Transactions

of the

Dumfriesshire and Galloway Natural History

and

Antiquarian Society

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Dumfriesshire and Galloway Natural History

and

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EDITORIAL

Contributions are invited on the Natural History, Geology, Antiquities and Archaeology including Industrial Archaeology, of South West Scotland or the Solway Basin, and preference is always given to original work on local subjects. Intending contributors should, in the first instance, apply to the Editors for 'Instructions to Contributors', giving the nature and approximate size of their paper. Each contributor has seen a proof of his or her paper and neither the Editors nor the Society hold themselves responsible for the accuracy of scientific, historical or personal information in it.

A list of Members, as in May 1998, appeared in volume 72 and a copy of the current Rules, dated 13th October 1995, appeared in volume 69.

The Honorary Secretary, Mr R. H. McEwen, 5 Arthur's Place, Lockerbie DG11 2EB, Tel. 01576 202 101, deals with all matters other than membership which are dealt with by the Hon. Membership Secretary, Mrs M. Rochester, Acorn Bank, 6 Bracken Wood, Gatehouse of Fleet, Castle Douglas DG7 2FA, Tel. 01557 814 966.

Exchanges should be sent to the Hon. Assistant Librarian, Mr J. Williams, St Albans, 43 New Abbey Road, Dumfries DG2 7LZ. Exchange volumes are deposited in the Library of Dumfries Museum at which location they may be freely consulted by members. However, as public opening hours may vary, it is recommended that prior contact be made with Museum staff (phone 01387 253374) before visiting.

Enquiries regarding back numbers of *Transactions* - see rear cover - should be made to the Hon. Librarian, Mr R. Coleman, 4 Lover's Walk, Dumfries DG1 1LP. As many of the back numbers are out of stock, members can greatly assist the finances of the Society by arranging for any volumes which are not required, whether of their own or those of deceased members, to be handed in. It follows that volumes marked as out of print may nevertheless be available from time to time.

All payments, other than subscriptions, should be made to the Hon. Treasurer, Dr J. Bruce Irving, Mount Annan Farm Cottage, Annan DG12 5LN. Payment of subscriptions should be made to Mrs M. Rochester (see above), on behalf of the Hon. Treasurer. The latter will be pleased to arrange for subscriptions and/donations to be treated as Gift Aid under the Finance Acts, which can materially increase the income of the Society without, generally, any additional cost to the member. Important Inheritance Tax and Capital Gains Tax concessions are also conferred on individuals by these Acts, in as much as bequests, or transfers of shares or cash to the Society by way of Gift Aid are exempt from these taxes.

Limited grants may be available for excavations or other research. Applications should be made prior to 28th February in each year to the Hon. Secretary. Researchers are also reminded of the Mouswald Trust founded by our late President Dr R.C. Reid, which provides grants for work on certain periods. Enquiries and applications for grants to that Trust should be made to Primrose and Gordon, Solicitors, Irish Street, Dumfries.

The Council is indebted to the following bodies for substantial grants towards publication costs viz to Historic Scotland for James R. Mackenzie's paper on the excavations in Irish Street, Dumfries, to The Royal Commission on the Ancient and Historical Monuments of Scotland for Stratford Halliday's paper on Settlement, Territory and Landscape, to Safeway Stores for Ronan Toolis's and Catherine Cavanagh's paper on the Burgh Ditch at Annan and to the Mouswald Trust for Fraser Hunter's paper on The Roman Sculpture from Birrens.

The illustration on the front cover is of the Wamphray cross-slab from the article *The Early Church in Dumfriesshire* by W.G. Collingwood, in volume XII, Series III (1926) of these *Transactions.* It is discussed afresh by Prof. Richard Bailey in *Whithorn Lecture* No. 4 (1996).

INDEXING THE *TRANSACTIONS*

by James Williams

Background

The *Transactions* of this Society have been published more or less continuously since 1862-63. There are, to date, some 105 volumes split into three series.-

Series I	6 volumes	1862-1868
Series II	24 volumes	1876-1912
Series III	75 volumes	1912-2001

The earliest *Transactions* were not individually indexed until Session 1908-09 when Samuel Arnott, in his 'Editorial Notes', records that he also wished 'to thank Mr G.W.Shirley, Librarian, Ewart Public Library, Dumfries for the Index at the end of this volume, which will be found to be of considerable assistance for reference'[1]. The index itself, which ran to approximately 4½ pages, is prefaced by the comment that 'From considerations of space only those names more particularly related to the district are included in this Index. Science subjects have been grouped under the headings: Botany, Entomology, Meteorology, Natural History, Ornithology, Physics.' The index was prepared by Shirley writing out the significant references on slips of paper measuring approximately four by one and a half inches[2]: once sorted they were typed up in preparation for the printer by a Miss Harkness a possible member of the Library staff[3]. These internal volume indices continued throughout Shirley's editorship and then for some time afterwards but in progressively decreasing size and effectiveness, until by volume 43 of the Third Series (1966) they comprised no more than a single page. The reason for this progressive reduction in size was principally a desire to conserve publication funds.

As part of the lead up to the Fiftieth Jubilee of the Society on 20th November, 1912, various plans were mooted to mark that occasion: Hugh Gladstone, speaking in his Presidential Address of 21st October 1910 mentioned, among others, that 'a suitable compilation might be made' .. towards publishing .. 'A complete alphabetic index to the whole series of our Published *Transactions*'[4]. Speaking a year later, on 20th October 1911, Gladstone reminded members that 'It is now only twelve months before we celebrate the jubilee … and you will remember that a year ago you remitted to a sub-committee to consider how this occasion could be most suitably honoured. It has been decided - and, in fact steps have already been taken - to do so by publishing an alphabetic index to all our past *Transactions*.

1 *Transactions,* Series II, Vol. XXI, (1908-09), p.6
2 The slips were retained in double rows within 8 x 6 inch oak drawers - which were in turn held within a cabinet stand.
3 First acknowledged when Shirley himself became Hon. Editor in Session 1909-10 - *Transactions*, Series II, Vol. XXII, p. 7.
4 *Transactions*, Series II, Vol. XXIII, p.16.

This has already proved, and will prove an even greater, labour to our secretary [G.W.Shirley]. He, however, is impressed with the desirability of such a work, and we trust that its publication will be acceptable to a wider circulation than that of our members. It is also hoped to publish a list of all members of our Society since its foundation in 1862, and a catalogue of all the books, manuscripts, and specimens in the possession of the Society. Possibly the inclusion of these in the index volume already referred to may be impracticable, on account of the great space they will take up; but this is a matter which I would ask you to leave in the hands of the sub-committee you appointed last year'[5].

To help carry out the indexing component of this scheme Shirley actually extended his 'slip index' back to 1862[6] - in the event the Jubilee passed without the publication of any of the proposed suggestions. In fact it took a further 56 years, until 1968, for such a hard-copy index to the First and Second Series to be published - and this only addressed the individual papers contained within the *Transactions* rather than their detailed contents[7].

The articles of the first 26 volumes of the Third Series were indexed by our former President, the late Dr Burnett, and published within volume XXIX of that Series. An Index for volumes 27 to 38 was prepared by the staff of the Reference Room at the Ewart Library and appeared in volume XXXIX. Thereafter decennial indices, prepared by the present writer, have appeared in volumes XLIX, LIX and LXIX. The way in which these indices were presented was not uniform, only related to articles *per se*, and it was, echoing the thoughts of 1911-12, long felt that a comprehensive index to the whole of the *Transactions* would be a significant aid to the researcher. A great philip was given to this project when the Council resolved to allocate to it a most welcome and timely legacy left to the Society by our late fellow Jack G.Scott. This has been of invaluable help. The present writer had initiated various electronic forms of these indices to allow him to continue to prepare the publications within the Third Series volumes XLIX, LIX and LXIX and it is the final version, in Microsoft Access97© of that database which has been extended into the project presently being described.

How the database works

The database logs each article title, the author(s) and any major 'topic area'- these 'topic areas' are used where items not appearing within an actual article are significant. For example, a major source of information in the First and Second Series are the Presidential Reports - these have been broken down into items, such as Excursions, Presentations, Discussions, Mediaeval, Roman, etc.

As mentioned above, the database has been written using Microsoft's Access97©. It functions from a Main form which, in itself, is supported by three integrated subforms to hold information on title variants, author(s) and topic types.

5 *Transactions*, Series II, Vol. XXIV, p.11.

6 This 'slip' index remained in existence within the old Ewart Library Reference Room until the 1970s. It was, at one time, hoped that it might have been utilised as first envisaged but that idea was eventually rejected when it was discovered that there were such numerous exclusions of what we would now regard as essential items.

7 *Index to the Transactions of the Dumfriesshire and Galloway Natural History and Antiquarian Society, 1862-1912*, J.Williams, Dumfries, 1968

The field by field components of this form are shown in Fig. 1 below and the detailed field by field description is as follows.-

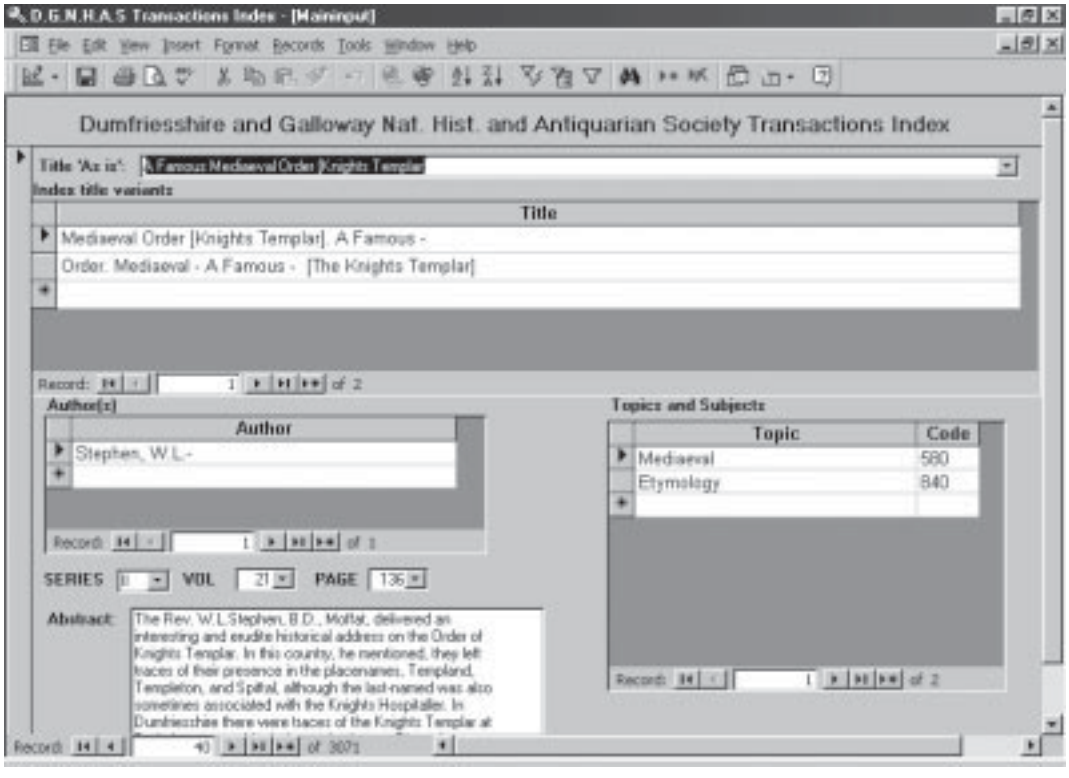

Fig. 1 'Screen-dump' of the Main Input Form.

The **Title or Topic** as it appears 'as is' within the publication - sometimes titles are edited to make them more meaningful for indexing. For example the article appearing as 'A Famous Old Battlefield' has been edited to 'A Famous Old Battlefield [Dawston Rigg - Daegsastan]' allowing it to appear in the indices under Battlefield, Dawston Rigg and Daegsastan.

The **Author** or combination of Authors - the entries are arranged to allow listing under each combination.

Series Number - I, II or III.

Volume number (arabic numerals)

Page number - number for the start of the article or entry

Topic entry - each article has been read and characterized on the basis of which subject area(s) or discipline(s) that it involves. For example, *Chemistry*, *Geology*, *Mineralogy*, … *Mesolithic*, *Bronze Age*, *Iron Age*, *Roman and Romano-British*, *Early Mediaeval*, …. *Recent*, *Recent (social), Recent (Art & Lit.),* and so on. These assigned categories will allow a

reader or specialist in any particular field to find all relevant articles for that discipline regardless of whether or not the title, as such, suggests the information. For example, a report on the excavation of a mediaeval site that happened to produce the recovery of Roman coins would be categorised under *Roman and Romano-British* and *Numismatics* as well as the more obvious *Mediaeval* entry.

Abstract. Each record has been assigned an Abstract field into which an abstract, summary or transcription of the article might be placed. At this point in time very few articles have been thus dealt with. The abstract should reflect the significant and important aspects of the article in question. In the case of presentations/donations and exhibits the individual items presented or exhibited would be listed. To aid this process into the future it is now an editorial requirement that, whenever possible, all articles printed in the *Transactions* should include a preliminary abstract - that entry becoming the data-entry which shall ultimately be transferred and recorded within the database.

In addition to the database 'Main Form' further databases are included within the package.- 'Excursions' has been created to include all the printed entries for **Excursions and Field Trips** of the Society: others detail **Office-Bearers (Presidents, Secretaries, Treasurers and Editors)** and **Publications**.

Input and output of Data

The work of completing the data entry to these databases was carried out by Mrs Pauline Williams over the Winter Session of 2000-2001. As mentioned above this work was supported by funds derived from the late J.G.Scott bequest to the Society. The database has been organised to be run on a standard Access© 'Switchboard' menu system and hopefully

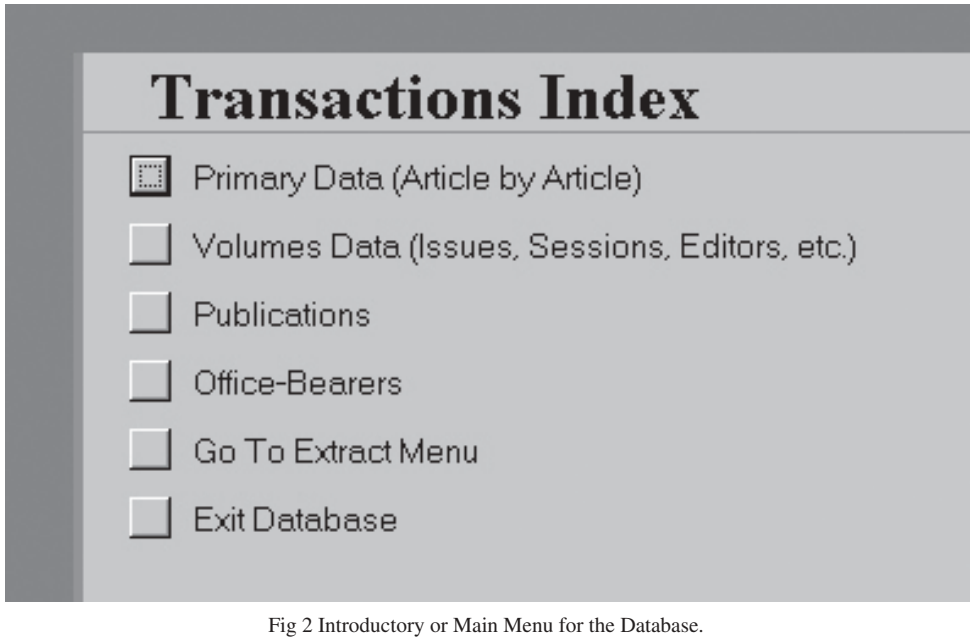

Fig 2 Introductory or Main Menu for the Database.

this, with the inbuilt dialogue box prompts, will be sufficiently self-explanatory for easy use.

The Introductory Menu provides access to the form 'Main Input' - which was initially used for data entry but can clearly be also employed for fundamental database interrogation. From the other 'internal' or 'hidden' databases it is then possible to display information on the Society's Publications and Office-bearers.-

Volumes Data provides a complete listing of all *Transactions* volumes published - indicating series, volume numbers, session dates and, where known, Editors[8]. Any special subject volumes, for example, Whithorn, Hoddom, Birrens, Wanlockhead and Leadhills, Barhobble, etc., are all indicated.

Publications records entries for all additional or separate publications of the Society. Where known, details of the printer, numbers of copies printed, reasons for publication, etc., are recorded.

Office-Bearers provides dated lists of Presidents, Secretaries and Treasurers - a start has been made to provide photographic illustrations of these individuals.

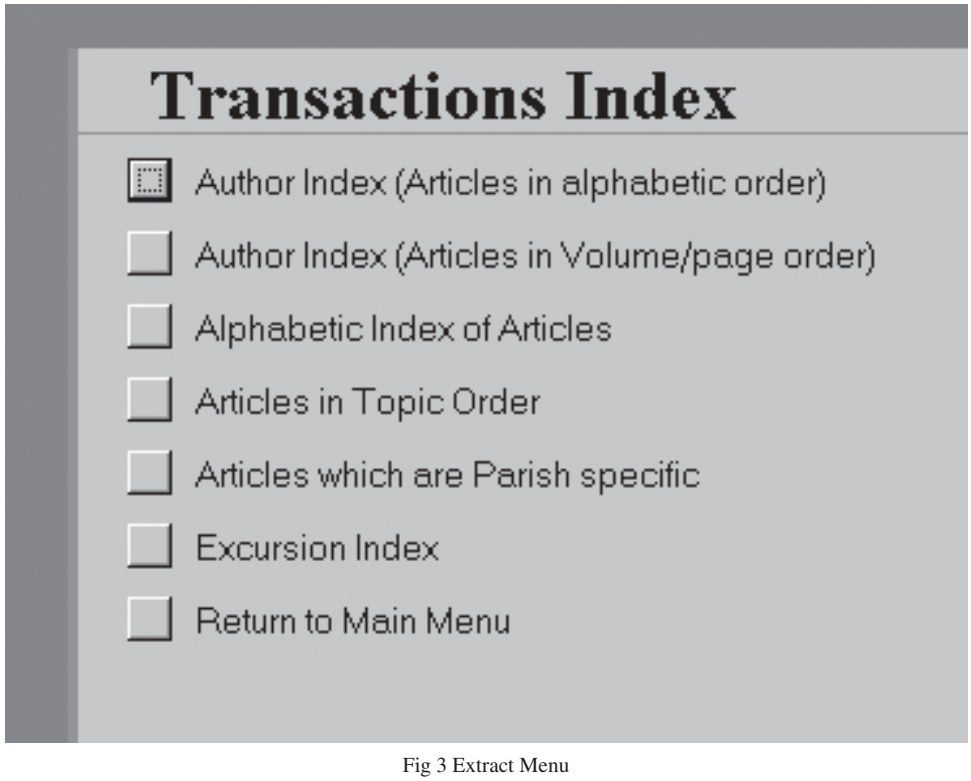

Fig 3 Extract Menu

8 The six volumes of the First Series were edited for publication by our first president Sir William Jardine. Thereafter there was apparently no one individual editor but rather the work was carried out by an unspecified committee of members. From Volume 20 of the Second Series (1907-08) Samuel Arnott, in addition to his secretarial duties, is also noted as 'Editor'.

With the above data in place it has been possible to prepare a number predefined searchable indices - these are accessible from the 'Extract Menu' of the database.-

Author Indices - runs to the equivalent of approximately 117 A4 pages. Articles and topics can be either ranked alphabetically under each author/combination of authors or in chronological order of publication. 'Wild-card' entries to the pop-up dialogue box allow an individual author to be listed. A tabular version of this index for the period 1862-2000 has been made available within the Society's WebSite[9].

Alphabetic Subject Index - Articles and topics can be listed in a straightforward alphabetic index or searched in detail by use of 'wild-card' entries. This index runs to the equivalent of approximately 306 A4 pages. A tabular version of this index has also been made available within the Society's WebSite.

Topic Index - articles may be displayed by chronological or discipline category. This index runs to the equivalent of approximately 1086 A4 pages.

Parish Specific lists - articles which have been categorized as Parish History can be separately abstracted. Alternatively the normal Subject Index can also be more extensively searched by the use of 'wild-card' entries.

Excursion Index - Lists all places visited in the course of Field Trips and Excursions between 1862 and 1963 for which there is a printed entry or report within the *Transactions*. Each entry is dated and is provided with the Series, Volume and Page entry. This index runs to the equivalent of 33 A4 pages.

As indicated above, in all cases 'wild-card' searches are possible. In view of the extreme size of any potential printouts the Society has decided not to provide any hardcopy versions of these indices.

Current Status and Future Activity

In recognition that not everything could be done at once it was always planned that the database would be progressed over a number of distinct phases. These were.-

Phase	Description	Status
1	Complete index of **Articles and Topics 1862-2001**	Completed
2	Add **Subject and Author Indices** to Society WebSite	Completed
3	Make information available on CD-ROM during subsequent development	See below
4	Institute the provision of an abstracts process within subsequent volumes of *Transactions*	Started from Volume 75

9 http://user.quista.net/dgnhas/ .

5	Maintain the database into the future	On-going
6	Continue to gather images of Office Bearers	On-going
7	'Backfill' the abstract process giving initial priority to finds, donations, presentations and exhibits lists.	Started
8	Develop a full item by item detailed Index of the *Transactions*	Future
9	Develop a digitised archive of all early printed illustrations	Started
10	Digitise early and generally unavailable volumes of *Transactions*	Under consideration

Because both the WebPage and Index Database are considered to be publications it has been agreed that their day to day control and finance should be dealt with by the Editorial Committee.

Access to Information and Release of 'State of Progress' CD-ROM

Following discussion at both Editorial and Council levels, and as indicated above, it was recognised that the production of hardcopy printed indices would, because of their sheer size, be an impracticable format for dissemination. It was therefore decided that the information accumulated would be released in two different electronic formats - Firstly, as tabular indices as a component of the Society's WebPage at http://users.quista.net/dgnhas/ and, secondly, as a CD-ROM. For the latter it was agreed that they would be issued on an 'as-is' or 'state of progress' basis. The first CD-ROM versions were released in September 2001 and included copies of the database in both Access97© and Access2000© versions as well as a static version of the then current WebPage and copies of the 'Topics' indices in .rtf format files. For those who do not have Microsoft Access© installed on their PCs the CD-ROM should still be of use: the Website will run under Internet Explorer© which is installed upon most current computers. Within the WebSite are tabular format versions of the *Transactions* Subject and Author Indices for the period 1862-2000. In addition, the subject-type or Topic .rtf indices should be readable by most versions of Microsoft Word©. Copies of the CD-ROM are available at a cost of £10.00 (inc. post and packing) from the Hon. Editor (James Williams - see List of Office-Bearers for address details).

CANNON-NETS
Their use to capture birds during Migration Studies on the Solway Firth, Scotland.

by John Young[1] and Ken Bruce[2]
North Solway Ringing Group

Introduction

The first boom- or cannon-net was invented in December 1948, at the Swan Lake National Refuge, Sumner, Missouri, U.S.A. specifically to capture Canada Geese. Cannon-net development was totally independent of and viewed strictly as a variation of the rocket net, invented earlier that same year, by the late Sir Peter Scott and was first fired successfully on 18th February at Slimbridge, when 32 White- Fronted Geese were caught.

Basically, the rocket, subsequently fuelled by cordite, was fired up a ramp and a hook dragged the net outwards and over the geese, which initially, were the principal target species of both methods. A cannon-net is propelled via a mortar, when a missile, detonated by slow burning black gunpowder, is fired from a single seamless steel barrel and attached to netting by cordage.

Both of these inventions have since been highly developed and modified. In particular the modern cannon-net is highly sophisticated and can, for example, be detonated by radio, be large enough to cover an area equivalent to one half of a football pitch or reduced to be mounted on the front of a vehicle. It is now the preferred option for both professional biologists and amateur bird ringers.

The first known cannon-net in the U.K. was assembled in 1955 by a team at the then Institute of Terrestrial Ecology based near Banchory in Kincardineshire Scotland with the objective of catching Black Grouse at the Lek. Fortunately it was never fired, as when tested at Dinnet in Deeside in 1981, the barrels literally 'blew up.'

The larger rocket nets 55 x 23 metres (c. 180 x 75 feet) which were eventually so invaluable for catching Pink-footed Geese in Britain, proved to be quite unsuitable for netting roosting assemblies of wader species. The Wash Wader Ringing Group then carried out the first major development in the U.K. to attempt to use cannon-nets. Following these early attempts the Morecambe Bay Ringing Group refined the techniques and in turn, they were largely instrumental in assisting to introduce the technique to Scotland on behalf of the North Solway Ringing Group (NSRG) based in Dumfries. In 1971 the NSRG celebrated their independence with a fine catch of mainly oystercatchers with their own equipment.

Thus the first Ringing Group to be formed in Scotland scored another first by becoming a fully licensed and operational cannon-netting group. In turn the NSRG assisted the Inverness based Highland, Clyde and Tay Ringing Groups to become operational in this field.

1 11 Ash Grove, Heathhall, Dumfries DG1 3TG.
2 Mallaig, Wellington Street, Glencaple DG1 4RA.

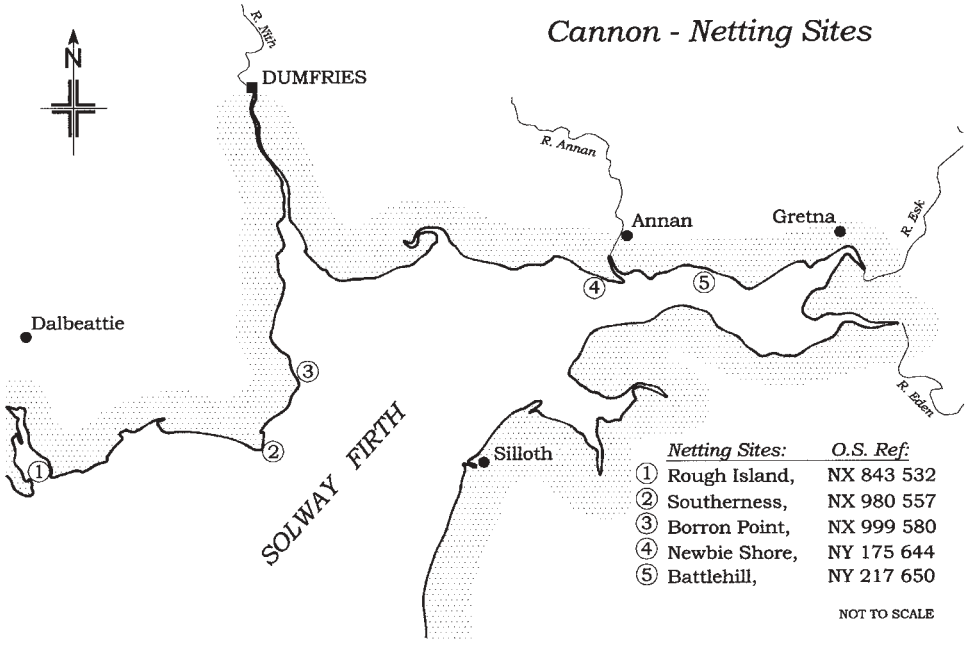

Fig 1: Cannon-netting sites

The Solway Firth

The Inner Solway Firth (fig1) is a sediment 'sink' with material accreting within the sandbanks of the inner estuary. It lies at the western end of the Southern Uplands between the Glen App Fault and the Southern Uplands Fault in the north and the Solway Fault in the south. It is composed of sediment deposited in the Iapetus ocean that for over a million years separated Scotland and England.

Ecologically the Firth can boast 2,925 hectares of salt marsh (locally merseland) 10.6% of the UK total and is the third largest area of such habitat in Britain. Salt marshes play a fundamental role in the life of the estuary; they bring stability to the margins and operate as a source of primary productivity. Usually they develop within estuaries on the sheltered side of sand and shingle spits and a feature is that they have a network of creeks and drainage channels, by which tidal waters enter and leave from the marsh. They provide excellent feeding and roost sites for waders, support a high density of breeding birds when lightly grazed and afford excellent grazing for most geese species and wigeon for example when the sward is more heavily cropped.

Sediments and significantly nutrients are carried in from the sea and down from the twelve major rivers, which enter into the Firth from the Scottish side where they become trapped and taken up by plants and animals. They are continually replenished and discharged by rivers and by the repeated ebb and flow of the tides. All of the Solway estuaries have at times recorded high densities of either Mollusca, Crustacea and/or Annelida on which mi-

grants and winter visitors depend. Overall, the Firth is the third most important area for waders in the UK and annually holds populations of international importance, the rich mud flats of the Inner Firth have been recognised and included within the contiguous conservation designations.

Within the Scottish Solway there are six major macrotidal estuaries, from west to east these are Luce Bay; Cree Estuary; Water of Fleet; Dee Estuary; Rough Firth together with Auchencairn Bay and the Inner Solway Firth. In total they have an area of 51,235 ha (126,594 acres) of which 34,990ha (86,462 acres) are intertidal, a total shoreline of 358.3 km (222.6 miles) and 151.3 km (94 miles) of tidal channels (see table 1(a) and 1(b)).

All of the Solway estuaries are vitally important to nature and especially bird conservation. In general Scotland lies at the junction of two major 'flyways' or migration routes. One from the high Arctic Canadian islands, across Greenland and Iceland, the other brings migrants from the east, including Scandinavia and Northern Russia.

Table 1 (a)
The Estuaries of the Solway Firth

	Total area ha	(%)	Intertidal area ha	(%)	Shoreline km	(%)	Tidal Channel	(%)
Luce Bay	1228	(2.4)	1196	(3.4)	27.5	(7.7)	8.5	(5.6)
Cree Estuary	4727	(9.3)	3340	(9.6)	24.3	(6.8)	63.2	(41.8)
Water of Fleet	790	(1.6)	790	(2.2)	19.9	(5.5)	7.2	(4.7)
Dee Estuary	1140	(2.2)	825	(2.3)	28.6	(8)	11.7	(7.8)
Rough Firth with Auchencairn	1290	(2.5)	1289	(3.7)	44.4	(12)	14.4	(9.5)
Inner Solway	42056	(82)	27550	(78.8)	213.6	(60)	46.3	(30.6)
Total(s)	51,235		34,990		358.3		151.3	

Table 1(b)

	Central Grid	Geomorph Type	Tidal Type
Luce Bay	NX1855	Linear Shore	Macrotidal
Cree Estuary	NX4655	Fjard	Macrotidal
Water of Fleet	NX5753	Fjard	Macrotidal
Dee Estuary	NX6747	Fjard	Macrotidal
Rough Firth with Auchencairn	NX8451	Fjard	Macrotidal
Inner Solway	NY2762	Complex	Macrotidal

Cannon-netting

Given the international, national and local importance of the various Solway estuaries, the geographical base and location of most of the NSRG members, it was inevitable that the main interest in cannon-netting would be directed towards the study of wader species, the order *charadriiformes.* Especially, where several conservation threats to estuarine habitats had been recognised, that could not be interpreted without detailed data on bird distribution and movements.

Statistics on the totals and distribution of bird numbers together with the location of feeding and roosting areas, were collected via several counting schemes, all affiliated to the national Birds of Estuaries Enquiry, organised by the British Trust for Ornithology. (BTO) Initially financed locally by the Nature Conservancy Council, *now* Scottish Natural Heritage (SNH), data on the ecologically diverse populations, of geographically widespread and extremely mobile migrant wader species which used the seven estuaries at different times, for entirely different purposes, could only be completed by analysis of samples of marked individuals. Attempts were made to catch waders by more conventional methods i.e. cage traps and especially flight netting, these proved useful but a mass capture method was clearly required. Cannon-netting thus emerged as the only sensible and practical method to handle sufficiently large and thus statistically acceptable numbers of measured and ringed birds.

Concentrations of waders were thus located at diurnal high tide roost sites, usually adjacent to their feeding zones, during routine monitoring. The immense communal night-time roosts, a feature of the Solway Firth, were largely inaccessible; in any event it was judged prudent to leave these totally undisturbed. Given access, a suitable tide height and a reasonable weather forecast the nets were installed *in situ*. The actual siting of nets was only possible following detailed reconnaissance, often involving monitoring flock behaviour and site preference a week in advance of a suitable predicted tide height. On the day, Solway tides are notoriously difficult and liable to significant fluctuations in response to climatic conditions. The procurement of three net kits allowed a setting regime of having nets ‘staged’ on the selected beach.

Fig 2 A cannon-net firing.

Fig 3 A catch of Oystercatchers prior to covering the birds with the white sheets lying beside the net.

Cannons are dug into the shore with two facing centrally, the outer ones angled at 40° to ensure the net extended to its full area on being fired. They are elevated to approximately 15-20° dependent on the height of the target species, topography and the vital wind direction and speed. Finally anchored and supported with solid material to absorb the recoil, the folded netting was laid out about 600mm (2 feet) in front, with the cords on the leading edge exposed and connected to the missiles. Usually the outline of the nets and cannons were camouflaged using the local tidal wrack.

Electrical circuits are then tested and the area cleared and left quiet, for a minimum of 2 hours before the tide turns and to await the incoming full tide which would normally move the birds from feeding zones to the roost, where they congregate and wait till the ebb tide exposes the feeding areas once more. During this critical period, advice on the behaviour and positioning of the birds is communicated direct to the firing position by strategically positioned personnel, using hand held radio sets the final decision to fire is thus a consultative one.

Following a successful catch the birds are immediately covered, while still under the net, with lightweight but densely woven cloth. The decreased light ensures a relatively stress free temporary environment, while they are gently extracted and placed in strong hessian 'keeping cages.' Within the cages the birds remain warm and dry and usually preen while awaiting ringing and processing, which usually involves being weighed, sexed, aged and measured prior to release.

In addition to the fiscal obligations, the complete cannon-netting operation, to include personal safety, bird welfare, the decision to fire the nets or not, extraction, the subsequent ringing and recording of the birds and including public relations is of necessity the sole responsibility of a highly trained ringer holding an endorsement to cannon-net added to his standard bird ringing licence. These restricted licences may only be issued by the BTO who administer the one state supported wild-bird ringing scheme allowed in Britain and only following lengthy tuition and strict examination.

Table 2(a)
Numbers of birds ringed and recovered
from cannon-net operations
1971-2000

	RINGED				RECOVERED		
	1971-80	1981-90	1991-2000	Total	(a)	(b)	Total
Oystercatcher	2009	193	1051	3253	120	47	167
Ringed Plover	620	1037	1610	3267	35	22	57
Golden Plover	0	0	1	1	0	0	0
Grey Plover	5	43	0	48	0	0	0
Lapwing	4	2	76	82	0	0	0
Knot	1094	34	38	1166	33	19	52
Sanderling	25	2156	183	2364	68	24	92
Curlew Sandpiper	0	0	2	2	0	0	0
Purple Sandpiper	1	1	0	2	0	0	0
Dunlin	2065	2016	1234	5315	76	46	122
Black-Tailed Godwit	0	0	1	1	0	0	0
Bar-Tailed Godwit	7	23	103	133	2	5	7
Curlew	0	2	2	4	0	0	0
Redshank	88	99	433	620	3	3	6
Greenshank	0	0	1	1	0	0	0
Turnstone	228	281	13	522	28	10	38
TOTAL(s)	6146	5887	4748	16,781	365	176	541

Table 2 (a) presents the number of newly ringed birds during three decades of operations, the ‘recoveries’ include total number of reports of ringed birds.
(a) ringed on Solway to be recorded mainly elsewhere.
(b) controlled on Solway, i.e. ringed by others elsewhere and recaptured or found dead.

Table 2 (b)
Proportion of Recovery Reports

	As represented in Group data	Species Recovery Rate (per 100 birds ringed)
Oystercatcher	30.0 (%)	5.0
Ringed Plover	10.5	1.7
Knot	9.7	4.4
Sanderling	17.0	3.8
Dunlin	22.5	2.2
Bar Tailed Godwit	1.3	5.2
Redshank	1.1	0.96
Turnstone	7.0	7.2

Reporting Rates

Overall, from a total of 16,781 birds, of 15 species, ringed during cannon-netting operations the NSRG have received reports of 541 individuals (3.2%) being either recovered or controlled.

Being "recovered" usually infers that the individual bird has been found dead and the details have been routed by the finder, via the ring number and address, to the national ringing office and hence to the ringer. 'Controlled' is the current term to describe the recapture alive and release of an individual captured and ringed elsewhere by others.

Historically, the rates of notification of ringed birds were largely related to whether or not they were legitimate quarry species, their size and colour and influenced by the degree of contact with the general public. Such latter involvement was obviously very low with wader species that inhabit the littoral zone during migration periods or as established winter visitors.

The current satisfactory rates with recoveries augmented with an estimated 32% from controls reflects not only an improved public relationship but also, more significantly, the excellent co-operation between similar bird ringing groups active in cannon-netting on other estuaries in Britain.

Given the local national and international importance of the various Solway estuaries and the extremely grave conservation threats that are currently posed to the estuarine ecosystems. Continuity of local effort and national co-operation on wading birds, which top the food chain and are thus valuable biological indicators to the condition of the environment, must be maintained.

The Equipment

Cannons

The cannon barrels are formed of hard, smooth bore, cold drawn seamless steel tubes. Firing a single missile, detonated by an explosive, they are exempt from the need of either a shotgun certificate or a firearm certificate. The barrels are not less than 610 mm (24 inches) long and the bore is maintained at 52mm in diameter (2 inches).

The original NSRG cannons, which are still in use, were manufactured locally, precisely and strictly within such limits.

Netting

The original three nets, which similarly are still in use, are of hemp and were treated with a pale green coloured preservative. They are formed of a 32mm mesh (1¼ inches) and measured approximately 27 x 13 metres (90 x 45 feet). Subsequently two smaller 'half size' nets were purchased, these proved more versatile, safer and simpler to manage with reduced personnel, fired by only two cannons they are also 'faster.' The perimeter of each net is bounded by a 9mm diameter cord, which is also used to form a frontal catching pocket and is sown into the net in such a manner, as to ensure it is fully extended on firing and also to evenly spread the stresses on detonation.

The rear edge of each net is anchored, with metal stakes driven into the beach while the 8 or 16 leading cords are gathered into D-shaped shackles and in turn attached to the projectiles.

Projectile(s)

Four projectiles to each full size net are cylindrical, of hard steel and with a welded 'ring' to facilitate the net pulling cords. At 200 mm x 50 mm (8x2 inches) they weigh approximately 2.8 kg. or (6.5 lb.). Each projectile is fitted with two neoprene rings, which ensure an effective seal when inserted into the actual cannon, thus maximising the thrust of the gases, released on detonation.

Detonation

Cartridges filled with 12-14 g. of a slow burning black gunpowder to British Standard, capped and sealed is the normal load required to ensure the rapid extension of the net over the target species. The ideal objective being that the net, fired at a safe angle is brought to its full size and returned to ground over the captured birds in approximately 2 seconds, thus minimising any potential injury to birds that might take immediate flight on the report.

Gunpowder, commonly referred to as 'black powder,' is in fact more volatile than many of the other various types of explosive material currently used as a propellant for modern ammunition, and may only be acquired under the *Control of Explosives Order 1953* with a

licence issued by the local Chief Officer of Police who stipulates the quantity that can be held by a named individual and advice on the rigid conditions, which of necessity apply regarding storage and transportation.

Firing

Initiation is required to be instantaneous and synchronous and is thus triggered electrically. A circuit is formed with junctions to each cannon and a single firing cable leads to a site some 50-100 metres distant, which importantly affords a clear view of the position and behaviour of the target species. Initially, engine-starting cartridges used to start diesel engines in agriculture, but more extensively in the military, were an integral component of the cannon. These were largely obsolete by 1973 and in spite of a generous offer of supply by the locally based RAF from redundant stock an alternative method was sought. NSRG accomplished this following advice from Jack Tudhope, then the explosive officer at Morrington Quarry, Dunscore with the simple introduction of a 'safety fuse head', especially manufactured by ICI to detonate industrial blasting powder, on a similar principal to that of a high explosive detonator.

Thus simplified, the cannons were also modified by welding the barrel into round steel pipe joints, this allowed a rubber waterproof seal to be incorporated between the powder, now contained in a refillable brass cartridge case and the fuse head, eliminating one of the most common causes of firing failures, by removing the electrical system from contact with moisture. Other long established U.K. netting groups had similar problems with the demise of the engine-starting cartridge. It was a matter of some satisfaction that the NSRG with local expertise were able to disseminate a solution. Originally, the electrical impulse required to detonate the 4 cartridges via the fuse heads, was generated from an assembly of six dry cell 1.5v batteries, assembled in series and wired to a condenser. When charged, this allowed a sufficiently large 'surge' to pass to and cause initiation of the explosive. The principal of an electrical surge is maintained by the more recent use of a professional exploder based on the principal of a dynamo. Capable of firing 100 detonators at over a mile distant it is substantially over powered for this specific use, none the less it proves reliable, safe and overcomes minor short circuiting problems. The main advantage of this type of exploder is that the exploder 'key' is removable and is thus in the control of the licensed 'firer'. Similarly, the complete system can be immediately disarmed, as an essential safety procedure.

Aspects of Wader Movements

Cannon-netting is gradually augmenting the existing, mainly 'visual' statistics on wader migration but with the very precise and accurate data that only the marked individual can provide. The importance of the Solway Firth is revealed as of international ranking. Ringing progress is inevitably slow with generally low rates of reporting (Table 2(a)) and requires sustaining over a longer period of time and enhancing geographically within the Firth.

The selected recoveries are illustrative, the ring number is followed by the age code and date of ringing, the ringing location, a recovery code and finally the date and location where found.

The data in tabular form have been grouped to present the individuals moving from the Solway to elsewhere and conversely from elsewhere to the Firth.

Key

Age codes:	1)	pullus (nestling)
	2)	full grown, age unknown
	3)	juvenile, (in first calendar year of life)
	4)	hatched before calendar year of ringing, exact year unknown
	5)	hatched in previous calendar year
	6)	adult, at least two years old
	7)	adult, at least three years old
Recovery Code:	x	found dead
	+	Shot or intentionally taken by man
	v	Caught or trapped, released with ring
Sex	M = male	F = female

Oystercatcher *Haematopus ostralegus*

70 % of the UK breeding population is located in Scotland and the oystercatcher is very much a feature of the Solway Firth. In autumn there is a marked southwest movement of local birds and together with an influx of immigrants, marks the inner north Solway as a recipient of the largest gatherings of passage and wintering birds in the country.

Migration from inland sites start in July and builds up during August and September, when immigrants from Iceland, the Faeroe Islands and Norway, swell the communal roosts. There is uniquely, evidence of overland migration from the Firth of Forth. Mid-winter numbers are lower with many birds moving further south to west coast areas such as Morecambe Bay and to Ireland.

It is not unusual for the November population to peak at 50,000 individuals, which represents 25% of the total wintering population of the U.K. The criteria for internationally important status is a total of 7,500 birds, nationally important flocks (more than 3,000) are also at times in Wigtown Bay and Loch Ryan.

Most recoveries during the breeding season emanate from northern Scotland, the Faeroes and Iceland demonstrating conclusively that these areas are the principal nesting grounds of the vast Solway oystercatcher flocks. A few birds are also reported from countries adjoining the North Sea.

County/Region	To	From	Country/Region	To	From	Country	To	From
Shetland	10	2	Cumbria	18	2	Iceland	4	2
Orkney	3	2	Isle of Man	1	-	Faeroes	18	-
Highland	5	1	Lancashire	6	19	Norway	1	3
Grampian	9	1	Cheshire	-	2	Denmark	1	-
Tayside	2	1	Gwynedd	1	1	Netherlands	2	-
Fife	2	-	Clwyd	-	1	Germany	1	-
Lothians/Borders	1	1	Dyfed	-	1	France	-	1
Strathclyde	1	1	Glamorgan	1	5			
Solway 0Kms	-	16	Lincolnshire	1	1			
(Dum.&Gall.) 1-50Kms		15	Northumberland	1	-			

Typical examples of birds located on their breeding grounds are –

412023	8	08.04.72	Arness, Iceland	v	25.11.73	Southerness
SS99870	5	30.01.75	Southerness	+	15.05.90	Toftoe, Eysturoy, Faeroes
FV07700	8	16.09.96	Waterfoot, Annan	x	30.06.98	Cunningsburgh, Shetland
FV07588	6	22.11.83	Southerness	v	12.05.98	Bridge of Don, Grampian.

Ringed Plover *Charadrius hiaticula*

The ringed plover breeds from northeast Canada, Greenland and Iceland eastwards through northern Eurasia. British breeding birds remain to winter in the U.K. In late April and in May migrants pass through and the Solway then attracts the largest numbers in Scotland. An all time peak occurred in 1974 when there were 3,000 between Priestside and Powfoot.

It has been during April and June that the NSRG make most catches of this species as the birds move to their breeding grounds in Iceland, Greenland and to Scandinavia. Most British recoveries are from birds either migrating south during the late summer and autumn or of birds entering the West Coast flyway and being caught on their northward passage. The recoveries from France have all been in August, the interesting Ghanian bird was only the third British recovery from that Country.

County/Region	To	From	Country/Region	To	From	Country	To	From
Shetland	-	1	Clwyd	-	2	Greenland	2	2
Orkney	1	-	Dyfed	-	1	Norway	-	3
Western Isles	2	2	Gwynedd	-	1	Netherlands	1	-
Highland	-	1	Essex	2	-	Eire	-	1
Grampian	1	-	Lincolnshire	1	-	France	7	-
Tayside	1	-						
Fife	-	1	Cleveland	2	-	Spain	3	-
Cumbria	6	4				Morocco	3	-
Lancashire	1	3				Mauretania	1	-
						Ghana	1	-

Recoveries from breeding and winter quarters include:

8160408	4	11.07.74	Greenland(East)	v	15.5.79	Waterfoot
BV49416	4	13.05.79	Waterfoot, Annan	+	16.06.79	Angmagssaliq, Greenland
NV14070	4	30.04.83	Waterfoot	v	15.10.88	Cap Timiris, Mauritania
NV16159	4	16.05.87	Waterfoot	x	09.03.92	Accra, Ghana

Knot *Calidris canutus*

Knots wintering in Britain originate from northern Greenland and north-east Canada. The North Solway regularly holds flocks of international importance (more than 3,500). On the Solway the main influx occurs in November and December, numbers peak in January and most have left by late March. The main concentrations are around Southerness and on Priestside. On the whole, numbers have decreased in line with European trends.

The overseas recoveries support that Knots occurring on the Solway emanate from their well known breeding grounds in Greenland and north-east Canada. The Icelandic recoveries were of birds caught, almost certainly, on passage to or from those breeding areas. Within Britain the movement of Knots is complicated with frequent interchanges between the east and west coast estuaries during autumn and winter. This is conclusively illustrated with the recorded movements between the Solway and the Wash. Many Knots arriving on the Wash in late summer or early autumn complete a wing moult before dispersal to other British estuaries.

County/Region	To	From	Country	To	From
Highland	2		Canada	1	
Cumbria		1	Greenland	1	
Lancashire	10	11	Iceland	3	1
Merseyside	2		Sweden		1
Clwyd	1	1	France	1	
Norfolk	5	4			
Lincoln	4				
Cleveland	1				
Solway 0 – 50km	2				

The following recoveries were notified following one catch at Southerness on 14.02.71 –

CP88908	4	v	22.5.72	Hvalfjordhur, Kjosar,	Iceland
CP88769	5	+	9.6.72	Satut, Umanak,	Greenland
CP88654	4	+	11.6.72	off Baffin Island,	Canada

The Baffin Island bird was one of the first of two British recoveries of the species in Arctic Canada, the other being a bird from the Wash.

East to West coast, estuarine interchange is demonstrated with:

CC70796	4	01.02.76	Carsethorn	v	31.08.88	Wainfleet, Lincolnshire
CC70875	6	01.02.76	Carsethorn	v	16.10.93	Holme, Norfolk

Sanderling *Calidris alba*

Sanderlings breed in the high Arctic in a discontinuous line stretching from Alaska through Canada, Greenland and Spitsbergen to Siberia. They winter on temperate and tropical coasts in many parts of the world. These birds are apparently opportunistic feeders during migration and may concentrate in areas that temporarily present such an opportunity.

On 21st May 1982, such a flock, estimated at between 9-15,000 an unprecedented number in the Solway, was located at Waterfoot, Annan by Bobby Smith, the regular and reliable watcher and was quickly exploited by NSRG.

All Sanderling ringed by the Group (2,364) were subsequently caught on spring passage at Waterfoot, the high numbers have not been repeated in recent years with few birds now being recorded. While no recoveries have yet been received from their established breeding grounds the Waterfoot birds are believed to have been on spring passage to these remote zones.

The large numbers of Sanderlings recovered from Cumbria are indicative of continued active support from the ringing team based on Morecambe Bay and may also suggest a current preference by Sanderlings for the invertebrate rich and sandy north of England estuaries in spring.

Large numbers of Sanderling do winter abroad; none the less, a few winter in Britain as is clear from recoveries at Cleveland and in Cumbria.

County/Region	To	From	Country	To	From
Cumbria	51	9	Netherlands	1	
Lancashire		2	Germany	1	
Merseyside	2	3	France	6	
Clwyd		3	Morocco	3	
Isles of Scilly	1		Mauretania	1	
Norfolk	1	6	Ghana	1	
Cleveland		1			

Autumnal migration and wintering grounds are implied from the following recoveries from Waterfoot–

NS12332	4	23.05.82	x	01.12.83	Bonyere,	Ghana
NS39459	6	30.04.83	+	31.03.86	Mohammedia,	Morocco
NS39477	4	14.05.83	x	03.08.87	Regneville, Manche, France	

Similarly, winter recoveries from within the UK and the interchange between West Coast estuaries –

NS04975	3	17.12.80	Teesmouth	v	23.05.82	Waterfoot
NS02834	4	23.05.82	Waterfoot	v	08.11.87	Flimby, Cumbria (1of 7same day)
NS02002	4	23.05.82	Waterfoot	v	14.05.87	Barrow in Furness, Cumbria
NS02005	4	23.05.82	Waterfoot	v	15.05.88	Dubmill Point, Cumbria

Dunlin *Calidris alpina*

Dunlins nesting in Britain belong to the race *C.a.schinzii*, which also breeds in south-east Greenland, Iceland, the Faeroes and around the Baltic. Two other races occur: *C.a. alpina*, the northern Dunlin, breeds from northern Scandinavia eastwards through arctic Russia and winters in Britain and south to Morocco. In addition, a third race *C.a.arctica* from north-west Greenland occurs on passage and winters with *schinzii* in Morocco and Mauritania.

These races differ sufficiently in measurement to allow proportions to be estimated in a catch and in spring plumage they may also be identified in the field. There is a major influx of *alpina* Dunlins to the Solway and Priestside and Southerness in particular during October and November and some of these pass through to winter in West Africa. Although the current numbers are much lower than the monthly average of 10,000 in the late 1970's nationally important numbers of Dunlins remain to over winter in the Solway.

British breeding *schinzii,* return to their nesting grounds in April when Icelandic birds pass through south-west Scotland in late April and May. Over 90% of those caught on the Solway at this time in 1979, for example, were considered to be of Icelandic origin.

County/Region	To	From	Country/Region	To	From	Country	To	From
Western Isles	1	1				Iceland	1	1
Grampian	1					Norway		4
Lothian		1				Sweden	5	1
Cumbria	5	8	Kent		3	Denmark	5	
Lancashire	6	1	Norfolk	4	5	Finland	6	2
Anglesey	1		Lincolnshire	13	3	Poland	1	
Gwynedd	1		Cleveland		3	Netherlands	1	1
Gwent		2	Northumberland		1	Germany	4	1
Avon	1		Ulster	2		France	6	
Cornwall		1	Local	1		Spain	2	1
Dorset		1	(under 5km)			Portugal	4	3
Hampshire	1	1				Morocco	1	1
						Mauritania	1	
						Eire	3	

schinzii is evident from:

BX25128	3	14.10.73	Carsethorn	v	15.06.74	Jylland, Denmark
855721	1	27.06.84	Sudur Thingeyjar, Iceland	v	03.05.93	Battlehill, Annan
D007663	4	25.04.90	Faro, Algarve, Portugal	v	03.05.93	Battlehill
TO14843	5	07.05.98	Huelva, Spain	v	06.05.00	Waterfoot

alpina is represented by:

819766	3	06.08.74	Finnmark, Norway	v	13.04.75	Carsethorn

Winter movements within Britain include:

BH86503	5	03.08.69	King's Lynn, Norfolk	v	15.12.74	Southerness
BX25289	3	14.10.73	Carsethorn	v	28.12.77	Beaumaris, Anglesey

Bar-tailed Godwit *Limosa lapponica*

Birds wintering in the U.K. are assigned to the nominate race *L.l.lapponica* which breeds in the Arctic from northern Scandinavia to the Taymyr Peninsula in Siberia. There is a profound lack of information on the migration of the species and of its conservation requirements, these godwits are extremely mobile and prefer sandy estuaries. The Solway numbers peak earlier in the season than at other sites and decline markedly from January onwards, possibly with movement to Morecambe Bay. The Southerness area holds the largest flocks of national importance (over 450) with a relatively recent average peak of 3,900 and a maximum of 7,000, international criteria are assumed on any site regularly holding more than 5,500 birds. Formerly in the late 1940's and up to 1950, large flocks were to be found west of Powfoot.

There have been no recoveries from the breeding areas of birds ringed on the Solway but there are two reports of birds ringed while on migration through Germany.

6326824	6M	22.04.86	Nordfriesische Inseln Germany		v	10.08.99	Waterfoot
6335515	4M	18.03.92	Schleswig-Holstein, Germany		v	20.12.92	Waterfoot

There is in addition, evidence of interchange between estuaries, within the Solway Firth.

DR14753	4	18.12.83	Southerness	v	28.02.87	Allonby, Cumbria
DR14756	4	18.12.83	Southerness	v	28.02.87	Allonby
DR37311	6	28.02.87	Allonby	v	10.08.99	Waterfoot
DR37455	6M	28.02.87	Allonby	v	10.08.99	Waterfoot

Similarly, an east to west coast dispersal is evident from:

DK77508	5M	21.05.93	Teesmouth, Cleveland	v	10.08.99	Waterfoot

With limited data available on a species that is such a distinctive feature of the Solway Firth and faces quite specific local conservation threats, further research is considered vital.

Redshank *Tringa totanus*

The Scottish breeding population, which expanded during the early part of the 20th century is currently declining dramatically, due to the drainage and improvement of rough pasture. As soon as the young of locally bred birds have fledged they disperse to the coast and many of those breeding to the north and east probably move south-west to the Solway. Immigrants from Iceland of the race *T.t. robusta* start to arrive by late July and account for a large proportion of the wintering population. Nationally important numbers occur on the Solway, with peak counts of over 4,000 during the last decade. Scottish breeding birds leave the estuaries by February; the Icelandic birds depart from March onwards with the main exodus in late April and early May.

With six recoveries reported to date, one supports the fact that Icelandic birds do winter. These as the sub-species name suggests are larger individuals, which can be identified by measurement and there are at least 174 records of the race from the Solway, mainly from birds previously ringed by Icelandic authorities or legally shot, prior to the changes enacted by the Wildlife and Countryside Act, 1981. These are held in various museums, private collections and by Scottish Natural Heritage. Other recoveries support the species mobility within the U.K. and that locally bred birds winter alongside the Icelandic visitors.

DN41108	4	07.08.83	Ogwen, Bangor, Gwynedd	v	21.08.93	Waterfoot
623001	1	02.07.86	Skerdingsstadir, Iceland	v	20.12.87	Waterfoot
DR14836	4	20.12.87	Waterfoot	v	02.08.88	Butterwick, Lincoln
DR14918	4	20.12.87	Waterfoot	x	05.07.94	near Lockerbie
DK37252	4	15.08.92	Ogwen, Bangor, Gwynedd	v	21.08.93	Waterfoot
DR16583	4	21.08.93	Waterfoot	x	24.02.96	Seaward, Kirkcudbright

Turnstone *Arenaria interpres*

The Turnstone is one of the most northerly breeding waders, the first immigrants arrive on Solway by mid-July but being birds predominately of the splash zone they are difficult to census, none the less the Solway regularly holds 250-500. Although some Scandinavian birds occur in Britain on autumn passage, most of our wintering population originates from Greenland and arctic north-east Canada.

Given the two recoveries of Greenland birds, there is little doubt that the majority of the Solway turnstones emanate from the breeding populations of Greenland and north-east Canada which winter throughout Western Europe with a few birds moving through to North Africa. A quite separate population, breeding in Fenno-Scandia and wintering mainly in West Africa, also appears to pass through the Solway, as the African report might suggest.

County/Region	To	From	Country	To	From
Strathclyde	1		Greenland	1	1
Cumbria	17	2	Belgium	1	
Lancashire		1	France	1	
Merseyside	3		Spain	1	
Gwynedd	1	2	Guinea Bissau	1	
Clwyd		1			
Devon	1				
Solway (Dum. & Gall.)		3			

7046250	4M	09.06.75	Danmarkshavn, Greenland	v	12.05.79	Waterfoot
CC70985	6	15.04.79	Waterfoot	v	16.04.88	Newbie
CC70558	6	15.04.79	Waterfoot	v	30.12.89	Nieuwpoort, Belgium
CE12307	2	10.11.79	Rhos-on-Sea, Clywd	v	16.05.87	Waterfoot
CE41771	4	30.04.83	Waterfoot	v	29.05.84	Angmagssalik, Greenland
XS79070	6F	16.05.87	Waterfoot	v	07.04.93	Ihia de Maio, Guinea Bissau

The ringing details demonstrate examples of birds not only on their Greenland breeding grounds but also the African recovery strongly indicates the possibility of the Fenno-Scandia population on the Solway in spring. The bird originally ringed at Waterfoot Annan in April of 1979 and recaptured alive at Newbie in the same month but nine years later, despite the fact it was probably on passage north, demonstrates remarkable site fidelity. Two of the other recoveries are symptomatic of the wintering areas in Western Europe.

Acknowledgements

The NSRG gratefully acknowledge the assistance of the late Stan Craig; Bill Cooper; and Jack Sheldon, of the Morecambe Bay Ringing Group, in the initial acquisition of the equipment and training. Purchase of netting was only possible from a generous grant from the Scottish Ornithologists Club which was repaid.

NSRG also gratefully acknowledge an early grant towards ring purchase, authorised by the Members of Council, of the Dumfriesshire and Galloway Natural History and Antiquarian Society. A. Smith & Sons; Solway Heritage; Dumfries & Borders Co-Op; and Scottish Natural Heritage; have all contributed significantly.

During the period under review, the group has enjoyed access over private land and would thank the management at Arbigland Estate; Caerlaverock Estate; Chirex (Annan Ltd.); Glaxo of Annan; The National Trust for Scotland; Southerness Holiday Village; Scottish Natural Heritage; and especially to John Panczak for continued use of his fields, for access and for erecting the keeping cages to allow the birds to be processed.

Overall, the BTO are responsible for the smooth administration of the national ringing scheme, cannon-netting is essentially a team effort and without the skilled assistance of the NSRG members the programme could not have remained viable.

Inevitably, the Group relied heavily on the skill and patience of other interested local ornithologists, especially John McCubbin, the late Jimmy Maxwell, Derek Skilling, John Skilling, Bobby Smith, Brian Turner and the late Jim Young. Together with a long list of family members and friends, who gave generously of their time prior to and following successful catches, alas they remain too numerous to mention individually. Inspector Ben McCallum, of the Dumfries and Galloway Police Force and the late Sheriff Walter F. Stevenson, provided initial guidance on legal aspects.

Geoff Sheppard forwarded the more recent ringing data in this report from NSRG records, Robert Skilling drew fig1, and Bobby Smith contributed the illustrations. Alwyn Coupe, kindly allowed access to the main SNH library. We are most grateful to Fiona Thomson who typed the drafts, to Derek Skilling who commented on the text and to James Williams for his editorial advice.

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LOW TIDE COUNTS OF WILDFOWL AND WADERS ON THE NORTH SOLWAY, 1998/99-2000/01

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Introduction

There are significant differences in the distribution of wildfowl and waders within the Solway Firth between high and low tides, which reflect patterns of feeding and roosting behaviour. Although counts carried out at high tide roosts under the Wetland Bird Survey (WeBS) Core Count scheme have produced a long time series of data which enables changes in the overall level of waterbird populations to be fairly accurately assessed, this only provides part of the picture. In order to devise conservation policies which safeguard essential feeding areas, more requires to be known about the distribution of these populations at low tide. For this reason, the WeBS Low Tide Counts scheme was initiated on selected estuaries in the early 1990's and on the Solway in 1998/99 (Pollit, et al, 2000). WeBS is a partnership between the British Trust for Ornithology, The Wildfowl and Wetlands Trust, Royal Society for the Protection of Birds and the Joint Nature Conservation Committee.

This paper summarises, on a species by species basis, the results of two years of wildfowl and wader counts carried out over low tide on the northern side of the Solway Firth between Mossband at the English Border and Mersehead, together with the results of a pilot survey which was carried out by the author over the eastern part of this area in 1998/99. The tables within the paper have been prepared to a common format and give monthly maxima (along with the month in brackets) and winter mean for each of the three years of the survey. The paper compares these results with those of a special survey, involving low tide counts, carried out on the Solway in 1991/93 (Quinn et al, 1993).

The area surveyed in 1999/00 and 2000/01 included some 45 miles (72km) of coastal margin, along with a significant proportion of the huge expanse of mudflats and channels exposed at low tide and, where practicable, their off-shore waters. These were divided up, for the purposes of the survey, into 49 count sectors, with volunteers charged with the task of carrying out one count within each Count Sector during each winter month from November to February. Notwithstanding the considerable difficulties involved in implementing such an extensive exercise, a substantial proportion of the area was covered by counters during the winters of 1999/00 and 2000/01. This included staff of The Wildfowl and Wetlands Trust walking out onto some of the more accessible areas of Blackshaw Bank during the 2000/01 winter, thereby starting to build up a picture of the distribution of birds over this extensive area of inter-tidal mudflats and channels.

The paper draws upon data from each of these Count Sectors to identify the principal concentrations of wildfowl and waders during the period in question. It is hoped that this information will help inform conservation policies for the Solway by supplementing the excellent density maps for selected species which have been produced as part of the national output from the WeBS Low Tide Counts (Pollitt, et al 2000; Musgrove, et al 2001).

Red-throated Diver

Only the odd bird was recorded on the Low Tide Counts, all being located in off-shore waters, mainly around Southerness. Most birds appear to move out into deeper water, between Hestan Island and St Bees Head, as the tide ebbs.

Great Crested Grebe

Location	Winter maxima			Monthly mean		
	98/99	99/00	00/01	98/99	99/00	00/01
N39-45 (Carsethorn/Southerness)	n/c	253*(F)*	378*(F)*	n/c	222	189
N47-49 (Mersehead)	n/c	0	204*(J)*	n/c	0	101

Birds were present in numbers that exceeded the GB threshold of importance during both the 1999/00 and 2000/01 winters. They were heavily concentrated at low tide within the sub-tidal zone between Carsethorn and Southerness, with a proportion moving around Southerness Point towards Mersehead during the 2000/01 winter. They were often to be seen diving very close inshore in shallow water depths. The numbers and distribution were similar to those found by Quinn et al (1993). Most birds moved out of this area as the tide began to flow, with the main direction of movement being across Blackshaw Bank into the upper reaches of the Solway, where many were to be found feeding at high tide, close to the confluence of the Esk and the Eden, off Torduff Point.

Cormorant

Location	Winter maxima			Monthly mean		
	98/99	99/00	00/01	98/99	99/00	00/01
N1-5 (off Rockcliffe Marsh)	8*(N)*	10*(N)*	46*(N)*	3	5	32
N10-13 (Bowness Wath/Waterfoot)	27*(N)*	33*(D)*	8*(D)*	10	10	5
N25 (Lochar Channel)	n/c	0	60*(D)*	n/c	0	30
N30-31 (Nith Estuary)	n/c	8*(N)*	9*(F)*	n/c	5	8
N44-48 (Carsethorn to Mersehead)	n/c	2*(N)*	19*(N)*	n/c	1	10

Small parties of Cormorant were widely distributed along many of the channels of the estuary at low tide, with a count of 60 birds along the outer reaches of the Lochar channel in

December 2000 by far the highest. Numbers present at low tide were higher in 2000/01 compared to the preceding winter. There appears to have been an increase in numbers since the study by Quinn et al (1993), with large flocks a more familiar occurrence. A substantial influx of birds into the upper part of the Solway was often found to take place as the tide began to flow, with the main feeding activity taking place at this time.

Grey Heron

Between one and three birds were recorded at various locations around the coastal margin, with a maximum of five at Greenmerse on the River Nith in December 2000. There was a tendency for occurrences to decrease as the winter progressed, possibly associated with a return to the vicinity of nesting sites.

Mute Swan

Two birds frequented the mouth of the River Nith in both the 1999/00 and 2000/01 winters, but these were the only birds that were located within the inter-tidal area.

Whooper Swan

Although substantial numbers of birds were present on the North Solway during the period under review, only a handful of records were produced by the Low Tide Counts, with a maximum of 18 on the Nith estuary in January 2001. This is because Whooper Swan feed almost exclusively on areas of merse and nearby agricultural land which were not covered by the Low Tide Counts. This was also the experience of Quinn et al (1993).

Pink-footed Goose

Parties of birds were occasionally recorded at low tide, with flocks of 200 and 300 on the Nith and Lochar respectively in November 1999 being by far the largest recorded. Birds tend to use the inter-tidal area principally for roosting, after spending daylight hours feeding on agricultural land, often some distance from the coast. Quinn et al (1993) found larger numbers present throughout the winter months, particularly in the vicinity of the Nith estuary.

Greylag Goose

Small parties of birds were occasionally met with at low tide, with 56 in the Esk channel off Rockcliffe Marsh in November 1999 and 38 off Powfoot in December 2000 being the largest recorded. Quinn et al (1993) found significantly more Greylags in 1991/93, particularly in the vicinity of the Nith estuary at Kirkconnel Merse and Carsethorn.

Canada Goose

There were only three records : a flock of 24 in November 1999 and two parties of seven in February and December 2000, all of them on the Nith estuary.

Barnacle Goose

Location	Winter maxima			Monthly mean		
	98/99	99/00	00/01	98/99	99/00	00/01
N1-5 (off Rockcliffe Marsh)	1700*(J)*	0	30*(N)*	7	222	16
N30-38 (Nith Estuary)	n/c	6000*(D)*	2600*(J)*	n/c	184	97
N49 (Mersehead)	n/c	0	6500*(N)*	n/c	700	158

Parties of birds were occasionally seen preening and roosting out on the mudflats off Rockcliffe Marsh, Caerlaverock and Mersehead, the three principal haunts of this goose on the Solway.

Shelduck

Location	Winter maxima			Monthly mean		
	98/99	99/00	00/01	98/99	99/00	00/01
N1-5 (off Rockcliffe Marsh)	12*(N)*	417*(J)*	51*(F)*	7	222	16
N19-20 (Powfoot)	n/c	712*(N)*	164*(D)*	n/c	184	97
N30-40 (Nith Estuary/Carse Bay)	n/c	985*(N)*	219*(F)*	n/c	700	158

The above table highlights the Shelduck's principal feeding areas on the North Solway. Birds present in 2000/01 were only a fraction of those found during the 1999/00 winter, which itself was a poor one for Shelduck numbers on the Solway as a whole (Musgrove, et al 2001). Whilst this may be a one-off event, it points to the need for continued monitoring of this species, particularly in the context of commercial shell-fishing activity. Quinn et al found significantly more Shelduck in the vicinity of Blackshaw Bank and the Lochar Water than has been identified in this latest survey, although this could be partly a reflection of differences in coverage of this particular location between the two surveys.

Wigeon

Location	Winter maxima			Monthly mean		
	98/99	99/00	00/01	98/99	99/00	00/01
N9-13 (Battlehill to Dornockbrow)	9*(F)*	10*(F)*	152*(F)*	2	4	85
N31-32 (Nith Estuary)	n/c	630*(F)*	200*(F)*	n/c	301	136

A scattering of small parties of Wigeon was recorded, with the only substantive counts coming from the vicinity of the Nith estuary. Although there were lower numbers at this latter location in 2000/01 compared to a year earlier, this was partly counter-balanced by an increase on the inner north shore, particularly in the vicinity of Battlehill/Dornockbrow. Quinn et al (1993) located large numbers of Wigeon in the vicinity of Blackshaw Bank and along the Annan foreshore. A less intensive coverage of Blackshaw Bank in the current survey may have resulted in some birds at this location being overlooked, but the decanting of large numbers of birds to WWT Caerlaverock and RSPB Mersehead since the early 1990's is also a factor.

Teal

Numbers were similar in both winters, with small groups scattered over a variety of locations. Largest individual counts were 82 off Torduff Point in November 1999, 70 on the Nith estuary in November 2000, 87 off Drummains in January 2000 and 37 off Seafield in January 2001. The numbers and distribution are similar to those found by Quinn et al (1993).

Mallard

Location	Winter maxima			Monthly mean		
	98/99	99/00	00/01	98/99	99/00	00/01
N4-10 (Redkirk Point to Dornockbrow)	111*(N)*	248*(N)*	106*(N)*	38	103	61
N19-22 (Powfoot)	n/c	78*(D)*	228*(J)*	n/c	38	127
N30-36 (Nith Estuary)	n/c	320*(N)*	54*(D)*	n/c	105	33
N46-49 (Gillfoot Bay to Mersehead)	n/c	97*(J)*	98*(J)*	n/c	36	60

Small numbers of Mallard were recorded at various locations, with the main concentrations set out in the table above. Numbers present in 2000/01 were slightly up on the previous winter, with a decrease in the vicinity of Browhouses/Dornockbrow counter-balanced by an increase at Powfoot. The numbers and distribution do not appear to have changed significantly since 1991/93 (Quinn et al 1993).

Pintail

Location	Winter maxima			Monthly mean		
	98/99	99/00	00/01	98/99	99/00	00/01
N19-22 (Powfoot)	n/c	168*(N)*	67*(F)*	n/c	73	42
N23-26 (Lochar Channel / Priestside Bank)	n/c	200*(F)*	2000*(D)*	n/c	75	1000
N30-31 (Nith Estuary)	n/c	88*(F)*	200*(D)*	n/c	160	88

The reserves at WWT Caerlaverock and RSPB Mersehead, which are not covered by Low Tide Counts, are important locations for the Pintail, with up to 2000 birds using both of these wetlands in recent winters. This has almost certainly led to a displacement of birds which formerly used the foreshore and merses of Carse Bay/Burnfoot/Nith estuary, where occurrences were found to be more sporadic than appears to have been the case at the time of the survey by Quinn et al (1993). A flock of 2000 birds located in the outer reaches of the Lochar channel by WWT staff on 6 December 2000 was particularly notable, with the next highest counts comprising parties of 200 on Priestside Bank in February 2000 and at the mouth of the Nith in December 2000.

Shoveler

There were only five records over the period under review, all within the area between Newbie and Powfoot, with maxima of 30 in December 1999 and 21 in January 2001. This area, along with the adjoining areas of Annan Bay and Priestside, were identified by Quinn et al (1993) as the most important location for Shoveler on the Solway, with the numbers present being slightly higher than in this latest survey. Parts of the reserves at WWT Caerlaverock and RSPB Mersehead which are not covered by the low tide counts accounted for a larger number of Shoveler than were to be found at Powfoot during the 1999/00 and 2000/01 winters.

Scaup

Location	Winter maxima			Monthly mean		
	98/99	99/00	00/01	98/99	99/00	00/01
N17-18 (off Newbie)	7*(N)*	0	340*(F)*	2	0	187
N22-23 (off Powfoot)	n/c	112*(N)*	200*(N)*	n/c	56	133
N38-45 (off Carsethorn)	n/c	2211*(J)*	1560*(N)*	n/c	1218	792
N47-49 (off Mersehead)	n/c	0	427*(J)*	n/c	0	159

The numbers of Scaup in both the 1999/00 and 2000/01 winters peaked at between 2200 and 2300. The birds were unusually late in arriving during the 1999/00 winter and very early to leave in 2000/01. Numbers were generally more widely scattered during the second of these winters, with a decrease in the numbers off Carsethorn being counter-balanced by increases in the number of birds seen off Mersehead and Powfoot/Newbie. Birds were often to be found dabbling and diving at low tide in relatively shallow water in large flocks stretched out along the edges of sandbanks, often well away from human disturbance. Quinn et al (1993) found significantly larger numbers of Scaup in the winters of 1991/92 and 1992/93 than in this latest survey, with substantially more at low tide off Powfoot. Current numbers are of GB importance, but have slipped below the threshold of international importance since the early 1990's when their numbers stood at between 3800 and 5400 each winter. Scaup numbers are known to be subject to annual and seasonal variations in response to the abundance and availability of food, of which molluscs and especially the blue mussel (*Mytilus edulis*) are of particular importance in winter (Cramp and Simmons 1977). The mussel stocks within the Solway have been subject to increased commercial exploitation since the early 1990's.

Goldeneye

Location	Winter maxima			Monthly mean		
	98/99	99/00	00/01	98/99	99/00	00/01
N1-4 (Esk Channel)	56*(J)*	38(J)	47*(F)*	33	27	30
N15-18 (Waterfoot to Newbie)	42*(N)*	n/c	n/c	31	n/c	n/c
N31 (Nith Estuary)	n/c	6*(D)*	12*(J)*	n/c	4	6

The heaviest concentrations of Goldeneye occurred in channels which flow with fresh water at low tide, particularly those of the Esk, Annan and Nith. Figures for Waterfoot/ Newbie for the 1999/00 and 2000/01 winters were incomplete. Quinn et al (1993) located larger numbers of this species around the Nith and off Powfoot than were revealed by this latest survey.

Red-breasted Merganser

There were records of between one and four birds at various locations, both in channels and off-shore waters, from the higher reaches of the Solway to Southerness Point, with most birds to be found diving in relatively shallow water depths at low tide. There were no significant concentrations of birds. Quinn et al (1993) found significant numbers in the channel of the Nith and off Mersehead at low tide, but these locations did not hold large numbers during the 1999/00 and 2000/01 winters. This parallels the fortunes of the Goldeneye insofar as the Nith estuary is concerned and possibly merits further investigation in terms of factors such as increased disturbance.

Goosander

Parties of up to seven birds were recorded in the upper reaches of the Esk channel and in the channel of the Nith, both of which flow with fresh water at low tide. Birds were found to move in and out of the area with the tides, with numbers tending to be at their lowest over low water. Quinn et al (1993) found that numbers between years were very inconsistent, partly because Goosanders tend to be attached to the river systems rather than to the estuary itself.

Oystercatcher

Location	Winter maxima			Monthly mean		
	98/99	99/00	00/01	98/99	99/00	00/01
N9-14 (Dornockbrow to Seafield)	2809*(F)*	2800*(F)*	2626*(N)*	1692	2204	2143
N18-22 (Newbie to Moss-side)	n/c	4910*(D)*	2323*(F)*	n/c	2736	1371
N25-29 (Blackshaw Bank)	n/c	n/c	7280*(D)*	n/c	n/c	7280
N39-44 (Carse Sands)	n/c	4256*(F)*	4766*(J)*	n/c	3189	3952
N46-49 (Gillfoot Bay/Mersehead)	n/c	1888*(D)*	4941*(J)*	n/c	1579	4718

Large numbers of Oystercatcher were seen feeding and roosting on the inter-tidal mudflats of Blackshaw Bank at low tide. The sheer size of this internationally important population and the large expanse of mudflats and their associated channels that are inaccessible to counters, makes it difficult to introduce a comprehensive scheme of low tide population monitoring for this species. Concentrations of birds which are accessible and, therefore, capable of fairly accurate monitoring include the inner north shore of the Solway and the areas of mudflat and rocks on the western shore off Carsethorn and Southerness. Other figures contained in the table above should be regarded as indicative rather than accurate counts. Counts from the more accessible areas suggest that the Oystercatcher has held its own in the face of increased shell-fishing activity and the disturbance that goes with it. A degree of caution is required, however, as the winter 2000/01 population totals for Carse Sands and Mersehead are both based on more effective and comprehensive counting regimes compared to earlier years. Numbers within the upper reaches of the Solway have increased since the study by Quinn et al (1993), possibly at the expense of the population present on Blackshaw Bank.

Ringed Plover

Location	Winter maxima			Monthly mean		
	98/99	99/00	00/01	98/99	99/00	00/01
N9-16 (Dornockbrow to Waterfoot)	11*(F)*	58*(F)*	22*(J)*	5	41	6
N36-41 (Burnfoot to Borron Point)	n/c	68*(N)*	27*(F)*	n/c	47	15
N46-49 (Gillfoot Bay to Mersehead)	n/c	92*(F)*	40*(F)*	n/c	55	15

Small groups of birds were found wintering on areas of sandy foreshore. The overall total amounted to no more than 200 birds, with numbers present on all sites in 2000/01 much reduced compared to the previous winter. The numbers and distribution encountered during the 1999/00 winter were similar to those found by Quinn et al (1993).

Golden Plover

Location	Winter maxima			Monthly mean		
	98/99	99/00	00/01	98/99	99/00	00/01
N6-13 (Browhouses to Battlehill)	1150*(N)*	1479*(D)*	1820*(D)*	555	756	1128
N19-20 (Powfoot)	n/c	2204*(D)*	1257*(D)*	n/c	895	745

Between 2000 and 3000 Golden Plover were located on the inner north shore between Browhouses and Powfoot during the period under review, with numbers peaking in the earlier part of both winters. Birds were often to be found roosting and preening at low tide on the mussel ‘scars’, with the majority moving onto the short cropped turf of the adjoining Ministry of Defence establishments at high tide, where they would often be found feeding when ground conditions were suitable. The distribution is similar to that found by Quinn et al (1993), with numbers slightly higher in this latest survey compared to 1991/93.

Grey Plover

Location	Winter maxima			Monthly mean		
	98/99	99/00	00/01	98/99	99/00	00/01
N9-14 (Dornockbrow to Seafield)	2*(F)*	43*(F)*	41*(N)*	1	20	16
N19-21 (Powfoot)	n/c	46*(D)*	14*(F)*	n/c	20	12
N41-47(Carsethorn to Southerness)	n/c	302*(D)*	81*(F)*	n/c	106	36

With the exception of a party of 280 in the vicinity of Southerness in December 1999, sightings were generally restricted to small groups of less than 50 located on a few, fairly localised, areas of inter-tidal sand-flats. As in the case of the Ringed Plover, with which it shares these sandy habitats, numbers of Grey Plover were substantially lower in 2000/01 than in the previous winter. Quinn et al (1993) identified Blackshaw Bank and the eastern end of Mersehead Sands as the principal feeding areas of the Grey Plover on the North Solway. Limited coverage of Blackshaw Bank during this latest survey may have resulted in some birds being missed, but there can be no doubt that Grey Plover, in common with some other species, have been making far less use of Mersehead Sands in recent years, probably on account of increased disturbance from shell-fishermen, bait diggers and dog walkers.

Lapwing

Location	Winter maxima			Monthly mean		
	98/99	99/00	00/01	98/99	99/00	00/01
N1-2 (Mossband to Redkirk Point)	513*(N)*	218*(J)*	800*(N)*	172	58	207
N5-6 (Browhouses to Torduff Point)	543*(N)*	951*(D)*	1121*(D)*	174	316	566
N7-14 (Torduff Point to Seafield)	1270*(J)*	721*(N)*	1253*(D)*	630	546	812
N18-21 (Newbie to Powfoot)	517*(D)*	357*(D)*	355*(D)*	272	160	217
N28-32 (Caerlaverock to Nith Estuary)	n/c	608*(N)*	1014*(N)*	n/c	555	423

During the period under review, up to 4000 Lapwing were located along the northern shore of the Solway, from the Nith estuary eastward to Mossband. The numbers and distribution during the 2000/01 winter corresponded reasonably well with those found by Quinn et al (1993), although numbers at Priestside and Newbie were considerably lower in this latest survey compared to the 1991/93 winters, possibly on account of increased disturbance at the latter and some erosion of the mussel ‘scars’ on which the birds tend to roost at

low tide. Numbers were highest during the early winter period, dropping rapidly in February as birds began their return migration to Scandinavia and points further east. As in the case of the Golden Plover, most birds moved out to feed on adjoining agricultural land (including the extensive areas under the control of the Ministry of Defence) at high tide.

Knot

Location	Winter maxima			Monthly mean		
	98/99	99/00	00/01	98/99	99/00	00/01
N9-14 (Dornockbrow to Seafield)	0	2072*(N)*	1425*(N)*	0	689	630
N18-22 (Newbie to Powfoot)	n/c	200*(J)*	695*(J)*	n/c	70	361
N29 (Blackshaw Bank)	n/c	n/c	4000*(D)*	n/c	n/c	2000
N41-47 (Carsethorn to Southerness)	n/c	4800*(J)*	4350*(D)*	n/c	2130	1338

The extremely mobile nature of the Knot and the vast inter-tidal area over which it ranges, make this bird very difficult to monitor through low tide counts. A flock of between 4000 and 5000 birds was present on the North Solway during both the 1999/00 and 2000/01 winters, with the area from Carsethorn, across Blackshaw Bank to the Lochar channel, being the one in which these birds were most frequently recorded. Up to 2000 birds were also recorded on the inner north shore between Dornockbrow and Seafield. Quinn et al (1993) found that the eastern end of Blackshaw Bank held the main concentration of Knot at low tide in winter, with the area between Seafield and Dornockbrow hardly featuring during the 1991/93 period. This is a similar situation to the Oystercatcher, which was present on the inner north shore in far larger numbers during this latest survey than it was during the early 1990's. It is probably no co-incidence that the two birds rely on shellfish, particularly mussels, as their principal food source and that there has been some deterioration in some of the mussel 'scars' in recent years as a result of commercial exploitation and erosion.

Purple Sandpiper

Location	Winter maxima			Monthly mean		
	98/99	99/00	00/01	98/99	99/00	00/01
N47 (Southerness Lighthouse)	n/c	18*(F)*	35*(N)*	n/c	7	15

The rocks around Southerness Lighthouse are a traditional haunt of the Purple Sandpiper in winter and the only one recorded during this latest survey. Birds were difficult to locate

amongst seaweed covered rocks at low tide and, consequently, it would be wrong to attach too much significance to the relatively low number that appeared to be present during the 1999/00 winter. The numbers located in 2000/01 were similar to those found by Quinn et al (1993).

Dunlin

Location	Winter maxima			Monthly mean		
	98/99	99/00	00/01	98/99	99/00	00/01
N6-14 (Browhouses to Seafield)	2701*(D)*	1713*(N)*	3588*(J)*	1723	1222	1233
N19-21 (Powfoot)	n/c	6180*(D)*	980*(F)*	n/c	3356	637
N23-26 (Priestside Bank)	n/c	1500*(N)*	n/c	n/c	480	n/c
N29-30 (Blackshaw Bank)	n/c	n/c	4400*(J)*	n/c	n/c	3625
N41 (Carsethorn to Borron Point)	n/c	330*(N)*	310*(F)*	n/c	177	221
N46-48 (Southerness)	n/c	703*(N)*	884*(N)*	n/c	267	542

The Dunlin, along with the Knot, is difficult to monitor at low tide, on account of its highly mobile nature and the vast area of mudflats and channels over which it ranges. Some 6000 to 7000 birds were located on the inter-tidal mudflats between Powfoot and Blackshaw Bank during this latest survey, with an additional 2000 to 3000 birds on the inner north shore from Seafield eastward to Browhouses and up to 1000 birds along the western coast between Carsethorn and Southerness. A comparison of these figures with those from the 1991/93 winters (Quinn et al,1993) indicates that, in common with a variety of other waders, numbers of Dunlin have fallen along the western shore and in the vicinity of Mersehead Sands. Increased disturbance from shell-fishers, bait diggers and dog-walkers is likely to be a factor responsible for the reduced number of birds at this location.

Snipe

Only a small number of Snipe were recorded on the Low Tide Counts, with the largest groups located at Browhouses (parties of seven and 12) and on the Nith estuary at Caerlaverock and Kirkconnel Merses (seven and nine respectively), all during the earlier part of the winter. The Snipe can usually only located by counters walking along the merse and flushing the birds, which is probably best done at high tide when they are more concentrated. One of the principal areas for Snipe identified by Quinn et al (1993) was on the western shore around Drummains, an area not traversed on foot as part of this latest survey.

Black-tailed Godwit

Two birds were present at Newbie in December 1999 and up to 53 birds on the sandy foreshore around Torduff Point during November and December 2000. Quinn et al (1993) found that the sandy areas around Seafield were favoured by up to 53 birds at low tide during the 1991/92 winter, but did not consider the bird a regular winter visitor in such high numbers.

Bar-tailed Godwit

Location	Winter maxima			Monthly mean		
	98/99	99/00	00/01	98/99	99/00	00/01
N6-14 (Browhouses to Dornockbrow)	25*(F)*	7*(F)*	16*(J)*	6	2	5
N17-22 (Newbie to Powfoot)	320*(N)*	400*(F)*	17*(D)*	174	107	11
N26 (Prestside Bank)	n/c	0	4*(D)*	n/c	0	4
N46-47 (Gillfoot Bay to Mersehead)	n/c	0	25*(N)*	n/c	0	6

Bar-tailed Godwit were of fairly sporadic occurrence on the North Solway during this latest survey, with the figures in the above table comprising all locations where this species was recorded during the winters in question. Quinn et al (1993) found that the area around Southerness contained an average of between 500 and 600 birds each winter, representing around 70% of the total Solway flock, but numbers such as these have not been seen here for some years, nor have birds been present for the duration of the winter. Numbers have also fallen on the inner north shore between Torduff Point and Powfoot compared to the 1991/93 winters. These birds appear to have moved *en masse* to the South Solway in recent years, where they tend to frequent the extensive sand-flats to the north and south of Silloth. Increased disturbance by shell-fishers, bait-diggers and dog-walkers is likely to have contributed to the demise of the Bar-tailed Godwit at these locations and of other waders which favour sand-flats, such as the Grey Plover and the Ringed Plover.

Curlew

Location	Winter maxima			Monthly mean		
	98/99	99/00	00/01	98/99	99/00	00/01
N4-12 (Redkirk Point to Battlehill)	518*(N)*	1281*(F)*	973*(F)*	374	778	761
N18-21 (Newbie to Powfoot)	751*(F)*	169*(N)*	286*(D)*	338+	95	208
N30-36 (Nith Estuary)	n/c	540*(N)*	427*(D)*	n/c	477	252
N41-49 (Carsethorn to Mersehead)	n/c	145*(N)*	249*(J)*	n/c	121	195

Over 2000 Curlew were present on the North Solway during both winters of the latest survey, with the distribution concentrated on the inner north shore, between the Nith estuary and Redkirk Point. Quinn et al (1993) also found that the inner north shore held very high densities of Curlew at low tide in winter. Slightly less birds were located along the western shore than in 1991/92, which accords with findings for a number of other waders, but this was counter-balanced by increased numbers around the Nith estuary.

Spotted Redshank

A single bird was present at Browhouses in November and December 1998.

Redshank

Location	Winter maxima			Monthly mean		
	98/99	99/00	00/01	98/99	99/00	00/01
N6 (Browhouses to Torduff Point)	147*(N)*	172*(D)*	222*(D)*	106	142	166
N9-12 (Dornockbrow to Battlehill)	692*(J)*	902*(N)*	829*(D)*	506	472	516
N13-14 (Seafield)	41*(N)*	450*(N)*	104*(N)*	21	212	77
N18-19 (Newbie to Powfoot)	299*(J)*	171*(D)*	325*(F)*	170	123	231
N35-41 (Burnfoot to Borron Point)	n/c	452*(D)*	525*(N)*	n/c	297	272

This latest survey found that by far the largest concentration of Redshank was located on the inner north shore, from Browhouses westwards to Powfoot. This area held an average of over 900 birds and a peak of up to 1500 during the early part of the winter, which is equivalent to the international threshold. The western shore, from Burnfoot to Borron Point, held

only a third of these numbers, with remarkably few Redshank found around the Nith estuary. The relative fortunes of these areas has changed significantly since the study by Quinn et al (1993). At that time the western shore was a far more important feeding area than it is today, with numbers at low water in winter more or less on a par with those on the inner north shore. The depletion of wader numbers along parts of the western shore has already been commented on in relation to a number of other species. Increased disturbance is one possible factor, along with over-fishing and erosion of the mussel 'scars' around Carsethorn, which previously attracted large numbers of Redshank to feed on the young mussels and the crustaceans trapped by the receding tide.

Greenshank

Single over-wintering birds were located at Southerness in December 1999, at Battlehill in January and February 2000, at Powfoot and Southerness in November 2000 and at Southerness in February 2001. Quinn et al (1993) found that wintering Greenshank were restricted to the rocks at Southerness and to the mouth of the Lochar.

Common Sandpiper

A single over-wintering bird was present on Powfoot Scar in January 2000.

Turnstone

Location	Winter maxima			Monthly mean		
	98/99	99/00	00/01	98/99	99/00	00/01
N6-7 (Browhouses to Torduff Point)	7*(F)*	3*(J)*	3*(J)*	3	1	1
N9-14 (Dornockbrow to Seafield)	1*(F)*	22*(F)*	15*(J)*	..	8	4
N18-20 (Newbie to Powfoot)	8*(J)*	6*(D)*	31*(D)*	4	2	11
N41 (Carsethorn to Borron Point)	n/c	6*(D)*	19*(F)*	n/c	3	10
N46-47 (Gillfoot Bay / Southerness)	n/c	7*(F)*	28*(J)*	n/c	4	16

This latest survey found that Turnstone were widely distributed, in very small numbers, amongst areas of rocks and mussel 'scars' on both the northern and western shores, with no area having a marked concentration of birds. There appears to have been a slight reduction in numbers at Browhouses and Southerness since the study by Quinn et al (1993), which may be associated with disturbance and a physical deterioration in the mussel 'scars' at these locations. However, the small numbers involved and the difficulties of locating birds at low water throws into question the significance of such changes.

Conclusions

Although the WeBS Core Counts remain the most effective way of monitoring year by year changes in the status of most species of wildfowl and waders on the Solway Firth, the WeBS Low Tide Counts are an important supplement, in that they provide:

- a more effective means of monitoring species which are difficult to locate at high tide, such as the Great Crested Grebe and Scaup;
- up-to-date information on the principal feeding areas of most wildfowl and waders, including the incidence of potential threats to these important areas, all of which are an essential input into conservation strategies for the Solway.

When the results of the latest survey are compared with low tide counts carried out during the early 1990's, it is apparent that there has been a marked deterioration in the overall resource, particularly the western shore of the Inner Solway around Carsethorn and Southerness. This has been associated with increased commercial exploitation and erosion of some of the mussel 'scars' and also with a heightened level of disturbance from shell-fishermen, bait-diggers and dog-walkers. Numbers of Shelduck and Scaup have both experienced a decline since the early 1970's, along with waders such as the Grey Plover, Ringed Plover and Bar-tailed Godwit, which frequent sandy shores. Redshank and Oystercatcher have both undergone a degree of redistribution, with much greater use now being made of the inner north shore.

This points to the need for continued monitoring of wildfowl and wader numbers at low tide, co-ordinated with counts which are also being carried out on the English side of the Solway.

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PREHISTORIC LANDSCAPES in DUMFRIES AND GALLOWAY
Part 2 – Bronze Age Landscapes

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Introduction

This contribution is the second part of a series which considers the evidence for prehistoric activity across an area of landscape found in Dumfries and Galloway, defined by the river systems of the Cree and Esk (cf. Gregory, 2000). It is the purpose here to assess the evidence for Bronze Age activity (c.2600-750 cal. BC), and in turn produce a historical narrative through an analysis of the surviving environmental and archaeological remains. This will begin with a discussion of the transition from the Neolithic to Bronze Age, which is dominated by the evidence of Beaker ceramics. The evidence for the earlier Bronze Age will then be considered, through a cursory analysis of funerary sites and their associated pottery, the metal and stone artefacts from the region, and the evidence of settlement and other related activities, recognisable in the form of small cairns and burnt mounds. Finally, the meagre evidence for the later Bronze Age will be considered. A particular emphasis of this narrative resides, however, with the context of many of these sites and artefacts, and their particular relationships to the natural and cultural landscapes in which they are found. This appears to suggest that the Bronze Age in substantial parts of Dumfries and Galloway was characterised by a radical break with earlier – Neolithic – ways of life, and that this was in someway connected to an increased domestication of both the physical and cultural landscape.

The Late Neolithic/Early Bronze Age transition c.2600-2000 cal. BC

The transition from the Late Neolithic to Early Bronze Age, although somewhat ambiguous, appears to be a period which was defined by certain changes in the structure, attitudes, and belief systems of the early communities occupying the region. The reasons behind these changes are not clear, but they may be the outcome of the direct movement of people into the region, who in turn imposed a new set of cultural and technological values onto the existing population. Alternatively they might equally be due to the indirect transferral of ideas between disparate social groups, most probably through mechanisms of trade and exchange. Whatever the precise reasons for these apparent transformations, what does appear clear is that the ideological foundations of this age rest, paradoxically, not with the introduction of bronze, but manifest themselves through the adoption of another novel artefact type - Beaker ceramics.

The Significance of Beakers

Before considering the apparent significance of Beaker ceramics it seems worthwhile to first establish the chronology of Beaker use in the region. Inevitably, this is linked to the wider chronological schemes that have been imposed on this peculiar type of artefact during the last century, schemes

which have either been derived from typological analysis (cf. Clarke, 1970; Lanting & van der Waals, 1972; Case, 1977), radiocarbon dating (cf. Kinnes *et al*., 1991), or a combination of these approaches (cf. Case, 1993). Taking the work of Clarke (1970), Ritchie (1970), and Ritchie and Shepherd (1973) it is, therefore, possible to place the Beaker material from the area within the typological schemes constructed over the last 35 years (Table 1).

Table 1: The typology of Beakers from the region

Clarke (1970)	**Lanting & van der Waals (1972)**	**Case (1977)**	**Case (1993)**	**Sites within the region**
AOC	Part of Step 1	Early	Style 1	Newby Hill Cairnholy II Kirkburn
E, W/MR, N/MR, BW, E.ANG, N/NR, NI/D, N2	Part of Step 1, Steps 2, 3, 4	Middle	Style 2	Cairnholy I Cairnholy II High Banks Farm Kirkburn Gawin Moor
N3, N4, S1, S2, S3, S4, SH	Steps, 5, 6, 7	Late	Style 3	Auchencairn Mainsriddle Lochhill
UNCLASSIFIED				Mollance Stroangassel Slewcairn

This suggests that stylistically the Beakers from the area fit comfortably within a wider intra-regional setting, as Case's (1993) styles 1 and 2 dominate the limited assemblage. It is these styles which are representative of Eastern Scotland, the Western Isles and North East England, areas where Beaker form and decoration were apparently influenced by earlier and later Neolithic pottery styles from Britain and Ireland (Case, 1993). Of particular significance for determining the introduction of Beakers into the region are the vessels that may be classified, after Clarke (1970), as AOC and European Bell Beaker forms. The traditional dating for these styles is placed at the beginning of the Beaker sequence (Clarke, 1970; Lanting & van der Waals, 1972; Case, 1977), but as Case (1993: 260) points out 'they are best seen as one early group among others'. In the region this early date is, however, confirmed by the association of European Bell Beakers with Peterborough ware in the Cairnholy I antechamber (Piggott & Powell, 1949), and through the association of AOC Beaker sherds with Carinated Bowls and Grooved Ware at Kirkburn (Cormack, 1963). Using Case's (1993) scheme and the evidence from radiocarbon dating (cf. Kinnes, *et al*., 1991) this may indicate their introduction as early as c.2600 cal. BC. Following this date the duration of Beaker use in the area is far from clear. Certain styles are present which, if the traditional typologies were adopted, indicate the continuation of Beaker use until the end of the Beaker period. Unfortunately, this terminal period is hard to define in radiocarbon terms due to a 'wiggle' in the calibration curve around c.2000 cal. BC, but as Needham (1996) notes, in discussing the evidence from the British Isles, Beaker use does decrease after this date as a consequence of the adoption of other ceramic types, and this observation is probably also relevant for Dumfries and Galloway.

Having established a possible period within which Beakers were used, an analysis of their depositional context becomes essential since this suggests a number of probable ideological shifts that might have occurred during this formative period (Table 2).

Table 2: Beaker contexts (after Ritchie, 1970; Ritchie & Shepherd, 1973; Masters 1981)

SITE	**NGR**	**BEAKER STYLE** (after Case, 1993)	**CONTEXT**	**FUNERARY DETAILS**	**ASSOCIATED ARTEFACTS**
Auchencairn	NX943913	3	Round mound containing 3 cists, one with a Beaker		Flint knife
Kirkburn	NY130832	1 & 2	Some sherds deposited in pits		In 'pit 9' associated with Grooved Ware
Newby Hill	NY169648	1	Single sherd found in sand dune		
Cairnholy I	NX517538	2	Located in blocking of forecourt & inside the chambered tomb	Cremation?	Flint knife & Peterborough Ware
Cairnholy II	NX517538	1 & 2	At least 6 vessels found in antechamber of the tomb		
High Banks Farm	NX704495	2	In a cist	Inhumation burial	
Mainsriddle	NX947565	3	In a cist	Crouched inhumation	Bone ring
Mollance	NX777663		Central cist of round mound		Food vessel
Slewcairn	NX924614		Secondary Beaker deposits associated with the cairn		
Lochhill	NX969912		Secondary Beaker deposits associated with the cairn		
Gawin Moor	NX942912	2	Central cist of round mound		Flint knife
Stroangassel	NX605873		Found in bank of River Ken		

The available information suggests that Beakers were probably used in a variety of situations. In some instances, Beakers may have been connected to domestic activities. At the site at Kirkburn, for example, Beaker sherds were found associated with a series of pits which were possibly linked to some form of early habitation (Cormack, 1963). The precise function of this pottery within a seemingly domestic sphere is, however, uncertain, but if

the apparent significance connected to Beakers, through their discovery at identifiable ritual sites, was transferred to the 'home', it seems probable that certain ritual connotations may also be transferred. In this sense, a proportion of the pits within which the pottery were found may relate to forms of structured deposition, connected to rituals which occurred within the confines of the settlement, although more mundane forms of deposition, such as rubbish disposal, are also entirely possible.

At other locations Beakers appear to be more intimately connected to sacred concerns. For instance, some form of ritual activity may explain the presence of a Beaker in the bank of the River Ken where, like earlier items of material culture, this object could have been used to denote the importance of this natural feature (cf. Gregory, 2000). On the basis of this single context it is, therefore, possible that Beakers were merely integrated into pre-existing ideologies or worldviews and, in this sense, they were just another, different, artefact which were utilised in Neolithic ritual practice. Certain ideological shifts are more readily detectable, however, when the predominant context of Beakers is considered. This context relates to funerary practice, and would appear to encompass a selection of different mortuary sites that were deemed appropriate for Beaker deposition. These sites include pre-established chambered tombs such as Cairnholy I, where a Beaker was inserted into the antechamber of the tomb. Beaker sherds also appear to be associated with material used in the blocking of the tomb (Piggott & Powell, 1949). At the other chambered tombs in the region a similar pattern emerges, as at least six Beaker vessels were found in the antechamber of Cairnholy II, deposited a short distance away from a probable hearth (Piggott & Powell, 1949), whilst at the tombs of Slewcairn and Lochhill, secondary Beaker deposits were found associated with the covering mounds (Masters, 1973; 1981). Again, as at Cairnholy I, the tomb forecourts of these three monuments were also deliberately blocked, and this blocking may well relate to Beaker activity. Beaker deposition within cists associated with single inhumation burials, as discovered at High Banks Farm and Mainsriddle (Ritchie, 1970), constitutes another category of Beaker, mortuary, deposition. A similar pattern of deposition is also replicated within a final category of Beaker funerary site, characterised by the sites at Mollance (Wallace, 1952) and Gawin Moor (Ritchie, 1970). In these examples the burial cists were covered by round mounds.

Although these three different sacred contexts appear superficially different, it seems probable that similar ideological practices were attached to them. The traditional Neolithic monuments were transformed architecturally. The tombs were blocked, denying direct access to the dead and, perhaps significantly, to an architectural form such as a forecourt that could have been used explicitly for the acting out of rituals, which appears an important element of earlier, Neolithic, life. This separation-through-sealing was echoed in the actual form of the round mounds and cists, where no architectural provision is made for such rituals. The evidence derived from excavation also suggests that ritual deposits, which were found at the earlier chambered tombs, were absent from these later monuments. In this way, the treatment, or perception, of the dead and their subsequent incorporation into the lives of the community appears to have altered. With this change of emphasis, Beaker funerary sites were not used as a means of explicitly structuring society through sustained ritual activity, as was the case during the Neolithic (cf. Gregory, 2000). Effectively the power of the communal monument became peripheral, with both traditional monuments, albeit in a transformed state, and novel monuments reflecting an ethos that largely excluded the commu-

nity. Effectively these monuments were cenotaphs, but little else. As a corollary to this, of course, it becomes necessary to inquire into those sites which replaced them; to identify those significant localities which functioned, as the communal monument had functioned, as a fixed locality for societal interaction. At present, though, these localities and the social life which they mediated during this transitional period remain unidentified.

The Earlier Bronze Age (EBA/MBA) c.2300-1150 cal. BC

Whilst a significant feature of the earlier Bronze Age is an increase in the archaeological evidence that may be used to reconstruct prehistoric society, it was also a period which was characterised by identifiable changes within the natural environment. The beginning of the period appears to have coincided with a phase of climatic deterioration, at c.2300 cal. BC, followed by another major deterioration at 1650 cal. BC, as derived from dendrochronology and bog humification levels (cf. Barber, 1982; Baillie, 1995). These deteriorations appear, however, to have had little effect upon anthropogenic clearance which continued in the lowlands and was sustained throughout the earlier Bronze Age, as evidenced from numerous pollen sites in the region (*inter alia*; Nichols, 1967; Birks, 1972; Jones *et al*., 1989; Tipping, 1995). Indeed, in the uplands, Tipping (1997: 10) suggests that the first farmers exploited this area 'in the face of a widely recognised and apparently substantial climatic deterioration, after c.2250 cal. BC'. The intensity of these clearances in the lowlands and uplands is uncertain, but their scale on palynological grounds, although sustained, was not of the magnitude which would occur during the latter half of the first millennium BC. Its significance, though, should not be underestimated, as it may in part have been responsible for the initiation of soil degradation within the upland environment, particularly in the Galloway Hills where localised deposits of blanket mire appear to have been developing (cf. Jones *et al*., 1989).

It was against this backdrop of environmental change that certain ideas, and beliefs, fundamental to Bronze Age society were effectively acted out. In part, these ideas and beliefs relate to the processes of living, to the products of manufacture, to the treatment and significance of some of those products, and to the creation of settlements. But in part, too, they relate to the processes of dying and the treatment of the dead by the living.

Death, monuments and ceramics

During the earlier Bronze Age the treatment and disposal of the dead forms an important, identifiable, component of the archaeological record. The evidence is present in the form of funerary sites and their associated artefactual deposits, which were in the main ceramics. Initially, until c.2000 cal. BC, Beaker ceramics were still used in this context, but these were eventually replaced by alternative ceramic forms, notably Food Vessels, Collared Urns and Cordoned Urns, which were intimately connected to the disposal of corporeal remains. Despite the declining use of Beakers the ideological themes connected to their deposition seem, however, to have been retained and in some respects amplified.

Unfortunately, when assessing the evidence derived from Food Vessel deposits there are certain problems associated with the study of this ceramic type, notably the absence of a

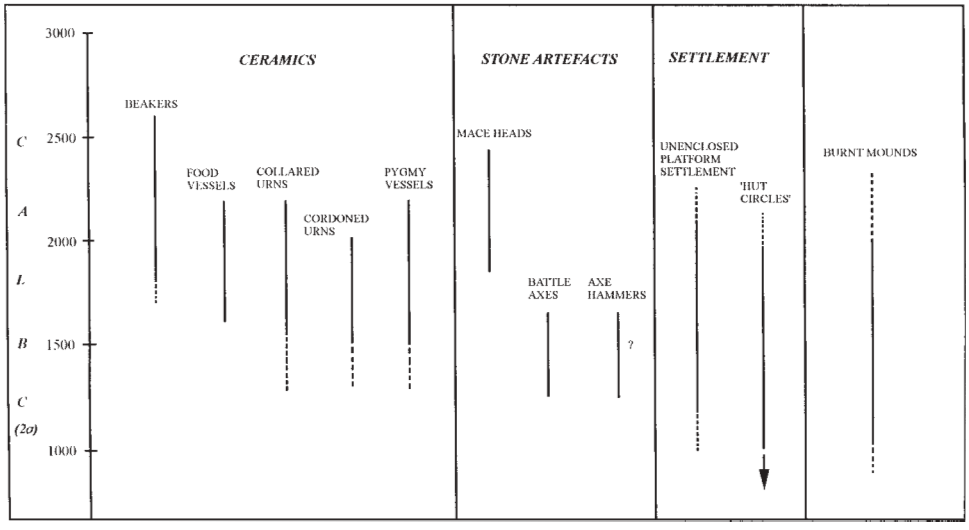

Figure 1: suggested chronology of artifacts and structures.

secure typology and chronology. In terms of typology, regional groups have been identified but at present it can only be assumed that these styles are of a similar date. The classification of these regional groups has been based upon form with a division being made between Vases and Bowls. Three major types have been identified: the Yorkshire Vase; the Irish Bowl; and the Irish Vase (Simpson, 1968). The decorative techniques applied to these differing forms is more complex and rich in Ireland, with simpler designs being applied to the English examples (Burgess, 1974; 1980). The Scottish examples, however, appear to represent an amalgamation of these two decorative styles (Burgess, 1974; 1980). Initially these three types were seen as contemporary with the two phases of the 'Wessex Culture' (Simpson, 1968). Similarly, Burgess (1986) argues that Food Vessels span his 'Fargo' and 'Bush Barrow' phases, which would indicate a chronological span somewhere between c.1800 - 1450 uncal. bc. When assessing the available radiocarbon dates from Scotland a long tradition may also be envisaged, since the main weight of the dates suggest a currency falling, probably somewhere, between c.2200-1600 cal. BC (Gregory, 1998). This would place the Food Vessel tradition broadly contemporary with the latter stages of Beaker ceramics and with the beginnings of the Collared and Cordoned Urn series (Figure 1). Unfortunately in the region no radiocarbon dates are available for Food Vessels, though there is no reason to believe that they may lie outside this general chronology.

The ancestry of these vessels is also unclear, but it has been argued that the Irish types were derived from a Beaker background, and that the Irish Vase may have evolved in north-east Scotland before being introduced to Ireland (Simpson, 1965). Conversely, the English forms, notably the Yorkshire Vase, are viewed as descendants of a northern Peterborough Ware tradition (Burgess, 1980). Presumably, these decorative techniques also influenced the Irish types found within south-west Scotland, of which two Irish Vases and three Irish Bowls are known from the immediate region. The remaining examples consist of two Yorkshire Vases, one Beaker Food Vessel, and three unclassified examples (Childe, 1946; Simpson,

1965). The majority of these vessels occur with cremation burials, which suggests that this was the predominant funerary rite associated with their deposition. There is only one example, from Kirkburn, where the presence of an inhumation is suggested due to the high phosphate levels associated with the Food Vessel burial (Cormack, 1963).

Collared Urns form a more substantial element of Bronze Age funerary practice, with seventeen examples known from the region usually associated with a cremation burial. In form these vessels comprise a characteristic collar, and it is possible that the initial form of the pot, and the decorative techniques applied, were derived from the later stages of the Peterborough Ware tradition (Longworth, 1984). The study of this ceramic type has been extensive (cf. Abercromby, 1912; Butler & Smith, 1956; Longworth, 1961; 1970; 1984; Morrison, 1968; Burgess, 1986), although presently two slightly differing typological schemes are favoured, which may have some relevance for the material from the region.

The first devised by Longworth (1961; 1970; 1984) divides the Collared Urns from the British Isles into a *primary* and *secondary* series, a division which is dependant on vessel form and decorative traits. Longworth (1984) further suggests that the Collared Urns probably date, on the evidence of radiocarbon determinations to the period c.1800-1000 uncal., but he could suggest no firm break between the primary and secondary series, observing merely that the bulk of the secondary series belonged to a later stage of the tradition. Recently, based on the radiocarbon dates from the cremation cemetery at Ewanrigg, Cumbria (Bewley *et al*., 1992), Longworth (1992) argues, however, that the Collared Urn tradition in Northern Britain may span the period 1750-1450 uncal. bc [c.2200-1520 cal. BC (2 sigma)].

A second scheme has been advanced by Burgess (1986). He suggests that the main weight of radiocarbon dates, alongside evidence of artefact association, indicates a Collared Urn tradition stretching from the 18th to 13th centuries uncal. bc. Burgess (1986) is also critical of Longworth's primary and secondary traits, which he regards as too simplistic for a ceramic tradition spread over 500 radiocarbon years. He therefore divides Collared Urns into three separate groups, again based upon vessel form and decorative traits. These divisions comprise an *Early Group*, dating between c.1800 - 1600 uncal. bc; a *Middle Group*, dating between c.1600 - 1450 uncal. bc; and a *Late Group*, spanning the period c.1450 - 1250 uncal. bc. Significantly, this re-analysis led Burgess (1986) to suggest that there is a notable lack of Early urn types from Northern Britain, indicating that the tradition was not established there until c.1600 - 1450 bc. He correlates this appearance with a corresponding decrease in the use of Food Vessels.

Using Burgess's scheme it is possible to reclassify the Collared Urns within the region (Table 3).

Table 3: Collared Urns contexts and associations (data from Morrison, 1968: Hodgson, 1975; Russell-White *et al*., 1992; Speller, 1994; Johnston, 1994; Thomas, *forthcoming*)

SITE	**NGR**	**URN GROUP** (after Burgess, 1993)	**CONTEXT**	**CREMATION DETAILS**	**ASSOCIATED ARTEFACTS**	**C14 DATE**
Kirkburn	NY130832	Early	Inverted in a cist	Contained remains of a juvenile	Flint knife	
Gateslack	NS891023	Early	?	?	?	
Palmerston	NX973764	Middle	Inverted in a pit	?		
Palmerston	NX973764	Middle	Inverted in a pit	?	Flint scrapper	
Palmerston	NX973764	Middle	Inverted in a pit	?		
Palmerston	NX973764	?	Upright in a pit	?	Accessory cup	
Carronbridge	NX869978	Middle	Inverted in a cist	1 adult; 3-12 yrs old child: an infant		
Carronbridge	NX869978	?	In a cist	Juvenile not older than 15 yrs		1000 ± 50 bc
Dinwoodie Green	NY107883	Middle	Found inverted within a middle group urn	Contained a cremation	Stone lid	
Dinwoodie Green	NY107883	Middle	Inverted over a middle group urn. Touching a late group urn			
Dinwoodie Green	NY107883	Late	Inverted in a cist			
Dinwoodie Green	NY107883	Late	Upright, touching a middle group urn.	Contained a cremation		
Burrance	NY090858	?	?	?	?	
Wylies Wood	NX978602	Late	Inverted under a round mound	Contained a cremation	Clay lid; flint scrapper; bone pin	

Table 3, continued

Park of Tongland	NX669609	Late	In a stone cist	Contained cremation burial and pyre debris	Perforated bone plate; accessory cup	1530 ± 50 bc
Park of Tongland	NX669609	Late	Found on its side within a pit	Contained cremation burial and pyre debris		1610 ± 50 bc
Goldie Park	NX966769	Late	?	Contained a cremation	Associated with possible Cordoned Urn	
Dinwoodie Mains Farm	NX104905	?	Within a pit	Burnt bone present		
Dinwoodie Mains Farm	NX104905	?	Within a pit	Burnt bone present		
Dinwoodie Mains Farm	NX104905	?	Within a pit			
Picts Knowe	NX953721	?	Located within the entrance of a henge monument	Burnt bone present		

Although there are a number of problems in applying this scheme at a regional level (cf. Gregory, 1998), which is compounded somewhat in South-West Scotland as, 'so little is known about the evolution of the local ceramic traditions' (Russell-White *et al*., 1992: 319), it is possible to formulate a generalised chronology of use. At a minimal level the available typological and radiocarbon evidence suggests that within Nithsdale and Annandale the Collared Urn tradition was adopted at an early stage, due to the presence of two Early urn types. This corresponds with the beginning of the tradition within Southern Britain and may indicate a date range somewhere between c.1800 - 1600 uncal. bc. A later date for adoption, though, may occur further west in Kirkcudbrightshire. The tradition probably then continued as indicated by finds of Middle and Late urn types though both styles appear, based on the associations found at Dinwoodie Green Farm (Hodgson, 1975), to have been used in *both* periods making chronological division uncertain. In these circumstances it is, perhaps, best to group the Middle and Late urn types together and to suggest that they may have been in use between c.1600 - 1250 uncal. bc.

In reviewing the funerary contexts and the associated objects the individual Collared Urn deposits share many similar characteristics (Table 3). The majority are inverted over the cremation deposit within a pit, which itself may be a stone lined cist. The burials associated with the urns provide evidence of both single interment, as at Kirkburn (Cormack, 1963) and the Park of Tongland (Russell-White *et al*., 1992), and multiple interment within the confines of a single vessel, as evidenced at Carronbridge (Johnston, 1994). Indeed, it is possible that this practice of multiple interment was widespread, but unfortunately little work has been undertaken on these cremation deposits, perhaps because of the degree of comminution. In some cases, associated grave goods are also found with the urns. At Kirkburn

(Cormack, 1963), Palmerston (Shirley, 1932) and Wylies Wood (Morrison, 1968), urns were associated with flint artefacts, and at the latter a bone pin was also found. Other bone artefacts include a perforated bone plate found in association with one of the Collared Urns at the Park of Tongland (Russell-White *et al*., 1992). Accessory cups, or Pygmy Vessels, are also associated with Collared Urn deposits, since urns from Palmerston (Shirley, 1932) and the Park of Tongland (Russell-White *et al*., 1992) were deposited with them. This association was not, however, universal as Pygmy Vessels at times appear associated with unurned cremations, as evidenced at the Whitestanes Moor cremation cemetery, in Dumfriesshire (Scot-Elliot & Rae, 1967).

Cordoned Urns associated with early burials are also found in the region. In form they closely mirror examples found within the Cordoned Urn zone of Northern and Western Britain and Ireland (Kavanagh, 1976; Burgess, 1980; Waddell, 1995), in that they are characterised by one or two horizontal cordons, with minimal decorative traits, which are usually of fairly simple design (Burgess, 1980). Piggott (1963) originally suggested that the origins of this ceramic style lay with the Late Neolithic ceramic traditions whose distribution extended over parts of Scotland and Ireland. In a recent reassessment a similar conclusion was reached, based upon the evidence from the cremation cemetery at Eagleston Flat, Derbyshire (Barnatt, 1994). Thus, the Cordoned Urn tradition, from Derbyshire at least, is viewed as reminiscent of both the Grooved Ware and Peterborough Ware traditions, with some Beaker influence, and it seems possible that these influences affected Cordoned Urn styles further north. Chronologically, the available radiocarbon dates from Britain and Ireland suggest a tradition which appears broadly contemporary with the Collared Urn series (Gregory, 1998). The tradition may continue, however, into the later Bronze Age if the examples found within domestic contexts are considered comparable. In the region, although no radiocarbon dates are available, one example at Shuttlefield was found associated with a Class Ib razor (Morrison, 1968), which suggests a date at the end of the Early Bronze Age.

The precise function of the Cordoned Urn is not particularly clear, but it may have been used in both domestic and funerary contexts. Burgess (1980) suggests, *via* comparison with Deverel-Rimbury wares of Southern England, that the plainer forms may have been used as domestic wares in the latter part of the second millennium bc. There is some support for this suggestion from the material recovered from an unenclosed platform settlement at Green Knowe, Peeblesshire (Jobey, 1980), while both Halliday (1985) and Smith (1995) also highlight the similarities between domestic pottery from Scottish Bronze Age settlements and Cordoned Urns. In the region, however, the only known contexts for Cordoned Urns are a funerary one. These burial contexts are similar to other cinerary urn deposits, in that Cordoned Urns are found associated with both round mounds and flat cemeteries. The discovery of Cordoned Urns with a razors/knives is also represented in the examples from Kirkburn (Cormack, 1963) and Shuttlefield (Morrison, 1968), and this kind of association appears to be a universal trait found throughout the British Isles and Ireland (Piggott, 1963; Kavanagh, 1976), although the significance of this is still unclear.

These varying funerary ceramics did not, however, exist in isolation. They were connected to, and placed within, a limited set of particular monuments. In general three broad contexts may be identified: vessels which were placed in pre-established monumental forms,

notably chambered tombs, stone circles, and henges: vessels within unenclosed and enclosed cremation cemeteries; and finally vessels within round cairns and round earthen mounds.

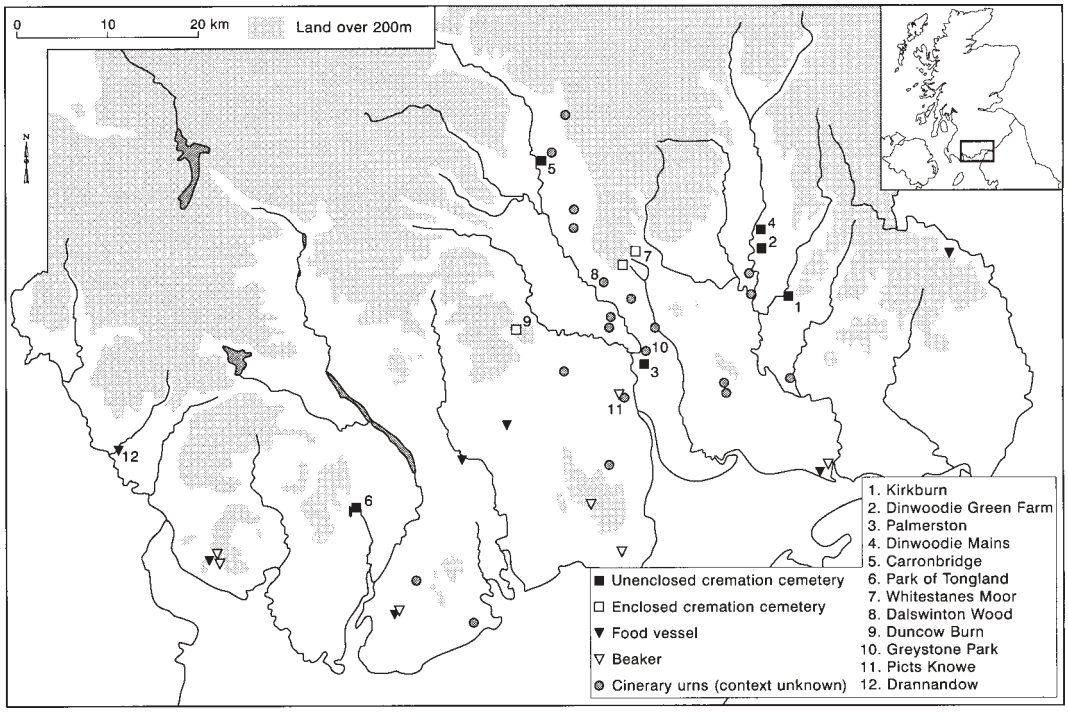

Figure 2: cremation cemeteries and unassociated vessels.

Unenclosed cremation cemeteries are generally confined to the eastern portion of the region located largely in the river valleys (Figure 2), but this distribution probably relates in some measure to their ease of discovery in this type of landscape. It is in these cremation cemeteries that the majority of Collared and Cordoned Urns are found, which probably indicates some loose correlation. In total five examples have been excavated. These include the cemeteries at Palmerston (Shirley, 1930), Dinwoodie Green (Hodgson, 1975), Dinwoodie Green Farm (Speller, 1994), Carronbridge (Johnston, 1994) and Kirkburn (Cormack, 1963). The latter site, however, provides the most significant detail concerning the cremation cemeteries of the region. Excavation revealed a complex arrangement of both cremation and other forms of deposition spanning the Late Neolithic and Early Bronze Age. The earliest phase may represent a Late Neolithic/Beaker period settlement or habitation area (Gregory, 2000), which was associated with ritual activity in the form of two cremation burials and separate deposits of Carinated Bowls, Grooved Ware, Beaker Ware, flints and hazel nut shells. A second phase comprised urned and unurned cremation deposits, and also the deposition of funerary urns without the presence of cremations. The ceramic types included Food Vessel, a Bipartite Urn, a Collared Urn and a Cordoned Urn which appear to have

been arranged, along with some small pits, around a large central oval pit 2.74m by 1.37m wide which may have contained an inhumation burial (Cormack, 1963). The only dating evidence from this pit came from a few comminuted sherds of possible Food Vessel. Although the excavator considered at the time from the plan and section that this oval pit might have held a body in a lightly built boat of wattle and skin, he thought such was too far-fetched to mention in the report (W F Cormack, pers comm). However the discovery over a decade later of a definite inhumation burial in a 'coracle' in a somewhat similar pit (2.32m by 1.15m) in an Early Bronze Age cemetery at Dalgety in Fife (Watkins et al; 1982) has rendered it quite possible that a similar boat burial is located in Annandale. Moreover, Kirkburn is at the edge of what was an extensive area of loch and fen until recent times (Bishop, 1963). The importance of Kirkburn also rests in its longevity, but its function, like many other Neolithic sites, appears to have been deliberately altered during the Bronze Age. A similar kind of site has also been excavated at The Park of Tongland. Here a flat cemetery defined by two standing stones and a series of pits, some of which contained Collared Urns and associated deposits 'evolved into a kerbed cairn with additional standing stones' (Russell-White *et al*., 1992: 321). Again this site appears significant due to its multiperiod construction, which was linked most probably to the veneration and alteration of a particular locality over an extended period of time.

Other types of cremation cemeteries are classified as enclosed (Figure 2). These are characterised by sites such as Whitestanes Moor where seven unurned cremation burials, one cremation burial associated with a Pygmy Vessel, and two pits which showed evidence of burning, were located within a stone banked enclosure (Scott-Elliot & Rae, 1965). Other features included a series of postholes, supporting timber uprights, found immediately to the east of the cemetery, though what these structures represent is not clear. Other examples of this kind of site have tentatively been recognised at Dalswinton Wood and Duncow Burn, but a potential problem with identification concerns site morphology as this shows many similarities with hut circles from the area. It is possible, therefore, that the hut circles found within areas of cairns and small cairns, may in fact represent the remains of unenclosed cemeteries, and it is perhaps only with geophysical survey, or excavation, that these functional questions may be directly addressed.

These types of enclosed cremation cemeteries, such as that at Whitestanes Moor, are essentially found in areas where there was an availability of stone for the construction of a bank to demarcate a particular form of sacred space. These are also areas where later agricultural interference has been minimal. In other locations, where these circumstances do not apply, such as the lowland landscape in the eastern part of the region, enclosed cremation cemeteries may be present as crop mark sites in the form of ring-ditches (Figure 2). Several of these have been located from aerial photographs, but the evidence from this one source is unfortunately problematic. In size and form they appear as circular ditched sites, ranging from 5m to 25m in internal diameter. In some examples an entrance may also be detected. These smaller ring-ditch sites with a clear entrance may represent enclosed cremation cemeteries similar to other examples excavated in Scotland, such as Balneaves, Angus (Russell-White *et al*., 1992), Ratho, Edinburgh (Smith, 1995), and Loanleven, near Perth (Russell-White *et al*., 1992), but the construction and use of small circular enclosures lasted over a very long period of time. Judging by their location, lack of entrance way and a central pit, some of these ring-ditches could be the remains of earthen round mounds, while

other examples may constitute unenclosed house sites. Where they are found close to Roman military installations, such as those in the vicinity of the forts at Dalswinton and Glenlochar, the ring-ditches might be the remains of Roman signal stations. Other examples, however, may also represent elements of later cultural landscapes dating, perhaps, as late as the Medieval period, such as the ring-ditch excavated at Hayknowes Farm, near Annan (Gregory, *forthcoming*). Excavation appears, therefore, to offer the only direct solution in determining the precise function of the majority of ring-ditches, and hence they may be mapped as only a *possible* element of the Bronze Age landscape of the region.

The most prolific Bronze Age funerary monuments found in the area, however, may be classified as round mounds, and these can be divided into two groups, round cairns and earthen round mounds, which largely reflects the materials available for their construction.

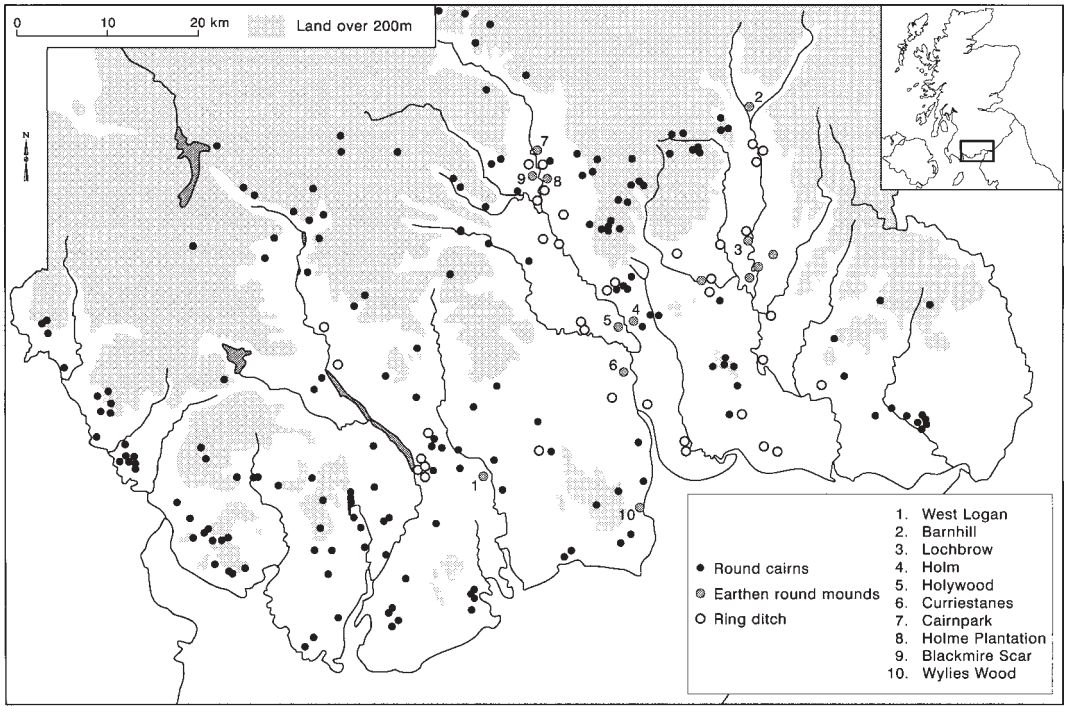

Figure 3: burial cairns, mounds and ring ditches.

Round cairns constitute the majority of the round mounds within the area (Figure 3). They consist of a round stone cairn, ranging between 8-25m in diameter. In some cases, they cover single or multiple cists. The few-recorded instances of inhumation burial also belong to this grouping. Generally, however, cremation appears the dominant burial rite, and multiple cremation burials are known from various sites. These cairns, and the cairns from south-west Scotland as whole, have been analysed by Yates (1984a). He observes that the monuments appear to correlate with the deposition of Food Vessels. The evidence from

Dumfriesshire and Kirkcudbrightshire, including the evidence from earthen round mounds, is broadly compatible with Yates' description, though Beakers and Pygmy Vessels appear also to share a depositional link with round cairns. In dating terms, therefore, they appear to be initiated in the Late Neolithic/EBA transition continuing, and perhaps becoming more prevalent, during the earlier Bronze Age proper. Yates (1984a) also observes that the only common positional feature of the round cairns is a raised location, which may highlight the visual importance of this monument type. He suggests that most cairns occur at low altitudes, between 30-152m OD. Distributionally, a denser patterning is found in the west which becomes more dispersed moving eastwards (Figure 3). He also notes a number of cairn clusters which, in some cases, may be explained by the presence of other monument types. The cluster in the Drannandow area, which is associated with an earlier chambered tomb, a stone circle, and standing stones, is one of the better examples of this favoured location hypothesis. Associated with many of these larger funerary cairns are numerous small cairns, or cairn fields. Their function and date is unclear, but they may conceivably be a product of agricultural activities, although other functions might also be suggested (cf. Dunwell *et al*., 2000).

The second class of round mound is the earthen round barrow. The identification of these monuments has relied largely upon aerial photography and careful field observation. Their distribution is confined to the lowland areas within the eastern portion of the region, where they are present as crop mark sites (Figure 3). They are detectable in most cases by an encircling ditch, which has no entrance, and by the presence of a central pit. At West Logan, Kirkcudbrightshire (Page, 1989), and Barnhill, Annandale (RCAHMS, 1997), the barrows are, however, defined by double ditches, and it is possible that these examples may 'mark the site of…large barrow(s), constructed in two phases with a small barrow subsumed within a larger mound' (Cowley & Brophy, 2001: 58). The dating of round mounds or barrows across Northern Britain is generally regarded as Bronze Age. In the region although there is only one earthen round barrow at Wylies Wood which has produced any dateable artefacts (cf. Morrison, 1968) an Early Bronze Age date for the majority of examples is also possible. Other ring-ditches, whose function is less clear, may also constitute the remains of earthen barrows since they lie close to Neolithic monuments. The clustering of round mounds around cursus monuments within Southern Britain has been well documented (Bradley, 1993; Barrett, 1994), and the presence of ring-ditches in the vicinity of the cursus monuments at Lochbrow, Holywood, Holm and Curriestanes may imply a similar patterning for south-west Scotland. At Lochbrow it may be significant that an apparent round barrow is positioned close to the terminal of the pit defined mortuary enclosures. Associated features found with a number of the barrows also include 'C-shaped' enclosures, as at West Logan (Page, 1989), Lochbrow and Holm, but their function, if they are not the more degraded remains of earthen barrows, is not clear. Another notable feature of many of these destroyed earthen barrows is that they cluster into apparent barrow cemeteries. The aerial photographic campaigns of the RCAHMS have identified four barrow cemeteries at Barwhill, Kirkcudbrightshire, and Cairnpark, Home Plantation and Blackmire Scar, all situated in Dumfriesshire. A component of these sites, at Barwhill, Blackmire Scar and Home Plantation, is a grouping of square barrows, while single examples may also be found at Lochbrow and Holywood (Cowley, 1996; RCAHMS, 1997). Traditionally, examples located further south would be considered to be Middle/Late Iron Age similar to the Arras burials of East Yorkshire (cf. Stead, 1991). Only excavation can determine whether the square barrows of Dumfries and Galloway are of a similar currency, or whether they are comparable in date to the Bronze Age round barrows.

Summary: The ideology of death and the transformation of the past

In summarising the evidence for the use of funerary ceramics and their association with particular monuments a number of indicators for ideological change may be identified. The first signs of this change begin with the evidence from the Late Neolithic/EBA transition, when Beakers were introduced. It seems likely that Neolithic monuments, though still significant places, had been ideologically altered to become localities which were used solely for the interment of the dead. This appears a dramatic shift, as monuments which were once significant in structuring and regulating the community now functioned merely as cenotaphs. This change is seen most dramatically in the blocking of the forecourt and façade areas of numerous chambered tombs. These alterations also correspond to a period when novel monuments to the dead first appear, in the form of round cairns and mounds. The ideology behind their construction appears similar to those connected with the transformation of 'traditional' tombs. For example, these funerary structures provide no architectural features for external ritual deposition and display, which may earlier have been important for social interaction and negotiation. Any rituals that were undertaken probably related, therefore, only to the initial interment. Although such rituals were perhaps important in mediating small-scale social relationships between the mourners involved in the rite, and those involved in the subsequent construction of the mound or cairn, they were probably limited in both scale and time.

This thematic shift appears to have continued and proliferated into the earlier Bronze Age. Then, the use and deposition of a variety of funerary vessels are found in sites such as round cairns/mounds and flat cemeteries. Food Vessels may initially have been significant, but they were gradually eclipsed by the Collared and Cordoned Urn tradition. Again, the sites in which these vessels are found probably functioned as markers for the dead, seemingly related to acts of rememberance and perhaps reverence, but to little else. It is not clear what these reverences were directed towards; whether, for example, they related to the individual, the community, or other supernatural forces. From the burial deposits of this period little may be concluded, but the idea of *community* may have been significant, and may be signalled in the discovery of both multiple cremations contained in single vessels and the occurrence of multiple vessels and burials in particular mounds and cemeteries.

These changes indicate that a very different view was taken of many traditional monuments and locations as the early Bronze Age progressed. They were, perhaps, no longer regarded as so important in wider societal processes. In the same manner that the power of the chambered tombs was commuted to only one small element of Bronze Age practice, other Neolithic sites and objects underwent a similar fate. At Cairnholy I, for example, a Food Vessel and rock art stele were inserted into the earlier tomb (Piggott & Powell, 1949). As Bradley (1992: 173) observes the rock art was probably moved from its original position in the wider landscape and was, 'no longer directed towards the outer world; now (it was) turned towards the corpse'. In these ways both symbols and monuments, which had held some significance to living communities during the Neolithic were now being incorporated into a different context - one which was intimately connected to death. At other traditional ritual sites similar processes may be detected. It may be significant, for example, that cinerary urns were placed within the confines of henge monuments and stone circles, as at Picts Knowe (Thomas, *forthcoming*) and Greystone Park (Morrison, 1968). This, perhaps, suggests that, just as the context of the earlier Neolithic tombs changed, a similar process

occurred at these later Neolithic monuments. At other sites such as Kirkburn (Cormack, 1963) the original ritual/habitation site was transformed into a flat cemetery, which again suggests a similar theme. At a broader landscape level too, these processes appear to be replicated. Round barrows and cairns were clustered around a number of Neolithic monuments, such as the cairns in the Drannadow area and the cursus monuments at Lochbrow and Holywood. This may suggest that the significance of these tracts of landscape had also shifted. In a manner comparable to the changes occurring at a monument specific level, their importance now resided as locations for the burial of the dead rather than as localities for the structuring of the living.

It appears then that monuments, sites, and even landscapes were altered and commuted to a single element of Bronze Age practice. A notable break was made with tradition, which may ultimately reflect a desire to erase or neutralise the power of the past, as manifest in the form of communal monuments and other significant Neolithic localities. Alternatively, these communities may have been actively drawing on this resource and in doing so converted, and reinterpreted, it to suit a new and ideologically different agenda. On this evidence alone, it appears that there was an absence of monuments, or places, which, as in the Neolithic, could have been used for the purposes of exchange and the structuring of society. These practices which are a fundamental tenet of any community did not, however, disappear. They were shifted to alternative arenas. It is only by considering the evidence for the activities and artefacts of the *living community* that the discovery of these processes may be made.

Artefacts and deposition

The remaining evidence for the earlier Bronze Age is derived from two sources. One of these is the evidence of settlement and its associated activities, signalled by small cairns and burnt mounds. This evidence will be considered later. The second form of evidence comprises artefacts and their depositional contexts. Initially this evidence appears a less tangible means of interpreting Bronze Age society, but it is through a close study of this material that certain elements of Bronze Age life emerge that were, perhaps, essential for the functioning of Bronze Age communities in the region.

Metalwork

The use of metalwork in the area may date on typological grounds from c.2300 cal. BC. From this initial date until c.1150 cal. BC the metalwork is varied. It is comprised throughout predominantly of a variety of early axe types, with some goldwork, and the later introduction of palstaves, dirks and rapiers, spearheads, and razors. A single dagger is also known. At the end of the earlier Bronze Age socketed forms of axes are introduced but proliferate chiefly during the later Bronze Age.

The dating of these varying types of metalwork is complex. It is based on a typological series developed largely in the post-war years by researchers such as Coles (1960; 1964; 1969) and, perhaps, most influentially Burgess (1974; 1979; 1980; 1986) who, in this context, reassessed the axes, dirks and rapiers from Northern Britain (Burgess & Schimdt,

1981; Burgess & Gerloff, 1981; Burgess & Colquhoun, 1988). In a recent review of these differing Bronze Age chronologies Needham (1996: 121) has, however, attempted to, 'take stock of the now vast quantity of radiocarbon results, as well as the few dendrochronological dates, and make judgements on those useful in creating an *independent regional chronology* for distinctive cultural elements'. In doing so he suggests five periods for the 'Metal Using Neolithic' and earlier Bronze Age. This scheme, based upon both radiocarbon dates and the evidence of association, effectively pushes back in time the metalwork stages envisaged by Burgess (1980). As it is an 'independent regional chronology' the dating for the metalwork may be more secure since it does not rely too heavily on dating *via* comparison with continental examples, and so it will be adopted in the following discussion.

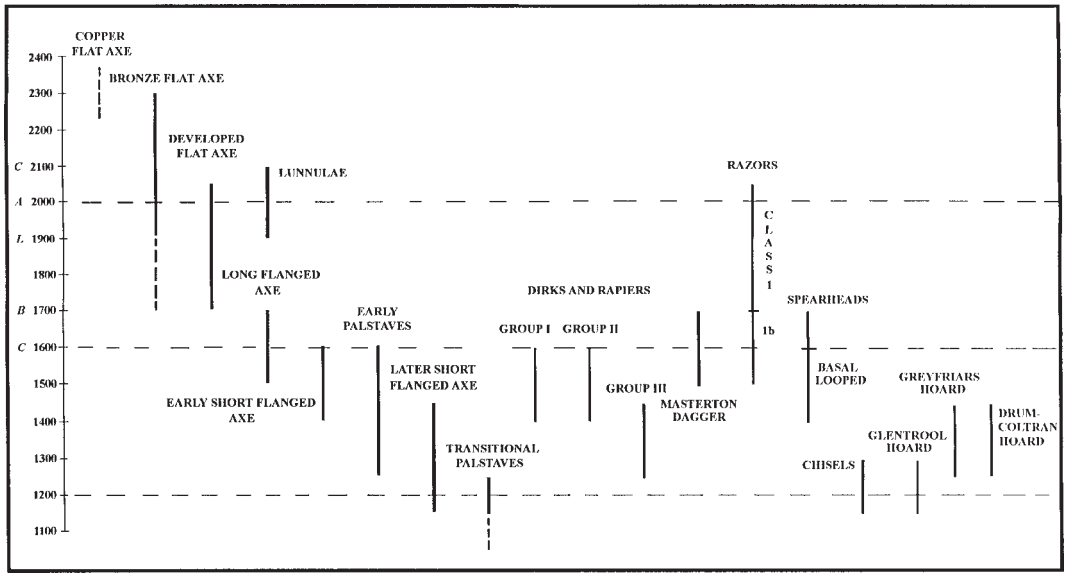

Figure 4: typology and suggested chronology of metalwork.

The typology and possible dates of metalwork from the area are shown in Figure 4. These suggest an origin in the late Neolithic or 'Metal Using Neolithic' (Needham, 1996) at c.2300 cal. BC evidenced by the find of a single Copper Flat Axe. This is a period that corresponds with the use of Beaker ceramics in the region, though Beakers appear to have been introduced at an earlier date. This Copper Flat Axe - like many of the Bronze artefacts from the study area - appears to be of Irish origin (Bally Beg/Roseisle Type), which may hint at the early introduction of this new technology from there. This link with Ireland was probably established during the Neolithic or earlier, and persisted throughout the Bronze Age (Gregory, 2000).

At a slightly later date Bronze Flat Axes, particularly the Migdale Type, came to prominence. These remained the standard 'tool' type throughout the Early Bronze Age. It is the

most prolific of EBA artefact types and its persistence may in part explain why Developed Flat Axes were not as common in the area (cf. Burgess & Schimdt, 1981). Other items of metalwork present in this formative period include Class I razors and one example of a gold lunula, from Auchentaggart (Taylor, 1979). Both of these date to the period when Cinerary Urns and Food Vessels began to be utilised in burial rites and when the influence of Beaker ceramics was dwindling or had ended (cf. Needham, 1996). The presence of a lunula in the area may be significant as it has been noted that, in Ireland, their distribution avoids areas where Beakers are found. They may, therefore, represent a deliberate attempt to neutralise the 'Beaker influence' (Clarke *et al.*, 1985). These ideas may, in part, explain the limited adoption of later Beaker ceramics in the region after c.2000 cal. BC.

After c.1700 cal. BC and when entering the MBA period at c.1600 cal. BC, metalwork diversifies and increases in the region. This was perhaps a period when the use of Food Vessels had ended but cinerary urn use continued. It is also a period when the first evidence of possible permanent settlement is available. Flanged axes, palstaves, dirks and rapiers, spearheads, chisels, razors and a single dagger example are all found within the region from c.1700 cal. BC onwards until the end of the earlier Bronze Age. Another significant feature within the region dating to the end of the earlier Bronze Age is the deposition of metalwork hoards (Bradley, 1990; Cooney & Grogan, 1994) which along with other artefactual contexts may provide numerous insights into landscape perception and ideology of this era.

Stone

The use of bronze within the region is relatively restricted. The use of stone for the manufacture of artefacts, however, continued and appears as prolific as in the Neolithic. The typical stone artefact types of the period include shaft hole implements - such as mace heads, battle-axes and axe-hammers - and the continued use of flint for a variety of tool types. Flint tools, however, are restricted in number and are confined largely to the lowland areas where they occur as single finds or scatters. Other stone artefacts, particularly the shaft hole implements, are, however, more widely distributed and their dating more secure.

Of these the earliest form of shaft hole implement appears to be the mace head. Smith (1979) suggests, through association, a chronological span for the utilisation of mace heads falling between c.2000-1550 uncal. bc (c.2450-1850 cal. BC), a date range corresponding roughly to the Beaker period. Typologically, Roe (1968) identifies three forms of mace head; ovoid, pestle and cushion head maces. Of the limited examples found in the region the ovoid form predominates (Roe, 1967). Their function, however, is problematic. In discussing the examples from the Orkneys, Simpson and Ransom (1992) view them as ritual objects incorporated in both funerary and domestic contexts. Within the region the all-important context is, however, missing but *via* analogy a ritual function for these objects could be possible.

The other shaft hole implements found within the region are battle-axes and axe-hammers. In form these artefacts are essentially similar. They consist of a stone implement with a hammer face at one end and a blade at the other. Implements less than 190mm long and 80mm broad are classified as battle-axes. Those greater in either dimension are classified as

axe-hammers (Roe, 1966; 1979). The chronology of battle-axes has been discussed by Smith (1979) who suggests that they were used between c.1650 - 1250 uncal. bc (c.1900-1450 cal. BC). This period corresponds to the use of Food Vessels and cinerary urns within the region. Axe-hammers, unfortunately, have no secure contexts but are dated, *via* analogy with battle-axes, to a similar period. Within the region the types present have been classified as early, intermediate-developed battle-axes and class I axe-hammers, with some decorated examples (Roe, 1966, 1979).

The distribution and context of bronze and stone artefacts

The distribution of bronze and stone artefacts is inevitably biased, as it may be the case that post-depositional factors, the distribution of field workers, and recent agricultural improvement, has produced the apparent spatial patterning. At most, therefore, the distributions reflect only a proportion of the landscape areas which may have been significant to Bronze Age communities. Turning first to the stone objects, these reveal a wide distribution which is due largely to the prolific spread of axe hammers across the region (Figure 5). Indeed, it has been argued that, for Scotland as a whole, the concentration of these artefacts in the south-west is of such magnitude that they may represent an original prehistoric spatial feature (Fenton, 1988). As with Neolithic material in the region the distribution of axe-

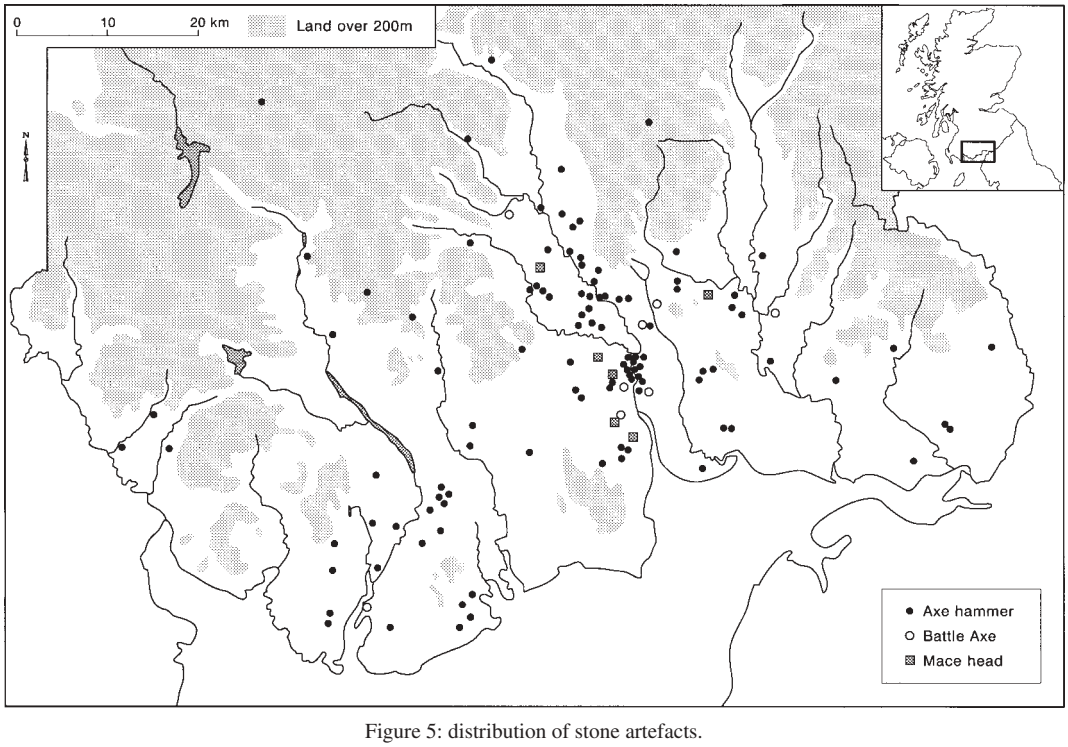

Figure 5: distribution of stone artefacts.

hammers is found predominantly in the lowland areas (cf. Gregory, 2000). Notable concentrations are found around the Kirkcudbright/Gatehouse of Fleet area, stretching inland to Castle Douglas and, as with the Neolithic material, Nithsdale again appears significant. The densest concentrations are found here, particularly around Dumfries and in the Thornhill area, which are also important for the distribution of battle-axes and mace heads. The evidence suggests, therefore, that it was these tracts of lowland landscape which were important in terms of habitation to earlier Bronze Age communities just as they appear to have been significant to Neolithic communities (cf. Gregory, 2000). Recovery rates, though, probably play a major part in these apparent concentrations. The significance of the lowlands is also reflected in the distribution of bronze artefacts (Figure 6). As Coles (1965: 63) observes, 'the overall distribution (of bronze artefacts) seems to point to certain significant low-lying areas, in which a high proportion of finds have been made'.

The depositional context of these objects may also offer some insights into the ideology of Bronze Age life (*inter alia*; Levy, 1982; Barrett & Needham, 1988; Bradley 1990; Cooney & Grogan, 1994). During the Neolithic, many of the artefacts identified in the region as stray finds may, in fact, represent deliberate deposition (Gregory, 2000). In some cases, these objects appear to have been placed in the vicinity of particular natural or anthropogenic features which were, seemingly, considered significant. In most cases the precise context of Bronze Age artefacts is vague, but it may be argued that this tradition continued

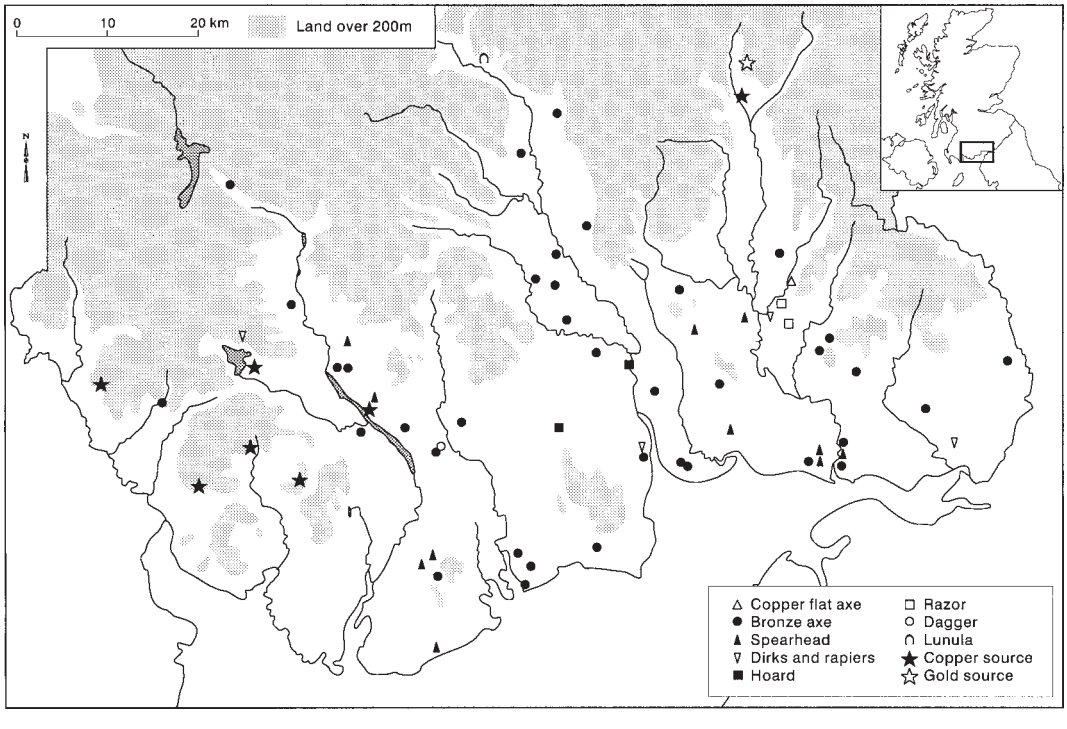

Figure 6: distribution of copper, bronze and gold artefacts.

and became the dominant form of artefact deposition. The deliberate deposition of objects during the Bronze Age, as opposed to their casual loss, has been argued convincingly by various writers (Barrett, 1985; Barrett and Needham, 1988; Bradley, 1990). This may be more applicable to artefacts made of bronze, as it is difficult to envisage the loss of so many precious objects in such limited geographical areas (cf. Barrett, 1985), but the deliberate deposition of a proportion of the stone artefacts should not be discounted.

If it is accepted that many of the Bronze Age artefacts found in the region represent deliberate deposits, context becomes all the more important. Generally it would appear that the placement of objects was *within the landscape* and largely avoided deposition in burial or settlement contexts. In the few examples where objects are found with cinerary urns these are confined to small tools such as flint blades or bronze knives/razors. These, as Barrett and Needham (1988: 129) argue, may be 'symbols which it was permissible to send into the afterworld'. The context of the remaining artefacts may be assessed at only the crudest of levels, but a proportion of these appear to be found in wet environments. These include rivers/lochs, mosslands and alluvium, which may suggest original deposition within a river (Gregory, 1998). This placement of bronze objects in both wet and dry environments has led to a number of arguments which are connected to the nature of Bronze Age society, and the circulation of bronze. They share a common theme, however, based upon the ideas of anthropologists, such as Gregory (cf. Barrett, 1985; Barrett & Needham, 1988; Bradley, 1990). It is envisaged that in early societies gift giving, in this case of bronze artefacts, was an important mechanism of social control, as it created obligations and confirmed alliances. In this way social positions could be established by the process of giving rather than accumulating. Tied to these concepts are ideas of the display of certain significant objects in ritual consumption. By giving objects in a ritual context, possibly a display, and by placing them at locales where they could not be recovered, those undertaking the deposition accumulated prestige and. In gift giving, objects were removed from circulation which effectively reduced the availability of artefacts for others in a system of competitive gift exchange. This may, therefore, have allowed the continuous accumulation of prestige (Bradley, 1990). It is thought that the majority of bronze artefacts located in hoards or discovered as 'stray finds' may represent such objects, in that they were probably not intended for recovery (Levy, 1982; Barrett & Needham, 1988). It is significant that these objects were of a specific type, intentionally selected for this style of formal deposition. Many more objects may have been in actual circulation, as suggested by the analysis of clay moulds and cargoes from sites in England (cf. Barrett and Needham, 1988). It may also be significant that many of the objects selected for formal deposition were exotic in manufacture, which may have increased their importance since they were different from local products. The lack of evidence for metalworking in the region suggests that these conditions may have operated here, as the artefacts that may be deliberate deposits do appear on the whole to be 'exotic' in origin, and Ireland seems to be important as a source area for them. The deposition of metalwork also appears to increase over the earlier Bronze Age culminating in the hoard deposits dated at c.1400 cal. BC (Figure 4).

If many of the bronze artefacts represent deliberate deposits of exotic objects in attempts to promote social control, this may equally be true of a number of the shaft hole implements. Again, at least a proportion of these are found in environments where recovery may have been impossible (Gregory, 1998), and some, such as the battle-axes and mace heads,

may represent specific ritual objects which may have enhanced their significance during ritual displays. Many of the stone implements may also be exotic in origin, though petrological analysis is inconclusive. This has been undertaken on a number of the axe-hammers and battle-axes, but the majority appear to have been produced from glacial cobbles of varying petrologies, or were produced from local greywacke (Group XXVII) stone (Fenton, 1988). Deliberate deposition of at least a proportion of these objects should not, however, be discounted but at present it is difficult to substantiate.

Deposition and ideological change

The deliberate deposition of particular objects appears to have a long tradition stretching back to the Neolithic. During the Bronze Age, however, the context of this deposition changed. In the Neolithic, although deliberate deposition close to specific natural features appears to have occurred, it was specific monuments which provided the major foci, and this was probably connected to communal gatherings, and activities connected to the structuring of society. During the Bronze Age, however, the importance of the monument dwindled and was perhaps neutralised by its incorporation into a conceptual framework connected solely to death and, presumably, the afterlife. The evidence of artefact deposition indicates that particular natural elements which were, perhaps, rooted in the tradition of the earlier period, rose to prominence and filled the void left by the decline in Neolithic monuments, and other places of ritual importance. Deposition and the rituals connected to this act became more reliant upon natural settings provided, for instance, by wet environments. The process appears to have become more widespread at the end of the earlier Bronze Age resulting in the deposition of substantial numbers of objects. It may also be significant that at the same time the deposition of artefacts within a funerary context, which appears so important during the Neolithic, also dramatically decreased.

Settlement and associated activity

It is during the earlier Bronze Age that the first evidence for permanent settlement is securely encountered in the region, which may be classified as unenclosed. Chronologically, unenclosed settlements throughout Northern Britain appears to have been initiated at least by the early second millennium BC persisting throughout the later prehistoric and protohistoric periods. The earliest unenclosed settlements which may be identified within the region, which potentially date to the earlier Bronze Age, are unenclosed platform settlements and hut-circles. It must be stressed, however, that other settlement sites, located within the lowlands and represented perhaps by a proportion of the ubiquitous ring-ditches may also date to a similar period, but at present this remains unproven.

Unenclosed platform settlements seem to be the earlier of the recognisable Bronze Age settlement types. Until recently, based on the excavations at sites such as Green Knowe, Peebleshire (Jobey, 1980), this settlement form was viewed predominantly within a late second millennium BC context (cf. Jobey, 1985; Gates, 1983). Recent excavation, however, at sites such as Bodsberry Hill and Lintshire Gutter, Lanarkshire (Terry, 1993; 1995), suggests the use of this settlement form during the Early to Middle Bronze Age. Within the

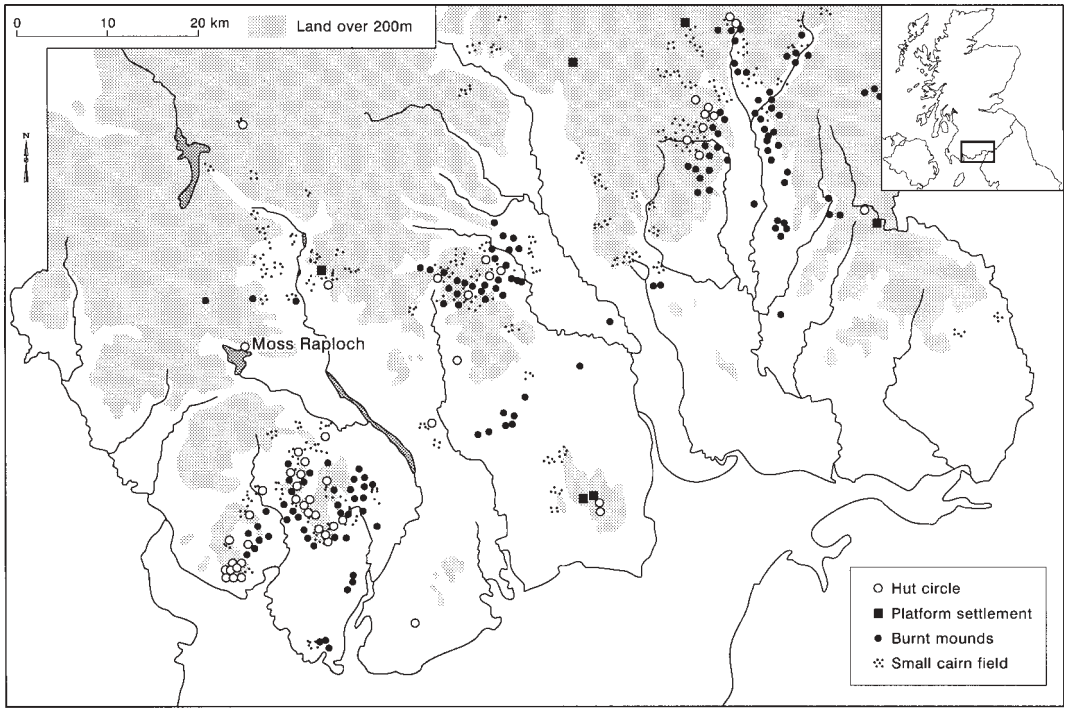

Figure 7: hut circles, platform settlements, burnt mounds and cairnfields.

region the unenclosed platform settlements are relatively restricted, extending the known distribution southwards from the Tweed and Clyde valleys (Halliday, 1985) (Figure 7). The areas in which the settlements are confined are generally those where intensive survey has been undertaken, such as Eastern Dumfriesshire (RCAHMS, 1997), and within these areas the settlement type is ultimately a product of topography.

The second class of site that probably represents a settlement type of the earlier Bronze Age is the ubiquitous hut circle. The classification and dating of these sites is, however, problematic, as the term 'hut circle' has been used to embrace a large collection of sites which, superficially, share similar morphological characterisitics. Whether all of these examples represent settlement is difficult to ascertain and it will only be through detailed survey and ultimately excavation that this problem may be resolved. The dating of the sites is also difficult as they appear to have a long currency. In the uplands, some examples are potentially earlier, or later, Bronze Age in date as attested by the excavation of ring-bank houses and hut circles in Northumberland and the Borders (cf. Jobey, 1983; Coggins & Fairless, 1984; Burgess, 1984; 1995; Topping, 1991). In the Scottish lowlands and Western Isles, however, limited excavation at sites in Perthshire, Sutherland, Jura, and Islay, indicates that the currency of these sites is potentially much longer extending throughout the Bronze Age into both the Pre-Roman and Roman Iron Age (Fairhurst & Taylor, 1971; Stevenson, 1984; Barber & Brown, 1984; Rideout, 1995). Moreover, in the immediate region an unenclosed hut circle excavated at Moss Raploch was argued on artefactual evi-

dence to have been occupied during the 1st-2nd centuries AD (Condry & Ansell, 1977). This sustained duration in use of this architectural form is obviously a problem for those interested in early landscape history, but it is at least possible that the examples found in association with clearance cairns, field banks and burnt mounds, predominantly in the uplands, are potentially of earlier Bronze Age date. Their distribution is relatively wide spread across Kirkcudbrightshire with an outlier group located within Annandale, whilst a marked concentration found around the Gatehouse of Fleet reflects the recent survey work of the RCAHMS (Figure 7). As with many Bronze Age sites, surviving examples are confined to areas where there is an availability of stone and where later agricultural practice has not had too severe an impact. The location of the hut circles, therefore, lies predominantly in areas of peat land and in tracts of landscape found between 150-300m O.D. It may also be significant that at many of these sites peat is found overlying the structures themselves, which poses questions relating to expansion and abandonment of early settlement into these now marginal areas.

Other archaeological sites found in similar environs, often associated with the hut circles, are small cairns. These range in size from 1-5m in diameter and at times cluster to form what may be loosely termed cairn fields (Figure 7). Locationally, it has been noted that, for Dumfries and Galloway as a whole, 70% of these cairns are found between 183m and 305m OD, and it has been suggested that they may represent 'an accurate reflection of the original distribution' (Yates, 1984b: 222). The function and chronology of the cairns has, however, been contested. Scott-Elliot and Rae's (1967) original survey of the cairn fields of Dumfriesshire proposed that they functioned as Bronze Age funerary structures. Yates (1984b), however, while acknowledging that in some cases burials were to be found beneath some of the small cairns, views them as a product of agricultural clearance. He suggests that the small cairns were generally found in areas that allowed natural free drainage, and that a correlation exists between sites found upon south and south-west facing slopes. He, therefore, concludes that 'groups of small cairns are the products of relatively simple and small-scale cultivation' (Yates, 1984b: 225). Chronologically, he favours a date in the earlier Bronze Age, which is based on the association of the cairns with hut circles in Northern Britain, though he also notes that small cairns may have enjoyed a longer currency spanning the later Bronze Age and Early Iron Age.

Only excavation may resolve the chronology and function of these small scale landscape features, and fortunately some headway has been made by the recent excavation of three small cairns at Stoneyburn Farm, Lanarkshire (Banks, 1995). Here the radiocarbon evidence and associated artefacts indicated a date in the earlier Bronze Age for these features, whilst the excavation also suggested that the function of many of these features was more than merely the product of agricultural clearance. Of particular interest, in this context, is the larger of the cairns at Stoneyburn Farm which appears to have covered activity and deposits spanning the Early Neolithic and Early Bronze Age. It is suggested that the construction of this larger cairn in the Early Bronze Age was connected to a final decision to denote the significance of the small hill on which it was found. Before this time this significance may have been retained, not by a permanent marker, but by oral tradition and generational memory, manifest in the various early deposits found beneath the cairn. In the light of this evidence, alongside previous interpretations, it is difficult to prescribe a precise function for the small cairns. In general the small cairns seem to have been constructed

during the EBA and sometimes later. They may represent burial sites, markers of earlier significant localities, or be merely the product of stone clearance connected to early agriculture. It may also be important, however, that burials and structured deposits are found within similar areas and beneath similar structures as the possible clearance cairns. Indeed, it is possible that the very act of clearance, and the 'opening' of the landscape during this period were in someway related and incorporated into a wider ideological sphere. Hence, agricultural clearance may have been significant not only in economic terms but also in a cosmological sense.

The final piece of evidence for the earlier Bronze Age activity is the distribution of burnt mounds in the region. The interpretation of these features is, however, difficult as their precise function is unknown, but they have been interpreted as either cooking places (O'Kelly, 1954) and/or bathing sites (Barfield & Hodder, 1987), perhaps associated with semi-mobile activities, such as hunting or farming. At the very least they were certainly structures which were used to heat water by the immersion of hot stones in a trough, and so it is no surprise to find that they are usually found in wet localities, such as close to streams or springs. Slightly more is known concerning their dating. The available radiocarbon evidence suggest use throughout the earlier Bronze Age, continuing into the early first millennium BC (Barber, 1990; Maynard, 1993), although potentially earlier dates may be attributable to the excavated mounds at Greenlaw, Kirkcudbrightshire (Maynard, 1993), and Kirkhill Farm, Dumfriesshire (Pollard, 1993). As with many other features of the earlier Bronze Age distribution is largely conditioned by factors of survival, and so accordingly they are often found in marginal locations (Figure 7). It must be stressed, however, that within areas which are now more intensively farmed these mounds may have been just as prevalent, as suggested by their discovery along a pipeline route through Dumfries and Galloway (Maynard, 1993).

It would appear, therefore, that it is within particular zones of landscape zones that earlier Bronze Age settlement and its associated domestic activities may be more easily recognised. From a modern day perspective these are usually areas which may be described as 'marginal landscapes', and hence the very presence of early settlement seems significant. At a locational level this suggests that these areas were first exploited within this period as the evidence for Neolithic activity is limited. When these sites are compared with later settlement patterns the evidence also raises the possibility of upland abandonment at the end of the earlier Bronze Age. At another level, however, the importance of settlement morphology may also be significant, particularly from a societal perspective. In the later periods of prehistory many settlement types are enclosed, which may imply the presence of a largely 'socially isolated' community, with production centred around the individual settlement unit (cf. Hingley, 1984; 1992). In contrast, the presence of unenclosed settlement forms during the Bronze Age may indicate a more integrated community, in which communal modes of production and resource control were preferred (Hingley, 1984; 1992).

The Later Bronze Age (LBA) c.1150-750 cal. BC

The later Bronze Age in the region is a period that may be characterised by a dramatic decrease in the volume of available archaeological evidence. There is, for instance, a demise in the practice of placing the dead in round mounds, or flat cemeteries, with set ce-

ramic types. The manner of treatment of the dead is, therefore, virtually unknown during this period, as are other ritual activities. Although metalwork is still present and appears to flourish with the introduction of novel artefact types, this is largely to the detriment of other artefactual remains, notably stone implements. The battle-axes and axe-hammers of the earlier Bronze Age disappear. There are also problems in the identification of settlement. It is not clear that settlement in the uplands persisted, while in the lowlands the long currency of many settlement forms makes periodisation difficult.

In environmental terms some observations may be made with relative confidence. The beginning of the period probably witnessed a marked decline to both wetter and cooler conditions, evidenced in peat bog stratigraphy, narrow tree ring events, and other palaeoclimatic sources (Lamb, 1981; Barber, 1982; Baillie, 1993; 1995). A date of c.1150 cal. BC is suggested from dendrochronological data for this apparent climatic deterioration (Baillie, 1993; 1995). The effects that this may have had upon clearance, particularly in the uplands, however, is vague, although some researchers suggest that it was potentially catastrophic in other areas of Northern Britain (cf. Burgess, 1985; 1989; 1995). The limited evidence available from the region suggests, however, that clearance may have continued and may have been associated with increased soil degradation.

The problem of settlement

One major problem associated with the later Bronze Age is the secure dating of particular classes of settlement to this period. Many of the hut circles and burnt mounds from the region could, for example, potentially date to the later Bronze Age in both upland and lowland landscapes. It is also during this period that certain settlement types, traditionally viewed as Pre-Roman Iron Age in date, may have been initially constructed. A proportion of the palisaded settlements, for instance, may date to the later Bronze Age, particularly if the early radiocarbon date from the palisaded settlement at Gledenholm, Dumfriesshire, is regarded as secure. Other settlement forms that may also date to the later Bronze Age, through comparison with the excavated evidence from sites in Northern Britain, Wales and Scotland, include those classified as hill-top or hill-fort settlements. Based on comparative evidence from sites such as Mam Tor, Derbyshire (Coombs & Thompson, 1979), Llwyn Bryn-Dinas hillfort, Clwyd, (Musson *et al*., 1992), Beeston Castle, Cheshire (Ellis, 1993), Eildon Hill North, Roxburgh, and possibly Traprain Law, East Lothian (Owen, 1992; Rideout *et al*., 1992), it seems feasible that a proportion of the larger hill-forts from the region may also have Late Bronze Age foundations. The potential appears, therefore, to exist for later Bronze Age settlement in the region, but on the available evidence any statements considering its nature and distribution are for the moment tenuous. This is somewhat compounded when considering the upland settlement of the area. In other Border regions, based predominantly upon the evidence of unenclosed platform settlements, a settlement lacuna has been identified during the later Bronze Age. It is argued that reoccupation does not occur until after a demographic swing during the 7th century BC (Burgess, 1980; 1984; 1985; 1995). This lacuna is viewed largely as a product of a widely recognised climatic deterioration. An alternative view, however, is to see a continuation of settlement in the uplands throughout the later Bronze Age (cf. Gates, 1983; Jobey, 1985). In the region the distribu-

tion of unenclosed platform settlements is limited and the major evidence for Bronze Age settlement lies in the distribution of hut circles and burnt mounds. Due to the problems connected to the dating of these archaeological features it is difficult to address any hypothesis of upland abandonment, although a case for abandonment has been recently made by the Royal Commission based on the location of certain Pre-Roman Iron Age settlements (RCAHMS, 1997). At most, the palynological evidence from the region (cf. Moar, 1969; Birks, 1972; Jones *et al*., 1989; Tipping, 1995), although tenuous, appears to suggest continued clearance albeit on a limited scale, in both upland and lowland areas during the later Bronze Age. This, coupled with the observations of Tipping (1997) that earlier clearance (c.2300 cal. BC) was initiated within the uplands during a period of environmental decline, may indicate that at this later period climatic deterioration could also have had a limited effect upon upland communities.

The advance of metalwork

One element of later Bronze Age activity that may be dated with some degree of confidence is the metalwork of the region. Major technological advances between 1100-700 cal. BC included the use of a variety of socketed axes, slender leaf spearheads, and the introduction of swords. The distribution of this material echoes the spatial patterning of the earlier Bronze Age material in that lowland coastal areas and river valleys appear, once more, significant (Figure 8). The depositional contexts also appear similar, though it must be stressed

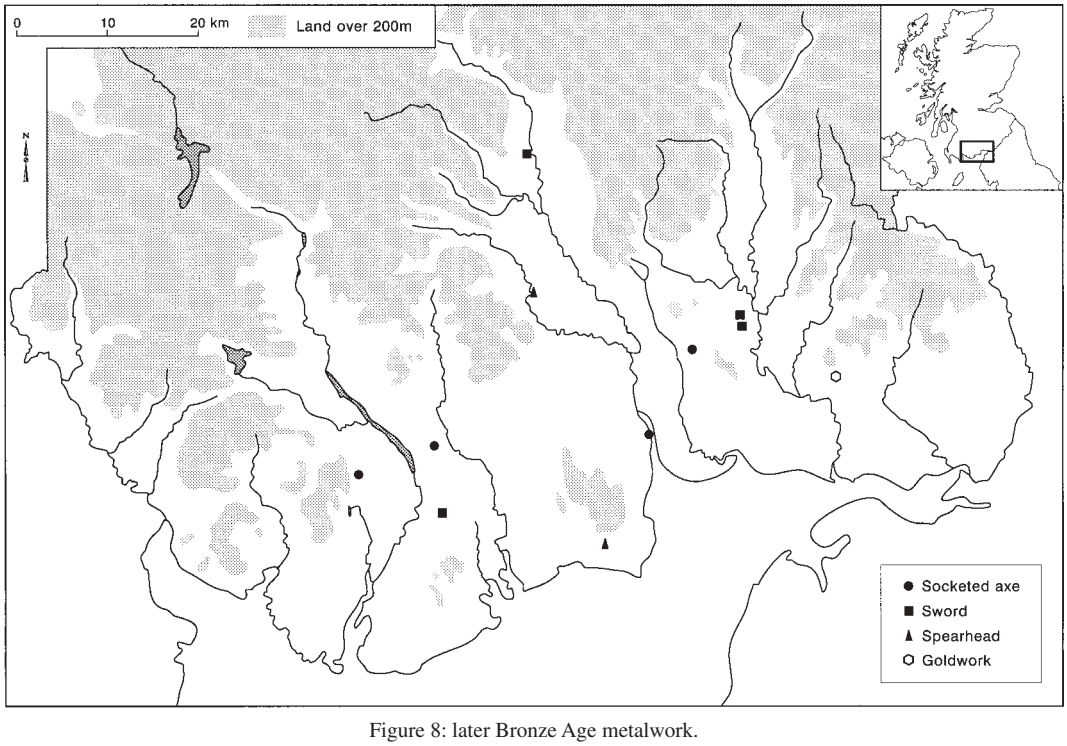

Figure 8: later Bronze Age metalwork.

that the deposition of hoards declined during this later period, as did the deposition of single artefacts (Gregory, 1998). The contexts, where known, again suggest that in some cases the placement of exotic objects within environments where their recovery would have been difficult was at times the favoured mode of deposition (Gregory, 1998). The most obvious example of this style of deposition is the discovery of a Scandinavian type socketed axe in Carse Loch (cf. Burgess & Schimdt, 1981). On the whole, however, the origin of the bulk of the material appears to reside in Scotland or Northern Britain (cf. Coles, 1965; Burgess & Schimdt, 1981; Burgess & Colquhoun, 1988), and hence the influence of exotic goods appears to have dwindled.

Summary and conclusions

The evidence for the Bronze Age in the region is diverse and may be amalgamated to produce a partial historical reading of the communities inhabiting, and their reflexive relationship with, the natural and anthropogenic landscape of this period.

The initiation of an identifiable Bronze Age appears to begin paradoxically before any identifiable evidence for metalworking is available, resting with the adoption of Beaker ceramics in the area, perhaps as early as c.2600 cal. BC. Although the evidence for Beaker use is limited, it is from this initial date until c.2000 cal. BC that subtle changes in ideological practice may be identified, which contrast with earlier Neolithic practices. Many significant Neolithic localities appear to have been initially retained, but significantly their function was altered. A proportion of the earlier funerary monuments, such as Megalithic and Non-Megalithic cairns, were architecturally transformed, evident most notably in the blocking of forecourt areas. Effectively their power as important ideological localities - important for both the coherence and structuring of society, possibly through particular forms of communal rituals - was neutralised. These localities were now significant in a Bronze Age context solely for the interment of the dead, not for the structuring of the living, which is in someway confirmed by the evidence available for novel types of Beaker funerary sites. These, which in form consist of either cists or round mounds, have no architectural or spatial provisions for external ritual activities, and so they effectively functioned merely as markers for the dead. There is also limited evidence for the 'structured deposition' of Beakers within the confines of settlement, if the early phase of Kirkburn is regarded as such. This evidence may be significant in that it suggests that the domestic context was beginning to replicate and, perhaps, replace many of the functions of earlier monumental forms. Corresponding with these events the palaeoenvironmental data indicates that from c.2300 cal. BC many areas, notably the uplands, were exploited for the first time during a phase of climatic deterioration. It may be no coincidence that this climatic event corresponds roughly, in radiocarbon terms, with the adoption of Beakers and the corresponding shifts in ideology. Although only speculation, this marked deterioration may have been viewed by the prehistoric inhabitants as a contributory outcome of the failing power of traditional monuments and rituals, and hence a new ritual and cosmological ordering was required to redress the balance.

During the earlier Bronze Age these ideological practices associated with the introduction of Beakers would be catalysed. The burial practices evident, although associated with

new ceramic forms, appear to consolidate many of the themes which were initiated during the Beaker period. Once more, round cairns and mounds were used in conjunction with novel burial sites such as enclosed and unenclosed cremation cemeteries. Although these sites may have been important for small-scale societal relations, confined temporally to the rite of burial, their overall purpose appears solely for interment. The context of traditional, communal, monumental forms was also altered and perhaps neutralised at both a monument specific and landscape level. The earliest monuments, such as the Megalithic and Non-Megalithic tombs, were largely abandoned, while other ritual sites, such as henge monuments and stone circles, appear to have been transformed to burial grounds. This may indicate that although these localities were still considered significant places their function had altered. At a broader level, landscapes of communal significance in a Neolithic context, were also transformed. During the earlier Bronze Age, landscapes around cursus monuments and chambered tombs became important locations for the erection of burial mounds or cairns. This may again suggest that the original importance and significance of these areas for structuring the lives of the community had also been altered. In this sense, the power derived from the past was, perhaps, erased and in consequence the presence of communal monuments was no longer required. Their power as an active element within wider social processes became peripheral.

If monuments were not required, it appears significant that corresponding with these events is evidence for the deposition of objects within the landscape. Natural landscape features became more significant as the importance of monuments dwindled. This practice, which elaborated a tradition established in the Neolithic, appears the major form of deliberate deposition, if accepted as such, as the placement of objects within burial or other contexts is largely absent. These depositional practices continued throughout the course of the earlier Bronze Age, and culminated with an increase in metalwork hoards between c.1400-1150 cal. BC. It may also be significant that this hoarding episode corresponds to a period when the use of funerary structures and ceramics was ending. It seems to suggest that the decline in one area of non-utalitarian practice may have been transferred and consolidated into another, though the precise processes behind these events are unclear. The reasons behind artefact deposition, however, in acts of ritual consumption, appears similar to the earlier rituals performed at specific monuments. Social control, the grading, or ranking, of society, and the assembly of geographically dispersed groups for the exchange of resources, may have been important underlying themes. Acts of social control may also have been enhanced by the deposition of objects which were of an exotic nature. The evidence, particularly that of metalwork from the region, shows that many of these objects came from outside of the area, and indicates the continued importance of external contact, or trade, during this period. In terms of metalwork production it is difficult on present evidence to rally a case for metalwork manufacture in the area. The availability of local copper ores, however, suggests the likelihood of manufacture and its apparent absence may be no more than a reflection of the limited excavation of Bronze Age sites.

The earlier Bronze Age is also a period when evidence for domestic and agricultural activity prevails. Although both the settlement and associated agricultural remains are difficult to date securely, they suggest that sedentary communities practising a mixed farming regime, occupied a variety of landscape areas, in some cases for the first time. The establishment of permanent settlement was significant and may, perhaps, explain in part why

earlier monumental forms dwindled. If the houses represented by a proportion of hut circles are contemporary they may suggest the presence, in certain areas, of fairly dense open settlements. These may have been centred around a system of communal production and control of resources. The permanent household and the first concerted, perhaps more organised, clearance of land for agriculture may well have negated the need for communal monuments. Land clearance evident in the form of small cairn fields appears, however, to incorporate wider cosmological issues. This is evidenced by the incorporation of burials beneath at least some of these structures. It was within this domestic context, of organised land clearance and permanent settlement, that societal cohesion, control and exchange may have resided in part - alongside the deliberate deposition of objects within the natural landscape. The creation of a more domesticated landscape should not, therefore, be underestimated as a powerful force in the process of coalescing and ordering the community in both a pragmatic and cosmological sense.

These processes appear to have continued into the later Bronze Age, but unfortunately this period is characterised by a lack of firm evidence. At most it appears an era when there is a demise in the evidence for funerary practices and also a decrease in deliberate artefact deposition. Although at present difficult to prove, this may correspond to an increase in the evidence for permanent settlement and agricultural remains which, in turn, may represent a catalysation of the processes occurring during the earlier Bronze Age.

References and Abbreviations

PPS; Proceedings of the Prehistoric Society

PSAS; Proceedings of the Society of Antiquaries of Scotland

TDGNHAS; Transactions of the Dumfriesshire and Galloway Natural History and Antiquarian Society, 3rd Series

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THE ROMAN SCULPTURE FROM BIRRENS REVISITED

by
Fraser Hunter* and Ian G Scott
with a geological study
by Suzanne Miller and Nigel Ruckley

Introduction

Birrens is the richest site in Scotland for Roman sculpture and inscriptions (Keppie 1994, 35). The sculpture has been well published by Keppie and Arnold (1984; see also Keppie 1994), but much of it is fragmentary, making interpretation difficult. In preparing the displays for the new Museum of Scotland we had to consider how best to present this important but intractable assemblage (Clarke & Hunter 2001). This has led to a number of new insights into and alternative interpretations of some of the key pieces. Crucial to this has been detailed geological work by Suzanne Miller and Nigel Ruckley which has allowed fragments to be grouped on petrological grounds not just into different sources but to individual blocks.

After outlining the geological techniques, we will consider the two major pieces of reconstructed sculpture - the Victory friezes (Keppie & Arnold 1984, nos 26-7). Some other fragments are then reconsidered along with little-known items which have not received full publication. Finally the question of how many sculptures the fragments represent is assessed. Catalogue numbers cited are taken from Keppie and Arnold, where full descriptions can be found. Only finds in the National Museums of Scotland (NMS) have been studied, comprising the surviving antiquarian discoveries and the finds from the 1895 excavations.

Geological study

Suzanne Miller & Nigel Ruckley

By comparing the mineralogical and physical properties and magnetic susceptibility of the fragments of carved stones it is possible to evaluate whether individual fragments are part of the same artefact.

Petrological analysis

All available sculptured stones have been examined using non-destructive petrological techniques in order to provide a 'hand specimen identification' of the rock type. This type of petrological analysis has provided a basic identification of rock type and has been used to distinguish between subtle differences in the sedimentary structures of individual fragments. All examination included the following measurements:

- colour (with reference to Munsell standard colour charts). Colour measurements from fresh, unweathered surfaces were obtained.

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- grainsize (with reference to standard grainsize measurements on the μm scale)
- macroscopic mineralogy (i.e. mineralogical content that can be ascertained by hand-specimen examination with hand lens)
- textural & structural characteristics such as bedding, cross-bedding, jointing, other planar fabric, grainsize variation and fracture type

Magnetic Susceptibility

Most igneous and metamorphic rock types contain varying amounts of ferromagnetic minerals such as magnetite. To a lesser extent sedimentary rocks, especially where they have been formed from the erosion of igneous and metamorphic material, also contain limited amounts of ferromagnetic material. Measurements of magnetic susceptibility are by nature closely related to the content of magnetite and other iron minerals and can be used in characterising rock fragments.

The magnetic susceptibility of the fragments of sculptured rock was measured with an Exploranium KT-9 Kappameter (manufactured by Exploranium G S Ltd) giving a measurement of the true susceptibility. The KT-9 has several operating modes but to achieve a consistency of readings the 'pin mode' of working was used throughout with accuracy on a flat rock estimated to be ±3%. The main limitation of this method is that measurements can only be made on rock fragments greater than 6cm thickness.

A series of a dozen readings was taken from each of the carved stones of suitable size, away from all possible sources of magnetic contamination.

Results

Of the 47 sculptured rock fragments examined so far, all are classified as sandstone with the exception of one classified as limestone.

The sandstones are generally fine grained and exhibit a reddish brown colour. Ubiquitously, their mineralogy comprises quartz (iron-stained), white mica and opaque minerals. They are all well sorted, mature sandstones. Parallel bedding is evident in all fragments, some also with internal bedding planes. These natural parallel 'separations' have in some instances been utilised in the carving process. In addition, the generally irregular nature of the thickness of individual sedimentary beds has been used to distinguish between otherwise petrologically similar fragments.

The magnetic susceptibility measurements of the sandstones are all relatively low, typical of sandstone in general. The average values range from 0.00 to 0.05. The magnetic susceptibility of the limestone is -0.003, a typically low measurement for limestone in general.

The petrological analysis and the magnetic susceptibility measurements suggest that the majority of the fragments come from a geologically similar source area but can be subdivided into nine sandstone groups characterising between two and nine fragments. Thus,

fragments belonging to the same block of sandstone have been identified. These results will form part of a more general consideration of the range of stone types used at Birrens and their sources which is under preparation.

The larger Victory frieze

Keppie and Arnold (1984, no 26-7) plausibly reconstructed several of the more distinctive fragments as two multi-block friezes with paired figures of the goddess Victory flanking an inscription in a wreath (figs 1 and 3). In the new NMS displays we wished to convey something of these striking sculptures, but the isolated fragments were difficult to understand while a full reconstruction would have taken up too much space and involved a lot more restoration than original pieces. It was therefore decided to focus on the larger frieze (cat.26) and reconsider the interpretation: could the fragments be combined into a single figure? This is not to say that Keppie and Arnold's interpretation is wrong: paired Victories flanking inscriptions are common in north Britain (e.g. Phillips 1977, no 219; *RIB* 783, 844), although there are also examples of Victory and another deity (e.g. Phillips 1977, nos 215, 295). However, as none of the anatomical elements are duplicated they could derive from a single figure, and in pragmatic display terms such a solution would maximise the ratio of original to reconstruction.

Re-examination of the fragments led to some new discoveries. When removed from their old display, a horizontal fastening slot near the base of the rear was noted. More crucially, fragment c (wing top) joins fragment b (wing and palm branch) to form the complete top of a left wing. It is unlikely that this was the full length, as it would be unnaturally short in relation to the figure, and there was probably a third set of wing feathers (cf. Coulston & Phillips 1988, no 99). This in turn means the palm branch was held higher, behind the head (for a related position see a Pompeian wall-painting: Reinach 1970, 147 no 3). The details of the reconstruction are of course uncertain, and Victories adopt a wide variety of poses in Classical art. In the new displays the aim was to maximise the number of fragments on show, and we opted for a single figure using fragments 26 a-c. She is reconstructed as a standing Victory, facing frontally but twisted slightly to the right; the twist arises because of the position of the left wing. The missing elements were sculpted by Tim Chalk following drawings by Ian Scott (fig 2). Although rare, similar twisted poses are known (e.g. Mócsy & Szentléleky 1971, Kat 71, Bild 57; Bauchhenß & Noelke 1981, Taf 90/2).

In display terms this reconstruction works well, as it maximises the amount of original sculpture. However subsequently we realised it should be modified. The crucial discovery was the recognition that cat.30c had the tip of a finger or thumb on the boss of the pelta, suggesting the Victory was holding a pelta flanking an inscription (cf. *RIB* 1093, pl XIV; Phillips 1977, nos 59 & 95). This inscription was probably that previously attributed to the smaller frieze (cat.27c-d): geological study clearly showed that it was dissimilar to cat.27a-b but from the same source as the larger Victory, as were the pelta fragments (cat.30). Study of the fracture and bedding plane separation allowed pieces from the same block to be identified, confirming that the pelta, the inscription and the Victory were all carved on separate blocks.[1] This differentiation arises because, while quarried from the same source,

1 The pelta fragment cat.31 has not yet been studied, but its dimensions indicate it does not relate to this sculpture.

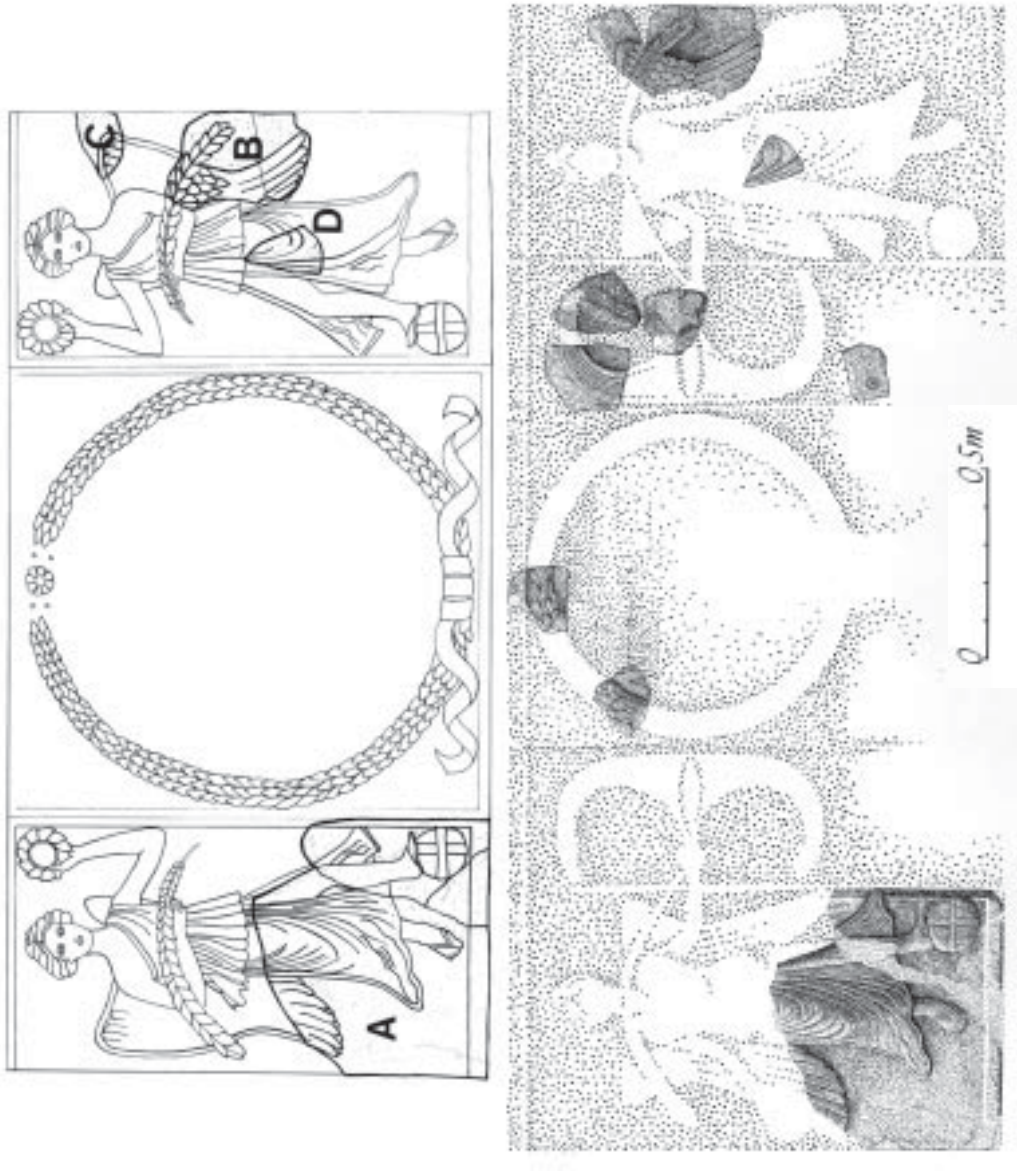

Fig 1 The larger Victory frieze: upper, as reconstructed by Keppie and Arnold (drawn by John Callan); lower, revised reconstruction (drawn by Ian G Scott)

Fig 2 The Victory figure as reconstructed in the Museum of Scotland. © NMS

they were taken from different levels (perhaps successively) with different bedding plane separations. Unfortunately (and ironically), because the Victory fragments were built into a reconstruction it was not possible to examine their full sections, and so it cannot be confirmed whether they come from one or two figures; this must await the next redisplay of the material.

Based on this data we think the most likely reconstruction returns to two Victories (fig 1 lower). The geological results suggest a frieze composed of five blocks: two outer ones with a Victory holding a palm branch, each with one arm outstretched onto separate blocks to hold a pelta, while the wreathed inscription was on a fifth block. The palm branch curves most naturally into the hand holding the pelta, leaving the other hand's position and contents unknown. The size of the peltae and the diameter of the inscription are also unknown. We have followed previous reconstructions of the inscription and thus kept a relatively small wreath; this leads to a blank space below which could be filled with corner rosettes and the wreath's fillets. However we should perhaps envisage a much more monumental

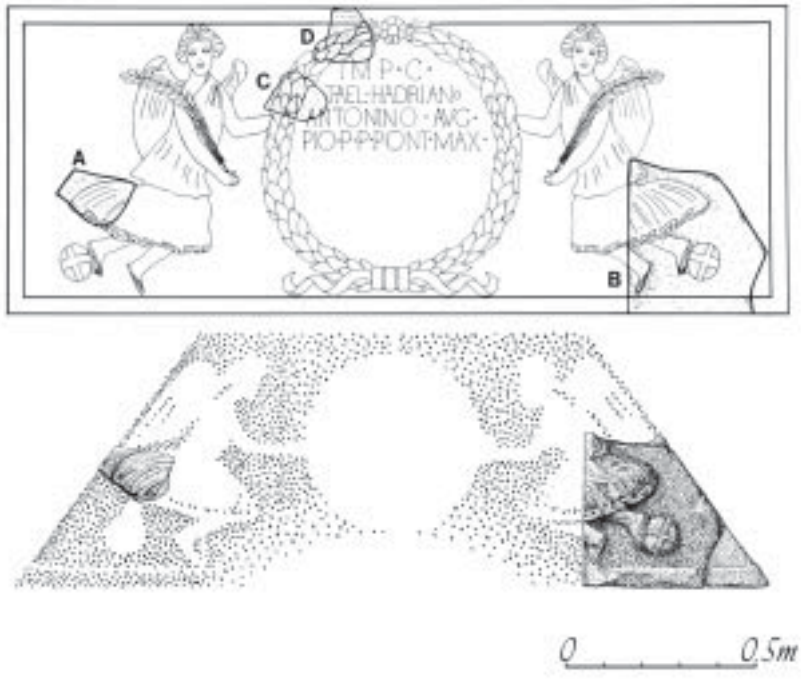

Fig 3 The smaller Victory frieze: upper, as reconstructed previously (by Avril Mackenzie); lower, revised reconstruction (by Ian G Scott)

inscription which filled most of the block. This would allow the inscription to be longer, but need not change the suggested restoration of its first few lines to Antoninus Pius (Keppie 1994, 42).

While the blocks may simply have been quarried sequentially from the source, it is likely that there was a deliberate selection for particular carvings. The thickness of the top bedding plane provides a natural background to clear onto when carving the reliefs. The block with the wreath has a thicker top bedding plane than the others, allowing the wreath to be more three-dimensional. This seems unlikely to be accidental and shows a subtle appreciation of the stone's properties, confirming this was a high-quality carving.

Can we relate any other elements to this frieze? The fragments of decorative mouldings (cat.34 and 37) come from the same stone source and it is likely that they flanked the sculpture. The sections published here (fig 7b) are composites using the best faces of the damaged fragments. The deep overhang of cat.34 seems particularly appropriate for the top edge of a frieze or inscription mounted high on a building, although the finishing is different from the Victory frieze. The findspots of 26b-c suggest the frieze was mounted in the headquarters building. This is also where the dedication slab by the second cohort of Tungrians was found (*RIB* 2110; Keppie 1994, 36-9): for reasons discussed below we infer that this Victory frieze is also the work of the second cohort of Tungrians, and indeed perhaps by the same sculptor.

The smaller Victory frieze

The reconstruction of the second Victory frieze should also be altered (fig 3; Keppie & Arnold 1984, no 27). The sloping edge of the main fragment (an angle of 54°) seems likely to be original, not from subsequent reshaping, and rather than a rectangular slab we suggest the fragments derive from flying Victories in a pediment. A previously unnoted fragment, sculpted only with a flat raised border on one edge, joins fragment b, giving a block width of 475 mm and (by projection) a height of some 675 mm. The piece of drapery (a) representing the left hand figure has a projection on its edge which is probably part of the leg, confirming the presence of two Victories as it cannot be accommodated within the right-hand figure. The overall form is uncertain; they may have supported an inscription but could equally be over a doorway or flanking some other motif. Flying Victories in pediments find ready parallel (e.g. supporting a shield with a Gorgon's head at Bath (Cunliffe & Fulford 1982, nos 32-7); over a fountain at Corbridge (Phillips 1977, no 89)). The border at the bottom suggests there would be a decorative framing along the top edges (as at Bath, *op cit*), but none of the surviving fragments in NMS collections have the same petrology. The pediment angle implies a steeply angled roof (cf. façade from Meonstoke, Hants and graffito from Hucclecote, Gloucs, with roof pitches of 47-50°; King & Potter 1990; Potter & Johns 1992, 110, pl V).

A figure of a boar

Another fragment (cat.39) is the snout of a boar (fig 4). It has a pronounced tusk and lips, while the end preserves part of the nostrils. A triple ridge moulding runs along the top of the snout. The modelling is very three-dimensional, suggesting it was sculpted in the round, although on the unillustrated side (which is poorly preserved) there is a slight outward curve in one area, perhaps to join the background of a deeply undercut bas-relief (or another component of the sculpture). With such a small piece this cannot be answered conclusively, and the pose is also unknowable, but the scale is substantial: the snout suggests a head around two-thirds life size, making it a major piece of sculpture. The stone comes from the same source as the large Victory frieze, with a similar structure to cat.34.

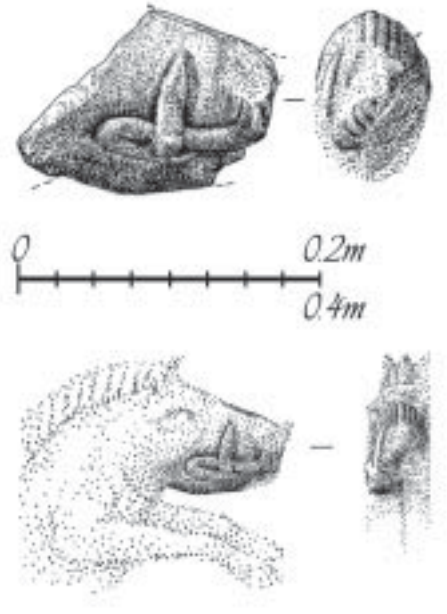

Fig 4 Fragment of a boar sculpture (by Ian G Scott)

What could it derive from? Boars (or more strictly pigs) appear in sacrifice scenes (*suovetaurilia*), although this seems unlikely

at this scale (cf. the Bridgeness slab; Phillips 1974). It is tempting to see it as a legionary emblem of Legio XX, attested at the site in a disputed (and now lost) slab (Keppie 1994, 36; *RIB* 2114). However most of the legionary emblems known from northern Britain are bas-reliefs rather than fully plastic sculpture, and are much smaller than this example (e.g. Keppie & Arnold 1984, nos 49-51; Phillips 1977, nos 97-102). There are fragments of two life-size boars in the round from Corbridge (Phillips 1977, nos 158-160, 162-3). Phillips interprets them as legionary emblems, although the front leg of no 158 appears to be contracted, suggesting a lying position which would be unusual for such an emblem. Unfortunately there are no inscriptions to confirm the identification, and these anomalous pieces could have another function. Large, sometimes life-size boar statues occur elsewhere (e.g. Henig 1995, 84-7), often in funerary contexts as the prey of a lion (e.g. Espérandieu 1908, no 1377; 1922, nos 6548-9, 6551; Wagner 1973, nos 393-4) or in one case as predator (Espérandieu 1922, no 6003). The size of the Birrens figure suggests it is probably from such a tomb guardian sculpture. While speculative, such pieces are well known from the military zone (Brewer 1986, 22-3; Hunter forthcoming), while other funerary monuments are known from Birrens (Keppie and Arnold 1984, nos 22-24).

The setting of inscription *RIB* 2110

Some of the fragments cast further light on *RIB* 2110, the dedication slab from the headquarters building which names the governor Julius Verus (Keppie 1994, 36-39). Four fragments (cat. 32, 36a-b, 38) come from a pelta, with three pieces joining to give a reconstructed height of c. 680 mm (fig 5). This matches that of *RIB* 2110 so closely (700 mm) that it is likely to have flanked this inscription. The stone for the two pieces comes from the same source, although the detailed structure differs as with the Victory frieze blocks; the stone source was probably the same as that for the larger Victory frieze.

Fig 5 Reconstructed pelta. © NMS

This suggestion carries further implications, since the pelta fragments have distinctive toolmarks from finishing: fine vertical or slightly diagonal lines on angled and vertical surfaces from the 'chatter' of the chisel's edge as it was tapped along the plane to smooth it. The inscription itself has a very smooth finish, but on the outer edges of the border similar toolmarks are visible. They are only found otherwise on the fragments of the large Victory slab (pelta 30a-d, drapery 26d, and worn traces on 26a and b).[2] The occurrence of such

2 There are hints on the blank altar (Keppie & Arnold 1984, no 17), but the coarser stone prevents certainty. Survival of such faint toolmarks depends on a number of factors, not least the final finish (some of the inscribed faces were smoothed to remove toolmarks), the coarseness of the rock grain (many of the altars are rather coarser) and the degree of weathering (as with 26a-c).

a distinctive finish on only a few pieces suggests it is the handiwork of a single sculptor. This argues that the same man carved the Victory frieze and *RIB* 2110, supporting Keppie's (1994, 43) attribution to the second cohort of Tungrians and dating it to the later Antonine period.

An imported sculpture

While most of the sculpture from Birrens is sandstone, which is abundant locally, one piece is clearly an import. This is the limestone head of a god with an animal-skin cap (cat.18; fig 6). The material has been identified by Lyall Anderson (NMS Geology) as a Jurassic bioclastic oolitic limestone with fossil oyster shell. Such oolitic limestones are found in southern England (in deposits from Lincolnshire to Dorset) and northern France. Archaeologically we can perhaps narrow the provenance down: it is most likely that the sculpture followed established trade routes from the south west of England marked by the distribution of Dorset Black Burnished pottery (BB1) from the Poole harbour area (Gillam 1976). Other examples of oolitic limestone are known in Scotland, notably an antiquarian

Fig 6 Imported limestone head. © NMS

find of a mortar from the Antonine Wall, probably from Cadder.[3] Imported sculpture is very rare in Roman Scotland - most was made locally from sandstones or gritstones, and the few imports are generally Mediterranean marble (cat 57, 79; *Britannia* 30, 1999, 332). This is the first example known to be imported from elsewhere in Britannia.[4]

Other fragments

Some minor items which fell outwith the scope of Keppie and Arnold (1984) or were not accessible at the time merit publication. All come from the 1895 excavations. One is the top of a small, crude, worn altar (fig 7a; NMS FP 40). The focus is crudely pecked into a small sub-square hollow; most of the flanking bolsters are lost, but they appear to be plain. The capital has two mouldings; one face is better finished than the others, but preserves no trace of any inscription. H 108 mm, W 154 mm, T 115 mm.

The second is part of an architectural screen with the corner moulded into a column shaft (fig 7c; NMS FP 42; Robertson 1975, 100, no 50). The front face is smoothed, while the rear is the natural fracture surface; the top is broken. The column stops 70 mm short of the bottom, suggesting it was sunk into a base to this depth; a crudely pecked vertical line below may relate to keying, while a short incision on the smooth face represents later damage. H 290 mm, W 132 mm, T 48 mm.

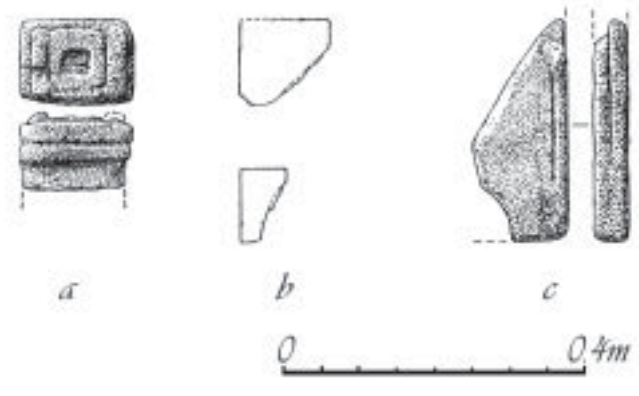

Fig 7 (a) Altar top (b) Section of mouldings: upper, cat. 34; lower, cat. 37 (c) Screen fragment. (Drawn by Ian G Scott)

3 It comes from the collection of Dr John Buchanan of Glasgow, donated to NMS long after his death (*Proc Soc Antiq Scot* 40, 1905-6, 47-8; for Buchanan's archaeological interests see Keppie 1998, 36-8). He observed excavations at Cadder which uncovered 'a considerable quantity of Roman pottery' and other finds (Buchanan 1854, 172). The *PSAS* listing of his collection mentions only the more impressive finds from the site (Samian and a fragmentary inscription), but more is held in NMS collections. Clarke (1933, 4-5) notes this material, but felt the provenance was insecure as Buchanan collected from other sites: from Stuart (1852, 304, 324, 328-9, 346-9) we know this included pottery, coins and other small finds from Duntocher, Kirkintilloch and Castlecary while NMS holdings comprise Cadder, Bearsden (New Kilpatrick) and Castlecary (*PSAS*, ibid). He also had sculpture from several sites. However the box of material which apparently contained this mortar included detached paper labels reading 'Cadder' (Clarke 1933, 4); and Macdonald, who located and examined the material, was more convinced of its homogeneity (1934, 312 n.1). A Cadder provenance thus seems likely but unproven. The item has been given the registration number x.1997.778.

4 The Cramond lioness is a non-local sandstone but the stone's origin remains uncertain, although it too may be an import from the south (Hunter & Collard 1997).

How many sculptures?

By combining the style-groupings identified by Keppie and Arnold with the geological results and a re-examination of the pieces we can present a revised estimate of the likely number of major sculptures. We have deliberately used a minimising approach, assuming fragments are from the same piece unless there is strong evidence to the contrary. The surviving fragments can be rationalised into five major items: paired Victories holding peltae flanking a wreathed inscription; paired Victories in a pediment; peltae flanking a major inscription; a boar, perhaps from a funerary monument; and pieces of an uncertain fifth sculpture.

This last comprises the group of fragments with spiral columns and wreaths (Keppie & Arnold 1984, no 33): to this we would link cat.10, the gabled niche with head of ?Minerva, on the basis of stylistic connections, thickness and identical petrology. The two shafts on the right of cat.10 can be read as parts of two column shafts, one with the worn remains of a capital. This may be connected to cat.33c, where the bases of two thin columns rise from two thicker ones; their shafts are not preserved, but from the base diameters would be a similar size. These columns are also close in size to the feature on 33a which we see as an arched colonnade. The reconstruction of this frieze remains elusive, but it is clearly not a simple rectangle: 33h preserves part of an arch, the corner of 10 is not a right angle, and the angles of some of the mouldings (e.g. 33a) would not easily fit a rectangular scheme. We suggest the frieze was framed by pairs of columns on two levels, with the lower part including a wreath and the upper featuring the Minerva figure. The arch may suggest it decorated an aedicula. However with so few fragments this remains very speculative.

Conclusion

With such fragmentary material there is always scope for new views and theories, and without new discoveries they will always remain open to debate. The Victory friezes would have been impressive and striking features when intact, and we feel these revised reconstructions take us a little further towards their likely original appearance. The detailed geological work has been crucial to the reconstruction, and shows the value of these techniques in reconstructing fragmentary material. The significance of the piece of imported limestone has been underplayed in the past: it is a rare example of imported sculpture and acts as a reminder that the Roman supply routes were not simply for the practical necessities of life. Finally, of the other fragments, the identification of the boar is most significant. While it may be a symbol of Legio XX, given its size we prefer to see it as part of a funerary sculpture, most probably the prey of a lion which once guarded the tomb of some garrison member. It is a reminder of the very human aspects to this sculpture, and of the potential it still has for new insights.

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Abbreviations

RIB R.G. Collingwood and R.P. Wright 1965, *The Roman Inscriptions of Britain I* (Oxford).

CSIR *Corpus Signorum Imperii Romani*

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SETTLEMENT, TERRITORY AND LANDSCAPE: the later prehistoric landscape in the light of the survey of Eastern Dumfriesshire

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Abstract

This paper reviews the archaeological evidence for the organisation of the later prehistoric landscape that has emerged from work in the Border Counties over the last twenty years. It challenges any assumption that prehistoric farms and territories were defined by artificial boundaries, and concludes that such boundaries were unnecessary in most of the hill country. In the light of a case-study drawn from the landscape around the fort known as Castle O'er, near Eskdalemuir, it identifies a topographically defined territorial unit whose elements include a fortified caput, a surrounding system of enclosures defined by linear earthworks, an associated ritual enclosure, and a series of lesser settlements. This unit also defines a medieval estate, and the paper speculates that the organisation of some elements of the medieval estate structure may originate in later prehistory. The paper concludes by suggesting that there are several indications of the existence of a similar pattern of later prehistoric territorial units in south-eastern Scotland.

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The Border hills provide remarkable opportunities for studying settlements in their contemporary landscapes. The apparent regularity with which settlement earthworks are scattered along the hillsides hints at the existence of both full and complete patterns of settlement. In many places the settlements have been subsumed into the upper fringe of the medieval ridged landscape, but in others elements of their contemporary farming landscape are patently visible, manifested in rickles of stones, more formal field-banks, lynchets, and clearance heaps; occasionally cord rig is visible, a sure sign that early field surfaces survive. These are the farms that make a dramatic impact on the pollen diagrams of northern England and southern Scotland towards the end of the 1st millennium BC, with a massive clearance of the forest and a concomitant rise in agricultural indicators. This paper is intended as a review of the archaeological evidence for the organisation of this landscape that has emerged over the last twenty years on the Scottish side of the border. It draws on a case-study from the recently published Royal Commission survey of Eastern Dumfriesshire (RCAHMS 1997) to provide a model for the structure of the landscape on the eve of the Roman intervention.

Evidence of extensive enclosure has been accruing steadily in south-east Scotland over many years, mostly taking the form of ditches and pit-alignments stretching out across the lowland landscape. By 1981 it had become possible to point to a number of coherent systems of pit-alignments. Of particular note on the Lothian Plain were those apparently focused on the forts at The Chesters, Drem, or Kaeheughs, Barney Mains, and also the extensive system at Newton and Castlesteads (Halliday 1982). Further afield, in Berwickshire, it

was evident that recurring axes could be identified amongst ditches and pit-alignments in the vicinity of Ayton. A tenuous case could be made for associating some of these boundaries with forts, and it appeared likely that comparable systems of enclosures would be found more widely in the uplands, hidden amongst the numerous cross-ridge dykes recorded throughout the Southern Uplands. In some cases these earthworks appeared to form systems, such as on Woden Law in the Cheviots and, perhaps more convincingly, on White Hill, south of Hawick.

With hindsight, this approach was an optimistic reaction against Piggott's long-lived dictum of footloose Celtic cowboys roaming through the countryside, and it is quite clear that many writers were doing their best to talk up some fairly fragmentary agricultural remains. Although it is now known that there are some remarkable later prehistoric and Romano-British field-systems on the Border Hills, they are still relatively few and far between. In many places, the evidence of a contemporary landscape around the settlement earthworks has been reduced to a scatter of banks and terraces poking through a veneer of medieval ridging. As far as the majority of upstanding settlements are concerned, even these fragments have been swept away.

It is a mistake, however, to assume that every settlement was accompanied by traces of a contemporary agricultural landscape. High above the upper limit of medieval cultivation, there are a host of forts and settlements with no traces of any surrounding agricultural remains. Even the subtle smoothing of the landscape that has now been recognised as the result of cultivation is only visible around a relatively small number of forts and settlements (Topping 1989, 167-8; Halliday 1993, 72-3). Furthermore, there are no grounds upon which to expect some form of artificial boundary between two or more forts in close proximity. To do so is almost certainly to misunderstand the chronology of their construction, occupation and abandonment. At Todshaw Hill, near Hawick, to take an extreme example, two forts lie within 200m of each other, but whereas one has a single house-platform within its defences, the other has rows of the complex minor earthworks of ring-ditch houses. The different character of the buildings that these two forts enclose almost certainly places their occupation and abandonment centuries apart in the 1st millennium BC.

In practice, there is little sign that artificial boundaries were normally used in the uplands to delineate blocks of ground. To take as an example Eskdale, Dumfriesshire, there are at least 120 forts and settlements upstream from Langholm, and yet only one enclosure-system and four other linear earthworks have been recorded. On this evidence, it is difficult to conclude that artificial boundaries were regularly employed in the division of this landscape and a similar pattern exists in other parts of the Borders. Throughout the Borders, there is a fundamental relationship between the distribution of settlements and the underlying topography. In the case of the upper reaches of Eskdale, virtually every spur has its own settlement, a pattern that extends northwards up the river until a point a little above Eskdalemuir. There the terrain becomes progressively more wet and hostile and the settlement distribution peters out. The choice of boundaries for prehistoric farms in such a landscape was fairly straightforward: the boundaries could follow either the crests of the ridges and the watersheds, or the courses of the burns. To use the terminology of medieval charters, the boundaries of these farms must have usually run 'where wind and water sheer'.

Thus, while it is likely that the prehistoric settlements existed within a framework of defined territories, it does not follow that their marches were marked with artificial features, and we should not expect to be able to delineate them precisely today. If, however, the only boundaries that were required were represented by natural features, such as the crests of ridges or the burn in the intervening valleys, the question arises as to why the landscape around some forts and settlements was apparently divided up with earthworks, while in other cases it was not.

Numerous theoretical reasons can be advanced for the enclosure of the landscape or the construction of march boundaries (*e.g.* see Fleming 1987), but there are three practical explanations that are of particular significance:-

1) that enclosure is a manifestation of pressure on the space available to each settlement to pursue its agricultural economy;

2) that enclosure reflects the intensification of production in an agricultural economy; and

3) that socio-political, administrative or tenurial boundaries might be identified in the landscape.

These are not exclusive explanations and it is likely that all three elements were at work, particularly where the richest soils and the most favourable climatic conditions were to be found in the lowlands of the Lothian Plain or the Tweed Basin. With an expanding agricultural economy of the sort attested in the palaeo-environmental record at the end of the 1st millennium BC, pressure on space would eventually have become an issue in these areas, and the construction of artificial boundaries would have been one way of resolving territorial disputes. As long as the economy continued to prosper and expand, and the population too, it would be but a short step before the intensification of production within a territory led to sub-division and enclosure. Thus, a progression to enclosure might be envisaged in the lowlands. In the uplands, on the other hand, with generally poorer soils, more space and lower densities of population, and the emphasis of the mixed farming regimes probably leaning towards stock farming, the need for either defined marches or large scale enclosures is less likely to have arisen.

In these terms, march boundaries and landscape enclosure are perhaps manifestations of a point when non-intensive or extensive agricultural production techniques could no longer meet the demands of consumption within the space available. Several variable factors competing in this equation can be identified: the size of the population; the extent of the existing territory; population density in respect to the economic potential of the landscape; the degree of economic development; and also, it should not be forgotten, the territorial ambitions of the communities involved and of their leaders. These factors would have combined to form a threshold that could not be crossed without spawning major changes.

The chronological point at which such a threshold was crossed, however, would have been specific to an existing territory and its people, and, therefore, would not necessarily have been a synchronous event from coast to coast. Looking at the whole of Scotland, it is clear that such a threshold was rarely crossed until well into the medieval period, for while estates and occasional assarts can be found amongst the earliest surviving medieval char-

ters, there is little evidence of enclosure until the eve of the agricultural Improvements in the 17th and 18th centuries. Indeed, virtually the only trace of extensive enclosure in mainland Scotland that can be attributed to the prehistoric period are the pit-alignments and linear earthworks in the south-east of the country.

In 1981, the contrast between the field-systems identified as of Romano-British date in the uplands and the pit-alignments focused on a number of earlier forts in the lowlands, seemed to point to a date in the mid 1st millennium BC for these boundary-systems. Since then a radiocarbon date of 2060 ± 70 BP (GU-1632; 339 cal BC - cal AD 111) has been returned from a pit-alignment at Eskbank, Midlothian (Barber 1985). The date from the linear earthwork sectioned at the Dod south of Hawick is comparable at 1905 ± 50 BP (GU-1269; cal AD 8 - 238), and the cross-ridge dyke sectioned by Peter Topping on Wether Hill, Northumberland, appears to fall in the same period. There is of course Grooved Ware from a pit-alignment at Ewart Park, Northumberland (Miket 1981), but this material may well be residual, and the interpretation of the pits as Neolithic post-holes does not stand close scrutiny (Barber 1985). The pits excavated at Marygoldhill Plantation, Berwickshire, are equally unconvincing as post-holes and produced no reliable evidence of their date (see Strong 1989). With so little secure dating evidence, it is perhaps unwise to seek the origin of these earthworks at any particular period. Nevertheless, this handful of dates coincides with dramatic events revealed in the palaeo-environmental record. Pollen diagrams show the pace of clearance progressively picking up in the second half of the 1st millennium BC, with a series of massive events recorded around the turn of the millennium and into the early centuries of the 1st millennium AD (Tipping in RCAHMS 1997, 20-1). As the tree values fall, all the agricultural indicators shoot up. The landscape was being taken in hand on a scale that had never been seen before. It is surely too much of a coincidence that the few dates available conform to this pattern. Furthermore, what little is known of the dating of the settlement sequence shows that forts were being replaced by undefended settlements right across the Borders at this time. The history of occupation of the fort at Broxmouth, East Lothian, suggests that this shift was taking place in the final centuries before the end of the 1st millennium BC (Hill 1982a & b; Ashmore and Hill 1983). Not only was the landscape being taken in hand and reorganised, but an old social order was probably being swept away.

What of this landscape that was coming into existence? Is it possible to pull out any sense of its structure? The Royal Commission's survey of upper Eskdale, coupled with a series of excavations and palynological investigations carried out by Roger Mercer and Richard Tipping (see RCAHMS 1997, 75-93), has provided a remarkable model for the sort of structure that was possibly being established across the Borders.

So much of upper Eskdale lies within modern forestry that it is difficult to appreciate the physical characteristics of its landscape. Nevertheless, around Eskdalemuir the valley of the White Esk is fairly open, with long ridges and spurs dropping down from the north-east. To the south, the hills close in upon the river until well beyond its confluence with the Black Esk at Bailiehill. There, the valley turns sharply to the east and a series of long spurs descend from the north. In general, the hills are composed of steeply-dipping Silurian shales and mudstones, and the lower slopes carry a thick mantle of till. The steeper slopes comprise a mixture of outcrops and screes, while many of the gentler inclines and hollows are

blanketed in peat. The rough pasture that preceded afforestation was largely dominated by wet grassland, and most of the improved ground is confined to terraces on the floor of the main valley.

Despite lithic evidence for Mesolithic and Neolithic activity in the valley of the Black Esk, and a probable bank barrow and two stone circles at Eskdalemuir, the palaeo-environmental record from beneath an earthwork at Over Rig, a short distance to the south, shows little sign of any anthropogenic disturbance until about 3100 BC. Located in a natural amphitheatre on the west bank of the White Esk, this pollen diagram provides an important insight into the development of the local environment. The first clearance ushered in a period of pastoral farming that was to last for about 500 years, but a more intensive phase of mixed agricultural activity began at about 2000 BC and continued into the middle of the 2nd millennium BC. Thereafter there is an hiatus in the pollen record until the construction of the earthwork during the 1st century AD.

This hiatus is particularly unfortunate, for it covers not only the period when the pattern of forts and settlements emerged, but also the transition from a wooded landscape into open country. Whether this transition took place in the dramatic fashion witnessed by the pollen record from the Solway Plain and elsewhere in the Borders is unknown. At the time of the construction of the Over Rig earthwork in the 1st century AD, farming activity in the vicinity was predominantly pastoral, and pollen from the ditches of the earthwork suggests that this agricultural regime was maintained until after AD 500. The species-rich grassland that has been recognised in the pollen data is thought to represent hay meadows on neighbouring haughland.

The pattern of settlement represented by valley-side earthworks was probably in place by the beginning of the 1st millennium AD. The typical features of these earthworks comprise an enclosure bounded by a wall, or a bank and ditch, with either the whole interior dug into the slope or at least a yard scooped out on the downslope side. The entrance usually opens into the yard, and both excavation and survey have shown that the remains of circular buildings tend to lie above the yard to the rear. In upper Eskdale they range in size from small enclosures of between 0.03ha and 0.08ha to much larger enclosures of about 0.2ha.

The overall distribution of these settlements comprises a series of earthworks of different sizes strung out at intervals along the sides of the White Esk valley (fig. 1). In some places there is a strong impression that each spur jutting into the valley is occupied by a single settlement, but elsewhere, such as between Watcarrick and Bessie's Hill, or at Shiel Burn, there are two or more settlements in close proximity, while in a few cases there are apparently none. Particularly noticeable gaps, however, occur to either side of Over Rig on the west side of the valley, and possibly between Cote and Bankheadhill on the east. The latter breaks the pattern of substantial settlements running down from the north - Clerk Hill, Clerkhill Cottages, Rennaldburn and Cote - from another two to the south - Bankheadhill and Yards Rig. The upper reaches of the Black Esk are also apparently barren, although this particular gap may be the result of afforestation. To the south of the Black Esk, the settlements that have been recorded tend to be situated on summits and shoulders, rather than on the lower slopes, and few of them show any signs of having scooped interiors.

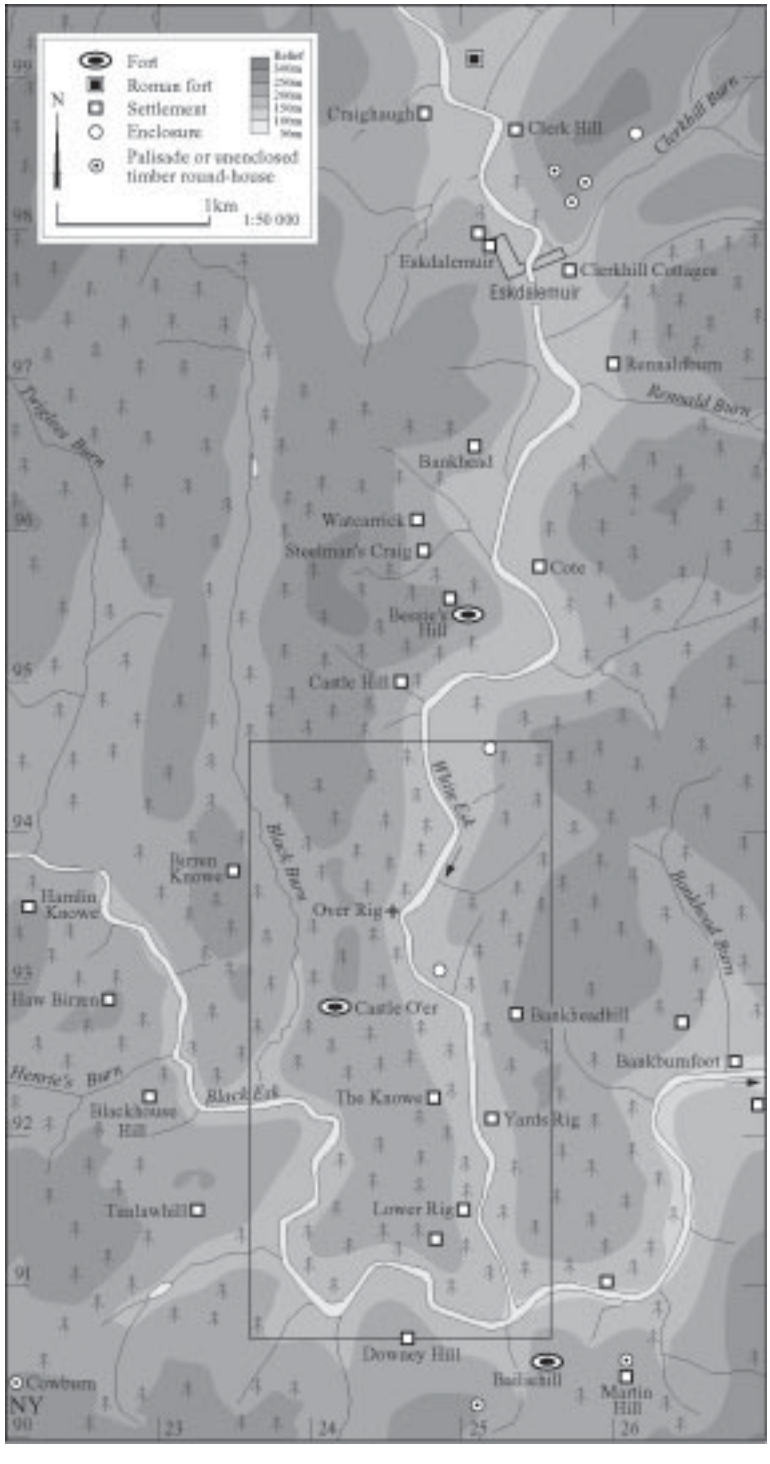

Fig. 1 Upper Eskdale. Map showing the distribution of forts and settlements between the confluence of the Black and White Esks at Bailiehill on the south, and Eskdalemuir on the north. The area of Fig. 2 is shown inset.

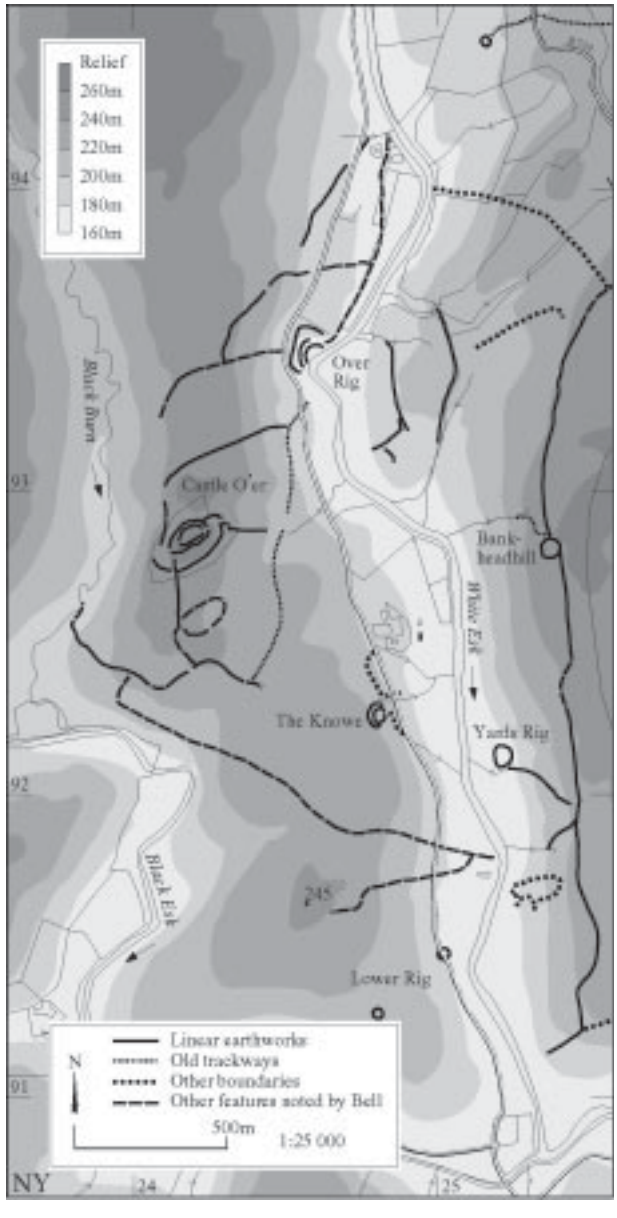

Fig.2 Castle O'er. Map showing the system of linear earthworks taking in both sides of the valley of the White Esk.

The large gaps in the distribution along the White Esk are difficult to explain simply in terms differential preservation. To the east of the White Esk the places where settlements may have been lost are easily identified and have been closely examined on the ground. A small enclosure of unknown date occurs amongst some indeterminate banks on a terrace 350m south of Crurie (top of fig. 2), but the only other possible settlement in the gap on this side of the river is represented by the apparently unfinished earthwork on the Slippery Knowe, opposite Castle O'er. On the west side of the river only two sites lie in the gap, one of them the remarkable earthwork at Over Rig (see below), and the other the fort on the summit of Castle O'er Hill. Both fall within the area enclosed by a system of linear earthworks.

The system of linear earthworks around Castle O'er was roughly mapped in 1896 by Richard Bell (fig. 2), who owned most of the ground they covered. Today, almost the entire area has been subsumed into forestry, and it is no longer possible to verify all the features recognised by Bell. Nevertheless, three linear earthworks extend away from the fort itself, and fragments of several others can be identified beneath the trees. As mapped by Bell, the various junctions between the linear earthworks suggest that the system expanded northwards from the fort in a series of stages, eventually taking in an area of at least 100ha on the west side of the valley.

On the east side of the valley there are also at least two linear earthworks connecting up natural sikes, suggesting that a much larger area of the valley was enclosed. Bell believed this to be the case, but afforestation makes it difficult to assess the integrity of this part of the system. One of the earthworks, however, the Deil's Jingle, can be traced for a distance of over 4km along the ridge. It behaves rather differently to the rest of the earthworks in the system and was evidently designed to define a much larger block of country; at one point, on Bankheadhill, the earthwork incorporates the ditch of an earlier settlement into its course.

The relationship of the boundaries west of the river to the Castle O'er fort (fig. 3) is ambiguous. The earthwork that approaches from the south (D on plan) cuts through the external bank of the annexe (C; Mercer forthcoming), but that on the east (E) originally stopped short of the annexe, leaving a broad gap that was only blocked subsequently. There is also a well-defined entrance at the south-west corner of the annexe (F), at what is probably the terminal of the boundary that approaches the fort from the north (H & G). The presence of these gaps or entrances implies that at least two of the earthworks were designed to be used in conjunction with the annexe, while the relationship between the annexe and the earthwork on the south shows that the system continued to evolve and develop over time. Charcoal samples recovered by trial excavation of the annexe ditch have produced one date of 1780 ± 80 BP (GU-2035; cal AD 75 - 428) from the primary silts, and another of 1975 ± 50 BP (GU-2029; 55 cal BC - cal AD 134) from the secondary silts (Mercer forthcoming). The annexe was evidently added to the fort at a time when the pollen evidence from Over Rig suggests that the emphasis of the farming regimes in the locality was firmly pastoral. Thus, it is likely that the linear earthworks were constructed to form a series of enclosed parks for the management of the pasture, presumably for cattle. The annexe, rather than being a component of the defences of the fort, is best seen as an element of the cattle-handling arrangements. It was probably the establishment and maintenance of this system that was responsible for the exclusion of more typical settlements from this part of the valley at the beginning of the 1st millennium AD.

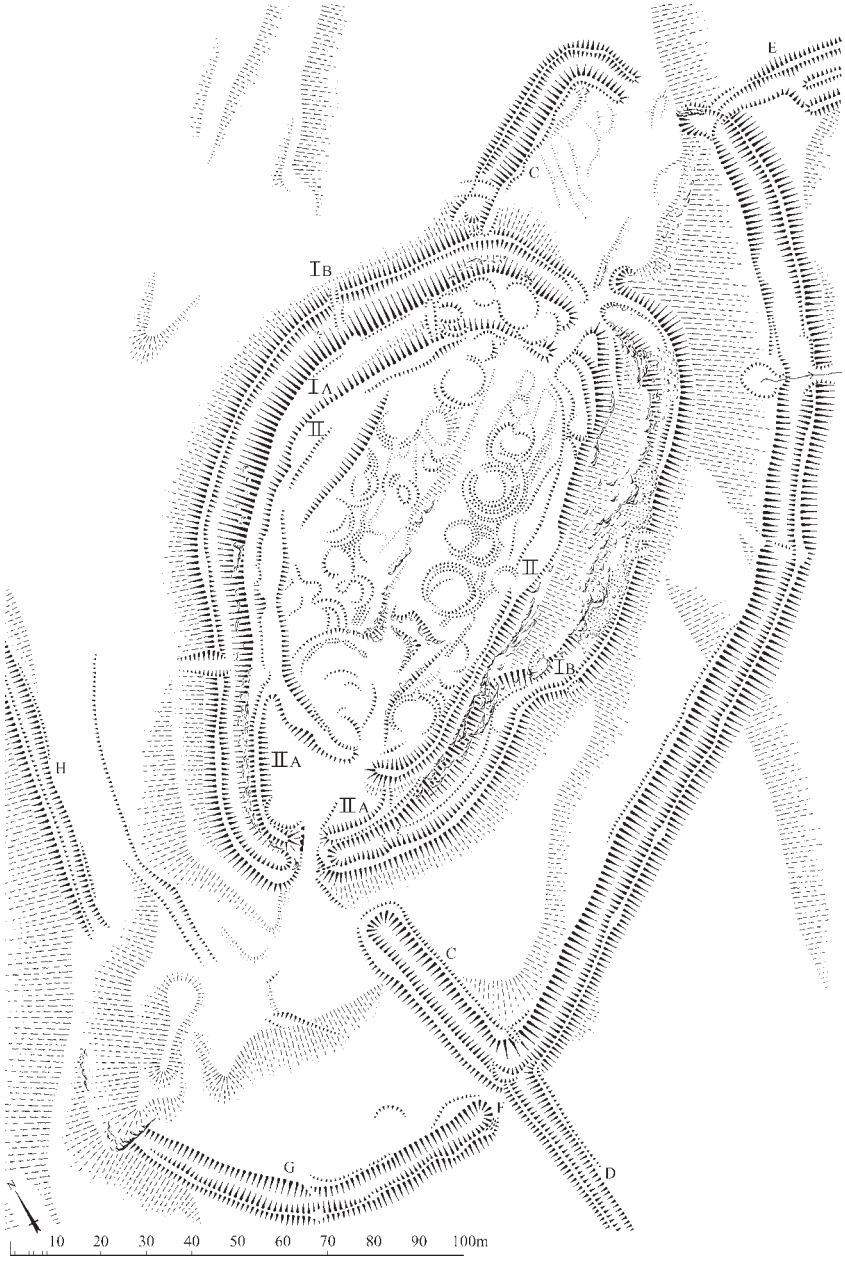

Fig. 3 Castle O'er. Plan of the fort showing the terminals of the linear earthworks in the immediate vicinity.

Castle O'er itself, with its massive ditches and commanding position, is the most imposing of the forts in upper Eskdale, and it is twice or three times the size of the majority of the settlements. The earliest visible defences comprise twin ramparts with an impressive rock-cut medial ditch (IA-B on fig. 3), which take in an area of 0.57ha on the rocky summit. This was succeeded by a smaller enclosure (0.36ha) defended by a thick stone wall (II), but at some stage the earlier rampart to either side of the south-west entrance was refurbished to form two hornworks protecting a forecourt at the entrance (IIA). The defences of the annexe (C) override the outer rampart of the period I defences on the north-east.

The interior contains traces of numerous intercutting timber buildings, mainly disposed in two bands along the axis of the fort, a disposition that is largely determined by the topography of the outcrops on the summit. Relatively few of the buildings could have stood at any one time, and it is possible to identify several sequences of construction. Of particular note are several shallow circular platforms that have been cut back into the line of the wall, and thus date from after the abandonment of the defences. The best defined of these occupy the space between the wall and the earlier defences at the north-east entrance.

Mercer's excavations at the fort have provided radiocarbon dates for several contexts in addition to the silts in the annexe ditch. Two come from the south-west entrance through the period II wall: the earlier, 1840 ± 90 BP (GU-2033; 2 cal BC - cal AD 412), comes from timberwork lining the gateway, while the second, 1655 ± 80 BP (GU-2037; cal AD 231 - 599), is from charcoal beneath the roadway. The context of the third date, 1725 ± 80 BP (GU-2032; cal AD 126 - 537), lies immediately above the primary silt in the northern butt-end of the period I ditch at the south-western entrance, although the ditch itself may well have been cleaned out with the refurbishment of the earlier rampart in period IIA. There can be little doubt that they indicate at least one major period of fortified occupation in the early centuries of the 1st millennium AD.

By comparison with what is known of other forts in the eastern Borders, the radiocarbon dates from the defences of Castle O'er are unusual, attributing at least one phase of its defences to the same period to which the smaller settlement earthworks in the area are conventionally dated (see Jobey 1975). Thus, by the beginning of the 1st millennium AD, the settlement pattern in this sector of the White Esk appears to have comprised a fortified centre on the one hand, with a series of smaller, perhaps dependent, farms on the other. An obvious comparison would be with a medieval estate, its castle sitting at the heart of demesne lands, surrounded by a scatter of farmsteads in tenanted holdings. Should this sort of analogy hold here, it raises the question of the extent of the territorial unit centred on Castle O'er's, and the status of other forts in the area.

In the later history of the area, the parish of Eskdalemuir emerged from a medieval estate that took in the upper reaches of both the White and Black Esks, from their confluence at Bailiehill right up to the watershed. These were the lands of Tomleuchar and Watcarrick granted by Robert Avenel to the Cistercian abbey of Melrose in the reign of Malcolm IV (1153-65). The boundary is described in a confirmation charter of William I. On the east it runs 'by the back of Harewude, and so descends to where the two Esks meet' (Armstrong 1883, 147). Thus it coincides with the course of the Deil's Jingle, which was later to form the parish boundary. No other Cistercian estate in southern Scotland is known to have been

defined by a linear earthwork in this way, raising the possibility that the Deil's Jingle is not simply the boundary of the medieval estate, originating in a much earlier land-holding occupying the same topographically defined area

Within the area of the medieval estate there are two other forts - Over Cassock and Bessie's Hill - but neither displays any comparable pattern of occupation to Castle O'er. In each case the fort appears to have been replaced by a lightly enclosed settlement, which at Over Cassock overlies the earlier defences. This pattern occurs widely in the Borders. If these settlements are broadly contemporary with other examples in the valley, then both forts are probably rather earlier than the dated phase at Castle O'er.

To the south, however, at Bailiehill, immediately across the march of the medieval estate, there is a fort that bears a striking similarity to Castle O'er, both for the presence of a large defended annexe of about 1ha that has been added to the earlier defences, and for the

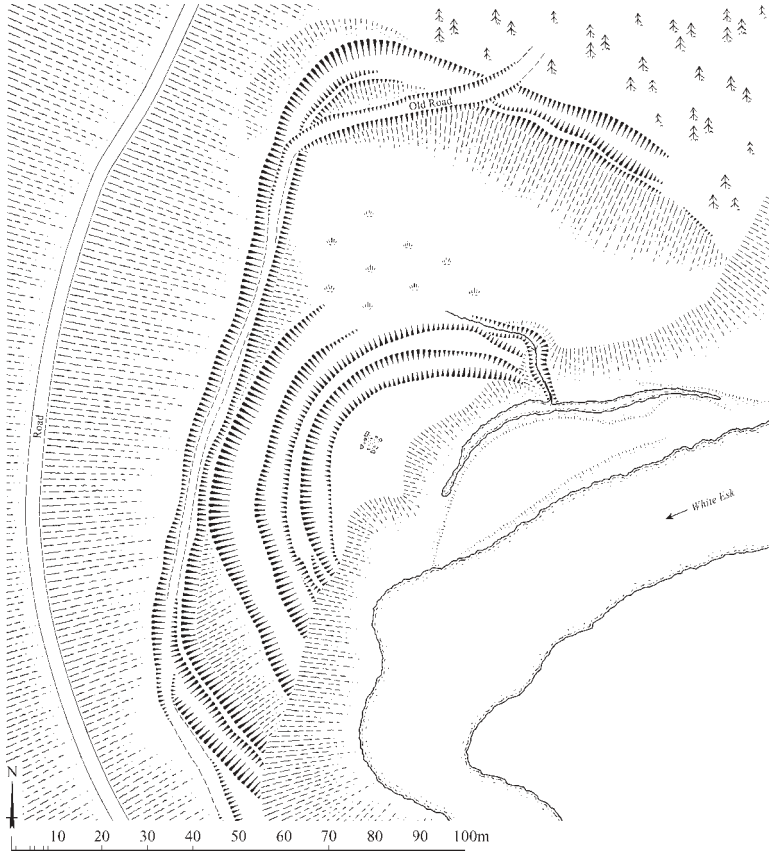

Fig. 4 Over Rig. Plan of the earthwork showing the slopes of the natural amphitheatre in which it lies.

platforms of circular timber buildings constructed across the latest ramparts. In other respects the defences of the two forts appear to have evolved independently, but the similarities in their sequences strongly suggest at least one period when they were both in occupation. That they should also be intervisible on opposite sides of the confluence of the Black and White Esks, is perhaps the best confirmation of a prehistoric territorial division at this point in the landscape.

The only element so far missing from the prehistoric territory that has been postulated, is the equivalent of the proprietorial chapel, which is such a common feature in the structure of the medieval landscape. The excavation of the extraordinary earthwork at Over Rig (fig. 4), however, has gone some way to filling this gap. Set on the floor of a natural amphitheatre on the west bank of the River White Esk, Over Rig lies in a position where water has always collected from the adjacent slopes and contrasts with the well-drained locations that are usually occupied by conventional settlements of this period. The main perimeter comprises a triple-ditched C-shaped earthwork backing onto the eroding cliff that forms the river bank at this point, but there is also an outlying bank and ditch on the slopes above.

Excavation of the enclosure was necessitated by the heavy erosion that was occurring along the river bank, and was carried out by Roger Mercer on behalf of Historic Scotland. Environmental and geomorphological investigation of the site, concurrent with the excavation, showed that the enclosure had always backed onto the river, probably at a time when the cliff was about 5m high. The projected arcs of the walls of two eroded timber buildings on the present cliff-edge show that at least 10m has been lost from the north-eastern side of the interior, and reconstruction of the fluvial history of this sector of the river suggests that as much as 60m may have been lost towards the south-east. Despite the loss of so much of the interior, the excavation provided a fascinating insight into the use of the site. The surface of the peat deposit on the floor of the amphitheatre had been consolidated with a raft of clay, and the interior was defined by a timber palisade set some 2m to 4m within the inner ditch. The palisade had been rebuilt on at least two occasions, and there was also evidence that the inner ditch had been extensively recut.

Apart from the two heavily eroded timber buildings on the cliff-edge, the only other structure in the surviving portion of the interior was a setting of stones immediately within the palisade on the south-west. Slightly trapezoidal on plan, with one slab set on edge across its axis on the south-east, the setting measures a maximum of 4.4m from north-west to south-east by 4m transversely. The stones were set into the surface of the clay raft, and there was nothing to indicate their function. The timber buildings were more conventional structures, but in both instances there was evidence of industrial activity, largely in the form of whole or broken whetstones and a quantity of slag. Amongst the numerous pieces of wood preserved in waterlogged deposits in the inner ditch, there were a handled scoop and two small dirks, while minute fragments of burnt bone were found in the primary deposits of all three ditches. Fragments from several glass bangles dating from the middle decades of the 1st century AD were also recovered from the clay raft. Six radiocarbon dates relating to the construction and early use of Over Rig (GU-1891-4 and 2030-1) range from 2025 ± 145 to 2010 ± 55 BP (falling within the span 391 cal BC - cal AD 332).

If the situation of the earthworks on the floor of the amphitheatre was not sufficient to indicate that the enclosure had some special significance, then the results of the excavation

have clearly demonstrated that this is no ordinary settlement site. The innermost ditch and bank might have prevented the interior from being inundated by a flash flood, but it is difficult to assign any utilitarian purpose to the outer earthworks. In the absence of any incontrovertible evidence of domestic occupation, these factors have led the excavator to conclude that the major purpose of the enclosure was to provide a stage for ceremonies and rituals, its position in such a natural amphitheatre perhaps implying an audience on the slopes above. The situation of such an enclosure so close to Castle O'er, in the gap in the distribution of settlements, can hardly be coincidence.

Assuming that this assemblage of different types of remains do amount to a later prehistoric territorial unit in Eskdale, what are the conclusions that should be drawn from it? Evidently there are socio/political implications, for not only must there have been some form of resident aristocracy, but also an aristocracy that held sway not far in advance of the Roman frontier. Such a small unit, however, is unlikely to represent the totality of a tribe, or to put it in the terminology of the social order that emerges from the pages of early medieval history, a kingdom. Castle O'er is presumably a sub-unit of social and political power that needs to be multiplied up across the country, possibly in a series of tiers, to form such kingdoms. Of the equivalent units in the rest of Eastern Dumfriesshire, however, there is little sign and none has been detected in the settlement distributions.

The only course of enquiry left open is to ask the question from the opposite direction. What was the origin of the medieval estate structure in Dumfriesshire? From where, for that matter, did the marches of the Bruce Lordship in Annandale emerge? Like the coincidence of the postulated Castle O'er territory with the lands of Tomleuchar and Watcarrick, was it topographically determined, or was there some more deep-seated structure to this landscape?

Continuity from the Scandinavian settlement of Dumfriesshire (*c.* AD 880-920) into the Anglo-Norman period in the 12th century is witnessed by the number of *-by* place-names (signifying a farm) prefixed with Anglo-Norman personal names. In addition, an *Inquisitio* conducted by David I prior to his ascent to the Scottish throne in 1124 shows that the estate structure was certainly in place before the establishment of the Bruce Lordship in Annandale. The *Inquisitio* identifies lands that were possessions of the church of Glasgow, and lists a number of recognisable blocks of land or estates that subsequently emerged as parishes in the vicinity of Hoddom. Although some of the parishes in Dumfriesshire were only erected at a relatively late date in the medieval period, there is a close correspondence between the parish structure and the secular medieval holdings throughout the area. Thus, there is no real reason to doubt that the boundaries of the early estates named in the *Inquisitio* were the same as those of their succeeding parishes. Furthermore, if some of these estates can be shown to belong to the pre-Norman landscape, then there is little reason to suppose that a new estate structure was introduced with the establishment of the Bruce Lordship. In short, it is likely that the pattern of estates that can be identified in the medieval period originated at an earlier date.

How much earlier the estate pattern may be is difficult to say, but it has been suggested that the lands mentioned in the *Inquisitio* formed the *parochia* (dependent lands and churches) of a minster at Hoddom (Lowe 1991), implying a pattern of organisation dating from at least the 8th century AD. It is worth noting also the presence of the earlier British elements

Tref- (a homestead) and *Aber-* (mouth of or confluence) amongst the names listed in the *Inquisitio*.

As to the antiquity of the Lordship as a unit, the 6ha fort on Burnswark dominates the whole of Annandale. The Bruces eventually chose Lochmaben close by to the west as their *caput*, while the Romans established their administrative centre to the south at Birrens. Just to the north of Lochmaben there is another immensely impressive fortification commanding the centre of the valley, and of course Lochmaben itself is perhaps the *Locus Maponi* of the Ravenna Cosmography (Rivet and Smith 1979, 395-6), interpreted by some as a native hosting place. It would come as little surprise to find that the medieval lordship has preserved some element of an earlier tribal territory, but it would be too simplistic to derive the medieval estate structure directly out of the landscape that emerged at the end of the 1st millennium BC.

The question remains as to whether the Castle O'er model can be detected in the prehistoric landscape in the eastern Borders. As yet the boundary-systems there cannot be marshalled into any complete territorial units, but there can be little doubt that they are a manifestation of some form of territorial organisation. Moreover, it is evident that there are common elements in both the settlement and palaeo-environmental records between the eastern and western Borders. The landscape of the mid 1st millennium BC, its pattern of settlement apparently based on numerous fortified earthworks of various sizes, had dramatically changed before the turn of the millennium. This is implicit in the palaeo-environmental data, but it is also seen in the widespread abandonment of fort defences that has long been observed from Northumberland to East Lothian in the east, and from Peeblesshire to Dumfriesshire in the west. In the light of Castle O'er, it appears likely that the defences of some of the smaller forts could have remained in use throughout the Roman Period, forming the *caputs* of a newly emerging structure, but without excavation it will be difficult to identify them. Obvious candidates include the small fort with its surrounding system of linear earthworks on White Hill, Roxburghshire, and the rather larger forts enclosed by substantial earthwork enclosures at Marygoldhill Plantation and Big Chesters, Bowshiel, in Berwickshire, and Torwoodlee in Selkirkshire (Halliday 1982, 77-8).

Torwoodlee, of course, is better known for the broch that overlies the fort, and it is perhaps such exotic elements in the settlement architecture south of the Forth dating from the 1st and 2nd centuries AD that provide a clue to the rise of a new order. The appearance of brochs in the lowlands has often been attributed to immigrants from the north or west (see discussion in Macinnes 1985, 237-8). In detail, however, few of them stand close comparison with those in the far north. Edinshall, in Berwickshire, for instance, dwarfs any northern broch. Rather than immigrants erecting these towers, it is far more likely that they stand witness to a local illusion of grandeur. The idea has travelled, but not the people. The prestige of such a structure to its occupants can hardly be doubted, and, if the continuity from earlier timber structures at Buchlyvie (Main 1979, 47-8) and Leckie (MacKie 1982, 61) in Stirlingshire is indeed correct, then perhaps they can be attributed to a new aristocracy emerging from the contemporary farming landscape. Certainly the assemblages of Roman artefacts that have been recovered from these structures, outclass those from any of the more typical Romano-British settlements that have been excavated. What could be more suitable as the *caput* of what would have been, in effect, a prehistoric estate? Moreover, it

can be of no surprise that some of the structures fulfilling such roles should meet a violent end, as seems to have been the case with a number of brochs (MacKie 1982, 65-6; but see Macinnes 1985, 238). If they did not succumb in the face of Roman power, they might just as easily have fallen victim to natural selection amongst their neighbours.

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BRITTONIC PLACE-NAMES from SOUTH-WEST SCOTLAND, Part 3: *Vindogara*, Elvan Water, 'Mondedamdereg', Troquhain and Tarelgin

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This paper, in a series on toponyms in south-west Scotland, discusses Ptolemy's Vindogara, Elvan Water near Wanlockhead, Tarelgin near Ayr, and Troquhain near New Galloway, which have Brittonic names explicable as 'white ridge', 'salt stream', 'willow homestead', and 'homestead of a feat'. It also discusses the lost name of 'Mondedamdereg' near Ayr, apparently Gaelic for 'red stag hill'.

Ptolemy's *Vindogara*

Ptolemy mentions *Vindogara* as a *polis* or city amongst the Dumnonii of south-west Scotland. Since he elsewhere mentions *Vindogara Sinus*, which must be Irvine Bay, *Vindogara* has been taken as a nearby but unlocated Roman fort or camp. The meaning of the name has likewise been problematic. The first element is British 'white' (compare Welsh *gwyn* 'white'). But the second has been obscure. Watson linked it with Gaelic *gar*, *garan* 'scrub', which he thought might survive in modern *Girvan*.[1] Yet this is not satisfactory, *Girvan* surely being Brittonic (not Gaelic) and related to Welsh *garw* 'rough', originally referring to the river Girvan 'rough one, turbulent one'.[2] Rivet and Smith try another tack, emending Ptolemy's form to *-mara* 'sea, lake' or *-cara* 'rock?', with a sense 'bright loch' or 'bright rock'.[3] That is little better.

This note tries a new approach. There is a Celtic form represented by Welsh *gar* 'leg, shank, thigh', Cornish *gar* 'leg', Middle Breton *garr* 'leg', and Old Irish *gairr* 'calf of the leg'. The Welsh word occurs in the eleventh-century *Mabinogion* tale of Culhwch and Olwen, where a spear is flung at a giant so that it stabs his kneecap (*aual y garr* 'shank's apple').[4] Welsh *dwyar* 'two legs, thighs', cognate with Breton *diouar* 'thighs', also points to an early British form. *Gar* may appear too in the name of the North British hero Gwyddno Garanhir 'Gwyddno Longshank' (linked with tales of a drowned kingdom in Cardigan Bay).[5] So *gar* would represent a form familiar in ancient Celtic.

We can hence use it to explain Ptolemy's *Vindogara* as 'white shank', meaning a white ridge or spur of land. There is no topographical difficulty here. Shangton in Leicestershire is explained as a farmstead by a 'shank' or hill-spur.[6] Pitlurg in Aberdeenshire is Gaelic *peit na luirge* 'portion of the shank', a shank-like strip of land; it parallels *Lurgyndaspok* 'the bishop's leg' (*Lorg in t-Easpog*), another Aberdeenshire name (now obsolete) figuring in a document of 1391.[7] Welsh *esgair* 'leg, shank' means 'ridge, mountain spur' as well, and is

1 W J Watson, *The Celtic Place-Names of Scotland*, Edinburgh (1926), 32
2 A C Breeze, 'Girvan, Ayrshire', *Scottish Language*, 18 (1999), 48-9
3 A L F Rivet and Colin Smith, *The Place-Names of Roman Britain*, London (1979), 501-2
4 *Geiriadur Prifysgol Cymru*, Caerdydd (1950-), 40
5 *Geiriadur*, 1107, 1380
6 A D Mills, *A Dictionary of English Place-Names*, Oxford (1991), 291
7 Watson, 412; K H Jackson, *The Gaelic Notes in the Book of Deer*, Cambridge (1972), 145

common in place-names (*Esgairdawe* 'ridge by the river Tawe', *Esgair Ddu* 'black ridge'). It figures as a common noun in the twelfth-century *Mabinogion* tale of Branwen, where a distant face is mistaken for a mountain ridge (*eskeir*) between two lakes.[8] (Branwen explains them as the nose and eyes of her brother, a giant, who is coming to rescue her from male violence.) The Irish cognate *eiscir* means 'ridge', as at Esker in counties Dublin and Longford. It gives the geomorphological term *esker*, describing the long winding ridges of sand and gravel (called *kames* in Scotland) left by the melt-water of ancient glaciers. Finally, Welsh *braich* means 'arm', but also 'ridge or spur (of mountain), headland', as at Braich-y-Pwll 'headland of the pool' protruding into the Irish Sea near Aberdaron, Gwynedd.[9] So we may reasonably take Ptolemy's *-gara* as a word for leg or shank that here means 'ridge of land'.

Can we locate this 'white ridge' or 'white headland'? Perhaps. The obvious site is the great headland at Troon (Gaelic *an t-Sròn* 'the nose; the headland'), jutting into Irvine Bay. This was a natural defensive site with a harbour (it is still a port). Local experts will be able to say if there is evidence for early habitation at Troon, and whether 'white headland' (from white sands at this low-lying promontory's foot?) makes sense as a name for the place.

Even if there is evidence for Celtic and Roman settlement at Troon, and whiteness galore, it may be objected that Irish *gairr* is an *i*-stem noun, pointing to an original British *Vindogaris*, not *Vindogara*.[10] Yet corruption in Ptolemy's text is always possible; it would here be aided by classical toponyms, such as *Gargara* (a Greek city near Troy); and emendation to *Vindogaris* in any case leaves us with a plausible meaning, as the changes proposed by Rivet and Smith do not. So there seem grounds to accept *Vindogara* as meaning 'white ridge, white headland'. If this were the name of the promontory at Troon, it implies the place was known to Roman soldiers and traders. The headland would also have given its name to Irvine Bay, stretching north of it.

Nevertheless, these arguments on *Vindogara*'s location can hardly be accepted without archaeological evidence. If ancient defences, pottery, and coins are absent from Troon, Ptolemy's *Vindogara* may have to be sought elsewhere in south-west Scotland.

Elvan Water, Clydesdale

Above the 900-foot contour in upper Clydesdale, by the main Lockerbie-Glasgow railway line, is the hamlet of Elvanfoot (NS 9517). It takes its name from Elvan Water, which joins the Clyde nearby. Elvan Water itself rises five miles south-west, near the old mining villages of Leadhills and Wanlockhead. The name of Elvan, surely Brittonic, is recorded by Newbattle charters in *Brother-alewyn*, *-awyn*, *Brothir-alewyn*, *Brothyr-alewyn*; early modern sources give it as *Aluan*, *Aluine*, and *Aldvine*. But its meaning has been unknown, though it has been compared with *Penhalwyn* (1288), the farm of Penhallyn (SX 2197) near Bude in Cornwall.[11]

8 *Geiriadur*, 1242
9 *Geiriadur*, 307.
10 Cf. Rudolph Thurneysen, *A Grammar of Old Irish*, Dublin (1946), 192
11 Watson, 197, 468-9

Yet a clue is provided by Watson's translation of *Brother-* as Gaelic *brugh ar* 'mansion on'. If a Brittonic name was transmitted via medieval Gaelic, we should expect initial *h* to be lost, as Gaelic has kept this in loanwords during modern times only. This suggests an original Cumbric form resembling 'Halewyn'. If so, this indicates an equivalent of Middle Welsh *halwyn* (Modern Welsh *halen*) and Old Cornish *haloin* 'salt'.[12]

Halwyn 'salt' provides names for various Welsh steams, some of them far from the sea. A stream east of Lanwyddelan (SJ 0801) in north Powys was once called *Halai*; there is a *Halen* in Carmarthenshire, near Newcastle Emlyn (SN 3040), and a *Nant Heli* south of Llanbryn-mair (SH 8902) in north Powys.[13] In England there are streams called Saw Brook (originally *Saltbroc*), Saltburn, and Saltfleet.[14] Thomas thought all these streams tasted of salt, including the inland ones.

Elvan Water borders a mining area, once famous for producing lead and even gold. So its waters, flowing through an area rich in minerals, may contain high levels of salt. This hypothesis, which would neatly explain the name of Elvan Water (and perhaps that of Penhallyn in Cornwall?), can be tested scientifically. Hydrological surveys of the Southern Uplands will contain chemical analyses of Elvan Water. If these show high salt content, we shall prove the name is a Cumbric one meaning 'salt (river)'. The loss of *h* here would suggest transmission via Gaelic, which displaced Cumbric in this region before it gave way to English.

'Monedamdereg', near Ayr

Monedamdereg figures in an inspection of 1367 of a charter of Alexander II.[15] The inspection gives the boundary of the burgh lands of Ayr, which started at *Inuerdon*', the mouth of the river Doon, went eastwards and then northwards to the river Ayr, and then west to the sea. Of places on it, the easiest to find now is *Lochfergus*', Fergus Loch, four miles east-south-east of Ayr (NS 3918). Fergus Loch still marks the eastern limit of Ayr parish. *Monedamdereg* must thus have been within a mile or so of the loch's south end, perhaps by the modern farm of Mosshill, though it cannot have been far from *Pollecleuan*, the farm of Purclewan (NS 3715) in Dalrymple parish, which is mentioned with it.[16]

Monedamdereg is Gaelic. The elements are *monadh* 'hill, mountain', *damh* 'ox; stag', and *dearg* 'red', and it means 'hill of the red stag' (red stags occur in Irish texts, red oxen do not). As such it offers a glimpse of medieval Kyle, when Gaelic was spoken in Ayr and red deer grazed nearby. But it also gives a lesson in the dangers of place-name research. Watson, citing *Registrum Magni Sigilli Regum Scotorum*, quotes the form as 'Monediwyerge', explaining the last part as the genitive of Middle Common Gaelic *díbergg* 'brigandage, marauding, rapine'.[17] The etymology 'pillage hill' would suggest that the rule of law was weak,

12 *Geiriadur*, 1816
13 R J Thomas, *Enwau Afonydd a Nentydd Cymru*, Caerdydd (1938), 27
14 Thomas, 27; Mills, 284
15 *The Acts of David II, King of Scots 1329-1371*, ed. Bruce Webster, Edinburgh (1982), 402-3
16 *The Acts of William I, King of Scots 1165-1214*, ed. G W S Barrow, Edinburgh (1971), 427, 518
17 Watson, 400, 521

violent crime was common only miles from Ayr, and a hill within sight of the town was bandit territory.

Yet the form, etymology, and implication seem ghosts. Watson quotes the inspection of 1367 from the nineteenth-century edition of the register of the great seal of the kings of Scots, where it is item 262 in volume one.[18] It has not been possible to check how the reading arose. But the context points to his 'Monediwyerge' as a corruption of *Monedamdereg*, which appears thus in Webster's edition of the 1367 inspection and Barrow's of the original burgh charter of about 1205.

If so, the outlaws of Ayr's 'hill of pillage' vanish, to be replaced by stags. The moral here is that minor inaccuracy in a text (especially for place-names) can produce wrong historical interpretation.

Tarelgin, near Ayr

Tarelgin is an isolated farm eight miles east of Ayr, just north of the A70 Ayr-Cumnock road (NS 4620). Its name is attested in 1449 as *Trarelgin*, where the first element is Brittonic *tre-* 'homestead, settlement'. Watson thought the whole name might mean 'homestead on the rock', comparing Welsh *Tre'r graig*.[19] But this makes neither phonological nor topographical sense (Tarelgin is sited on a gentle hillside at the 500 foot contour, not on a rock).

Another explanation is thus possible. The Welsh for 'willow tree' is *helygen*, cognate with Old Cornish *heligen* (glossing *salix* 'willow') and Breton *halegenn*.[20] This is attested from early times and is common in place-names. In Ceredigion there is Llanfair Tref Helygen or Llanfair Trelygen 'St Mary's church of Helygen's homestead', near Newcastle Emlyn (SN 3444). At this former parish (so small that it does not figure on standard maps) 'Helygen' is a personal name.[21] The form *Trarelgin*, by contrast, suggests that in Ayrshire we have a common noun, part of the Cumbric equivalent of Welsh *tre'r helygen* 'willow-tree homestead'.

If so, Tarelgin corresponds to other places named after willows, such as Wellow 'willow tree' on the Isle of Wight, Welwyn 'willow trees' in Hertfordshire, and Willoughby 'farmstead of the willow-trees' in Lincolnshire.[22] Of the many species of willows, some grow by water, but other habitats include thickets, woods, commons, and moors.[23] So Tarelgin can reasonably be taken as named after a willow tree that grew in the district of Kyle over a thousand years ago.

18 *Registrum Magni Sigilli Regum Scotorum*, ed. J M Thomson and others, Edinburgh (1882-87, 1912)
19 Watson, 360, 362
20 *Geiriadur*, 1846
21 Thomas, 149
22 Mills, 350, 351, 361
23 Thomas Schauer, *A Field Guide to the Wild Flowers of Britain and Europe*, London (1982), 318, 320

Troquhain, near New Galloway

Troquhain is a farm surrounded by trees on the Dumfries road, three miles east of New Galloway (NX 6879). A mile north-east is Troquhain Hill, rising to over 1250 feet. This place, recorded as *Trechanis* (with English plural) in 1467, has a double at Troquhain, an upland farm five miles east of Maybole in South Ayrshire (NS 3709), which appears as *Treuchane* and *Treuechane* in 1371 and *Troquhan* in 1511.[24] These Scottish places have a parallel at Troughend, near Otterburn in Northumberland (NY 8692), recorded as *Trocquen* in 1242, *Trequenne* in 1279, and *Trehquen* and *Troghwen* in 1293.[25]

The first element here is the Cumbric equivalent of Welsh *Tre-* 'homestead, settlement'. The second has been mysterious. Yet it may be equivalent to Welsh *chwaen* 'occurrence, event, chance, adventure, expedition, feat, exploit'. Though now obsolete in standard Welsh, the word survives in place-names. On the modern map are the farms of Y Chwaen-bach, -ddu, -goch, -hen, and -wen near Llannerch-y-medd in north Anglesey (SH 4184), with suffixes respectively meaning little, black, red, old, and white. There are or were Y Chwaen, a mansion in Denbighshire, and Hafod-y-chwaen 'summer dwelling of the *chwaen*' (not marked on the 1:50,000 map) between Betws-y-Coed and Penmachno in Snowdonia.[26]

As regards form, our Scottish and English names can easily be taken as equivalent to Welsh *Tre-chwaen* 'homestead of an exploit'. The difficulty is in explaining what this means. It is not helped by the fact that *chwaen* is of unknown etymology, with no cognate in Cornish, Breton, or Irish. Yet for Troquhain and Troughend it may be best to take the literal meaning as correct and relate these places to early feats, perhaps ones of war. Other place-names support this. Dalwinnie in Highland (NN 6384) was a 'field of champions' (in Gaelic, *dail-chuinnidh*); we also have *Gleann Cheatharnaich* 'glen of a warrior' near Duthil (NH 9324), some thirty miles north.[27] Less intimidating and defiant is Mondrum, near Crewe in Cheshire, which has been linked to Old English *mandream* 'joyous life amongst men, joyous noise', the settlement perhaps having a reputation for village sports, feasting, or merriment.[28]

Troquhain and Troughend may thus have been known for strenuous feats. Despite the evidence of Mondrum, these were probably of war, not peace. Troughend is situated on Dere Street (the modern A 68), the Roman road running from Corbridge on the Tyne via High Rochester, Carter Bar, and Jedburgh to Edinburgh. From the Roman period until modern times this was a vital military road, repeatedly used by invaders of Scotland. Trouble might be expected on it.[29] Its reputation was such that Soutra, where Edinburgh at last comes into sight for travellers northward, is apparently mentioned in the Welsh *Mabinogion*, centuries after Lothian was lost by the Britons.[30] Troquhain in Galloway is also on an obvious route for armies. It lies three miles from a strategic bridge, where the A 712 now crosses

24 Watson, 362-3
25 Eilert Ekwall, *The Concise Oxford Dictionary of English Place-Names*, 4th edn, Oxford (1960), 362
26 *Geiriadur*, 838
27 Watson, 145, 419; cf. Richard Coates and Andrew Breeze, *Celtic Voices, English Places*, Stamford (2000), 287
28 Ekwall, 329
29 A C Breeze, 'Froissart's *Montres* and Melrose Abbey', *Scottish Language*, 18 (1999), 35-7
30 A C Breeze, 'Soutra in Lothian and Dinsol in *Culhwch and Olwen*', *The Innes Review*, 51/1 (2000), 76-9

the Water of Ken near Kenmure Castle, stronghold of the lords of Galloway. Only Troquhain in Carrick seems far from lines of communication, though it was clearly more important in the middle ages, when its site may well have seen bloodshed.

The names do not seem early. Jackson noted that *chw-* in Welsh and *c'hw-* in Breton are a late development, hardly indicated in spelling before the Middle Welsh and Middle Breton periods (beginning about 1100).[31] If (as is likely) Cumbric resembled Welsh and Breton, the name of Troughend perhaps dates from the eleventh century, when Cumbric was still spoken in neighbouring Strathclyde. At this date much of south-west Scotland and Cumberland had been re-occupied by Cumbric-speaking Strathclyders, so that settlement at Troughend may be due to British recolonization. Its name would hence not have been borrowed by English much before the twelfth century. If so, it would be an instance of late Old Cumbric in northern England, as at Castle Hewin (Cumbric *Castell Ewein* 'Owein's castle') between Carlisle and Penrith.[32] *Troquhain*, perhaps not an old formation, would have been borrowed by English at a similar date. Unfortunately, the Celtic sound-change in these forms is obscured by an equivalent change in English first represented in the tenth-century Lindisfarne glosses. In late Old Northumbrian, the guttural element of [hw] became emphasized, and this (spelt *quh*) existed in Scots dialect until the eighteenth century.[33]

Despite problems of dating, the evidence of Welsh *chwaen* suggests conflict at Troquhain in Ayrshire, Troquhain in Galloway, and Troughend in Northumberland. They are perhaps old battle-fields. When they were settled permanently, this was remembered, so that they all gained the name 'homestead (at the site) of exploit, settlement (of the place of) of a feat'. (The 1371 form *Treuechane* may even contain the definite article: hence 'homestead of the feat' = Welsh *Tref y chwaen*.) However remote and tranquil these three places may now be, they seem evidence for ancient fighting in North Britain; or more innocently of ancient sports.

31 K H Jackson, *Language and History in Early Britain*, Edinburgh (1953), 525-6
32 Cf. K H Jackson, 'Angles and Britons in Northumbria and Cumbria', in *Angles and Britons* (Cardiff, 1963), 60-84, at 81
33 See the *Oxford English Dictionary* entry for *wh*

HOLYWOOD, AN EARLY MEDIAEVAL MONASTERY:
Problems and Possibilities

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The Praemonstratensian monastery at Holywood was dissolved in AD 1606. During its 400 year history very little has been recorded of its size, holdings, value or sphere of influence. Even its name is in doubt. Very little trace of the mediaeval buildings remains at the site, and only a few sculpted stones in a nearby garden can testify as to its former architectural beauty and local importance as a place of contemplation and worship.

This brief essay is an attempt to deal with the largely folkloric history of the foundation prior to the arrival of the Praemonstratensian canons and place it in an early mediaeval context, namely the 6th century to the 12th century. Almost all the historians who have commented on the site have given an earlier date than AD 1153 for its foundations.

The place-name appears to be simple enough. Holywood is an Anglo-Saxon name whose meaning derives from the two elements '*halig'* and '*wode*'. The name which appears in many mediaeval references is *Sacer boscus*, the same words rendered in Latin (Cottineau 1935-7 p 1427). Also *Sacer nemus* which appears in around 1704 as the name for the site (Hay MS). Another name appears as Dercongal – apparently British – also Darcungal in the *Liber S. Marie de Melros* (Melrose Charters, Bannatyne Club). This name contains two elements *'der'*, the oak wood, and *'Congal'*, the name of the saint Convallus or Cinwall, who was a companion of Saint Kentigern according to Jocelin of Furness (*Vita* trans. Llanerch 1985, p 33). The name of this saint also appears in an Irish form as *'Congal'* or *'Conell'* as a place-name element in Kirkconnell which appears several times in both Dumfries and Galloway. Watson considered that Holywood was the centre for a cult of the saint in the 6th century (Watson 1926, p 169). Local associations with St Kentigern are found at St Mungo's and Hoddom to the east of Holywood in Annandale.

If the name Dercongal is of British origin, we may accept the form of the name as having survived the transformation of many saint's names by association with the Irish saints such as Conal at the time when a great many of the place names of Gaelic origin were being introduced in this region. The names of the churches Kirkconnell and Kirkbride are typical of this association. This appears to have been late in the name history of the Dumfries area, perhaps as late as the 11th century, after the decline of the kingdom of Strathclyde. The name Dercongal may, therefore, indicate that there was a religious foundation here before the 11th century. The first recorded occurrence of this name is in AD 1229 (ESSH ii 468), which shows that this name survived for a long time after that transformation.

Another name which appears as an alternative for Dercongal is Dalquongale (*Aberdeen Breviary*, ESSH ii 174). Here the reference is to the early career of St Drostan as having taken the habit at this monastery. Drostan was a disciple of Columcille in the 6th century. This Irish connection is repeated by other authorities. Cottineau states that the monastery at Holywood was founded by St Vimin, Scottish bishop (d. 615)(Cottineau 1935-7, p 1427). The Irish connection claimed here is St Finian of Movilla, but this has not appeared in other commentaries. If we pursue an Irish derivation for the name it is possible that the elements

in both Dercongal and Dalquongale are *'dal'* (from Norse *dalr*. Gaelic *dail*, a meadow or valley), and *'congbhail'* (a monastery or cloister) (Flanagan 1994, p 58). Such a name would probably have been given during the period of strongest Gaelic influence in this region, after AD 1000 and the subsuming of Strathclyde into Scotland. It is interesting that Backmund dates the occupation of the site by an eremitic called Congall to around AD 1013 (Backmund 1952, p 106).

Altogether the place-name evidence is inconclusive and we should seek alternative evidence for a monastic site which may have existed earlier than the foundation of the Praemonstratensian house. There are some pointers. Backmund says that the site was an ancient 'druidic' sanctuary. The sacred grove might have been noted in the name, a holy wood or *sacer nemus*. It is interesting that the plateau at the confluence of the rivers Nith and Cluden contains a large circle of standing stones, locally known as The Twelve Apostles, and a long cursus monument, recently excavated, both within sight of the monastery. These monuments date back to the late Bronze Age or even Neolithic, c.2000 BC.

These monuments are interesting in themselves as an indicator of a place of worship of great antiquity, but they may have inspired a later shrine site or even an important administrative site during the early mediaeval period. Steve Driscoll has written extensively about such early Scottish centres of power, especially in establishing the siting of 'thanages', and Forteviot in particular. This became a royal centre during the 6th century (Driscoll 1991, passim). Recent discoveries of a Bronze Age ritual landscape at Dunragit may show why there was another such royal centre from the kingdom of the Rheged at that location. The practice of selecting important Bronze Age religious sites as a focus for early mediaeval religious foundations and royal administrative centres seems to have been carried out by the Anglo-Saxons also. The minster and administrative focus of the aristocratic bishop Wilfrid at Ripon is close to the Thornborough rings and standing stones in the valley of the Ure. The foundation of the abbey at Dorchester on Thames is also in a prehistoric ritual landscape.

The early Christian archaeological record for Holywood does not show any remains dateable to a period before the 13th century. Apart from stones reused in the construction of the present parish church and churchyard walls, there are few traces of the former monastic complex. An excavation in 1922 on the east side of the abbey church revealed buildings of poor quality together with some fragments of stone mouldings, a sculpted head from a decorative feature of a building and a grave cover from the 13th century. All these fragments were given to the Keswick family at Cowhill House (Anon., 1922, p 209). A foliated stone cross, either a roof finial or boss, was found in 1965 beneath the floor of the pulpit in the church and also given to the Keswick family (*Discovery and Excavation, Scotland* 1967-71, p 19). I have examined all the stones from the site at Cowhill House and cannot date any of these remains to before about AD1200.

There was, however, a meeting of the Dumfries and Galloway Society at the Manse, next to the church, in 1912 at which the visitors were shown some sculpted stone fragments including the central boss from a standing cross and two portions of a cross shaft showing panels with human figures, possibly Adam and Eve, and serpents or dragons, but without any 'interlace work' (Anon. 1922). This interlace work was clearly expected in this context by the reporter of the meeting. It is locally believed that there used to be a dragon-decorated

stone in the gardens of Portrack House. This house has also been connected with the family at Cowhill, and the sculpted stone may have been the one described in the 1912 meeting of the Society. This has now vanished, possibly during the remodelling of the gardens in the 1970s. In addition to these reports, Dr Martin described a stone from the Manse gardens as having two figures 'as Ruthwell' (Martin 1897, p 70). The stones described seem to have been two, a dragon scene and two figures in panels from cross shafts, or from one cross shaft, and both appear to have been familiar as Anglo-Saxon pieces. If the cross shaft fragments were indeed like panels from the Ruthwell cross, then the date for their design and execution may have been in the early part of the 8th century. Alfred Truckell, former director of the museum in Dumfries, was convinced that they were of pre-Norman date (Dumfries Museum leaflet, undated, p 4).

If we accept that the reports of early or middle period Anglo-Saxon sculptures at this site are correct, then the name Dercongal assumes a new significance. Congal, probably identified with Convallus, is recorded in later mediaeval literature as a follower of St Kentigern who is reputed to have died c. AD 612 (Watson 1926, p 338). St Kentigern is associated in mediaeval hagiography with the foundation of the monastery at Hoddom. He was, more certainly, associated with the foundation of the monastery in Glasgow. St Convallus is said to have been buried at Inchinnan, near Glasgow (*Chronica Gentis Scotorum* III, p 49). The lands around the Annan and Nith were the subject of a land ownership claim by the monastery of Glasgow known as the *Inquisitio Davidis* in the early 12th century. Hoddom's claim of St Kentigern as a patron may date from this episode and any associations of Convallus with Holywood may follow this tradition. In other words, the presence of British named saints of founding fathers at both monasteries was a late propaganda association. A British foundation is not ruled out, since we know from recent excavations that there had been some monastic presence at Hoddom since the early 6th century (Lowe 1991, p 22).

It can thus be argued that the association of Hoddom and other ecclesiastical properties in Annandale with St Kentigern is probably a result of the claims on this area by the bishops of Glasgow in the 12th century (*Registrum Episcopum Glaswegiensis*, the *Inquisito Davidis*). This claim would have been supported by the biography of Kentigern by Jocelin of Furness. Holywood was also in the diocese of Glasgow during the 13th century if not the 12th, although we have no record of the foundation of the Praemonstratensian house before the 13th century. The name of the estate of Holywood does not appear in the *Inquisitio*, but the neighbouring lands at Terregles do appear as *'Trevergylt'* in that document (AD 1124). It might be reasonable to suppose that the lands of Holywood were also considered to have been the property of Glasgow at the time of the *Inquisitio*. As stated above, the association of Kentigern with Glasgow appears to be early, but the association of this saint with lands in Annandale and Nithsdale would appear to be of 12th century origin (Crowe 1998).

When the Bernician Angles took over this region, probably around AD 675, they established a strongly Anglian church presence. Sculpture at Ruthwell was of the finest quality in the British Isles, similar sculpture at Bewcastle, and later at Hoddom, is as fine in execution. By AD 730 there was an Anglian bishop at his see in Whithorn. The dedication of the church at Ruthwell was to St Cuthbert. The presence of Anglian sculpture at Holywood is not, therefore, surprising. But since we cannot now trace these stones, it would be foolish to speculate any further about a date for these pieces of sculpture. Likewise we have no

evidence for a dedication for a church at Holywood any earlier than the 10th century although a dedication to an Anglian saint such as Cuthbert would not be out of context.

The case for an early foundation of a church of monastic establishment before the Praemonstratensian house is certainly not proven by this discussion. There are significant indicators that an earlier foundation should not be ruled out. As a prelude to further researches, the site of the monastery and its surrounding landscape were surveyed in 1997. The resulting map shows that there were two curvilinear boundaries around the location of the present church and site of the former abbey. An inner line follows the southern side of the present churchyard and the road has been diverted to follow the curve at this point. A second boundary is an earthwork bank which can be traced for about 900m on the northern and western sides of the site, forming a possibly outer precinct 700m in diameter. The bank is about 1.3m high and 5m wide at the base, with no sign of a ditch, suggesting that the original may have been constructed of imported turf.

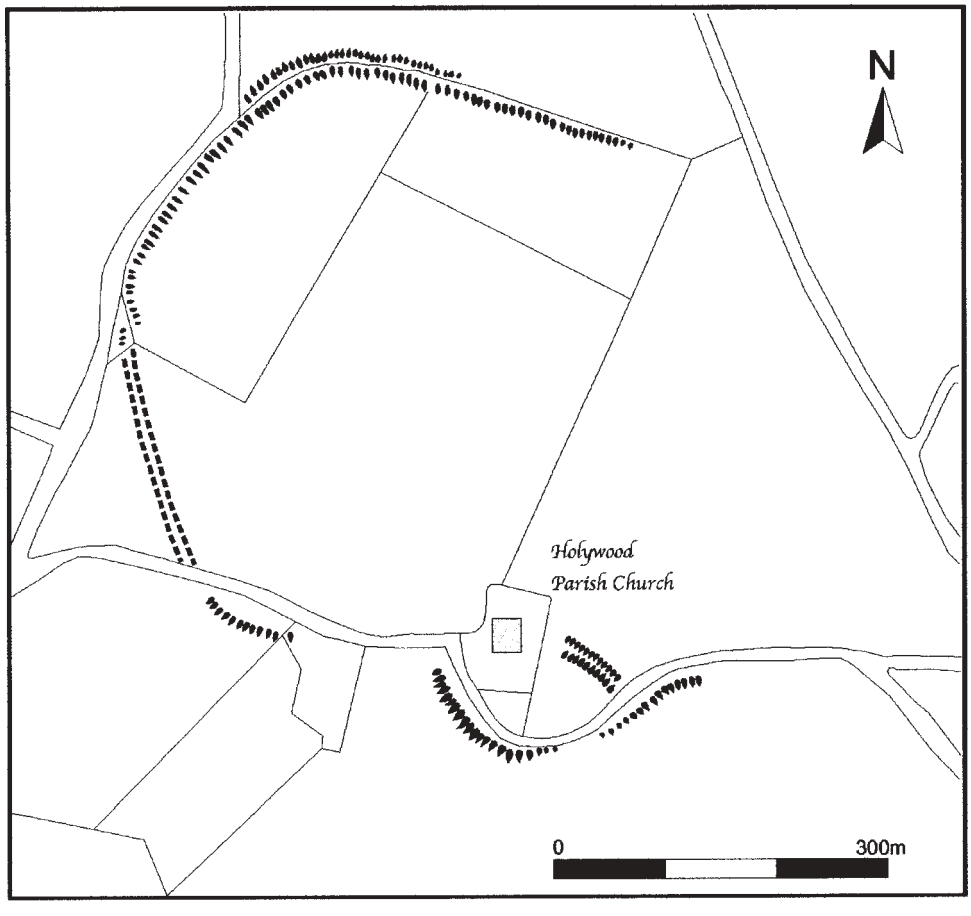

Fig. 1 Holywood 1997: The survey revealed a large curved bank surrounding the site of the abbey on the northern and western sides. A smaller enclosure seems to have been constructed around the abbey church and can now be seen in the curve of the churchyard wall to the south. The map is adapted from the Ordnance Survey with many modern features omitted for clarity.

If this outer precinct can be partly traced by this bank and a shallow continuous cropmark in the field to the west of the church, then it is similar in size to the outer precinct ditch was has been shown by excavation to have been constructed around the monastery at Hoddom (Lowe 1991, p 13). The boundary of Hoddom is about 600m in diameter. The form of an inner and outer precinct may be found repeated in monastic sites of an Anglian or even earlier date at Whithorn in Galloway (Hill 1997).

Taken together, the evidence for an earlier religious site at Holywood is not conclusive. Place-names from British and Gaelic or Scottish sources may show that a religious foundation preceded the Anglo-Saxon presence in this region. There are records of what appear to be early Anglian sculptural fragments found at this location, although there are not stones or fragments traceable now. They may still exist in a local garden or field wall. There is an inner precinct boundary and a possible outer precinct boundary as have been found and excavated at Hoddom and at Whithorn, both sites of important monastic houses which had been occupied during the period of Anglian hegemony in the region.

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A MULTI-PERIOD SITE AT 67-71 IRISH STREET, DUMFRIES, the former British Legion Club-House

by James R Mackenzie
with contributions by C R Wickham-Jones and Adrian Cox

The Scottish Urban Archaeological Trust Ltd (SUAT) carried out an excavation in advance of development at the site of the former British Legion Club House at 67-71 Irish Street (NGR NX 9717 7595). The excavation was jointly funded by Callander Land Developments Ltd and Historic Scotland, and produced evidence of prehistoric activity dating from both the Mesolithic period, in the form of a lithic scatter and cut feature, and the Neolithic period, in the form of three small patches of burning. The prehistoric remains were sealed below evidence for the earliest development of this part of the medieval burgh, which was in turn sealed below the remains of subsequent activities spanning the last four centuries.

Background

Historically, settlement at Dumfries is known to date from at least the mid-12th century, as records indicate that Radulf sub-king of Strathnith granted land in 'Donfres' to the hospital of St Peter at York (Gourlay and Turner 1977). Records also show that Dumfries was granted royal burgh status by around 1186 AD, during the reign of William the Lion (1165-1214), making it the first royal burgh in the south-west of Scotland.

The siting of this early settlement owes much to the local topography. The River Nith is the dominant feature of the area, and the initial focus of the town, thought to have been in the vicinity of the Townhead Motte (Fig.1 No.1), lies close to the lowest bridging and fording point and the highest navigable point on the river. Detailed study of the growth of the burgh has revealed at least three stages of development (Dodd 1978) as the town expanded across a ridge overlooking the east bank of the river. This provided a strong defensive position as the town was protected by the river to the west and north, the Mill Burn to the south, and the Lore Burn and Lochar Moss to the east. The defensive position was then enforced by the establishment of a ditch on the southern and eastern sides of the town in the post-Medieval period.

The first stage of development, probably in the vicinity of the Townhead Motte, comprised a wedge-shaped market area. This market then expanded across the ridge, forming the High Street, and rigs or burgess plots were laid out on either side to form the basic building blocks of the town. Back lanes then developed at the rear of the High Street plots, formerly known as West and East Barnraws, or Under the Yards and Yardheads (Barbour 1910-11). These lanes later became known as Irish Street and Loreburn Street respectively. The second stage saw the burgh expand to the north and south, and vennels were developed on the west side of the High Street down to the river; Friars Vennel to a ford and Bank Street, formerly Stinking Vennel, to the riverbank (Perry forthcoming). Later developments *c.*1450 to *c.*1580, comprising the third stage, saw changes mainly within the early core as long rigs were shortened due to development pressures.

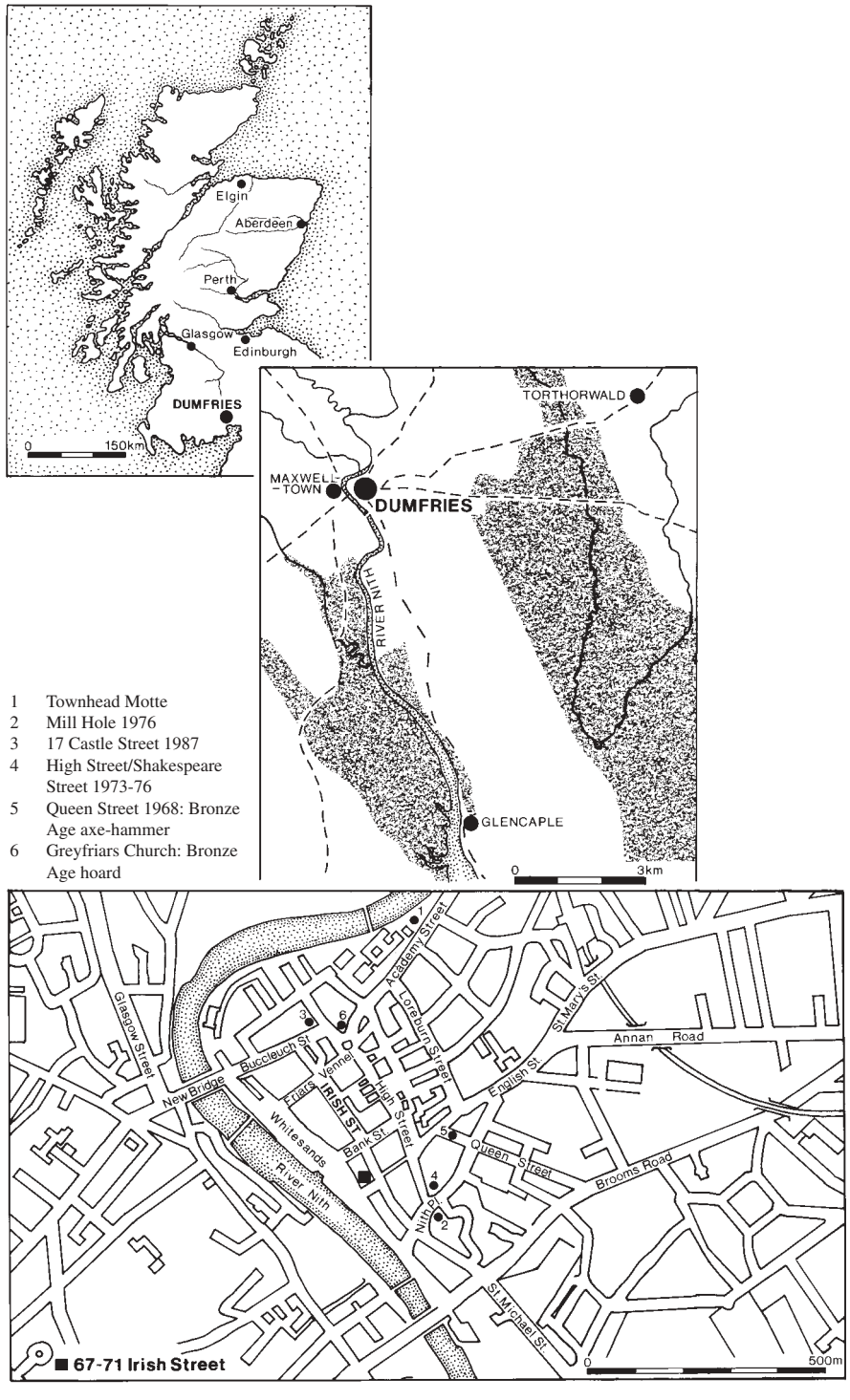

Fig. 1 Site location and previous work.

It is open to conjecture that the area around Nith Place was developed as a satellite during initial settlement prior to the expansion of the town from the Townhead Motte (Gourlay and Turner 1977). Evidence to support this is found when considering the proximity of a ford, the parish church and the mill to Nith Place.

Recent archaeological investigation in the historic core of Dumfries has revealed an incomplete but still interesting picture. In 1993 five trenches were excavated by the Centre for Field Archaeology (CFA) prior to development at 87-95 High Street/84-88 Irish Street (Fig.2 No.1). These excavations uncovered a group of five sub-circular pits cut into the undisturbed subsoil (*DES* 1993). Only one pit was of probable medieval date indicated by sherds of 14th-century pottery recovered from its fill. Later pottery and finds were recovered from the fills of the other pits indicating a post-medieval date of activity. In addition, a length of stone-built foundation wall was uncovered cut into the fill of one of the post-medieval pits. These features were sealed by a garden soil which contained 18th and 19th-century pottery. Overlying the garden soil was a cobbled surface and 20th-century overburden. The evidence recovered from the CFA's work was too slight to determine whether industrial or domestic activities were being carried out but it does indicate continued use of the backlands area from the 14th century.

In 1988, to the south at 39-53 High Street (Fig.2 No.2), SUAT excavated seven trenches. Four trenches revealed backfilled cellars on the High Street frontage (*DES* 1989). Three trenches in the backlands revealed 1 m of modern deposits overlying undisturbed subsoil. Cut into the subsoil was one probable medieval feature. Nearby at 29-51 Nith Place/Irish Street (Fig.2 No.3), excavation by SUAT in 1988 revealed that all possible archaeological remains had been scarped away during 19th/20th century development (*DES* 1993).

On the opposite side of Nith Place, at Mill Hole (Fig.1 No.2), work carried out by Dumfries Museum in 1976 revealed deep stratigraphy (Perry forthcoming). Some 2 m of modern overburden was removed and was found to overlie a late-medieval midden deposit. The midden was contained within a cut which was excavated to a depth of 1.5 m whereupon it became waterlogged. No archaeological remains were found to support the possibility of an initial settlement at Nith Place and so this supposition is still open to question.

To the north, excavation at 17 Castle Street (Fig.1 No.3) by SUAT in 1987 revealed that modern activity had truncated the undisturbed subsoil removing all possible archaeological remains (*DES* 1987). At Friars Vennel (Fig.2 No.4), however, excavation by SUAT in 1990 revealed a cultivation soil from which sherds of medieval pottery were recovered (*DES* 1990). Evidence for medieval activity was also found during excavations at High Street/Shakespeare Street (Fig.1 No.4) by Dumfries Museum in 1973-76 (*DES* 1974). A significant assemblage of 13th to 16th-century pottery was recovered although the stratification appeared to have suffered from 20th-century disturbance.

The site of the former British Legion Club lies on the southern frontage of Irish Street (Fig.2). Nearby is the supposed site of the Chapel of Our Lady (Fig.2 No.5) first mentioned in 1431, which provides an indicator that Irish Street was developed by the early 1400s at the latest. Prior to excavations at the former British Legion, reported here, there has been no work carried out between Irish Street and the river, and it was thought that this area was not developed until *c*.1600 (Gourlay and Turner 1977).

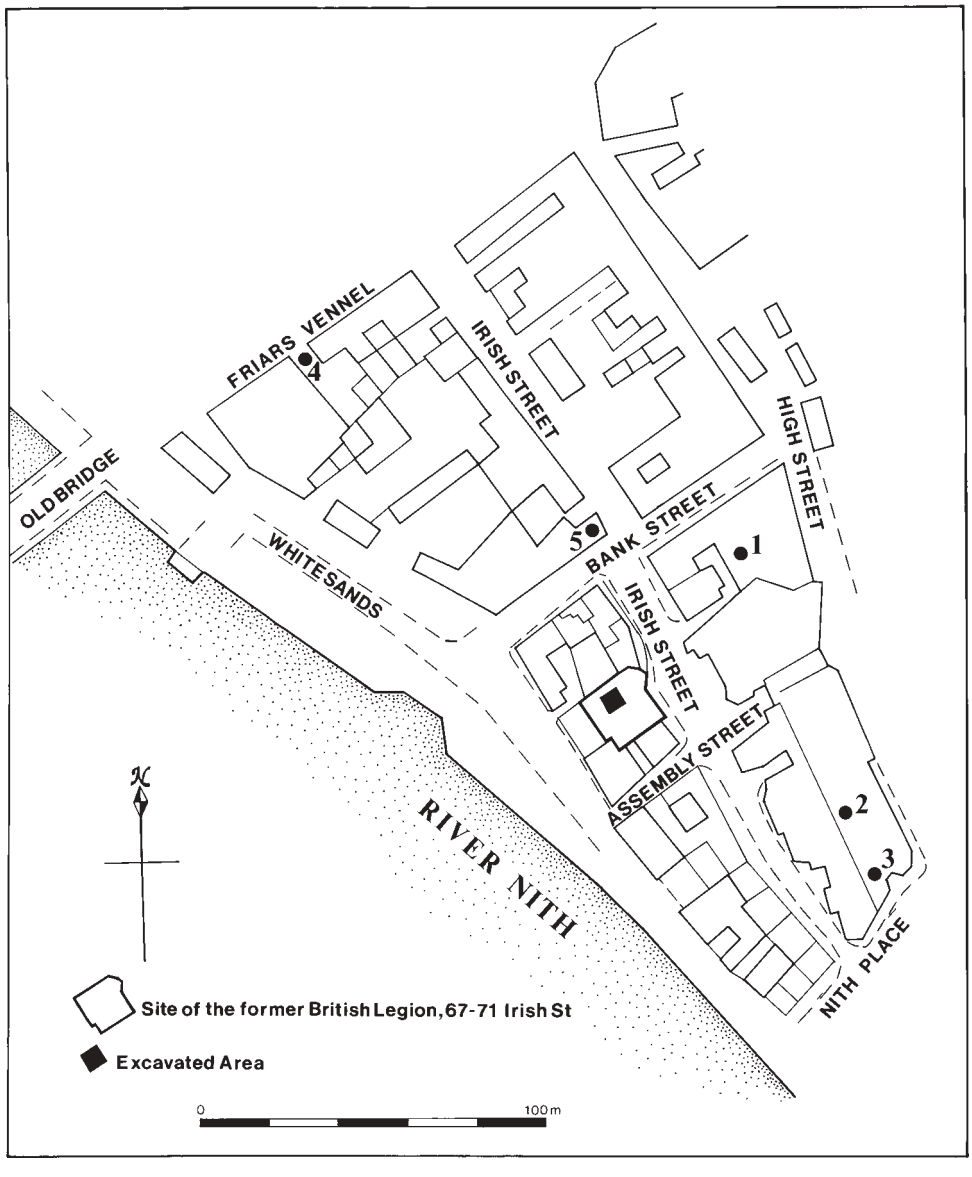

Fig. 2 Previous work and trench location.

1 87-95 High Street/84-88 Irish Street 1993
2 39-53 High Street 1988
3 29-51 Nith Place/Irish Street 1988
4 Friars Vennel 1990
5 Supposed site of the Chapel of Our Lady

It was against this background that the initial site evaluation was carried out at the time of the first threat of development in June 1989 (*DES* 1989). The presence of medieval remains was anticipated as the proposed development area lay on the south western fringe of the historic core of the burgh. Trial trenching established that the frontage of the site had been cellared thereby removing all possible archaeological remains. To the rear of the former British Legion building trial trenches revealed the presence of a significant depth of medieval garden soil in which sherds of pottery dating from no later than the 15th century were found. This indicated that the area between Irish Street and the river may well have been developed prior to the 17th century. The results of the evaluation also, quite unexpectedly, established the presence of mesolithic artefacts sealed below the medieval remains. These artefacts comprised four pieces of worked chert recovered from the top of an undisturbed raised beach deposit. The fresh nature of the artefacts led to speculation about the existence of a possible buried mesolithic land surface and the survival of archaeological deposits and features from that period.

Prehistoric activity is already known to have taken place in the vicinity of this excavation as a number of stray finds have been recorded, examples of which are: a perforated axe-hammer of early Bronze Age type found at Queen Street (Fig.1 No.6) (*DES* 1968); flint strike-a-lights found at High Street/Shakespeare Street (Fig.1 No.3) (*DES* 1974); and a middle Bronze Age hoard found at Greyfriars Church (Fig.1 No.7) (Perry forthcoming). But the possibility of recovering earlier mesolithic remains in such a context was an exciting prospect. This type of find is rare but not unique in a modern urban context; excavations at 13-24 Castle Street, Inverness revealed a mesolithic horizon sealed below urban medieval remains (Wordsworth 1985). Evidence of mesolithic activity in Dumfries would contribute to a growing overall picture of mesolithic site distribution across Nithsdale, where 28 locations have already been identified with a roughly even distribution between coastal and inland areas (Miller 1994). An identified mesolithic site here at Irish Street would also provide useful information in the wider context of site distribution and movement in the south-west of Scotland, where notable sites such as Barsalloch (Cormack 1970); Starr, Loch Doon (Affleck 1986); and Kirkhill (Pollard 1993) have been excavated.

The extent of the proposed redevelopment would certainly have destroyed the surviving archaeological remains identified in the evaluation. The evidence for both periods warranted further detailed investigation before redevelopment, and so a controlled excavation was carried out between November 28th and December 9th 1994.

The Excavation

From the outset the excavation strategy comprised two separate elements; one to deal with the medieval remains, the other to maximise the recovery of all possible mesolithic remains. Relying on the information on depths of deposit established during the evaluation, the excavation area was opened by machine to remove all the modern overburden and reduce the soil profile to the top of the medieval garden soil. An area measuring 10 sq m was cleared and the excavation then proceeded by hand, cleaning and recording each separate stratigraphic element. This allowed for careful trowel cleaning down to the putative mesolithic horizon at *c* 10.7 m OD.

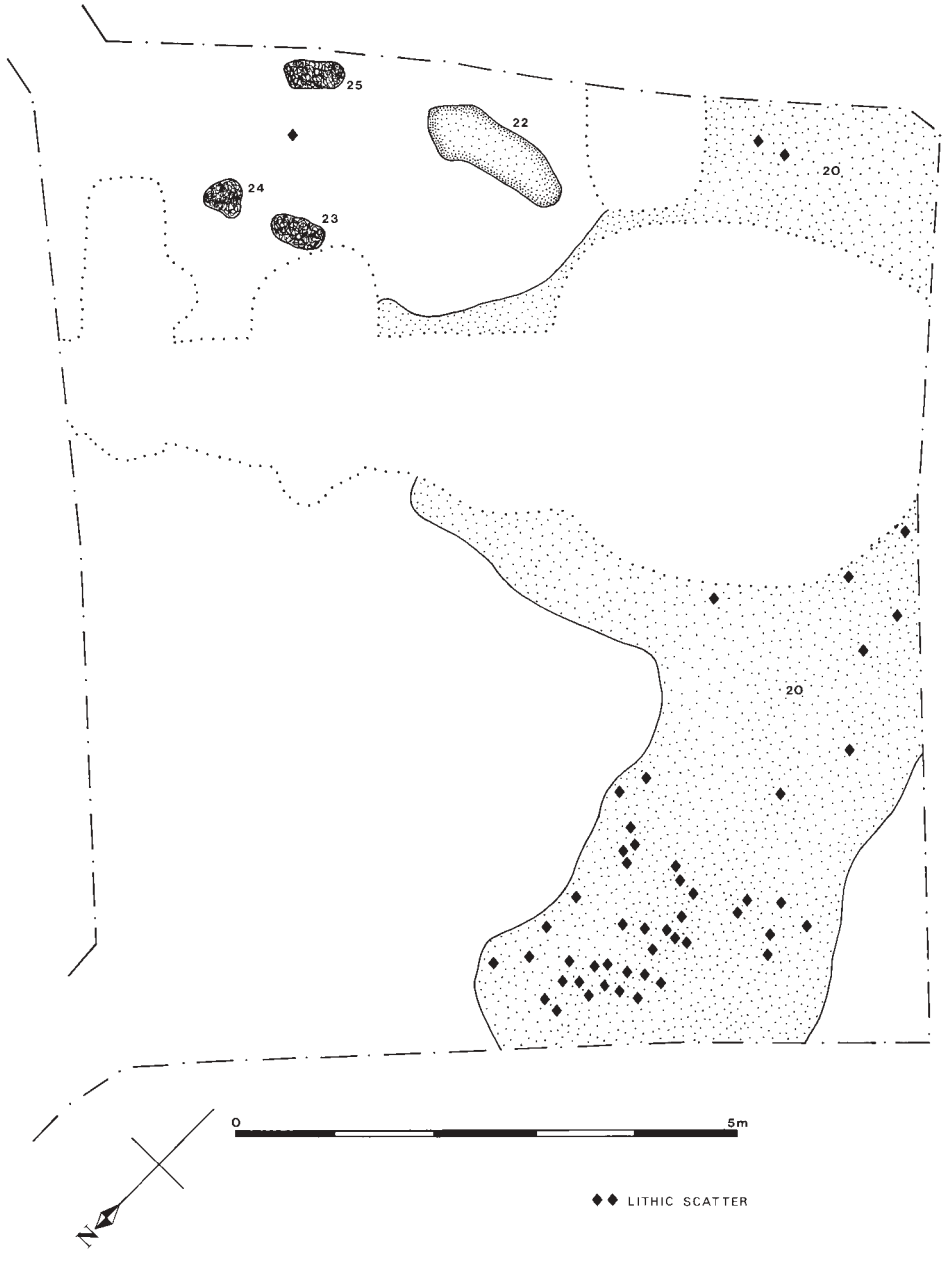

Fig. 3 Phase 1: Lithic scatter, layer 20, feature 22. Phase 2: Charcoal patches 23, 24, 25

A two-dimensional grid was then established in 2 m squares over the excavation area. Each square was allocated a unique letter and number sequence for recording purposes. The possible mesolithic horizon was then examined by removing 50 mm spits and each artefact encountered was recorded *in situ*. With the known difficulties in the practical recovery of lithic material, due to their small size and concealment within a background matrix (Wickham-Jones 1990) it was also decided that the soil residue from each 2 m square would be sieved through a 5 mm mesh sieve. This enabled the maximum recovery of artefacts.

The Archaeological Sequence

For ease of reporting, the archaeological sequence has been divided into five distinct phases of activity. Phases 1 and 2 overlie a post-glacial raised beach deposit.

Phase 1 A Possible Mesolithic Work-Site (Fig. 3)

A layer of water-laid grey/white silty sand (Context 20) overlay the raised beach deposit at the western extent of the excavation. At this point it had a maximum thickness of 0.15 m. The layer thinned out to the east where the raised beach deposit became exposed. This evidence indicated that the natural slope had been truncated in antiquity, creating a terrace, thereby removing the eastern portion of the silty sand layer.

A total of sixty lithic artefacts were recovered during excavation of this layer; 49 were recorded *in situ* and 11 were recovered from dry sieving of the soil residue. The assemblage, although small, was of a fresh nature, and specialist examination revealed it to have characteristics diagnostic of the Mesolithic period (see Wickham-Jones below).

Environmental analysis of the artefact-bearing layer revealed little organic material (Fairweather 1996). The only identifiable material found was that of two carbonised fragments of hazelnut shell (*Corylus avellana*). Unidentifiable wood charcoal fragments were also retrieved.

Evidence of hazel colonisation indicates that the mesolithic activity, identified in this phase, does not date from the very beginning of the post-glacial period. This can be established as the beginning of the post-glacial environment was marked by a rapid amelioration from near-arctic to temperate conditions (Bishop and Coope 1976, 86). Evidence of an initial colonisation of birch woodland in the south-west of Scotland was found dating from *c* BP 9540 at Bigholm Burn (Moar 1969). Colonisation of hazel then followed shortly afterwards with oak and elm becoming established later still between *c* BP 7600 and 7300.

Close to the southern limit of the excavation one cut feature was identified (Fig. 4) (22). This feature contained an upper fill identical in matrix to that of the artefact-bearing deposit and therefore is assumed to be contemporary. It was rectangular in plan with rounded ends, measuring 1.56 m x 0.58 m and 0.35 m in depth. At either end of the feature the fill contained a small proportion of unidentified wood charcoal fragments. Excavation revealed the cut to have a sharp break of slope at the top, steep sloping sides, and an irregular base. Cut into this base were two post-holes (34 and 40) located at either end of the feature, and two stake-holes (36 and 38). Placed around the southern edge of the feature, and on three sides of post-hole 40, was evidence of stone packing. This packing comprised six water-rounded stone cobbles, some of which had slumped into the feature.

It is unclear what function this feature may have had, and research has failed to find a parallel. It is possible that it represents a wind break or may even be the remains of a drying rack. Whatever interpretation is correct, the combined evidence of the feature and contemporary lithic scatter indicates that this area of the east bank of the River Nith was most likely utilised as a temporary camp sometime in the Mesolithic period.

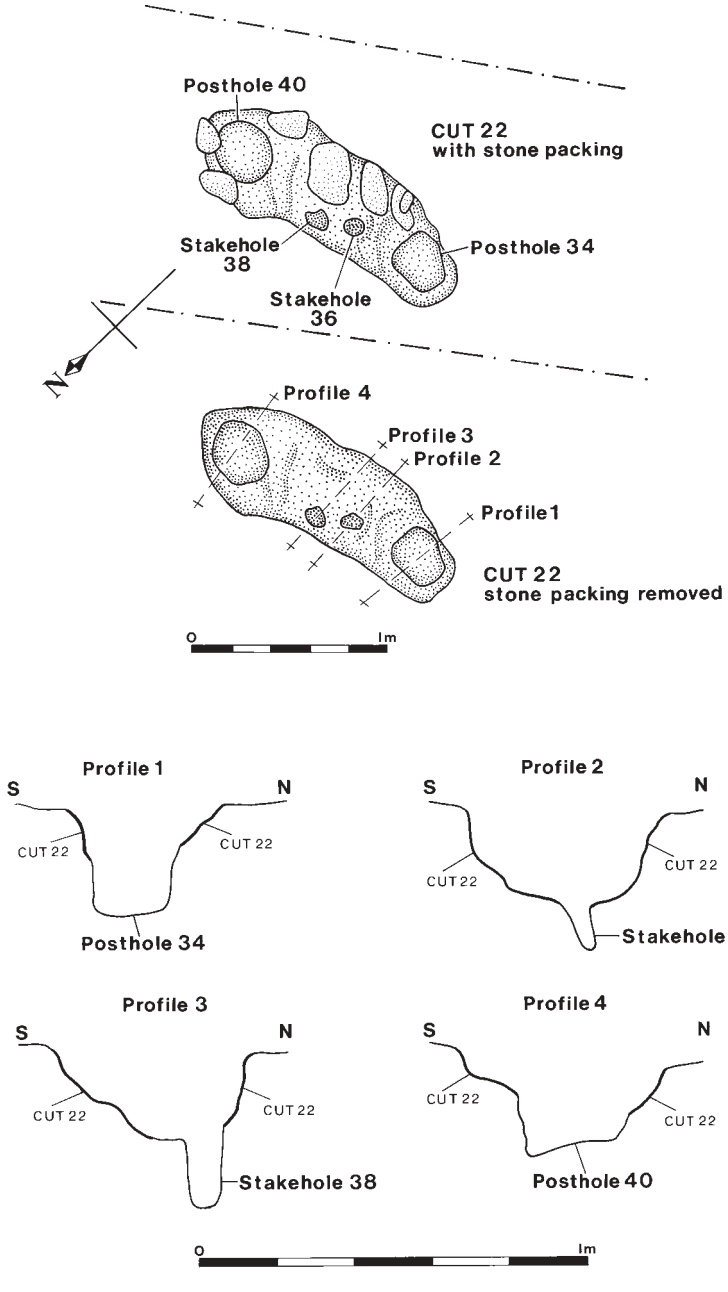

Fig. 4 Phase 1: Feature 22

The Lithic Assemblage (Fig. 5) C R Wickham-Jones

The lithic assemblage comprises sixty pieces of flaked stone; mostly chert, but there is also some flint and one piece of jasper (Table 2). It is a classic small blade assemblage (Table 1) and includes one core as well as three retouched pieces, two of which are microliths.

Table 1: composition of the assemblage

Blades	12
Regular Flakes	11
Debitage Flakes	29
Cores	1
Chips and Chunks	4
Retouched Pieces	3
TOTAL	60

Raw Materials (Table 2)

Most of the pieces are made of a blue-green chert. There is very little cortex on these pieces, but where it survives some is quite rolled, while the rest is relatively fresh. The chert is not as homogeneous in texture as the flint, though it is of quite good quality. Chert like this was very commonly used on sites across the southern Borderlands of Scotland, from the Tweed to the Solway, and there are a number of local sources (Wickham-Jones & Collins 1978). Cortex such as that on the Dumfries assemblage indicates that people were using both a pebble source and a primary vein source. It is possible that both occurred together, for example in river gravels near to an actively eroding outcrop.

The amount of flint used is very small, but it probably came from a pebble source. It is of better quality than the chert.

Table 2: Raw Materials

	Debitage		Regular		Total
Chert	31	60%	21	40%	52
Flint	3	37%	5	63%	8
Jasper	1				1

The jasper is also probably a local stone, used to complement the other materials.

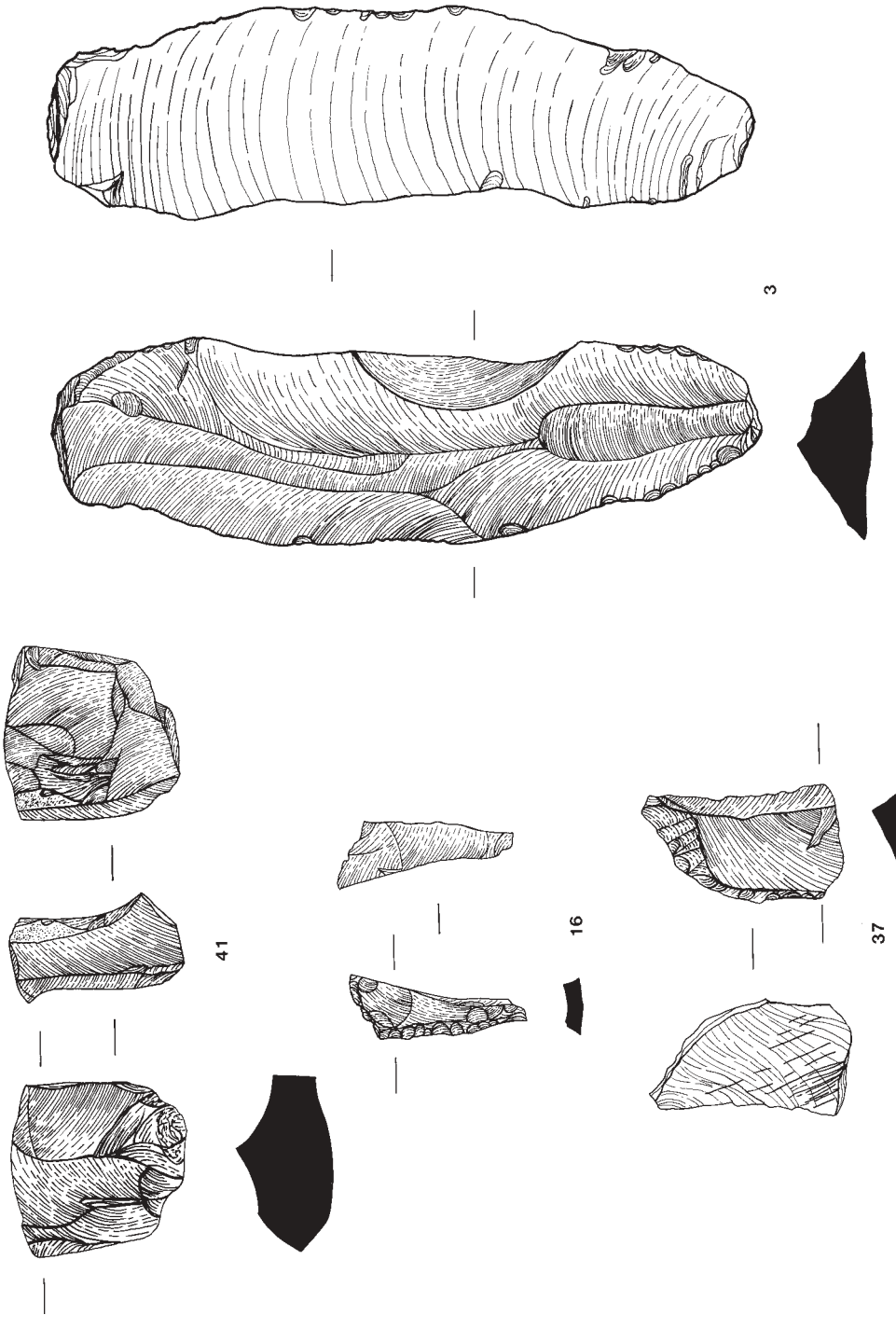

Fig. 5 Lithics: 41 core, 16 and 37 microliths, 3 blade. Scale 1:1

Knapping Techniques

The assemblage is not large, and detachment characteristics occur on few pieces, so it is not possible to give much information about the knapping techniques. Nevertheless, it does seem worthwhile to make some generalisations.

There is only one core, a tiny platform core of chert No 41 (Fig.5). It has two platforms at right angles to one another, and must have been completely exhausted when it was abandoned. The platform edges on the core have been carefully trimmed, which is interesting, because few of the surviving flake and blade platforms have signs of trimming. In general, the flakes and blades have diffuse bulbs and small flat platforms, which indicates soft hammer percussion, though in view of the size of the core, punches may also have been used. There is no evidence for bipolar flaking, which would not generally have been necessary on good quality flint or chert.

The assemblage contains roughly equal blades and regular flakes (Table 1), all of which would have been quite suitable for use with no further alteration. An example, No.3, which has slight edge damage on both sides, is illustrated (Fig.5). There are also many debitage flakes and other pieces, which are likely to be an off-shoot of the knapping process. Some of these may also have been selected for use.

In addition to the unaltered artefacts there are three pieces which have been altered, all made of chert. No 16 (Fig.5) is a small microlith, a classic scalene triangle made with tiny step retouch on two sides of a fragment of narrow blade. No 37 (Fig. 5) may also be a microlith, though it is a wider piece. It is broken, but comprises one end of a narrow blade with steep microlithic retouch up the long side. It may be an unfinished microlith, possibly also a scalene triangle. No.6 (not illustrated) is a broader flake and only a fragment survives. There is a short length of steep truncated retouch on one edge, but it is impossible to make out the original form of the tool.

Despite the lack of retouch pieces, there were a number of small debitage flakes with a significant convex profile and regular shape indicating that they had been removed during the retouching of other artefacts.

The Composition of the Assemblage

The assemblage comprises both debitage and regular pieces. Just over half (58%) is debitage, but this is not a particulary high percentage. It apparently includes both waste from the manufacture of regular pieces as well as from their subsequent alteration. The regular artefacts are almost equally divided into flakes and blades. In addition, there are two retouched blades and one flake.

Function of the Assemblage

No microscopic use-wear analysis was carried out, but it is notable that macroscopic edge damage occurs on very few pieces. Nevertheless, this cannot be taken as a sign that pieces have not been used, but rather that if they were it is unlikely to have been for long and not on tasks likely to damage them quickly.

The presence of some regular blades and flakes as well as the retouched pieces indicates that part of the assemblage, at least, was designed for use.

Spatial Distribution

The assemblage all comes from context 20, interpreted as a riverine deposit. It is unlikely that the pieces lay in situ, but in view of their fresh nature it may be suggested that they have not moved far. It is interesting, therefore, to look at their general distribution.

Most pieces come from the western edge of the excavation, where context 20 was thickest. From this area there is both knapping debris, including the one core, as well as more regular artefacts, including the three retouched pieces. Sadly, there was little material in the vicinity of the cut feature.

Cultural and Chronological Associations

The overall characteristics of the assemblage: narrow blades and small flakes; with some microlithic retouch, indicates that it is of mesolithic association. There is not much detail available in such a small collection, but it would be quite at home in the general south-west mesolithic tradition of flaked stone tools (Wickham-Jones 1990).

Phase 2 Late-Neolithic Activity (Fig. 3)

Spatially distinct from the artefact-bearing deposit, and sealed below the medieval burgh development, were three patches of concentrated charcoal (23, 24, and 25). The largest of these, patch 23, was 0.4 m in diameter and had a depth of only 0.06 m. This patch was of sufficient quantity and quality to merit environmental and radiocarbon analysis. The species origin for the charcoal was established as oak (*Quercus*) and the radiocarbon dates returned from the Scottish Universities Research and Reactor Centre in East Kilbride are as follows: (GU-4609)

Calibrated Age Ranges

1 sigma cal BC 2860-2498, cal BP 4809-4447

2 sigma cal BC 2876-2470, cal BP 4825-4419

These calibrated age ranges are interesting because they post-date the distinctly mesolithic lithic scatter, dating instead from the later stages of the Neolithic period. The charcoal clearly indicates burning on the river bank and may imply that this part of the eastern bank could have been used as a temporary camp site at that time. The charcoal patches were also clearly truncated by medieval development and so, as with Phase 1, further evidence, which might have elucidated the function of the site, may have been destroyed in antiquity.

Phase 3 Medieval Burgh Development (Not illustrated)

A single layer of homogeneous light brown silty sand garden soil sealed Phases 1 and 2, and was found across the site. It had a significant thickness of 0.6 m and it seems probable that it was imported to create a fully functioning burgage plot. This depth of soil may have been formed as a result of one or more factors: It may be due entirely to importation; importation added to during the time it was worked; importation added to as a result of hillwash (a possibility as the site lies lower down the slope from the High Street), or any combination of the three. Whichever may be, the garden soil is the earliest evidence of the medieval burgh found within the limits of the excavation, and its presence fits

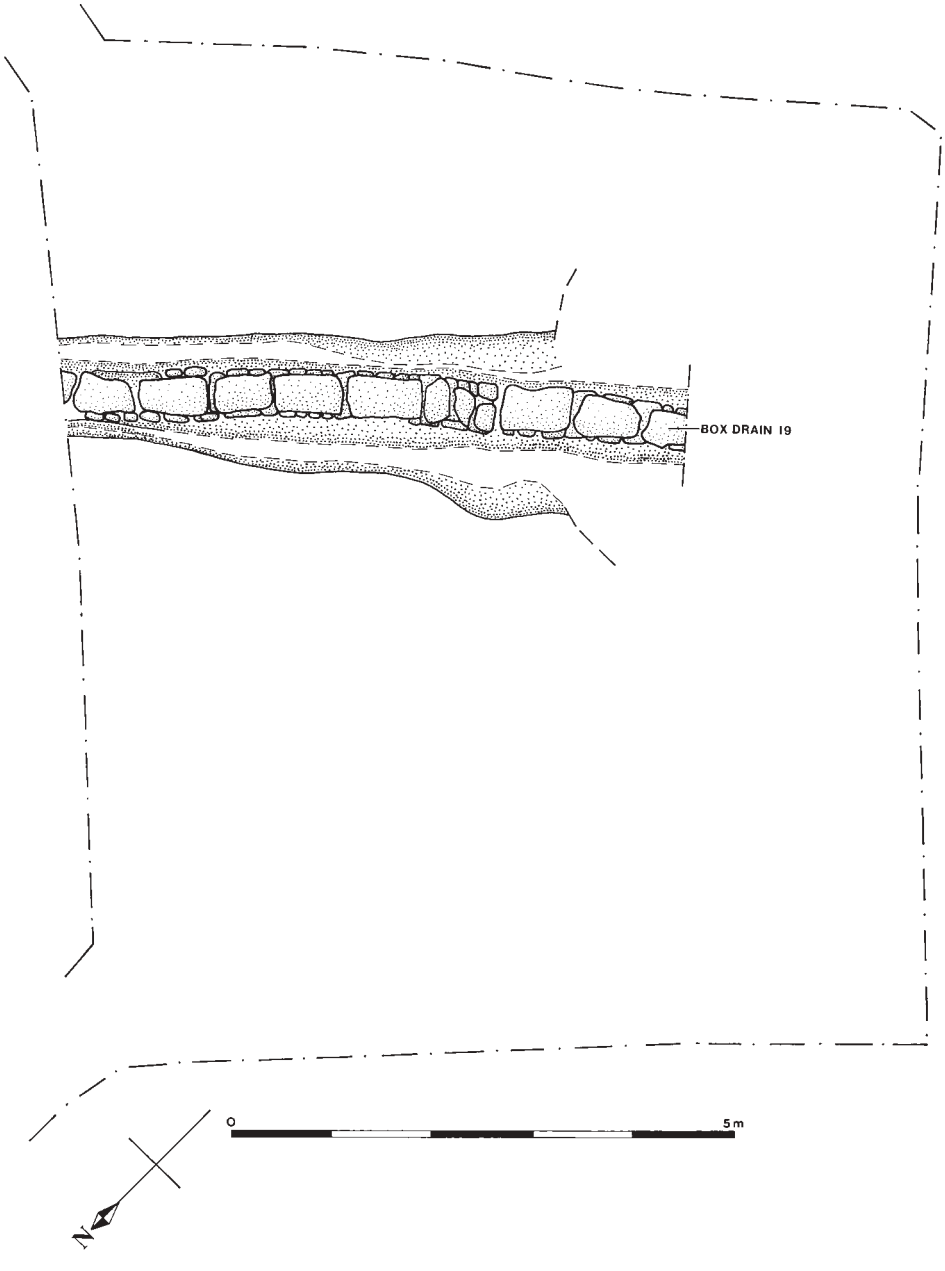

Fig. 6 Phase 4: 17th/18th-century drain.

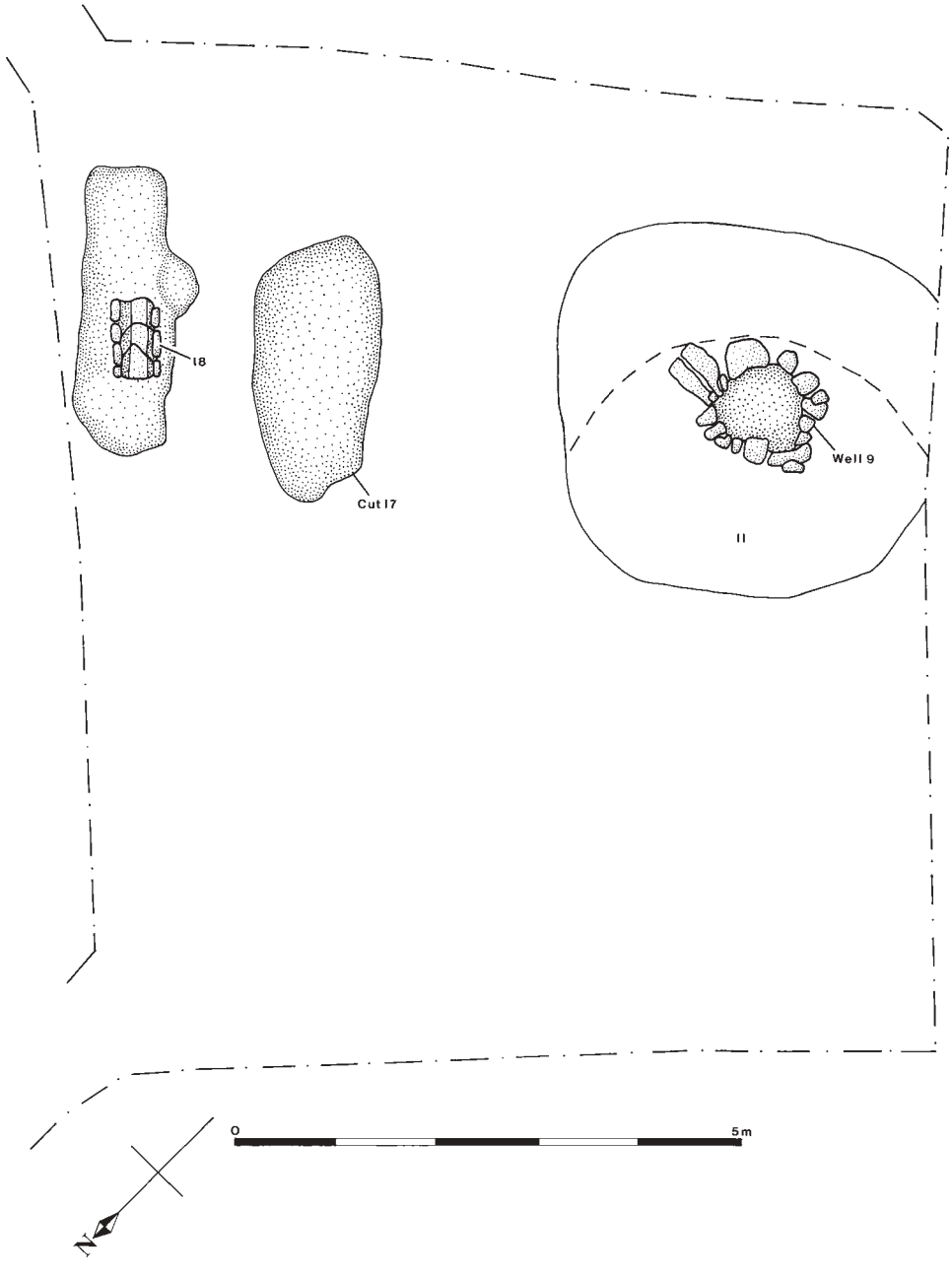

Fig. 7 Phase 4: Repairs to Drain 19. Phase 5: 18th/19th-century well.

the model of the utilisation of this part of the burgh as a backlands area during the Medieval period. Pottery recovered from the garden soil indicates a date of deposition of no later than the 15th century. This clearly indicates that the part of the burgh between Irish Street and the river was being utilised earlier than previously thought (Gourlay and Turner 1977). As Irish Street was most likely developed by the 15th century, the garden soil probably relates to Irish Street property burgage plots. Alternatively it may relate to an extension to the burgage plots leading back from the High Street properties.

Phase 4 Early Modern Drainage (Figs. 6 and 7)

Cut through the medieval garden soil, on an east to west alignment, was a box drain (19). The sides of the drain were constructed from four courses of mortared red brick. The base and the capping both comprised pink, roughly faced sandstone slabs, while contained within the drain was a single fill which represented silting. The drain respected the slope downwards from the High Street to the River, and it is clear that it was constructed to carry waste away from the inhabited area of the burgh to the river.

Two cuts were visible overlying the drain. One contained a second box drain (18) clearly built to feed into the main drain, whereas the other cut (Context 17) was to gain access either for repairs, or more likely, to clean out residue. This implies that the drain must have been utilised for sufficient time in order to make such activity worthwhile.

No direct dating evidence was recovered in association with the drain but its method of construction implies a 17th or 18th-century date.

Phase 5 18th/19th-Century Well (Fig. 7)

Truncating the main east to west drain was a circular dry stone-built well (9) constructed using roughly worked, randomly coursed pink sandstone blocks. During machine-stripping of the site, the internal walling of the well could be viewed. A minimum depth of 2.5 m was recorded before the well was backfilled for safety reasons.

Phase 6 19th-Century Garden Soil (Not illustrated)

The features identified in Phases 5 and 6 were sealed by a second layer of garden soil. This dark grey/brown sandy loam layer had a maximum thickness of 0.5 m and also appeared to have been imported, most likely to add to a back garden associated with an Irish Street frontage property. Finds recovered from it indicate a 19th-century date for such activity (see Cox below). This garden soil was sealed below 0.6 m of 20th-century overburden and 1990s demolition debris.

Medieval and Post-Medieval Finds (Fig. 8) Adrian Cox

A small assemblage of medieval and post-medieval material was found during the excavation, in a medieval garden soil and a series of later features. The main components of this assemblage are sherds of medieval and post-medieval pottery and a small group of clay pipes.

A total of 23 sherds of pottery were recovered, 19 of which are of medieval date. Fifteen sherds of medieval pottery came from a garden soil deposit (Context 3) which sealed the exposed surface of the natural subsoil and the deposit containing the lithic artefact scatter. The pottery assemblage from the garden soil includes nine sherds of a redware fabric of medieval date. This buff to orange fabric

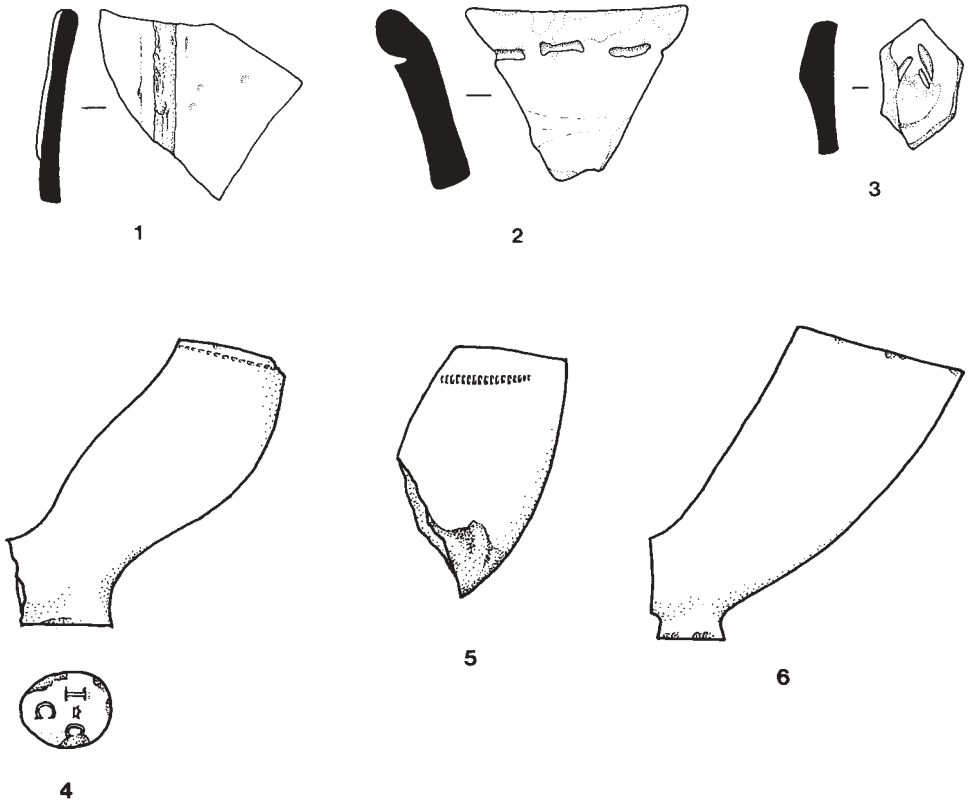

Fig. 8 Pottery (above) scale 1:2, Clay pipes (below). Scale 1:1

exhibits slight variations in coarseness and contained varying proportions of organic inclusions, evidence for which survives in the form of small, linear voids caused by the burning out of grass or straw temper.

It appears that both jugs and cooking pots were produced in this redware fabric, some sherds bearing a patchy, green to brown glaze while others are quite heavily sooted. The three illustrated sherds (Catalogue Nos 1-3) belong to this fabric type and Nos 1 and 3 are probably from jugs. A rim sherd (No.2) has a band of simple, linear decoration encircling the rim, produced using a blunt-ended object before the clay body had hardened. A body sherd (No.3), residual in a feature representing a repair to a post-medieval drain, was probably decorated in a similar manner, although the decoration is shallower. A base sherd in Reduced Greyware was also recovered from this drain repair feature.

Some of the sherds from the medieval garden soil exhibit a moderate degree of abrasion. Two conjoining base sherds in the local redware fabric exhibit slight post-depositional abrasion to their conjoining edges. None of the pottery from the garden soil post-dates the 15th century.

Among the post-medieval wares from the excavation is a sherd of hard-fired, manganese glazed tableware, found in the cut for the brick-built drain. The other sherds are also from tableware vessels in fine earthenware and china.

A total of 13 fragments of clay pipe were recovered, including three bowls (Catalogue Nos 4-6). No 4 is a Glasgow product of James Colquhoun. Two successive makers of this name were the most prominent pipe manufacturers in 17th- and early 18th-century Glasgow, being active *c* 1668-1730 (Gallagher 1987, 38-9). Parallels have been excavated at Hillis Tower, Lochrutton Parish (Williams 1980, 15, No.5), in Ayr (Gallagher forthcoming) and in St Andrews (Davey 1997, 96, Illus 45, No.287). Another milled bowl of bulbous form (No.5) may be of a similar date, while the larger, more upright example (No.6) is a more modern form. Found in deposits representing the backfilling of a sandstone well, No.5 appears to have been poorly made, with a much greater thickness of clay on one side of the bowl than on the other.

The remaining components of this artefact assemblage include small fragments of brick in a coarse, red to orange fabric and fragments of roof slate. This material, most of which was recovered from the backfill of the cut for a brick-built drain, dates from the late 18th or 19th century.

Catalogue

A select catalogue is presented below. Clay pipe stem bore diameters, where measurable, are expressed to the nearest 0.05 mm. All other measurements are expressed to the nearest 1 mm.

Pottery

1 **Decorated body sherd**. From a vessel, in a moderately fine, buff to orange fabric with fine, angular and sub-angular quartz inclusions. The sherd has an external green to brown glaze. A decorative ridge runs vertically down the sherd, bearing a darker brown glaze. Context 3; Find No.1

2 **Decorated rim sherd**. From a vessel (estimated diameter at rim *c* 190 mm), in a moderately coarse fabric, buff to orange where oxidised during firing and grey where reduced. The sherd has an external green to brown glaze. A series of horizontal, linear indentations forms a line of decoration *c*.10 mm below the rim. Context 3; Find No.2

3 **Decorated body sherd**. Probably from a jug, in a moderately fine, buff to orange fabric with fine, angular and sub-angular quartz inclusions. The sherd has an external green to brown glaze. A series of three oblique indentations form part of a decorative pattern, the lower part of which has broken away. Context 16; Find No.3

Clay Pipes

4 **Bowl**. Depth 38 mm; internal diameter at rim 13 mm; stem bore diameter 2.90 mm (7/64") Bulbous bowl with a short heel and a horizontal rim. The bowl is milled below the rim. The heel is stamped 'I C G'. Context 2; Find No.4

5 **Bowl fragment**. Surviving depth 32 mm; internal diameter at rim 13 mm; stem bore diameter not measurable. Fragment of a poorly-made, bulbous bowl, with one side much thicker than the other (the thickness of the bowl wall ranges from 2 to 9 mm). The bowl is milled below the rim. Context 11; Find No.5

6 **Bowl**. Depth 41 mm; internal diameter at rim 17 mm; stem bore diameter 2.50 mm (6/64") Plain bowl with a short, broad-based heel and a forward-sloping rim. The sides of the bowl are fumed. Context 14; Find No.6

Discussion

The excavations at the former British Legion, Irish Street have provided a surprising insight into past human activity within the area defined by the historic core of Dumfries. Mesolithic remains, unexpectedly found during the evaluation, were further encountered in the excavation and, although providing nothing to revolutionise the picture of early settlement of Scotland, have made an important contribution to a period that is sadly largely neglected in modern archaeological work.

The small lithic assemblage is typical of mesolithic narrow blade technology and there is evidence for both the manufacture of lithic artefacts, and their use, in the vicinity of the site. It is interesting to note that flint nodules and flakes (NMR NX 97 NE 78) of possible mesolithic date were found in a garden behind the raised beach at New Abbey Road on the western bank of the river. A hammerstone (Shirley, 1915) was also recovered from Whitesands, indicating lithic exploitation.

This evidence clearly represents mesolithic activity in the area, and the presence of the one cut feature hints at the site being utilised either as a temporary camp or a work site. This is possible as the general situation of the excavation, on the bank of the River Nith, is a commonly occurring location for mesolithic material. River courses were of particular importance to Scotland's earliest settlers, both for their food resources (fish, wildfowl and plants), and as a means of transport. Until recently the majority of mesolithic sites identified in the south-west of Scotland lay on coastal and riverine locations. Recent studies in inland locations in the south-west have identified numerous mesolithic sites, and further investigation may continue to redress the balance (Edwards, Ansell and Carter 1983) providing a more rounded view of mesolithic site distribution.

Unfortunately temporary sites, by their very nature, leave little trace in the archaeological record. Stone, in the form of tools or debitage scatters is the most durable sign of such early activity. Here at Irish Street the problem of preservation has been compounded by truncation during later medieval activity which has probably removed more revealing evidence.

As with the evaluation results, the excavation also provided a surprise, as evidence for the Neolithic period was encountered. This evidence was found in the eastern half of the excavation which was significantly affected by medieval truncation. Further neolithic remains may have existed, but what little was found, as with the mesolithic remains, implies that a possible temporary camp or work site existed during Phase 2. This evidence demonstrates recurrence of use of the area in the mesolithic and the neolithic periods.

It is clear that the void in the archaeological record of some 4000 years between the neolithic and medieval evidence does not represent a gap in the continuity of human activity in the area. This is evidenced by the stray finds dating from intervening periods found within the town limits, such as the Bronze Age hoard found at Greyfriars Church (Perry forthcoming), and a jet object of probable Iron Age date found at Elm Bank (NMR 97 NE 82). Such evidence clearly indicates that the area currently occupied by the town of Dumfries offered attractive reasons for human activity in prehistory.

It is interesting to suppose that the main reasons for the particular siting of the urban centre may echo those reasons for prehistoric activity. The presence of the River Nith is certainly the key factor in both prehistoric and historic occupation. Undoubtedly some other medieval burghs were founded in situations commonly used during prehistoric times, but early remains tend to have been either obliterated by development in antiquity or overlooked.

The establishment of the medieval settlement at Dumfries had certainly taken place by the mid-12th century, and it appears that the area between Irish Street and the river was utilised by the 15th century. Unfortunately the only datable evidence was in the form of medieval redware pottery which is believed to have been manufactured before or during the 15th century. Further pottery study of locally produced fabrics of the south-west of Scotland may reveal a more accurate date for manufacture. This would be especially beneficial in defining when layers such as the garden soil found here were deposited.

During the initial development of the burgage plots, the natural slope from the High Street to the river had been truncated, indicating that the area was deliberately terraced. It is likely that a significant amount of garden soil was then imported to provide a working burgage plot.

The evidence for medieval activity found here falls broadly in line with the pattern emerging from the historic core of the town. Across the ridge of the High Street it seems that modern development has truncated medieval remains, reducing the soil profile to leave only isolated cut features evident, if anything at all: such as at 17 Castle Street (*DES* 1987); 39-53 High Street (*DES* 1989); and 87-95 High Street/84-88 Irish Street (*DES* 1993). On the slopes of the ridge, or in the hollows in the topography, medieval archaeology still survives as seen at Mill Hole (Perry forthcoming), Friars Vennel (*DES* 1990) and here at the former British Legion, Irish Street. This means that although attention must be paid to possible intrusive development on the higher ground as 'pockets' of archaeology may still survive, it is on the lower ground of the burgh backlands that the greatest potential lies. Investigation in these areas can still prove fruitful regarding how and when the burgh developed as the backlands are an integral part of the development of any medieval burgh. In addition, investigation in the vicinity of the Townhead Motte and again at Nith Place have obvious priorities as they are the possible areas of the earliest medieval focus.

The presence of drainage features dating from the 17th/18th century shows that the town continued to grow and, with advancing technology, was improving its sanitary conditions. It is unusual that the later 18th/19th-century well truncated the earlier drain, but it does indicate that the drain must have been redundant by the 18th/19th century. It is unlikely that contamination of possible underground spring-water from the drain could have occurred as

the drain lies at least 2 m higher than the base of the well and it would have undoubtedly fed into the nearby river. The well was redundant either by, or during, the 19th century, as it was sealed by a layer of imported garden soil in which pottery and finds dating from no earlier than the 19th century were recovered.

Conclusion

Excavations in an urban context in Scotland rarely uncover evidence of multi-period occupation. The norm is to uncover remains relating to the establishment and development of the urban centre, usually a medieval burgh. Occasionally evidence of post-medieval development is also recovered either untouched, or at least not fully destroyed, by modern development. In some burghs, especially those with a monastic origin such as St Andrews (Hall 1995), evidence dating from the Dark Age can sometimes be uncovered. In other urban centres evidence of prehistoric activity can be found, such as Bronze Age cist burials at Kirkcaldy (Torrie and Coleman 1995), or lithic assemblages such as one found at Castle Street, Inverness (Wordsworth 1985). Stray isolated finds: prehistoric, Roman, Dark Age and Medieval are not uncommon in some burghs, indicating activity during these periods in the local environment.

What makes this site at Irish Street, Dumfries unusual is that it demonstrates *in situ* prehistoric remains from both the Mesolithic and Neolithic periods sealed below evidence of medieval burgh development. The evidence recovered during the excavation has significantly raised the archaeological potential of this part of Dumfries, and it is essential that any future intrusive development on the eastern bank of the River Nith is monitored. It is possible that monitoring of development on the western bank may also reveal prehistoric remains.

In a wider context, the results of this excavation have provided a salutary lesson for archaeologists by blurring an all-too-common preconception of the division between rural-prehistoric and urban-medieval archaeology. The findings here at Irish Street reaffirm that the archaeologist must always be aware of the full archaeological potential of a site whether in an urban or rural context.

Acknowledgements

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THE BURGH DITCH OF ANNAN:
An Excavation at Butts Street, Annan

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Abstract

In 1998 AOC Archaeology Group conducted an archaeological evaluation on behalf of Safeway Stores plc in advance of the supermarket redevelopment of the livestock market on Butts Street in Annan. Of 18 trenches opened, 12 trenches revealed features cut into the natural sand and clay. The most significant of these was a substantial ditch orientated approximately north/south, from which artefacts of the late 12th to 15th centuries were recovered. This ditch and a sandstone wall associated with it may correspond to the former town boundary mapped in the 18th century. Only two other features contemporary to the ditch were found. The remaining features were either modern or had been formed by natural processes.

Introduction

AOC Archaeology Group was commissioned by Safeway Stores plc to carry out an archaeological evaluation in 1998 at the site of the auction mart on Butts Street, Annan (NY 1952 6671; Figure 2). This work was undertaken as a condition of planning consent, stipulated by Dumfries and Galloway Council, in advance of the redevelopment of the site as a supermarket with associated new access and parking.

Butts Street bounds the development site to the west with Rose Street forming part of its northern limit. The site covered approximately 1.1 hectares and prior to the development functioned as a sheep market. The site was divided into two areas by a boundary wall, of which only 'Area A', comprising the market and an open strip of land between the market and Butts Street was subject to an archaeological evaluation (Figure 3). A smaller area, 'Area B', comprising the easternmost part of the development site, was excluded from the archaeological evaluation partly due to truncation by former gasometers on the site. The planned development of the site entailed the reduction of the ground level across most of the site.

Trenches were placed along the Butts Street frontage to investigate street alignment and previous buildings. Further trenches were intended to establish the nature of the 'Town Yeards', 'Kiln Closs' and 'dyke' seen on Tait's Plan of 1759 (Figure 4).

Archaeological and Historical Background

Although there are no recorded prehistoric monuments within Annan, a number of prehistoric artefacts, including a flint point, stone axeheads, bronze spearheads and socketed

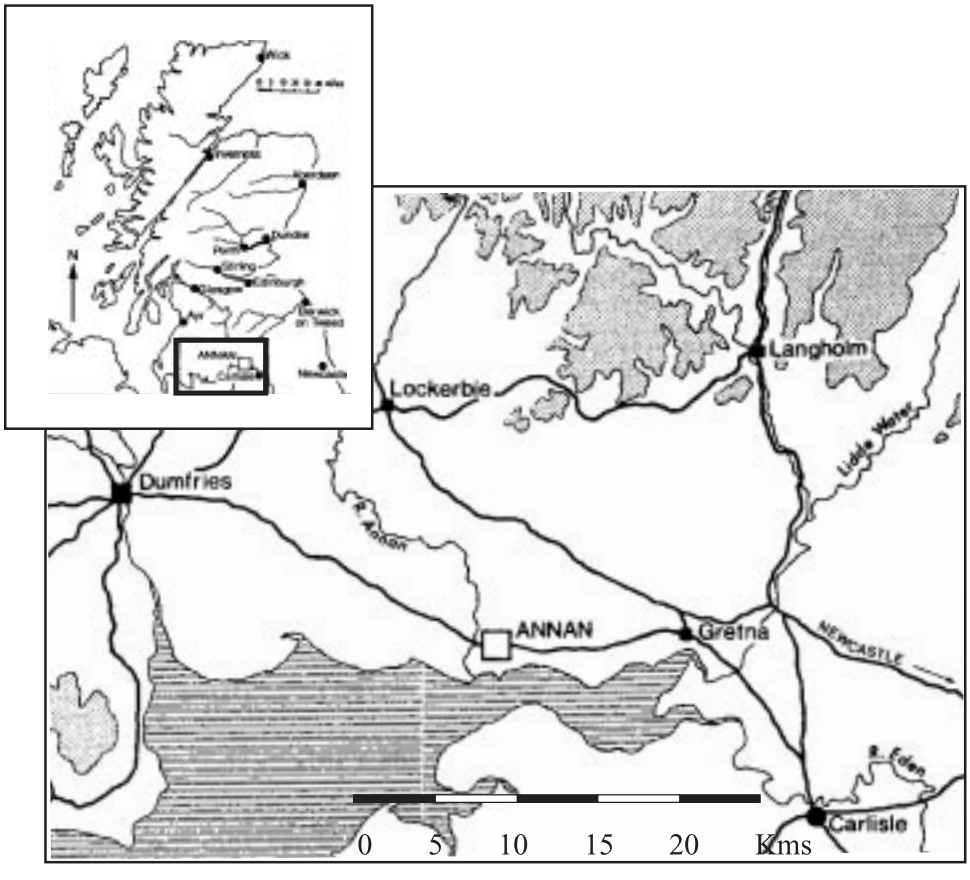


Fig 1 Location Map.

axeheads (Truckell, 1965, 16; Livens, 1961, 59; Lennox, 1893, 80; Callander, 1925, 108; Clough & Cummins, 1988, 235; Coles, 1962, 1965, 1966) have been found within the town.

A single Roman coin, a 'second brass' of Hadrian, was found in a garden in Butts Street, west of the development site (Macdonald, 1924, 328; Simpson & Stevenson, 1981a, 16) but hardly supports the assertion made by the Statistical Account that Annan was a Roman station (Anon., 1797, 451).

Medieval finds from Annan include an iron axe head discovered during the making of a garden at Stapleton Road, Annan and tentatively classified as a wood-working implement of about 1400 (Scott, 1969, 182). A small fragment of probable 12th century pottery was also found on the surface of Annan Motte in 1966 (Truckell & Williams, 1967, 169).

The town of Annan first appears in the historical record in connection with Robert de Brus (RCAHMS, 1997, 188). Brus established his first motte and bailey castle on the east side of the river at Annan (NY 1920 6675), some 170 m west of the Butts Street site. Prob-

ably because of river erosion of the motte, his son transferred the caput of the lordship to the larger stronghold of Lochmaben (RCAHMS, 1997, 188). Certainly from at least 1218 if not earlier Annan had been reduced to a *vill* (Reid, 1955, 162) and only recovered its status around 1296 when it was once again referred to as a burgh (RCAHMS, 1997, 197).

While Neilson (1916, 66) has cited a private document as proof that the town was a royal burgh by 1532, the earliest surviving charter for the town is of 1538-9 when, 'to make good its loss by war and fire', James V granted Annan the privileges of a royal burgh (Pryde, 1952, 89). The burgh ultimately sustained itself through its role as a small agricultural centre with a port for coastal trading (Simpson & Stevenson, 1981a, 21). The High Street was always the main thoroughfare of Annan, leading to the river crossing where there was a ferry until the 18th century when a bridge was constructed (Owen et al, 1996, 2).

Early maps for Annan, such as Blaeu (1654), are at scales that preclude the detailed identification of Butts Street itself, although the town of Annan is depicted. The first detailed plans of the town were John Tait's map of the town (1759) and his plan of the new enclosures around the common lands of the town (1781), which depict terraced housing on the Butt's Street frontage with 'Town Yeards' to the rear (Figure 4). To the east was an area

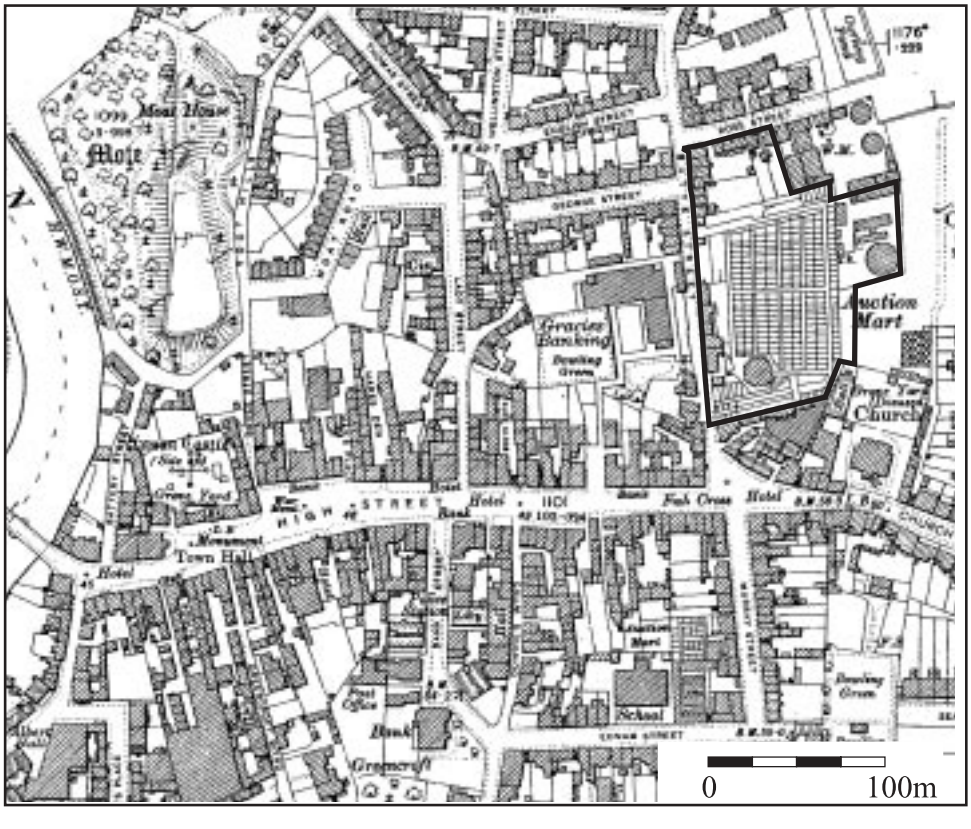


Fig. 2 Location map showing the development site, Butts Street, Annan.

named ‘Kiln Closs’ suggesting industrial activity. Tait’s map of 1759 also illustrates a dyke running approximately north-west/south-east through Kiln Closs in the eastern part of the site. By the mid-19th century the area formerly known as ‘Town Yeards’ had become a plant nursery (Ordnance Survey, 1857 and 1899).

In 1764, Thomas Gray (Miller, 1909, 163-4) observed that Butts Street or ‘the Butts’ and its immediate vicinity was the favourite residential area of the town, although most dwellings within Annan at this time appear to have been ‘huts of mud with no chimneys’.

Other Archaeological Work

Very little archaeological work is known to have taken place in Annan in recent years. This has been limited to small-scale trenching near the bridge in 1989, which encountered 19th century disturbance but no evidence for earlier occupation in the area, and more small scale trenching at Greenbanks House immediately north of Annan motte and bailey, which again revealed only modern activity (Toolis, 2001, 4).

Archaeological Evaluation Results

Geological

The earliest deposit in all the trenches was pinkish red sandstone covered by sand and sandy clay of similar hues, both of which had occasional patches and mottles of pale grey sand or clay. This was identified as the undisturbed natural strata. In places, a layer of pale greyish brown sandy silt mottled with pinkish red sand overlay the natural strata. This contained no artefacts and was interpreted as an interface between the natural sand or clay and archaeological deposits. Trenches 4, 5, 7, 11 and 12 contained no archaeological features and consisted solely of natural deposits overlain by mixed subsoil and sealed by topsoil.

Medieval Ditches

Trenches 17, 15, 13 and 16 intercepted at least two substantial ditches located in a north/south orientation while Trench 3 revealed one ditch (Figure 3).

Trench 17

Trench 17 was the northernmost section through at least one of the ditches. This was the only complete section through the ditch that had not been truncated by later features, and showed it to be over 5m wide. The primary fill within the ditch, composed of light grey sandy silt, contained Gritty Ware and Red Ware pottery. This was overlain by material with a similar soil matrix but also containing lenses of yellow sand with occasional stones at the base of the deposit.

At the extreme west end of Trench 17 was an irregularly shaped feature that had a slightly undercut/collapsed western edge and was filled with reddish brown silty sand. Due to later truncation by a ditch, it was not possible to determine whether it represented a pit or the edge of a ditch.

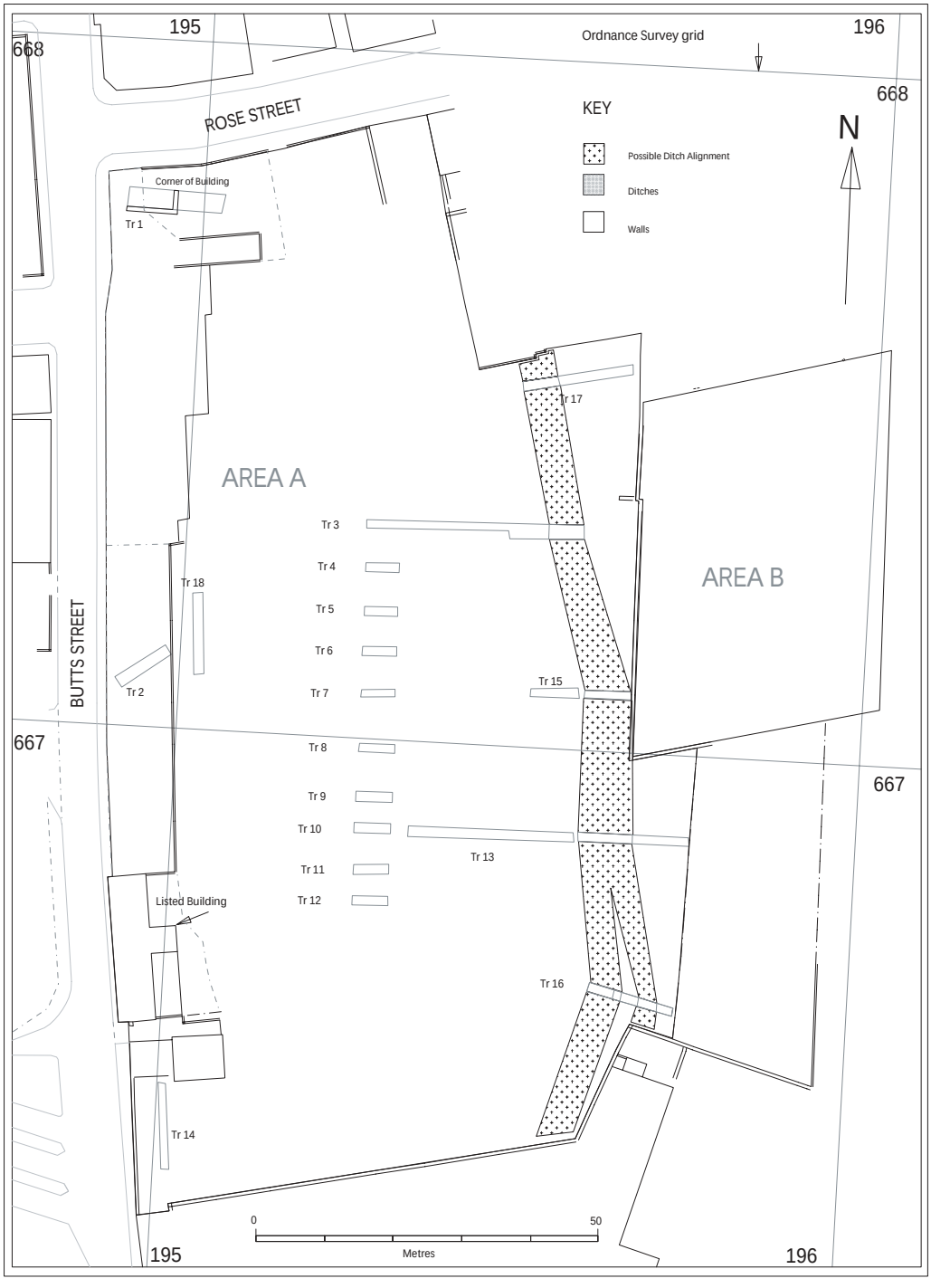


Fig. 3 Development site with trench locations revealing ditches and wall.

Trench 3

The westernmost ditch within the site lay along a north-west/south-east orientation and was at least 2.65m wide where it was encountered in Trench 3, revealing a depth of 1m and a fairly flat base (Figure 5a). The primary fill of the ditch was a 0.15m thick reddish brown silt, containing small to medium gravel. This was overlain by a succession of pale brown silts. These contained Gritty Ware pottery sherds and were sealed by a dump of gravel, which also contained Gritty Ware. A succession of three 0.30m thick layers sealed the earlier deposits, and appeared to have been tipped in from the western edge of the ditch as deliberate backfilling once the ditch had gone out of use. The earliest of these comprised reddish brown silt with gravel inclusions and was sealed by a reddish brown loam beneath a brown loam. Both loams contained Gritty Ware.

Trench 15

Trench 15 had an intricate stratigraphic sequence, complicated by the fact that the boundaries between deposits were blurred. More than one ditch was encountered in this trench, possibly representing recuts of the same ditch (Figure 5b). Natural deposits had been truncated to a depth of 1.80m below the ground surface by a ditch, of which only the flat base appeared to survive. A 0.20m thick grey sand and gravel fill then accumulated and was followed by 0.28m of grey clay with occasional pockets of sand, both of which contained large sandstones at their eastern extent and Gritty Ware and Reduced Greyware pottery. These primary deposits were truncated to the west by a gently sloping flat-based ditch recut 0.70m deep and perhaps also to the east by another more concave recut ditch. The relative sequence of these two ditches is uncertain but they seem to represent successive recutting and cleaning out of the original ditch after it had silted up. The secondary fill of the western recut ditch produced abraded Gritty Ware and Reduced Greyware pottery sherds. The primary fill of the eastern recut ditch, comprising 0.30m deep mottled yellow sand, contained Gritty Ware, Red Ware and Reduced Greyware pottery. It was not clear which of these ditches corresponded to the ditch recorded in Trench 3, but the alignment and profile indicate the westernmost recut ditch within Trench 15 as the most likely.

Following the deposition of the primary fill in the eastern recut ditch of Trench 15, it appears that the accumulation of deposits within the ditches ceased for an unknown period. During this time two features were cut into the surface of the uppermost recut ditch fills. One of these was a 0.30m long semi-oval pit with near-vertical sides and a concave base. This was filled with 0.10m of gravel sand, which was fully excavated and contained no artefacts. The other feature, cut into the fill of the eastern recut ditch near the south-east corner of the trench, was a pit with a slightly irregular shape in plan and a concave profile. This small pit was filled by, in order of deposition: a 0.20m thick grey clay containing abraded Gritty Ware, Red Ware and modern pottery; a 0.30m thick pale grey clay; and grey and yellow mottled sand. The function of this feature was unknown and the pottery found within it appears to have been residual because it was found within material that overlay, stratigraphically, the eastern recut ditch fill and included modern pottery.

Trench 13

Further south, within Trench 13, the natural subsoil was cut by the base of a 5m wide ditch with regular sloping sides, which had been severely truncated by a modern pipe trench. The ridge in the centre of the base of the ditch may indicate instead two intercutting ditches. However, the overlying pale greyish brown clay silt fill was indistinguishable on either side of the ridge. No artefacts were recovered from this fill.

Trench 16

Further south, near the south-east corner of the site, there was further evidence within Trench 16 for more than one ditch cut into the natural subsoil (Figure 5c). Unfortunately, a modern pipe trench and the foundation trench of a wall destroyed the stratigraphic relationship between the two ditches. Neither edges of the western ditch were revealed due to later truncation, but the 4m wide roughly concave base was recorded at a depth of 1.60m below the ground surface. The fact that the cut of this ditch seemed to rise towards the east while the base of the ditch further east was at a slightly lower level suggested two intercutting ditches or a recut within an extremely wide ditch.

The primary fill within the western ditch appears to have originated from eroded natural yellowish red sand and iron pan, which formed *in situ*. This was covered by a series of dumps totalling 0.90m in depth: lenses of greyish brown, silty clay; red clay; red sand; brownish grey silty sand; dark grey silty clay; lenses of pink silty sand; lenses of yellow sand interspersed with grey silty clay; dark and pale grey lenses of silty sand; and lenses of pink and brown silty sand.

While Trench 16 revealed the undulating east edge of a more eastern ditch, no trace of its west edge survived. This more eastern ditch was filled by a 0.50m deep greyish brown silty clay beneath a 0.30m deep pinkish red sand with brown silt mottles, which had probably been tipped in from the east edge of the feature. No artefacts were recovered from any of these earlier features recorded within Trench 16.

Undated Wall

Trench 16

Truncating the uppermost fill of the western ditch evident within Trench 16 was a north/south orientated linear trench that appears to have been the foundation trench for a wall at least 0.60m wide (Figure 5c). A subsequent pipe trench removed any trace of the eastern edge of this foundation trench, if indeed there ever was one. The wall was built of roughly worked red sandstone blocks laid on their beds in uneven courses 0.55m wide to a height of 1.40m and bonded with loose reddish white sandy lime mortar and soil. While the western 'face' of the wall was rough and irregular, the eastern face was relatively smooth and even. A thick deposit of buried topsoil evidently abutted the west wall face while it was still presumably in use but in the 19th century the wall was levelled and covered by further topsoil.

Early Modern Features

A number of undated, irregular features recorded within Trenches 2, 6, 16 and 17 appear to represent 'tree-holes'. Together with the extensive deposits of humic soil directly below the present ground surface, these relate to the nursery that occupied the site by the mid-19th century, as shown on the O.S. First Edition map of 1857. The planting date of this nursery is unknown but is likely to have been post-medieval.

The western half of Trench 1 had been truncated to a depth of at least 2.35m below the present ground surface by a cellar. This structure comprised 0.55m wide sandstone walls, incorporating a north-facing fireplace and plastered internal wall-faces. The cellar was paved with tightly fitting sandstone slabs. Following its disuse, the cellar had been backfilled with sandstone rubble, pieces of wood and metal pipes, which presumably originated from the demolition of the former building illustrated on Tait's map in 1759.

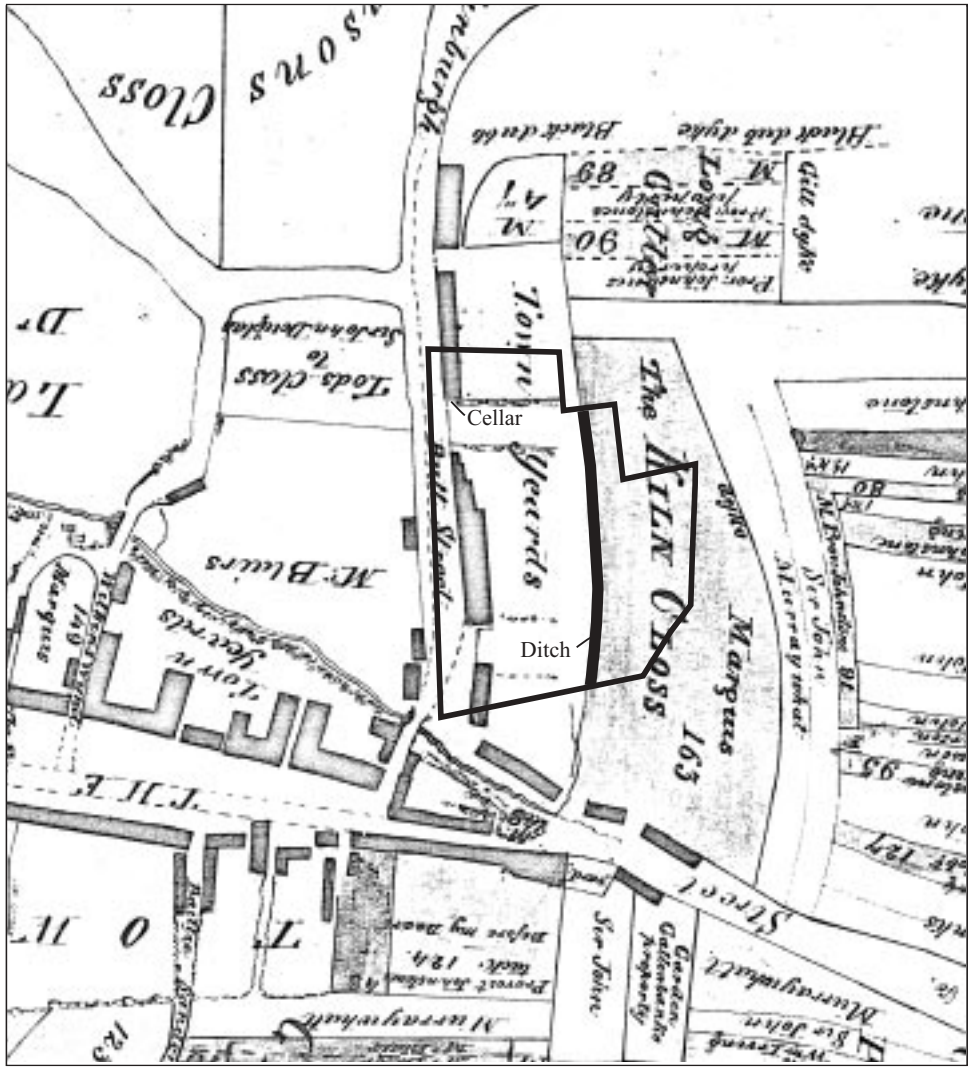


Fig. 4 John Tait's *Plan of Burgh of Annan and Adjacent Lands* (1759), based on John Tait's *Eyedraught of Annan and Adjacent Lands* (1759).

The southern end of Trench 18 clipped the edge of a modern pit, which was filled by re-deposited natural sand. The rest of the trench contained overburden comprising reddish brown silty sand with dark brown/black mottles. The depth of modern overburden in this area, and possibly also where Trench 14 was located, suggests that the ground level had been deliberately raised, perhaps to compensate for earlier terracing of the area.

Artefactual Evidence (Naomi Crowley)

The site investigation at Butts Street Annan produced a small assemblage of medieval pottery. This was quantified by context, fabric, form, weight, and sherd count, noting features and decoration. The full quantification can be found in the site archive. The modern pottery from the site was scanned and is included in the archive.

Three different types of pottery fabrics were recorded in the archaeological evaluation. These were a Red Ware, Gritty Ware and Reduced Greyware. The most common fabric evident was Gritty Ware, accounting for 84% of the weight of the medieval pottery assemblage. This gritty fabric varies in colour from white through to a red fired variant. Although similar to the Gritty Wares found on the east coast of Scotland the Gritty Ware in this assemblage is likely to be a local product and dates from the 12th to 15th centuries. The forms present include glazed jugs, cooking pots and a possible dripping dish with internal green glaze.

The Red Ware accounts for only 5.5% of the assemblage. Glazed jugs and cooking pots are both represented. This soft red coloured fabric is similar to pottery found on excavations at Hayknowes Farm, Annan, which was dated to the 11th to 12th centuries, making it one of the earliest native assemblages in Scotland (Hall, forthcoming).

Reduced Greyware accounts for 16.5% of the assemblage. Reduced Greyware fabric was first identified in excavations in Stirling Castle in the late 1970s (Haggarty, 1980) and occurs across Scotland and Northern England. It is dated to the mid-15th to mid-18th centuries. The only form present in the assemblage from this site are green glazed jugs.

The ditch deposits exposed in Trench 3 contained a small quantity of Gritty Ware pottery, dating from between the 12th and 15th centuries. The lower ditch deposits, perhaps representing a gradual accumulation of material, contained fragments from a cooking pot and a possible dripping dish. These were not abraded indicating that the pottery was not water-borne but probably thrown in. The deliberate backfilling above these deposits contained only two sherds of Gritty Ware pottery.

The ditch exposed in Trench 15 yielded a mixture of pottery including Gritty Ware, Red Ware and Reduced Greyware, providing dates ranging from the 11th or 12th century through to the mid-15th to mid-18th century. The pottery from the earliest ditch deposits consisted of Gritty Wares and Reduced Greywares. Although mixed in date, these did not show many signs of abrasion, thus indicating that the pottery was probably deliberately deposited during the 15th century at the earliest. The pottery from one of the re-cut ditch deposits contained sherds of Red Ware dating to the 11th to 12th centuries suggesting early activity. However these were very abraded and the sherds generally very small which together with the presence of Gritty Ware and Reduced Greyware sherds, suggests that the re-cut ditch deposit represents re-deposited material.

The medieval and late-medieval pottery from the site appears to be locally produced domestic wares, typical of the types of pottery found in medieval urban sites elsewhere in Scotland and Northern England. There are some early Red Ware sherds dating to the 11th to 12th centuries, Gritty Wares typical of the 12th to 15th centuries and Reduced Wares that occur over large parts of Scotland and Northern England from the mid-15th to mid-18th centuries. The assemblage is dominated by glazed jug sherds although there are three examples of cooking pots and one possible example of a dripping dish with internal green glaze in Gritty Ware. There is no imported pottery in this assemblage.

There are only a few excavated sites in this area which have produced suitable assemblages for comparison. Excavations at Hayknowes Farm produced similar early Red Ware (Hall, forthcoming). Recent work on pottery excavated at nearby Caerlaverock shows that there were few if any imports at that site (pers. comm. Derek Hall). Excavations at Kirkcudbright Castle (Dunning 1957) produced some similar fabrics as well as a few sherds of imported medieval French Whiteware. French wares

are often found on medieval sites along the West Coast of Scotland associated with the wine trade. The lack of such imports on this site may be due to the small size and nature of the assemblage rather than a comment on the status of the burgh.

Miscellaneous Artefacts

A miscellaneous collection of artefacts dating to the 19th and 20th centuries and of little significance was recovered during the archaeological evaluation. This collection included metal work, fragments of a leather shoe, a small amount of building material, clay pipe fragments and a small collection of animal bone fragments recovered from a variety of trenches.

Environmental Analyses (Alan Duffy and Dr Clare Ellis)

Bulk Soil Samples

Very few ecological remains were found within the 15 samples submitted for environmental analyses. In the main the samples came from contexts interpreted in the field as ditch fills, or contexts associated with the ditch. Small fragments of unidentifiable charcoal were noted in samples from the ditch fills revealed in Trenches 3 and 15 although a fragment of hazel (*Corylus avellana*) was noted in a sample from the secondary fill of the ditch revealed in Trench 3. Small fragments of unidentifiable large mammal burnt bone were also noted from samples taken from the ditch fills of Trenches 3 and 15. Small lumps of coal were noted in a sample from the primary ditch fill revealed in Trench 3.

Routine Soil Samples *(Dr Clare Ellis)*

The phosphate content of the samples was generally high and indicates a considerable anthropic and/or animal addition of material to the analysed deposits of the ditch. Phosphorus is derived from domestic refuse, food wastes, plant and animal material, excreta etc. The depth of the ditch and the continued high phosphate content of the deposits down through the profile indicates that leaching of phosphate has not been significant. The organic content is generally low and may reflect the original nature of the material deposited in the ditch. It could also reflect the rapid breakdown of organic material after deposition. This does not conflict with the perception of rubbish being deposited within the ditch.

Discussion

No evidence for prehistoric or Roman activity, in the form of deposits or artefacts, was encountered during the archaeological evaluation.

At least one substantial 5m wide ditch dating to the late medieval period was discovered during the archaeological evaluation. There was evidence for this having been re-cut or cleaned out on more than one occasion, indicating its continued importance. The ditch may have been open for a few hundred years, from some point between the mid-15th century and mid-18th century, as indicated by the Reduced Greyware pottery recovered from the primary ditch fill deposits. There may even have been more than one ditch in contemporary use, but this cannot be proven due to the problem of later truncation and the need during the archaeological evaluation to divide the excavation trenches in order to avoid a functioning water pipe. Later truncation of the ditch has also prevented an accurate estimation of its depth but the survival of 1m depth of ditch fill deposits in places indicates its minimum depth.

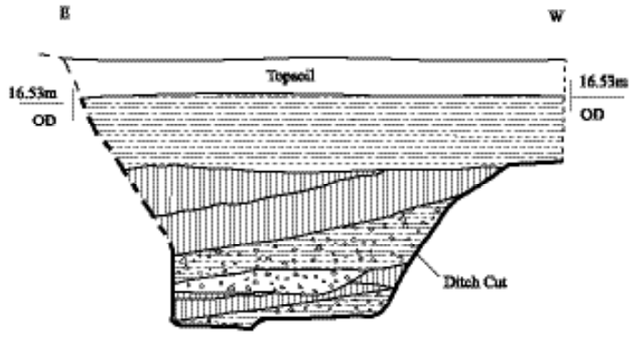


Fig. 5a Trench 3, north-facing section.

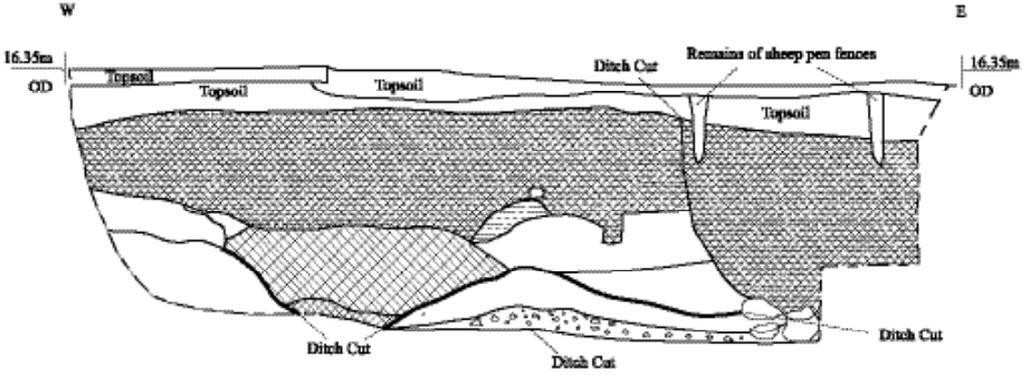
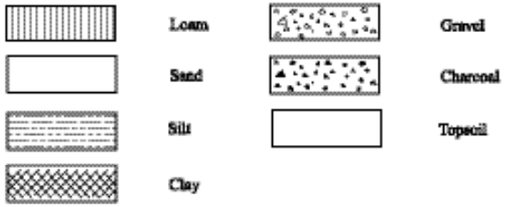


Fig. 5b Trench 15, south-facing section.



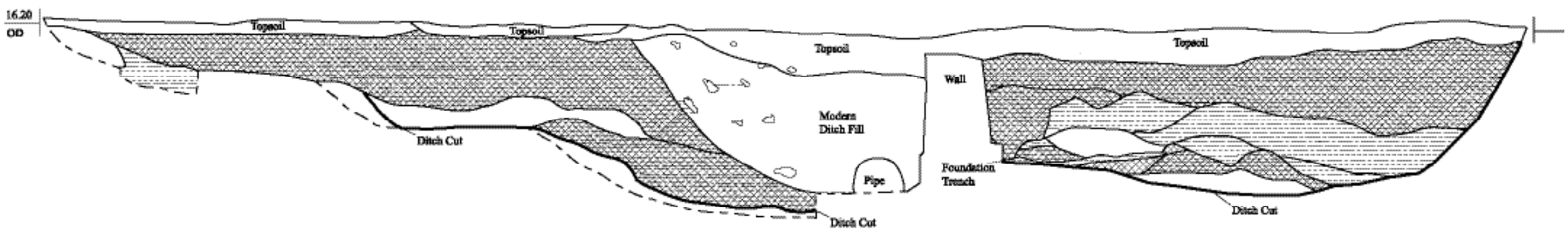


Fig. 5c Trench 16, north-facing section.

The base of the ditch sloped down gradually to the south but at an insufficient gradient for water to be free flowing within it. This factor, along with the width and depth of the ditch, comparable to the burgh ditch exposed at East Gate, Inverness (Ellis, forthcoming), indicates that it was primarily intended as a boundary marker, or perhaps even a defensive barrier, rather than a drainage ditch. This is supported by the general lack of abrasion evident in the pottery assemblage recovered from the earliest ditch deposits and the general stratified sequence of pottery deposition. However, this appears to contradict observations made by Irving (1930, 308-9) of a section of an old ditch exposed during street repairs close to the river south-west of the High Street. Irving (1930, 308) noted that a primary deposit of gravel was exposed within an 'old burn' 15 feet wide, which closely matches the width of the ditch exposed in Trench 17, and that this bed of gravel flooded at high tide (Irving, 1930, 309). Irving consulted an unidentified old map, which not only depicted this 'burn' running west from Greencroft but also depicted a small loch in the location of the Railway Station with two tributaries, one running down modern Bank Street and the second running down modern Ednam Street, Murray Street, The Canteen, George Street and down to the Moat. The first tributary was apparently called 'the inner ditch' and the second tributary 'the outer ditch' (Irving, 1930, 309). It is this 'outer ditch' which perhaps corresponds with the ditch exposed during the archaeological evaluation at Butts Street (see Figure 8). If this is correct, the burgh ditch may have defined the southern, eastern and northern limits of the burgh while the river defined the western limit.

However, burgh ditches around Annan are not evident in either of the potentially contemporary plans of Annan; the Platte of Castlemilk drawn following the English campaign in 1547 (Merriman, 1967, 181) and the illustration apparently made by an anonymous English spy around 1566 (Armstrong, 1883, App., cxvii; Figure 6). This is in some ways surprising, as burgh ditches are features that one might expect to be included if military intelligence was the objective. This potential lack of detail does not preclude the existence of burgh ditches at Annan at that time but as the Kirkcudbright town ditch is evident in an illustration apparently made by the same spy in 1566 (Armstrong, 1883, App., cxviii; Figure 7), it does bear serious consideration. Taken together with the pottery from the primary ditch fill deposits, which only indicates a date *between* the mid-15th century and the mid-18th century for the cutting of the ditch, the illustration suggests that there was in fact no burgh ditch in, and perhaps before, 1566.

The Annan ditch was apparently still evident on the ground though in the early 19th century when Rev. J. Monilaws (1841, 525) traced it from Galabank, the old site of the town gallows a little way upstream from the motte, to Annan Moss, skirting the side of the town nearest to the English border, differing somewhat in course from Irving's description (1930, 308). Monilaws (1841, 525) interpreted it as 'cast by the inhabitants of the town for a means of defence'. The Royal Commission (1920, xxxii) also noted that not only one ditch was dug from the town to the sea with three places of entry but another landward ditch extending to a moss, with similar points of entry. The First Edition O.S. map of 1859 does not show any trace of these ditches but Butt Street does appear as more or less defining the eastern edge of the town. Tait's map of 1759, however, does depict a dyke on the same orientation and location as the ditch revealed during the archaeological evaluation (Figure 4) implying perhaps that sufficient detail was absent from the earlier plans above rather than the ditch absent itself. The alignment of the Butts Street ditch may have survived for some time since a nineteenth century pipe follows the alignment of part of the medieval ditch.

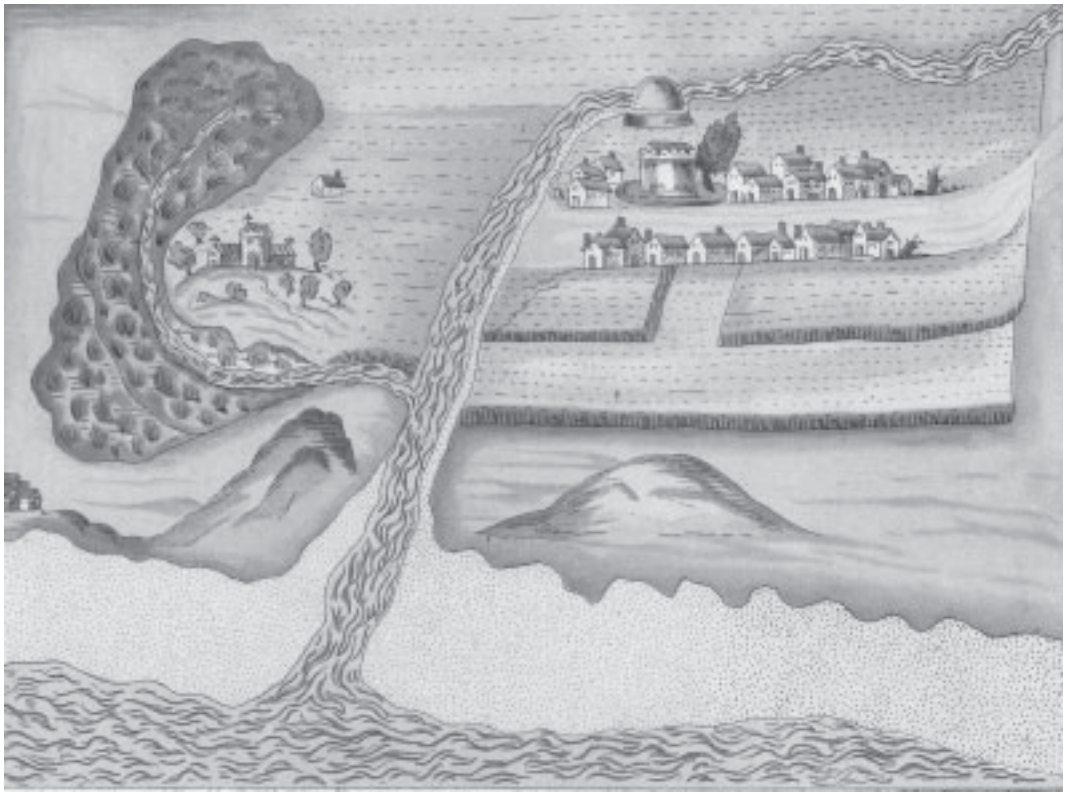


Fig. 6 A depiction of the burgh of Annan *circa* 1566 (Armstrong 1883).

There are a few clues to the former presence of a boundary ditch in the vicinity of the site through the survival of place names. The name 'Butts Street' apparently derives from the practice of archery by the burgh folk (Thomson, 1995, 62) which offers a tentative 'defensive' association with the area within which the ditch was revealed. A more useful indicator is revealed by the name 'Town Yeards' over Area A of the Butts Street site in Tait's Map of 1759. 'Town yards' was the term for the backlands of a medieval town in Scotland and the 'town yard heads', usually a stout wall or wooden palisade, formed the burgh boundary. The upkeep of each section, or yard head, was the responsibility of the individual owner, such as at Dumfries, where in 1577 after Lord Maxwell and Lord Herries had advised the Provost, baillies and council on how to strengthen the town, every man was to 'big his awin yairdheids and cast to them sufficient dykes' (Truckell, 1999, 191). In 1579 Lord Herries offered the Scottish Crown and the burgesses of Annan similar advice to 'strenthin the keipar dyke that enveronettis the toun of Annand' and 'cast and strenthin the fuirds' of the river as had been the 'ancient ordour' (*Regist. Secreti Concilii Acta*; Fraser, 1873, 486; RCAHMS, 1920, xxxii). Whether this was actually carried out might be open to doubt, given the umbrage taken by Lord Maxwell at Lord Herries' advice (Fraser, 1873, 489). Other ordinances were, however, also issued in other burghs across Scotland in the 15th and 16th centuries such as Edinburgh (RCAHMS, 1951, lxxii-lxiv), Lanark (Renwick, 1893, 220; Robertson, 1974, 1; Simpson & Stevenson, 1981b, 4) and Dunfermline (Perry, 1999, 805). This strengthening, during the late 16th century, would presumably result in the recutting of the burgh ditches, a feature evident in the ditch exposed at Butts Street.

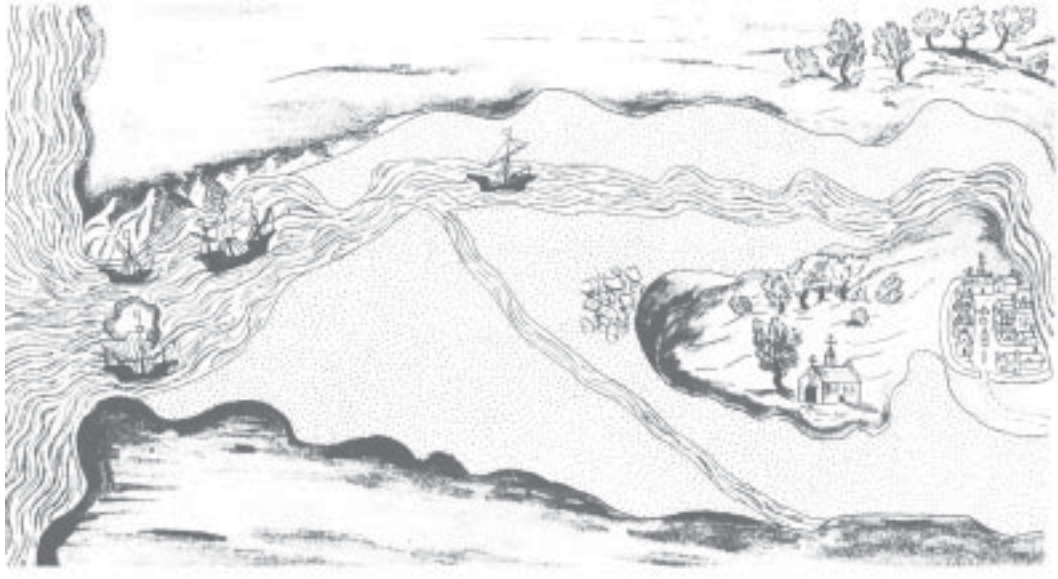


Fig. 7 A depiction of the burgh of Kirkcudbright circa 1556 (Armstrong 1883) showing the burgh ditch around the town.

The edge, or 'town yard heads' of the town yards depicted in Tait's Map (1759) is represented by a dyke and corresponds closely with the location and alignment of the ditch revealed in the archaeological evaluation. Furthermore the 0.55m wide red sandstone wall, revealed in Trench 16 (Figure 5c), appears to be the remains of this dyke. The rough and irregular western 'face' of the wall recorded within Trench 16 in contrast to the relatively smooth and even eastern face suggests that the eastern face was built to be visible. If this was the case, the wall may have functioned as a retaining wall to prevent material slumping into the ditch to the east. This cannot, however, be proved since the parallel pipe trench to the east of the wall has truncated any trace of ditch fill still evident west of the wall. That the wall was not revealed in Trench 13 suggests that it had been completely truncated at that point.

In essence, however, the location of the wall at the western limit of a substantial ditch and its alignment with the likely location of the eastern port at Fish Cross (Owen et al., 1996, 2) as illustrated by Tait (1759), together with the fact that it was faced solely on the eastern side, suggests that it could be a surviving stretch of the 'town yard heads'.

It is unfortunate that no evidence was recovered to indicate the precise date for the construction of this wall. While it was abutted by deposits that contained artefacts of the 18th and 19th centuries, as we would expect given that it was still upstanding when Tait's Map (1759) was made, the apparent foundation trench for the wall cuts through ditch fill deposits that yielded no artefacts. If, however, we assume these deposits to have accumulated as other sections of the ditch appear to, we might conclude that the wall was built between the 15th and 18th centuries. Given the absence of a town wall from the mid-16th century illustrations of the town however (Merriman, 1967, 181; Armstrong, 1883, App., cxvii), it is unlikely that the wall is earlier than the late 16th century.

While there may be no archaeological evidence to prove a late 16th century date for the construction of the wall and the ditch this is arguably the most likely date, given what we know of the history of the town at this time. In 1573, three years after a raid by the Earl of Sussex, the men of Annan entered into a 'Bond of Manhood and Service' with Lord Maxwell who was, in return, to supply, maintain and defend the town (Thomson, 1995, 104-105), a bond that was repeated in 1591 to Lord Maxwell's son (Thomson, 1995, 91). If the 1573 bond included the creation of some form of town defence, it evidently had to be repaired in 1579, when Lord Herries advised the strengthening of the town dyke against thieves (Fraser, 1873, 486; RCAHMS, 1920, xxxii; Thomson, 1995, 92).

It is evident that any discussion of medieval burgh dykes within what was the West March of Scotland has to take into account the local impact of the Anglo-Scottish Wars. Annan was razed to the ground repeatedly into the last half of the 16th century (RCAHMS, 1997, 237-8; Merriman, 1967, 177; Johnstone, 1909, 111) despite its dykes. The successful defence of the Kirkcudbright dykes by its townsfolk against a large English raiding party in 1547 (MacDonald Fraser, 1971, 108; Merriman, 1967, 177) illustrates that a small burgh could hold back even a well organised attack using its dyke, but Annan clearly never achieved this. Elsewhere in Scotland, outwith the Marches, burghs like Inverness proved equally unable to resist determined assault time and time again (Wordsworth, 1982, 322).

Irrespective of size, burgh defences vary greatly in Scotland, from the exceptional formidable barrier built around Perth in the 14th century (Yeoman, 1995, 65; Blanchard, 1987, 210; Ewan, 1990, 8) to the insubstantial defences around Aberdeen (Murray, 1982, 247), the latter being much more common amongst Scottish burghs. However, given that in 1547 Annan could provide the English Commander Wharton with no more than 33 fighting men as 'Assured Scots', compared to 221 men from Dumfries (Maxwell, 1900, 179) there was probably never enough manpower in Annan to defend a town dyke. Perhaps this is why the anonymous English spy may have omitted the town's ditch from the 1566 illustration while the Kirkcudbright dykes did merit an illustration because of their proven effectiveness in holding back an assault.

While a burgh law made each burgess responsible for 'watch and ward', this was probably aimed more at dealing with trouble inside the burgh than with danger from outside (Ewan, 1990, 8; Yeoman, 1995, 65). The most accurate perception of Annan perhaps is that the town itself was not a stronghold but that it *contained* a 'place of strength'; first a motte and bailey in the 12th century, then from at least 1299 until 1547 a fortified church (Neilson, 1896, 162; Simpson & Stevenson, 1981a, 21) and finally from around 1560 a tower house, kept by a warden deputy with '16 well horsed men' (Pease, 1913, 51-52). This last point illustrates the fact that defence was not left simply to each individual community but was the responsibility of the Warden of the West March, whose officers maintained a system of beacons across his jurisdiction (Maxwell, 1900, 127) including one perhaps at Watchhill south-east of the town (Thomson, 1995, 58). This system had offered local people warning of English raiders and enabled local forces to swiftly muster against them from at least 1448, when Earl Douglas addressed the Border Laws at Lincluden Abbey (Brown, 1998, 142).

But it is not only in terms of national conflict that burgh dykes in the Scottish marches should be discussed. Probably the principal function of the 'town yard heads' was to deter illegal entry into the town, thereby compelling all visitors to enter through the ports, where various tolls could be collected from those wishing to trade within the burgh (Ewan, 1990,

Fig. 8 A plan of Annan showing putative line of town ditches, based on the results of the Butts Street excavation and observations made by Irving.

8-9; Yeoman, 1995, 64; Ellis, forthcoming; Robertson, 1974, 1; Perry, 1999, 806). It is with regard to this primary role that the burgh dykes of Annan should be understood.

The evidence for the disposal of rubbish, in the form of domestic pottery, is also typical of a burgh ditch, as demonstrated at Inverness (Ellis, forthcoming). The medieval pottery recovered from the Butts Street ditches consisted of locally produced domestic wares, including jugs, cooking pots and a possible dripping dish. This modest, homely assemblage is perhaps what we would expect of a small self-reliant, medieval urban community within the turbulent West March of Scotland.

Conclusion

The archaeological evaluation at Butts Street, Annan has established the position of one stretch of the burgh boundary ditches previously alluded to in early maps and documents (Figure 8). The ditch, the wall and two features that may have been associated with the ditch were the earliest features on site and appear to date from some time after the mid-15th century on the basis of the pottery found within or associated with them. Taken together with documentary and cartographic evidence the late 16th century is perhaps the most likely time for the creation of the ditch.

It is noteworthy that there was no evidence for any other significant archaeological features on the site, particularly in the western part of the site, which was devoid of archaeological features or deposits. One explanation for this may be that truncation of former archaeological deposits by terracing and building activity took place on the site, while the ditch survived due to its depth.

Archive

A more detailed account of the results can be found in the AOC Archaeology Data Structure Report for the archaeological evaluation (Cavanagh, 1998) which has been lodged with Dumfries and Galloway Council and archived by the Royal Commission on the Ancient and Historic Monuments of Scotland in the National Monuments Record of Scotland.

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CHARTULARY of the BURGH of LOCHMABEN

by John B Wilson

This is a large book[1], covering the period from 1826 to 1880, with many gaps in the written text and only half filled by charters granted to those who had purchased portions of the Commonty of Lochmaben after the Sequestration of the Burgh in 1824. Large tracts of Common Ground had already been sold.

The volume begins with about a dozen charters and ends with about 30 more. Between lies a long description of about one hundred properties which were to be sold by public roup. The areas of land were small parks of two or three acres though a few measure up to 20 acres. Their north, south, east and west boundaries were detailed. The purpose of their sale was twofold, to raise funds to pay the Burgh's debts and to complete the process of enclosure of the countryside.

The rouping, made possible by an Act of Parliament, of these properties described as being 'held in Free Burgage of the King for service of the Burgh' gave rise to so many legal problems that in 1831 the Town Council sought the advice of Donald Hunter Q.C. He advised the council on the wording of the new charters and remarked on the problem posed by the transference of Public Burdens to the new owners. He suggested that the Burgh Officer's wages should come from the income generated by the burgh customs.

The roup, on the 18th September 1835, was advertised in the local newspapers and by notices around the town including one affixed to the door of the Parish Church. No indication is given of the names of the purchasers. We learn however from the Town Council Minutes that the principal purchaser was Andrew Johnstone of Halleaths who paid £1050 for about fifty lots mainly in the Innerfield area. They were purchased on his behalf by John Irving, surgeon in Annan and James Jardine, writer in Lochmaben.

After the detailed descriptions of these properties and their boundaries the volume contains several Charters of Novodamus and Confirmation replacing paper deeds which had been lost or destroyed. Together with the charters with which the volume commences and ends they provide a glimpse into life in these times for they tell of the rights of the burgers to dig peat in the various mosses, the allocation of seats in the church, half a sitting in the front row of the gallery to the tenant of Aikrig and the positions of the numerous manure loanings which provided access to the newly created fields.

The legal phrases which occur throughout the volume add an old fashioned tone to the charters. For instance, William Miller of Townhead was granted his property along with 'a portion of Righeads Moss, with all the revenue and humility as becomes purely and simply by staff and baton as use is to resign surrender upgive and deliver all the whole portions all lying bounded and described in manner foresaid'. The title to the lands of Cockiesknowe contains the phrase 'Bearers of earth and stone of the grounds of the said lands and others and a handful of grass and corn for the said tiends and all other symbols usual and necessary'. Another area, near Cockiesknowe, was sold 'Lyable to pay watching and waiting' and the new owner was 'to keep dykes and fences in proper repair'.

In two instances the terms of sale stipulated the planting of thorn hedges, whilst the unfortunate William Wells, blacksmith in Lochmaben was informed, 'If limestone should be found he should be obliged to work the same and keep going a quarry so as to furnish the inhabitants of the Burgh with limestone at the ordinary rate paid at Kellhead Quarry. Also the council to have the power to search for limestone on any part of the said ground. Any damage to the ground shall be determined by two persons mutually chosen, one by the proprietor and the other by the magistrates. The Council shall also have full power and liberty to cause dig or lead out gravel or sand or other materials for road making throughout the Commonoty made in the years 1797 and 1782 without compensation.' A house in the Vennel which had belonged to John Fergusson, shoemaker was sold 'With liberty to drive and turn a horse and cart when leading manure' and a house in Marjorybanks was granted 'the priveledge of taking water from the Bogle Hole Well'.

1 At present in the Tolbooth in Lochmaben.

'A Kiln Stead, Kiln Yard and Kiln Acre at Townhead, bounded by the High Street on the east and the Barras Loch on the north east' is described - the first mention of a kiln in Lochmaben.

Not surprisingly, many properties have disappeared in the process of enclosure, Stonk, Bellshill, Kittyfell, Killimyre, Raescleuch, Ritchies Park, Double Dykess, Stone Grumal, Boot, Nutknows, St Mary's Chapel and Silverknowe, the 'Sour Milk Loaning' at Whitelaird, Dunglass alias Hallpansies and Ladies Park no longer appear on maps of the district.

Six serving officers from the armed forces are named in the charters, Laurence Brown, Captain of the 4th Ceylon Regiment, later Lt. Col. the Grenadier Guards, Lt. Col. Charles John Gray, formerly Major in the Rifle Brigade, Major General George Johnstone of the 93rd Regiment of Foot, son of the deceased Major William Johnstone of Millantae also Andrew and Robert Hoggan, Surgeons R.N.

One personality to emerge from these documents is that of William Ker, retired post runner. According to the Statistical Account of 1835 he met the daily mail coach from Edinburgh to Dumfries and carried the post from Dumfries to Lochmaben. In 1880 he owned property in the Barras.

The scribe responsible for the writing of these documents and the collator, usually the Town Clerk, are often named at the end of the charters.

Summary

The charters provide a glimpse into a vanished age before the enclosure of the countryside.

PORTPATRICK CUSTOMS (1671-99)

by A.E.Truckell

The Portpatrick books of Customs, Excise and Bullion occupy two spools of microfilm. The customs books of Dumfries, Kirkcudbright and Alisonbank - the latter the border with England, and dealing with pack trade and cattle - differ from Portpatrick in that it is the border port for Ireland and that that kingdom is for part of the books' course in a state of war.

The books run from November 1671 to late 1699 and thus include the famine of 1695-6-7 - 'King William's Years'. The customs precincts of Portpatrick include Wigtown, Whithorn, Kirkcolm, Portnessock, Portlochryan, Garvilland and Portwilliam.

The Collector for 1671-72 is William Spittall but when the record recommences in the early eighties we find William Fullarton Surveyor and Collector, and so he remains to the end. Portpatrick is for most of the time a very busy port, with often three ships a day, despite the then inadequacy of the port. The names of the ships are interesting in themselves - the Margaret, the Bonadvenure, the Good Fortune, the Mayflower, Jonas, Isobel, Jean, James, Agnes, Boundwater, the Archibald and Mary, the Janet, the Watch, the Matthew of the Isle of Skye and the Squire. The Donaghadee boats may come several times a week - for Donaghadee is overwhelmingly the dominant partner though Larne, Belfast, Carrickfergus, Islemagee, Portdavie turn up fairly often and Dublin once or twice.

For many months imports from Ireland are mainly horses, in great numbers, sometimes accompanied by the 'Gentlemen' who own them; occasionally special arrangements are made as to duty on the

horses - the Duke of Shonberg, a commander in the Irish war, does so[1]. Cheese, butter and horses are both imported and exported - though far fewer horses exported than imported: cattle, sheep and goats are also exported: no cattle (this is surprising) are imported from Ireland. Wine, Claret and Brandy come in from Nantes, sugar and ginger from Barbados, though all of these more often come in indirectly through Ayr, Girvan, Saltcoats, Greenock, Glasgow, or occasionally Bristol - one shipmaster with a Cornish name from Bristol brings in a cargo from Barbados, reporting that his papers permit him to land it in England or Wales - no mention of Scotland! Cargoes of woollen goods, biscuit and barrels of salt pork are exported to Barbados. Exports include a good deal of linen cloth and some woollen cloth: barrels of herring are imported from Man: timber comes in from Norway as deals and barrel staves.

Women, as is usual at this period, are rarely mentioned. However, early in 1690 something odd happens. Each ship has its master and merchant - both male of course and sometimes the same man. Suddenly, in March 1690, in half a dozen cases or so, mostly on boats from Donaghadee, the merchant is a woman. Each case is lightly crossed out and bears a tiny footnote by the Collector 'repaid' and a date in April. What has happened? Is this connected with the war? Did the Collector think this was permitted and found out too late that it was not?

The names of the men involved as masters or merchants, are varied and interesting - almost all Scottish though mainly from Donaghadee: quite a few Wigtownshire names - Uchtred McDowall, Adair, Agnew, Vance, and several names of the McIl …. type. There are no clearly Irish names such as O'Neil or Flaherty; the effect of the Plantation is obvious.

At the beginning of the Irish War William Fullarton is ordered by the Privy Council to provide intelligence on the war: this involves him in sending boats across (a boat and its four crew were taken by the Irish): he himself crosses several times and is present with Captain Hook when Hook burns five ships at Donaghadee: the French land in Ireland: there is talk of an invasion of Scotland: the Duke of Shonberg lands in Ireland: defeats and victories are mentioned: Captain Hamilton reports to the Duke of Hamilton (his Father?), disappears and is found to be a captive of the Irish: and Fullarton handles a heavy series of dispatches from and to Ireland - all express and expensive: the letters go to and from the Lords Justices of Ireland and in Scotland to the Dukes and Earls of Bute, Hamilton, Queensberry and the Privy Council: one letter is from King William. However, this matter is not Customs and if not already known to the historians will be dealt with separately.

Finally, as at Alisonbank, we find in 1696-97 a bounty of 20/- Scots for each boll of meal, barley or malt imported: in 1697 Fullarton is tardy about paying it and has to be taken to law. The bounty of course is a consequence of the famine.

1 For further details of the Duke of Shonberg see also, 'William Fullarton's Expenses (1689-92) about the War in Ireland', elsewhere within this volume of *Transactions*. Ed.

WILLIAM FULLARTON'S EXPENSES (1689-92) about the WAR in IRELAND

by A E Truckell

In the brief note, elsewhere in the *Transactions*, on the Portpatrick Customs Books I include a mention of a Duke of Shonberg dealing with the customs duty on a number of horses which came from Donaghadee with their riders. It is now clear that this was Frederick Herman, Duke of Shomberg or Shonberg, Commander in Chief of King William's forces in Ireland, and that the riders would be officers of his staff on their way to London.

Shomberg, born in Germany in 1615 and so in his seventies by the time of the Irish campaign, had a long and notable military career in several European countries before being killed by the Irish cavalry at the Battle of the Boyne. He crops up several times in William Fullarton's accounts for Fullarton's services to the Privy Council in gathering intelligence on the Irish War, which are appended to the Customs accounts. As this historical material has not been published before, and as it related in a way to Portpatrick, it is published here.

The first mention of Fullarton's special service for the Privy Council comes at the end of the account of contingent charges at Portpatrick Customs Office for the year from November 1688 to Candlemas (1st February) 1690.-

> 'Ane Accompt of debursments Expended by the said Mr ffullarton for Expresses by Sea and Land & other Necessaries for their Mat^{ies} Speciall Service, conform to ane particular accompt extending to £527. 7 . 0.'

The second account, dated 1689, reads

> 'Accompt of depursements expended by Mr W^{m} ffullartoun collector at Portpatrick for their Ma^{ties} Speciall service'
>
> | | |
> |---|---|
> | Imprimis payed to one John Lyon Seaman who brought a packet from Capt. Hamiltoun to be sent to His Grace the Duke of Hamiltoun. | 0.14.0 |
> | To Robert fultoun for conveying the same to his Grace being sent there with express. May 18th | 6. 0.0 |
> | His Graces answer returned May 19th as also his letter ordering me to use all diligence to get the same conveyed to Cap$^{t.}$ Hamilton quhich cost me to send my own boat to the coast of Ireland with 4 men to inquire after Cap$^{ts.}$ Hamilton & Broun with a letter from my self showing them that I had letters from his Grace to them quhich boat was seased upon by the Irishes & the men Secured quhich cost | 24.0.0 |
> | Sent notwithstanding the 2^{d} tyme another boat to that effect but fearing least they should be catched returned not fynding them nor yet bringing to me any intelligence therefore gave them but | 6.0.0 |
> | May 25th I fearing that his Graces Letter (as I doe not in the least question I might be of concerne) did fraught a ship of one W^{m} M^{c}Meechan of Donnochadie I furnished men and provision and went into her myself, went towards Lochindale Isle of Mull Darie Lochmouth & alongst the coast of Ireland for ten dayes tyme Inquiring for them quhich cost me | 101.3.8 |
> | June 6th the returne of my diligence I sent to his Grace with ane accompt of quhat intelligence I gott from Major Generall Kirk & the men of warr that cruised on that coast quhich was sent by one William Montgomerie express | 6.0.0 |
> | June 15th a boat quhairof John Broun Master I sent to Ireland for intelligence | 15.0.0 |
> | The return quhairof I sent to his Grace delyvered by provost Muir of Air quhich cost me to the express | 6.0.0. |

July 18th sent ane express viz Hugh Montgomerie to his Grace giving ane accompt of a pairt of K. James his army goeing for Scotland	6.0.0
To James Neall & Edward Sturgeon quhom I sent express to his grace to depone quhat they witnesses to in the imbarquing of the foresaid	6.0.0
Sent Wm. Montgomerie express with ane accompt of Capt. Hamiltoune & Brounes being taken quhich proved too true	6.0.0
July 13th, I sent a boat towards Carrikfergg Loch & to Isle of Man to give ane accompt of their being apprehended as also to give the same accompt to the english men of warr & with all for intelligence from the Governour of Isle of Man John McGill Master of this boat quhich cost	18.0.0
July 19th, his Graces packet came to my hand by ane express with orders instantly either to goe or send it by a weell manned boat (quhich was verrie hard to be gotten) to goe to Capt. Hook then lying at Lochswilly, the seas being foul however I sent off a boat quhairof John Boyd Master quhich cost	72.0.0
Admiral Hooks answer July 23th I returned by Wm. Montgomerie to his Grace express quhich cost	6.12.0
July 24th, Sent another boat to Ireland to one Doctor fferguson quhairof there was great hazard John Grier Master	18.0.0
The returne quhairof sent to his Grace by Hugh Montgomerie express	6.0.0
July 28th a packet came from his Grace to be sent to Admirall Hook quhich I sent away that night by one John Boyd to [?]Reidbay where Capt. Hook was then lying	30.0.0
The answer quhairof August first returned to his Grace by William Montgomerie express	6.0.0
August first I sent a boat to Ireland & another to Ile of Man for intelligence to Ireland and I wrote to doctor ferguson to Ile of Man to the Governour for ane accompt of quhat he heard of the english army all quhich cost	240.0.0
Summa	363.19.8
Item August 3dth the answer was returned from Ireland & so, forwarded by ane express giving ane accompt of the Irish army quhich was delivered to Binny	6.8.0
Sunday August 10th at Capt. Hooks desire I went off to him, then cruising betwixt the Mule of Kintyre & the coast of Ireland & took one John Broun pylot to conduct him into the road of donnochadie of purpose to burne barkes that the Irish army had secured there for transportation of victual & men as was supposed for Scotland they belonging all to papists quhich accordingly on Munday at 12 a clock he effectuated this voyage cost	12.0.0.
August 12th the wind being at a E.S.E. & I observing one of their Maties yaughts inclyning to come for our port went off in a boat my self with 6 oares & went a board of her quhair I gott the glad news of his Grace the Duke of Shonbergs Landing as also 2 packets after receiving of the same was blown near 6 myles from portpatrick quhich cost me	3.0.0.
The same day dispatched the packets with the news in all hast	9.0.0
August 13th Sent off Jo: Boyd in a boat to attend Capt. Hook for intelligence of his Graces the Duke of Shonbergs procedour who returned August 17th with a packet to his Grace the Duke of Hamilton & another to his Grace the Duke of Queensberry quhich cost	24.0.0
The saids packets I sent that night be ane express so directed	6.0.0
August 18th a packet from his Grace came to my hand to be sent to Capt. Hook & another to Major Generall Kirk quhich accordingly I did forward with a boat furnished with 5 men & provision quhich cost	24.0.0

Who returned the 21th with ane accompt of Duke Shonbergs ships and with ane accompt of his army all quhich I sent that day to Edbr.	6.0.0
August 21th ane express with a packet from his Grace to his Grace the Duke of Shonberg & another to Capt. Hook to the bearer quhairof I was ordered by his Graces command to give	9.0.0
Quhich instantly dispatched to Craigfergus quhich cost	15.0.0
August 20th Sent to the Earle of Crawford by ane express with a packet from his Grace the Duke of Shonberg which cost	8.0.0
August 25th Sent to the Earle of Crawford by ane express ane accompt of the newes of Ireland as also a packet from His Ma.tie the receipt quhairof ready to be produced I have under Mr Gilbert Eliots hand quhich cost	7.0.0
Betwixt August 29th & Mr Claires establishing the stage post for expences & expresses	36.0.0
My expences in keeping the imbargo by rydeing & taking others alongst the coast for assistance to the breaking of some boats & using other diligence to the effecting the same	20.0.0
Ane order for establishing the packet boat & goeing to Ireland to establish correspondents there & my sallary for keeping the saids packet	363.19.0
Totall five hundred twentie Nyne pound 7s. 8d	529.7.8

By & attour my oun pains & diligence & the loss of a boat abovementioned

Summa	[signed] W. Fullartoune	
Summa Saleris primi	363 19.8	
Summa Saleris [?]idi	165. 8.0	
Summa	529 7.8	

– o O o –

Accompt of expences in goeing to Ireland by the Counsell Command & for boats to Carie over expresses to & from the kingdom of Ireland to & from the Kingdome of Scotland	
May 29th 1691. An Express from the Earle of Craufurd ordering me to go for Ireland to Sir Robert Collvill & ?Porteved qch according I performed tho by Contair windes was put into Lairne quhich was 30 myles from the port appointed which coast for boat fraught	18.0.0
I stayed in the Kingdome of Ireland for intelligence & by Sir Roberts Advyce till an express was sent to Dublin & returned quhich occasioned me for horse hyre & other wyse to spend	36.0.0.
I returned to Donaghodie June 7th it being Sunday & prest a boat quhich coust	18.0.0
That day I dispatched an express to the Earle of Craufurd with the Lords Justices ansuer quhich coast	6.12.0
Who returned June 18th with an express to the Lords Justices quhich I dispatched by a boat quhich coast	18.0.0
June 22th An Express from Sir Robert Collvill about the Landing of the ffrench to the boat that brought it express I payt	12.0.0
Which Express that day I dispatched to the Earle of Crauford by express	6.12.0
24th An Express from the Lords Justices payt to the boat that brought it	12.0.0
That Day. Dispatched by an express to the Councill quhich coast	6.12.0

July 3th. An Express from the Councill to the Lords Justices quhich I immediately dispatched by a boat express	18.0.0
7th An Express from the Lords Justices to the Councill quhich I dispatched by an express	6.12.0
9th An Express from Sir Robert Colville to the Councill to the boat that brought it quhich I dispatched by a boy express	12.0.0
13th An Returne from the earle of Crauford quhich by reason a westerly winds was not dispatched till the 14th & then sent by a boat express quhich coast	18.0.0
That night at 12 a clock at night an express from the Lords Justices to the Earle of Crauford to the boat that brought it	6.0.0
16th To the boat that caried it express to Edr. To the Councill	6.12.0
An Express from the Lords Justices to the Earle of Crauford giving accompt of the defeat of the Irish army quhich caried over by reason of contraerie winds coast	18.0.0
Immediately dispatched it by express to the Councill	6.12.0
July 19th 1691	
An Returne from the Earle of Crauford I dispatched by a boat it being Sunday I dispatched by a boat express	18.0.0
24th An Express from the Duke of Hamiltoune to the Lords Justices quhich I instantly dispatched by a boat	18.0.0
With quhich express received orders to pay nothing to the Irish boats that brought expresses nor to send an Express to the Councill of purpos with Sir Robert Collvills letters	
28th An Express from the Lords Justices to the Councill quhich I dispatched by express	6.12.0
August 4th Returned with an answer from the Duke of Hamiltoune to the Lords Justices	18.0.0
7th An Express from the Lords Justices to the Duke of Hamiltoune	6.12.0
26th An Express from the Lords Justices quhich I forwarded by Express Coast	6.0.0
Septr. 14th We returned with an answer from the Duke of Hamiltoune to the Lords Justices quhich coast by sending a boat there which	18.0.0
22nd An Express from the Lords Justices to the Duke of hamiltoune quhich I instantly dispatched to Hamiltoune by express coast	5.10.0
Octr. 7th An Express from the Lords Justices about the surrender of Limrick to the Duke of Hamiltoune forwarded to Hamiltoune by express	5.10.0
Who returned with an answer to the Lords Justices octor 13 bot by reason of crosswinds could not get it forwarded till Sunday 8 ber 18th quhich coast	18.0.0
21st An Express from the Lords Justices to the Duke of Hamiltoune quhich I forwarded by express	5.10.0
Novr. 7th An Express from the Lords Justices to the Duke of Hamiltoune quhich I forwarded by express coast	5.10.0
Janry 5th 1692 An Express fro the Duke of Hamiltoune to the Lords Justices quhich I sent by a boat express	18.0.0
By and attour my paines & trouble	149. 4.0
	231.12.0
[signed] W Fullartoune	380.16.0

ALISONBANK CUSTOMS RECORDS
by A E Truckell

On September 8th 1972 Major W.A.J.Prevost of Craigieburn read at Cambridge a paper on 'The Turnpike and custom port at Alisonbank', later published , as article XVII, in our sister Cumberland and Westmorland Society's *Transactions*. Major Prevost had been stimulated by Dr Athol Murray's paper on 'The Customs Accounts of Dumfries and Kirkcudbright between 1500 and 1660' in our own Transactions, and in the section of his Cambridge paper dealing with the Alisonbank Customs Accounts used material given him by Dr Murray. Marion Stewart, the Archivist, having microfilms of the Alisonbank accounts from 1665 to 1699, suggested that I make a transcript of this, which I have done: it is now accessible to the public in the Archive Room.

Alisonbank Customs post was near the mouth of the Sark at the head of the Solway: I had assumed it to have dealt mainly with cattle, being on the main, and at that time rapidly developing, cattle droving route to England, but found this to be only one aspect of its work, the greater part dealing with imports from England.

The imports are very varied - everything from wooden sticks for women's stomachers and women's 'vizards' (masks), horse gear in great variety, - the horse was very important - large amounts of liquorice (why?), hops for brewing, pistols, pistol belts (once even 'bagonets' - bayonets), gingerbread, sword belts and sheaths, copperas and other materials for dyeing, Yorkshire and other English cloths in great variety (plentiful in the 1660s and 70s, almost missing in the middle years, plentiful again in the late 80s and early 90s), 'drugs', English spirits only in the later years, bread, rye bread, horses (horses and cheese appear as both exports and imports) cheese in large lots - 200 lb., 400 lb., yarn, silk, pins - 150,000 pins at a time - who counted 'em? Knives, coarse knives, spring knives, pen knives, children's knives, appear in almost every account, as do corn hooks, scythes, scythe stones (occasionally) children's hats, hats, children's shoes - no other clothing. Glass, window glass, bottles and vials. These are all pack goods: Walter Allardyce, apparently from Dumfries, brings goods including dyestuffs from Newcastle: there is a large group of Glasgow merchants - Zacharias Murdoch, John Murdoch elder and younger, Simeon Tennant and others: many Dumfries merchants of course.

Exports are largely cattle and sheep usually in quite small amounts - one cow, two sheep - linen cloth and yarn, plaiding, horses and cheese. Castletown, Surrone, Lockerbie and Langholm fairs figure in the exports as well as Alisonbank itself. One new development, by the way, is that in 1691 we began to export oysters.

Women rarely feature in 16th and 17th century records but a few do appear as exporters and importers - Dorothy Addison on 5th February and 3rd April 1666 and several more in the late 80s and early 90s: they seem to be merchants - possibly carrying on the business of deceased husbands?

The total amount over the years from 1665 to 1699 - not quite continuously - is very considerable and gives a vivid picture of how we lived in South Scotland at that time.

The material comes on two microfilm spools, that on the second spool running from January 1691 to July 1699. It begins with many pages of exports - to 1691 as in the first spool - but moves in November 1686 to bullion only. This material is rather different in character - hops, yes, as before: but large amounts of leather and brass and a good deal of soap; with hats and gloves prominent: whalebone and baleen appear also. The latter part of the record is the office's accounts, balances, certificate by the Lords of the Treasury, detailed and interesting records of the work of the waiters in visiting markets and fairs all over the area, searching for and occasionally seizing goods - indigo and muslin in one case - and looking for prohibited imports.

One 'discharge' includes 'Item the Accomptant is discharged of the sum of 1047 lb (Scots) which wes Robbed from him on the 13th of October 1689 by Robbers who came upon him under night whliest he wes in Bed in the Custome office, did tye him with Ropes & bate him and Caryed away the foresaid Sum with other things belonging to him & Merchants, and whereupon, in presence of the Lords, he hes Solemnlie Sworn that the said Sum of 1047 lbs Swa taken from him wes the Customes of Goods, which he had receaved for some five Moneths before and that no part of either belonged to himselff or others Inde'.

Until 1696 there has been little evidence of the famine of 'King William's Years' but in that year imports dramatically decrease though not changing character - loaf sugar and candy are still included - and in Summer 1699 a bounty of 20/- per boll of victuals imported is paid to the merchants importing food - giving a flood of personal names including several more women.

Incidentally, the earlier part of the spool - as in the early part of the first spool - gives the locations of the merchants - Dumfries, Ayr, Falkirk, Linlithgow, Glasgow, etc. In the latter part we find the waiters being sent to Falkirk, etc., to await the arrival of droves of cattle.

An interesting point which comes up in the second spool is that a number of merchants importing are in Brampton. Cockermouth, Keswick, etc.: and it is noticeable that Carlisle market is that most frequently attended by the waiters; the rest, apart from Bewcastle, are all in Scotland: but the waiters are sometimes sent to ask for funds in England!

REVIEWS

The Royal Burgh of Lochmaben: Its History, Its Castles and Its Churches by John B Wilson, 2nd Edition (published 2001)

First published in 1988, John B Wilson's *The Royal Burgh of Lochmaben: Its History, Its Castles and Its Churches* was well received, providing the first comprehensive account of the development of the town. In 1992, Dr Wilson published *The Medical Men and Other Lochmaben Postcripts* with material drawn from several of his own articles supplemented by information and illustrations provided by those who had enjoyed his earlier work.

We now have this second edition of Dr Wilson's *History* which brings together these two earlier books, expanding certain chapters and adding maps and photographs. This new book is, however, more than just the sum of its two predecessors. Solway Offset have produced here a most handsome volume, distinguished by the high quality of the numerous, excellent illustrations. The attractive page layout, Dr Wilson's helpful sub-headings and the comprehensive index lead one comfortably through the text, whether as a work of reference or as a pleasant place to browse.

Within the covers of this book, Dr Wilson has brought together the fruits of his study of every aspect of the life - past and present - of Lochmaben. The depth of his research is clear throughout. His transcription of Lochmaben's Court and Council Book 1616-1721 has recently been published by the Scottish Record Society and his profound knowledge of the burgh archives is evident in the particularity of his account. Everywhere the bare facts are enriched by telling details. Nor is his interest confined to the burgh's written heritage. Passages describing its archaeological remains, its past and present architecture, artifacts like its ancient bells, testify to the author's meticulous research and the breadth of his interest in his subject.

As a medical man, it is natural that Dr Wilson should be fascinated by the many distinguished physicians and surgeons with Lochmaben connections. His research in this field has borne fruit in articles in these *Transactions* and elsewhere. It is fitting that this material is incorporated into the present volume and is also pleasing that other, less famous, local "personalities" should find a place in its pages.

What then can be found to criticize? On page 21, the name of the Regent, James Stewart, Earl of Moray is miss-spelt as "Murray" and on page 37, annates have become "annuates" but these are minor details which cannot detract from this scholarly work, packed, as it is, with factual information, intelligent exposition, thoroughly researched and well buttressed by meticulous references.

In chapter 25, Dr Wilson mentions his 33 years as a medical practitioner in Lochmaben. In retirement, he has become its historian. Truly he has served Lochmaben well and this handsome and engaging book is a fitting tribute to his devotion.

Marion M Stewart

The Excavation of a Scottish Lowland Crannog: Excavations at Buiston, Ayrshire 1989-90 by Anne Crone with contributions from: John Barber, Sheila Boardman, Richard Brunning, Ewan Campbell, John Carrott, Stephen Carter, Ann Clarke, Magnar Dalland, Bill Finlayson, Thea Gabra-Sanders, Willi Groenman-van Waateringe, Julian Henderson, Michael Heyworth, Mike Hill, Tim Holden, Deborah Jaques, Harry Kenward, Alex Kroupa, Frances Large, Andrew McMullen, Ann MacSween, Coralie Mills, Tanya O'Sullivan, Peter Skidmore, Robert B.K.Stevenson, Richard Tipping, Roy Thompson, Allan Wilson, Graeme Wilson, Paul Wilthew and Robert Young. 2000, Crown copyright. xx + 326p, soft cover. ISBN 0 9519344 6 5. Published by the Scottish Trust for Archaeological Research (STAR), Monograph 4, Historic Scotland AOC Archaeology Group.

In explanation of why the publication of an excavation report for an Ayrshire crannog site should be of special interest to our Society it should be stated that the interest generated in the crannog as an archaeological entity by the work of the Irish[1] and Swiss[2] archaeologists in the 1830s, '40s, and '50s fed through into Scottish archaeology via work carried out by, among others, the Society of Antiquaries of Scotland, this Society, the Ayrshire and Wigtownshire Archaeological Society and very particularly the work of Dr Robert Munro from Kilmarnock. The inter-relations between these groups and their members proliferated a wide field of enquiry locally. The very first mention in our *Transactions* appears upon page 12 of Volume One of the First Series when, May 5th 1863, Dr Grierson of Thornhill reported the discovery of 'a supposed ancient stockade recently discovered.' He observed, 'that about five weeks since, a man drowned himself in a tarn about two miles north of Sanquhar. In order to recover the body, the water was drained off, when it was found that a small island in the middle of the loch or tarn was artificial, and had been constructed of stakes with stones between and had been approached by a zigzag line of stepping stones. It was thought that the loch might be altogether artifical, forming, as it were, a moat or fosse to the little fort.' Dr Grierson was requested to procure further information and report at a future meeting[3]. This interest in the Sanquhar Black Loch Crannog

1 Initially by Sir W.R.Wilde in 1839 at Lagore Crannog in Co. Meath, *Proc. Roy. Irish Acad*., Vol. 1, p. 420.

2 See, for example, reports by Dr Ferdinand Keller, President of the Antiquarian Society of Zurich, regarding the finds of 1853-4 at Ober Meilen near Zurich.

3 Dr Grierson's *MS* Notebooks record an entry when he 'Visited the Blackloch in Sanquhar Moor May 1863. It had been drained during the preseding month in order to procure the body of a man who had drowned himself in it. In it is an artificial island on which there has been a building. I took the dimensions …. of this island and what seemed to have been the boundaries of the loch.' The dimensions record the loch as 323 x 176 feet; the greatest length and breadth of the island to be 59 and 49 feet respectively and greatest length and breadth of the island to be 42 and 24 feet repectively. A rough sketch plan by Grierson shows the outline of the loch, the location of the causeway and that the building plan to be an oval.

eventually found expression in a field trip in July 1865 - before that, however, the fourth field meeting in the Society's history took place on the sixth of October 1863 to the area around Corncockle and Spedlins and included a brief examination of a crannog-like structure in Spedlins Flow. Sir William Jardine, the author of the report communicated some interesting observations on a visit he had made the previous week to crannogs in Dowalton Loch (reports being made at that time by Lord Louvaine to the British Association)[4].

In 1865, on sixth June, the lochs in the Colvend district were examined for crannogs and a report was made on that at Barean Loch - and one of the two metal pots from the site illustrated by only the third illustration to appear in any of our volumes[5]. In ?July of that same year a field trip was finally made to the Black Loch, Sanquhar - a subsequent archaeological section of the structure was published as our fourth illustration[6].

Maintaining this present discussion to the area within a relatively short radius of Dumfries district crannog investigations continued apace throughout the remainder of the 19th Century. For example, in the late 1870s Thomas Newton of Friar's Carse, whilst engaged in draining the loch there, discovered a further crannog. Among the various finds were a dug-out canoe and mediaeval pottery[7]. The crannog at Lochrutton Loch, with a very obvious mediaeval occupation, was investigated by our member James Barbour around 1901-02[8]. Similar, but less extensive work was carried out by John Corrie at Loch Urr about 1902[9]. The lochs at Lochmaben contributed numerous references and finds over the years[10].

Taking the opportunity of the present review the Editors have including a photographic illustration of the 1901-02 excavations at Lochrutton Crannog. The original of this image is retained within the Society's Portfolio and has not previously be made available in print.

For the remainder of the 20th century there was much less, but not insignificant, activity - for example the extensive excavations of the Iron Age crannog at Milton Loch, Kirkcudbrightshire, by Mrs C.M.Piggott about 1953-54[11] and the preliminary investigations, by the present writer, at Loch Arthur in 1966-67[12].

Robert Munro's interest in his subject caused him to visit and report upon many of the crannogs in the South-West of Scotland. With the Ayrshire Crannogs he included an investigation of that at Buston (Buiston - pronounced locally as 'Biston') just north of the Ayrshire village of Kilmaurs in 1880-81 - this was originally published in the third volume of the *Archaeological and Historical Collections relating to the Counties of Ayr and Wigtown*, Edinburgh, 1882 - pp. 19-51 and the text and illustrations were incorporated into Munro's 1882 *Ancient Scottish Lake-dwellings or Crannogs* (Edinburgh: David Douglas).

4 Address of the President, Sir William Jardine, *Transactions*, Series I, Vol., 1, 1862-63, p.38.
5 Address of the President, Sir William Jardine, *Transactions*, Series I, Vol., 3, 1864-65, p. 1.
6 *Ibid*., pp. 3-6.
7 Both canoe and the pottery were presented to Dr Grierson's Museum, Thornhill. *MSS* Catalogue entries 964 and 965. The original finds are reported in *PSAS* xvi, 1881-82, pp. 73-78 and the pottery is further reported in these *Transactions*, Series III, Vol 44, p.168.
8 For reports on the excavations at Lochrutton Crannog see the following within the *Transactions*.-
'Lochrutton Crannog Field Meeting', Series II, Vol. 16, p. 39
'Lochrutton Crannog Excavation. Field Meeting', Series II, Vol. 17, p. 113
'First Account of the Excavations of Lochrutton Crannog', Series II, Vol. 17, p. 128
'Account of Excavations at Lochrutton Lake Dwelling', Series II, Vol. 17, p. 246.
9 'Loch Urr Crannog', John Corrie, these *Transactions*, Series II, Vol 17, p.242.
10 See, for example, 'Crannog at Castle Loch, Lochmaben', Sir Wm. Jardine, Series 1, Vol 3, p.23 and 'The Crannog at Castle Loch, Lochmaben', J.B.Wilson, Series III, Vol. 57, p. 88 (both references these *Transactions*).
11 'Milton Loch Crannog 1. A native house of the 2nd Century AD in Kirkcudbrightshire', C.M.Piggott, *PSAS*, 87, pp. 134-52.
12 'A Crannog at Loch Arthur, New Abbey', Williams, these *Transactions*, Series III, Vol. 48, p.121.

The publication presently under review, *The Excavation of a Scottish Lowland Crannog: Excavations at Buiston, Ayrshire 1989-90,* describes in detail the results of a 14 week excavation at Buiston Crannog carried out by Historic Scotland as a result of a deliberate move prompted by a concern for the neglected state of many of the crannogs which had been exposed during the 19th century. The choice of Buiston had followed on a decision by Historic Scotland to commission a survey of the crannogs in South-West Scotland which had included an extensive programme of radiocarbon dating. (This initiative has been followed in other parts of Scotland with surveys in the Lake of Monteith, Stirlingshire; on Mull and the Clyde and in the Beauly Firth).

The volume has a sound introductory chapter which outlines the historical significance of the crannog and establishes the general chronology, their distribution and construction - with background notes on the the South-West of Scotland during the Roman and Early Christian period; the Physical background; Discovery and excavation in the 19th Century. Chapter 2 describes the 20th Century excavation - from the stratigraphic sequences to the on-site sampling strategy and design of the post-excavation programme. The post excavation research, as befitting an excavation of a waterlogged site yields a vast array of information by a group of scientists whose names are now becoming familiar to readers of the many specialist reports found within these *Transactions*.

Chapter 3 by Richard Tipping, Roy Thompson and Robert Young covers the sedimentary history of the crannog; Chapter 4, lead by Anne Crone, covers aspects of her own specialisation of the dendrochronology of the site and then the History of the Crannog; Chapter 5 specialises on the Romano-British Crannog and earlier activity and includes a discussion of the logboat; Chapter 6 covers the Early Historic Crannog - with sub-chapters on the natural environment - land use, macroplant activity, beeetles and other insects and woodland reconstruction . Chapter 7 discusses the construction and occupation of the Early Historic Crannog - leading into the 'toolkits' actually employed in that construction work and the living conditions on the crannog - illustrated, for example, by the coleoptera and flies.

Chapter 8 deals with the economy of the site and lists the artifactual evidence - the wooden items; stavebuilt vessels, wooden lids, carved vessels, cattle hobbles, a wooden plough ard - with comparative information on the other 'crannog' ard from Milton, Kirkcudbrightshire - weaving and loom materials, shoe making - with comparisons to Dowalton Crannog - and carved objects; textiles, cordage, and the bronze hanging bowl described by the late Robert Stevenson and Paul Wilthew. Metalwork, glass vessels and beads, worked bone and lithic materials. The 'artifact list' is enhanced by some of the wonderful illustrations from Munro's 1882 excavation reports - one of the bone pins with cross-hatching is paralleled by one from the 1960s excavations at Tynron Doon[13]. And finally the ecofactual evidence. Chapter 9 provides for discussion and conclusions - including aspects of global climatic change and the coinciding of the end of occupation with the 7th century AD climatic 'event' also seen in the tree-ring records from Ireland and elsewhere.

The volume is supported by thirteen appendices dealing with analytical types, off-site analyses, dendrochronology, pollen analysis, macroplant analysis, coleoptera, wood studies, diptera, an artifact catalogue (rightly including material from Munro's excavations), charred macroplant analyses, faunal analysis, moss analysis and parasitic nematode eggs.

There is an extensive bibliography (although it is worrying to note the lack of any representation of Munro's earlier works within the *Ayr and Wigtown 'Collections'*). The index is workable and sufficient. The quality of print and illustrations is excellent - it is to be hoped that the binding, being non-sewn, will complement this within routine use.

13 See *Transactions*, Series III, Vol. XLVIII, p. 114.

Fig. 1 Excavation at Lochrutton Crannog, Summer 1901.
Print impressed 'White // DUMFRIES' (Digitised by James Williams).

This volume does have a particular significance to this Society and the appreciation of the crannog in south-western Scotland. For all those with an interest in either the past history of crannog study or the current status of crannog investigations (particularly the whole area of paleoenvironmental and scientific study of the crannog and its artifacts) this is a desirable volume.

James Williams.

The Early Development of Dumfries from William I (1165-1214) till James III (1460-1488) by Inez Debaus, 1999, ix, + 97 pp with illustrations and inset plans. Copy available at Dumfries Archive Centre.

This thesis was a result of practical work carried out in Dumfries during July 1998 and under the guidance of her 'unofficial supervisor' our Hon. Member A.E.Truckell - and to whom the volume is dedicated. The publication is one of a very small number of English translations of a thesis originally written in Dutch as a thesis for the degree of Licenciate in Archaeology at the Catholic University of Leuven. The work is split into three chapters and is supported by appendices and an extensive bibliography extending to 8¼ pages. The initial chapter (21 pages), providing an historical review for the

12th to 15th centuries is more extensive than we would expect but it has to be remembered that it has been written for the benefit of its primary Belgian audience. Chapter 2 (17 pages) provides the topographical setting for the burgh - and is based extensively on the earlier work and propositions suggested by W.A.Dodd in his *The Mediaeval Town Plan of Dumfries* (Edinburgh, 1978). Debaus uses Chapter 3, the remainder of the volume, to bolster and support Dodd's thesis on the basis of a comprehensive Archaeological Inventory for the burgh. This Inventory ranges from the mesolithic to the late mediaeval period and incorporates much that is already well known for the burgh but also calls extensively on the recent excavation work of the last 25 years - particularly that work of the Scottish Urban Archaeological Trust (S.U.A.T.)[1] much of which has not yet had an adequate availability to the general public. The guiding hand of Mr Truckell can be recognised throughout but Debaus has crafted a useful overview to a period of great change within Dumfries. Other office-bearers of the Society have received due acknowledgement for their assistance.

James Williams

1 See also 'A Multi-period Site at the former British Legion Club House, 67-71 Irish Street, Dumfries' by Mackenzie *et al* elsewhere within this current volume.

John Faed RSA The Gatehouse Years by David I. A. Steel: The Stewartry Museum, Dumfries and Galloway Museums Service, 2001. 28pp, 2 b & w, 3 coloured illus. plus family tree and coloured illus.laminated soft cover. ISBN 0 9533907 2 1.

This small book in no way attempts to compete with what has already been written about the Faeds, most notably by the late Mary McKerrow. It has the specific aim of adding to what is known about the family by drawing largely on the legal papers of R. S. Glover, the solicitor acting for John Faed (1819-1902) and his sister Susan Bell (1827-1909) in the years after John returned to Gatehouse in 1880.

The book consists of 28 pages, with seven illustrations, and is published by the Museums Service of Dumfries and Galloway Council. Outstanding among the illustrations is the colour reproduction of the self-portrait in oils of John Faed, now in the Stewartry Museum. There is a useful family tree of the Faeds, with five of the six children of James Faed becoming artists. The format of the book consists of five short chapters, each with subheadings, which, along with the list of contents, makes reference easy.

After giving a brief family history, the author concentrates on the last thirty years of John's life when he returned from London to Gatehouse to build a holiday home in which he and his wife finally settled permanently. Thus he re-established the Faed link with the area and helped to found the Kirkcudbright Fine Art Association. This attracted artists such as Hornel, who were to become the Kirkcudbright School. There is an interesting account of the work Faed submitted to the RSA from Gatehouse, and a sorry tale of how he was defrauded. A rogue Liverpool auctioneer sold three of his paintings for which Faed was never paid; but thanks to the intervention of Glover the auctioneer went to jail, though without the return of either the paintings or the money.

The author shows John's involvement in local affairs, such as his chairing of the committee responsible for building Gatehouse Town Hall. To this he donated his *View over Gatehouse,* valued at £1,000 in 1897. The Glover papers also reveal a rather tedious family dispute over the will of William Faed, and details of the deaths and estates of John and his sister Susan Bell Walthew. There is a comprehensive list of the author's sources, and detailed end notes. This is a scholarly booklet, and is a well-produced addition to works on the Faeds and their connections with Galloway.

Margery A. Wilkins.

DAPHNE BROOKE (1921-2001) – An Appreciation

All people are unique, but Daphne Brooke was more unique than others. It is not uncommon nowadays for retired people to return to education, often picking up threads of interest that were abandoned decades earlier, resuming interrupted educations or embarking on studies in areas that have come to interest them over their working lives, but few embark upon what could be described as an academic career. That, however, is exactly what Daphne Brooke did. When circumstances brought her to settle permanently in Galloway, she returned to academic pursuits reluctantly set aside forty years earlier and over the next twenty years made a contribution to Scottish medieval studies that would be the envy of many professional research academics, amounting to some fourteen articles and books in a period of fourteen years. She must stand as one of the pioneers of place-names studies in Scotland and as one of the most significant contributors to the new historiography of Galloway that has flourished since the 1980s.

The first of what was to be a steady stream of groundbreaking articles appeared in vol LVIII (1983) of the *Transactions*. 'Kirk-compound place-names in Galloway and Carrick' was a seminal study that called in to question a whole series of the basic building blocks of what can be referred to as the 'traditional' interpretation of Galloway's history. Although essentially a study of one of the distinctive components of the place-name map of the region, it was effectively the beginning of what was to be a deconstruction of the Gall-Gaidhil quasi-history that had evolved gradually over the 20th century. Her systematic assembly and analysis of the recorded forms of these names forced a sea-change in conventional thinking on the date of their formation and, probably more significantly, required historians to reconsider the cultural circumstances in which these hybrids were coined.

Daphne's studies of the place-name pattern in Galloway were, by the late 1980s, beginning to reveal to her the fossilised image of lost landscapes that had otherwise left only the most fragmentary of pieces of evidence for their existence. The clearest impressions of an organised landscape belonged to the Northumbrian period, dating from the late 7th century onwards. The first indication of the scale of her findings came in 1987 in vol LXII of the *Transactions*, where her 'The Deanery of Desnes Cro and the Church of Edingham' pointed towards the former existence of an Anglian minster or monastic community in the heart of the territory between the rivers Nith and Urr. When presented in isolation in this article, her argument appeared rather thinly stretched, but the publication in 1991 of what Daphne regarded as one of her most important studies, 'The Northumbrian settlements of Galloway and Carrick', which appeared in vol 119 of the *Proceedings of the Society of Antiquaries of Scotland*, set Edingham into a broader context and provided compelling evidence for a complex administrative structure extending through Galloway from the Nith to the Rhins. In conjunction with the steadily emerging archaeological evidence for a highly organised Northumbrian monastery and estate based on Whithorn, this article revolutionised historical interpretations of the nature and extent of the historically obscure period of Anglian hegemony in Galloway from the later 7th until the 10th centuries. By 1991, her research had demonstrated beyond question that place-names could give voice to the silent centuries in Galloway's history.

While place-names remained Daphne's driving academic passion, her knowledge of the sources from which she drew her evidence also led her in other directions. This can be seen most clearly in 'The Glenkens 1275-1456: snapshots of a medieval countryside', published in vol LIX (1984) of the *Transactions*. The study of place-names in this area runs as the spinal strand through the essay, but she used the place-names and the documents in which they are recorded to produce a series of images – almost literally 'snapshots' of the landscape - frozen in moments of key historical change in Galloway. In this essay, most importantly, she was able to demonstrate the profundity of the changes that occurred in upland Galloway as a consequence of the systematic harrying of the region through the first two phases of the Scottish Wars of Independence. Place-name evidence revealed the disappearance of basic components of the pre-Wars social, political and ecclesiastical landscape, and the effective re-drawing of the map that occurred towards the end of the 14th and beginning of the 15th centu-

ries. A final place-names driven essay came in 1996 with 'The Place-Name and Port of Menybrig, Leswalt', published in vol LXXI of the *Transactions*.

A more conventional documentary history approach was taken in 'Wigtown, Profile of a Medieval Burgh', which appeared in vol LX (1985) of the *Transactions*. This re-appraisal also resulted in a stream of articles and short pamphlets. The first, *The Medieval Cult of St Ninian*, written in 1987 for the Friends of the Whithorn Trust, served to set out the evidence for the cult and to provide an introduction to the idea of penitential pilgrimage, the cult of saints and the form and function of hagiography.

Space forbids discussion of all these but Daphne's skill in creating a coherent narrative from disjointed historical fragments, demonstrated with great effect in relation to Ninian, was next directed towards the shadowy figure of the first historically documented king or lord of Galloway. This was published in vol LXVI (1991) of the *Transactions* in 'Fergus of Galloway: miscellaneous notes for a revised portrait', which also appeared in more popular format in the Friends of the Whithorn Trust booklet, *The Medieval lords of Galloway 1: Fergus the King*. This evolved from a basic appraisal of Fergus's involvement in the revival of the see of Whithorn in the late 1120s into a systematic re-evaluation of the evidence as it survives for this most enigmatic of Galloway's rulers. As usual with Daphne, these twin publications represented only her first word on the subject, for she found herself drawn deeper into the controversies that surrounded Fergus and his relationship with the Church, material that led her beyond Galloway into the murky religious politics of the see of York. Her developed views on the career and historical reputation of Fergus appeared finally in *Wild Men and Holy Places*, which must now be looked back upon as the pinnacle of Daphne Brooke's research and writing career.

Richard Oram

List of Publications by year

'Rural ecclesiastical institutions in England: the search for their origins', *Settimane…di studi sull'alto medioevo* xxviii (1982).

'Kirk-compound place-names in Galloway and Carrick', *TDGNHAS*, lviii (1983).

'The Glenkens 1275-1456: snapshots of a medieval countryside', *TDGNHAS*, lix (1984).

'Wigtown, Profile of a Medieval Burgh', *TDGNHAS*, lx (1985)

The Medieval Cult of St Ninian (The Friends of the Whithorn Trust, 1987).

'The Deanery of Desnes Cro and the Church of Edingham', *TDGNHAS*, lxii (1987).

'St Ninian and the Southern Picts: speculations as to topography and personnel', *TDGNHAS*, lxiv (1989).

The Search for St Ninian (The Friends of the Whithorn Trust, 1990).

'Gall-Gaidhil and Galloway' in R D Oram and G P Stell (eds), *Galloway: Land and Lordship* (Edinburgh, 1991).

The Northumbrian settlements of Galloway and Carrick', *Proceedings of the Society of Antiquaries of Scotland*, 119 (1991).

'Fergus of Galloway: miscellaneous notes for a revised portrait', *TDGNHAS*, lxvi (1991).

The Medieval lords of Galloway 1: Fergus the King (The Friends of the Whithorn Trust, 1991).

Wild Men and Holy Places (Edinburgh, 1995).

'The Place-Name and Port of Menybrig, Leswalt', *TDGNHAS*, lxxi (1996).

Proceedings 2000-2001

13th January 2000
Annual General Meeting
Speaker: Mr Graham Roberts - 'Maps and Plans of Dumfries and Galloway'

27th October
Speaker: Prof. Michael Lynch - 'James VI, the Borders, Siller Gun and All'

10th November
Speaker: Dr James D Floyd - 'Dumfries and Galloway, 500 million years in the making'

24th November
Speaker: Mr Bobby Smith - 'Applegarth Wildlife Sanctuary'

8th December
Speaker: Dr Valentina Bold - 'Digitising Scotland from North-East to South-West'

19th January 2001
Speaker: Mr Alastair Maxwell-Irving - 'The Border Towers of Scotland - The West March'

2nd February
Speaker: Mr John Hudson - 'William Nicholson and other Galloway Poets'

16th February
Speaker: Mr Fraser Hunter - 'Roman and native in the South-West - Recent Finds'

2nd March
Members' Night - this meeting was cancelled owing to the outbreak of foot and mouth disease

16th March
Special General Meeting
Speaker: Mr Hugh Chalmers - 'Carrifran Wildwood - Origins and Progress'

31st March
Speaker: Dr Donal Bateson - 'Scottish Coins'
This meeting was held in Kirkcudbright

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The History and Archaeology of Kirkpatrick-Fleming Parish

No.1 Ann Hill and her Family. A Memorial, by D. Adamson (1986)

No.2* Kirkpatrick Fleming Poorhouse, by D.Adamson (1986)

No.3* Kirkpatrick Fleming Miscellany
Mossknow Game Register 1875
Diary of J. Gordon Graham 1854
edited by D. Adamson and I.S. MacDonald (1987)

No.4* Middlebie Presbytery Records, by D. Adamson (1988)

No.5* Kirkpatrick Fleming Miscellany
How Sir Patrick Maxwell worsted the Devil
Fergus Graham of Mossknow and the Murder at Kirkpatrick
both by W.F. Cormack (1989)

No.6 Kirkpatrick Fleming, Dumfriesshire - An Anatomy of a Parish in South West Scotland, by Roger Mercer and others (1997)

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Records of the Western Marches, Vol II, 'The Bell Family in Dumfriesshire', by James Steuart, W.S., 1932.* (for reprint see Reviews in Vol 75)

Records of the Western Marches, Vol III, 'The Upper Nithsdale Coalworks from Pictish Times to 1925', by J.C.McConnel, 1962*.

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