loch Ellrig
- Centaureum erythraea* (Common Centaury) : Rare: Summerford, Bo'ness Foreshore; also Jupiter WG, Grangemouth Docks, by M9 at Polmont (WB).
- Circaea x intermedia* (Intermediate Enchanter's Nightshade) : Rare : Castlecary Glen, Rumford East, Polmont Woods.
- Corydalis claviculata* (White Climbing Fumitory/Corydalis) : Rare: Dales Wood.
- Echium vulgare* (Viper's Bugloss) : Local : Bo'ness Foreshore; Grangemouth Docks, Jupiter WG (WB-1991).
- Epipactis helleborine* (Broad-leaved Helleborine) : Rare : Braes Wood, Limerigg Pools, Torwood Glen.
- Galeopsis speciosa* (Large Hemp-nettle) : Local: Skipperton Glen.
- Galium uliginosum* (Fen Bedstraw) : Rare: Tak-ma-Doon Road, South Torwood, Shortrig, Braes Wood.
- Geranium molle* (Dove's-foot Cranesbill) : Local : Polmont Station; Bonnybridge (WB-1995).
- Geranium lucidum* (Shining Cranesbill) : Rare: Skinflats Wood.
- Geranium sylvaticum* (Wood Cranesbill) : Rare : Westquarter Burn.
- Gymnocarpium dryopteris* (Oak Fern) : Rare : Cleuch Plantation, Braes Wood.
- Hieracium brunneocroceum* (Orange Hawkweed) : Local : Hallglen Haven, Rumford, Polmont Station, Jupiter WG (WB).
- Honkenya peploides* (Sea Sandwort) : Rare: Carriden Woods (shoreline).
- Hypericum tetrapterum* (Square-stemmed St. John's-wort) : Rare : Polmont Woods.
- Isolepis setacea* (Bristle Club-rush) : Local: South Torwood, Rough Castle, Maddiston West.
- Lamium album* (White Dead-nettle) : Local : Powburn Coast; Jupiter WG-1991 (WB).
- Lathyrus montanus* (Bitter Vetch) : Local : Rumford West.
- Leucanthemum maximum* I (Shasta Daisy) : Rare : Wallacestone.
- Listera ovata* (Twayblade) : Rare : Braes Wood.
- Lycopodium clavatum* (Stag's-horn Clubmoss) : Rare : Limerigg Pools.
- Peplis portula* (Water Purslane) : Rare : Loch Ellrig.
- Melilotus alba* (White Melilot) : Rare : Polmont Woods, Bo'ness Foreshore.
- Mentha piperata* I (Peppermint) : Local : Hallglen Haven, Maddiston, Polmont Woods.
- Mentha x villosa* I (Apple Mint): Stoneywood, Polmont Station.
- Millium effusum* (Wood Millet) ; Local : Castlecary Glen, Westquarter Burn, Polmont Park.
- Mimulus guttatus* I (Monkey-flower) : Local : Maddiston.
- Mimulus moschatus* I (Musk) : Rare : North Stenhousemuir
- Ononis repens* (Common Rest-harrow) : Rare: South Polmont, Avonbank-Birkhill.

- Petasites albus* I (Creamy Butterbur) : Rare: Skipperton Glen, Summerford, Cleuch Plantation, Westquarter Burn.
- Phegopteris connectilis* : Beech Fern: Rare : Braes Wood, Castlecary Glen.
- Phleum bertolonii* (Smaller Cat's-tail) : Rare: Carriden Woods.
- Platanthera chlorantha* (Greater Butterfly Orchid) : Rare : Bo'mains Meadow, Avonbank-Birkhill, Balquhatstone (Slamannan).
- Populus tremula* (Aspen) : Rare: Castlecary Glen.
- Pyrola minor* (Common Wintergreen) : Rare: Braes Wood, Summerford, Redding grassland.
- Ranunculus omiophyllus* (Round-leaved Crowfoot) : Rare : South Drum clay pit.
- Rheum rhabarbarum* I Rhubarb : Local : Haliglen Haven.
- Ribes alpinum* I (Mountain Currant) : Rare: Westquarter Burn.
- Sagina nodosa* (Knotted Pearlwort) : Rare: Tak-ma-Doon Road, Shortrig, California North, Loch Elrig, Craigbank Quarry.
- Salix pentandra* (Bay Willow) : Rare: Shortrig, Craigbank Quarry, Rumford West, Newcraig, Loch Ellrig, Lochgreen.
- Salix purpurea* (Purple Osier) : Rare Wallacestone; Bonnyfield Quarry (Bonnybridge), Loch Ellrig, also planted by M876 (WB 1995-98).
- Salix phylicifolia* (Tea-leaved Willow) : Rare: California Muir, Greyrigg, Black Loch.
- Schoenoplectus tabernaemontani* (Grey Bulrush) : Local : West Mains Pond.
- Silene vulgaris* (Bladder Champion) : Local : Polmont Station; Jupiter WG, M9 west of Kinnaird, Bonnyfield Quarry Bonnybridge), A803 east of Bonnybridge, Lochlands (Larbert)(WB-1991-96).
- Solidago virgaurea* (Golden-rod) : Local : Shortrig, Torwood Glen.
- Sorbus aria* (Whiteheeen) : Rare : Castlecary Glen.
- Sparganium emersum* (Unbranched Bur-reed) : Rare : Wallacestone.
- Spiraea douglasii* I (Bridewort) : Rare : Braes Wood.
- Tolmeia menziesii* I (Pick-a-back Plant) : Local : Avonbank-Birkhill (presumably now frequent along River Avon).
- Viola lutea* (Mountain Pansy) : Rare : Braes Wood.

Acknowledgement

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BOOK REVIEWS

Loch Lomond and the Trossachs. Robert D. Campbell. 1999. Mainstream Publishing. 250pp. ISBN 1.84018.189.3. £9.99.

Well produced with many illustrations, many coloured; and tourist information – visitor services, transport, accommodation – supplement a very readable, knowledgeable, informative text, taking us round the area by ten road routes. Some source works, naturalist and historical, are mentioned in the introduction, including FNH's *Central Scotland: land, wildlife, people* (by title only), but not our *Lure of Loch Lomond* (which is kindred though briefer to much of this book), while giving some lesser works. Opportunities in the text to give further reading are not taken eg. Mair's. *Stirling* and our Mackay's *Downe; historical notes*. The reader really needs a magnifier to benefit from the useful maps and street plans. Though a great deal of known information is given well, a notable omission spotted was the classic bathyspheric surveys by Murray and Pullar c1900 of all Scottish lochs, where the author only mentions the earlier Admiralty survey of Lomond.

As the author says "it is remarkable that there has been no comprehensive guide" to the region, but by "bringing together much diverse information about this beautiful region ... about to become Scotland's first National Park", he has here succeeded in providing an admirable guide for some time to come.

Scotland: World Bibliographical Series (vol 34). Dennis Smith, compiler. revised edition 1998. ABC Clío Press. 466pp. ISBN 1.85109.280.3. £37.

This extensive series, presently of over 200 titles, will eventually cover every country, and some of the world's principle regions and cities, each in a separate volume of annotated entries of books and papers dealing with its history, geography, economy, politics, and people, culture, customs. Each volume seeks to achieve by careful selectivity and critical comment of the literature, a realistic expression and appreciation of the country; for the reader – reference sources in a uniform format. FNH's *Central Scotland: land, wildlife, people*, and the *Forth Naturalist and Historian* are in the chapters on Flora and Fauna, and on Local Studies.

Access to the Countryside for Open Air Recreation. Scottish Natural Heritage's Advice to Government. The Access Forum. November 1998. 60pp.

After extensive and vigorous debate this states that the best way to meet the Government's intent to create greater freedom for people to enjoy the countryside is to change the law to create a right of access.

**BRAMBLES OF THE TROSSACHS AND STIRLING:
W. M. ROGERS' 1896 SCOTTISH VISIT RETRACED**

G. H. Ballantyne

Most people with more than just a passing interest in wild flowers are probably aware that there are some groups of plants which are 'difficult' and which need to be left to specialists. The main groups include the hawkweeds (*Hieracia*), dandelions (*Taraxaca*) and brambles (*Rubi*). Most of these reproduce asexually and, e.g. what Linnaeus classified as a single species, *Rubus fruticosus*, is now known to consist of several hundreds of true-breeding entities, each the product of a fertile cross in the past. In the case of brambles, well over 300 microspecies have been reliably recorded from Britain and Ireland and several additions are being described yearly. However, it is now evident that many brambles have a very localised distribution – some a mere bush or two – and it has become the custom to bestow a scientific binomial only if a particular microspecies is known to be present over a reasonably large area. Therefore there are quite a few bushes and clumps to be found that cannot be named, and may never receive one.

Differences between some species are small and not obvious whereas others look quite dissimilar. In the field environmental factors, especially shade, can exacerbate difficulties in identification so that the same taxon growing at the edge of a wood can look quite distinct in the wood itself. Thus it is not surprising that the early botanists were baffled by brambles and in fact it was not until about 1970 that any real progress was made. By then, Eric Edees had been joined by Alan Newton in paying the *Rubus* genus much attention, and their resultant *Brambles of the British Isles* (Edees and Newton 1988) at last made it worth while for interested individuals to record brambles meaningfully.

In Scotland not much work was done on the genus during the 19th century. Towards its close, the foremost British authority was the Reverend W. Moyle Rogers of Bournemouth, who received parcels of dried specimens from north of the Border and thus gained a knowledge of some species. In 1896 he took the opportunity of a first visit to Scotland to stay in Callander for the first three weeks of July and to explore the surrounding countryside increasingly being called the Trossachs, in search of brambles. He chose well for, unknown to him, Callander lies near the dividing line between what were much later described as the North Sea and Irish Sea Bramble Florulas (Newton 1980), thus giving him the chance to find a good range of species. Had he gone to any number of other places as his base, he might have been quite disappointed, for there are many parts of the country bereft of other than a handful of species. He also made short outings to a few other localities, notably Killin and Crieff while he stayed at Gargunnoch at the invitation of Colonel Stirling, a local botanist, for three days at the end of his visit and explored the Stirling area. The results of this Scottish trip are described in Rogers (1897a and 1897b).

His first excursion was to Callander Craggs, where he found two species new to him in a living state. The number of new species was increased by subsequent walks, causing him to comment that the Craggs were “exceedingly good bramble ground”. He also explored the immediate countryside around the town and went to the shores of Lochs Venachar, Lubnaig, Earn, Tay and the Lake of Menteith, and, albeit briefly, further afield to Oban, Balloch and the Edinburgh area. At several of these localities he came across brambles he was unable to name, while confirming the identities of some that he had seen in a pressed state. Specimens of those that he had difficulty with were subsequently sent to the leading German batalogist of the day, Dr W. O. Focke, so that by the end of 1896 he had names for most. However, bramble nomenclature was still in a very muddled state then and it has taken a long time to sort out just what Rogers did and did not find. This is not a criticism of him, for he was a first-class observer and interpreter as his *Handbook of the British Rubi* (1900) shows, but a reflection on just how difficult it was to assign meaningful names then.

Although I first visited the Callander district in search of local brambles in 1981 and the Stirling area in the late 1980s, it was not until 1998 that I was able to follow in Rogers’ tracks to any extent. A full hundred years has seen many changes, of course, with much habitat loss, but with the exception of the first four species in the following list there were probably as many bushes around as in Rogers’ day, if not all exactly in the same stations. Brambles are pretty resilient and liable to persist for long periods! The Craggs were an immediate success, as had been the case with Rogers: on my first half hour’s walk I saw no fewer than nine species, followed by a further five not long afterwards – a large total for a Scottish site. With the facility for much faster travel than in Rogers’ time, I was able to add to that figure from the various lochs in the vicinity, so that in a single day I came across as many species as he had in about a week. A visit to Killin (Mid Perth, VC 88) confirmed my suspicion that, despite Rogers’ implication to the contrary, the west end of Loch Tay was not good for brambles, although I did have the satisfaction of clearing up a long-standing query over the identity of ‘*R. macrophyllus*’ (q.v., below). Loch Earn proved much more productive, with a total of 14 species; the contrast between the comparatively developed north shore and the single track south side (except near St Fillans) was marked, with the latter presumably being not too dissimilar to what it was like when Rogers explored it. What he called *R. britannicus* now *R. pictorum* Edees was very showy in several parts round the loch. A third trip, to the Lake of Menteith and Aberfoyle and thence to Loch Lubnaig and Balquidder completed my 1998 retracing of Rogers’ footsteps although of course I could not go to exactly everywhere he went. These later outings added fewer new species, naturally, but verified several of Rogers’ finds and elucidated the identities of others. Coupled with my previous Stirling visits I was pleased to re-find nearly all his species and, in time and with help, to establish the precise identities of most.

During the twentieth century, and particularly in its second half, there have been many alterations to the names of the brambles on the British list. This has been due both to research demonstrating that a lot of continental names had

been incorrectly applied and thus needed to be rejected, and to the naming of a considerable number of new species. As these changes make it difficult to reconcile the nomenclature used by Rogers, the accompanying list is arranged in the same order as he employed in 1897, with his names followed by the current ones used by Eedes and Newton (1988) in bold type. It should be noted that in Rogers' time the concept of a "species collectivae" was prevalent, i.e. the lumping together under one name of two or more, not necessarily closely related, taxa. There are several examples in the list of these aggregate names.

SUBERECTI = subgenus RUBUS

This group combines the characters of rasp (*R. idaeus* L.) with those of the non-glandular groups of the true brambles, notably the *Silvatici*, and are usually associated with moors and heathy ground. They are much diminished of late.

R. fissus Lindl. = ***R. scissus*** W. C. R. Watson: "Locally abundant in open heathy places"; as these have declined very considerably, this species is now found in only small quantity, although widespread. By south side of Loch Earn; east side of Loch Lubnaig; etc.

R. suberectus Anders. = ***R. nessensis*** W. Hall: "Nowhere seen in any great quantity"; still between Strathyre and Loch Lubnaig, by the lochside; and near Loch Tay, by Pier Road at Killin.

R. plicatus Weihe & Nees: Although described as "fairly widespread", in 1998 only a single stem was seen, by the south road of Loch Earn at the caravan site.

R. rogersii Linton = ***R. fissus*** Lindley: "I think the most abundant and most conspicuous suberect bramble in W[est] P[erth]"; now much reduced owing to loss of habitat. Only the odd bush in 1998, as at Bracklinn Falls car park and by Loch Venachar.

In contrast to Perthshire, Rogers did not see any living bushes of any of the series *Suberecti* in the Stirling area, although had he had time to go to Flanders Moss or other comparable spots he would probably have found them as plentiful. He had seen dried specimens of *R. scissus* and *R. nessensis* from the county.

(*R. latifolius* Bab.: see *Caesii/Corylifolii* at end.)

Series RHAMNIFOLII

"More than half of the *Rhamnifolians* known for Britain occurred in the localities I visited, and many of them in great quantity". One hundred years on, the figure is now about a quarter. Several of those noted by Rogers still grow abundantly.

[*R. incurvatus* Bab.: Although Rogers said he found "well marked examples" by L. Earn, in his *Handbook* (1900) he states "I cannot recall having seen this

typical plant from any English or Scottish locality" (p.27). This species is scarcely found in Scotland, and this record does not appear in Edees & Newton (1988); both D. E. Allen and myself consider it to be an error, perhaps for *R. pyramidalis* Kaltenb. a similarity to which Rogers discusses.]

R. lindleianus Lees: In Scotland this is a western species and so Rogers' statements that he found it "by L. Earn, in great quantity" and "by L. Tay, abundant" are surprising. In 1998 some were present by both shores of L. Earn, particularly on its north-west side, but only one bush was seen at the west end of Loch Tay. His Stirlingshire dried specimens all came from Loch Lomond.

R. rhamnifolius Weihe & Nees (sp. collect.): Under this name Rogers mentioned two brambles he was unable to name satisfactorily, one on Callander Crags which he considered to show "rather closer affinity with *R. pulcherrimus*" = *R. polyanthemus* Lindeb. – and in fact this may have been the species involved, as an atypical form was seen there in 1998. The other, found at Stirling and which he assigned to *R. cardiophyllus* Lef. + P. J. Mueller, has been determined by A. Newton as his *R. wirralensis*, a member of the series *Mucronati*.

R. nemoralis P. J. Mueller: Rogers did not find this growing, his determination being made from material gathered by his son from Black Hill, south of Callander; it is in fact *R. wirralensis* (det. D. E. Allen, conf. A. Newton). It is likely that "var. *glabratus*" from Wester Glen, Gargunnock was also that species. It should be noted that what Rogers normally understood to be *nemoralis* was the bramble now called *R. oxyanchus* Sudre; see also *R. villicaulis* Koehl. var. *selmeri*, below.

R. pulcherrimus Neuman = *R. polyanthemus*: In the west and especially the southwest, this is abundant, but it is much less so in central and eastern Scotland, so Rogers' assessment that it was "not very abundant" was correct. Found in small quantity in 1998 on Callander Crags, by L. Venachar and by the Lake of Menteith.

R. scheutzii Lindeb. = *R. errabundus* W. C. R. Watson: A new species in the living state to Rogers, who sent specimens to Focke for determination along with various notes, which he reproduces. He considered it to be "one of the most abundant and most constant brambles seen by me in Mid-Scotland", an accurate summing-up of its position both then and now.

R. lindebergii P. J. Mueller: Seen by Rogers in only two localities, "in the higher part of the Callander Crags", i.e. by the track above Bracklinn Falls car park where it still grows, and from the Aberfoyle area. In 1998 it was noticeable in several places along the Loch Earn South Road. This bramble seldom occurs in any quantity and avoids the more acid soils; it is scattered throughout central and south Scotland.

(*R. dumnoniensis* Bab.: "extraordinarily abundant" near Oban, which is still the case but well outwith the Trossachs.)

R. villicaulis Köhler. var. *insularis* (F. Aresch.) Rogers = *R. septentrionalis* W. C. R. Watson. Rogers was delighted to see this species, which he opined was

“one of the most abundant and characteristic of Scottish brambles”, having described the form from dried material in 1894. While his view is perhaps an overstatement of its distribution, it certainly is widespread in central and especially north Scotland (‘septentrion’, chosen by Watson, is an ancient name for ‘the north’). Still on the Callander Crags and scattered throughout the Trossachs although seldom in quantity; here and there in Stirlingshire.

R. villicaulis Köhler. var. *selmeri* Lindeb. = *R. nemoralis* P. J. Mueller. At the time Rogers was writing there was considerable confusion over the segregates comprising the aggregate *R. villicaulis*. In his 1894 description of the various taxa he points out the differences between *insularis* (see previous entry) and *selmeri*, which “seems to be the commonest fruticose bramble in Scotland, as in most parts of the British Isles”, so much so that he gave no stations for it. It is indeed widespread and often abundant and, along with *R. latifolius* and *R. radula*, has the widest distribution of all the Scottish species of *Rubus*.

(*R. rhombifolius* Weihe: “I think certainly a strong form of this” in one place west of Callander; although a possibility – there is a good colony at Rowardennan by Loch Lomond, a mere four miles distant (but on the other side of Ben Lomond) – his identification may be an error. In his *Handbook*, Rogers places this taxon under the aggregate name *villicaulis* near to *selmeri*, i.e. *nemoralis*, and it may have been a form of that. A voucher specimen has not been found.)

Series SILVATICI

R. macrophyllus Weihe & Nees (sp. collect.): most of the available material gathered under this composite name, including *R. schlechtendalii* Weihe, has proved to be *R. leptothyrsos* G. Broun, discussed in the next entry. However, a puzzling specimen collected by Loch Tay at Killin by different botanologists, including Rogers who called it “somewhat off type” (by 1900 dubbing it *macrophyloides*), has turned out to be a shade form of *R. furvicolor* Focke.

Another “shade form ... not very well marked” shown to Rogers at Gargunnock may well have been *leptothyrsos*.

R. hirtifolius Muell. & Wirtg., var. *danicus* Focke = *R. leptothyrsos* G. Broun: Rogers had not come across this in England but from specimens received he realised it was “a frequent and very handsome Scottish bramble”. This is indeed the case, especially in the central belt. Focke had confirmed it as his *R. danicus* and Rogers goes on to discuss its affinities with ‘*macrophyllus*’ (see previous entry). He also noted specimens seen from further afield than the Trossachs area and Stirlingshire.

R. pyramidalis Kaltenb.: a short entry states “By L. Earn, a hairy form ...”; a specimen has not been seen but a bramble collected near the east end of the loch and on the outskirts of St Fillans has been confirmed by D. E. Allen as “fairly typical” *pyramidalis*. The other station was “near Killin; the type”, which may in fact prove to be *furvicolor* or *wirralensis* if a specimen can be traced.

Series EGREGII = MUCRONATI/ANISACANTHI

R. mucronatus Blox. = *R. mucronulatus* Boreau: Described as “frequent and locally abundant” in West Perth, an assessment which applies to most of central Scotland including parts of Stirlingshire; and also to the NE, where in some areas it is the sole bramble.

R. melanoxyton Mueller & Wirtgen = *R. furvicolor* Focke: Rogers was very pleased to find this species and have it verified as part of the British bramble flora (along with *R. drejeri*). He gives a long account of the differences between it and allied taxa, and states that “I have no other British specimens that quite match the Scottish ones”, confirming the fact that it is endemic to Scotland. However, not surprisingly, this bramble caused him much confusion, being collected under a variety of names: “*macrophyllus* sp.coll.”; “near *pyramidalis*”; “near *mucronatus*”; and “*rosaceus*”. *R. furvicolor*'s stronghold is in the NE, with good populations also in the west central region centred on VC87 (West Perth), and occasionally in VC86 (Stirlingshire). The lectotype is a specimen from Loch Earn, collected by Rogers on his 1896 visit – but it should be noted that this is in VC88 (Mid Perth), not, as indicated in Edees & Newton (1988), following Rogers' original error, in VC87.

R. infestus Weihe: This was apparently observed by Rogers in several places, sometimes in quantity, but there may have been confusion at times with the next species, *R. drejeri*: at least one of his specimens is labelled “near *infestus*” when in fact it is *drejeri*. In 1998 *R. infestus* was seen only as a few plants on Callander Crags, although it does certainly occur elsewhere in the general area. In Stirlingshire, Rogers “saw handsome bushes at Gargunnoch and Stirling” (1897b), where it can still be found. This species is scattered throughout central and south Scotland, coast to coast.

R. drejeri G. Jensen. An extended note on the *R. drejeri* aggregate is given, beginning with the fact that a plant Rogers had seen two or three years previously and took to be *R. drejeri* had turned out to be his own *R. leyanus*. He goes on to give a detailed comparison of the two taxa and adds an account of a new variety, *hibernicus*, collected in Co. Down in 1894/5. He was gratified that Focke had named his mid-Scotland specimens as *R. drejeri*, concluding his note with the declaration “The confident restoration to our British list of typical *R. drejeri* and its ally *R. melanoxyton* at the same time and from the same part of Scotland is remarkable”. Actually, this restoration of *R. drejeri* was doubted by Alan Newton during the 1970s (Newton, 1979). At that time, he had not seen any of Rogers' specimens of it and it was not until August 1978 that he came across living bushes. I well remember his elation on realising that plants found in the Blairgowrie area (VC89, East Perth) were true *R. drejeri*, while, co-incidentally, I was able to send him two examples from Fife (VC85) about the same time. In 1896 Rogers had collected material in Perthshire from Lochs Earn and Venachar; 100 years on only one patch was seen, by the former locality – perhaps the same as that referred to under *R. infestus*. Rogers also collected it in Stirling where it is frequent. The species' distribution in Britain is concentrated on east central Scotland, with further-flung outliers being found regularly.

Series RADULAE

R. radula Weihe: As an aggregate species, Rogers considered this to be locally abundant, with four forms including the type, which he did not see in the Trossachs area. However, in 1998 typical *radula* was found by the Lake of Menteith and Loch Earn. He also encountered “a good deal of *radula*, some of which was nearly or quite typical, while other bushes were less so” (1897b) at Stirling, and the typical form at Crieff. The true species is abundant in east and south Scotland and scattered throughout the rest of Scotland.

R. radula Weihe var. *echinatoides* Rogers = *R. echinatoides* (Rogers) Dallman: “Locally the most abundant form”; it is at its northern limit away from the NE coast and does not occur in the Loch Earn area but can still be found at Callander, Loch Tay, Lake of Menteith, and at Gargunnock. The next species, *R. scoticus*, is equally as frequent.

R. radula Weihe var. *anglicans* Rogers = *R. scoticus* (Rogers & Ley) Edees. Rogers comments “not seen growing by me”; however, on his second day he collected on Black Hill just south of Callander what he believed to be “a weak form” of what is now called *R. dasyphyllus*. Later, he redetermined it as “*anglicans* or *ericetorum* ... var. *scoticus* Rogers & Ley”. In turn this was upgraded to a full species by Edees in 1974. It seems odd that Rogers did not come across more of this bramble, as it is common in and around Callander; elsewhere it occurs southwards down most of the west coast.

R. anglosaxonicus Gelert var. *raduloides* Rogers = *R. raduloides* (Rogers) Sudre: The sole record is at Gargunnock near Stirling, from where Rogers mentions “a very handsome form ... [that] departs from the type considerably in the direction of my *raduloides* var.” (1897b). It has not yet been refound there but it does occur in Stirling in several places. This is predominantly a western and south-western species, penetrating the Clyde/Forth valley eastwards.

[*P. echinatus* Lindley: “I have, I think, seen dried specimens from Stirling Castle Hill” (1897b) (author’s emphasis) but this appears to be an error – it seems unlikely Rogers would have missed the plant on his visit. This species has not been reliably recorded north of North Yorkshire.]

Series KOEHLERIANI = HYSTRICES

[Rogers detected what he considered to be “a weak form” of *R. Koehleri* Weihe & Nees, var. *pallidus* Bab. = *R. dasyphyllus* in two stations. One has proved to be *R. scoticus* (q.v.) and it is likely that the other, from near Lake of Menteith, will be the same. *R. dasyphyllus* is common throughout south Scotland but thins out rapidly towards the Forth/Clyde line; it may well occur in the Trossachs but in very limited quantity. The other member of this group Rogers termed “my *infecundus* var. of *R. rosaceus* Weihe & Nees”, which was possibly a form of *R. fuscicolor*, found at Balloch at the south end of Loch Lomond, not far outside the Trossachs.]

(BELLARDIANI)/CAESII = CORYLIFOLII

The Corylifolian group was not well understood in Rogers' day and it still causes many problems, as demonstrated by his exclusion from it of two of its most prominent Scottish members, *R. latifolius* and *R. pictorum*.

R. latifolius Bab.: Babington described this species in 1851 from specimens he gathered at Cramond Bridge, just west of Edinburgh. Forty-five years later Rogers made a special trip there but found the bramble to be "in very small quantity". This is rather surprising as it is, along with *R. radula*, the dominant species in east and south Scotland. It occurs in a variety of forms, one or two of which may deserve a new name in time. Rogers placed it under the series Suberecti, although in his *Handbook* he has it in the Subrhamnifolii series a group no longer recognised. His uncertainty is expressed in the account of his visit to Stirling: "On the Castle rock I saw both *R. corylifolius* Sm. and *R. caesius* L. (sp. collect.). A bush or two or more of the *R. corylifolius* seemed fairly good *R. sublustris* of Lees, which may be regarded as typical *corylifolius* [=, in Scotland, *R. latifolius*], but most of the bushes were, I think, uncharacteristic, while some of them looked like hybrids of *R. corylifolius* and *R. caesius*. *R. caesius* itself I saw there ..." (1897b). This succinctly sums up the position of *R. latifolius* today. (It should be noted that Rogers' last observation is an error, as in Scotland the true dewberry occurs only in the extreme SW; some low-growing forms of *latifolius* can mimic it.)

R. britannicus Rogers = *R. pictorum* Edees: "A strong, very handsome bramble in sunny places, and, I believe, a well-marked distinct species" seen "in considerable quantity" by Rogers. It is indeed the commonest bramble in mid-central Scotland, found in a variety of habitats and often the only one to be encountered, catching the eye with its masses of white blooms in mid summer. Rogers placed it in the Bellardiani, now Glandulosi. Watson (1958) was also confused by it, putting it under his own *R. iodnephes*, and allocating it to the Dispaes, now Anisacanthi. In 1982, what had been dubbed 'false *iodnephes*' for some years was put out of its misery by Edees, who named it *R. pictorum*, after the ancient Scottish people.

Mention is made earlier of two recent determinations of *R. wirralensis* A. Newton under *rhamnifolius* and *nemoralis*. Several brambles collected in 1998, notably from the sides of Lochs Venachar and Achray, have proved to be *R. wirralensis* (det D. E. Allen) which seems to be widespread in the Trossachs, and reaches Stirling. Only one other bramble was found which was not listed by Rogers under one name or another, viz. *R. elegantispinosus* (A. Schum.) H. E. Weber, a clump of which was growing by a car park on the east side of Loch Lubnaig. This is of comparatively recent garden origin and is now thoroughly established in the central belt and is spreading rapidly.

In addition to the 34 taxa in his two lists. Rogers gives a further 25 recorded from Scotland, leaving "fifty-five species and thirty-six varieties of British Rubi ... still unrecorded from any part of Scotland". The 59 taxa mentioned by him, together with the vice-comital list given in an Appendix to the *Handbook* of

1900, formed the basis of the first comprehensive *Rubus* list for Scotland, issued a year or two later. This was compiled by Trail (1902-03), who acknowledges the debt owed to Rogers, without whose records it could not have been made. This list, of course, has been much out of date for many years and is very badly in need of revision, a task for the beginning of the new millennium. Interestingly, there are fewer than 70 named species (out of well over 300 on the British list) currently recorded from north of the Border, which is not many more than Rogers listed – although the determinations of many have changed of course and others have been deleted.

Without the assistance of Dr David Allen, this paper could not have been compiled. As well as giving advice, determining some of my finds and commenting on and making corrections to the draft, he examined Rogers' specimens from his Scottish trip in the Natural History Museum (BM) and let me have details of both the original determinations and the comments of Focke and later experts. Few papers on British brambles could be written without the help, direct or indirect, of Alan Newton and I am indebted to him also. Lindsay Corbett kindly furnished me a copy of Rogers (1897b).

It should be noted that unattributed quotations throughout are taken from Rogers (1897a).

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Man and the Landscape Symposia

This November 1999 is our 25th annual symposium, with review/survey presentations on Landscape; Archaeology; History; Butterflies; Birds; Ecology. The first was organised by Lindsay Corbett, Robert Innes of the University's Continuing Education, and the Clackmannanshire Field Studies Society (CFSS), after the Advancement of Sciences (BA)'s meeting/conference at the University in 1974. We were anxious that such presentations of general interest and quality should be regular, and not just once a lifetime – since BA (British Association) meetings are annually at universities – hence a 40 year plus cycle! Following the BA meeting also, several University staff and others inaugurated the Forth Naturalist and Historian (FNH) as an informal University body to promote the environment and encourage and publish contributions to the natural and social history of central Scotland. Thence FNH has since run these symposia, with the continuing support of CFSS whose members have regularly reported on the presentations and published them in the April issue of the half yearly *CFSS Newsletter*. These thus provide a brief record of the 25 years of the Man and the Landscape.

Symposium	Year	Theme/s	CFSS Newsletter			
			No.	Vol.	Part	Pages
1	1975	Forth Estuary and Carse, Moorlands Man and Landscape	16	5	(4)	19-20
2	1976	Run Rigs, Flowers, Birds, Country Park	18	6	(2)	10-11
3	1977	Flanders Moss, Butterflies, Doune Muckhart	20	7	(1)	15-21
4	1978	Climate, Fish, Recreation, Haldane, Fairy Knowe broch	22	7	(3)	1, 21
5	1979	Fossils, Gartmorn, Peregrine, Devon Birds,	24	8	(2)	7-9
6	1980	Earthquakes, Rainfall, Nimmo Woollen Mills	25 and 27	9 10	(1) (1)	5-7 31
7	1981	Howieton, L Lomond Birds, Forth, RLS ...	28	10	(2)	14
8	1982	Wildlife, Conservation, R Burns, Bronze and Iron Age sites	30	11	(2)	12-18
9	1983	Lochs, Culross, Battle of Stirling Bridge	32	12	(2)	18-19
10	1984	Waterpower, Sandmartins, Coal ...	34	13	(2)	11-14
11	1985	Conservation, Recreation, L Lomond, Agriculture, Aerial photography, Industrial...	36	14	(2)	8-13
12	1986	Scenery & Geology, Cornstones ... Fisher Row, C Scotland bird watching	38	15	(2)	10-24
13	1987	Dutch Elm, Antonine Wall, Menteith Birds, Oral history, Young Forth Naturalists awards ...	No CFSS reports			
14	1988	Woodlands, Graveyards, Bridge of Allan History Society, Shieldhill, SCP, YFN awards ...	No CFSS reports			
15	1989	The Forth – Cruise, Scottish Navy 16C, Fish, Birds, Future, YFN awards ...	44	18	(2)	19-29
16	1990	Loch Lomond – also with a cruise, Key review by J Tivy, Tom Weir, YFN awards, Plants, Natural History, Now and Future	46	19	(2)	18-23

17	1991	Focus on Falkirk, Origins, Callendar House, Geese, Opencast mining, Birkhill	48	20	(2)	22-28
18	1992	University Jubilee, 25 years of change, Historian's view, Impact of University, Birds, Weather, River/estuary	50	21	(2)	15-22
19	1993	Clackmannanshire environment/heritage/ Railways, Red Carr Wood, East India Co., Alloa Tower, Gartmorn Nature Reserve	52	22	(2)	14-22
20	1994	Waters of C Scotland, Nature conservation, Forestry, Fish, FRPB, Bridges, Water supply (F Khan), Water power	54	23	(2)	13-22
21	1995	Mountains, Muirs, Mosses – Birds and Animals, Raised bogs, Grouse moors, Ochils, Sheep, Jacobite march, Tom Weir	56	24	(2)	19-31
22	1996	Environmental Awareness & Education	56	24	(2)	18-28,28a
23	1997	Transportation- People and Environment	58	25	(2)	17-26
24	1998	Woodlands-Past, Present, Future	60	26	(2)	14-23
25	1999	Jubilee – Landscape, Archaeology, History, Butterflies, Birds, Ecology	62	27	(2)	17-28

Note: There are 5 yearly index/contents to the CFSS Newsletter, so some details on the CFSS reports on the papers of the symposia are traceable.

AN ASSOCIATION OF HERITAGE SOCIETIES IN MID-SCOTLAND

Bill Inglis
University of Stirling

On Saturday October 17 last year at a meeting attended by representatives of 16 local societies it was decided to establish an **Association of Heritage Societies for Mid-Scotland**.

Why? The unanimous view was that an Association could **Develop a range of activities which most individual societies found difficult eg conferences, specialist workshops, visits to major centres of historical interest and publications.**

Behind this broad aim was the desire to **Generate increased interest in the Scottish past. Enhance our understanding of Scotland's heritage. Sharpen individual and group abilities to investigate Scotland's history.**

To date 13 societies, principally focussing on local and family history, archaeology and civic issues have formally joined the Association.

On Saturday March 13 over 100 people went by bus to Edinburgh to visit the Museum of Scotland and Mary King's Close. On Sunday April 18 Richard Fawcett and Peter Buchanan of Historic Scotland introduced over 60 members of the Association to the restored Great Hall of Stirling Castle.

On Saturday May 22 at Stirling University the **Inaugural Conference** was attended by over 40 people. The theme was "*Evidence of Our Past*" in which speakers concentrated on the documentary and physical evidence of Scotland's history. The keynote address was by **Fiona Watson of the University History Department** describing "*The Changing Faces of William Wallace*".

The remaining speakers were drawn from member societies.

Ron Page (Stirling Field and Archaeological Society) concentrated on recent archaeological investigations in Stirling, Craig Mair (Bridge of Allan Local History Society) on the gravestones of Old Logie Kirkyard, Bill Inglis (Dunblane Local History Society) on 17th and 18th century inventories, Alison Brown (Drymen Local History Society) on compiling a local photographic archive and Archie Smith (Callander and District Heritage Society) on 18th century estate plans. In general everybody was impressed by the variety, local relevance and liveliness of the presentations.

In the coming year, in addition to winter visits and a conference in the early summer, the Association will be producing its first publications and a number of specialist workshops in cooperation with Stirling Council, and the Scottish Local History Forum. (For further details of the Association please contact Bill Inglis 01786 822962)

**THE WALLACE OAK: TORWOOD:
A SUPPLEMENT TO FORRESTER [FNH 21]**

Lindsay Corbett

Colin Forrester's paper 'The Wallace Oak, Torwood – and Roy's Military Survey' (1) is based on earlier research, and is here supplemented by contemporary quotations, artifacts, and notes from further research on matters relevant to this legendary tree. Presented by date these come from – Forrester himself, K. J. H. Mackay, Sir John Clerk, W. F. Howie, Angus Smith, Bob McCutcheon, Elspeth King, M. Donnelly, John Ballantyne, John Harrison, Peter Cadell, Ian Scott, and the journal of the Falkirk Local History Society – *Calatria*.

1628

"On Christmas Day a freak tidal wave activated by violent winds swept up from the Forth. This was treated as a national disaster, many families losing their homes and fields. A lake existed thereafter for some time, and this would have extended to the East end of the wood where you (Forrester) have marked the Wallace Oak on Roy's map."

(pers. comm. Howie to Forrester, April 1985)

One of the families/victims of this was Thomas Bruce of Woodsyde (now Glenbervie). Reported as "A local disaster of the seventeenth century" in Love's *Antiquarian Notes and Queries* volume 1 (1908) pp175-181 – which quotes from the *Privy Council of Scotland* at 5 February 1629 *et sub* –

"...ane great and large mosse of the thicness of ane speir hes been driven by the force and violence of wind and water ... has overflowed and covered the saids lands ... overturned the whole housis ... so that twenty families were constraigned for lyffe and deid ... are upoun a suddane turned beggars ... the lords of Secret Counsell recommends the saids distrest ... to the ... charitable and christiane consideratioun of the whole estaits ... committs the collectioun of this ... benevolence of the people ... to the owniers and indwellers of the lands ..."

(Ian Scott)

1643

Gilbert Blackhall, a Jesuit priest – on a journey from Edinburgh to Stirling – quote –

"...Torwood, which now hath nothing but some scattered oakes, dying for antiquity, which conserve the name and memory of that sometimes so famous a Wood, especially in the history of Wallace..."

From *Ancient Castles and Mansions of Stirling Nobility* by J. S. Fleming, 1902.

(Howie and Mackay)

1687

Milntoun of Bannockburn and Edinburgh, 25 and 28 April 1687. A contract for the sale of growing timber in Torwood between Sir Andrew Bernie of Saline with the consent of William, Lord Forrester of Corstorphine, and Robert Cadell of Banks and James Kerr of Keir, which includes this – quote –

“...sell to Robert and James, equally between them, the heall growing timber in Torwood, beugh and barke therof, comprehending Aikens glen on the east syde of the burne, and all other pairts and pertinents of the said wood, with frie ische and entrie therto (**excepting Wallace tree**, the tuo parkes lately cutt lying upon the west syde of the heugh way betwixt the samen and the house of Torwoodhead) ... to cutt and sell within the space of eight yeires after ther entrie...”

(Harrison and RD. 13. 1688 no 353)

This was discovered by John Harrison (2) in the findings of John Ballantyne’s researching Scotland woodland management contracts for Professor Chris Smout of St Andrews.

(Harrison and Ballantyne)

1689

The ‘Wallace’ quaich wood with silver rim and two ‘handles’ (lugs) ... inscription on rim, ending on each lug –

“Torwood, I was cut, from that known tree
Where Wallace, from warrs toyls took sanct’ arie
Mars’s sones, I’m only nou made fitt
When with thee sones Bacchus the shall sitt”

Given by the Laird of Polmais to Sir Robert Hamilton. An. 1689. Lent by Lord Lamington. Displayed in case 4 East Gallery of the 1911 Glasgow Exhibition – catalogue entry 120. Note also another at 1795 below.

(Donnelly)

1712

A handwritten note on the fly-leaf of a copy of *The London Spy* of 1709 in the library of Sir John Clerk at Penicuik House, Orchyhead Head, 28 October 1712 –

“Wallace his oak tree is in ye midst of ye Torewod
betwixt (Tor) wodehead gth belongs to my Lord
Fo(rre)ster and wodesyd yt belongs to Sir
Harie Rollock & is 21 passes in circumference
and 7 in diameter. It bears no leaves
except a part towards ye north & is all
rotten & bad in ye heart, ye outward
circumference to ye thickness of a fot
standing still”

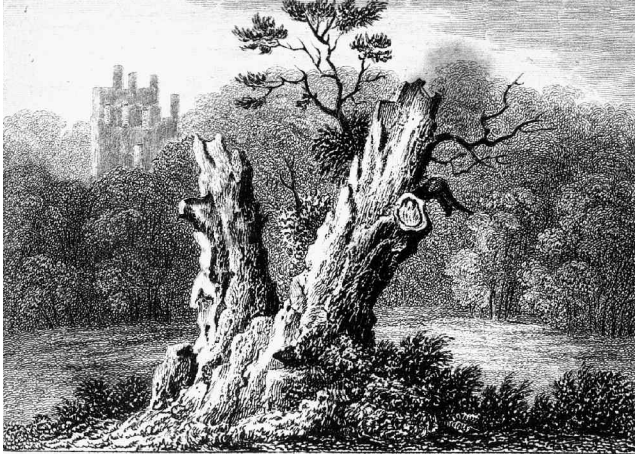
(Mackay and Clerk)

1771

The Wallace Oak, Torwood, engraved by W. Miller from a drawing by Alexander Nasmyth, 1771. The ruins of the Tor Castle are in the background. Discovered in the Mitchell Library's *Constable's Miscellany* volume 53, 'Life of Wm Wallace part 1'. 1830.

This is also the front cover feature of the *Forth Naturalist and Historian* volume 21.

(King)



1776

A copy of an expanded part of the Torwood area of a road map, Taylor & Skinner, 1776, found in the library of Penicuik House.

(Mackay and Clerk)



1782

According to *The Scottish Nation* (3) an elegantly mounted snuff box was presented to Lord Buchan, 11th Earl, David Stuart Buchan (1742-1829), by the Goldsmiths of Edinburgh in 1782. Made from the tree which sheltered Wallace, and described by the Smith Art Gallery and Museum as –

“of the highest quality ... with a gold and silver plated inscription”.

The Earl was a great admirer of Wallace, owned Kirkhill in Uphall (West Lothian), and bought Dryburgh Abbey and its lands. There in 1814 he had John Smith of Darnwick build on the slopes of Bemersyde Hill the massive statue of Wallace, visible from as far away as Berwick (7), and see 1814 below.

(Howie and Mackay)

1792

In 1792 the Earl of Buchan obtained leave to transfer this Edinburgh Goldsmiths' snuff box –

“to the only man in the world he thought it justly due” – George Washington, first president of the United States of America. He had it conveyed to the President by the portrait painter Archibald Robison, and it became known as the Washington Snuff Box. Buchan, a highly respected friend to the United States, named Washington “the William Wallace of America”.

It was last publicly seen at a Daughters of the American Revolution tea party in Belleville, Illinois on 22nd February 1923, and under guard by owner Henry Williams. It is the subject of a detailed report of 10th February 1997 by Robert Goodrich of the *Post Dispatch Belle*. This included an illustration of the oval shaped 6+4+2 inches box, carved from the wood of the Torwood Wallace Tree, and said to have a secret compartment. Buchan had asked George Washington to pass the dedicated box to his successor, but the President is said to have willed it back to the Earl. Goodrich says it never got back to the Earl, but was ‘acquired’ via a US Navy Commander by the pioneer Belleville family Williams.

Another account says it did come back, was ‘rededicated’ by Buchan, and sent to someone else in America, but en route it was hijacked in a stage coach hold up.

The Williams family reputedly kept it secure till the death of Henry J. Williams in August 1931, but he had no survivors, and no traced will. According to the *Belleville Daily Advocate*, quote –

“...the Museum of Edinburgh tried several times to purchase the snuff box from the Williams family, but was rebuffed. – This 1997 faxed report to Forrester also says – quote –

“...enthusiastic efforts are being made to find this very desirable box by International Press Service correspondent Jim Leggett, a Stirling Scot and Wallace admirer, of Charlotte, NC.”

Colin Forrester wrote to President Regan about this in 1985, but without reply. A note to Forrester by the Earl Buchan also in 1985 says that a number of

the boxes were made, "and one came up at a Christie auction 'recently'" but he did not buy.

(Forrester, King, LC)



1794

Remarks on the Wallace tree by the Rev George Harvie in his reports on the parishes of Larbert and Dunipace in the *Old Statistical Account of Scotland ...* quotes –

"In Dunipace parish is the famous Torwood; in the middle of which there are the remains of Wallace's tree, an oak which, according to a measurement when entire, was said to be about 12 feet diameter. To this wood Wallace was said to have fled, and secreted himself in the body of the tree, then hollow, after his defeat in the north. Adjoining to this is squire field, inclosed by a ditch, where Mr Donald Cargill excommunicated King Charles II."

1795

Quaich – wood and silver-mounted, four heraldic shields, engraved thistle rim, inscribed –

"This cup is part of the oak tree in the Torwood, which was often an asylum to the immortal Wallace." and "Drink of this and mark the footsteps of a hero."

With Wallace's head and date 1795. Lent by W. Meikle. Displayed in case 4 East Gallery of the Glasgow Exhibition of 1911 – catalogue entry 104 – note also 1689 above.

(Donnelly)

1805

From *The Beauties of Scotland* edited by R. O. Forsyth, 1806, 5 volumes, in the Stirlingshire chapter vol. 3 pp381-490 is this quote p405-6 –

"In this county are many coppices, used as such past all memory ... Torwood ... remains of the Caledonian Forest ... some oaks rise to a great size. The most noted tree in the whole district was Wallace's oak, in the middle of the famous Torwood. This tree, which when entire neasured 12 feet diameter, afforded ... a seasonable shelter, in an hour of danger, to the hero whose name it bears, and company of his brave attendants, struggling for the independance of their country. A few small decaying fragments only are all the remains that are now to be seen of this venerable oak; and even these will soon be eradicated from the Torwood, as the virtuosi in several parts of the kingdom are picking them all up, and forming them into various devices, for the glorious memory of the ever-celebrated Wallace."

(Howie and LC)

1812

Wallace Oak snuff box ... in the Queen's Royal Collections, Frogmore House, Windsor ... ref 54349. This small oval box is one of three presentations made to the Prince Regent (later King George IV) in June 1812 at Carlton House London, by John Russell of Falkirk (1745-1817), the Royal Watchmaker of Scotland. This was his recognition and thanks for the Prince's keen interest and commissions. A gold plate on the lid has this inscription –

"To His Royal Highness the Prince Regent This Box made from the Celebrated Wallaces Tree in the Torwood Stirlingshire Containing Wheat found in a Vault of the Roman Wall of Grahams Dyke at Castle Cary and is supposed to have lain there for upwards of 1400 years Is presented by John Russell Watchmaker for Scotland To His Royal Highness"

(Forrester, L.C., and *Calatria* 9, 1996, 90-91)



1814

At the inauguration of the first public statue of Wallace (the Dryburgh) (7), commissioned by the Earl of Buchan (see 1792 above), the Provost of Stirling could not attend but sent to the Earl 'a staff made from the Wallace Oak'.

(King ... 1-SAGM 6/96.11)

1815

Quaich of wood, mounted in silver; a plate inside engraved with Wallace's tree and "Tor Wood 1294"

"To the immortal memory of Sir William Wallace, the ill required hero of his native land." Four silver shields (one lost) applied to the outside, one has date 1815. Encircling grooves decorate the outside. Two handles or lugs. H 1½ in., diam. with lugs ¾ in. Scottish, early 19th cent. (Noel Paton Collection.) ... 1905-1009."

This is the index entry in the Royal Museum of Scotland as reported by Godfrey Evans to an inquiry by Colin Forrester in 1985.

(Forrester, and LC)

1817

Quote from the second edition of Nimmo's *History of Stirlingshire* edited by McGregor Stirling, p 170, about the Wallace Oak –

"...the remaining stump is no less than 11 to 12 feet in diameter ... it stand suppon a summit of a small eminance, which is surrounded on all sides by a swamp. A rugged causeway runs from the south through the swamp, and leads up to the tree. Some other vestiges of the stonework are discernable, surrounding the tree in a circular form, and lending to the conjecture, that the oak is of very high antiquity ... and ... that being much frequented by Druidical priests among whom the oak was sacred, the causeway having been laid for their approach to it, and the performance , underneath its branches, of religeous rites".

(McCutcheon)

1810-20 estimated

A painting 'The Blasted Oak, Torwood Forest near Stirling'. Oil on board laid down on canvas, by the Reverend John Thomson of Duddingston (1778-1840) – Recently acquired by the Smith Art Gallery and Museum.

(King)



1827

Sir Walter Scott in his *Tales of a Grandfather* – on Scottish history to 1746 – speaks of his having seen some of the roots of the Wallace Oak.

(Howie)

1830

Plan of the Estate of Woodside, property of James Russell Esq of Edinburgh (MS NLS Deposit 240 ... Russell and Aitken Papers) ... poorly legible ... see Forrester's paper, figures 3 and 4. The plan has many pencilled annotations thought to be by James Aitken who aquired the estate in 1899, and the Asylum in 1869. A different hand added the location of Wallace's Oak, and the 'proposed pond' at Cockmylane, probably that of Anne Stirling of Glenbervie, who was rebuilding Glenbervie House around 1850. Her daughter Mrs Houston of Johnstone claimed to have identified the site of the Oak.

(Gibson's *Lands and Lairds of Larbert and Dunipace*, 1908 p75; and pers. comm. Patrick Cadell, NLS, to Forrester, 1985)

(Howie, Forrester, Cadell)

1840

Thought by some to be the date of the pencilling 'Wallace Oak' on the Woodside Plan possibly by a member of the Blair family.

(Mackay)

1841

From the *New Statistical Account of Scotland*, Stirlingshire volume, are these quotes from the Rev. John Bonar's reports on his parishes of (a) Larbert and (b) Dunipace –

- (a) "There was – 50 years ago, a remarkable oak in this neighbourhood on the lands of Blairs, two miles north of Larbert. It was called Wallace's tree. When I saw it about 1794, there remained only a part of the outer shell and a branch with a few green leaves on it....the capacity of the hollow might be such as to contain a man or two ... as the popular story ... asserted..."
- (b) "The forest of Torwood is associated with all that is enobling in patriotism and persoal valour. Here stood Wallace's Oak, 12 feet in diameter, in the hollow of which he and his companions, it is said, used to meet and concert their plans for wrasting from the grasp of the ambitious Edward. This noble son of the forest disappeared about 30 years ago, after having weathered the storms of a thousand winters."

Might not 'hollow' be the enclosed centre of a coppiced tree, since these woods are said to have been coppiced "passed all memory", as quoted above at 1806, *The Beauties of Scotland*.....LC

1850

The pencilling of 'Wallace's Oak' on the Woodside estate plan by Ann Stirling of Glenbervie ... as in figure 4 of the Forrester paper, as noted above at 1830.

(Cadell)

1866

“Captain Stobo MP is to send an elaborate side board, made from the wood of Wallace’s Oak” – quoted in a recently noted report in the *Glasgow Herald* 1866 27th June p1 col 1, on a ‘Glasgow Museum and Polytechnic Exhibition’ (?Torwood oak)

(Donnelly)

1880

R. Gillespie, rewriting Nimmo’s *History of Stirlingshire* in its 3rd edition, enthuses on the ennobling patriotism and valor culled from various sources, including quotes –

“At Torwood ... remains of the primaeval Caledonian forest. ... Down on top of an ordinary ‘hillock’, north of the present toll house, stood the gigantic oak into whose capacious interior Wallace is said to have retreated when pursued in 1298 ... The noble tree was surrounded in former days by a marsh. Not the smallest vestage, however, of the Wallace Oak remains ... Even the ‘oldest inhabitant’ can say nothing of it save what he has gathered from tradition ... Sir Walter Scott saw some roots 80 years ago ... Recently we were shown a treasured morsel of the tree in the Chambers Institute at Peebles ... Wallace, undoubtedly, often chose the solitude of Torwood as a place of rest ... here he concealed his numbers and his designs, to oppose the tyranny of Edward ... to sally out suddenly on the enemy, and retreat as suddenly ... While his army lay in these woods, ‘the oak’ was his headquarters ... But of one defeated army after another, we find it said that the fugitives found refuge here...”

(Mackay and LC)

1882

Wallace Oak ... in *Poetical Musings*, 1882, by Joseph Hutton ... sung to tune ‘Bonnie Dundee’ –

“We sing of the heather, the broom and the blue bell,
And join in our charms the sweet wimpling rill,
We forget not the thistle, that flower of the free, –
Then why not remember the Wallace Oak Tree!

Let us sing of that oak where our young hero played,
All sportive and jioius beneath the green shade;
Then resting in sunshine in yiuth’s happy morn,
Eyr fate bad him feel that the rose had a thorn.

That treasured old oak, by arts magic hand,
In casket or cup a memorial shall stand;
And ages unborn shall sing o’ that name
That engraph’d bonnie Scotland to freedom and fame!

(McCutcheon and LC)

1891

From the *Scottish Chiefs*, by Jane Porteous pp362-3

"As the chief meant to assume a border minstrel's garb, that he might travel the country unrecognised as its once adored Regent, he took his way towards a large hollow oak in Torwood, where he had deposited his means of disguise (a) –

- (a) The remains of a venerable oak, bearing Wallace's name, has long been revered in this wood. Indeed, there are several oaks consecrated to his memory in various parts of Scotland: some as his shelter at one place, some at another; for he who often has to watch for his country, without 'bield or board', must have been glad of a tree canopy or a cave for his lodging. More than one of these fine old oaks (of perhaps a 1000 years 'age') (4), has been lopped in our own times to afford relics of the hero; in the shape of caskets, crosses, and even rings set in gold. Of all these forms, the writer of *The Scottish Chiefs* has had presents from their brave and noble descendants; namely – the late Earl of Buchan; Lady Macdonald Lockhart; the Lady Charlotte Gordon; the Duchess of Richmond; etc etc "

(Jane Porteous 1891)

See note (4) for a notable example from the Elderslie Wallace Oak.

(King)

1903

Torwood ... from F. H. Croome's Ordnance Gazetteer of Scotland volume 1, 1903 –

"Torwood a village in Dunipace parish ... to the S. are the ruins of Torwood Castle, mid 16th C ... surrounded by the Tor Wood, a remnant of the ancient Caledonian Forest and the hiding place of Sir William Wallace. The true 'Wallace Oak' here is gone forever though a shoot of it was thriving as late as 1835 ... an old thorn tree near it was very possibly the identical tree beneath which Donald Cargill excommunicated Charles 11, Sept 1680 (*Transactions of the Highland Agricultural Society* 1881, p204)"

(LC)

1908

Quotes from Gibson's *Lands and Lairds of Larbert and Dunipace* in footnotes to the chapter on Woodside estate, being information communicated to Gibson by Mrs Houston of Johnston Castle, who was a grand-daughter of Mrs Sylvester Douglas Stirling of Glenbervie, and states that this is partly based on information given by her grandmother whose knowledge of the places dated from 1832.

"Cargill's Thorn at one time marked the spot where the Covenanter Donald Cargill excommunicated Charles II, but is no longer in existence having been blown down 10 to 15 years ago. It stood on the east side of the Falkirk/Stirling road on Woodside estate which originally formed part of the ancient Low Torwood."

"Wallace's Oak which stood on another part of Woodside (Low Torwood) has also vanished. There is an account of it in the second edition of Nimmo's *History of Stirlingshire*, in which the editor calls it "an august vegetable". Mention is made

of a 'druidical causeway' leading up to the tree and circling round it. By means of tradition and an old map we succeeded in identifying the spot a few years ago, and even found traces of the rough causeway mentioned by Nimmo."

see also above at 1817 (pers. comm. Howie to Forrester 17/4/85)

1982

The Glenbervie Golf Club's *Jubilee Booklet* has various notes relevant to the Wallace Oak, the Cargill Tree, the history of the Torwood area, previous owners etc – as mentioned in the Forrester paper and as its reference 16.

(Howie)

1986

Glenbervie Golf Club contracts the Scottish Wildlife Trust to manage the Wallacebank Wood, which is within the golf course grounds, as a listed Wildlife Nature Reserve. This was negotiated by Forbes Howie. Subsequently, in the course of arduous rhododendron clearance, SWT people, Smith (6), found evidence for the Wallace Oak being in the wood, as posed by Forrester, in that many of the oaks in the the northern section had been coppiced – including one of 21 feet in girth at the stool. This would indicate an age of some 500 to 800 years – adding to the probability that a "a hollow tree of gigantic proportions" did exist in the time of Wallace.



(Angus Smith)

1989

There are notes on the Oak, Torwood, the Blairs ... in Forrester's *The Forresters, a Lowland Clan and its Lands*.

1996

A 'reconnaissance' of the Wallacebank Wood was made in August by Angus Smith, warden of this SWT Nature Reserve, and Mackay and Corbett of FNH – W. F. Howie was unfortunately unable to attend. It was proposed that the 'tree' might be considered a bit more left (north) and within the Nature Reserve rather than on the boundary, which, since the 1830s Woodside plan (FNH 21 p70), has had additional plantings some ten meters wide. Several current coppiced oaks just within the wood could be seen as possible sites of an ancient large circumference oak.

(Smith)

Notes and References

- (1) Forrester, D. I. G. 1998. The Wallace Oak, Torwood – and Roy's Military Survey. *Forth Naturalist and Historian* 21,63-70.
- (2) Harrison, John G. 1999. The Torwood and the Wallace Oak; some early records. *Ibid* 22.
- (3) Anderson, W. 1863. *The Scottish Nation*. Fullarton. Edinburgh.
- (4) Recently one Wallace artifact remarkably recovered by the Smith Art Gallery and Museum was one much sought, but feared lost, made from the Elderslie Wallace Oak – a picture frame housing six Wallace supportive letters by notable European patriots, including Garibaldi. This was a feature at the grand opening of the Stirling Wallace monument in 1886, but long lost.
- (5) A possible wording for a hoped for ?Millennium? plaque to commemorate the Wallace Oak, Torwood –
"In this wood was the legendary Wallace Oak, Torwood – a refuge of the hero, Guardian of Scotland, Sir William Wallace, particularly after the battle of Falkirk, 22 July 1298. This commemorative plaque is the long time ambition of Colin D. I. G. Forrester, ancestor of the ancient royal foresters, the Forresters of Corstorphine, and founder of the Clan Forrester. He researched and traced the site of this legendary tree, as reported by the *Scotsman* of 8th April 1985, and in *The Forth Naturalist and Historian* volumes 21 and 22, 1998 and 1999".
- (6) Smith, Angus. 1999. Wallacebank Wood wildlife reserve-1986-99. *Forth Naturalist and Historian* 22.
- (7) Ross, David R. 1999. *On the Trail of William Wallace*. John Donald, Edinburgh.
- (8) While little of the great forest of Tor Wood remains today, the area is still patched with woodland. It has a rich history, on which Colin Forrester has a paper in progress. As Nigel Tranter says in his 1971 book *The Heartland, the Queen's Scotland*, Hodder & Stoughton, "Scotland would not have been the same without the Tor Wood."

Appendix

Key list by date

- 1628 Xmas day ... mosse disaster
- 1643 Jesuit priest
- 1687 Deed/contract ... sale of wood, Torwood
- 1689 Quaich ... Glasgow ... 1911 Exhibition
- 1712 London Spy
- 1771 Namsmyth painting ... illus.
- 1776 Road map, Torwood ... illus.
- 1782 Snuff box ... Edinburgh Goldsmiths to Buchan
- 1792 Snuff box ... Buchan to Washington ... illus.
- 1794 *Old Statistical Account*
- 1795 Quaich ... Glasgow ... 1911 Exhibition
- 1805 Coppicing ... *Beauties of Scotland*
- 1812 Snuff box ... Russell ... to Prince ... illus.
- 1814 Staff ... Dryburgh Statue ... Buchan
- 1815 Quaich ... NMS ...
- 1817 Nimmo's *History* ... 2nd edition
- 1810-20 Painting ... Thomson ... illus.
- 1827 Walter Scott
- 1830 Woodside plan
- 1840 Pencilling of Wallace Oak site
- 1841 *New Statistical Account*
- 1850 Pencilling site of Oak
- 1866 Side board ... Glasgow
- 1880 Nimmo's *History*
- 1882 *Poetical Musings*
- 1892 Porteous's *Scottish Chiefs*
- 1903 Crome's *Ordnance Survey Gazetteer*
- 1908 Gibson's *Land and Lairds*
- 1982 Glenbervie Golf Club's *Jubilee booklet*
- 1986 Wallacebank Wood ... SWT Wildlife Reserve and coppicing ... illus.
- 1989 Notes from Forrester
- 1996 Wallacebank Wood ... recce

BOOK REVIEWS

Scotland's Roman Remains: An Introduction and Handbook. Lawrence Keppie. new edition 1998. John Donald. 200pp. ISBN 0.85976.495.8. £9.95.

This edition not only includes new findings of a dozen years of excavations and research since 1986 when it was first commissioned by the Council for British Archaeology Scotland, but illustrations have been enhanced and updated by computer aided technology. Also updated are the bibliography and visiting information – the latter by revisiting many of the sites described – one of which saw the complete removal of the railway viaduct over the fast flowing Esk. Site descriptions and locations are discussed more widely than in previous works. Excavated artifacts are described, and where they can be seen. This new edition is witness to the success the work has achieved since 1986 in increasing public interest and enjoyment in Scotland's cultural heritage.

History of Dollar. Bruce Baillie. 1998. Dollar Museum Trust. 156pp. ISBN 0.9534542.0.7. £10.

A sound and handsome history produced by a team of people from the Friends of Dollar Museum, a group of enthusiastic achievers, led by the author, a former master and archivist of the Academy. His many years of interest and research have produced this history to make a real advance on numerous 'reminiscences', including the well known one of Gibson of the 1880s, and papers in the *Dollar Magazine* over the years. The well illustrated text takes us from the early Dollar and its lands, through the Castle Campbell and Argylls, early church, the centuries 17th to 20th, peoples, places, events – including Tait, the Cowden estate, explorer Christie, Japanese garden, the Academy, and so much more – all greatly complementing the resources of the expanding museum.

Memories of St Ninians. Willie Jenkins. 1999. Stirling Libraries. 65pp. ISBN 1.870542.39.8. £3.50.

Some fifty, mostly old and very well restored photographs of people and places, are informatively annotated to give the book a real feel of history, a celebration of the individuality of St Ninians and its people at work and leisure. The author's inimitable knowledge, his extensive collection of photographs, his enthusiasm for the place and for sharing it with others, are well demonstrated here. Helpful maps show details of the area as of 1896 and 1996.

THE TORWOOD AND THE WALLACE OAK; SOME EARLY RECORDS

John G. Harrison

The Wallace Oak in Torwood was discussed by Forrester (1) whilst a supplement to Forrester's paper appears in this issue. Forrester used cartographic evidence to locate the site of this once-famous tree. Recent work has located a number of records concerning management of the Torwood in the seventeenth and eighteenth centuries. Two of these refer to the Wallace Tree and the records make clear that the tree's long survival was the result of a deliberate policy of protection.

Like other semi-natural woods in early modern lowland Scotland the Torwood was managed for the production of timber, bark, charcoal and other wood products. The general aspects of the system are described by Smout and Watson (2). At some phases in the cycle of management the woodland was also grazed and grass was cut for hay. Small woods might be cut in one year but larger woods were divided into a number of sections (called hagg) and one hagg cut per year. Trees were to be cut carefully so as to encourage re-growth. Each section was fenced after it was cut to exclude grazing animals. The contracts often specify that a proportion of substantial trees (maidens) should not be cut and specific trees might be named or marked for preservation. After cutting, re-growth from the stumps was rapid and after 20 years or so the wood was ready to be cut again. Contracts between proprietors and felling contractors become increasingly common from about 1600 on and are the prime documentary source.

Lord Forrester, proprietor of the Torwood, entered into such a contract some time prior to 1656 but breached it by selling the wood to others; arbitrators ordered him to compensate the original contractors (3). In 1682 Andro Mackie bought the rights to the bark of the trees in the Holleinwaird of Torwoodhead (a part of the Torwood). He was to pay 37 shillings Scots per boll with a free boll for every twenty bolls and an extra free one for every 100 so this was a substantial area of woodland (4). In the same month, William Livingstone had paid 400 merks for the rights to *the hail greine wood and growing timber of all sorts quhatsomever presentlie growing within the dykes and upon the dyke backes, with severall uther bussis of timber growing without the dyke, of the parke of Torwoodhead called the eister parke theirof, and within the roume and mealling presentlie possess be Margaret Rennie, with the bark and other wood products*. He had only two years to do this work and this contract clearly refers only to a part of the wood. There is no mention of reservation of maidens but he was to do the work carefully to secure re-growth (5).

A 1687 contract excluded *the tuo parkes lately cutt* (those involved in the 1682 contracts) which lay *upon the west syde of the heigh way betuixt the samen and the house of Torwoodhead*, and also *the planting in and about the yeards and inclosours of Torwoodhead*. But otherwise this contract encompassed the whole Torwood

comprehending Aikens glen on the east syde of the burne. Oak was the prime produce but it also mentions 'common timber' such as *birk, arne, eash and hizell* [birch, alder, ash and hazel]. The 1687 contract specifies that the cutters were to leave *in everie hagg uncutt yeirlie the number of ane hundred young oaks betuixt fyfteen and eighteen inches [say 40 to 50 cm] in greatnes about.* The wood was to be cut in eight hags and work to be completed within nine years (6).

In 1740 parts of the wood were feued (7). The division refers to parts north and south of the road from Larbert to Stirling and to the wood dykes. The division seems to have given rise to confusion and by 1791 the new march was to apply only for cutting grass whilst the 'ancient' boundaries applied when cutting timber (8).

Also in 1740 Lady Forrester sold the timber in specified sections of the wood, north and south of the highway. The dykes and other boundaries involved are carefully specified but there is now, also, mention of planted trees and of the *Firwood*. The planted fir trees could be thinned but, where needful, the firs were to be replaced with oaks, ashes and elms from the estate nurseries and the hags were also to be 'thickened' by replanting. Parts of the adjacent muir were to be new planted (9). Some years earlier than this, in 1723, Johnstoune had commented that "The Tormuir which in old time was a part of this wood is inclosed and planted which will make that wood as beautiful as ever" (10). Deliberate planting was rare prior to the eighteenth century and this represents a very significant change of woodland management; but otherwise, the cutting by hags, fencing and so on are very traditional.

Finally, in 1787, William Wilson bought the right to cut the wood of Torwood, consisting of 120 aces (11). The conditions are traditional. The wood was to be cut in hags over an eight year period; the trees were to be carefully cut, the hags fenced. Charcoal could be made in the wood so long as no damage was done. Three old oak maidens were to be left in each of the first three hags and four in each of the others and a total of 2176 young seedlings, from six to nine inches round at a yard [roughly 15-25 cm at 1 metre] above the ground were to be left in the whole wood. No small seedlings (less than half-barrel size) were to be cut. The owner would supply the cutter with materials for fencing where the walls were inadequate. Bark and other produce were to be removed by three, specified gates.

These contracts suggest that the traditional management system was based on a number of recognised divisions, some separated by earth banks, some by stone dykes and elsewhere by roads or tracks. The 1687 tack allowed the tenants to cut the oak but not the other trees growing on these wood dykes, specifically *for the better strenthning and fixing of the said fence.* An agricultural tack of Todhills, the Wandless and Greingait of Torwoodhead dated 1657 obliged Duncan Robein to assist in building and maintaining wood dykes and in bringing in the wood hay and also granted him grass for two horses within the wood (12). The 1687 tack further refers *to the house within the laigh forresters fauld* and the forester's fauld itself; these might either be ploughed or kept in

grass as the tenants preferred. The contractors could also have the grazing of each year's hagg before cutting began for their horses and for two milk cows but they were to preserve the meadow and other grass of the wood from damage.

The persistence of the Wandless ('wanlace') is interesting as a relic of the wood's use as a hunting forest; it would have been the enclosure to which deer were driven for killing by the royal or noble hunting party (13). On Timothy Pont's manuscript map of the area *Wainless* is shown in the south east corner of the wood. This map, originally surveyed in the late sixteenth century but revised later, shows a double wall or fence about the whole wood and what might be a road leading from *Wainless* to *Woodsyde* in the north east corner.

We thus have records of cutting of major parts of Torwood about the 1650s, of an eight-year cutting cycle beginning in 1687, another eight-year cycle beginning in 1741 and a last one beginning in 1787. The woodland was interspersed with meadows and parts were grazed. In spite of the evidence of planted firs and other species, the overall impression is very traditional.

The Wallace Tree is mentioned in 1687 and 1787. In 1687 the contractors could cut the whole wood *excepting Wallace tree, the tuo parkes lately cut ... etc.* In 1787 the vendor reserved (Article 8) *the whole grass of the wood as [well as] the whole ash in the wood also the old stock called the Wallace Tree and the seedling on the East side of it which the purchaser shall no ways hurt or damage.* The 1687 record is by far the oldest non-literary record of the tree. It is clear evidence that there was an ancient tree here, closely associated with Wallace – though, I must emphasise, this is 400 years after Wallace's day and is not evidence that he sheltered within its hollow trunk. The contracts confirm Johnstoun's assertion in 1723 that *Wallace tree ... [is] ever excepted from cutting when the wood is sold* (14). And together the records make clear that this was the conscious protection of a famous, national relic.

Already, by 1723, the tree was 'much decayed' only bearing leaves and acorns on the north side. By 1787 it was a mere 'stock' or stump. This is consistent with Bonar's recollection (15) that about 1797 the tree consisted of an outer shell and a single branch with a few leaves. Most tantalising of all, the proposed preservation of the 'seedling on the East side of it', hints that the proprietor was encouraging the growth of a successor to the tree – presumably the 'shoot' which was 'still thriving as late as 1835' and perhaps, if Charles Rogers is to be credited, so late as 1850 (16).

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SIR GEORGE HARVEY PRSA (1806-1876)
People of the Forth (12)

Maria Devaney



Figure 1 Self Portrait in Pencil, 1849.

'One of the best known and most distinguished among the Scottish Artists'.

Robert Brydall, History of Art in Scotland.

Sir George Harvey (figure 1), a landscape and genre painter, played an important role in the establishment of a 'Scottish School' of artists in the mid-19th century. His career coincided with the period following the establishment of the Trustees Academy in Edinburgh, when Scottish born artists could for the first time, train, exhibit, and base themselves in Scotland, without having to move south to further their careers.

Harvey was born in St Ninians in 1806, where his father, also George Harvey, worked as a clockmaker. The Harveys moved into the town of Stirling later the same year, when Harvey senior was admitted into the Hammermen's Trade. Young George Harvey was one of five children, and he attended the High School in Stirling, before being apprenticed to a bookseller in the town.

His first painting, entitled 'His Own Catch of Trout' (figure 2) is now part of the Stirling Smith's large collection of works by Harvey. At the end of his apprenticeship, Harvey did not enter the bookselling trade, but instead attended the Trustees Academy in Edinburgh for a further two years where he studied fine art under Sir William Allan. Allan was one of the pioneers of Scottish history painting, and had himself studied under David Wilkie at the Trustees Academy. The popular success of Scott's Waverley novels encouraged Scottish artists to look to the history of their own country for source material, instead of classical subjects. Harvey in his turn continued to build on this trend, by choosing to paint scenes from the lives of the Covenanters, contemporary Scottish life and latterly Scottish landscape.

Many of Harvey's early paintings must have been inspired by the geography and people of Stirling. It is said he often used family and friends as his models. 'Disputing the Billet', exhibited at the Scottish Academy in 1827 shows a householder and her son trying to oust the militia foisted on them for the drill period. The young soldier's assurance is pitted against the refusal for admittance by the woman (figures 3 and 4). Harvey must have been aware of such incidents in Stirling, the garrison town. The Castle was the military base for the Highland Borderers Militia (now the Argyll and Sutherland Highlanders) and recruits regularly underwent drill periods and were allocated billets in the area, when accommodation was in short supply.

'The Small Debt Court', exhibited the same year describes several incidents which Harvey has captured in such well observed detail. Scots Law allowed creditors to recover debt up to the amount of twelve pounds through the Sheriff's Small Debt Court. The finished painting is now lost, but several sketches survive in the Smith collection, which suggest the scope of the painting. 'Family at the Law Court' (figure 5) is a sketch showing a country family come to town to have a grievance heard. The husband, suffering from poor eyesight peers to read a legal letter, while his young son holds his hat. The Sheriff Court in Stirling, in Harvey's day, as now, served a large scattered rural population, as well as the town itself.

Harvey may have treated these incidents from contemporary life with some affection and amusement, but later he did tackle more serious subjects. 'Quitting the Manse' (figure 6), exhibited at the Royal Academy, London in 1847 and the Royal Scottish Academy in 1848, deals with the repercussions of the Disruption of 1843 when nearly 500 ministers left their charges for the sake of conscience and established the Free Church of Scotland. The painting shows a minister and his family shutting the door of their home for the last time to face homelessness. The entire village watches their departure with sorrow and regret. Harvey used Tullibody Church as his model for the background of the painting. The finished work is now in the collections of the National Gallery of Scotland, but has sadly deteriorated due to Harvey's over use of bitumen. Many of his paintings have been lost in this way, and their images survive only through his sketches and engravings.

It was through engravings that Harvey's works became known to a popular world wide audience. His treatment of Scottish history and contemporary incidents appealed to Scots at home, and also the growing numbers of emigrant Scots, who responded to the sentiment and nostalgia of pictures such as 'Quitting the Manse' and his series of Covenanting scenes. Harvey's first painting of this series, 'The Covenanters Preaching' was exhibited at the Scottish Academy in 1830. It is now in the collections of Glasgow Museums. Several sketches for this painting are in the Smith collection, including a pair of covenanting figures (figure 7) and a study for the preacher (figure 8). The former sketch also reveals notes to the engraver in Harvey's own hand.

His next Covenanting scene, 'The Baptism', was exhibited the following year. The Smith has the initial composition and several sketches including the study for the central family group (figure 9). The finished painting is in the collections of Aberdeen Art Gallery. Harvey's sketch has incorporated the custom of the 'Baby's Maiden', when a young girl passed the baby between mother and father, then back again. The mother is dressed in white garments. The source for this subject matter is thought to have been drawn from literature, from Christopher North's 'Lights and Shadows of Scottish Life'. Harvey's other Covenanting works included 'The Battle of Drumclog' (Glasgow Museums, first exhibited 1836 at the Scottish Academy) and the 'Covenanters' Communion' (first exhibited 1840).

Harvey's sympathetic treatment of the Covenanters, and the troubles of Scottish church matters in his own day, perhaps struck a chord with the artist since his own family, originally called Hervé, had fled France during the Revolution and experienced such persecution.

Harvey did for a time paint other history subjects including 'Shakespeare before Sir Thomas Lucy' (exhibited 1837), 'An Incident in the Life of Napoleon' (exhibited 1845), and the 'First Reading of the Bible in the Crypt of Old St Paul's' (exhibited 1847), but it was his everyday subjects such as 'The Curlers' (National Gallery of Scotland, first exhibited 1835) and several paintings inspired by childhood that he enjoyed a popular following.

Harvey's first school subject was 'Village School' (exhibited 1826), reputedly based on a school at Causewayhead. The same school is said to have also been the model for 'Examination of a Village School' (exhibited 1832). Harvey's gift for expression can be seen in his many sketches of children. His childhood subjects were a celebration of adventure and discovery, and depicted children with great charm. 'Boy Restraining Dog' (figure 10) is a sketch for 'Rabbit Hunting in the Craigs', exhibited at the Scottish Academy in 1828. At that time, the Craigs was rugged land outside the town walls of Stirling. Other childhood subjects included 'Harrying the Byke' (1827), 'The Lost Child Restored' (1829) (4), 'Boys and Burning Glass' (1834) and 'Blowing Bubbles: The Past and the Present' (1849).

Harvey's landscapes, the least recognised during his lifetime are now considered to be some of his best work. They suggest a close study of nature

and weather conditions; a modern approach at the time. His landscapes were at first only backgrounds to his historical or genre subjects, but later in his career he concentrated on pure landscape with fewer and fewer figures.

In 'Sheep Shearing' (figure 11) he "attained a truth and subtlety of aerial effect new in Scottish art" (J. L. Caw). Dating from 1859, it marks the transition from figure to landscape painting, and depicts man in harmony with his environment. Harvey has captured a scene from the annual event of 'the clipping', taking place beneath dramatic hills (thought to be the Ochils). Each stage of the process has been described in detail from the bringing in of the next animal, the shearing, the branding, sharpening of shears, and the collie dogs carefully watching the flocks. The whole image exudes such harmony, in terms of composition, treatment of subject and depiction of the landscape and sky.

The reasons for his turning more towards pure landscape subjects are not known, although it is thought that John Ruskin's Edinburgh lectures of November 1853 may have had a major impact on Harvey. Ruskin wrote to his father, "I have many friends and admirers in Edinburgh, and am in some respects far better understood there than in London. The Edinburgh artists – Harvey, D. O. Hill, Noel Paton, etc, are all eager to meet me" (D. & F. Irwin). In one of his lectures, Ruskin attacked the current trend for history painting, and promoted Pre-Raphaelitism with its uncompromising truth and minute detail taken directly from nature. Ruskin stated that "the only historical painting worth a straw" is the recording of contemporary events. It is clear to see Ruskin's influence in Harvey's 'Sheep Shearing'.

Portraiture is another aspect of Harvey's oeuvre which is rarely discussed. There are three oil portraits in the Smith collection, one of his brother Alexander who became Baillie of Provan in Glasgow, and the others are of former Provosts of Stirling, William McAlley and William Rankin. There are also individual sketches of himself and his father, the Stirling clockmaker. The collection of Harvey oil sketches are principally portraits and character studies of unnamed people, likely to be friends, members of his family or models. It would appear that portrait commissions were few until Harvey's career as a Royal Academician began to flourish. This is surprising when his portraits reveal such insight into character and expression, without any leanings towards sentimentality.

Art historians and critics have since Harvey's day considered his painting techniques, particularly in his earlier works, to be lacking. It is generally agreed however that Harvey's painting improved as he matured. He was certainly held in the highest regard by his peers. Harvey was involved in the formation of the Scottish Academy, and was one of the original Associates in 1826 at the young age of twenty. By 1829 he was elected an Academician. His support of the Academy can be seen in the number of paintings he submitted each year to the annual exhibitions, and in his support of younger artists, and is acknowledged by his colleagues. The Rev. A. L. Simpson states that it was to

Harvey and others that the Academy owed its 'early stability and youthful vigour'. He also cites Harvey's role in the purchase of paintings by William Etty, now in the National Gallery of Scotland. His efforts were officially recognised when Harvey became the fourth President of the Royal Scottish Academy in 1864, and served until his death in 1876.

Harvey's legacy to Scottish art is now widely acknowledged by art historians, principally, his role in establishing a vibrant Scottish school, with the Royal Scottish Academy at its centre. He is often referred to as an 'Edinburgh' artist, but Harvey clearly drew on his Stirling background and connections for subject matter and inspiration. The Harvey family connection continued with the town, when George's brother William took over the family business. George's niece, Nellie Harvey became a popular local artist and member of the Stirling Fine Art Association. It was through her that most of the large collection of sketches survive, and which she generously gifted to the Smith in 1935.

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The illustrations in this article are all by Sir George Harvey and are all in the Smith Art Gallery and Museum Collection.

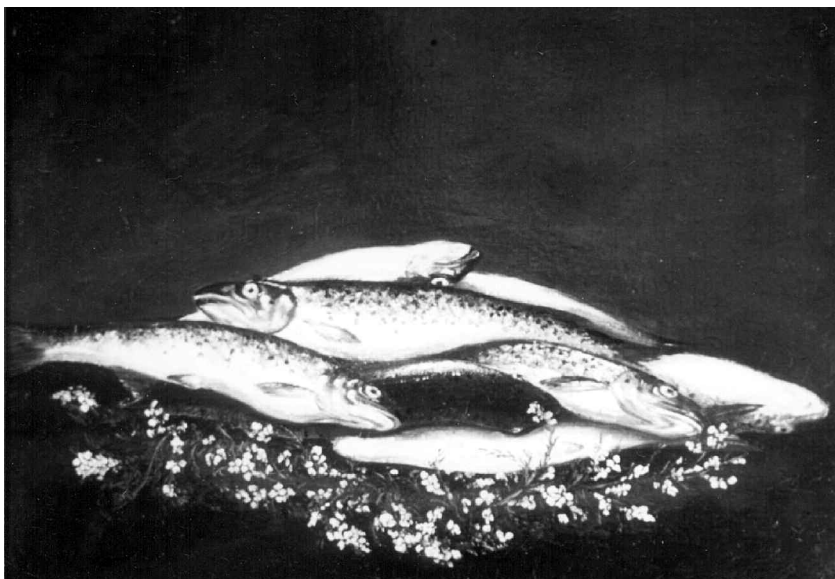


Figure 2 His Own Catch of Trout, Oil on Board, c1826.



Figures 3 and 4 Sketches for Disputing the Billet, Oil on Paper, c1827.



Figure 5
Family at the Law Court,
Oil on Paper,
Study for the Small Debt
Court, c1827.



Figure 6 Quitting the Manse, c1847, taken from 'A Selection of the Works of Sir George Harvey PRSA', Rev. A. L. Simpson.



Figures 7 and 8
Sketches for the Covenanters'
Preaching, Oil on Paper, c1830.



Figure 9
Sketch for The Baptism,
Oil on Paper,
c1831.



Figure 10
Boy Restraining Dog –
Quarry Emerging,
Oil on Paper,
study for Rabbit Hunting
in the Craigs,
c1828.



Figure 11 Sheep Shearing, Oil on Panel, 1859.

**THE SHERIFFMUIR 'ATLANTIC WALL':
AN ARCHAEOLOGICAL SURVEY ON PART OF THE WHITESTONE
MILITARY RANGE**

David C. Cowley, John A. Guy and Diana M. Henderson

Few would credit that part of Hitler's coastal defences could have been built in Scotland, and yet, on moorland north of Stirling, a section of the Atlantic Wall was constructed and survives to this day (NGR NN 8379 0367). This was recorded in the course of mapping an area of Sheriffmuir, on the western flank of the Ochils, by the Royal Commission on the Ancient and Historical Monuments of Scotland (RCAHMS). For the most part the archaeological remains in the area were of post-medieval date, comprising braided trackways, enclosed patches of straight cultivation ridges and smaller stock enclosures, but they also included a series of much more recent military training works. These lie on a terrace pockmarked by shell craters at about 295 m OD and were formerly part of the Whitestone Range. The importance of recording 20th century military remains such as these archaeologically is now widely recognised (*e.g.* Lowry, 1995), in particular because they are often regarded as eyesores and are prone to being 'tidied-up' without any form of drawn or written record. Notwithstanding the aesthetics of such sites, they are important historical monuments which are often poorly documented, if at all. Consequently, they are little understood despite dating to such a recent period of our history. This is certainly the case at Whitestone Range, which was in use for about 100 years.

Between about 1860 and 1906 Whitestone Range was one of ten Militia and Volunteers ranges and training grounds in the Tillicoultry-Dollar area. In 1907 the annual training camp of The Argyll and Sutherland Brigade of the Volunteers took place on Sheriffmuir and a four lane rifle range at the south end of the area that has been mapped may date to this period. An aerial photograph taken in 1946 (106G/SCOT/120, No. 4250, 20.06.1946) records its layout as patches of lighter vegetation some of which can still be traced on the ground, presumably indicating the locations of supports for a target superstructure. A scatter of small emplacements and slit trenches, dug into the hillside and fronted by an upcast bank, lie across the hillside around the rifle range, but these probably date to WW II.

During WW I the 52nd (Lowland) Division trained on the range before going to Gallipoli in 1915. They are likely to have started what is evidently the earliest system of trenches on the terrace. This system may have been extended by Second Line or Reserve Battalion drafts of men destined for France throughout WW I and was subsequently tailored to the WW II training operations. Some of the shell holes on the hillside to the east (Figure 1) may originate in this period, as the 4th Lowland Howitzer Brigade Royal Artillery of 52nd (Lowland) Division were stationed in Stirling and Tillicoultry in 1914/15.

The most spectacular structures on the range, however, are the remains of a mock-up of the anti-invasion beach defences built by the German army along the Atlantic seaboard of the Continent during WW II. This was one of a number of other such practice works (Shepherd, 1994, Thomas, 1995) constructed during 1943 as part of the intensive rehearsals for Allied D-Day landings. The 49th and the 52nd (Lowland) Divisions trained in the area in 1943-44, along with the 1/4th King's Own Yorkshire Light Infantry, based in Crieff. Mock-ups of German coastal defences were also built near Muthill by the 294 Field Company Royal Engineers. Operations related specifically to the breaching of the defences were the remit of the Assault Engineers. If there was any modification of the range during the Cold War it has not left much trace, and the range is now dormant.

The WW II Practice Works

The elements of the site dating to WW II are described in detail below, divided between defensive (*i.e.* German) and offensive (*i.e.* allied) positions (Figure 2). The defensive positions lie to the east of the public road and comprise a section of reinforced-concrete 'Atlantic Wall', fronted by an anti-tank ditch, lying at the north-east end of the terrace, and a system of bunkers and gun emplacements linked by trenches that extends over a distance of 600 m to the south-west of the Wall. The system incorporates the trenches dug during WW I. The offensive positions lie to the west of the road and mainly comprise a series of gun emplacements and levelled platforms set out along a graded access track. The depot where raw materials for the construction of the WW II site were handled lies to the north (NN 8404 0406; beyond the top of Figure 2).

Practice works such as these required considerable intelligence information, including aerial photography of actual German defences on the continent. Thus, the Sheriffmuir area may be a model of a specific segment of known beach, but it may also be a 'composite', drawn from a number of different locations. The recollections of a Captain M. A. Philip (Brigade Signals Officer, 185 Bde 3 Div.) recorded in the Imperial War Museum Oral History Collection provide a useful insight into the operation of the practice works.

"We began some Combined Operations exercises, pretty primitive at first, known as 'dryshod-exercises'. A road or some other suitable landmark represented the coastline, and if you were on one side of it you were technically afloat and on the other side on land again. Men and vehicles were fed across the 'coastline' at specified intervals to represent landing craft discharging their contents."

This description has clear resonance on Sheriffmuir, the sinuous line of the graded track to the west of the public road representing the shore, and the ground shelving gently up towards the 'Atlantic Wall', a good approximation of a beach.

Defensive Positions: The 'Atlantic Wall' and Tobruk Shelter

The 'Atlantic Wall', incongruous in its moorland setting, is a massive block of reinforced concrete 86 m long and about 3 m in height. Just over half of the

length of the Wall is 3 m thick, stepping down to 0.7 m at the south-west end, where the Wall curves round slightly to the west. The rear face of the Wall is vertical for about half its height, battering inwards towards the top, which is flat. The front, or seaward (facing north-west), side slopes outwards to create an overhang, with a small inwards batter at the top supporting iron pickets between which barbed wire could be strung. The pattern of the corrugated iron sheets used for shuttering in the construction of the Wall and individual dumps of concrete are clearly visible. Some care has been taken in finishing the surfaces and filling the gaps between the initial dumps of concrete. A small tunnel runs through the Wall about half way along. The Wall was built to practice assault techniques and presumably specifically to perfect a method of breaching it. It is no surprise, therefore, that the front face of the Wall is extensively pitted by impacts from a variety of calibres revealing the $\frac{1}{2}$ inch and 1 inch iron reinforcing rods. Holes of various diameters have been drilled into the face of the Wall to take explosive charges which may have been responsible for much of the extensive damage to the Wall. The most spectacular damage is a gap some 4 m wide (Figure 3), from which a spread of debris extends backwards for some 40 m. The sheer force of the explosion that caused this breach can be seen in the twisted reinforcing rods, bent back from the edges of the hole. This explosion and the consequential damage must have marked a notable success in perfecting techniques to overcome such a massive obstacle.

The Wall is fronted by a flat bottomed anti-tank ditch some 3 m across and about 0.6 m deep, with an upcast bank on the 'seaward' side. A trench running at right-angles to the south-west end of the Wall may have run up to an emplacement on the hillside 180 m to the south-east (NN 8389 0351; off the east side of Figure 2). Some 20 m to 25 m to the north-west of the ditch a trench runs roughly parallel to the Wall and may originally have connected the network of trenches to the south (see *The Trench System* below) with an underground bunker to the north-east of the Wall. This bunker (Figure 4) incorporates a Tobruk shelter, consisting of a sunken chamber with two observation and firing holes (in this case octagonal) in the roof, which was almost flush with ground level and so presented a very small target. Initially developed by the Italian Army in North Africa, this type of bunker was quickly adopted by the Afrika Korps and was developed by the German Army as an integral part of many defences on the north-western seaboard of the continent (Thomas, 1995, 43). By comparison with the Wall this bunker shows relatively little sign of any damage, in common with the two concrete bunkers built into the trench-system to the south-west. To the east of the Tobruk shelter a large disturbed hollow full of ironwork extends as far as a grass-covered mound, probably a bunker, and trenches extend up the hillside to a gun emplacement to the south (NN 8389 0351; off the east side of Figure 2).

What may be the line of a tramway or levelled path lies to the rear (south-east) of the Wall, in amongst a confusing network of earlier braided trackways; its course is best discerned from the air (Figure 1). It runs from an area of disturbed ground beside the public road to the north of the Wall and does not

appear to extend far beyond the Wall. The disturbed ground may mark the site of the depot for handling building materials for the Wall, with what may have been a site office built on a concrete floor beside the entrance from the road. If the levelled path originally carried a trolley way from the depot to the Wall, it must have been carried across Geordie's Burn on a timber bridge. Strips of worn vegetation are visible on the 1946 aerial photograph to the south of the Wall and may mark the lines of paths bringing building materials from the public road to other parts of the range. The absence of such paths between the road and Wall adds weight to the suggestion that building materials for the Wall came from the depot.

The Trench System

To the south-east of the 'Atlantic Wall' an extensive network of trenches connects a concrete blockhouse, two concrete and two timber bunkers and four gun emplacements (Figure 2). The blockhouse lies midway along the trench-system, and is built above ground of reinforced concrete, with three openings. It has been fired on extensively and damage is particularly marked around the openings. In addition holes have been drilled into the concrete to take explosive charges, which may account for some of the larger craters in the blockhouse walls.

The trenches extend from the terrace up the flank of Black Hill to the south-east, and are clearly of two distinct phases, the earlier a simple system dating from WW I, subsequently modified and extended during WW II. The WW I trench runs north-east along the terrace from a point adjacent to a turf redoubt (possibly dating to early in WW II, together with a gun emplacement 60 m to the east-north-east) on the south-west. The blockhouse and at least three machine gun emplacements are laid out along it, indicating its reuse during WW II, presumably as part of the 'Atlantic Wall' practice works. The two concrete bunkers are situated along the back of the terrace and are connected into the later system. The concrete bunkers are both rectangular but do not show much sign of damage. Evidently they were not subjected to the same attention that inflicted so much damage on the blockhouse. The trenches that connect these bunkers into the system to the north-west, however, are cut by trenches that zigzag up the slope from the bunkers to circular gun emplacements on the hillside to the south-east. Another trench zigzags up to a third emplacement to the south-west. The gun emplacements survive as ragged hollows measuring between 5 m and 8 m in diameter, and in one case the iron rods that supported some superstructure are still in place around the edges of the hollow.

In addition to the gun emplacements, machine gun emplacements are scattered across the site, but, these are much smaller, measuring only about 2 m in diameter, in some cases with a concrete lining. The final defensive feature is an asymmetrical anti-tank ditch, which lies along the north-west front of the trenches forming the German front line. The scatter of small emplacements and slit trenches to the south of the trench-system may also have been

associated with the practice works to provide defensive flanking covering fire, perhaps with mortars or smoke, as it was being attacked.

Offensive Positions

The positions from which the defensive works were fired on lie immediately to the west of the public road, although fire may also have come from further afield. The locations of at least six gun emplacements are marked by hollows measuring up to about 10 m in diameter (one lies off Figure 2 to the west); a pronounced break of slope within some of the hollows may mark the original position of a revetment around the interior. Their disposition does not appear to relate to the 'Atlantic Wall' and they may date to earlier in WW II. The main positions from which the Wall was assaulted probably lay along a graded access track, which is clearly visible on aerial photographs (Figure 1), leading off from the public road and running roughly parallel to the Wall and trenches. This sinuous track may also be taken to represent the shoreline across which troops participating in 'dryshod-exercises' disembarked. Aerial photography (Figures 1 and 5) shows the ground at the south end of the track churned up by tracked vehicles, possibly tanks, which must have been manoeuvring here as well as firing on the Wall. Spaced along the west side of the track are a series of low turf mounds, mostly occurring in groups of three, and set about 5 m apart. Each mound measures about 1.5 m in length by 0.5 m across, and lies at right angles to the line of track, orientated towards the defensive works. These may have been markers to position field artillery, which could be returned to the same location reasonably accurately. Some mounds lie beside graded platforms, visible most clearly on aerial photography (Figure 1, shown as open rectangles on Figure 2), which may have been intended to simulate landing craft from which troops could 'land' on the 'beach'; equally they may have provided level stances for tanks or other artillery firing on the defensive works.

Conclusion

While the main objectives of the majority of these features appears to have been training exercises for the assault in Normandy, it is also clear that there were several phases of construction. As we have seen, the trenches linking the concrete bunkers to the gun emplacements on the hillside to the south-east cut other elements of the trench-system, and it is equally clear that one of the tracks visible on the 1946 aerial photograph (Figure 1), leading from the public road up to the blockhouse, perhaps bringing building materials into this end of the site, is cut by the anti-tank ditch. Close examination of the 1946 aerial photograph (Figure 1) reveals that the northern sector of the main trench-system appears fuzzy in comparison with those to the south, and therefore being of somewhat earlier date. Accordingly, it should be concluded that the area was used as a training ground at various stages in the war, on the one hand for minor exercises, represented by trenches and gun emplacements, and on the other for the major set-piece landing exercises that were to determine the outcome of the war.

The survey has highlighted the complexity of range archaeology and shows how survey can illuminate this aspect of military training and warfare. The WW II practice works are an impressive monument to the effort that went into preparing assault troops for what they would face when landing on the Continent. As such, they are very potent pieces of history. The survey provides a valuable record of one element of this rapidly vanishing, and often unappreciated heritage, while the incongruity of a coastal defence on moorland at nearly 300 m above sea level adds to the interest of the site. Care should be taken when visiting the site as there is a lot of protruding iron work, rolls of barbed wire and other traps for the unwary.

Information about this or other military sites would be welcomed by both the National Monuments Record of Scotland (NMRS, RCAHMS, 16, Bernard Terrace, Edinburgh, EH8 9NX) and the Scots at War (The Institute for Advanced Studies in The Humanities, The University of Edinburgh, 2 Hope Park Square, Edinburgh, EH8 9NW).

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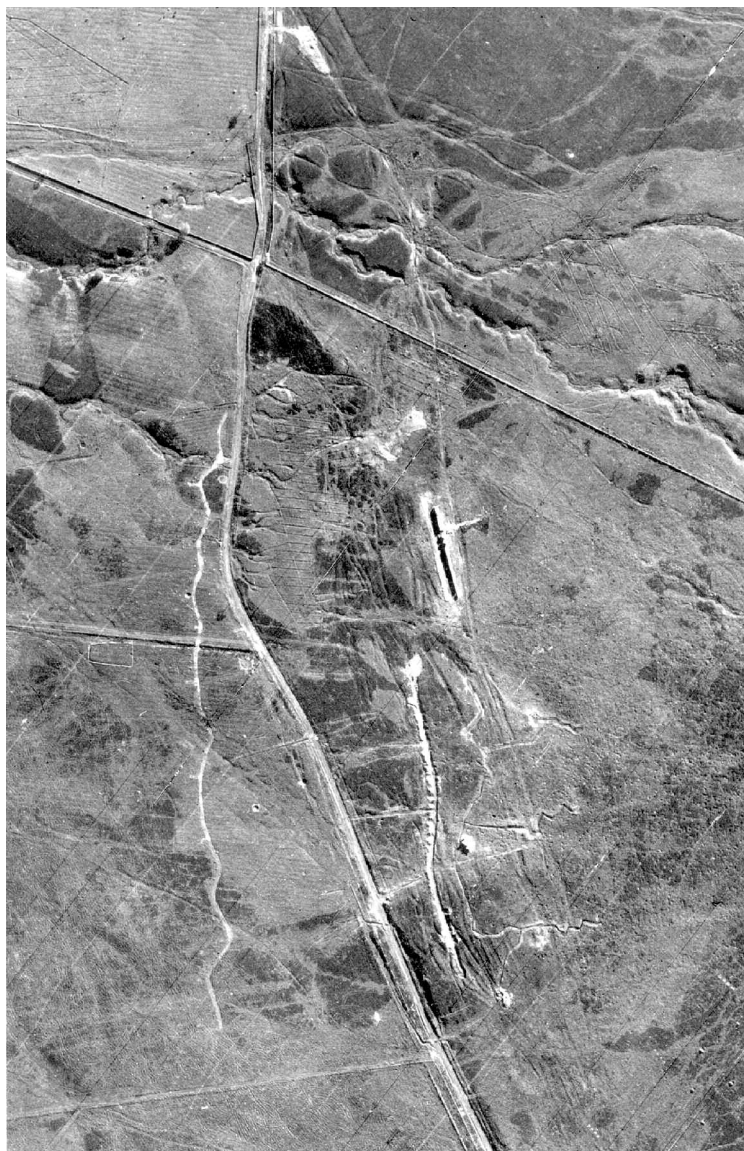


Figure 1

Aerial photograph taken by the RAF in 1946 (106G/SCOT/120, No. 4250, 20.06.1946). The WW II works are relatively sharp and vegetation has not yet regenerated across features such as the track to the west of the public road, the anti-tank ditch and some of the trenches. North is to the top of the page.

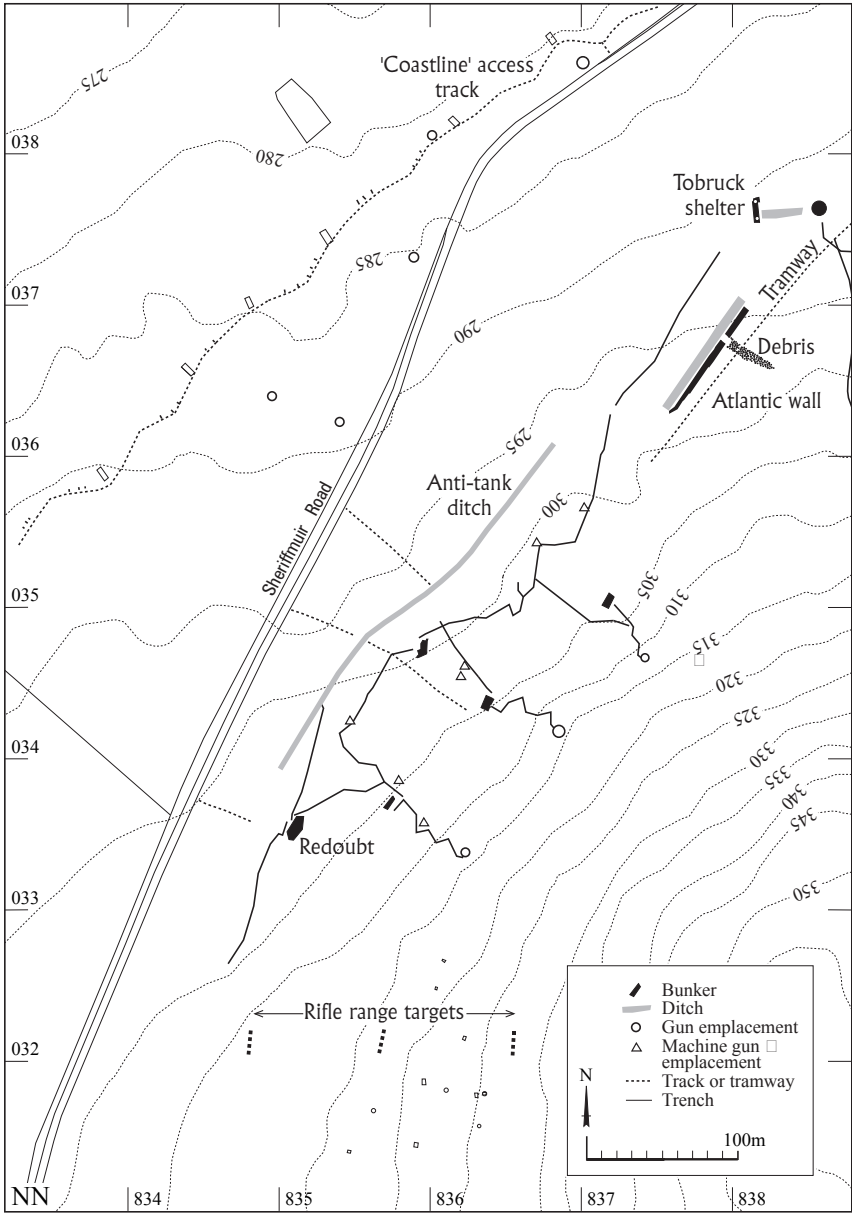


Figure 2

Map of part of the Whitestone range focusing on the trench-system, the 'Atlantic Wall' and the offensive positions to the west of the Sheriffmuir road.



Figure 3

The breach in the 'Atlantic Wall', showing the bent iron reinforcing rods, the form of construction and the anti-tank ditch on the north-west. The scale is 1 m in height (photograph D. C. Cowley).



Figure 4

Aerial photograph (RCAHMS D28166, 27.01.1998) looking west across the 'Atlantic Wall' (the anti-tank ditch fronting the Wall lies in shadow) and the bunker with the Tobruk shelter. The two firing and observation holes in the roof of the bunker are clearly visible although the bunker to the south is obscured by a patchwork of vegetation.



Figure 5

Aerial photograph (RCAHMS D28173, 27.01.1998) of ground at the south end of the artillery access track that has been comprehensively churned-up by vehicle tracks (probably tank). In the top right of the photograph a rectangular enclosure can be seen in the heather. This is one of a series along the east of the road and may be stock enclosures, perhaps of 18th century date.

MY STIRLING AS REMEMBERED 70 YEARS AGO

Duncan W. McNaughton (1)

One of the most interesting papers given to the Stirling Field and Archaeological Society was that given in 1927 by Mr J. W. Campbell (2), one of their oldest members, of his recollections of Stirling in his youth around 1854. A great many changes in the town of Stirling had taken place in those seventy years, and while the later similar period has not made so great a difference on the appearance of the town, I feel that perhaps those changes which have occurred over those decades should be noted, as far as I recollect, for the benefit perhaps of some local historian seventy years on (1). Perhaps some of the local residents can correct me, or come up with added information.

Port Street, Murray Place, Thistle Areas

The main streets, Port Street, Murray Place, Barnton Street, etc, are in part relatively unchanged apart from the shopping complex, but new traffic regulations, a new road, the demolition of buildings and changes of shops, have given an appearance to some parts different from that familiar to me in childhood and youth.

The nature of the traffic, and its vastly increased volume, has been one of the chief reasons for the alterations to roads which have left me bewildered. In my early days one entered the town from St Ninians, negotiating the Railworks, still in production, which jutted out into the road, and would probably be faced with the green double decked petrol tram at the terminus, on the lines in the middle of the road. It must have been a real modern innovation; either during or just before the First World War, for the normal tram was a double decker drawn by two horses as the petrol variation was extremely unreliable, and more often off the road than on it. The horsedrawn trams to St Ninians found the slope up from the Black Boy too much, and required an extra horse to help them up the incline to the end of Melville Terrace. The trace boy and his horse waited on the road in front of Dr Vost's house opposite the Black Boy, and the recess in the banking for the horses' nose bag may still be visible.

To us youngsters the sight of the trace horse with its jangling harness, and the trace boy reclining on its back was one of the highlights of a walk out Melville Terrace. Miss MacJannet, an elderly, old fashioned lady, who then lived in Woodlands, used to come out to feed the horse. The main tram terminus was at the foot of King Street from which they ran to Bridge of Allan. They were all double deckers, with sparrd wooden seats, and a single sparrd backrest which swung over to reverse the seating. In summer, open single deckers appeared on the Bridge of Allan run, and it was a great treat for a five or six year old to sit beside or near the driver and watch the horses.

The main depot was about two hundred yards from Causewayhead on the Stirling road, near the old Causewayhead Station, and consisted of a large

single storey stable on the right from which the new horses were led out ready harnessed. On the left was the tram park and the manager's house. The latter is still there, but the stables and tram park have entirely disappeared. The trams ceased to run just after 1918 when motor buses began to appear. These I think were the General Omnibus Co., with a depot at the end of Forth Street. The buses were unusual in that they were Petrol Electric, which meant, we believed, that they were powered by electric motors with their own petrol engine as a generator. At first, they (and nearly all motor lorries) had solid rubber tyres, which on the still cobbled roadways were not altogether comfortable. However pneumatic tyres and smooth asphalt surfaces appeared not long after the end of the War. The road laying replacing the cobbled streets was a major disturbance.

To return to the approach to the town. The main road from St Ninians has changed little in appearance. Apart from extensions by the new public departments, all the houses and mansions are still standing, though few are left in private ownership. The greatest change is that a complete football stadium has intruded into what was a select residential area for Glasgow and Stirling businessmen and county families. To the south east the residential area of Randolph Road and Livilands now houses the new Royal Infirmary after its move from Thistle Street.

Where Melville Terrace meets Park Terrace, there used to be at the back of Port Street, a block of private houses with their gardens reaching down to Park Terrace, an area now occupied by the garage. The Black Boy still stands despite the opposition of some in the town who objected to it as indecent (3). Some humorists, not long after it was unveiled in the late 19th century, dressed him in a vest for the benefit of the good public of the Terraces on their way to church. However that was long before my time.

The road to the Park is unchanged in appearance, although Allan Park has suffered a cinema and a garage at last. At first glance the section of Port Street beyond Park Terrace to Dumbarton Road is much as it was seventy years ago, but has been extended to cover Col. Morton's house and stable at No. 1 Pitt Terrace. Familiar shops have however disappeared. Before the pend on the left, leading to the flats was Isa Whyte's flower, vegetable and sweet shop, considered to be one of the best in the town. Sowden and Forgan's music shop on the other side of the pend was originally a double shop across the road beside that of Harris the tailor. Halfway to Dumbarton Road was the bakery and tea room of Elder the Baker, a popular rendezvous and thought to have the best bread and cakes in the town. Next to this large shop was another institution – Jean Johnstone's fish shop, also held to have the best fish. It is still there though Jean Johnstone has long gone. Palmer's shop next door is relatively new having originally been in King Street. It too was considered the best in the town for travel goods, umbrellas and other weather ware and sports goods.

On the other side of the street adjoining No. 1 Pitt Terrace were a joiner's and undertaker's offices and a workshop behind, reached by a pend. Beside

the pend was Hogg the Chemist, Harris the tailor and next the public house George Owen the cycle agent, one of the two main suppliers of bicycles in the town. Old Mr Owen was a crafty chess player and one of the ablest of the Stirling Chess Club. I found that, as a young member, I had to be exceedingly watchful in playing him, I didn't often beat him!

On the corner of Dumbarton Road and Port Street was, in my earliest memory, the high class and extensive grocery of Robertson and Macfarlane in opposition to D. & J. McEwan across the road. When they ceased business their premises were taken over by Messrs. Graham and Morton as an extension of their fine furniture and house furnishing business next door. Next to G. & M. was Drummond's Tract Depot, still in the business of providing religious tracts, but now providing cards, notepaper, etc, very much changed from its worldwide trade at the beginning of the century from the centre it had built at the foot of King Street. The only further change is that at the end of the Town Wall in Dumbarton Road Alex Sands had his auction saleroom and undertaker's rooms. These have now gone and their place taken by a public toilet and less important salerooms.

Opposite Dumbarton Road the Craigs was the main access to the road via Fallin along the south of the Forth. It was even then what modern town planners would certainly call underdeveloped, being much as it had been at the end of the 19th century. As I have not been down the Craigs for over 40 years, I have no idea what changes have come about, and can only describe it as I remember, and presume that whatever changes have taken place that they are for the better.

In my time, Messrs. Gray, seedsmen and their stores adjoined the public house on the left, and a farrier carried on business behind the public house in the opposite corner, entered by a large gate spanned by a large wooden sign. The remainder of the upper part of the street consisted of fairly non-existent shops, with tenement houses above. Halfway down on the left was an open space filled by low toilets their roofs not greatly above street level. The ground fell back here to another street lower than the Craigs, where Stirling's first cinema was built, or almost the first. I can remember directly opposite beside the Observer offices and printing works, an entrance to the Electric Theatre. This and the Kinema were owned by the Menzies Bros, who later built the Picture House and ran the motor business in Orchard Place. To us, however, the Kinema was not considered the most desirable place of entertainment, and I cannot remember ever seeing a film there.

The Craigs opened out after warehouse property to an open square, into which a lane from Thistle Street led, running behind the Kinema and the former site of Macdonald Fraser's cattle market. Here the horse brakes, open wagons with wooden seats, began their journey to Millhall and Fallin. The factory on the right hand side was in full production but the vacant ground as far as Nelson Place was given over to allotments during and after World War I. This area – the Boroughmuir – was largely occupied by Messrs. Graham and Morton's extensive stables and furniture stores. Beyond that one could take a

pleasant walk along the burn, between Nelson Place and green fields, to the Shirra's Brae. On the right of the Craigs were the fairly old houses of George Street opposite the Craigs School, leading into the Well Green, where the building since identified, I believe, as a medieval chapel still served as a public wash house.

To return to Port Street, where more than any other place except the St Mary's Wynd new buildings have transformed the appearance of Stirling as I knew it. These have taken place on the right hand side where the new shopping centre and Woolworths have replaced first of all Kinrosses coachbuilding premises and workshops (4). Here there was a large showroom displaying carts, gigs, carriages and floats built in the extensive workshops behind the saleroom. Later the firm abandoned the horsedrawn carriage in favour of the new motor car, and these occupied the showroom while the coachbuilding works became a large and important garage and repair shop, probably the largest in the town at that time. Slightly further along were Mrs Hetherington's grocers' shop and two butchers' shops of the Cullen brothers. Why two brothers should open shops almost side by side I do not know, but I think there was some family disagreement. Both were highly thought of and well patronised. Practically next door was the ironmonger's shop of Messrs. Somerville and Valentine on the flight of stairs leading down to Orchard Place. This must have been an old property as the successive raising of the street and pavement had left the shop below street level, and, as it faced up King Street, it had flooding to contend with in heavy rain with the water coming down from the upper part of the town.

The other side of Port Street was very much as it is today though some of the shops have had their fronts renewed. Messrs. D. and J. McEwen were in the large corner shop, the largest grocery shop in the town, and a number of smaller shops including Stewarts the jewellers continued towards King Street. A little more than halfway was the large double shop and bakery of Keith and Ralston, probably the largest in the town. It was noted particularly for its cakes, and its tea room was a popular rendezvous for the ladies. It also had a branch in Bridge of Allan, and I have a faint impression of one in Dunblane where one got iced drinks after the tiring walk through the Glen. On the corner of King Street was Jimmy Gavin's men's' outfitters recognised as having a superior stock of men's' wear and accessories.

King Street Area

King Street has not changed much in appearance except for the disappearance of Messrs. Graham and Morton on the left hand side of the street, and the extension of Menzies the Ladies' outfitter, on the other side, now linked to Kenneth Morton's new shop. Two important shops however lower down the street have disappeared. On the left just above Gavin's shop was Messrs. Crawford, booksellers. One could order any book through them if not held in their large stock of good quality literature. They also stocked good quality stationery and writing materials. Less extensive stock but also of good

quality was to be found in James Shearer's shop near the Gold Lion. He was the main publisher of local history, and those interested in the story of the town and its medieval buildings owe him a great debt for preserving accounts and drawings of them before they were swept away.

The most important shop in King Street, and in fact in the district was that of Graham and Morton. While their Dumbarton Road shop dealt in superior furniture, curtaining and furnishing materials, the King Street shop had the most extensive ironmongery business in the whole area. There were two shops separated by a long close which ran right back to the Town Wall on the Back Walk. Old Col. Morton had had unusual success in persuading the Town Council to allow him to breach the wall to provide him with a goods access. On either side of the close were large workshops and stores – blacksmiths and tinsmiths' shops, for grate building was one of their many services. Above the ironmongery shop was an extensive silver and cutlery department. Most of the county was served by the firm, particularly the rural area, as well as parts of Perthshire and even Argyll.

Macaree's clothing store was there then serving as now the middle and lower strata of the community. Only one other place should be mentioned and that was the Journal office with its printing works behind a relatively small shop. The Stirling Journal was the third of the Stirling newspapers and was owned by Drew Learmouth. It was a sober paper and came out, I think, on a Tuesday but was widely read. It was situated just above Crawford's bookshop.

The Corn Exchange is exactly as I remember it apart from the extension to the Council chambers, which to my mind is largely in keeping with the main building.

Where that stands there used to be an old two storied house. The top flat was used as a practice room by the Burgh Band, but the lower flat was a second hand shop kept by Mrs Dewar. It was an indescribable hotch potch of old furniture, books and household articles, picked up from the unsaleable items at local auction sales. Still one could sometimes pick up a bargain, especially in books, as she had no idea of the value of things. A friend of mine, a local architect, found a 17th century edition of Shakespeare's plays priced 6d, which he got for 3d because it was a bit dirty. Later he had it valued in London at £1000, as it turned out to be a rare edition. Mrs Dewar was also a zealous photographer of local vents, using a large box plate camera, mounted on a tripod, requiring her to be covered in a large black cloth. I well remember supporting one leg of the tripod while she photographed Earl Haig from a precarious stance in front of Campbell Bannerman's statue, as he unveiled the town's war memorial.

The Municipal Buildings had only been completed just before the 1914-1918 war, as I clearly remember being perched on my grandfather's shoulders to see George IV driving up Wallace Street in a small car on his way to open them.

On King Street next to the Arcade stood the shop of Menzies, the ladies' outfitters, as it does now. Then however its main business was bespoke

dressmaking, and the other items of ladies' dress requirements were confined to the present front shop, which ended at the foot of the stairs, at the top of which a glass partition divided off the dressmaking section. There was then no tearoom.

Friar Street Area

Friar Street has not changed greatly in appearance. McCulloch and Young, even then, had a popular restaurant and the rest of the street has the same appearance, only Miss Crocket's paper shop, facing the bank, and Jimmy Millar's bakers shop facing down Friar Street have gone. At that time Friar Street was cobbled and open to all traffic, albeit mostly horsedrawn carts and lorries. At the top next to the public house was Leathley's fish shop. The Leathley's prided themselves on driving high stepping, mettled young horses for their fish floats and were notorious for their reckless driving, though I cannot remember their involvement in any accidents.

Their daredevil driving was equalled by that of Fullarton, the dairyman, or his young drivers. He had, I believe, a place in Baker Street and possessed I think, two of the earliest motor milk floats in the town painted a bright yellow. Their speed was something the sober townfolk was not accustomed to and they named them "The Yellow Peril".

Further down Friars Street before approaching the Co-operative buildings was a large deep windowed shop; once occupied by Hay the music seller, before transferring to Murray Place beside the South Church. It was then taken over by McLaren, the painter, who also dealt extensively in prints and paintings which were also displayed in a glazed passage to the right of his shop. Next door, but on the second floor were the auction rooms of Henry P Watt.

Incidentally one of the traffic hazards of this street was that on market days, one would probably be faced with a drove of cattle or sheep being driven from the market en route for the Corn Exchange and Dumbarton Road. The reason was that, still, at that period, the town had the right to collect the old medieval customs on farm produce and animals leaving and entering the town. At the bridge at the foot of Wallace Street, and, I think, on the St Ninians Road or Port Street there were provisions to collect these, but could be evaded for traffic to the west by using the Friars Street-Corn Exchange route.

Continuing along Murray Place there are some more major changes. Next to Somerville and Valentines opposite the foot of King Street was a wide flight of steps leading down to Orchard Place, a relatively wide street which ran along the back of Murray Place from Thistle Street. At the front of the steps on the right was a narrow lane or entrance to the Olympia theatre which occupied the ground behind what is now the new Centre. It was a largeish building which mainly staged variety shows. I have a feeling that it was owned or managed by the Menzies Bros, who had built the Kinema.

It was destroyed by fire just after World War II and never rebuilt. It was the largest hall in the town, but again it could have been a death trap owing to the

restricted access and egress. Somewhere down here also was a Territorial training depot.

The left hand side of Orchard Place consisted of basement access and storage rooms for the Murray Place shops. On the right hand side was a large garage and repair premises for Menzies who also built the Picture House at the end of the street on the corner of Orchard Place and the road down to the gasworks, behind which I think there was a bonded warehouse. At its opening a man named Menzies – no relation – who lived at the time in Plean Castle, created a scene over the pronunciation of the name Menzies about which he had strong feelings. This cinema was for long the only decent one in the town.

From the Picture House Thistle Street ran down past the gasworks to a lane leading behind the Kinema to the Lower Craigs. On the left of this lane had been a large area of ground occupied by Macdonald Fraser's cattle market leading to extensive railway sidings. This gave up shortly after or during World War I, and the resulting vacant area was used for the Shows on their visits to the town. Circuses however, preferred to set up their tents on the flat area of the King's Park.

Murray Place Area

Next to the stairs down to Orchard Place stood the Waverly Hotel. Its proprietor, Peter Macalpine, was something of a character who was no respecter of persons and exceedingly outspoken. Beyond his hotel was the large double shop of McLachlan and Brown who were considered to be very high class ladies' dressmakers and outfitters. They also had an equally reputable gentleman's tailoring department facing the Station Hotel. Slightly further along Murray Place was the County Hotel, a temperance hotel, on the second floor above the shops. On the corner of Thistle Street was the large establishment of Virtue the ironmongers, who later had to migrate to a smaller shop in King Street.

The other side of King Street has also seen some changes mainly in shops. The bank at the foot of King Street, built by the Drummonds for their original Tract Depot, was already installed, and next to it, the shops of Hepting and Farrer, the jewellers (earlier Hepting, optician), and Drummond the seedsmen, who also had a nursery on the Cambusbarron Road. The other shops as far as the turn of the road have not made any impression on me, but as one approached the turning there was Jimmy Blair the hairdresser, Birrel the confectioner and on the corner Eneas Mackay, travel agency. Almost next to him was the photographer Crowe and Rodger, followed by McLachlan and Brown's shop already mentioned. On the entrance to the Arcade was the North British Butter Co, with Brown the hatter opposite. I may be wrong, but I have an impression that there was a small hotel on the upper floors.

At the top of Thistle Street opposite Eneas Mackay's premises stood the North Parish Church which has now disappeared. The Baptist Church next to it may soon go the same way, and give place to shops. The lane beside the

Station Hotel led down to large stabling for Jeffrey's extensive fleet of horse cabs, many of whom stood daily in front of the North Church and the Station, and latterly in front of the South Church, until replaced by the new motor taxis.

The Arcade consisted of a number of small shops, a ladies' toilet and an extremely large toy shop latterly run by Mr Craig. In the centre portion was the entrance to the Alhambra Theatre which stretched back behind the King Street shops. Most of it is now part of the extension of Messrs. Menzies. Again I am doubtful it would be permitted to function today owing to its limited access, but it was a very comfortable little theatre.

The large building at the top of the Station Road opposite the Station Hotel was built and run as the County Club. Below that on the Station Road was a sculptor's yard next to the Savings Bank which had moved from Murray Place. The other side of the street was the blank wall of the Station Hotel stables until Burns the jeweller from Port Street took a newly built shop in the early thirties.

To the Post Office the street has not changed much. The stretch from the high buildings, originally private houses were already occupied as business premises, including the dentist's surgery of Common, now in Albert Place. On the opposite side the space between the South Church and the bank then in operation, at the corner of Friars Street was occupied by a nondescript hall used as a church or meeting place by some religious body. If it has disappeared it is not before time. Hay's music shop from Friars Street was built here.

From the Post Office Maxwell Place ran down at an angle to the railway bridge, making a direct road to the Riverside. Beside the Post Office, Bailie McElfrish had a newspaper and tobacconist shop, displaying his posters along the railings. A kenspeckle figure he had a very sharp tongue, and woe betide any youngster who fell foul of him. On the right of Maxwell Place were some shabby houses, from some of which small businesses were run, and adjoining them were the stables and lorry park of Wordie the carters. The big Clydesdale horses were stabled on the second floor, reached by a wooden ramp, and it was always a delight to see and hear the heavy horses clomping up to the stalls. This disappeared in the early twenties when the Regal cinema was built beside the bridge. It had an excellent and popular cafe much patronised. The other side, Maxwell Place, consisted solely of the back premises of the Barnton Street shops ending in housing at the corner of Viewfield street which ran up to the County Buildings. In a yard, near the foot, a cycle repair shop was run by one William Shakespeare if my memory does not fail me. Beyond the entrance to Viewfield Street were small shops and Sergie's Restaurant. The latter served the farmers and drovers from the Live Stock Marts, which occupied a large portion of what had been Speedies mart, which had reached across to and down Wallace Street. The main entrance was at the end of the flats at the start of the Bridge and I think took up ground which had been railway sidings for cattle trucks now no longer used. Sergies had a perpetual sound of frying with the accompanying smells and its hygiene gave rise to suspicion. To us children, the sight of real mice playing with the sugar mice in the shop window was a constant fascination.

Riverside Area

As we are on the old road to the Riverside, we might as well have a quick walk down memory lane. On the right of the bridge, or lane, was a very handy shortcut to the station along the back of the Regal and the back of the Post Office and gardens of the Barnton Street houses. It was a godsend in the old days when running along for the first train to Glasgow for a nine o'clock class at the University. On the left were the Livestock Marts. At the other end were the Ordnance stores which were a hive of activity in World War I with horse drawn military wagons carrying all sorts of equipment, as well as gun limbers and artillery. Opposite was the main railway goods yard, an extensive area stretching as far as the bridges at the foot of Wallace Street. Its Forth Street boundary constructed of a continuous fence of railway sleepers. Forth Street boasted quite a number of small industrial premises. On the right was Parks Brush factory, next to Oliphant's sweetie factory producing mainly boilings. Next to Oliphant's was the large open walled area, containing the lorry park and stables of Messrs. Cowan the carriers which extended back to Ronald Place. On the opposite corner of the road leading to Roseberry place was a yard for repairing agricultural machinery. I am not clear about the other factories, but one at least was a laundry, and the last was a lemonade factory, where the hiss of the gas being injected into the bottles was always thrilling to us youngsters. This building became the first depot of the General Omnibus Co.

In Argyll Avenue there was the flourishing Ochilview Tennis Club, a consuming interest on summer evenings when we stood on its wall to watch the players. The site of Riverside School was then the Cow Park, grazed by the cows of Gilvear, farmer and milkman. It was our favourite play area for football and cricket, always with a wary eye for Mr Gilvear who chased us for our lives. Another play area was a walled enclosure in the opposite field with house foundations built to about three feet.

The banks of the river were not built up and were guarded only by a simple wooden fence as far as the Boating Club House, which housed a number of single skiff, four oared racing skiffs as well as pleasure boats. It was quite popular with the young men who exercised in the racing boats, and even with some families who went for a row up the river. Pollution, not being recognised, as it is today, swimming was popular despite the evil looking mud.

Beyond the Boating Club apart from Provost Baxter's house, there was nothing but open field from behind Millar Place and Abbey Road down to the river and round to the Abbey Ferry.

There was a football pitch on the corner of Millar Place, though I never saw it in use. It was a nice evening walk through the fields along the river. There was as yet no Riverside Bowling Club. That came some years later.

At that time there was no footbridge to Cambuskenneth, and one was dependent on the "pennyworth of navigation" in the clumsy ferry boat rowed by a sturdy boatman. It was sometimes a hard haul if the river was running strongly. I don't remember whether it also operated at night.

At one time there were at least two textile factories and I think a sawmill on the left hand side of Abbey Road going towards the town, but I can only remember one nearest the river still in operation. The other sites were cleared just after 1918, or before that, and were used for the "Shows" after they left Goosecroft. At the junction of the Shore Road (Low Road) and Abbey Road was an old red washed building, said to be a salt factory, though I never saw signs of activity, beyond the occasional arrival of carts of raw salt. The harbour was even then deserted even in war time, although small vessels did use the Ordnance pier. D & J McEwan did, in the early thirties bring in an occasional coasting vessel with a cargo of grain, piloted by old Captain Wilson, the last of the river pilots, but the silting up of the river made this impossible. Curiously, the booking office for the old pleasure cruises on the river were still standing.

Barnton Street, Wallace Street Areas

To return to the town. Barnton Street from the Post Office appears the same although many of the shops have changed ownership. On the right hand side the corner shop was Mrs Somerville's papershop. Next to it was Skinner's large chemist shop, and the extensive grocery of Messrs McEwan Bros. Few of the remaining shops along this side of the street have registered in my memory, except a few at the end, including Tyndale McLelland, a grocer beside Copley's fruit and vegetable shop, Forrester's fish shop and the large premises of Dowell the tailor with the windows facing the County Buildings. One clear picture remains in my mind. In front of the County Buildings one could sometimes see an old fashioned motor coach, with a poster proclaiming a run to Mussleburgh for 1/6 return. This was part of some rivalry of different bus companies, and as the Stirling company (General Omnibus?) was not allowed to use a terminus in Edinburgh, one could be taken straight through.

At the foot of Friars Street were the extensive premises and offices of the Stirling Co-operative Society, occupying the building on the corner which had once been Campbell's Royal Hotel, but before my time. I think that even earlier the large building at the foot of Queen Street, which was divided in my time into residential flats had been the original Royal Hotel. The reason for this is that when coming up Wallace Street, one could clearly read the sign "Royal Hotel Stables" which had been painted above the ground floor windows of the houses in Cowane Street, implying that the first few houses there had been converted to houses at an early date. Again this side of Barnton Street shows little or no structural changes, except that a little along from the last Co-operative shop stood the offices with printworks behind of the "Stirling Sentinel", one of the three local weekly newspapers, which were destroyed completely in a spectacular fire some fifty odd years ago. Unfortunately a number of unbound books and a stock of books on local history were destroyed, though through the efforts of a Mr Crobie, a number were found and saved. I have a set of the "Stirling Antiquary" rescued by him, and still readable despite the charred edges.

At the end of this side of the street, Viewfield Street ran up to meet the Bridge Street passing at the top. Burden's Brewery what was still in full swing

in my early days. The Viewfield church was then set back behind a massive wall, which has now been removed to give place to shops.

Queen Street looks the same today as it did seventy years ago, except the Queen's Hotel has taken over the building once residential flats, already mentioned. At the top right hand side in my earliest days was a busy tannery with along yard which ran down the back of the Bridge St houses, beside a long lane. The smell was atrocious from the processing and the rotting debris in the yard and we used to run down the lane as fast as we could, holding our breath. This ceased operating either during the 1914-18 War or shortly afterwards and the site was used for another cinema, the Queens, a pleasant picture house but a bit inconvenient to reach. I believe it has also ceased operating as a cinema.

Cowane Street, as I remember it, consisted mainly of old working class housing, some of which was have been over a hundred years old even then. It had been a colony of wool workers in the basements which had windows at pavement level. My grandfather who came to the town, probably in the sixties of last century, told me that he could then hear the whir of the spinning wheels and clack of the shuttles from these ill-lit basements. If these have now been cleared away, it is not before time.

It is however at the foot of Union Street at its junction with Wallace Street that the biggest change has taken place and the approach from Davy Bain's clock to the Bridge is entirely different. Here, behind Davy Bain's clock, massive gates and fences barred the entrance to the town from the bridge, to allow the Forth and Clyde Railway to cross the main roads on its way to Gargunnoch, Kippen and all stations west. The crossing was controlled from a signal box set back from the road on the left, from which the signal man came down to shut the gates and lock the wicket gates on the pavement, and reopen them when the engine and two or three carriages had crawled over.

The clock reminds us of Provost Bain who had a thriving grocery business on the corner between Union Street and Wallace Street which he had built up over all his life in Stirling. I can just remember him as a little stocky man with a short white beard. I've heard it said that when, as a young man, he first set up his shop, he slept in it all week, and then, at the week-end tramped home to Auchterarder over Sheriffmuir with his takings. I doubt if one could dare do that today.

At the bridge, on the left hand side, stood a public house, the Bridge Customs, whose licensee was responsible for collecting the Burgh customs on farm produce, sheep, cattle, etc as already mentioned. There was a weigh bridge in front of the pub, and one often saw lorries, laden with hay and other farm produce including cattle and sheep, being weighed there. A small street connected the public house with the Old Bridge at water level and here the Town fishings, another ancient practice, rented by Mr David Bentley Murray were carried on.

Top of the Town and King's Park Areas

The new road from the foot of Wallace Street to the Station runs across an area, then comprising a sawmill, part of Speedies mart which reached halfway down Wallace Street, and railway sidings. The road has also demolished the Live Stock Marts and the Regal Cinema.

The area of the town where change is most marked is St Mary's Wynd, and the top of the town as far as Broad Street and St John Street are concerned. Upper and Lower Bridge Streets are, I understand, reviving, whereas in my time they were in decline from their previous reputation as a fashionable area for the well to do upper class and military families. The Wynd, however, was a complete and absolute slum which had been neglected for two hundred years. Many of the houses had been built in the 17th and perhaps 16th centuries and they were beyond repair, housing the poorest of the poor, with a reputation for flouting the law. My father, a Special Constable in World War I, used to tell of exciting chases down the back of Upper Broad St to the Wynd. This was all cleared away in the thirties, and new housing built. It sometimes seems to me that it is a pity that some of the more interesting doorways and other architectural features were not incorporated in the new buildings. The renovation of the old 18th century houses in Broad Street was much more imaginatively done and the appearance of the street hardly seems to have altered.

Seventy years ago the Police headquarters were still beside the old Burgh Court Buildings where courts were still being held.

A good many old houses on St John Street have either disappeared or have been renovated. One which has gone, was pointed out as the Hangman's House, next to the court buildings, no doubt convenient for that gentleman to carry out his duties at the Burgh Cross. The Erskine Church was a thriving body though now deserted, and the once well kept grounds overgrown. It seems that in these days it is too much to ask people to climb the hill to church, as I am told that the East and West churches have also ceased regular services. I have a great feeling of regret, as I took great interest when the two churches were rejoined to restore the building to its original fine appearance. One thing of the restoration was the excavation of the choir, and part of the nave of the old West church, to provide choir rooms, etc. The site of the church had been a town cemetery in the middle ages, and many had also been buried there after the church was built, and so hundreds of skeletons turned up. Amongst them was found a sepulchral chalice which, I hope, has been duly preserved by the Kirk authorities. The beadle and I searched the ground round the place where the chalice was discovered, thinking that an important cleric, meriting burial with a chalice, might have had a ring or something to identify him. We found nothing but scraps of coarse black material as from a monk's robe with copper clips to hold it closed. This crumbled immediately on exposure to the air. Later, on trying to discover whom this might have been, I came to the conclusion that it was possibly Archbishop Hamilton Archbishop of St Andrews who was

executed at the Old Bridge or the Cross in 1571 for supporting the Catholic faith and persecuting the Reformers.

As we proceed down Spittal Street, we find the Old High School where I spent so many happy days now abandoned and likely to be put to other use. Some parts of it, mainly the frontage must be well over a hundred years old. The enormous rooms built at a time when classes were equally large were no longer suited to modern teaching techniques, and the school population outgrew its original home. How things change! I can just remember Dr Lawson, the Rector, the last of the old school of teachers, coming to the school in his frock coat and tile hat! Now the school has moved out to a new site where there were open fields at the back of Snowdon Place.

Below the school the Education Offices occupy what was the old Royal Infirmary before its removal to Livilands. I can well remember as a very young primary schoolboy waving to the wounded soldiers of the 1914-18 War convalescing in the gardens of the hospital below the school playground. There were few facilities for school lunches in these days, though a small luncheon room staffed mainly by the domestic department served those pupils from a distance with a bowl of soup for 1d, a meat and potato course for 4d, with 2d for a sweet. Those of us in the town had to run up and down Spittal St for a hurried meal!

People

We have now been around the town looking at the changes in its appearance, but what of the peoples' lives? What differences are there in the habits and amusements in these seventy odd years? Stirling was lucky in having the great open space of the King's Park. It provided a very popular golf course supporting the Stirling Golf Club, then much nearer the Park gates, with the artisan's club, the Victorian, behind it. The flat region of the Park did not then have any tennis courts – they came in the late twenties, and were exceedingly popular, though that popularity seems to have waned. There were no toilet facilities at that time until they were erected at the gates and, for some reason, caused considerable ribaldry in the local press. At the same time a putting green was laid down. The rest of the flat area was used for cattle shows and football pitches and was at these times exceedingly muddy. I cannot remember any swings or other amusements for children. For most Stirling people the Park provided a fine walk (on Sundays) round the racecourse by the quarry. Incidentally in the early years of the 1914-18 war there was a small airfield at Tolleninch farm, and the quarry was a vantage point to watch these early stringbags taking off and landing. The air currents above the Castle caused quite a number of crashes which always added spice to the anticipation of the spectators.

There was also the King's Park football team with its pitch at Springkerse over the bridge at the foot of the Craigs. It was moderately successful and had a good following in the town. It had one fervent supporter in Prig Wordie. Who

he was was a mystery as was his means of support. He claimed he was one of the wealthy Wordie family who had the carting business, that may have been. His main object was making the price of his next pint and he went around picking up trifles to flog. He often came to the Smith Institute with what purported to be antiques or historical curios, few of which were genuine. However he never caused trouble and on away football matches he was to be found at the station with his decrepit hat, decked in the red and white club colours held out until he had collected his fare. There was considerable interest in amateur football and on Saturday afternoons, a dozen amateur clubs would be playing in the King's Park. In summer months one would watch Stirling County Cricket club playing at Williamfield, while the same ground was the attraction for Stirling High School rugby and hockey teams. Eventually partly due to my own humble efforts, the school had its own ground in an adjacent field.

For evening entertainment in the wetter months, there was no radio or television, though primitive crystal wireless sets with earphones were beginning to appear, often a homemade effort. One had to make ones own amusement with hobbies, card games or the early scratchy gramophone. Outside one could go to one of the picture houses, the Olympia, Alhambra, or the Albert Hall if a celebrity concert or lecture was being staged. The Stirling Fine Art Association had an annual exhibition in the Smith Institute with a weekly concert, provided mainly by local artists which were well attended. There were also numerous clubs in the town for indoor sport and games and interests which had a flourishing membership. The local Gilbert and Sullivan Society also had a winter season when they staged a G & S opera usually in the Albert Hall, playing to packed houses.

However there was a peculiar custom indulged in by the Stirling men folk. On good nights they would gather in front of the Post Office and meet their friends, or just watch the world going by. Then they would stroll along to the end of Port Street at least and return, perhaps once or twice a night, no doubt settling the affairs of the town and the world. Sometimes we would extend our walk to include the Terraces or over the top of the town. I wonder if this has died out since the War.

Perhaps the great night of the year, often eagerly anticipated especially by the younger folk was the Friday evening before the "Brigallan Games". This was memorable because of the great attraction of this visit of the "Shows". It was, then, a Mecca for almost every kind of show business on the roads in Scotland. Huge roundabouts, swings, helterskelters, hoopla, boxing booths, sweetie stalls, peep shows and anything to conjure the money from folks' pockets.

On that night almost everything on wheels was on the road, apart from the hundreds making their way by Shanks pony. Horse drawn gigs, floats, brakes, cabs and carts, extra trams and later every conceivable motor vehicle – early

high buses and charabancs with single seats running across with doors on each side, and so high that grasping handles one had to climb up two high steps to get in, taxis and even private cars. The games seem to have declined considerably in attraction from these exciting times.

Looking back I wonder if we were not a lot happier with our simpler amusements, with more time for our hobbies and pursuits, than the present day frenetic search for ways to combat boredom and the hideous assault on our senses by the mass pop scene.

At any rate this nostalgic journey round the town has brought back to me many happy memories. Maybe some have been faulty, not surprising after seventy or more years, and I apologise if that is so. Yet I feel I should put on record details about the town which may soon be forgotten and which perhaps would be useful to future local historians who may find here some last clue or piece of interesting information.

EDITORIAL NOTES

- (1) The author was born in Stirling in 1911, graduated from the University of Glasgow and taught in the High School of Stirling before moving to Dunfermline in 1946. He was Principal Teacher of History at Beath High School, Cowdenbeath, where, unusual for the time, he taught mainly Scottish history, inspiring a generation of Fife schoolchildren, including the current Director of the Smith. He died in 1996.

As a young man he helped his uncle Joseph McNaughton, Curator of the Smith Institute, to compile the Smith's 1934 Catalogue, a standard reference work to this day. His earliest publication was an *Index to the Transactions of the Stirling Natural History and Archaeology Society* vols. 1-57 (1878-1936) in 1936.

FNH published the author's *History of Old Stirling* in 1980 (140pp) and for some years thereafter he had been working on the basis of this paper.

Stirling, his home town, was constantly in his thoughts, and he amended and extended this paper between then and the time of his death. He was an inspirational teacher who encouraged his pupils to explore and examine their history, and his own love of Stirling was passed on.

He was a founder member of the Scottish Genealogy Society, and this manuscript was passed to the Forth Naturalist by his executor, Sheila Pitcairn, Chairman of Dunfermline Heritage Trust.

- (2) J. W. Campbell's paper is in the *Transactions of Stirling Field and Archaeological Society* volume 50 pp136-149 entitled 'Humorous Reminiscences'. However a major survey of the growth of Stirling, based on the evidences of the Ordnance maps of 1858 and 1913, by William A. Ballantyne, is more akin to McNaughton, and much more comprehensive than Campbell's above.

Ballantyne is published also in the Stirling Society *Transactions*, in two parts, part I in volume 49 pages 144-185 on changes in the central part of the burgh, and part II in volume 50 pages 85-109 on changes in the various districts into which he divided the burgh, the Craigs, St Ninians, Wellgreen, Burgh Muir.

- (3) Campbell's paper has the story of the Black Boy.
- (4) We published 'The Kinrosses of Stirling and Dunblane' including the story of the Coachworks in the *Forth Naturalist and Historian* volume 21 pages 97-108.

BRIDGES OF THE RIVER FORTH AND ITS TRIBUTARIES

Louis Stott

Introduction

The Forth is bridged by more distinguished bridges than most rivers, and they are insufficiently celebrated. Stirling Old Bridge occupies a particular place in the affections of all Scots, and has played a notable part in the history of the country. The Forth Road Bridge at Kincardine-on-Forth was the largest swing bridge in the world when built in 1936. The Forth Rail Bridge by Fowler and Baker remains, well over a hundred years after it began to be built, one of the engineering wonders of the world. The Brig o' Forth at Aberfoyle is steeped in spurious associations with 'Rob Roy'. The Forth Road Bridge is one of the finest examples of modern engineering in Britain, and there are a number of others which, anywhere else, would receive a good deal of attention. Robert Stevenson's Stirling Bridge of 1931, Drip Bridge, Cardross Bridge, and Bridge o' Frew all have considerable interest; indeed there is no bridge over the Forth without its attractions.

The tributaries of the Forth are bridged by a dozen further notable bridges; Brig o' Turk in the heart of the Trossachs, Bracklinn Brig, hurled dramatically across a roaring waterfall; and Rumbling Bridge on the Devon, double-decked like the famous Pont du Diable in the St Gothard Pass. Others are of considerable architectural or historical interest, for example, one of Telford's most spectacular bridges is hardly known beyond the Stirling district, although it is situated in a place renowned throughout the world, Bannockburn. Pontifex Maximus, as Telford was dubbed, carried his arch to its logical conclusion, a full circle, in the gorge of the little village's Bannock Burn. Bannockburn Bridge is worth seeking out. Other examples include Callander Brig, the 'ancient' bridge across the Keltie, and the 'Roman' bridge at Kilmahog.

See the Appendix for tabled data on the bridges – Table 1 for the Forth and Table 2 for the tributaries – and illustrations of some at the end

Bridges of the Lower Forth

There is no doubt that the two bridges across the Firth of Forth are remarkable. Two such eminently successful solutions to the same problem, each so characteristic of its generation, cannot be so neatly juxtaposed anywhere else in the world. Both represent the finest architectural and engineering achievements of their day, which are intertwined in them, and, this is the thing about them, they set one another off. Whether the eye is filled with the ponderous grandour of the one, or enraptured by the spidery finesse of the other – and it is possible from the vantage-point of the Hawes Inn to dwell on either.

It must be acknowledged that neither of these massive presences detracts from the other, and, whatever superlatives may be applied to the first, more

must be found for the second. They are the furthest north of the world's greatest bridges, and, although great bridges have been constructed in more hostile places their construction – in the case of the Road Bridge with the loss, in unpredictable circumstances, of only three lives – represents a notable achievement in itself. A good idea of the atmosphere during the construction of the railway bridge is given in this account.

Every limb of the three great cantilever structures had to be served by cranes crawling upwards and outwards as the particular member grew. There were steam cranes, hydraulic cranes, giant rivetting cages, heavy hydraulic 'scissor' rivetting machines and all the paraphernalia common to the needs of men engaged in drilling, reamering, shaping, cutting and fitting steelwork together; all had to creep ever outward and upward along these members, Power to operate the plant came not through wires or even air hoses; neither dynamo nor pneumatic compressor was available in the contractor's kit; coal and water for the cranes had to be delivered to all parts of the girderwork; rivet-heating furnaces weighing half a ton apiece were run on oil, and, yet another sign of the times, electric light was tried, with mixed results. The last was an arrangement of arc-lights of between 1500 and 2000 candlepower, which proved to be quite hazardous because of their unreliability. Men working out on the erection would one minute be working in the dazzling glare of these lights and in the next they would be in a darkness made more absolute by the sudden failure of a carbon. Such conditions cannot have added to the safety of men clambering about at night on the narrow slippery stagings and facing the cold and wet of a Scottish winter.

P. S. A. Berridge *The Girder Bridge* 1969

Both bridges represented, at the time they were built, the best technical achievements of their age. The **Forth Railway Bridge** restored the reputation of British railway engineers after the Tay Bridge disaster. Its massiveness owes something to that disaster, and it soon became one of the wonders of Europe. "The structure", stated Black's Guide for 1889, "is larger than any bridge yet built (not excepting the Brooklyn Bridge)". Even postcards of the day, unusually, recited the facts and figures:

THE FORTH BRIDGE

THE LABOUR OF 5000 MEN FOR OVER SEVEN YEARS, DAY AND NIGHT
COST OVER £3,500,000 COMMENCED DECEMBER 1882
COMPLETED MARCH 1890

Engineers: SIR JOHN FOWLER Bart AND SIR BENJAMIN BAKER KCB
Contractor: SIR WILLIAM ARROL

LENGTH, INCLUDING APPROACH VIADUCTS: OVER 1½ MILES
TWO SPANS 1,710 FT, AND TWO OF 690 FT
HIGHEST POINT ABOVE HIGH WATER LEVEL 360 FEET
HEIGHT OF VIADUCT: 158 FEET WIDTH OF VIADUCT: 27 FEET
DEPTH OF FOUNDATIONS BELOW RIVER BED: 60 FEET
DEPTH OF WATER IN MAIN CHANNEL: 218 FEET
DIAMETER OF LARGEST TUBES: 12 FEET
DEAD WEIGHT ON EACH CIRCULAR PIER 16,000 TONS

MATERIALS USED-STEEL 54,000 TONS RIVETS: 6,500,000=4,200 TONS
GRANITE: 750,000 CUBIC FEET CONCRETE: 109,000 TONS

All of this carried just two railway lines, but for threequarters of a century the bridge captured the imagination by itself – most famously perhaps in the two movies of *The Thirty-nine Steps*, neither of which much resembled John Buchan's book, but which left familiar images of the bridge in the minds of many who had never seen it. H. V. Morton, the travel writer, put it well in the thirties in *In Search of Scotland*: "To see the Forth Bridge is rather like meeting a popular actress, but with this difference: it exceeds expectations." Interestingly enough it became the custom to cast a coin out of the window of the train as it crossed the bridge. The reason for this was that the bridge replaced the very old established and often dangerous Queensferry which in the early days represented a considerable hazard to travellers who used to make an offering in one or another chapel situated nearby before embarking. The motor car brought about the revival of this crossing which lasted until the opening of the Road Bridge in 1964.

The bridge realised a long-held ambition: to achieve a crossing below Stirling, but it did not meet demand for a road bridge at Queensferry and, in the late fifties, plans were laid to build the fine suspension bridge which makes Queensferry such a unique place for bridge enthusiasts. The building of the **Forth Road Bridge** marked the dawn of the contemporary era in Scottish motoring. Serious talk about a Forth Road Bridge began in the 1920s resulting in the eventual compromise of the Kincardine-on-Forth Bridge. After the war it was evident that the original suggestion, that a suspension bridge should be built at Queensferry, would have to be reconsidered. Some notable long span road bridges had been built between the wars elsewhere, but there were none in Britain. One reason for this was that, in a relatively small country, it could always be argued that even great estuaries like the Humber and the Severn could be circumvented with comparatively little inconvenience, provided that there were not delays on the alternative routes. It is also possible that some engineers did not trust suspension bridges. However, when the Motorway network was planned after the Second World War the two first estuaries to be included in the plans were those of the Forth and the Severn.

In the early sixties the two great towers of the Bridge were built. Then the tiny thread of the catwalk appeared. It was followed by the wires from which the deck of the bridge would be suspended. It seemed then that, rather than ploughing across the Forth on the *Queen Margaret* eating ice cream, one might one day be driving across the water. The reason for this was that the solution to the problem of crossing the Forth without getting your feet wet which was so firmly imprinted in every mind, was the heavyweight engineering extravaganza of Baker and Fowler – most famous bridge in the world perhaps – the Forth Rail Bridge. While even when it was completed the road bridge looked so insubstantial by comparison with the Road Bridge that it appeared inadequate for its task, there is, surprisingly perhaps, two thirds as much steel in the road bridge, which is of course wider, as there is in the Rail Bridge which has always been regarded by engineers as much heavier than it needed to be.

One reason why there is so much steel in the road bridge was the need to

strengthen the plate girder deck after the spectacular Tacoma disaster which occurred in November, 1940. The Severn Bridge, opened two years later than the Forth Bridge, has a box girder deck which is shaped to reduce its resistance to the wind which in consequence strikes vehicles on the bridge with some force. In fact, up to date as it was, the Forth Road Bridge was superseded in a technical sense by the Severn Bridge, two years later. It is strengthened inelegantly by what were to be, within two years, outdated methods. The engineers were Messrs Mott Hay and Anderson, who had built the steel arch bridge at Newcastle-upon-Tyne, in conjunction with Freeman Fox and Partners, the firm which designed the Sydney Harbour Bridge of 1932 and the Medway Bridge in Kent.

The bridge carries two 24 foot carriageways, two nine foot cycle tracks and two six foot sidewalks, the whole scheme which provides for eight miles of dual carriageway approach roads and incorporates 24 minor bridges, was estimated to cost £18 million.

There are four stages in the erection of a bridge of this kind, in which the main cables pass over high towers and are anchored independently of the deck structure. First come the foundations for the towers and preparatory work for the cable anchorages. After the towers have been erected the the cables are spun. Finally the deck structure is suspended,

Dorothy Henry and J. A. Jerome *Modern British Bridges* 1965

Commemorative stamps, much less usual then than now, were issued to mark the opening. Edwin Morgan, now Glasgow's 'poet laureate' wrote an enigmatic poem, but it was Sidney Goodsir Smith, the New Zealander who became Edinburgh's poet, who caught the imagination with a brilliant updating of Robert Burns' poem, *The Twa Brigs*, about the old and the new bridges in Ayr, to celebrate the existence of two Forth Bridges:

– And here it is:

The new brig we'd dreamed o'
 But never dreamed sae bonny, like a sprite,
 An Ariel, sae licht as etter's gossamer it looks ...
 There she swings and lowps the Frith
 Wi a lightsome lauch, sheer glee and joy,
 A dance-step wrocht in siller wire,
 A lassie's lowp, fit foil for the stridin strenth,
 Dour and purposefu', o' her brither's o' the iron road
 Near a hunder years her senior – it's truth!
 There she swings and loup
 And looks at her auld brither
 Like a wee slip o' lassie to her busy jo
 As gin she said, as lassie says,
 'See me! See my braw new dress, Johnnie!
 See me nou, like a swan,
 No, a swallow mairlike, swingin out
 Athort Queen Margaret's Passage,
 See me, sweet hairt, Auld Stumpie, look at me,
 Like a fling o' the airm, a rope flung
 Athort the Firth – and we're ane, the gither.

Elegant as the bridge is, its reinforced deck is less airy than that of the Severn Bridge. However, the contrast with the railway bridge is marked: the main span is longer, in contrast to the two railway lines the road bridge carries two twenty-four feet carriageways and more. In the case of the railway bridge much of the steelwork was assembled on site, whereas much of the Road Bridge was prefabricated. In comparison with the rail bridge twenty-one and a half thousand tons of steel were used; about half as much. However, some things do not change much: Sir William Arrol and Company, together with other distinguished bridge builders, participated in the building of the new bridge.

Generally innovation in Scotland has taken place either too late, or with too little impetus. The **Kincardine-on-Forth Bridge** ought to have been built a decade before it was completed in 1936. It was a compromise. In 1919 Messrs Mott, Hay and Anderson, who eventually built the Forth Road Bridge forty-five years later, produced a scheme for a road bridge at Alloa to relieve traffic at Stirling Bridge, and in 1923 James Inglis Ker first proposed a suspension Bridge at Queensferry. Mott, Hay, and Anderson undertook a survey completed in 1928. The Government was unwilling to pay the entire cost of either bridge, and 'The Silver Bridge' at Kincardine, so called from the aluminium paint used to maintain it, was built by Scotland's relatively small pre-war local authorities (the Burghs of Stirling, Falkirk and Dunfermline and Stirlingshire, Fife, and Clackmannanshire), who cooperated with one another to build a bridge at the lowest point where a bridge could be economically built. The Kincardine Bridge was the cheapest solution, and, whereas an Alloa bridge would have been of most benefit to Glasgow and the West, and a Queensferry bridge would have served Edinburgh, it went some way towards serving both. The bridge was designed by Sir Alexander Gibb and Partners, and built by the august bridgebuilders Sir William Arrol and Company and others. It was not until 1936 that the steel girder bridge was finished, and it was opened in 1937. At the time it was built it was the longest road bridge in Britain, and the swing bridge with the largest span in Europe. In order not to impede shipping the swing span was built 'open'; it had to be closed, rather than opened, before traffic could use the bridge. The swing span, 110 metres long and weighing 2000 tons, provided two 45 metre openings for navigation. At the time the bridge was built there was no question that provision had to be made for shipping. Fifty years later in 1987 it was decided that the swing span could be dispensed with and the 'Silver Bridge' was 'closed'. It could be said of this bridge that before it was opened it was closed, and before it was closed it was opened, because before the machinery was shut down the span was swung open one last time. The Kincardine Bridge is celebrated on cards of the thirties which, as with the Forth Bridge, gave information about the bridge and details of its pre-eminence.

In 1931 Jan Struthers summed up the attitude to the steel bridges of the twenties and thirties in *Punch*:

'Statistics have shown
 That the traffic's outgrown
 Your bumpy old,
 Humpy old,
 Bridges of stone;
 It's the Age of the Wheel,
 And we earnestly feel
 If you want to be safe you must build 'em of steel:
 Dashing new,
 Flashing new,
 Bridges of steel.'

Bridges of the Devon and Bannock

Above the Kincardine Bridge it is bridges of stone rather than bridges of steel which deserve attention, but it is a mistake to suppose that the Railway Bridge and the two Road Bridges at Queensferry and Kincardine are the only 'Forth Bridges' worth going to. Beyond **Alloa**, where, on the railway, there was another **swing bridge**, are the 'Links of Forth', notable meanders which meant that the little steamers which, at one time, plied between Edinburgh and Stirling travelled a very much greater distance than the few miles between Stirling and Alloa. Below this point rivers which empty into the Firth of Forth – the Carron, the Almond, the Avon and the Esks – are generally regarded as being independent streams. The trunk stream is joined by the Devon, the Black Devon, and the Bannock Burn, on which there are, or were, a number of distinguished bridges.

From the geomorphological point of view the Devon ought to flow into Loch Leven and join the sea in Fife, but, at the Crook of Devon, it changes direction. This is a notable example of 'river capture' demonstrating the erosive power of rivers. The lower Devon cut its way back forming the dramatic series of gorges and waterfalls at **Rumbling Bridge**. At this point William Grey of Saline threw a narrow bridge, only twelve feet wide and without parapets, across the river in 1713. It carried the principal road to the North and was superseded in 1816 by a stone arch bridge, 120 feet above the water, built on the same site above the old bridge. The whole site, now in the care of the National Trust for Scotland is a remarkable tourist attraction, well worth seeking out. Near Tullibody, on the Devon, another critical crossing point, were two fine old stone bridges.

At Bridgend on the A907 is the **Old Bridge of Devon**, an unusually long early sixteenth century bridge, designed to impede the rapid transit of horse traffic. Its great length is attributable to the difficulty in crossing the flood plain at this point. It is said that in 1559 Kirkcaldy of Grange dismantled a part of the bridge to prevent the French, retreating from Fife, from crossing the Devon. However, they dismantled the roof of Tullibody church to effect a temporary repair. A more permanent repair was carried out in 1560. Parallel to the old bridge, a lattice girder bridge, **Downies Bridge**, was erected during the 1920s. This metal bridge, long neglected, had suddenly this August 1999 to be by-

passed by the Miller concrete bridge built some two years earlier but not connected to the road – part of the A907 ‘improvement’ debacle!

The Bannock Burn joins the Forth almost opposite the Devon, It has three notable bridges, one ‘new’ by **Telford**, another ‘old’ built by the local benefactor Robert Spittal whose bridge at **Doune** is discussed below. Spittal may have also financed the bridge at Tullibody. Higher up the Bannock Burn, a delightful mountain stream of great interest throughout its course, there is another old stone bridge at **Chartershall** dating from 1747.

Bridges of the Upper Forth – Alloa

All three of the bridges at Queensferry and Kincardine are relatively recent; further upstream **The Old Stirling Bridge** deserves all the attention it has had. It was, after all, *the* Forth Bridge for several hundreds of years. As Alexander Smith put it in *A Summer in Skye*, “Stirling, like a huge brooch, clasps Highlands and Lowlands together”. It is one of the oldest and finest stone bridges in Britain. What makes it more interesting than some others is its strategic importance:

The Old Bridge of Stirling which will be readily distinguished from its modern neighbours, existed long before there was any bridge upon the Tay, or any other stone bridge over the Forth, and it was thus absolutely the gate between the north and the south of Scotland.

Black’s Guide 1889

The old bridge features in *Kidnapped*:

“The bridge is close under the castle hill, an old, high, narrow bridge with pinnacles along the parapets; and you may conceive with how much interest I looked upon it, not only as a place famous in history, but as the very doors of salvation for Alan and myself. The moon was not yet up when we came there; a few lights shone along the front of the fortress, and lower down a fewer lighted windows in the town; but it was all mighty still, and there seemed to be no guard upon the passage.”

Robert Louis Stevenson

What is remarkable is that the old Stirling Bridge is still there, exactly as Stevenson described it. As early as 1831 it was not up to its road task, and it was replaced by Robert Stevenson’s elegant road bridge. Stirling Bridge remains, more or less as it was – strengthened and reinforced, of course – and is in use as a footbridge, with its appearance much as it ever was. It featured in the ‘rebellion’ of 1745, when General Blakeney ordered the taking down of the arch nearest the town to defend it:

When Charles was passing through St Ninians, Cumberland was only a mile or two away at Falkirk. It was the missing arch that brought Cumberland to a halt and gave Charles time to withdraw his men over the Ford of Frew. What Cumberland had to say to Blakeney is mercifully forgotten!

Wm T. Palmer *The Verge of the Scottish Highlands* 1947

The Battle of Stirling Bridge of 11th September 1297 probably took place at a wooden bridge just upstream of the old brig. This famous victory for the Scots

was achieved by William Wallace and Andrew Moray. The popular story of the stratagem used by Wallace is related by Charles Roger in his authoritative tourist's guide *A Week at the Bridge of Allan* (1851). The story is not now taken seriously by most historians, but it is a fine piece of hokum. He describes how the English army under Surrey and Cressingham reached the Forth:

Early on the following morning they proceeded to send the army across the river; but now they were to fall to a stratagem to which Wallace had dextrously resorted, The Forth was then crossed by a bridge, at an abrupt bend in its course, still known as Kildean Ford, about half a mile above the ancient stone bridge of Stirling. This bridge which was originally constructed by the Romans, consisted of a narrow platform of timber, affixed to a main beam, which was extended across several stone piers erected in the bed of the river. Wallace, being acquainted with its formation, had, prior to the arrival of the English army, ordered the main beam to be sawn across, while he had the fabric temporarily supported by a wedge, fastened to each end of the broken beam, and which, by the stroke of a hammer, could easily be removed. To execute his design, one of the most ingenious and adventurous in his army, who had followed the occupation of a carpenter, was placed under the bridge in a basket, in such a manner as to be unnoticed, and to remain unhurt, though a section of the bridge should fall into the water.

Several thousands of the English army had already crossed the river, and the stream of soldiery continued to pour rapidly across, when suddenly, on the sounding of a horn by Wallace from the crag, the wedge securing the cut beam being drawn out, the bridge gave way, and communication was stopped between the two divisions of the army, while those in the act of crossing the broken part of the bridge were plunged into the water.

The Abbey Craig, from which Wallace sounded his horn, is surmounted by one of the most obtrusive monuments in Britain which towers over the site, dominating the plain of the Forth.

Bridges above Stirling – Forth

Immediately above Stirling the Forth is joined by two significant tributaries, the Allan and the Teith. Indeed, rather like the Tummel, the principal tributary of the Tay, the Teith drains a basin as large as that of the main stream. The upper Forth itself winds across the Flanders Moss, an unimpressive stream. On Drip Moss there is the site of a significant medieval ford, then a ferry, which was by 1790 succeeded by a fine stone bridge of five arches, still to be seen today. **Drip Bridge** has been replaced by a concrete beam bridge of 1920 on the road which leads to Doune and Callander. However, in the days of the Drovers, of Rob Roy and of Prince Charlie the principal crossing place was called the Fords of Frew which have many historical associations; the old stone **Brig o' Frew** has gone, its successor is a modern structure of little interest. At the fords, the Forth is joined by a considerable tributary, the **Boquhan** Burn. Indeed the reason for the plural in 'fords' is that most travellers had to cross both the Forth and its tributary at this point. There is another good stone bridge on the burn. Higher up, at Wright Park, associated with Jean Key the heiress abducted by Rob Roy's son, there is a spectacularly situated nineteenth century rubble bridge with the attractive name **Bailie Bow's Bridge**. The back road crosses the same burn by

an ordinary little bridge a few metres upstream, but the architect has provided a grand entrance to the estate with this bridge high above a gorge.

The next important bridge on the Forth, **Cardross Bridge**, like Drip, is very fine indeed, a three-arched stone bridge, with an inscription. It is 200 feet long, spanning the Forth between Port of Menteith and Arnprior.

On the east side there is a panel declaring that it was erected in 1774, with a subvention of £250 from the King, out of the confiscated Jacobite estates, with the latin injunction that travellers should be grateful for this royal benefaction [The Queen's Scotland].

Although it is on the verge of the Trossachs it is out of the way nowadays. In the days of the Forth and Clyde railway, however, it was crossed by the principal way by which the tourists came to Aberfoyle until the Strathendrick and Aberfoyle Railway Company built a direct line including a lattice girder bridge across the Forth.

Above this the river is crossed by two more stone bridges of note, and a ferro-concrete by-pass for one of them. The **Brig o' Forth** at Gartmore replaced the Gartartan ferry over the Forth, hard under 'The Fairy Knowe' where the local minister was supposedly taken up by the fairies, a story which fascinated Sir Walter Scott. The **Brig o' Forth, Aberfoyle** is another interesting bridge. The trouble with bridges, of course, is that after a while, seen from the river bank, they are rather indistinguishable from one another, at first glance Aberfoyle resembles Gartmore. However, Aberfoyle bridge is backed by Craigmore a distinctive hill which marks the edge of the Highlands. It is well known partly because Scott mentions it, as follows, in 'Rob Roy'. "We crossed the infant Forth by an old-fashioned stone bridge, very high and very narrow". The crossing of the Forth and entry into the Highlands marks a turning point in the story. Scott was wrong in supposing that there was a bridge in Rob Roy's day. It had relatively recently been erected when Scott first visited Aberfoyle in 1790, the old bridge having been destroyed in the 1715. The Brig o' Forth at Aberfoyle is sometimes referred to as the fourth Forth Bridge, the other three, at the time it was erected being, one supposes, Stirling Bridge, Drip Bridge, and Cardross Bridge.

The bridge is a focal point in the life of the village and it was the scene of a real life fracas relayed by W. T. Palmer as follows:

Among the neighbours with whom William Graham, the eighth Earl of Menteith (1667-1694), had debts and disagreements, was John Graham, laird of Duchary and his son Thomas Graham, but for some time he found it impossible to put these into execution. No sheriff officer was willing to enter Duchary Castle with his writs. At length, what seemed to be a favourable opportunity presented itself.

The younger Graham was to have a child baptised at the Kirk of Aberfoyle on 13th February 1671, and it occurred to the Earl that, not only the father of the child, but old Duchary and the whole family would be present at the interesting ceremony. He resolved therefore to seize the opportunity to serve his letters of caption. Having collected a number of his friends and servants and taking with them a Messenger-at-Arms, Alexander Muschet, he intercepted the christening party at the Bridge of Aberfoyle.

Duchray seems to have had warning of the Earl's intentions, for, in addition to the ministers and elders of Aberfoyle and the indispensable baby, he had with him a strong party of his friends and tenants, all well armed. Muschet and his attendants advanced to execute the writ, the Earl with his armed followers remaining some little distance behind. But when the messenger informed Duchray that he must consider himself his prisoner, the latter defied him to lay hold upon him, and taking from his pocket a paper which he alleged was a protection from the king, he shouted:

'What wad ye dare? This is all your master!'

The baby was set down upon the ground, and the Duchary men, with swords guns and pistols, fell fiercely on Muschet and his satellites, and, threatening loudly that they would slay half of them and drown the rest in the Forth, drove them back on the Earl and his friends. The latter at first gave way but quickly rallied, and a stubborn fight ensued. The Earl himself narrowly escaped the bullets of his assailants, and several of his servants were wounded, one of them – by name Robert MacFarlane – having two of his fingers shot away. At last his party was fairly driven from the field, and turned in full flight to Inchtalla.

After this little interruption, it is to be hoped that the Duchray Grahams completed the celebration of the christening in a peaceful and Christian frame of spirit.

Wm. T. Palmer *The Verge of the Scottish Highlands* 1947

The Forth rises beyond Aberfoyle, but there is one more fine old bridge on one of its headwaters, **Teapot Bridge**, next to the cottage between Loch Ard and Loch Chon where whisky was sold as tea! It is a delightful little sharply hump-backed 'Wade' bridge on the military road to Inversnaid Fort.

Bridges of the Allan

The river Allan is bridged at **Bridge of Allan**, Dunblane and elsewhere. The original bridge which gave its name to the Spa Town was built in 1520 to replace a ford. It was stone built, narrow, high at centre, and crossed the river at a different angle from the present. After restoration by Lecropt Church heritors in 1695, it served till 1842 when it was widened and extended to take in the small bridge over the mill lade. A new design by F. A. Marshall & Partners was contracted in 1939, but work was not started till 1957. A plaque says it was completed in 1958 though the new road including it was not opened till 1960. The Inverallan Mill and the Bridge Inn remind us of the days when the village was a picturesque clachan on each side of the river. A celebrated inn, the Bridgend Changehouse, stood by the south end of the old bridge (see the plaque on the present bridge wall marking the site). The Changehouse was built in 1600, the second storey being added in the 1840s. It was taken down in 1948. The original 'Pape' (Pope) James Steuart, was innkeeper and blacksmith here, 1632-1701. He and his family were descendants of the Royal Stuarts, and their story is told by one of them in the book *By Allan Water* (Steuart 1902), and was serialised in the *Stirling Journal* in 1902.

Dunblane Bridge, also noteworthy, is almost as old as the Old Stirling Bridge, and still in use. This stone bridge built by the Bishops of Dunblane has

been incorporated in a girder bridge, and while main road traffic has been diverted, it still is the road access to the station. The Stirling Arms Hotel at the bridge used to be called the Head Inn. A plaque there says that Robert Burns accepted the post of exciseman there in 1796, but did not take it up. The A9 crosses the Allan by a ferro-concrete bridge of the late forties, one of the last improvements to the A9 in the first phase. Dunblane is now fairly recently by-passed in the second phase of A9 upgrading. A concrete footbridge, called the '**Fairy Bridge**', is situated above the cathedral.

Cromlix Bridge, yet another eighteenth century stone bridge, crosses the Allan at Kinbuck, and is picturesquely situated amid green banks at a sharp bend in the road to Braco.

At **Braco** two bridges of considerable interest cross the Knaik within a few metres of one another. The older of the two is one of many in Scotland referred to as the 'Roman Bridge' and, as it is situated in the shadow of the remarkable Roman Camp of Ardoch, it has more claim to the soubriquet than any of the others, but, like them it is of much later date. It is said to have been erected in 1430 by the Bishop of Dunblane who also erected a bridge over the Machany Water near Muthill, still called the Bishop's Bridge. Although the bridge at Ardoch was only six feet wide the erection of these two bridges at so early a date is a testimony to the importance of the route from Stirling to Crieff, and thence to Inverness.

Indeed Wade made the road beyond Crieff to Dalnacardoch while the improvement of the stretch between Stirling and Crieff was the first road work undertaken by his successor, Caulfeild in 1741-2. It may have been at this time that an addition of three and a half feet was made to the old bridge, an addition which fell into the river in 1896. In any case there was much correspondence about a bridge 'over the Allan' which, from topographical evidence, was probably this bridge as there is a reference to a 'steep ascent of the Bridge of Allan near Ardoch.' Caulfeild rebuilt a bridge there in 1751. The newer bridge also proved problematic. It was begun in 1861, but the centering collapsed and the bridge was only completed in 1862.

Bridges of the Teith

The Teith is a fast-flowing stream. On it, at Deanston, one of the most considerable water-driven cotton mills in Scotland was established in 1785. Below them is the famous **Brig o' Teith** with its inscription "In the Year of God 1535 founded was this bridge by Robert Spittal, tailor to the most noble Princess Margaret, spouse to James IV". There is a boldly emblazoned pair of scissors *en saltier* symbolising the fact Spittal, a notable benefactor, was a tailor:

Its erection by Spittal, it is popularly believed, was owing to the avarice and disobliging conduct of one who kept the ferry at this point. Spittal had occasion to arrive here with a view to crossing the river, when he discovered he had either lost or forgotten his purse. Intimating the circumstances to the ferryman, he gruffly refused to allow him the use of his boat, a course which subjected Spittal to considerable inconvenience. But that no other person should be so circumstanced,

and that the ferryman might be punished for his disobliging obduracy, he forthwith determined to erect a bridge,

Charles Roger *A Week at Bridge of Allan* 1851

The other old bridge in Doune, **Ardoch Bridge**, close to the Castle has a plaque stating that it was repaired at the public expense of the shire in 1735. It was used by Prince Charlie in 1745. Above Doune the Teith is pre-eminently the river of the Trossachs. On its first major tributary is **Keltie Bridge**, a narrow pack-horse bridge dating from the period when road communication was first extended towards the Highlands. Higher up the same stream is **Bracklinn Bridge**, a footbridge at the waterfall associated with Scott, and a good country stone bridge at **Eas na Caillich**. At Callander the **Old Brig** was taken down in 1908. Its high arches featured on prints and postcards until then showing the famous view of the holiday town with Ben Ledi in the background; later studies of the same scene incorporate the flatter-arched new bridge, made of concrete, but faced with stone.

By far the most famous bridge in the Trossachs is **Brig o' Turk**, situated at the entrance to Glenfinglas. This eighteenth century stone bridge was reconstructed and widened in 1931-32. Nearby, hardly known at all, is a much more genuine article, a narrow old bridge hidden in the woods between Loch Achray and Loch Venachar, the **Brig o' Michael** (Mickle) across the Blackwater. At the foot of Loch Venachar are two stone bridges which, like Cardross Bridge were built with money from the forfeited estates after the Jacobite uprising, **Gartchonzie Bridge** (1779) and **Kilmahog Bridge** (1777), which has a plaque. Kilmahog is an example of a bridge called a 'Roman' bridge. There are three old bridges at Strathyre and at the foot of Loch Voil, one of which, **Calair Bridge**, is at the entrance to Glenbuckie where there are delightful, if neglected, waterfalls. In his very interesting book *Robert Louis Stevenson and the Scottish Highlanders* the former town clerk of Stirling, David Morris, describes Glenbuckie thus:

Glenbuckie is a wild highland glen at the northern end of the mountain pass that leads to Bridge of Turk. Its stream is the Calair Water, which, just before it joins the Balvaig near the exit of that river from Loch Voil, forms an islet known as the Black Isle, amid a scene of great beauty. It is the traditional site of the defeat of the Buchanans of Leny in the fifteenth century, in a desperate clan fight against the M'Larens assisted by the MacGregors.

David Morris 1929

What makes this fight memorable is that it originated when a Buchanan hit a MacLaren with a salmon at a fair in Callander. Bridges of today are unlikely to be remembered for such outlandish occurrences. These old stone bridges flung over roaring highland rivers seem as remote in time as the Forth Road Bridge seems up to date. However, they were the original Forth Bridges.

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Appendix

Table 1. Bridges over the Forth [Trunk Stream]

Bridge	River	Map Ref	Date	Details
Forth Rail Bridge	Forth	NT 130 780	1890	Spectacular cantilever bridge.
Forth Road		NT 120 780	1958-64	Notable suspension bridge 2515m long.
Kincardine		NS 920 870	1936	Swing bridge; longest swing span when built, weighing 2000 tons; A876.
Alloa Rail Bridge		NS 860 915	1882-3	Swing Bridge; largely dismantled.
Stirling, Stirling Relief Road Bridge		NS 821 940	1987	Modern; concrete beam. Short sightedly designed – restricting head-room for possible/desirable boat traffic.
Cambuskenneth Stirling Railway Bridges		NS 805 940 NS 798 943	1936 1846-48	Footbridge; ferro-concrete. The Perth and North line was first. Later rebuilt. The second bridge is the Alloa/Dunfermline line, reopening in prospect.
Stirling Bridge		NS 797 944	1831-2	Engineered by Robert Stevenson.
Stirling Old Brig		NS 796 945	1415[?]	Historic stone bridge of four semicircular arches; now a footbridge
'Stirling Bridge' Ancient		NS 784 950[?]	13C(?)	Site of Battle in 1297 at which Wm Wallace defeated English.
Drip, New Bridge		NS 770 956	1920	A84 road bridge.
Old Bridge		NS 770 956	1745[?1790]	Fine old stone bridge [A84], five arches.
Meiklewood		NS 725 956	1876	Lattice girder; Walter Paul of Killearn.
Gargunnoch Bridge		NS 714 952	1932	Unprepossessing ferro-concrete.

Brig o' Frew (Forth)	Forth (cont.)	NS 667 961	1964[?]	'Fords of Frew' – associations with Rob Roy, Prince Charlie; old bridge like Drip,
(Boquhan)		NS 668 958	C18	Stone; three arches.
Bailie Bow's Bridge		NS 652 922	C19	Rubble; elaborate estate bridge on Boquhan Burn.
Netherton Bridge		NS 661 986	1827	Henry Home Drummond; on Goodie Water.
Poldar Bridge		NS 625 966	1882	Lattice girder; Walter Paul of Killearn.
Cardross		NS 598 972	1774	Three stone arches; inscription.
Flanders Moss Railway Bridge		NS 543 980	1881	Now dismantled.
Gartmore, Brig o' Forth		NS 533 988	C19	Two-span rubble bridge with segmental arches of unequal size; replaced Gartartan Ferry; 1810-20.
Aberfoyle, Brig o' Forth		NN 520 009	C18	Literary and historical associations.
Milton		NT 503 013	C19	Rubble arch.
Teapot Bridge		NN 439 032	C18	Markedly hump-backed 'Wade' bridge; on Allt Tairbh, headwater of Forth.

Table 2. Some Notable Bridges over the Tributaries of the Forth

Bridge	River	Map Ref	Date	Details
Old Bridge of Devon	Devon	NS 847 952	C16	Three-arched bridge. Robert Spittal.
Downies Miller		NS 847 952	1926	Steel lattice girder.
		NS 847 952	1949	A907 'improvement' concrete.
Tullibody		NS 857 959	C18	Two arched stone bridge.
Vicar's Bridge		NS 986 980		Modern girder bridge on site of C16 bridge gifted by Thos Forrest.
Rumbling Bridge: Old Brig		NT 017 995	1713	William Grey, of Saline; 12' wide, 22' span; 86' above water.
New Brig			1816	Built on same site; 120' above water.
Bannockburn: New Brig		NS 809 904	1819	Telford. Unique arched.
Old Brig	Bannock	NS 807 904	1871	Built by Robert Spittal (1516); single semental arch [33'10"], coursed ashlar.
Chartershall	Bannock	NS 792 902	1747	Single rubble arch [26'8"].
Bridge of Allan	Allan	NS 788 976	1842	Widened and extended, replaced by new, opened 1960.
Old Bridge		NS 788 976	1520	Restored 1695.
Dunblane 'Fairy Bridge'		NN 782 010	1409	Very old, much altered, still in use.
		NN		Footbridge, above Cathedral Dunblane.
Kinbuck: Cromlix Bridge		NN 791 054	1752	Two-span rubble bridge with segmental arches.

Braco:				
Ardoch Bridge	Knaik	NN 837 099	1430[1724]	'Wade' Bridge; single arch in rubble.
Doune, Brig o' Teith Auld Bridge	Teith	NN 722 013	1535	Widened 1866. Still main road.
	Ardoch	NN 730 014	1735	Single rubble arch.
Inscription reads 'Built upon the publick expense of the Shire AD 1735'				
Burn o' Cambus	Annet	NN 706 030	1690	Only part survives.
Keltie Bridge	Keltie	NN 648 068	1690	Narrow old stone bridge.
Bracklinn Bridge	Keltie	NN 645 084		Literary associations with Scott; footbridge.
Callander Brig	Teith	NN 627 078	1908	Concrete with stone facings; replaced Old Brig of 1764,
Gartchonzie	Eas Gobhain	NN 605 071	1779	Built, like Kilmahog, from annexed estates.
Brig o' Turk	Turk	NN 530 065	1932	C18 bridge re-built.
Brig o' Michael	Blackwater	NN 532 063	C18	Old stone bridge; single arch.
Kilmahog	Leny	NN 607 082	1777	So-called 'Roman Bridge'; plaque.
Strathyre	Balvaig	NN 560 171	C18	Two arches.
Balquhidder; Stronvar Calair	Balvaig Calair Burn	NN 535 205 NN 536 203	C18 C18	Four arches; rubble. Two arches; rubble.

Illustrations

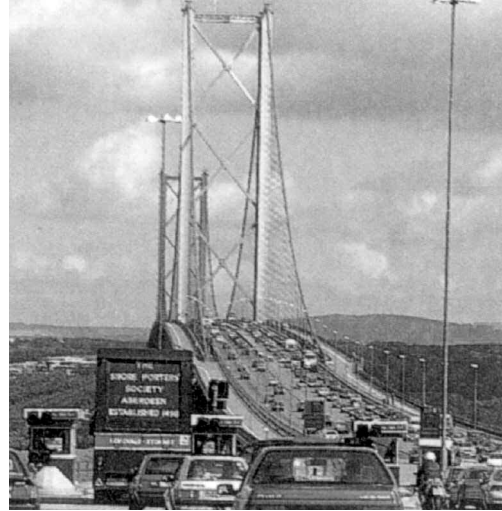
The following is a small selection. Another of the Forth Rail Bridge is on the back cover of this journal. Figure 1 illustrates the contrasting designs of the rail and road bridges as discussed early in the text, the apparent elegance of the road, the striking massiveness of the rail.

Forth



L. Stott

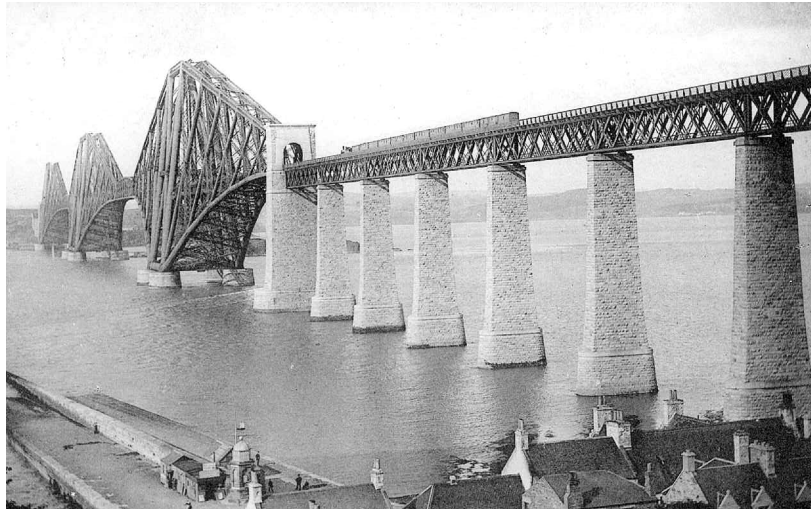
Figure 1 Road and Rail bridges – Queensferry, aerial view.



FEF

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Louis Stott

Figure 2 Road Bridge – Queensferry.



L. Stott

Figure 3 Rail Bridge from the south.



L. Corbett

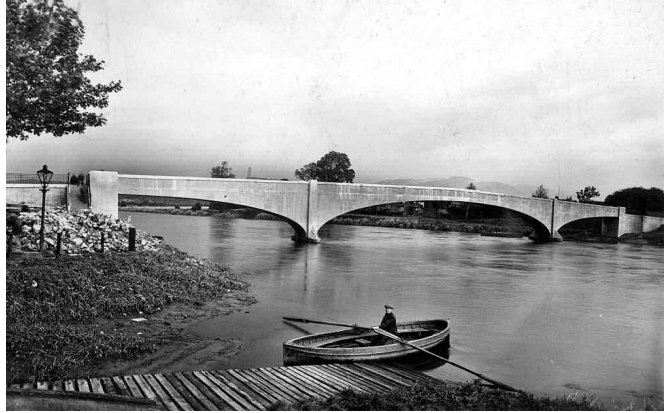
Figure 4 Kincardine's last 'opening'.

Forth



R. McCutcheon.

Figure 5 Alloa Rail – after ‘accident’ 1906.



R. McCutcheon.

Figure 6 Cambuskenneth.



R. McCutcheon.

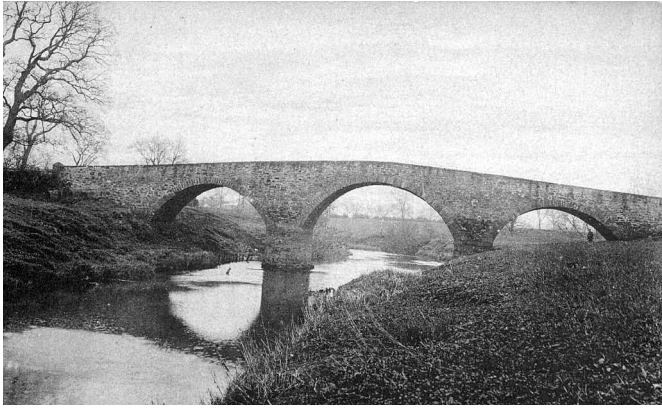
Figure 7 Old Stirling Bridge.



L. Stott

Figure 8 Ancient Stirling Bridge/Battle 1297.

Forth, Ardoch, Teith



R. McCutcheon.

Figure 9 Bridge of Frew.



L. Stott

Figure 10 Bridge of Forth and Craig Mhor, Aberfoyle.



McKenzie.

Figure 11 Ardoch Bridge, Doune.



McKenzie.

Figure 12 Bridge of Teith, Doune.

Teith and Bannock



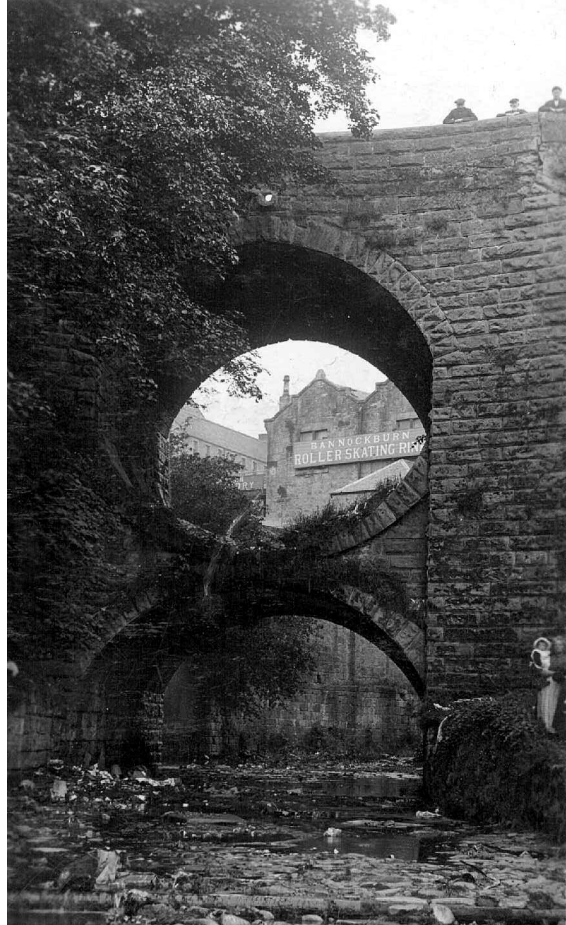
R. McCutcheon.

Figure 13 Old Bridge, Callander.



R. McCutcheon.

Figure 15 Old Bannockburn.



R. McCutcheon.

Figure 14 New Bridge, Bannockburn (Telfer).

Bracklinn and Devon



Figure 16
Bracklinn Falls
Bridge.

R. McCutcheon.



L. Stott

Figure 17

Ye Rumbling Bridge that
spans the gorge
Sae rugged and sae
grand,
I think ye are a favoured
bridge
Sae near the gorge tae
stand.

The gorge has been the
work of years,
All ploughed by water
power;
You'll hear the rumbling
through the day
And silent midnight
hour.

Devon and Allan



R. McCutcheon.

Figure 18 Bridge of Devon, Tullibody.



R. McCutcheon.

Figure 19 The Bridge of Allan c1940.



R. McCutcheon.

Figure 20 Dunblane Bridge and 'Inn'.



R. McCutcheon.

Figure 21 'Fairy' Bridge, Dunblane.

BOOK REVIEWS

On the Trail of William Wallace. David R. Ross. 1999. Luath Press. 160pp. ISBN 0.946487.47.2. £7.99.

The author, now a colourful 'character' in the Scottish history scene, is bringing a fresh outlook and enthusiasm; physically impressive, he scours the land by high powered motor bike questing the truth about his subjects, in this case " as if personally burdened by the bitter sweet legacy of Wallace." The six-foot-five stalwart kilted leader of this year's Elderslie Wallace Commemoration Day, in this book refreshingly illuminates the life, places, memorials of Wallace, "the one man who gave all he had for his country". "What I have set out to do in this book is to take the bare bones of the historical Wallace's life and flesh them out with the Wallace of legend to give a picture of the life of this remarkable man. It will also act as a guide book, which people with an interest in Wallace can use to discover where incidents in his life took place, and even visit them. But, most of all, I hope it will encourage others to follow and build on the research I have done so far." 74 places to visit, maps, plans and rare illustrations – a must purchase!

On the Trail of Robert the Bruce. David R. Ross. 1999. Luath Press. 164pp. ISBN 0.946487.52.9. £7.99.

While Wallace is the author's first love, his years of research and visiting over 60 sites related to Bruce, chart the story of Scotland's hero-king, through his days of indecision to his assuming the crown just six months after the death of Wallace; and of living just long enough to see the 1328 Treaty of Edinburgh's signing of Scotland's Independence. The author shows himself a master of the brand of hands-on history that made the *Trail of Wallace* so popular, and not least in presenting afresh the Battle of Bannockburn, and the Wallace/Bruce relationship.

Under the Hammer: Edward 1 and Scotland 1286-1306. Fiona Watson. 1998. Tuckwell Press. 280pp. ISBN 1.86232.020.9. £14.99.

Here is a fresh portrayal of mediaeval Scotland – its parts, its sense of self, its strengths and weaknesses – how it marshalled its resources into dealing with a powerful occupying enemy. How the people related to the occupying administration, wrested with contradictory desires for independence, and for stable living. The Scotland of Wallace and Bruce illustrates the central role of the conflict of patriotism and of self-interest in studies of war and conquest. Firmly based on primary sources* the work is presented under contents headings – *Dramatis personae*; Fact and Fiction; the Lion and the Leopard; the resistable rise of Edwardian government; a Kingdom Divided; Stalemate; Turning the Screw; 'Edward the fair'? the Settling of Scotland; Lessons in

Conquest; Bibliography and Index. It is representational of a 'new era' of Scottish mediaeval history studies.

*The 'general reader' will find of some relevant interest, the Scottish Record Office 1996 booklet *Freedom is a Noble Thing; Scottish Independence 1286-1329*; historical background document extracts and copies. c £4.50. National Archive of Scotland – history at source series.

Revue de Terroir, supplements *Hors Seri*, and other publications of the Musée de Terroir of the Stirling Exchange Town – Villeneuve d'Ascq, Lille, France – is an 'exchange' of the FNH. Their interesting heritage and museum publications are available in the University Library. Examples are – the annual journal number 37, 1997, is its Jubilee, and the supplement series *Hors Seri* (HSI) from 1996 includes issues on 'Pilgrimages for recovering good health' (1), 'Roman villas in Villeneuve d'Ascq' (5,6), 'The 80th anniversary of the end of the Great War' (8), and 'The Middle Ages in V.A.' (9,10,11).