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JAMES WILLIAMS, F.S.A.Scot.,
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EDITORIAL

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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.

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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 should be made to Primrose and Gordon, Solicitors, Irish Street, Dumfries.

The Council is indebted to Historic Scotland for a substantial grant towards the publication costs of Mr. Trevor Cowie's Report on Torrs Warren, Luce Sands and to the Royal Commission on Ancient and Historical Monuments of Scotland for a grant towards Mr David Cowley's Paper on Square Barrows in Dumfries and Galloway.

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* (pub.1996).

REVEREND Wm. LITTLE:
incumbent in Kirkpatrick Juxta, 1841-67

by Mrs Mary Martin

Editorial Note: It is regretted that owing to Mrs Martin's death this paper has not had the benefit of checking by her. The same applies to her note on Monkey Puzzles in Addenda, below.

The subject of this note was born in Jedburgh about the end of the eighteenth century or beginning of the nineteenth, the son of William Little a tanner and Mary Lamb. He studied at Edinburgh University and before the end of the 1830s became tutor to the family of Hope-Johnstone of Annandale whose principal residence lay in Johnstone Parish.

At that time the incumbent in the adjoining parish to the north of Johnstone Parish was the Revd Dr Singer, a writer of authority on the subject of agriculture in the Dumfriesshire county of his day, a botanist and compiler of plant lists in the area around him and contributor of the Kirkpatrick-Juxta section of the *New Statistical Account of Scotland.*

It is not a known fact, but it is quite possible, that the young tutor at Raehills came to admire this man who contributed so much to the County as well as to Kirkpatrick-Juxta Parish and it may explain why William Little had an aptitude for natural history and followed Dr Singer in this special part of the county in a notable way.

Now, more than 150 years have elapsed since the events written of above. It was in this present century when I received a letter dated 2nd November 1978 from my botanical colleague Dr R.W.M.Corner, who records the plant life in the neighbouring counties of Roxburgh and Selkirk, telling me that he had found some old herbarium specimens in Hawick Museum at Wilton Lodge. They were from Dumfriesshire and dated 1850 and 1854, each collected by a William Little near the various Waters of Kirkpatrick-Juxta - these locations being unfortunately rather vague. Mr Little's name was prefixed by his title 'Reverend'. The eight specimens with their botanical names are given below, the first four are flowering plants, scarce in any part of the county but not one of them is known to have been definitely found again in either the Beattock or Moffat areas. The other four fern, or fern-like, plants are all scarce if not even very very rare.

Gagea lutea	*Hymenophyllum wilsonii*
Epipactis palustris	*Lycopodium clavatum*
Cephalanthere longifolia	*Woodsia ilvensis*
Goodyera repens	*Thelypteris dryopteris*

Also one other plant, *Epipactis latifolia*, Moffat, R.Elliot, 1854.

It was because Dr Corner reported these specimens with dates and the name of the Revd W.Little that this botanist could then be traced by turning to page 212 of the 2nd volume of Hew Scott's *Fasti Ecclesiae Scoticanae*. The Revd Dr Singer died in 1840 and William Little was ordained to follow him as minister in Kirkpatrick-Juxta, being ordained on the

29th of April 1841 and continuing until his death in 1867. He had been a man with a considerable knowledge of natural history, especially as a coleopterist. He corresponded with the leading entomologists of his day and contributed to the magazine of Zoology and Botany in 1853 with Andrew Murrray. His work among the insects would have grown from his love at looking at plants. On thinking along these lines I turned to a section in the first part of G.F.Scott-Elliot's *Flora of Dumfriesshire* published in 1896 where I had not been successful in finding more than one mention, and even that is queried, *Hutchinsia petraea* by the Revd Dr Little, in 1850, in Kirkpatrick-Juxta, an uncommon plant indeed and not otherwise recorded for Dumfriesshire. In the plant section only of Scott-Elliot's *Flora* is Revd. W. Little referred to as Revd Dr Little as on p.18 and as Revd Dr. W.Little in the list of abbreviations on p. xxxix. What information had come to Scott-Elliot's ears about the interesting naturalist/Minister of Kirkpatrick-Juxta? Another investigation into this might at sometime prove helpful.

It seems apparent at the present time that the Revd. W. Little was a quiet man in full time employment in his parish. He was a family man with a son William who went in for farming and a daughter of whom nothing is yet known, and his wife Christina Bayne who survived him by twenty three years. Although a 'phone call was made to Hawick Museum (Wilton House) about the old herbarium sheets from Dumfriesshire it was not followed up by a necessary appointment for such an investigation.

One can find the reason for Scott-Elliot wanting to give Dumfriesshire a *Flora*, of his decision to begin, and of his dedication to see it to a final publication, by reading the preface to the book, and his active days of membership of this Society and its Committee upon which he held a special place. He was no one-sided naturalist: He had studied many avenues and was supported in his publication by friends responding to requests for articles supportive to the growth of plants which would enlarge the book to give more value in size.

In the section on entomology, pp. xiv-xxii, by Robert Service, an authority for names of *Aculeate Hymenoptera* and some *Diptera*, (the Aculeates are Wasps and Bees that are not parasitic) the late Revd. W. Little is referred to several times connection with his recognising specimens of wasps and bees near Moffat and in Kirkpatrick-Juxta and having their names recorded. The plants on which the insects were taken were Harebell, Dandelion and unspecified Umbelliferae. At the time of writing his article Robert Service said that 'the collection of Revd. W. Little is now in my posssession but they do not all have data attached so it is uncertain if they are all of local origin or not'.

Returning to him as a botanist, there has been no break-through like finding him a member of this Society or even of a local group but the name Kirkpatrick-Juxta can catch one's eye when turning pages of the *Flora*, for example p.206 *Ceterach officinarum* in the Manse garden, Kirkpatrick Juxta, Mr Brodie. The only dates that are known of William Little's fieldwork are between 1850 and 1854 and without some local investigation we may not assume he enjoyed full health and vigour to follow the interest in natural history. The church appointed an assistant to the parish in 1865.

Of W. Little's four pressed flowers, Yellow-Star-of-Bethlemhem, *Gagea lutea*, is the only one that has a flicker of hope of being found recently with a verbally repeated message that a visitor thought, not a flower but a leaf only, might have been seen in a choice

of locations by one of the streamside walks of the Beld Craig, Evan or Garpol Waters. Those interested in making a twentieth century record might still have time. It is not a native plant of Scotland and these areas have undergone changes, first in development and then in loss of spas made attractive for visitors. This happened after Moffat became a popular centre reached by railway travel. The Revd W. Little would have seen the construction of the main Caledonian Railway completed in 1847. Other developments in that narrow valley have continued.

More recently I was kindly directed by Mr W.F.Cormack to seek an 1879 (second edition) of *Fairfoul's Guide to Moffat* at the Ewart Library and in it I found both *Cephalanthera* and *Epipactis* orchids had been found long ago, but no mention of Creeping Lady's Tresses, *Goodyera repens.*

Sources, with summarised extracts:

1. *Fasti Ecclesiae Scoticanae*; Hew Scott, ed. of 1917, vol 2, p.212: *Presbytery of Lochmaben, Parish of Kirkpatrick Juxta.*

   William Little, b. Jedburgh, about 1797; son of William L., farmer, and Mary Lamb; Educated at Univ. of Edin.; Tutor in the family of John James Hope Johnstone of Annandale; Ord. 29th April 1841; died at Moffat 17th Feb. 1867. He had a considerable reputation as an entomologist, and corresponded with the leading collectors of his day. He assisted James Francis Stephens, author of *Illustrations of British Entomology*, in giving Scottish localities for Coleoptera, and Andrew Murray, in the compilation of his *Catalogue of Scottish Coleoptera* (1853). He contributed to the *Magazine of Zoology and Botany*. He mar. 9th March 1858, Margaret Bell (died 25th Octr. 1871) daughter of Thomas Jardine of Beattock, banker, Moffat and Christiana Bayne, and had issue - William, farmer, Bankside, Lockerbie, b. 6th Aug 1860; Christina Bayne, b. 27th Octr. 1862, d. 4th May 1890.

2. Extracts from Newspaper Index: *Dumfries & Galloway Standard.*

   1848, 19/7, 1G.

   Horticultural Show Moffat; held in the Pump Room of the Baths, Friday last the 11th inst.
   Best four roses, sorts, ... eleven competitors - 1st Rev.W.Little, Kirkpatrick Juxta.
   Eight violets, 5 competitors, ... 2nd Rev.W.Little.
   A fine lot of named roses were shown from Kirkpatrick Juxta Manse.

   1854, 29/11, 4G.

   Officiated at the marriage of the daughter of Wm Younger of Craigielands.

   1859, 10/12, 3A.

   Established Presbytery of Penpont. The Clerk was instructed to furnish the Rev. Joseph Anderson, presently assistant to the Rev. William Little, Kirkpatrick Juxta, with a Presbyterial Certificate.

1860, 15/9, 4A.

Moffat Annual Show, Yesterday (i.e. 14th).... The Judges were... Honey - Mr James McMillan; Revd. William Little, Kirkpatrick Juxta.

1862, 2/7, 4G.

Officiated at the marriage of Mr George Lawson, cabinetmaker, to Miss Charteris, teacher of the Applegarth Girls Academy.

1867, 20/2, 4G.

Death: On the 17th instant at Elmhill, Moffat, the Rev. William Little of Kirkpatrick Juxta.

GREENLAND WHITE-FRONTED GEESE IN WIGTOWNSHIRE

by R C Dickson
Lismore, New Luce, Newton Stewart DG8 0AJ

Introduction

Recently there has been an increase in the interest in the numbers of Greenland White-fronted Geese, *Anser albifrons flavirostris*, wintering in Britain. This is because the world population of this goose, which breeds in Greenland, winters exclusively in Ireland and Britain but where there are potential threats to its wintering grounds. The major site in Scotland is in Islay but two relatively important flocks occur in southern Scotland in Dumfries and Galloway, one at the Moor of Genoch and the other at Loch Ken. This note, however, is only concerned with the flock wintering at the Moor of Genoch, near Stranraer, Wigtownshire and gives background information on the numbers wintering there.

Background

The first occurrence of White-fronted Geese in Wigtownshire was given by Gray and Anderson (1869) who presumably recorded this race (which was not officially described until 1948) on the low-lying grassy shores where they were shot by keepers for the market. There were very few records thereafter but Birrell (1934) thought that there was only an occasional Whitefront at Glenluce and Wigtown Bay. There were no subsequent records of this goose in Wigtownshire until January 1966 when a small flock of 55 (it was confirmed then that they belonged to the Greenland race) occurred at the Moor of Genoch and another flock of 28 which occurred at Wigtown Merse in March 1966. Regular counts were then made at these two sites (Tables 1 and 2).

Local distribution and behaviour

It was apparent from the beginning that the Moor of Genoch was the most regularly used site for this goose in Wigtownshire. Counts at Wigtown Merse were sporadic and irregular and seemed to involve transient birds only, probably stopping briefly to rest and feed before moving on (Table 2). The Moor of Genoch flock, on the other hand, spent the winter and, from January 1966, numbers gradually increased, centred on a core area of farmlands around the Moor of Genoch (Low Mye and Culmore Farms). Numbers fluctuated throughout every winter and they slowly built up at first, reaching 200 in November 1969 and 480 in December 1981. They continued to increase thereafter but have remained fairly stable since the mid-1980's peaking at 770 in December 1989 (Fig.1 and Table 1). From the beginning the Geese fed primarily at the Moor of Genoch and, once they had become established, spread more widely onto the surrounding farmland (Fig.2). They then kept to these 'traditional' feeding grounds which were regularly used from year to year. They also established regular roosting areas: two inland at Moss Plantation and at Lochinch and one on the coast at Luce Bay. Moss Plantation was used both as a roosting and feeding area but was abandoned in 1970 in favour of the inland roost at Lochinch or the coastal roost at Luce Bay. On arrival at their wintering grounds, the flock tends to keep as a whole unit but, as the winter progresses, the flock sometimes breaks up into small feeding units often foraging in the company of the

Table 1. Counts of Greenland White-fronted Geese at the Moor of Genoch/Lochinch. 1966-96

Year	Jan.	Feb.	Mar.	Apr.	Oct.	Nov.	Dec.
1966	84	67	84	84	71	71	84
1967	103	86	83	39	87	102	110
1968	119	119	119	100	100	122	114
1969	114	114	44	102	51	200	100
1970	150	162	150	146	126	nc	nc
1971	nc	133	160	18	26	52	137
1972	181	123	187	120	62	200	50
1973	200	153	185	177	32	32	155
1974	155	170	170	180	40	40	180
1975	220	270	300	165	100	175	240
1976	215	200	225	230	70	275	200
1977	250	245	200	175	150	200	200
1978	250	200	75	100	24	220	220
1979	290	232	210	115	40	110	200
1980	200	230	270	200	120	230	360
1981	210	220	360	392	200	200	480
1982	380	106	350	170	270	310	290
1983	330	350	380	300	280	350	330
1984	270	144	370	430	280	420	310
1985	486	400	435	485	220	530	340
1986	450	530	530	530	250	600	600
1987	600	600	710	740	550	500	630
1988	475	525	700	410	330	400	650
1989	580	355	400	400	162	725	770
1990	600	600	600	50	200	500	370
1991	550	620	620	9	62	450	600
1992	450	650	600	400	14	450	450
1993	550	550	500	500	450	450	600
1994	600	660	550	550	130	500	500
1995	500	500	565	375	300	550	550

Note
nc = no counts made because of restrictions on outbreak of foot and mouth disease in UK.

larger Greylag Goose, *Anser anser*. On going to roost, however, the flock usually unites together again and is then normally composed of Whitefronts. The majority of the flock leaves in April and by the third week most have departed.

Habitat use

Figure 2 shows the general area where these geese are distributed and the traditional fields that they use. Thus these fields are of high conservation value. Greenland Whitefronts still live on acid bogs in a few places in Ireland and Scotland in winter (Ogilvie 1978) but in Wigtownshire they have adapted to feeding to a large extent on farmland, although boggy

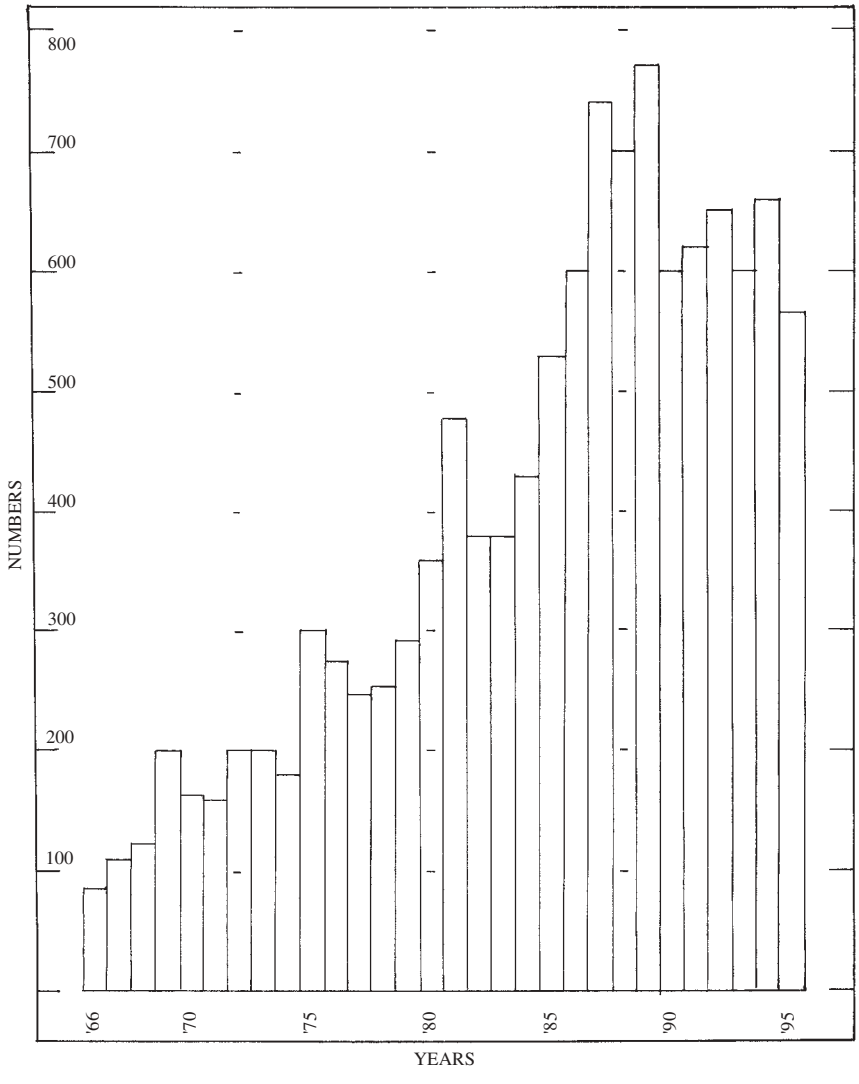

Fig. 1: Numbers of Greenland White-fronted Geese at Moor of Genoch, shown graphically

land is not entirely forsaken. Depending on availability, Whitefronts feed in a wide range of habitats including rushy field, rough pasture, damp meadows, stubble, potato fields and prime pasture land (Dickson 1992). Thus Whitefronts wintering on natural habitats (blanket bogs/peatland) have not occurred in Wigtownshire. Despite the many moors in both upland and lowland areas, none has been recorded either for roosting or feeding.

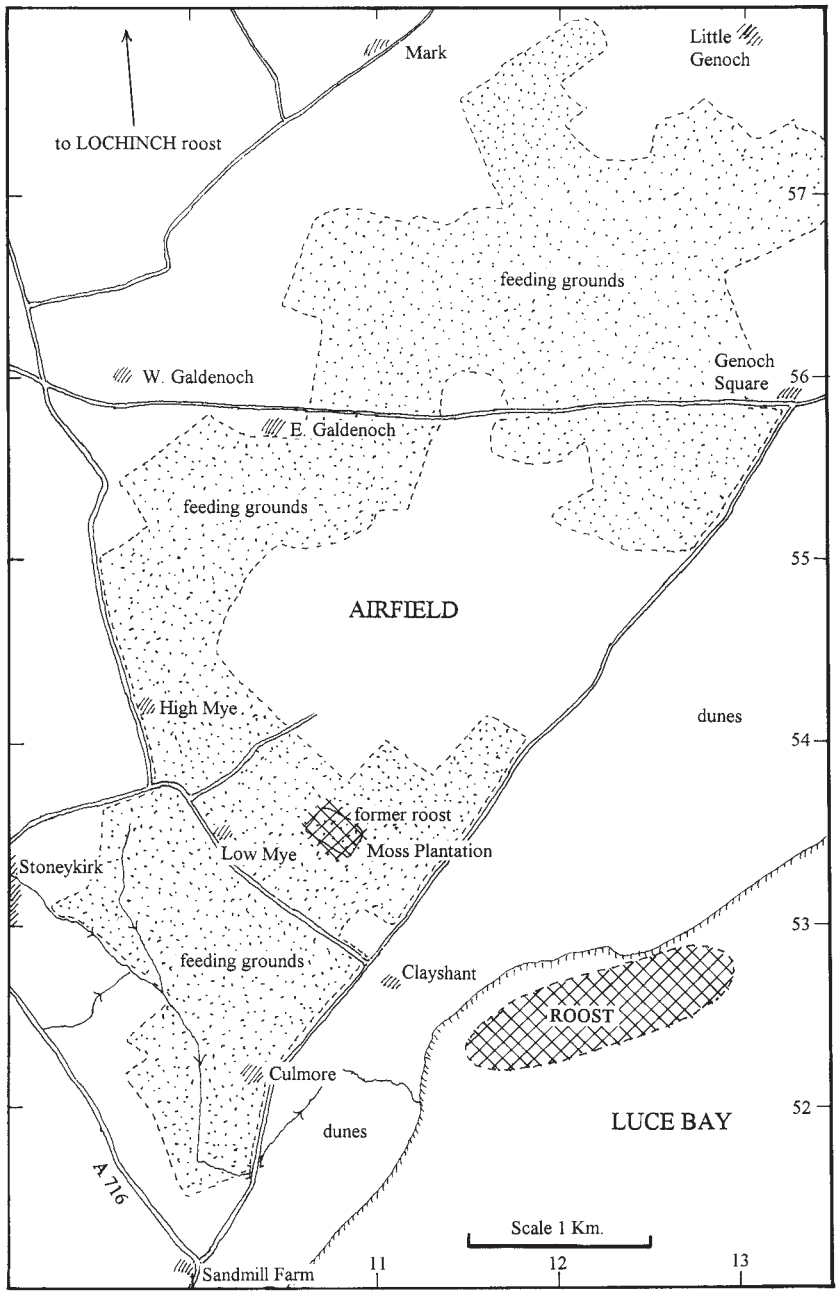

Fig. 2: Feeding areas of Greenland White-fronted Geese at Moor of Genoch. Roosting areas are shown hatched, feeding grounds shown stippled.

Table 2 Counts of Greenland White-fronted Geese at Wigtown Merse, 1966-89

Year	Jan.	Feb.	Mar.	Apr.	Oct.	Nov.	Dec.
1966	–	–	28	–	–	–	–
1967	–	–	25	–	–	–	–
1969	–	–	–	–	–	26	–
1970	–	–	–	–	–	–	17
1971	–	–	–	–	–	62	–
1973	–	–	–	–	–	41	–
1976	–	19	–	–	–	66	39
1977	–	–	50	–	–	–	–
1982	–	–	–	–	–	15	–
1985	–	–	–	–	–	43	–
1986	–	–	–	–	–	1	–
1989	–	–	–	–	–	–	7

Disturbance

The geese are generally tolerated by land owners and farmers and there is little evidence that much human activities disturb them and, indeed, they have been quite tolerant of most of these activities over the years. Greenland Whitefronts, however, have been given full protection under the Wildlife and Countryside Act 1981.

Conclusions

As the wintering flock of Greenland White-fronted Geese contains about 3-6% of the wintering population in Britain, the flock in Wigtownshire is of international importance. Because of long, continuous and systematic use, it is obvious that the habitats at the Moor of Genoch meet their wintering requirements but if they are to continue to use this area it will need public co-operation and the tolerance and goodwill of the resident human population.

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TORRS WARREN, LUCE SANDS, GALLOWAY:
a report on archaeological and palaeoecological investigations undertaken in 1977 and 1979

by
T G Cowie
Department of Archaeology, National Museums of Scotland, Edinburgh
incorporating text and reports by L Anderson, C J Bown, S E Durno, R M Bradley, T G Cowie, C B Denston, R P J McCullagh, P J Newell, J C C Romans and C R Wickham-Jones and illustrations by M O'Neil

Abstract

In an attempt to assess the archaeological potential of an area of Luce Sands threatened by development, fieldwork was carried out in order to locate and, where possible, examine the old land surfaces which have provided the original context for the extensive artefact collections made since last century in the area of dunes known as Torrs Warren. After preliminary inspection of the threatened area as a whole, several areas were excavated to reveal buried soil horizons, but it was found that the fragments of old land surface had invariably been severely truncated by earlier episodes of erosion. However, clear evidence of human activity was revealed in several locations: at two points in particular the remains of shallow hollows were found in the fossil subsoil, and these produced sizeable quantities of Neolithic pottery and lithic material. In one of the hollows, small dumps of fractured stone were present, and it is suggested that these may have been connected with the heat treatment of flint prior to knapping.

In several locations, the buried soil preserved traces of agricultural activity, either in the form of low ridges in its surface or marks of ploughing in the ancient subsoil: unfortunately, no secure dating evidence is available for these traces, nor for the burial of the former land surfaces by blown sand. However, soil survey and pollen analyses, undertaken to complement the work, now help to define the environmental framework against which the archaeological record of Torrs Warren can be set. In the course of the final discussion an attempt is therefore made to re-assess the early land-use history of the area.

Contents Page

1. Introduction

The sand dune complex of Luce Sands is nationally known to workers in several disciplines on account of its rich, but diminishing, mosaic of ecological habitats, and the quantity and quality of archaeological material recovered there over a century or more. The geographical setting and the historical background of the area have been conveniently summarised and discussed by Idle and Martin in these *Transactions* (1975), but it is necessary to preface the discussion of the archaeologically orientated work of 1977 with a brief reconsideration of both aspects, since these in large part determined the course of the investigation.

Geographical background

Luce Sands, or Torrs Warren (NGR: NX 150 550), is a major sand dune complex situated at the head of Luce Bay in the former county of Wigtownshire (Fig. 1). The dune system

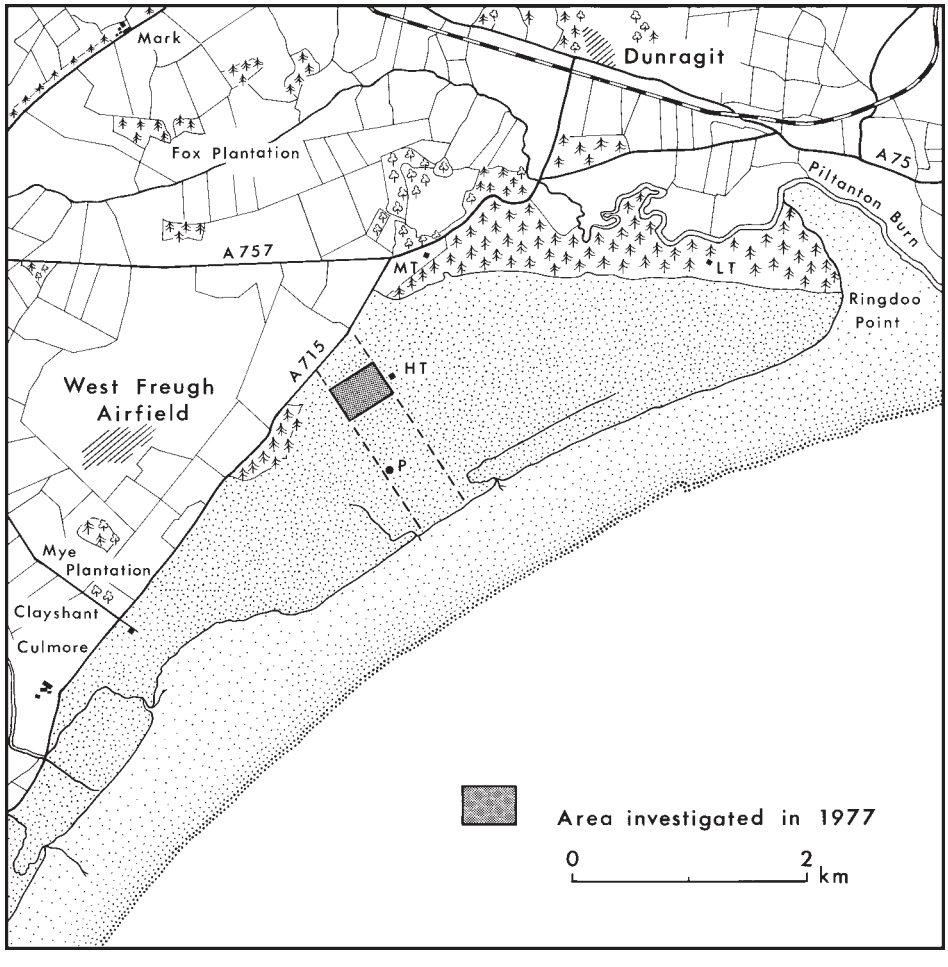

Figure 1 Location map showing the strip through the dunes system affected by the range development (indicated by dashed lines); the main area investigated in 1977 (see also Fig. 8) and the site of the pollen core (P).
Abbreviations: LT, MT and HT = Low, Mid and High Torrs Farms. Based on OS map.
The roadway passing the site has recently been renumbered B7084.

Figure 2 Aerial view, from south, of part of the high dune area investigated in 1977.

covers an area of some 1200 hectares, and has a coastal frontage of c.7km, running from the mouth of the Clayshant Burn at its SW end, to the mouth of the Piltanton Burn in the NE. Its hinterland is formed by the relatively low-lying plain which links the Rhinns to the Machars of Galloway (Idle and Martin 1975, 1; Steers 1973, 114; Mather 1979, 324 - 332).

The dune complex includes a suite of botanical habitats of national importance, and can be divided into three main topographical zones:

1) low foredunes behind the shore;

2) a level boggy area of dune slack;

3) high dunes, inland.

The gently inclined sandy shore has a broad intertidal zone, from which rises the present foredune system, forming a low coastal ridge of comparatively recent origin. Behind this is a relatively level area with expanses of bog. This has hitherto been interpreted as an area of relatively recently impeded drainage (cf Davidson 1952, 43), but observation in 1979 revealed deposits of peat up to at least 1.50m deep, suggesting a greater antiquity. A peat core extracted from this deposit has provided palaeoecological information of considerable interest (see below).

The third major topographic zone consists of a broad band of high dunes, occupying about half of the total area of the system, and lying alongside the B7084 (formerly numbered A715) road and Piltanton Burn (Fig. 2). The high dune belt has been much corrupted by erosion in the past, resulting in several large blowouts or deflation hollows. The dunes are now largely stabilised by a well-developed dune heath vegetation or by recent afforestation, and there are no large-scale areas of active erosion today. The main heath, dune grassland and wet slack plant communities have been outlined by Idle and Martin (1975, 3 - 4). Near the remains of High Torrs Farm there are one or two stands of stunted scrub oak, presumably the remains, or secondary regrowth, of earlier woodland, but otherwise trees are absent (cf McInnes 1964, 42; Newell 1985, 31 - 32, 114 - 115). Some of the dunes are clearly very mature, and have been features for long enough to be named, eg: ‘Flint Howe’, ‘Knockdoon’, and ‘Horse Hill’. The importance of these mature dunes will be discussed in due course.

The belt of high dunes gives way to an area of bog and moorland - the ‘Freugh’ - along the edge of which runs the former A715 road from Glenluce to Sandhead. The road effectively demarcates the landward boundary of the dune complex.

Archaeological background

Torrs Warren ranks as one of the most productive areas for archaeological finds in Scotland, and needs little introduction in these *Transactions*. Although an attempt has been made to synthesise the secondary sources for the earlier prehistoric material (Selwyn 1976), there is as yet no satisfactory published account of the full range of material from the area. As there are over 8,500 objects in the National Museums of Scotland alone, large collections in Glasgow, Dumfries and Stranraer, and smaller dispersed collections elsewhere, the absence of such a study is perhaps more easily understood. Material from Luce Sands has, however, figured frequently in major synthetic works (eg Coles 1965; McInnes 1971a;

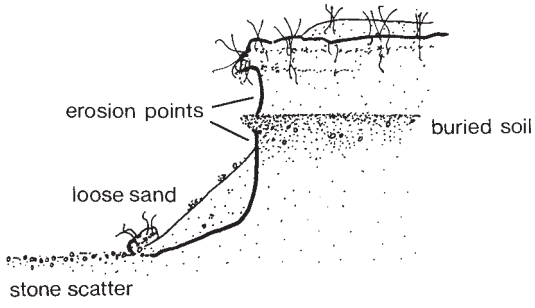

Figure 3 Diagram to show the main erosion processes.

Simpson 1965) and in more specific artefact studies (eg McInnes 1964; Rynne 1965; Penney 1975).

In most cases the finds have originated in the buried soil horizons which have long been noted in the dune area (eg Smith 1908, 37; Callander 1911, 159). These show up as darker humic bands in the exposed faces of the dunes, and represent the remains of earlier vegetated land surfaces subsequently covered by sand blows. The natural processes of denudation and redeposition involved in dune formation have been summarised by Ritchie (1972, 29-33), but from the point of view of Luce Sands it is worth considering the process which causes the accumulation of surface litters of stone and artefacts in the deflation hollows, since the wholly unstratified nature of this material seems to have been frequently overlooked (cf Peek 1976). Once freed of its overburden by wind action, an area of buried soil is then subjected to wind scour on its upper surface and undercutting from beneath (Fig. 3 - 4).

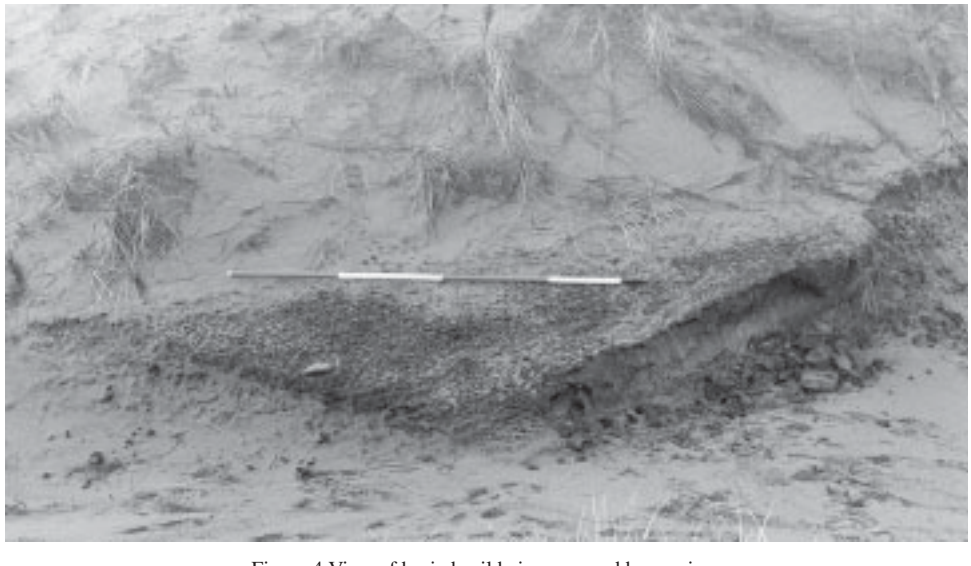

Figure 4 View of buried soil being exposed by erosion.

In a short time lumps of the more compact sand making up the buried soil horizons will break off and disintegrate. Any archaeological features, such as pits or post-holes, dug into, through, or sealed by, the old land surface will gradually be damaged, or destroyed, by the erosion process. Archaeological material is thus removed from its context; more resistant objects, such as flint or stone, form a heavy residue which accumulates as an unstratified jumble in the eroded depressions or blowouts between the surviving knolls. Pottery, unless quickly covered by fresh sand, can be abraded by the wind to the extent that it becomes virtually unrecognisable within a short time (cf McInnes 1964, 40).

The main body of discoveries from Luce Sands appears to have been made in, or after, times of severe erosion. The great bulk of the material recovered has accordingly been without satisfactory context, retrieved by fieldworkers such as W F Cormack, J M Davidson, Ludovic MacLellan Mann, or last century by the Reverend George Wilson. Only rarely, and largely through chance, has material been recovered in context: eg the excavation of a coin hoard and part of a medieval structure (Jope and Jope 1959); the recovery of cinerary urns in 1964 (Cormack 1968) and 1948 (Davidson 1952); and excavations by Atkinson in 1951 (unpublished, but for brief details see McInnes 1964, 40-41). To these may be added Mann's discovery and excavation of a Roman burial, the significance of which was for long unrecognised (Breeze and Ritchie 1980). This previous work is conveniently summarised in the list of archaeological sites and monuments for East Rhins (RCAHMS 1987).

In 1955, the dune area was designated by the Nature Conservancy Council as a Site of Special Scientific Interest (SSSI), and among the most valuable recent work has been the attempt by Idle and Martin (1975) to reconstruct a land-use history of the Warren, using a variety of source material. The fieldwork described here is intended as a further contribution to this particular research goal.

Format of the report

The report on the archaeological fieldwork (Section 2) includes edited versions of reports prepared by T G Cowie, with the assistance of J B Kenworthy (pottery), R M Bradley and C R Wickham-Jones (lithics), C B Denston (cremated bone) and R P J McCullagh (charcoal). Reports of work by C J Bown, Dr S E Durno, J C Romans & L Anderson (soils) and Dr P J Newell (pollen analysis) form Sections 3 and 4 respectively. Individual contributors are acknowledged in the text where appropriate; their unedited original reports form part of the full archive report lodged with the site records in the National Monuments Record of Scotland. It is only fair to note that several of these reports were submitted between 1977 - 1983, and it has not been practicable to revise them in detail. The artefacts are housed in the National Museums of Scotland.

Radiocarbon dates are cited in their uncalibrated form, with the error at one standard deviation (eg 2736±90 BC uncal), although the convention BP has been retained in the report on the pollen analysis. All other dates may be assumed to be calendrical dates.

2. Excavations at Torrs Warren, 1977

Background to the 1977 fieldwork: aims and problems

Much of Torrs Warren has been in use as a military training area or range since before the Second World War, but in the past this has involved only limited interference with the dune system. Towards the end of the 1970s, however, the existing facilities were deemed inadequate and permission was granted for them to be extended. This resulted in the destruction of a sizeable area of the dune system, including portions of all three topographic zones noted above (Fig. 1). In view of the archaeological potential of the area, Historic Scotland's predecessor department (Scottish Development Department, Ancient Monuments Branch) decided that trial excavations should be undertaken to assess the area affected. The fieldwork was undertaken in February-March and July 1977. In the event some of the more archaeologically sensitive dunes towards the margins of the strip were left relatively unaffected by the earthmoving operations, but most of the area was finally destroyed by developments in 1979. At this point the opportunity was taken to extract the peat core referred to in Section 4.

The problems facing the archaeologist in a dune complex of this size and diversity are considerable: the threatened area was one of broken country c.0.5km by 1.5km in extent, of probable, but not proven, surviving archaeological potential. It consisted of relatively inaccessible, hostile terrain of bare and vegetated dunes of all shapes and sizes, with low wet slacks and deflation hollows between. This terrain largely determined the course of the work and it is therefore necessary to discuss its limitations and the archaeological methods employed in advance of the description of the results.

A major problem of the area was site location. The current overall stability of the dune system meant that there were no large areas of erosion where the retrieval of artefacts might aid the identification of likely sites for excavation; nor were there many vertical erosion faces which could be examined for features such as cairns or pits. Ironically, in an area that had produced thousands of finds, the identification of specific sites or features met with little success. The deceptively static nature of a dune system (Ritchie 1972, 30) means that archaeological prospection must involve periodic monitoring and this was not possible for the present project.

In the absence of well-recorded find-spots, therefore, the great mass of objects from the area can only be treated as unlocated surface finds, with the slight qualification that the bulk almost certainly derive from the belt of high dunes, the third of the topographical zones noted previously. Without natural erosion to pinpoint sites, it was necessary to resort to mechanical and manual inspection of the dunes, but even this was difficult.

Inspection of the barer dune slacks and eroding deflation hollows revealed the presence of residual scatters of fractured stone, containing occasional artefacts such as struck flint, abraded sherds or lumps of slag (Fig. 5; the main locations are marked S on Fig. 8). These were examined superficially, but as they were totally divorced from their original contexts they were not examined in detail. It was clear that the extent and amount of material exposed at any one time varied according to the prevailing wind and erosion conditions.

Much more time was devoted to the inspection of exposures of buried soil, especially when in proximity to the scatters noted above. As wind scour can quickly efface a sherd, the

Figure 5 View of stone scatter in deflation hollow near the 'High Torr'.

existence of fresh, relatively unabraded sherds was considered to offer the best indication of intact buried soil surfaces, with possible archaeological features. In the event, however, freshly eroding sherds were recovered from only two locations - one, a dune that was virtually inaccessible, and the other outwith the immediate area of threat. Exposures of buried soil were also limited in extent and number, mainly due to the present day stability of the dune system.

Excavation therefore began on the following premises: that Torrs Warren had produced many finds, of which few could be adequately provenanced; that the bulk of the finds appeared to have derived from one or more 'old land surfaces' within the present dune-scape; and, finally, that fragments of these buried soils, which might contain archaeological features, might survive for examination.

Compounding these difficulties were two particular problems relating to the excavation of sand sites in a developed and stable dune system: in the first place the inaccessibility of surfaces required for inspection; and secondly, the problem of consolidation of excavation areas and spoil once the vegetation cover was broken. Quite apart from general difficulties of access into the area, the inaccessibility of surfaces for excavation was a major practical problem, since survey soon revealed that the dunes which held the most archaeological promise were precisely those mature dunes with an elevation of up to 28m OD, and with as much as 10m of overburden. The removal of many thousands of tons of overburden would be necessary in order to expose a completely unknown area of buried soil. Had this removal taken place, the effort and cost would not necessarily have been rewarded by any results: earlier erosion might well have removed some or all of the buried soil, and even where intact soil surfaces survived there was no guarantee of *in situ* archaeological deposits. Sand removal had, therefore, to optimize the resources available and the methods used are described in the next section.

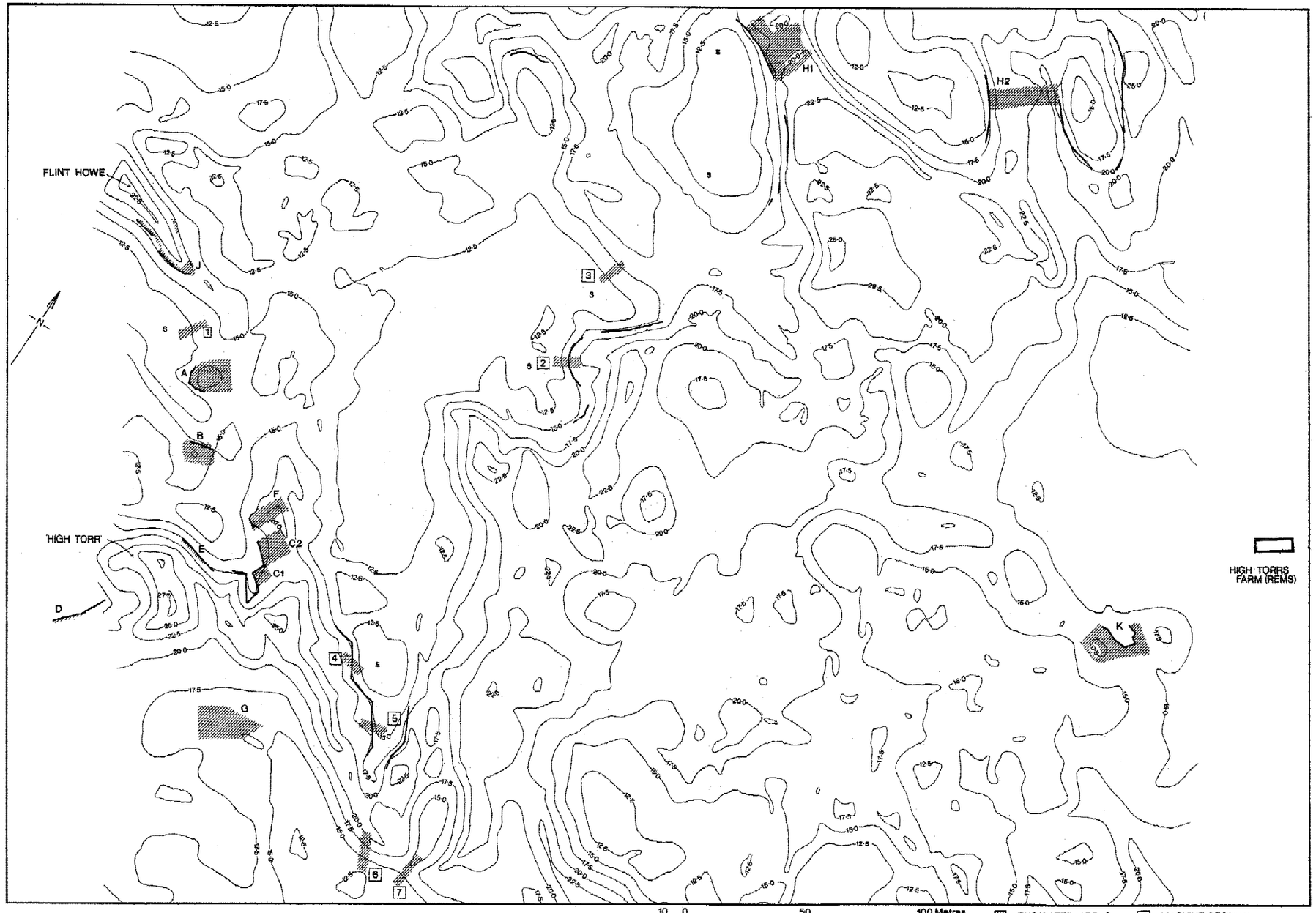

Figure 8 Simplified contour map of main area investigated in 1977
showing locations of Sites A - H, machine cuts 1 - 7 and stone scatters (S).

At the time of the excavation, furthermore, the dates for the development were not available: thus any decision to remove massive quantities of sand could not be underwritten by an assurance that short-term consolidation measures would not be necessary to prevent exposure of the dune system to immediate erosion. With hindsight, more extensive examination by machine could have been undertaken; reservations about ecological damage now seem irrelevant in the light of the subsequent devastation of the area.

Methods of excavation and their limitations

A combination of machine and manual clearance was employed which allowed efficient sampling of the area to guide the assessment of its potential for more extended archaeological operations.

The machine employed was a JCB 110 tracked digger, with the dual advantage of a 4-in-1 bucket and good visibility of the work in hand (Fig. 6). It was possible to use this machine to strip the overburden and for more careful trial examination of the buried soil surface. In the event of the location of possible features, manual excavation took over, though in many cases the machine was used to complete the process of checking the buried soil. This permitted the relatively quick and reasonably effective examination of much larger areas than could possibly have been tackled by hand. In some cases, however, the height and size of the dunes precluded access for large-scale mechanical stripping. This was particularly so where the buried soil was exposed high in the side of a dune, between c.13m - 18m OD, and with a further 5m - 10m of overburden. Here, manual excavation alone could be used. This involved the laborious removal of tons of sterile sand, and the reward was usually only a narrow strip of buried soil (eg Sites D, E). The small size of these strips reduced the likelihood of locating features, but manual excavation did prove worthwhile in at least one case (Site J).

Figure 6 JCB 110 clearing overburden to expose buried soil at Site H.

Survey and excavation 1977

The specific area to be considered comprised a strip 0.5km in width extending from the former A715 road (Glenluce-Sandhead) to the shore, a distance of over 1.5km (see Fig. 1). This strip transects all three topographical zones of the dune system, and encompasses a total area of c.75 hectares (Fig. 7). Within this area the zone likely to have archaeological potential could be limited to the portion at the northern end, in the belt of high dunes, but still an area of over 18 hectares. The salient topographical features are shown on the contour map and site plan (Fig. 8), together with the locations of the superficial exposures of buried soil horizons.

The northern part of the area comprised a relatively level strip of grassland and heath, giving way sharply to an area of high dunes much dissected by erosion and characterised by marked contrasts in elevation and dune configuration. The western margin was dominated by a mature dune, 28.10m OD high, which overlooked much of the Warren: for ease of reference, this was named the 'High Torr' (Fig. 9). A further large dune, 150m to its NNW, was taken to be remains of the 'Flint Howe'. To their E these massive dunes overlooked a roughly L-shaped depression fringed by smaller dunes and ridges of varying maturity, those with visible exposures of buried soil clearly being more established than a number of more lightly vegetated ridges. Further ridges, dunes and deflation hollows extended to the eastern margin of the area which was bounded by the remains of High Torrs Farm. In general a vegetational mosaic of consolidated dune heath, dune grassland and blowout was presented.

Excavation represented not so much the trial excavation of a single archaeological site as of numerous fragments of ancient land surfaces, already corrupted by erosion. The results are thus described by individual area (Fig. 8).

The finds

Several thousand artefacts were recovered and it is not possible to describe them all in detail here. Copies of the complete archive catalogues have been lodged with the site records and with the artefacts, and this report is a summary of what was recovered. The catalogue numbering is therefore discontinuous.

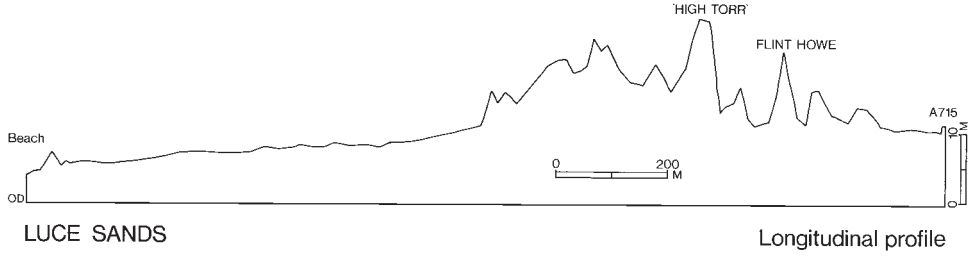

Figure 7 Longitudinal profile through dune system: the line of the transect corresponds to the more westerly of the two dashed lines shown on Fig. 1.

The finds from individual areas are noted and, where relevant, discussed under the separate excavation site headings; their wider significance is considered in the general discussion. Only a selection of artefacts have been described in more detail or illustrated: they are referred to by their archive report catalogue numbers (eg 1; 2-5; etc.)

The following notes are applicable throughout:

Lithic Material

i. Unless otherwise stated, all entries in the catalogues of lithic material refer to flint.

ii. In classifying the pieces, conventional typological terms have been used.

iii. Unless otherwise stated all pieces have been illustrated with the proximal end towards the observer, and with the dorsal surface uppermost.

iv. All dimensions are given in millimetres, in the order - length: width: thickness.

v. The following abbreviations have been used when referring to the edge angles of retouched pieces: l: left edge angle; rt: right edge angle; d: distal edge angle; p: proximal edge angle. Where an edge angle is given with no reference it is the retouched edge.

Pottery

vi. The catalogue entries are intended to aid 'reading' of the illustrations, and provide an

Figure 9 View of the main area of high dunes investigated in 1977.
The 'High Torr' is the massive dune in the centre of the shot, with Site C2 exposed in the foreground.

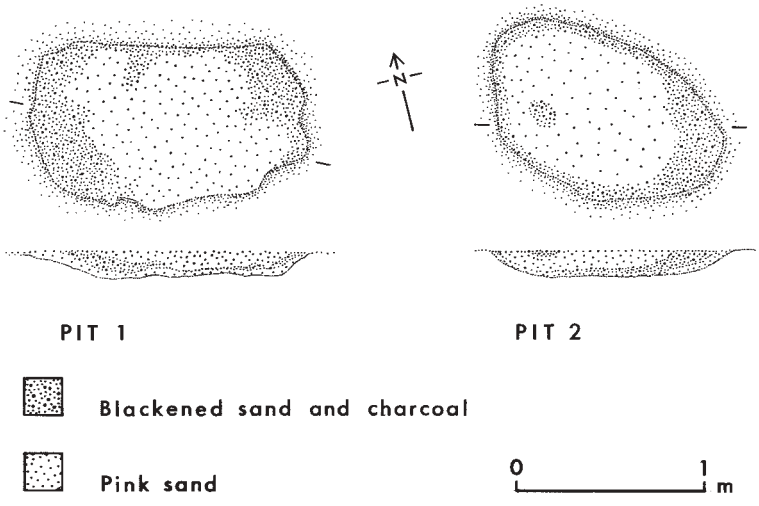

Figure 10 Site A: plans and sections of pits 1 and 2.

indication of the quality of the evidence. Owing to their fragmentary nature, the precise orientation of many sherds is uncertain.

vii. All measurements are given in millimetres. Where possible an estimated rim diameter has been given.

Site A (Figs. 8, 10)

Preliminary fieldwork revealed a buried soil profile in the exposed W face of a small knoll-like dune, up to 16.3m OD, in elevation, jutting out from a ridge of sand into an eroded depression running approximately NW-SE. As a result of erosion, the western face had been undercut leaving an exposed section in which a dark band of buried soil was visible between 13.6m - 13.8m OD. A number of derived fragments of iron slag and scattered flints were recovered from the neighbouring depression and on the ridge in close proximity to the knoll.

Prior to machining, a section was exposed manually in the W side of the knoll, revealing what was to be, with variations, the characteristic buried soil profile in the survey area - a humus-iron podzol. Using this section as a guide, the sterile overburden was machined off to reveal the surface of buried soil, a surviving area of $10m^2$. Thereafter this was examined manually.

The buried soil was largely without archaeological interest. At its very base, however, and dug into the fossil subsoil were two small, shallow oval pits (Fig. 10). Finds comprised a small quantity of worked flint and some featureless crumbs of pottery together with scattered pieces of fractured stone and occasional charcoal flecks, all dispersed within the buried soil.

Pit 1 was c.1.40m by 0.85m and c.0.10m - 0.15m deep, containing much charcoal and heavily stained black sand. The sand at the base of the pit showed a dark pinkish discolouration characteristic of fire. A sample of charcoal was identified by Mr R P J McCullagh, as principally *Quercus* sp (oak), with about 25% *Corylus avellana* (hazel), which, unlike the oak, was derived from mature wood.

Pit 2, some 3m to the south of Pit 1, was 1.30m by 0.80m, and similar in depth and fill. The

charcoal from this feature was all identified as *Quercus* sp (oak), mostly of small branch material with some possibly mature timber.

No artefacts were found in association with these pits/hearths.

Finds (Archive report: lithics: 1 - 5; pottery 6)

All the artefacts from Site A derived from the buried soil. The lithic material is summarised in Table 1. A small lump of mudstone (33:18:16mm), possibly flaked, is of note in view of the proximity of this site to Site J where worked mudstone was recovered in some quantity. The lithic material from Site A also includes a hammerstone (5: Fig. 11), one of the very few recovered in the course of the fieldwork.

5 Hammerstone; egg-shaped plan and cross-section; three areas of damage around latitudinal circumference; one area of damage at wider end; 60:38:30mm. (Fig. 11).

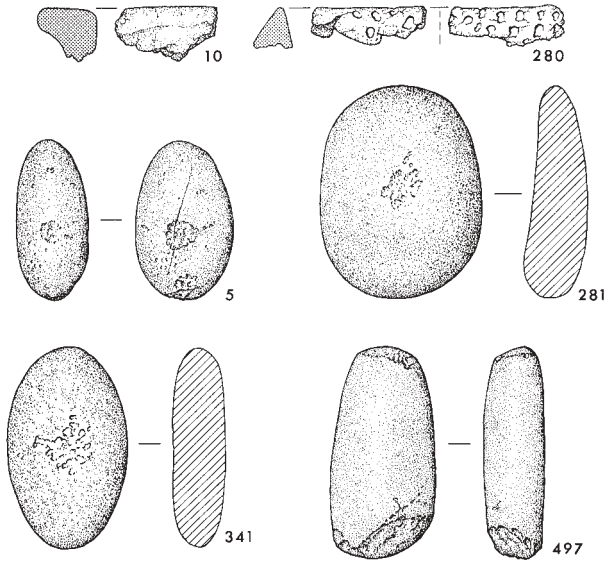

Figure 11 Miscellaneous finds: rim sherds from Sites A (10) and B (280); hammerstones from Sites A, E, F (5,281,341) and an unprovenanced surface find (497). Scale 1:2.

Table 1: summary of lithics from Sites A-C2

	A[1]	B1[2]	B2[2]	C1[3]	C2[4]
Flint					
Unworked waterworn pebbles	1	-	-	-	25
Cores from waterworn pebbles	-	-	-	-	128
Other cores	-	-	-	-	1
Primary flakes	-	1	-	2	180
Secondary flakes	3	1	2	1	456
Secondary blades	-	-	-	1	12
Inner flakes	-	-	-	-	130
Inner blades	-	-	-	-	4
Burnt: cores	-	-	-	-	5
Burnt: primary flakes	-	-	-	-	12
Burnt: secondary flakes	-	-	-	-	35
Burnt: secondary blades	-	-	-	-	1
Burnt: inner flakes	-	-	-	1	13
Burnt: inner blades	-	-	-	-	4
Tools (including burnt)[5]	1	-	-	-	47
Total: flint	*5*	*2*	*2*	*5*	*1,053*
Other flaked stone					
Mudstone	1	-	-	-	-
Quartz	-	-	-	-	36
Chert	-	-	-	-	30
Chalcedony/agate/carnelian	-	-	-	-	3
Coarse flaked stone	-	-	-	-	20
Tools	-	-	-	-	1[6]
Total: other flaked stone	*1*	-	-	-	*90*
Hammerstones	1[7]	-	-	-	2[8]
Overall totals	*7*	*2*	*2*	*5*	*1,145*

Notes
1. Site A = archive report cat nos 1 - 5.
2. Site B = archive report cat nos 7 - 9.
3. Site C1 = archive report cat nos 12 - 15.
4. Site C2 = archive report cat nos 16 - 183; this includes *all* lithics retrieved from Site C2 (see Tables 2A-2B for further details of stratified material)
5. Tools: see Table 2B for details of the main categories of tools recovered.
6. Quartz scraper (153): see Figure 16.
7. Hammerstone (5): see Figure 11.
8. Two possible hammerstones of flint and quartzite.

Site B (Fig. 8)

Site B1 was also cleaned manually in advance of machining. It lay at the E end of a ridge of lightly vegetated sand on the western margin of the threatened area. A triangular ledge of buried soil was partially exposed c.15.0m OD, and about 2m of overburden was uncovered from an area c.4.25m by 2.5m. A stepped section revealed the buried soil profile to a depth of c.1.5m, whereupon manual clearance became impracticable. The profile was virtually the same as that in Site A, and there were no other archaeological features.

Machining then revealed, as far as possible, the remainder of the old land surface extant along the ridge to the SW. As elsewhere, only truncated fragments of buried soil survived intact; the largest was an area of only about 6m by 4m. A few flint flakes were retrieved, but it became clear that scattered, uncontexted, finds were ubiquitous in the surviving areas of old land surface.

During the second season of excavation, field-walking revealed a seemingly divorced fragment of old land surface further along the narrow sand-ridge some 25m - 30m NNW of Site B1, probably representing a slumped remnant of an otherwise eroded area of buried soil. This fragment (termed Site B2, not shown on Fig. 8), produced a quantity of eroded Late Neolithic sherds (see 10 below) and further flint flakes. Unfortunately, there was no indication of the original context of these finds, but it seems reasonable to link them with the prehistoric settlement activity in the general vicinity, best attested on Site C2.

Finds (Archive report: lithics: 7 - 9; pottery 10 - 11)

The lithic material from B1 and B2 is summarised in Table 1. The pottery included the featureless weathered rim sherd (10) described below, a further very abraded rim fragment of similar form, and over thirty featureless weathered fragments and crumbs.

10 Rim sherd from vessel with upright flat-topped and out-turned rim; undecorated.(Fig. 11).

Site C (Figs. 8, 12 - 23)

Site C comprised two areas (C1 and C2) to the NE of the ‘High Torr’ dune, where preliminary inspection suggested that fragments of the old land surface(s) might survive around 17.10m OD.

Site C1

Site C1 was excavated manually to provide a preview of the buried soil profile. Erosion had resulted in the exposure of a small area of old land surface with only a limited capping of wind-blown sand and manual clearance of the overburden over an area of some 36m^2 revealed a truncated fragment of buried soil. This comprised a roughly crescentic block, at most 7.4m by 2.4m, surviving between two ‘fossil’ erosion faces.

The traces of past erosion on Site C1 highlight the problems discussed in the introduction. At the outset of excavation, it became clear that superficially promising exposures of former land surface(s) were wholly unreliable guides to the actual integrity or condition of the buried soil.

The available fragment of buried soil on Site C1 was first sectioned, then totally removed, but apart from some flint flakes (Table 1), charcoal flecks and pieces of slag, nothing of significance was noted, and no features were located.

Site C1 therefore presented a further humus-iron podzol profile, uniform with Sites A and B, with no archaeologically detectable traces of human activity other than the ubiquitous thin scatter of uncontexted finds. Just above the main body of the buried soil, but separated from it by a layer of

wind-blown sand, a horizon of dark brown sand 8cm - 10cm thick clearly represented a more ephemeral stabilisation of the dune surfaces following the invasion of the area by mobile sand. However, no evidence was recovered to date either of these events.

Finds (Archive report: lithics: 12 - 15)

See Table 1 for summary.

Site C2

Site C2 lay immediately N of Site C1 and comprised an area, just over 100m^2, excavated manually in a grid of 2m by 2m squares (Fig. 12). The site was investigated after 'speculative' machining of a superficially featureless ridge had revealed the presence of a stone scatter and quantities of pottery and flint at the base of the buried soil (along what was to become the eastern margin of the excavated area).

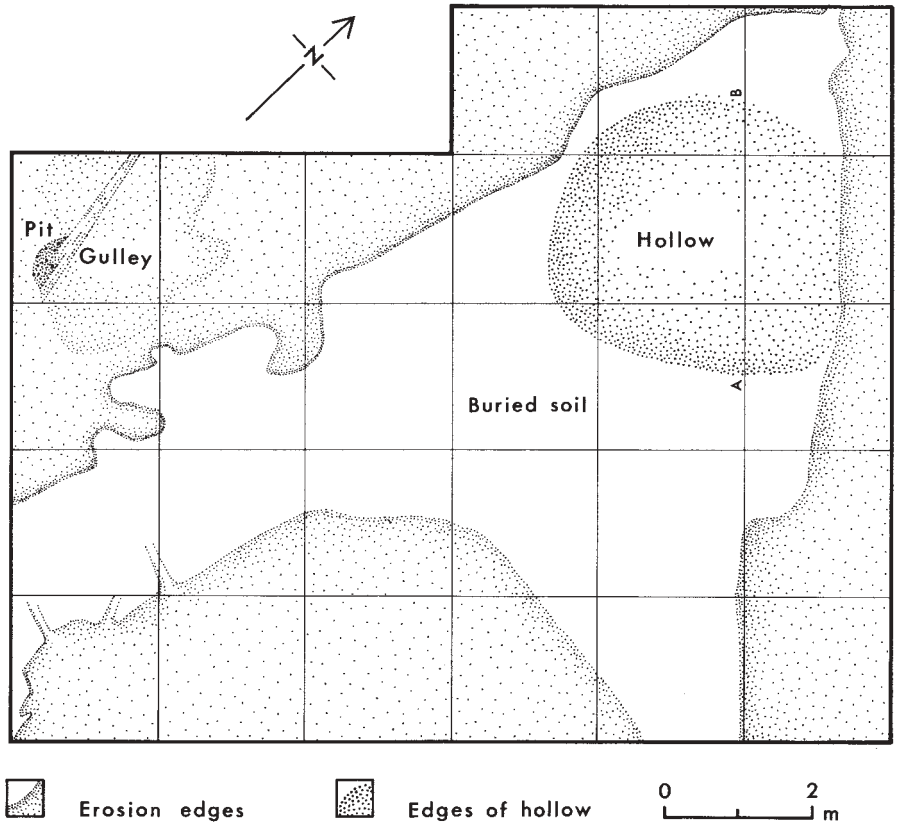

Figure 12 Site C2: plan showing area of intact buried soil, erosion edges and location of 'hollow'. In the case of the hollow, areas of denser stippling indicate those edges traced with more certainty.

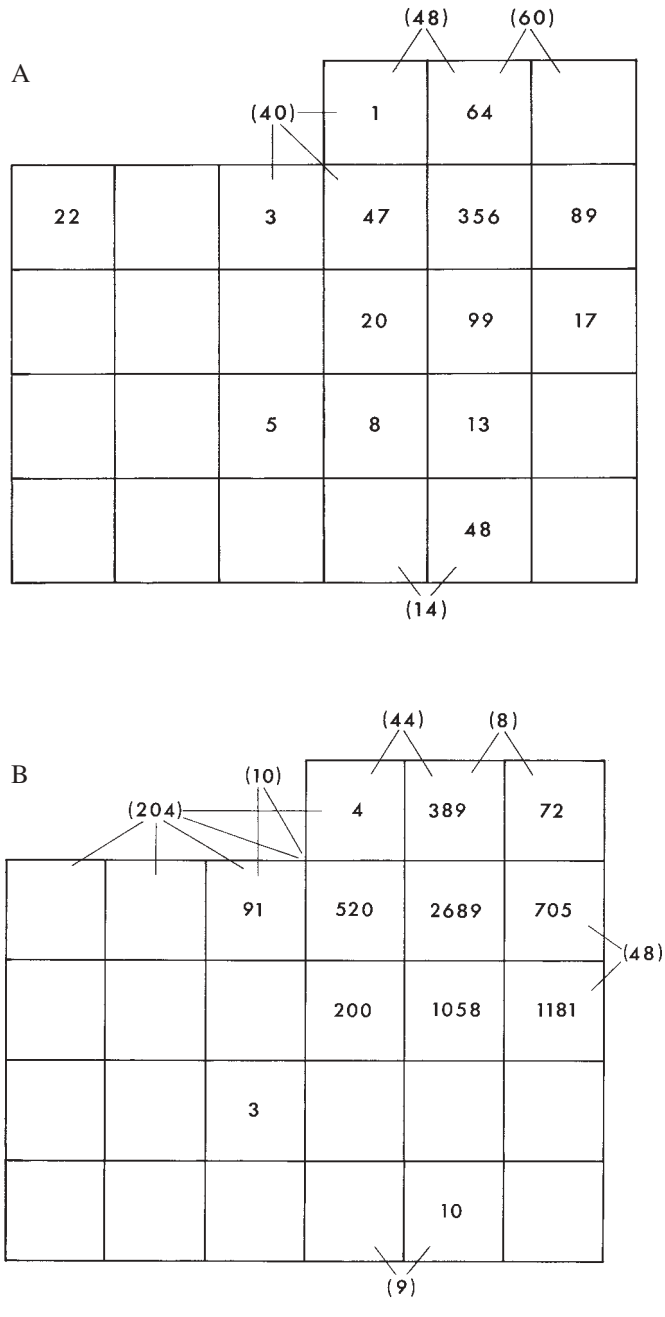

Figure 13 Distribution of finds from Site C2. The 2m grid corresponds to that shown on Fig. 12 (figures in parentheses represent material from more than one square). A: lithic material (by numbers of pieces) recovered from Site C2 (not including 186 unstratified pieces). B: pottery (by weight in grammes)

Clearance of the overburden revealed the following major features: to the S of the area exposed, the buried soil had been virtually removed by an extensive semi-circular fossil blowout representing the extension of that noted in Site C1; on the NW and E margins of the area, further fossil blowout edges were apparent; in the NW, earlier episodes of erosion had resulted in the incorporation of pottery and flints and a scatter of stones in the derived sand round the edges of the intact area of buried soil. In this area, oddly, the last vestiges of a pit and possible gully had survived and these are described below.

Most of the area was taken up by an irregularly-shaped fragment of old land surface measuring c.10m by 10m overall. To the S, this tapered to a thin wedge adjoining Site C1, whereas to the E and NE, it stretched over some 10m. In places the fossil blowout edges were fretted by old rabbit burrows. Before excavation, several distinctions could be seen in the intact area, corresponding in plan to outcropping horizons of the characteristic soil profile, exposed in section. Thus, dark grey-to-black compact sand, representing the fossil H horizon, gave way to grey-white leached sand, and, below that again, intensely mottled dark orange-brown sand, with iron pan formation in places, overlay the iron stained surface of the parent material.

At the outset, the lower layers (the mottled B horizons) of the soil profile appeared to be the main source of the finds of flintwork and relatively unabraded pottery which seemed to be concentrated along the N and E margins of the area. During excavation, however, it became clear that there was a deepening of the fossil subsoil in the NE part of the site, and this revealed an actual hollow in the fossil subsoil (C horizon). Before considering this hollow in detail, it should be noted that the remainder of the intact area of old land surface contained no further archaeological features. A general, but limited, scatter of finds was present throughout the soil profile, but there were no concentrations of stone or artefacts.

The bulk of the area therefore represented a natural soil profile, and the archaeologically productive area was extremely localised (Fig. 13A - 13B). This once again highlights the problems of conducting fieldwork in stable sand dunes. The archaeological features located on Site C2 were limited to the pit and the gully surviving in an area truncated by erosion and the 'hollow' in the fossil subsoil sealed by an intact fragment of the buried soil; these are now discussed in more detail.

The Pit and Gully

Two features survived in the NW part of the site, cut into the orange sand of the fossil subsoil, the upper layers of buried soil having been largely removed by erosion in this area. The more substantial feature comprised the remains of an oval pit c.1.0m by 0.4m, with a maximum surviving depth of 0.15m. Its undifferentiated fill consisted of dark grey or blackened sand, charcoal flecks and a proportionately large quantity of stones - mainly heat-fractured sandstone fragments, about 50mm in average dimension and all stained by the sand matrix. Apart from two pieces of *Corylus avellana* (hazel), the entire sample of charcoal recovered from this feature was identified as *Quercus* sp (oak). There were no finds apart from a few crumbs of pottery, similar in fabric to the Late Neolithic assemblage from the hollow described below.

The pit was truncated to the east by the fragmentary remains of a shallow gully running approximately NNW-SSE but this faded out after a short distance. The remains of the base of the pit could just be traced running below the fill of the gully which was composed of grey-brown sand with an occasional charcoal fleck and some fractured but unblackened sandstone. This feature was more tenuous than the pit, and had itself been severely truncated. It had an irregularly U-shaped profile, and at its deepest not more than 0.1m of fill survived while the average width was 0.2m. On the base of the gully, immediately next to the pit, were the possible remains of three stake-holes, surviving only as smears of slightly darker-grey-brown sand with darker central patches. No other features were noted.

Both the pit and the gully lay under a thin spread of dirty grey-brown sand with occasional sandstone fragments. This seems best interpreted as severely mixed and redeposited soil and occupation debris.

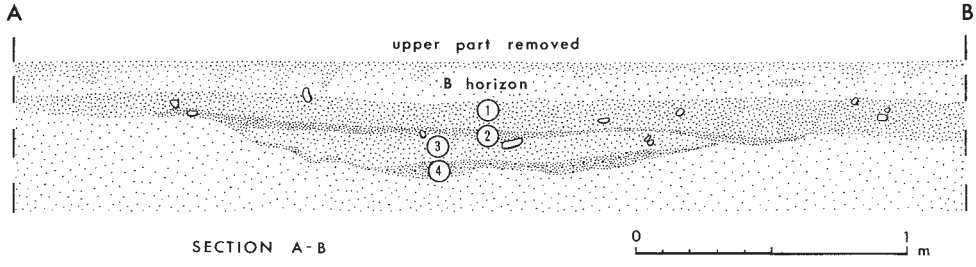

Figure 14 Site C2: section through the 'hollow';
the upper part of the overlying buried soil profile is not shown.

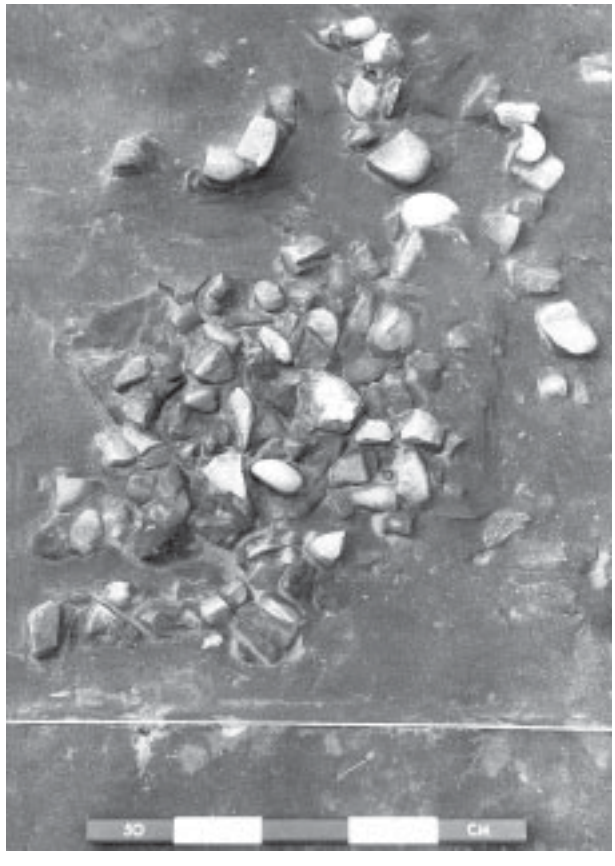

Figure 15 Part of the burnt stone dump in the Site C2 hollow.

The 'hollow'

The bulk of the archaeological material from Site C2 was recovered from the shallow oval 'hollow' in the fossil subsoil of the old land surface. Partly because its form was not clear at the outset and partly because of erosion along the E edge of the site, its precise extent is uncertain at the E end; however, its approximate dimensions were 4m by 3.5m, with an average surviving depth of c.0.25m - 0.3m.

Overlying and effectively sealing the 'hollow' was the usual buried humus-iron podzol profile. Within it the upper soil layers produced very few finds apart from a few flint flakes (see Table 2), and artefactual material only appeared in any quantity in the lower soil profile (or B horizons). The stratigraphy was straightforward, and comprised the following layers (see Fig. 14):

(1) Underlying the orange-brown mottled horizon of the old land surface was a layer of dark grey-brown sand with some stones. Pottery and flint were present in quantity;

(2) Dark brown sand with stone fragments; at the west side of the 'hollow' lay a denser concentration, almost a small pile, of fractured stone (Fig. 15). This was set in, and overlay, a particularly dark brown sand matrix, containing pottery and flint, and charcoal fragments. The concentration appeared to represent a deliberate dump of heat-fractured angular sandstone fragments or portions of rounded sandstone pebbles (about 100 pieces, all less than 0.20m) occupying an area c.1.0m by 0.5m. Similar but less well-defined concentrations of stone were noted on the eastern side of the 'hollow'; in one case the stones consisted of unburnt, rounded pebbles. The 'hollow' was quite clearly differentiated by the denser concentrations of stones within it;

(3) A further layer of grey-brown sand, lighter in colour possibly as a result of leaching, with some stones, and pottery and flint;

(4) On the base of the 'hollow', but not extending to its edges, was a deposit of dark grey-brown sand with charcoal flecks. Finds included a number of burnt flakes, but pottery was absent.

The 'hollow' had been dug or formed in the parent dune sand (C horizon); stratigraphically the pit and gully appear to have occupied a similar position, but evidence for the direct association of the three features is lacking.

Analysis of the lithic assemblage has shed light on the possible function of the 'hollow'. The assemblage is one in which small pebble nodules were exploited to produce a flake-based industry. Most were of flint or chert, and owing to the nature of the raw material, the size and types of the pieces are generally restricted: the majority of the flakes are secondary (c.46%) and primary (c.18%). Cores and nodules of unflaked stone were also recovered (c.16% of the total assemblage) and it appears that knapping was probably carried out in the vicinity of the area excavated.

In 'hollow' layers (3) and (4), there was a higher proportion of calcined (burnt) flint to unburnt pieces, while in the lowest layer (4), particularly, a number of flakes appear to exhibit the colour and texture change characteristic of thermally treated flint. It is therefore suggested that these may be waste from the deliberate heat pre-treatment of flints carried out in or close to the 'hollow'. This would have been done to improve its knapping qualities, and is a process in which the clusters of heat-fractured stone may well have played a part. During excavation, it was noted that flints appeared to cluster in layer (4) of the 'hollow', and it is possible that initially the 'hollow' itself provided a small working area for knapping.

Turning to the pottery, the condition of the majority of the sherds suggests exposure, mostly after vessel fracture, to the effects of considerable heat. This factor, coupled with the abraded and largely comminuted condition of the sherds suggests that the assemblage, though largely homogeneous, is no longer strictly *in situ*, but may be seen rather as a body of ceramic debris that accumulated or was deposited in the upper part and immediate area of the 'hollow' after the end of that feature's primary use.

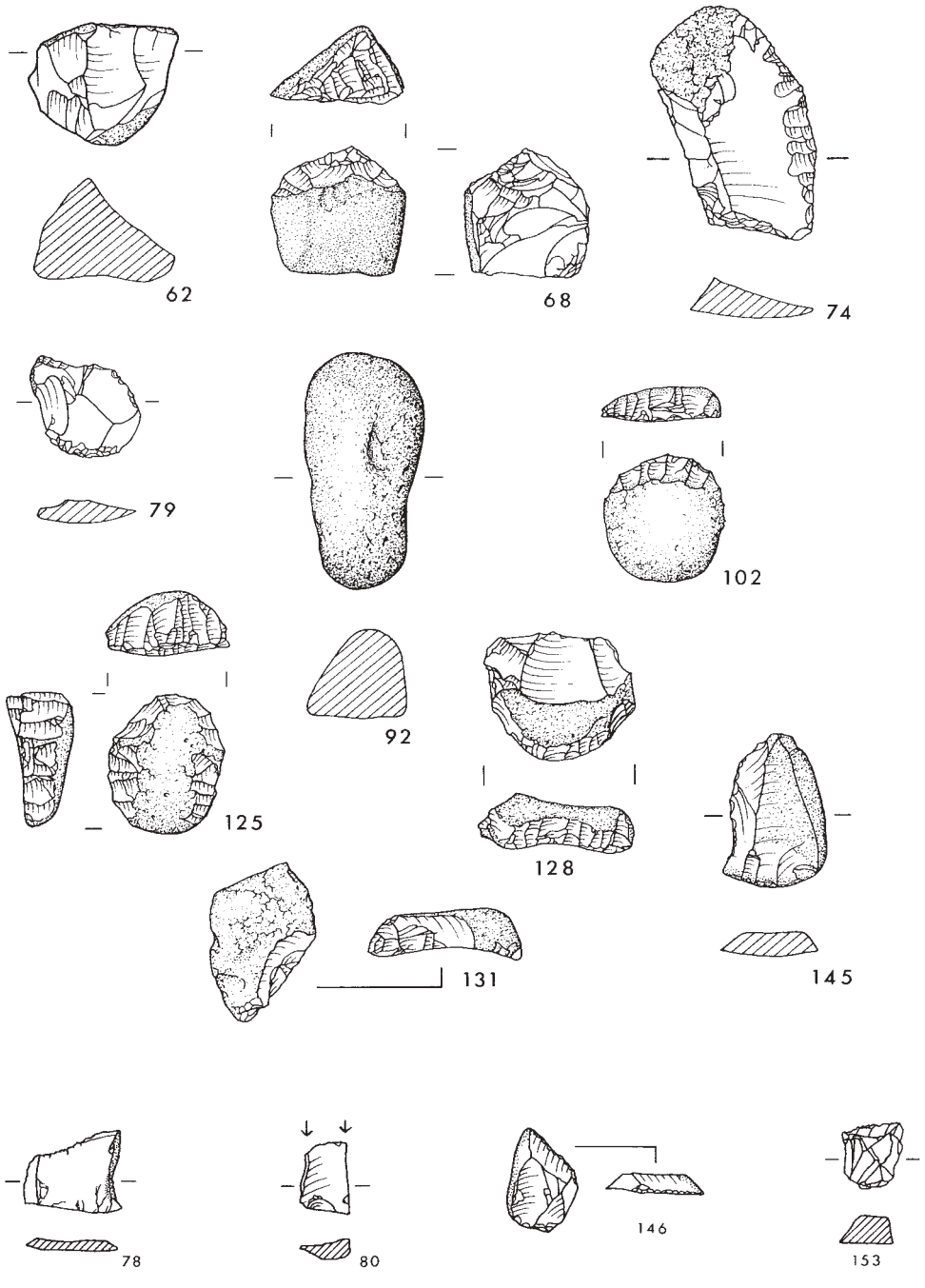

Figure 16 Lithic material from Site C2.Scale 2:3.

Samples of charcoal were recovered from the buried soil and fill of the 'hollow', and once again the species record shows a clear predominance of oak, followed by hazel. Table 5 summarises the results.

Finds (Archive report: lithics: 16 - 183; pottery 184 - 270)

Lithic assemblage (Tables 1 - 2; Fig. 16) by Rosemary Bradley

Raw Materials

The flint assemblage from Site C2 contains many unworked waterworn and abraded pebbles (eg Fig. 16: 92), presumably gathered from the contemporary beach, from local raised beach exposures, or from near-by fluvioglacial deposits. There were also a few pebbles with previously flaked surfaces, now heavily corticated and abraded; their re-use suggests that even previously inhabited sites were exploited.

These smoothed and generally heavily corticated pebbles were mainly used to produce flakes, the proportion of blades being extremely low. Cores from waterworn pebbles, simple nodules with flakes removed, are quite common (eg Fig. 16: 62). None of the pebbles or cores is larger than 60mm in its greatest dimension, and since none of the flakes from Site C2 is larger, it seems that the major source of raw material was indeed these small pebbles, though a small number of flakes, particularly inner pieces, were probably struck from larger nodules.

Most of the flint is mediocre in quality, and the number of pieces with irregular and rough faces suggests that shortage of raw materials forced the use of poor quality stone. The flint is often very cherty in appearance, opaque and matt in texture. There are, however, some pieces of very fine flint, free from flaws and exhibiting good flaking properties. The colour range of the flint mainly includes light to mid-grey, grey/brown, and light to mid-brown, while cream and white pieces are also relatively frequent.

Most of the assemblage is of flint. Other raw materials comprise c.2%, and include quartz and quartzites, coarser grained stone, and occasionally banded agate.

Condition

In general, the pieces are well preserved and a large number are in a fresh state. Frost fractures are rare.

Seventy pieces (of which fifty six were from the 'hollow') show signs of exposure to heat and rapid cooling. This leads to 'calcination', as evidenced by their white colour, surface crazing and irregular fractures including the removal of 'pot-lid' flakes. They include a number, which may have been deliberately heated to improve the properties of flint for knapping (cf Shippee 1963; Mandeville 1973). Heat pre-treatment would have been beneficial in an industry such as this where the raw material was of poor quality. Several pieces exhibit characteristics diagnostic of this treatment, such as colour change and waxiness of the flake scars. It is possible that the dumps of fractured stone found in the 'hollow' reflect the method used to heat the flint (cf Shippee 1963). Heat pre-treatment is a technique well attested ethnographically and archaeological evidence of this practice has been recognised both in the Old (Collins 1973) and the New (Mandeville 1973, 184 - 186) Worlds.

Knapping techniques

The quality and type of material varies, but the flaking of the various types of flint and other stones seems remarkably uniform. There is little evidence that very good quality flint was selected for differential use, for instance as retouched tools. The small nodule size has restricted the methods of flaking and this probably played a large part in producing uniformity in the fracture patterns.

Generally, the nodules were not specially prepared prior to flaking and only simple flakes, and occasionally blades, were removed. There are also many bipolar flakes (with bulbs at either or both ends, often with a longitudinal ridge between them), and this indicates that a common method of flaking was to rest the nodule on a hard anvil stone, and strike it from above with a hard hammer or via a punch. Cores with negative scars resulting from the removal of bipolar flakes have also been found.

Knapping hammers were both hard and soft, the former being more common, though pieces with diffuse, wide bulbs of percussion were present, indicating the use of bone or wooden batons, or punch technique. Some pebbles have probably been used as hammerstones and these include both quartzite and flint.

Other features on the flakes show the use of certain recognisable techniques. A number of cores were struck when supported by the hand, deduced from pieces with 'spontaneous retouch'. Occasional languettes indicate the use of very hard hammer technique which has also resulted in a number of straight longitudinal breaks bisecting the bulb of percussion. Irregular fractures, where the flint is incompletely flaked or the surface has a rough nature, are also almost invariably associated with the use of hard hammer, as are the prominent pressure rings concentric to the bulb of percussion and the hinge tops of some flakes.

While there are some core rejuvenation flakes, most cores were abandoned because they were too small for further flaking. However, a few cores were prepared with more care, as shown by one blade core, and there are a number of flakes with prepared platforms, which are occasionally facetted. Manual polishing is present on one pebble core, the striations possibly having been made in an effort to prevent a punch from slipping during knapping. Secondary use of cores was rare; one may have been used as a scraper.

Tools

The assemblage contains three major types of tool: retouched pieces where an obvious attempt has been made to change an edge or edges by controlled small-scale flaking, possibly using pressure as well as percussion techniques; unretouched pieces which have been modified generally by notching or serration but showing no signs of the detachment of small flakes; and unretouched, unaltered pieces which have been used in their 'raw' state in a variety of ways. The remaining pieces constitute waste flakes but since use of the majority of unretouched pieces can only be discerned by microscopic examination, the present discussion concentrates on the first two categories; the rest may be considered as potential tools and not waste until so proven.

In the first group, that of deliberately retouched flints, most of the implements are scrapers of various types. End scrapers are the most common. These have 180° or less of their periphery retouched into a convex arc, and, generally, are longer than they are broad. The preferred edge angle appears to have been about 76°. This is either a function of use, the angle becoming steeper with time until the edge stability angle is achieved (Broadbent and Knutsson 1975) or else is due to resharpening, in which case it must have been considered the optimum angle to prevent severe damage from use while maintaining sharpness.

A number of primary and secondary flakes were recovered which are probably scraper blanks, on the basis of their thickness, size and cross-sections. A further two flakes have preliminary working on a small sector of their peripheries only, and presumably represent the beginnings of scraper manufacture. Even with a very few flakes removed their edge angles are 69° and 87°. Some of the scrapers have ventral flaking which indicates that they have been resharpened. Indeed, some of the pieces are so damaged ventrally, both by use and renovation, that they are virtually useless as implements.

There are eight other scrapers which may be classified according to the position of the retouch. All have retouched edge angles of over 65°. These include two side scrapers with edge angles of 66° and 70°/68°; a further two 'side scrapers' have lower edge angles of 44° and 57° (Fig. 16: 131), possibly

more consistent with use in a cutting motion. There is one end/side scraper; one circular scraper, (with retouch 180° - 270° around its periphery); two horseshoe scrapers with retouch over one end and on the two adjacent sides (eg Fig. 16: 125); and, finally, one core possibly used as a scraper. None of the scrapers have concave or hollow retouched edges. Retouch must have been limited to one side or one end for reasons connected with the functions for which the implements were intended, but without detailed functional analysis these remain uncertain.

Although most of the scrapers are made on very ordinary quality flint, special mention may be made of the glass-like, well retouched clear quartz scraper (Fig. 16: 153), which is one of the most accomplished pieces in the assemblage.

A number of pieces have lower edge angles consistent with use in a cutting motion and can be best described as 'knives' (though this functional name may be misleading). One (Fig. 16: 74) has the right side retouched to 41° which is a suitable angle for working in a cutting motion, while another has its left distal side retouched to 55° and may also have been used for slicing. A third has a right edge angle of 72° which may indicate that it was used for heavier duties or even as a side scraper. Akin to these pieces are those which have only a small portion of one edge retouched though it is not always possible to tell if this is a result of design, use, or 'spontaneous retouch'. However, nine pieces with such retouch form a distinctive group: of seven which could be measured, all but one had edge angles below 68°, and they may have been cutting tools.

The second class of implements comprises those with no retouch, but edge modification in other ways. There are two main forms: the first includes serrated flakes and saws, where the edge to be used has been notched, generally to no great depth but sufficient to make an irregular edge. The edge angles of the three pieces treated in this manner are 25°, 31° and 40°, all of which are suitable for sawing and cutting (eg Fig. 16: 78). The other main form consists of burins, which are represented by flakes which have usually had one spall removed to present a point for engraving. There are six burins, but without microscopic analysis only the most obvious examples can be recognised (eg Fig. 16: 80). Indeed, this caveat applies generally to all the tools under discussion.

The low proportion of pieces classifiable as tools (<5%) and their restricted range of types, is very striking. It is possible that retouched pieces represent flakes specially prepared for a particular purpose, and the majority of tasks may have been performed by using unretouched unaltered flints. Numerically, such 'utilised' flakes appear to form the most important category of 'tool' but in the absence of detailed functional analysis no definite conclusions can be drawn.

Catalogue

The lithic material from Site C2 has been tabulated by context (Tables 2A - 2B), and only pieces which are illustrated (Fig. 16) are catalogued here.

Table 2A: summary of lithics from Site C2[1]

	Buried soil (upper)	Buried soil (lower)	Base of buried soil/ top of hollow[2]	Hollow layer 1	Hollow layer 2	Hollow layer 3	Hollow layer 4	Total
Flint								
Unworked waterworn pebbles	1	5	6	-	3	3	-	18
Cores from waterworn pebbles	1	18	30	1	11	25	3	89
Primary flakes	2	24	41	12	23	31	2	135
Primary blades	-	-	1	-	-	-	-	1
Secondary flakes	7	97	106	17	36	55	8	326
Secondary blades	-	1	5	-	2	-	-	8
Inner flakes	-	26	23	5	19	27	7	107
Inner blades	-	1	-	1	1	-	-	3
Burnt: cores	-	-	2	-	-	-	3	5
Burnt: primary flakes	-	1	5	-	2	2	1	11
Burnt: secondary flakes	1	2	3	3	1	8	9	27
Burnt: secondary blades	-	-	-	-	-	-	1	1
Burnt: inner flakes	-	2	-	-	-	3	3	8
Burnt: inner blades	-	-	-	-	-	-	4	4
Tools (including burnt)[3]	-	9	12	5	5	5	1	37
Other flaked stone								
Quartz	-	6	18	-	3	-	-	27
Chert	-	4	2	4	4	2	-	16
Chalcedony/agate/ carnelian	-	-	-	-	2	-	-	2
Coarse flaked stone	-	3	12	1	-	3	1	20
Tools	-	-	-	-	1	-	-	1
Hammerstones	-	-	1	-	-	-	-	1
Total	*12*	*199*	*267*	*49*	*113*	*164*	*43*	*847*

Notes
1. Table does not include unstratified pieces from preliminary cleaning of erosion edges, spoil from machining etc (Archive cat nos 16-55).
2. Base of the buried soil/top of hollow not differentiated initially.
3. Tools: see Table 2B for the categories of tools recovered.
4. Quartz scraper (153) (see Fig. 16).
5. Possible quartzite hammerstone.

Table 2B: tools from Site C2[1]

	Buried soil (upper)	Buried soil (lower)	Base of buried soil/ top of hollow	Hollow layer 1	Hollow layer 2	Hollow layer 3	Hollow layer 4	Total
Category								
End scrapers	-	3	6	2	2[2]	4	-	17
Side scrapers	-	1	-	1/2	-	-	-	2/3
End/side scrapers	-	1	-	-	-	-	-	1
Other scrapers	-	-	2	1	-	-	-	3
Miscellaneous retouch[3]	-	2	1	-	4	-	-	7
Knives	-	1	-	?1	-	1	-	3
Serrated flakes/saws	-	1	3	-	-	-	1	5
Burins	-	1/2	3?	-	-	1?	-	5/6
Utilised[4]	3	17	13	3	6	9	2	43
Totals	*3*	*27/28*	*28*	*8/9*	*12*	*15*	*3*	*96-98*

Notes
1. Table does not include unstratified pieces from preliminary cleaning of erosion edges, spoil from machining etc (Archive cat nos *16-55*).
2. One of these is quartz (*153*) (see Figure 16).
3. This includes possible tools where deliberate and 'spontaneous' retouch is not distinguishable.
4. This represents a minimum figure of unaltered pieces, compiled from archive catalogue entries where possible 'use' has been noted (based on macroscopic edge damage).

62 Core from waterworn pebble; honey gold; dull texture; 25:27:22

68 Primary; mid-grey/brown; steep distal retouch and strong ventral flaking; 77°; 27:28:15. Resharpened end scraper.

74 Secondary; light yellow-brown; lightly corticated; prepared platform; crescentic plan; fine retouch on right lateral dorsal surface; 41°; 46:29:10. Unilaterally, unifacially retouched 'knife'.

79 Secondary; light grey; corticated; light distal retouch; 46°; 19:25:17. Retouched piece.

92 Unworked waterworn flint pebble; light/medium brown; 42:25:12.

102 Primary; light grey; strong bulb of percussion; circular plan; steep distal retouch; 79°; 26:24:8. End scraper.

125 Primary; dark grey with cream flecks; steep retouch on lateral and distal edges; 94°; 30:25:14. Horseshoe scraper.

128 Secondary; mid-golden brown; ventral flat flaking; steep proximal retouch; 76°; 29:31:11. End scraper.

131 Secondary; mid-brown/grey; fine quality; steep retouch on right proximal edge; 57°; 34:23:8. Side scraper.

145 Secondary; mid/dark brown; much white cortex; heavy damage to left side (?spontaneous retouch).

78 Secondary; semi-translucent, mid-brown; proximal break; ?used; distal end toothed to saw edge; 25°; 17:18:2. Saw.

80 Secondary; streaked light grey and brown; broken (or burin spall scar?); rectangular plan. ?Burin.

146 Secondary; semi-translucent dark golden brown; ?spontaneous retouch or fine deliberate retouch on distal and right edges to give a point; 67°; 20:14:5. ?Point.

153 Quartz; transparent, colourless; steep retouch on distal and right side; 72°; 14:12:6. End scraper.

Pottery (Figs. 17 - 23) by T G Cowie

Introduction

Approximately 1205 sherds and fragments and over 800 crumbs were present in the ceramic assemblage from Site C2, mostly recovered from over, within, or derived from, the subsoil hollow. The assemblage includes numerous joining sherds and fragments from separate contexts (eg from the base of the buried soil over the hollow, from layers within the hollow itself, and unstratified finds).

The sherds and fragments vary considerably in condition, a factor which largely accounts for the wide variation in size and thickness, and the virtual absence of reconstructible vessel profiles. The published catalogue principally includes sherds and fragments retaining significant formal or decorative features; in addition, a representative selection of body sherds which cannot definitely be attributed to particular vessels has been included to illustrate the range within the assemblage.

Form

Parts of the upper profile of a minimum number of between 47 and 50 vessels are represented in the ceramic assemblage from Site C2. With much further conservation, it might have proved possible to extend the profiles of some of the vessels and incorporate into this group some of the mass of unpublished body sherds, fragments and crumbs, which cannot at present be assigned to particular vessels. In only one case, that of 241 (Fig. 22), has it been possible to reconstruct a more substantial part of a vessel, and it is salutary to note in this instance the oval shape and distorted condition of the rim, which must invite caution when attempting to assess precise rim diameters on the basis of single rim fragments or small sherds. The preferential survival of rims may be due to their relative compactness, perhaps a result of the greater degree of moulding required in rim formation, in contrast to the extreme crumbliness of much of the unassigned 'body' material. Other aspects of the condition of the pottery are considered below.

An attempt has been made to classify the reconstructible rim profiles; in order of numerical importance these are as follows:

a. internally bevelled rims;

b. everted rims, lacking distinct internal bevels, though the interior surface may be decorated;

c. heavy expanded (or thickened) rims;

d. simple rims;

e. others.

a. The internally bevelled rims may be subdivided into three groups on the basis of the upper vessel profile and the proportionate width of the bevel to the rim. Two vessels (184, 189) possess a distinctive flaring upper profile with a deep broad internal bevel; others are characterised by proportionally narrower internal bevels and these occur with both slightly flaring (190, 194, 197 - 198) and more everted (186, 188, 217, 220, 222, 234 - 236) rim profiles. A number of fragments and sherds also have internally bevelled rims, but cannot be assigned to a more specific type (185, 187, 192 - 193, 225, 240, 251).

b. Vessels with everted rims are represented by a homogeneous group of sherds, from some four or five vessels, which also share details of fabric and decoration (242 - 248). The distinctive rim sherd, 224, may be noted here.

c. A number of vessels appear to have possessed proportionally heavy, expanded rims either slightly everted with a convex top (219), or upright with a convex top (218, 221). Akin to these, in the thickened proportions of their rims, are a small number of vessels with flattened expanded rims (195 - 196, 228, 238).

d. Simple, upright or slightly flaring rims, rounded or flattened at the lip, account for a relatively small proportion of the total assemblage, including 204 and 233 (rounded), 215, 232, 241 (flattened) and 206 (indeterminate).

e. Finally, a small number of vessels appear to be represented by single occurrences: this miscellaneous group includes a sherd of a vessel with upright externally bevelled rim (227) and a group of sherds (214) representing fragments of a ?shouldered bowl with distinctive expanded flat-topped rim.

In the context of classification of rim forms the variations in profile on the joining sherds of 194 are notable: the marked transition from a weak to well-defined wall/bevel junction on this rim serves as a warning against over-detailed classification into types on the basis of single small sherds.

Details of the lower profiles of the vessels are largely absent; formal features are present among the representative body sherds in the catalogue, and include probable neck fragments (eg 212), shoulder fragments (eg 255, 267), and lower body or base sherds (eg 203, 257, 266). Although not included in the published catalogue, other rounded base (or near base) sherds have been recognised as a result of their thickness and orientation, but the distinctive flat base, 266, is without obvious parallel in the assemblage. In the absence of any correlation of upper profiles with the surviving mass of body fragments, there is a considerable degree of uncertainty about the form of the vessels in the assemblage. Tentative classification of vessel type must, therefore, largely proceed on the basis of analogy rather than physical reconstruction of the pots. On balance, the vessels could nearly all be seen as variations on a deep, open, occasionally relatively straight-sided, flared bowl form. The size range of the assemblage is also uncertain, but of 26 pots where diameters can be approximately estimated the range can be tabulated as follows:

Diameter (±25mm)	No
150mm	2
200mm	12
250mm	11
300mm	1

In the absence of parameters for the height of the vessels (which would provide an indication of their volume) the implications of the size range are uncertain, but the assemblage is clearly characterised by quite sizeable vessels. These might well be of considerable weight and the presence of flattish, or sagging bases is not unexpected.

Fabric

The fabric range of the Site C2 pottery is relatively limited, though there is a considerable difference between the finest and coarsest material. On the whole, the fabric can be characterised as having a fairly hard, fine clay matrix with inclusions of variable size, mainly stone grits (crushed quartz and angular sandstone fragments ranging from <5mm to >10mm) and very occasionally, grog. A small number of vessels have a more compact, slightly sandier fabric (eg 244, 245), and some of these can also be distinguished from the main body of the assemblage on typological grounds. A few sherds (eg 214, 268) contain traces of mica but this is rare, in marked contrast to the fabrics on Site J. The colour range is wide and varies from pink to reddish-yellow, to very dark grey, though radical post-firing colour changes may frequently have occurred due to the effects of heating, typically after breakage of the vessels. Surface treatment commonly included smoothing of the faces, and occasionally wiping of the internal surfaces, but, as a rule, the inclusions break the surface of all the sherds apart from a few of the finer examples.

Decoration

All the individual vessels which can be distinguished (on the basis of the rim count) are decorated in some fashion. Obviously the preferential survival of rims has dictated that our fullest appreciation of decoration is of that applied to the upper parts of the vessels, and though decoration on the bodies is relatively common there are few indications of the overall decorative arrangements.

The techniques used can for convenience be divided into three main categories, but in some cases they may be difficult to distinguish and the divisions should not be treated as inflexible. The techniques include:

a. Cord: including whipped cord and 'maggot' impressions and a variety of twisted cord impressions;

b. Jabs and stamps: these terms cover a variety of impressions including those of the epiphyses of bird and small mammal bones, or the end of a broken stick, reed or other such 'spatulate' implement. In addition, deep pits or circular punctulations made with a reed-end or point; comb; fingertip and fingernail impressions are also included in this category. Jab-and-drag decoration also falls, as a somewhat specialised technique, into this overall heading;

c. Incised techniques: this term covers both broad tooled lines or grooves, as well as thinner drawn lines and slashes, the main emphasis being on the essentially 'linear' aspect of this decoration.

Fingernail impressions are numerically the commonest mode of decoration but it must be remembered that they may only occur as relatively minor elements on a vessel predominantly decorated in some other way (eg 193). The same reservation should be applied to the relative frequency of incised decoration. Nevertheless, fingernail impressions and incisions do form the major component in the decoration of a number of vessels: there are, for example arrangements of fingernail impressions in rows on the bevelled rims of 234 and 235; and incised patterns occur on a group of vessels already noted as having other features in common (242 - 248).

Other 'jabbed' and 'stamped' techniques are also widely represented both as minor and major elements in decorative schemes. In the latter case, the decoration may be quite distinctive, aiding the recognition of individual vessels: for example, the punctulated ornament of 222 and 226; the use of toothed comb impressions on 215 - 217; or the unusual, careful arrangement of bone-end impressions on 224. Attention may also be drawn to the distinctive use of jab-and-drag decoration on four vessels, three of which have thickened or expanded rims (218 - 221).

However, the most remarkable integration of form and decoration occurs on the series of internally bevelled vessels where the bevels have been decorated with a more or less careful arrangement of concentric rows of twisted cord impressions, or, more rarely, with arcs or other curvilinear patterns. The deeply bevelled, flaring bowls (184, 189) are particularly distinctive, though the careful arrangement of the cord design on the rim contrasts markedly with the rather haphazard 'grooving' on the external surface. A further distinctive effect is presented by several sherds, probably all from the same vessel (186) in which short transversely applied cord impressions have been used to form a `scalloped' rim edge or `pie crust' effect.

Whipped cord 'maggot' decoration occurs in a variety of forms and arrangements, ranging from the line of contiguous 'maggots' on the exterior of 205 to their more careful application in rows on 207 and 214.

Finally, mention may be made of the possible, but very worn, textile or mat impressions on the internal bevels of 197 and 198, a type of impression also present on a fragment of rounded base (203), though this cannot definitely be associated with either vessel.

Decoration of the vessel bodies appears to have been relatively common, but in the absence of reconstructible forms it is difficult to gauge the range of patterns, or the frequency of all-over decoration. Nevertheless, all three major decorative categories appear to have been used, as 199, 202, 209, 253, 257, 263 and 264 illustrate. Particular mention may be made of the distinctive finger-pinched rustication on 256, the unusual jabs on the decorated base of 265 - 266, and the rather indeterminate but apparently geometric 'grooved' designs on 260 - 262.

Condition and Context

The pottery assemblage from Site C2 totalled some 2,000 pieces ranging from indeterminate crumbs to more substantial sherds. The apparently preferential survival of rim fragments has already been mentioned and a possible causal factor suggested. Mention must also be made of the burnt condition of the majority of the sherds suggesting their accidental exposure, mostly after breakage, to the effects of considerable heat. In this way the inherent tendency of the pottery to laminate or crumble has been aggravated, resulting in the frequent loss of one or both surfaces. Although the sherds are worn and in a largely comminuted condition, highly abraded wind-scoured pieces are absent, suggesting that the pottery was not exposed to destructive wind-blow prior to burial.

Catalogue

Figures 17 & 18

184 Sherds from a vessel with flaring upper profile and a broad internal bevel; diameter: 250mm - 260mm; cord impressions and light grooves.

185 Sherds from a vessel with internally bevelled rim; cord impressions, bone-end impression on edge of rim.

186 Sherds from one or possibly two vessels with everted internally bevelled rims; diameter: c.200mm; fine cord impressions in rows crossed or overlain by concentric arcs; on edge of rim, short transversely set cord impressions producing 'pie-crust' effect.

187 Fragment of rim bevel; cord and fingernail impressions.

188 Sherds from a vessel with everted internally bevelled rim with rounded lip; diameter: >200mm; cord impressions and light grooves.

189 Sherds from a vessel with flaring upper profile and a deep broad internal bevel; diameter: 240mm - 260mm; cord and ?fingernail impressions, and incisions.

190 Sherds from a vessel with slightly flaring upper profile and proportionally narrow internal bevel; diameter: 250mm - 300mm; fine cord and bone-end impressions; ?possibly slightly burnished.

192 Sherds from a vessel of uncertain form but probably with internally bevelled everted rim; cord impressions applied deeply enough for fingernail to follow cord into clay.

193 Sherds from a vessel of uncertain form but probably with internally bevelled everted rim; cord and fingernail impressions.

194 Sherds from a vessel with slightly flaring upper profile and proportionally narrow internal bevel; diameter: 180mm - 220mm; coarse cord impressions possibly in broad arcs. Two rim profiles are illustrated to show the variation in joining sherds: in one the wall/bevel junction is weak, and in the other, sharply defined.

195 - 203: Figure 19

195 Sherds from a vessel with upright externally expanded rim; diameter: 100mm - 150mm (uncertain due to distortion); fine cord impressions and deep angled jabs.

196 Sherds from a vessel with flaring upper profile; rim flat with slight internal expansion; diameter: 200mm - 240mm; coarse cord impressions and possibly some irregular incisions.

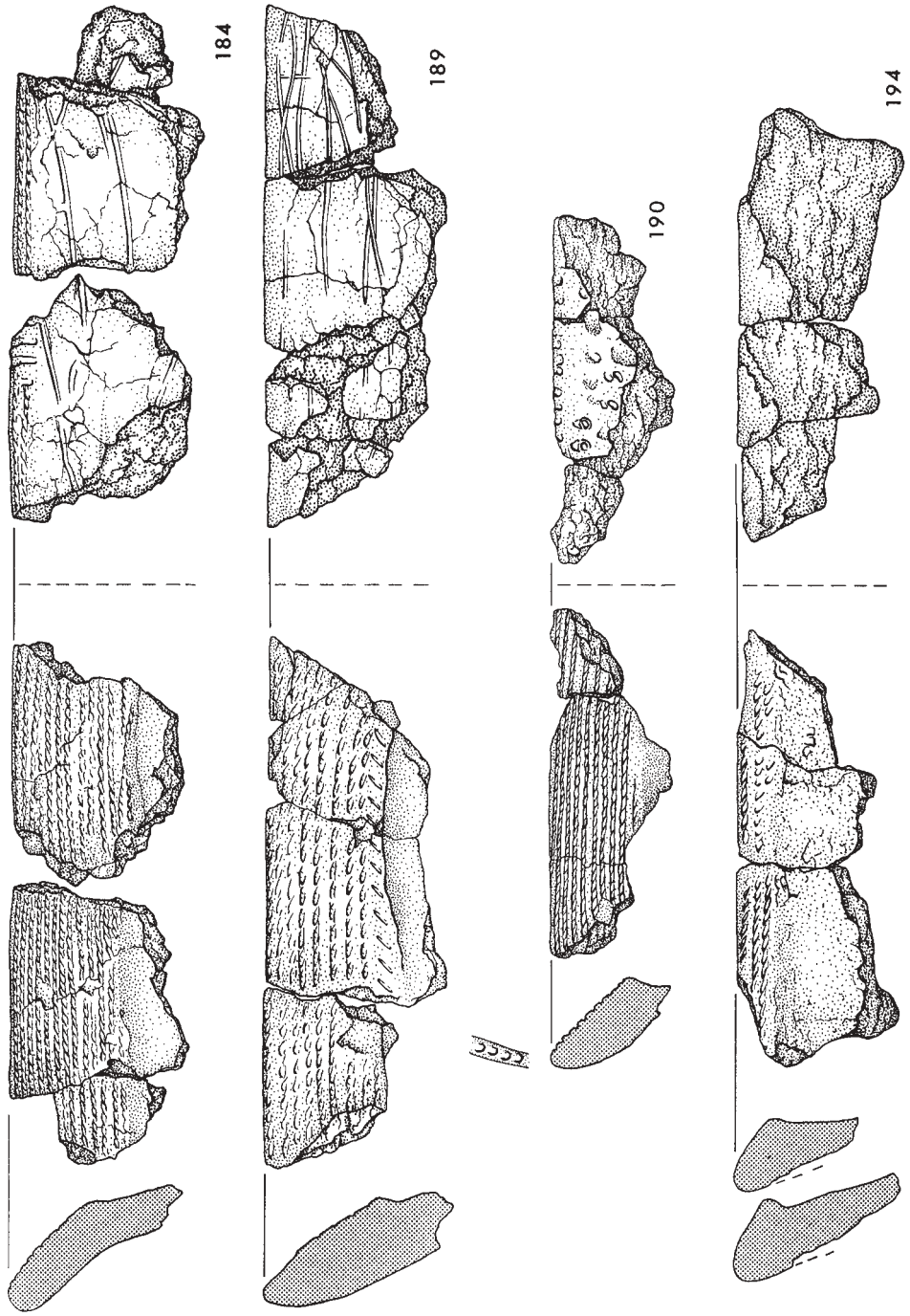

Figure 17 Pottery from Site C2. Scale 1:2.

197 Sherds from a vessel with slightly flaring or upright upper profile and rim with narrow internal bevel; diameter: c.200mm; on bevel, very faint, indistinct cord (or possibly even textile?) impressions; on external surface, indistinct shallow grooves.

198 Sherds from a large vessel with deep internal bevel, and probably flaring upper profile; on bevel, "graining" possibly from worn impression of fabric or matting.

199 Miscellaneous body sherds (from more than one vessel) with a variety of twisted cord impressions on external surface.

200 - 201 Fragments of internally bevelled rims; very fine cord impressions.

203 Sherds from sagging or rounded base?; ?accidental incorporation of ?textile or reed mat impressions.

204 - 217: Figure 20

204 Sherds from a vessel with almost upright, rounded rim, with very slight external lip; diameter: 180mm - 200mm; lines and arcs of whipped cord.

205 Rim sherd from pot with everted rounded rim; diameter: c.200mm; maggot impressions arranged contiguously in lines.

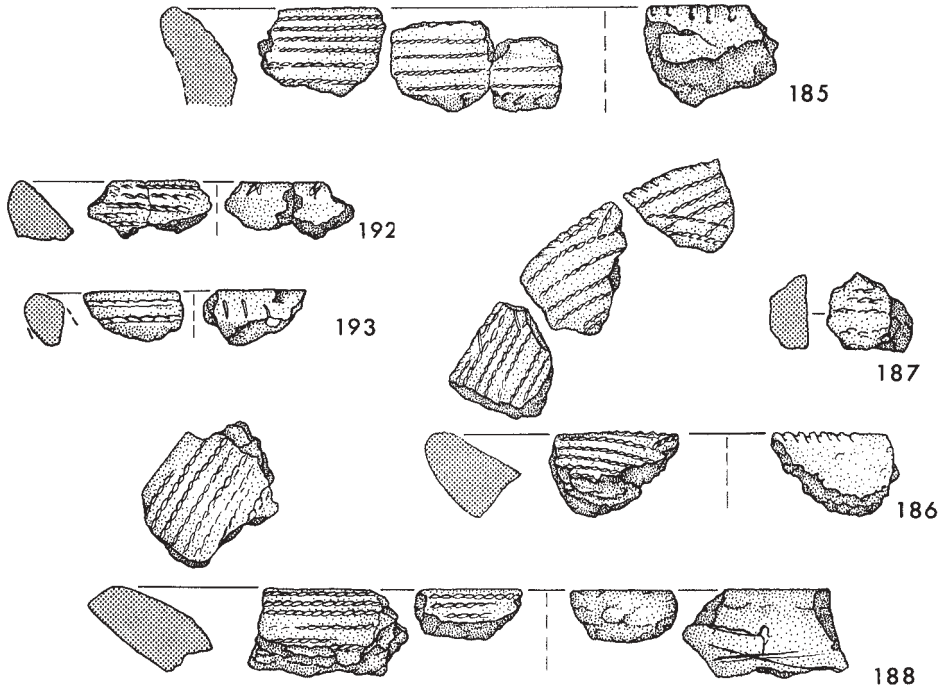

Figure 18 Pottery from Site C2.Scale 1:2.

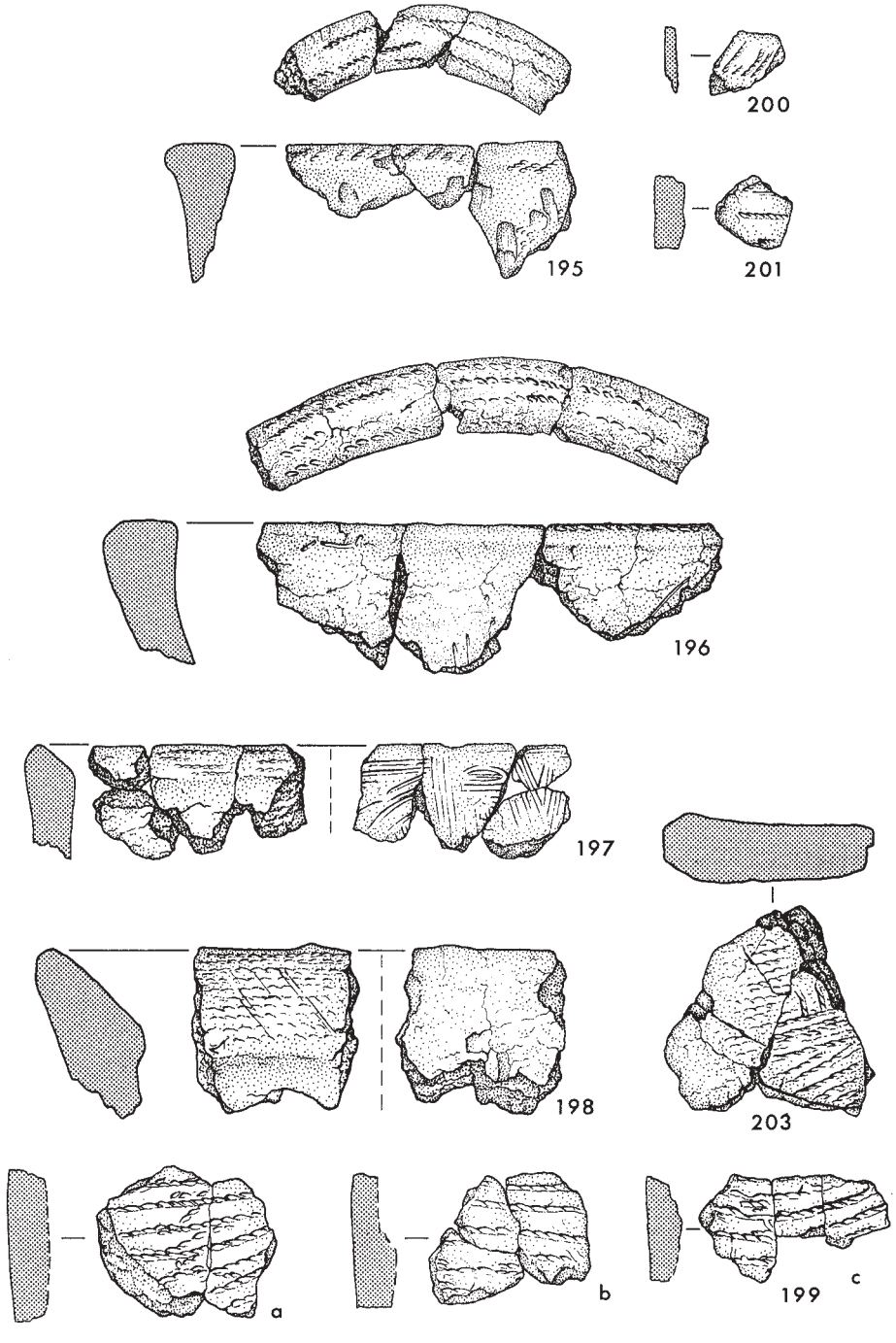

Figure 19 Pottery from Site C2.Scale 1:2.

206 ?Rim sherd from vessel with upright or possibly slightly inturned rim; fine maggot impressions crossed by fingernail impressions.

207 Fragment of internal rim bevel?; maggot impressions.

208 Fragment of internal rim bevel?; maggot impressions, possibly arranged in rows.

210 Fragment of internal rim bevel or external surface; maggot and fingernail impressions.

211 Fragment of internal rim bevel?; maggot impression.

213 Fragment of internal rim bevel or external surface; maggot impressions.

214 Sherds from a vessel with upright externally expanded rim and slight neck and shoulder; diameter: 180mm - 220mm; well fired; maggot impressions on rim; possible shallow bone-end impression on external surface of body sherd.

215 Sherds from a vessel with upright flattened to slightly rounded rim; fine tooth comb impressions; pattern continues over rim top and onto inner lip.

217 Rim fragment, possibly from everted internally bevelled rim; on ?internal surface, remains of tooth comb impressions.

218 - 232: Figure 21

218 Sherds from a vessel with an upright, slightly convex rim; diameter: c.250mm; on top of and round edge of rim, rows of jab-and-drag impressions; on exterior, vertical jabs.

219 Sherds probably all from the same vessel, with upright or slightly everted convex expanded rim; diameter: c.250mm - 300mm; on top of rim, jab-and drag impressions separated by pronounced ridges; on external surface, horizontal jabs.

220 Sherds from a vessel with everted upper profile and internal bevel; diameter: c.300mm; jabbed, and jabbed-and-dragged, bone-end impressions.

221 Sherds from a vessel with upright, convex expanded rim; diameter: c.250mm - 300mm; on rim, deep bone-end and jabbed-and-dragged impressions.

222 Sherds from a vessel with everted rim; diameter: c.250mm; on bevel and lip, rows of bone-end impressions, on external surface, incisions possibly drawn with fingernail.

223 Fragments from an internal rim bevel or external surface; bone/stick impressions.

224 Rim sherd of vessel with everted, slightly flattened rim; diameter: c.200mm; bone-end impressions, and also a single maggot impression on the edge of the rim.

225 Fragment of bevelled rim; bone-end impressions.

226 Rim sherd, possibly from upright rounded, slightly expanded rim; punctulations applied with pointed implement.

227 Fragment from a rim or rim bevel; jabbed bone-end impressions.

228 Sherds from a vessel with heavy flat-topped expanded rim; on edge of rim, fingernail impressions; on top of rim, coarse maggot or contiguous bone-end impressions continuing onto internal surface.

232 Rim sherds of a vessel with upright or only slightly flaring upper part, and slightly flattened rim; lip pressed over in places; diameter: c.200mm; incisions and shallow ‘grooves’ applied with ?fingernail and/or spatulate tool.

233 Rim sherd of vessel with upright, slightly externally rounded rim (slightly ‘rolled over’); diameter: c.200mm; deep slashes or fingernail impressions.

234 - 253: Figure 22

234 Sherds from a vessel with everted rim, with proportionately narrow internal bevel; probably broken along neck/rim construction junction; diameter: 250mm - 300mm; fingernail impressions.

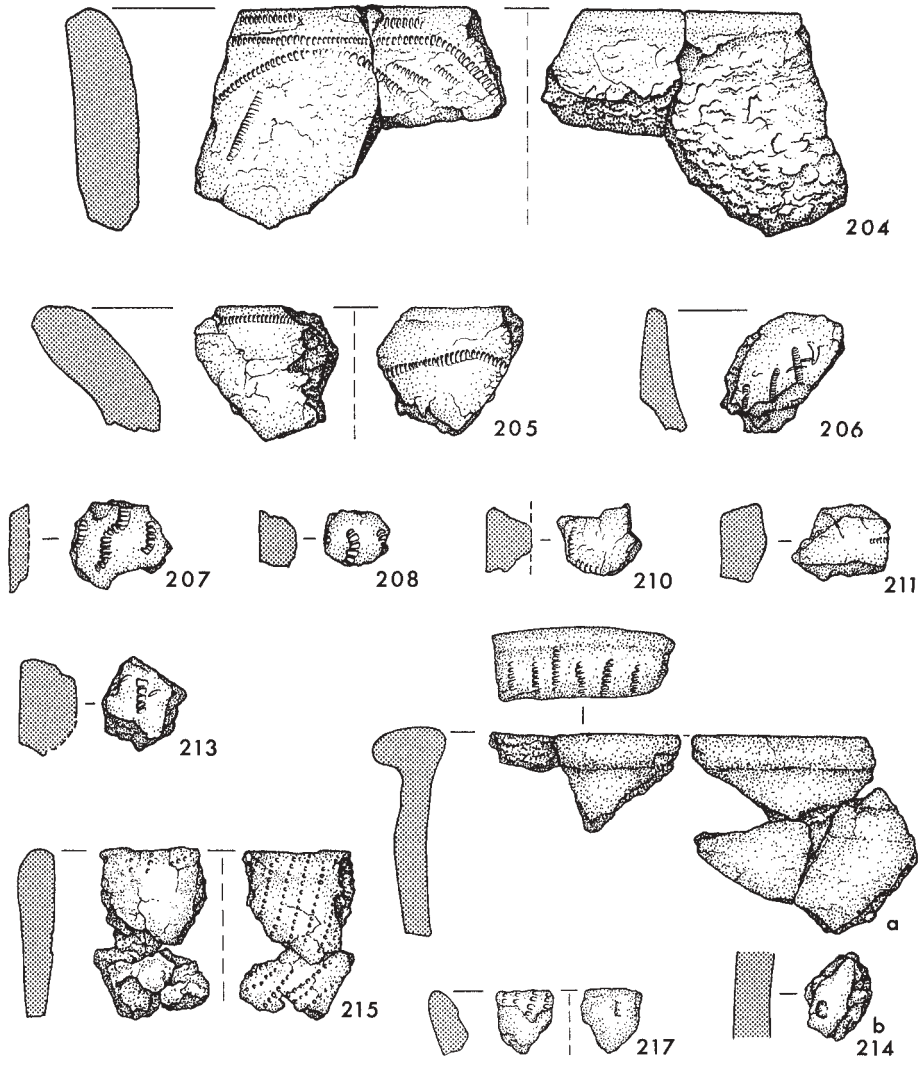

Figure 20 Pottery from Site C2.Scale 1:2.

235 Rim sherd of uncertain form: probably everted, with slightly convex proportionally narrow, internal bevel; fingernail impressions.

236 Rim sherd and fragment from same vessel, with sharply everted, internally bevelled rim; diameter: c.250mm; fingernail impressions.

237 Rim fragment possibly from slightly everted rim; fine incisions or fingernail impressions.

238 Rim fragment, possibly from expanded flat-topped rim; fingertip impressions.

241 Sherds from a small vessel with an upright, slightly flaring, upper profile and uneven flattened rim; pot distorted; diameter: 140mm - 180mm; fingernail impressions or slashes.

242 Sherds from a vessel with everted rim; lower profile uncertain but possibly slightly shouldered (see 243); diameter: 250mm - 300mm; on interior or rim, fine incisions.

243 Body sherd, probably from near rim of a vessel with everted rim, with thickening at neck/body junction (to give slightly shouldered profile); possibly from same vessel as 242; on internal face, horizontal fine incisions; on 'shoulder', possibly worn cord and fingernail impressions.

244 Rim sherd probably from vessel with everted rim; fingernail impression or incisions.

245 Rim sherd probably from vessel with everted rim; fine incisions and fingernail impressions.

246 Rim sherd from vessel with everted rim; fine incisions on internal surface and edge of rim.

247 Sherds from a vessel probably with everted rim; diameter: c.250mm; incisions.

248 Sherds probably from a vessel with everted rim; fine incisions.

249 Fragment, probably from an everted rim (cf 248); fine incisions.

251 Rim fragment from vessel with bevelled rim; fine incisions.

252 Body sherd; fingernail impressions.

253 Body fragments; fingernail impressions.

254 - 270: Figure 23

254 Body sherds; fingernail impressions.

255 Body fragment; fingernail/tip impression.

256 Body fragments; fingertip pinched 'rustication' with some irregular rows of fine fingernail impressions.

257 Body sherds - from ?lower body; fingertip jabs all over to produce 'rusticated' effect.

258 Sherds, possibly from near rim of substantial vessel; bone-end impressions.

259 Body sherd; grooves and jabs apparently in an opposed arrangement.

260 Body fragment; grooves.

261 Body sherd; grooves possibly forming chevron pattern.

262 Body sherd; grooves, possibly chevron or filled triangle.

263 Body sherd; ?stick impression drawn or trailed to form shallow incisions.

264 Body sherd and fragment probably from same vessel; intersecting incisions.

265 Sherd with very little curvature, probably part of a base (cf 266), or possibly fragment of a clay disc; haphazard arrangement of jabbed impressions (on 'external' surface).

266 Fragment of ?flattened base (cf 265); irregular jabs/fingernail impressions.

267 Fragment of basal angle.

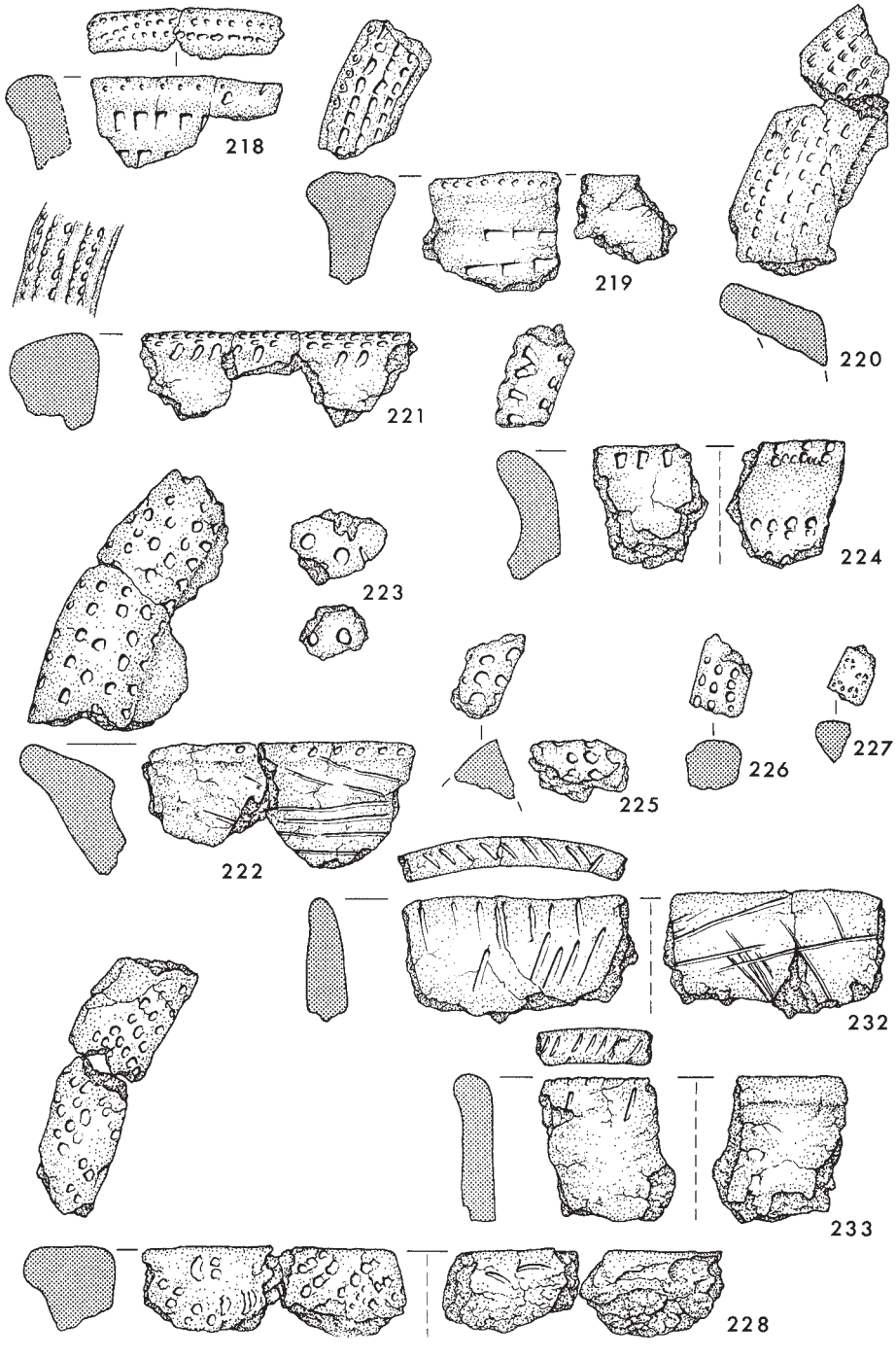

Figure 21 Pottery from Site C2.Scale 1:2.

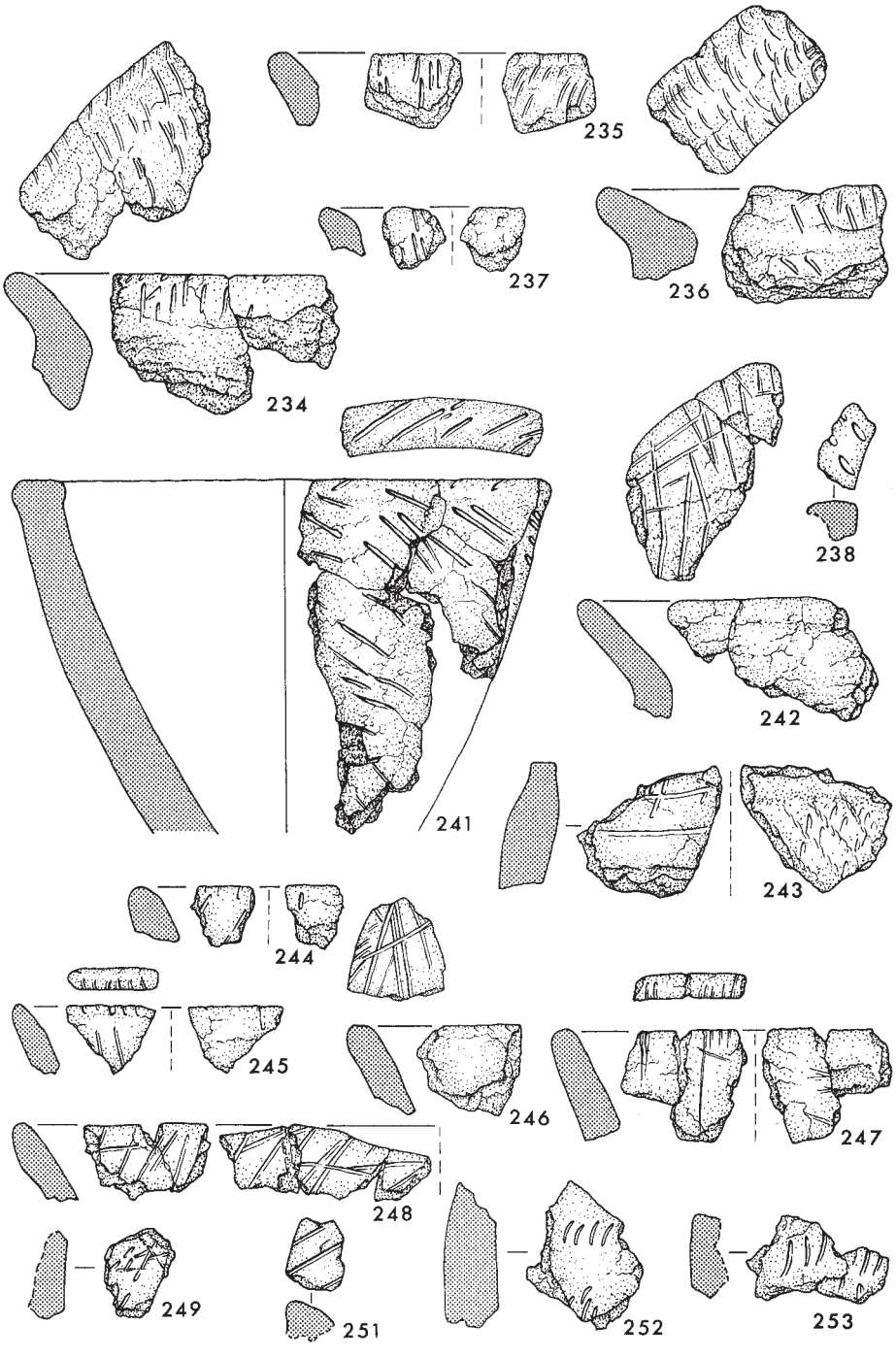

Figure 22 Pottery from Site C2.Scale 1:2.

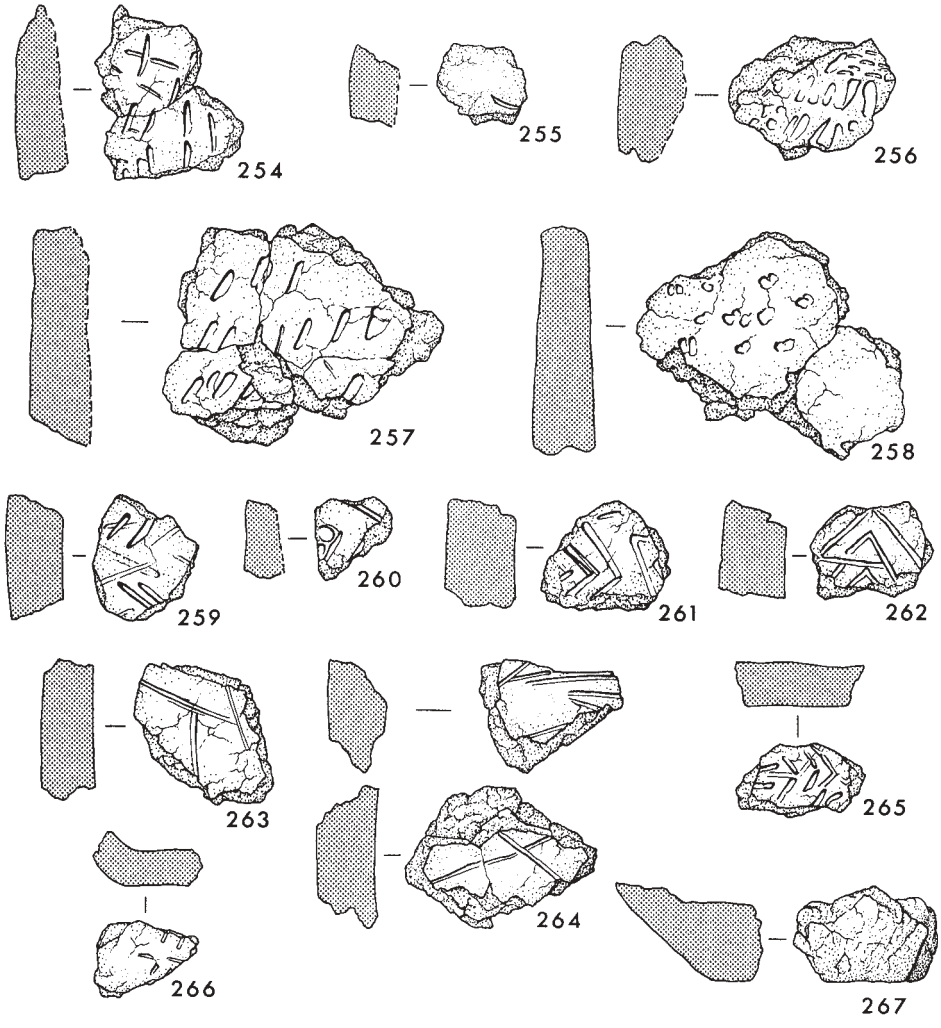

Figure 23 Pottery from Site C2.Scale 1:2.

Site D (Fig. 8, 24)

Site D lay on the western margin of the threatened area to the SW of the 'High Torr'. Prior to excavation a stretch of the characteristic dark band of the main buried soil was visible at an elevation of around 14.9m - 16.5m OD in the eroded north face of a large dune. At one point, there appeared to be an outfall of stone, mainly consisting of rounded quartz pebbles. The remains of the feature from which the stones derived could be seen in the exposed face, and this proved to be the site of a small burial cairn partially excavated by Mr W F Cormack (1968).

The cairn, about 1.2m in diameter and 0.2m high, had covered two cremation deposits, one of them under an inverted bucket urn (see Morrison 1968, no 63). An unburnt flint knife was also recovered.

The size of the dune precluded mechanical stripping on a large scale particularly as the site appeared to lie right at the limit of the area designated for development. As a result, only a narrow band of buried soil, about 10m by 1m in extent, was investigated following the manual removal of as much overburden as possible (here some 5m - 6m in height) (Fig. 24). In the event, no further features emerged though this is almost certainly due to the small size of the area examined. Further exposure of the surviving old land surface in this area would have been valuable, since further burials or other features might have been located in the vicinity of the cairn. Furthermore, Site D offered a rare opportunity to work outwards from a known site. This opportunity should be taken up in the event of any future westward expansion of the range facilities.

Apart from providing a detailed location for this site, the 1977 work added little to that carried out by Cormack other than the completion of the excavation of the surviving portions of the cairn. About 25gm of burnt bone was identified by Mr C B Denston as mainly post-cranial fragments of one ?adult, and this almost certainly represents further portions of the cremation deposits.

Finds (Archive report: lithics: 271 - 278; pottery: 279 - 280)

The lithic material from this area (Table 3) was mainly recovered from collapsed dune sand and buried soil. The only notable pieces were a possible flake of pitchstone and a unifacially worked blade with very fine edge retouch.

Two sherds, five fragments and some crumbs of prehistoric pottery were recovered from the windblown sand beside the dune and from the floor of the adjacent deflation hollow. Most of the pottery was featureless and heavily abraded, but it included a body sherd of all-over-cord Beaker and a fragment of a bevelled rim with bone-end impressions (280).

280 Fragment of externally bevelled rim; bone-end impressions (Fig. 11).

Figure 24 View of Site D, showing excavated strip and site of the 'Cormack cairn'.

Site E (Figs. 8, 25)

Preliminary fieldwork in the area of the massive dune known as the 'High Torr' revealed an exposure of the main buried soil horizon on the steep N/NE side of the dune at an elevation of about 17.25m OD. At this point the buried soil lay over 5m above the floor of an eroded depression sloping downwards and NW of Site C2, with a marked surface spread of heat-shattered stone with occasional flints. The buried soil horizon could be traced, with interruptions suggestive of fossil erosion phases, from an erosion corridor just east of Site C1, round the face of the 'High Torr' for a distance of about 25m - 30m, before its course became masked by accretions of wind-blown sand or collapsed dune material.

Table 3: summary of lithics from Sites D-K

	D[1]	E[2]	F[3]	G[4]	H	K
Flint						
Unworked waterworn pebbles	-	16	-	-	-	-
Cores from waterworn pebbles	-	32	-	-	-	-
Primary flakes	5	163	7	2	-	-
Primary blades	-	2	-	-	-	-
Secondary flakes	6	204	6	5	-	-
Inner flakes	3	98	2	-	-	-
Inner blades	1	3	-	-	-	-
Burnt: cores	-	-	-	-	-	-
Burnt: primary flakes	-	19	-	-	-	-
Burnt: secondary flakes	3	18	-	-	-	-
Burnt: inner flakes	-	13	-	-	-	-
Tools (including burnt)	1	7	3	2	-	-
Total: flint	***19***	***575***	***18***	***9***	**-**	**-**
Other flaked stone						
Quartz	-	30	-	1	-	-
Pitchstone	1	-	-	-	-	-
Chalcedony/agate/carnelian	-	1	-	-	-	-
Coarse flaked stone	-	8	-	1	-	-
Total: other flaked stone	***1***	***39***	**-**	***2***	**-**	**-**
Hammerstone	1	1[5]	1[6]	-	-	-
Overall totals	***21***	***615***	***19***	***9***	**-**	**-**

Notes
1. Site D = archive report cat nos 271 - 280.
2. Site E = archive report cat nos 281 - 314.
3. Site F = archive report cat nos 341 - 348.
4. Site G = archive report cat nos 350 - 356.
5. Hammerstone (281): see Figure 11.
6. Hammerstone (341): see Figure 11.

At one point relatively unabraded potsherds could be seen in the broken-up material along this exposure, possibly indicative of the survival of *in situ* prehistoric material. As in the case of Site D, the exposure of a large area was precluded and only a small strip, about 10m - 12m long by 0.80m wide, could be investigated which naturally diminished the chances of locating the original contexts of the finds.

Excavation revealed a rather uncharacteristic soil profile; while falling within the general category of humus-iron podzol, the upper part of the profile on Site E appeared to show signs of disturbance in keeping with agricultural activity. In the dark compact sand of the old land surface were a series of roughly parallel, slight undulations filled with wind-blown sand. These undulations were about 2m apart and were aligned approximately 50° east of north. Although the very small size of the area makes their interpretation tentative, these linear marks could represent the last traces of ploughed or spaded ridges existing prior to burial of the area by mobile sand. Similar parallel undulations were also noted on Site H. The leached grey-white (A_2) horizon was also less prominent, and these variations appear to be in keeping with disturbance resulting from light tillage activities, the date of which must remain uncertain without a reliable *terminus post quem* for the date of the inundation of the site by blown sand. Below this lay the more characteristic B horizons of the normal podzol profile.

Finds were limited to occasional stray lithic material (including one leaf-shaped arrowhead) and fragments of pottery dispersed mainly through the orange-brown mottled sand of the B horizon. However, at one point, a concentration of stones in a slight dip in the fossil subsoil suggested the possible presence of a depression kindred to, but smaller than, that recorded on Site C2. From this was recovered a number of Late Neolithic sherds broadly similar to those from the Site C2 ‘hollow’, and a quantity of flintwork.

It seems reasonable to suggest that the features located on Sites E and C2 are the now physically separate fragments of a once unitary area of human activity, divorced at an unknown date by erosion eventually forming the deep depression between them. The stone spreads and occasional worked flints in the deflation hollows represent the sole surviving, but totally redeposited, component of the buried soil and any associated cultural activity in the intervening eroded areas.

Finds (Archive report: lithics: 281 - 314; pottery: 315 - 340)

The lithic material from this area (Table 3) is generally similar in character to the material from Site C2 and does not warrant detailed discussion.

281 Hammerstone; roughly circular plan; plano-convex cross-section; hollows of damage in the centre of each face; 78:61:37mm (Fig. 11).

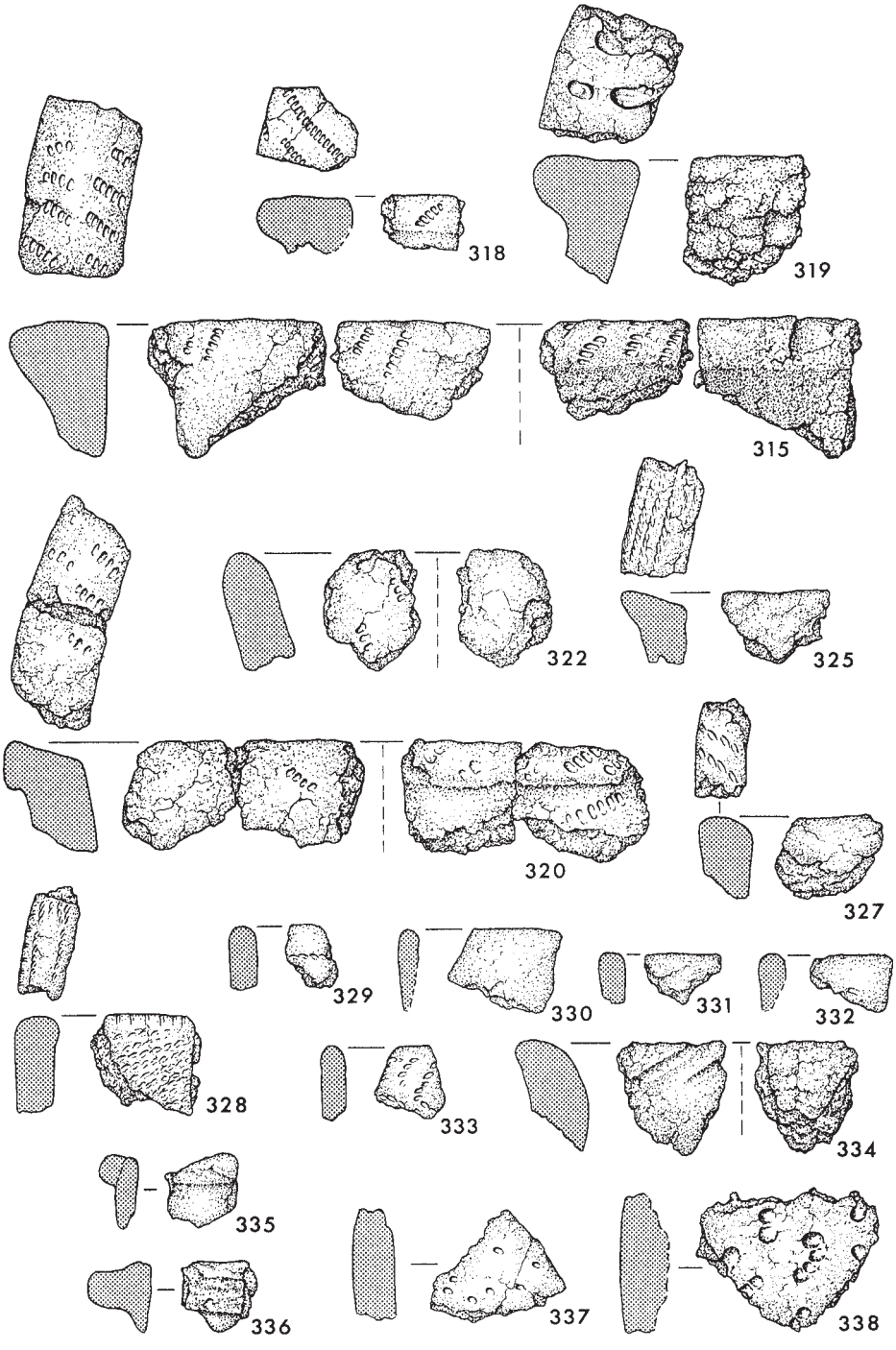

Figure 25 Pottery from Site E.Scale 1:2.

Pottery (Fig. 25) by T G Cowie

Introduction

Approximately 101 sherds and fragments and over 130 crumbs of pottery were recovered from Site E; the condition and form of the material compares generally with that from Site C2, but this is considered more fully below. The published catalogue includes sherds identified as belonging to a minimum of 17 vessels but most are represented by single rim sherds or fragments, there are few instances of joining sherds. The catalogue also includes a representative selection of body sherds which cannot be attributed to specific vessels.

Form

The absence of sherds from the lower profiles of the vessels again means that their proportions and sizes are for the most part indeterminate, and classification of form is largely dependent on rim morphology. Four main categories can be recognised:

a. heavy, upright externally expanded rims with flattened or slightly convex rim tops;

b. everted, internally bevelled rims;

c. upright or slightly flaring vessels with simple (flattened or rounded) or slightly moulded rims;

d. miscellaneous.

Heavy, externally expanded rims include 315, 318 - 320 and probably 316 - 317 and 321, though there is some variation within this group. 319, for example, has a more inturned rim than the others, while 320 has a distinctive squared external moulding. Indeed, on small sherds, or fragments where surfaces may be wanting, the precise orientation of the rim is uncertain. The groups distinguished should not therefore, be treated as inflexible, but rather as loose classes for the purposes of comparison and discussion. This cautionary note is particularly relevant in the case of the internally bevelled rims, 325 - 326 and possibly 322 and 324 which are represented by small or fragmentary pieces of uncertain orientation. The upright, or slightly flaring,-thin-walled vessels represented by 329 - 332, and possibly 333, form a more coherent group, sharing slightly flattened or rounded, simple rims and compact fabrics (see below). Relatively upright upper profiles also characterise the two vessels represented by 327 - 328, though in these cases the rather thicker rims have been slightly moulded (without the addition of further clay) and ornamented around the lip. One everted rim (334) is present in the assemblage, as well as a number of indeterminate fragments which cannot be attributed to a particular type. Finally, mention may be made of two lug fragments (335 - 336), which unfortunately cannot be attributed to particular vessels. Apart from two possible shoulder fragments (337, 339) these are the only pieces other than rims with recognisable formal features.

Within this small assemblage of pottery there is thus some diversity of form: in the absence of reconstructible profiles, the precise types of vessel are uncertain, but the heavy rims suggest predominantly deep, weighty, relatively straight-sided bowls, though lighter bowls with upright, simple or only lightly moulded, rims are also well represented.

Fabric

The range of fabrics represented in the material from Site E is similar to that on Site C2, with the majority of pieces characterised by a fairly hard fine clay matrix tempered with more or less profuse grits and grog. Nevertheless, whereas on Site C2 only a handful of sherds stood out as possessing exceptional fabrics, on Site E a higher proportion of sherds possess a more compact, slightly sandier fabric, a difference that is reasonably well matched by typological distinctions, as noted above with special reference to the group of thin-walled vessels, 329 - 333. Significantly perhaps, the two lug fragments (335 - 336), and an unassigned shoulder sherd (339), also belong to this fabric group.

Decoration

The decoration of the vessels provides further contrast between Sites E and C2: not only is the range of techniques more restricted, but also the decoration of vessels is more limited (assuming that the available decorative repertoire is reflected). Thus several of the seventeen vessels do not have rim decoration, whereas all the recognisable C2 rims were decorated. Twisted cord and maggot impressions are the only common decorative techniques, occurring on a total of twelve of the seventeen vessels. Maggot impressions occur on four of the five externally expanded rims, 315, 318, 320 - 321 and on the supposed internal bevels of 322 and 324.

Twisted cord impressions are used less formally than on Site C2, occurring on a true bevel only once (325), and otherwise found on rim tops (327 - 328 and ?323), and on external surfaces (328 - 329, and probably 333). 'Jabbed' and 'stamped' impressions are also present, on the heavy rim of 319, on the ?bevelled rim fragments, 326, and, possibly, 322. The sole everted rim, 334 is decorated with deep slashes or grooves on its internal surface. The range and extent of decoration applied to body sherds is also restricted, and includes only occasional maggot impressions, haphazard bone-end impressions (338) or indeterminate jabs (337, 340).

There is thus a marked absence of a whole range of techniques noted in the material from Site C2: not only are rarer elements such as stamped comb or jab-and-drag impressions unrepresented, but also some more common techniques such as 'incision' and fingernail impression.

Condition and Context

Although a smaller proportion of the pottery showed the effects of burning, the material from Site E was recovered from a broadly comparable context to that on Site C2 - a spread of stones at the base of the buried soil - suggesting that similar circumstances of deposition may have occurred on both locations. The size range of the individual pieces in the assemblage is comparable to that on Site C2.

There is no excessive abrasion on the sherds to suggest prolonged exposure to wind scour or surface movement; thus the removal, presumably from a domestic context, disposal and burial of the pottery probably all took place within a relatively short time.

Catalogue (Figure 25)

315 Rim sherds from vessel with heavy upright externally expanded rim and flattened/slightly convex top; diameter ?300mm - 360mm; maggot impressions.

318 Rim sherd, possibly from vessel with flat-topped externally expanded rim; maggot impressions.

319 Rim sherd probably from vessel with upright flat-topped externally expanded rim; diameter: >250mm; deep oval jabs.

320 Rim sherds probably from a vessel with slight internal bevel or slightly flaring with flat top (drawn as former); squared external moulding (made by rolling out and applying wedge of clay); diameter: >300mm; maggot impressions.

322 Fragment of rim bevel or possibly body (drawn as former); maggot impressions and jab.

325 Rim sherd of vessel with everted internally bevelled rim; diameter: 200mm - 300mm; cord impressions.

327 Rim sherd probably from upright vessel with slightly convex internal bevel; diameter: 200mm - 250mm; cord impressions.

328 Rim sherd of vessel with upright, flattened and very slightly inturned rim; diameter: 200mm - 250mm; cord and fingernail impressions.

329 Fragment of upright rim with flattened top; ?cord impressions.

330 Rim sherd of vessel with upright flattened (or possibly very slightly flared) rim; diameter: 150mm - 200mm; undecorated.

331 - 332 Rim fragments possibly from same vessel, with upright slightly rounded rim; undecorated.

333 Rim fragment, either from vessel with upright rounded rim or possibly fragment of very abraded internal bevel (drawn as former); cord impressions.

334 Rim sherd of vessel with slightly 'hooked' everted rim with convex internal 'bevel' surface; diameter: >200mm; oblique channels on internal surface.

335 Possible lug fragment?

336 Lug

337 Body sherds, possibly from shoulder; oval jabs.

338 Body sherd; bone-end impressions.

Site F (Fig. 8)

Immediately N of Site C2 preliminary inspection of the dunes revealed an exposure of buried soil at approximately 17.0m OD in the SW face of a knoll overlooking the eroded depression at the foot of the 'High Torr'. Excavation revealed that, as in the case of Sites A, C1 and C2, the intact old land surface had been considerably reduced by earlier erosion episodes to an elongated strip about 15m long by less than 3m in average width. This was cleared manually to the underlying fossil subsoil but no archaeological features were located. A scatter of flakes, a hammerstone and one undecorated rim sherd (possibly of somewhat earlier Neolithic date) were retrieved from the buried soil.

Finds (Archive report: lithics: 341 - 348; pottery: 349)

The lithic material from this area is summarised in Table 3.

341 Hammerstone, oval plan; elongated oval cross-section; hollows of damage in the centre of each face, and on the edge at one end; 75:49:22mm. (Fig. 11).

Sites G, H, K and Machine Cut Sections 1 - 7 (Fig. 8)

As noted in the introduction, the dune area is today largely quiescent and the topography of the area may not have changed appreciably for many years. The absence of erosion did not help fieldwork and consequently an amount of speculative sectioning and stripping of dunes was carried out, largely by machine, in the hope of locating areas worthy of more detailed examination.

Machine sections

Mechanically excavated sections were cut into the dunes at the points indicated on the survey map (Fig. 8), with the aim of ascertaining the presence or absence of buried soil horizon(s). This showed clearly that there was little survival of intact old land surface in the more lightly vegetated dunes and ridges linking the more mature dunes. In these areas much of the earlier dune formation has been redeposited and any ancient land surface(s) have been corrupted. This, in turn, has led to the destruction of any archaeological features and the dispersal or conflation of any remains once contained within them. The stone scatters on the blow-out floors are the residual product of this process (marked S on Fig. 8).

Where intact fossil surfaces survived, however, the machine sections revealed a variable amount of wind-blown sand capping a buried soil profile conforming, in most cases, to a humus-iron podzol classification. Usually, only one major buried soil profile was observed above the present-day water-

table. Although in some instances there were indications of other, more ephemeral, soil horizons these appear mainly to have consisted of little more than phases of stability once the processes of inundation and redeposition of the main buried soil were under way.

Three areas (Sites G, H and K) were stripped by machine on a larger scale in order to examine stretches of the buried soil in locations away from the known productive sites in the vicinity of the 'High Torr' and 'Flint Howe'.

Site G

A sizeable area was opened up in the grass-and-heather covered depression to the south of the 'High Torr' in an attempt to locate the old land surface in an area where surface indications of its presence were wanting. The elevation of the buried soil horizon at Sites D and E suggested that the fossil surface might survive intact below the present day ground surface of the depression, and this proved to be so. The upper surface of the podzol formation was located at an elevation of between approximately 13.25m and 15.0m OD (ie up to more than 2m below present ground level) and the buried surface sloped gently downwards from south to north. The area was exposed by machine, but, though a few finds were recovered from the lower part of the soil profile, no archaeological features were noted. The buried soil here conformed to Bown's 'peaty podzol' classification (below), and must reflect the previous existence of a slack or depression in the fossil terrain. The area that could be investigated was limited, but the presence of uncontexted finds and relative proximity of the site to known productive areas, suggest that this area might repay further examination in the event of any westward extension to the range (cf Site D).

Finds (Archive report: lithics: 350 - 356; pottery: 357)

The few finds were recovered from the buried soil. The lithic material is summarised in Table 3. The pottery included two joining sherds and a fragment from the shoulder of an all-over-cord beaker, and also a featureless crumb of the very micaceous fabric characteristic of the pottery from Site J.

Site H

Two areas, totalling several hundred square metres, were investigated by machine near the northern boundary of the area designated as 'threatened' (Fig. 8). Both lay on well-vegetated ridges separated by deep eroded depressions; in each case, a buried podzol horizon could be seen in the exposed ridge faces at elevations ranging from about 14.0m to over 20m OD. As elsewhere, fragments of more ephemeral stabilised surfaces overlay what appeared to be the main buried soil formation, but their antiquity is uncertain.

On Site H1, the buried soil was seen to have been subject to earlier erosion resulting in the truncation of the surviving surfaces. The only features of interest were a series of parallel ridges, about 2m broad, on the buried soil surface, with yellow wind-deposited sand filling the intervening depressions. At first, these were thought to be natural, but their regularity and the presence of similar ridges on Site E suggested that they may be traces of cultivation plots on top of, and affecting only the upper part of, the buried soil. Apart from these, no features of archaeological interest were revealed, a dearth reinforced by the complete absence of finds.

Inspection of a further area, Site H2 revealed an undisturbed buried podzol profile and no archaeological features were noted.

Site K

Preliminary fieldwork revealed an exposure of buried soil at an elevation of about 16m OD in a knoll on the eastern margin of the threatened area (Fig. 8) (cf Idle and Martin 1975, 8). As this was the sole exposure on the eastern margin of the development area, and in view of its proximity to High

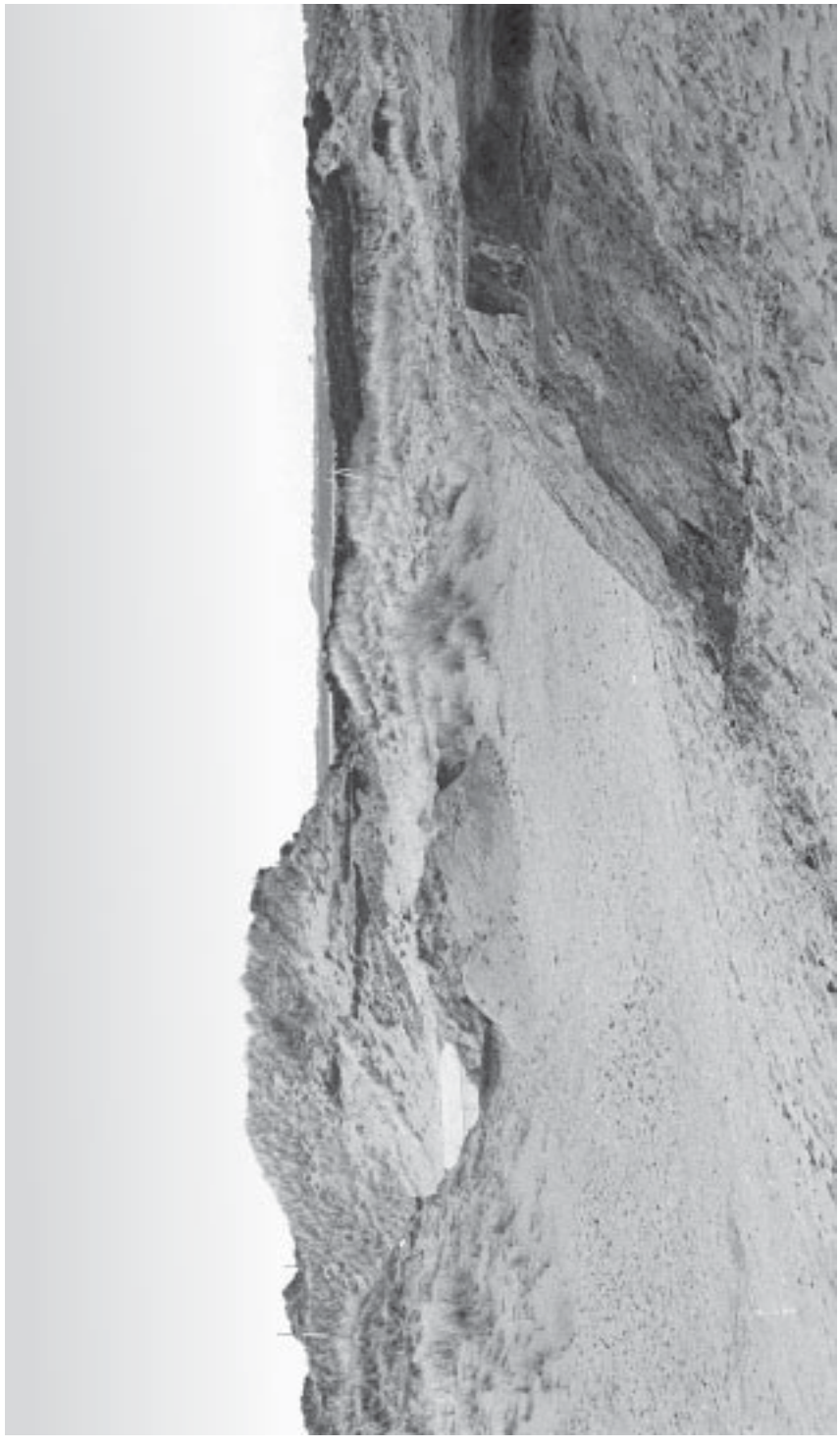

Figure 26 View of Flint Howe (Site J) from the SE, with Site F in the right foreground.

Torrs Farm, the knoll was machined in order to inspect the surviving portion of buried soil. However, the fragment of old land surface which survived presented a wholly natural podzol profile devoid of any evidence of human activity.

Site J (Figs. 8, 26 - 30)

Site J was located on the NW margin of the threatened area: prior to excavation a thick dark band of buried soil could be traced at an elevation of between 17.7m and 18.2m OD in the S facing side of a massive, well-vegetated and clearly mature dune (Fig. 26). This appeared to correspond with the dune known as Flint Howe recorded on Ordnance Survey maps of the area, and was identified as such by Mr W F Cormack and by the late Mr R McHaffie of Drummore, both fieldworkers with a long-standing knowledge of Torrs Warren. Owing to erosion, the dune had acquired a roughly parabolic shape, and at the eastern end the surviving upper portion tapered to a point at which the buried soil was more accessible for excavation.

The height of the dune, the amount of overburden and the exposed situation on the northern margin of the high dune belt precluded the use of machine for large-scale excavation. Instead, a series of narrow strips totalling c.14m in length were investigated manually along the S and N sides of the dune, and at the tapered end it was possible to open a larger area, about 6m by 4.5m.

The archaeological features investigated may best be described with reference to the section of the dune face (Fig. 27). The amount of sterile overburden removed varied in thickness from less than a metre to more than 2m, and it consisted of a series of laminated deposits of orange-yellow wind-blown sand (layer (1) on the section).

Upper soil formation with traces of a hearth or pyre

Approximately 0.15m above the main buried soil was layer (2), a uniform brown sand, apparently another soil formation, or at least a period of vegetational stability at some time after the inundation of the main old land surface by deposits of mobile sand (3).

A scatter of charcoal flecks and two possible stake holes were detected in the section at the base of this ‘upper’ soil formation. The excavated area was therefore extended westwards in an attempt to examine this feature. The charcoal scatter proved to derive from a small hearth c.0.75m - 0.8m in diameter, with a spread of burnt bone and charcoal fragments (mainly oak and hazel). The fill of the hearth comprised reddish-brown sand overlying sand discoloured to salmon pink by heat action. The deposit lay in a slight depression in the surface of the main buried soil (layer (4)) suggesting that the

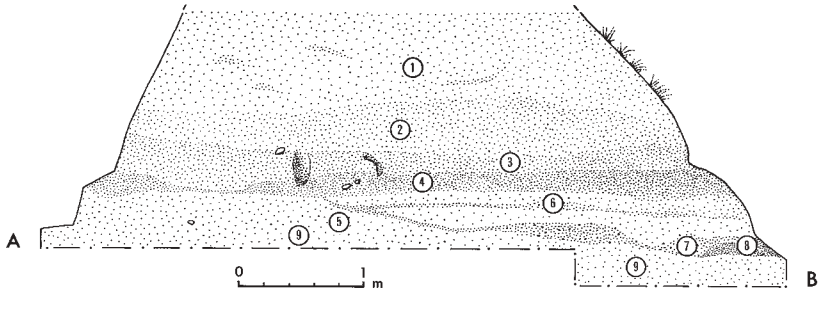

Figure 27 Site J: section through the face of the dune.

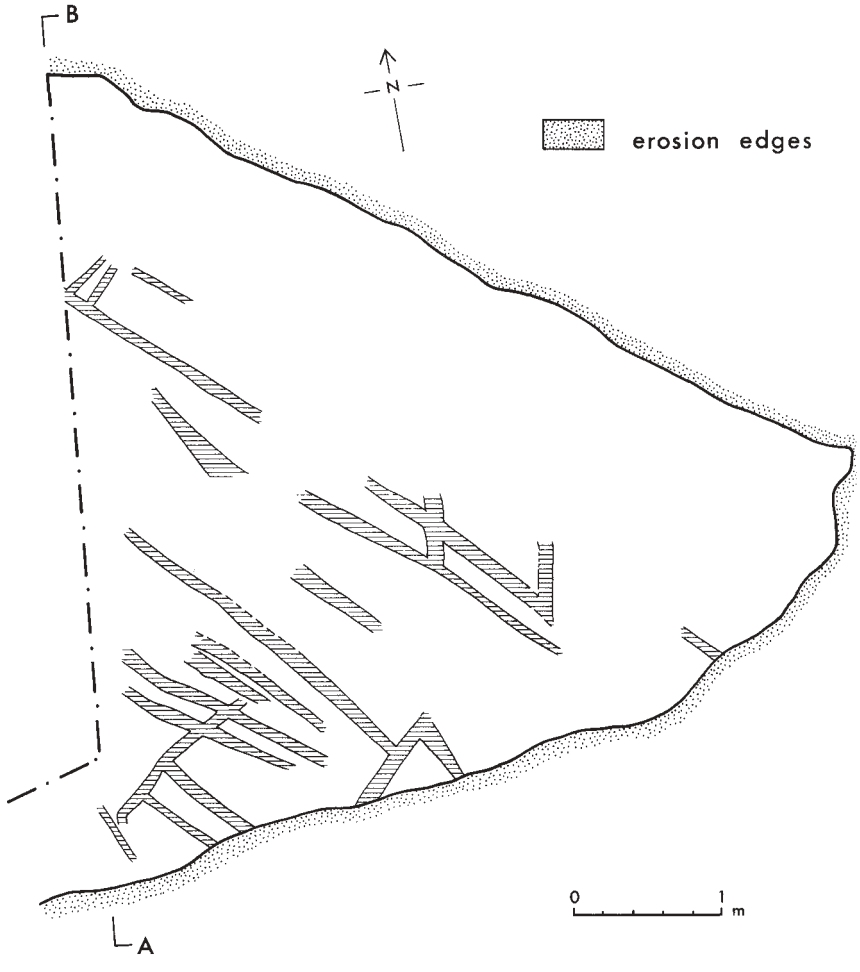

Figure 28 Plan of cultivation marks recorded on Site J1.

fire(s) had been set in a shallow hearth scooped through the wind-blown sand, just into the underlying land surface. A series of patches of dark sand with charcoal specks appeared to surround the fire-place, possibly the sites of stake-holes and suggestive of the remains of a flimsy windbreak or fire-screen.

About 110g of burnt bone from the upper soil surface round the hearth was identified by Mr C B Denston as a mixture of human and animal. The human remains comprised both adult and immature bones, but owing to the small number of fragments, it is uncertain whether more than one adult was present. However, the presence of at least two immature individuals is suggested: one, a child of about eight years; the other, an infant not older than six months. The animal bones derived from at least two animals, of uncertain species, though one bone would be appropriate perhaps to sheep or pig.

Unfortunately, extension of this area was not possible. There were no artefacts, and so the date and circumstances of this intriguing evidence for human activity remain uncertain.

The layer of wind-deposited sand (3) separating this upper soil horizon from the main body of the buried soil was c.0.15m in thickness at the section but increased considerably to the west. This variation cannot, however, be used as a guide to the duration or severity of the erosion, for wind deposits are notoriously mobile (cf Crawford 1978, 60).

Buried horizons such as this can only be securely dated therefore by undisturbed finds or organic deposits; stray finds from the surface can only provide, at best, an unreliable *terminus ante quem* for the date of formation of a soil (they may represent artefacts that have accumulated as a result of the erosion of much later soil horizons).

Cultivation traces

The major buried soil formation at Site J bore a similar profile to that revealed on Site E, but here the evidence of human interference was beyond doubt, as several sets of cultivation marks were revealed in the upper part of the buried soil. In one of the cleared strips (on the north-facing side of the dune), close-set parallel linear ridges (oriented 100°±5°) were revealed in the fossil land surface (cf layer (4)), where wind-blown sand had filled the intervening depressions. Otherwise, the marks could only be discerned once the upper part of the soil profile had been removed, showing up as slightly darker grey lines against the mottled orange-brown sand (5). These marks were present, if only fragmentarily, right across Site J. They varied in width from 0.05m to 0.12m and, though discontinuous, some reached nearly 4m in length (Fig. 28). They were not well defined in vertical section and merged with the layer into which they were scored. Depth could not, therefore, be ascertained accurately but averaged approximately 0.05m. The cultivation traces were oriented as follows: of twenty-five which could be measured, nine were set at 140°±5°; seven at 130°±5°; five at 100°±5°; and the rest occurred at 10°, 37°, 45° and 64°. It was impossible to tell whether or not cross-ploughing was represented, or merely traces that had been worked in different directions in different seasons. The date of the marks is also uncertain and will be considered in the general discussion.

The 'hollow'

At one point on the very edge of Site J, the fragmentary remains of a further subsoil 'hollow' were revealed. This had been dug or formed in the fossil subsoil (the iron-enriched orange sand underlying the old land surface). Unfortunately, owing to erosion, aggravated by animal burrowing, only a narrow chord survived for inspection, and the original size and depth are unknown. The main section (Fig. 27) revealed only a slight dip to the W. The surviving area of the 'hollow' was c.2.6 by c.0.7m and the maximum depth was 0.55m.

Within the feature, three main layers could be discerned. Towards the edges, the fill consisted of silvery-brown sand, but the bulk of the fill comprised a chocolate brown sand (6), 0.2m - 0.3m thick, containing heat-fractured stone and finds of flint, mudstone flakes and pottery, much of which showed the effects of severe burning (though apparently not *in situ,* at least in the surviving portion of the feature). Underlying this deposit was a basal fill of darker sand (7), within which were several darker patches of charcoal-flecked, blackened sand (8) up to 0.08m thick and possibly representing trampled material on the base of the 'hollow'. No other features were found in association with the 'hollow'.

Whatever its original function, the 'hollow' appears to have been filled with soil and occupation debris. An unusually high proportion of the lithics and pottery appear to have been burnt or scorched (apparently not *in situ*) and it is possible that these represent accidentally fire-damaged artefacts discarded along with other material in the process of infilling. As in the case of the 'hollow' on Site C2, the wider context of this feature remains unknown.

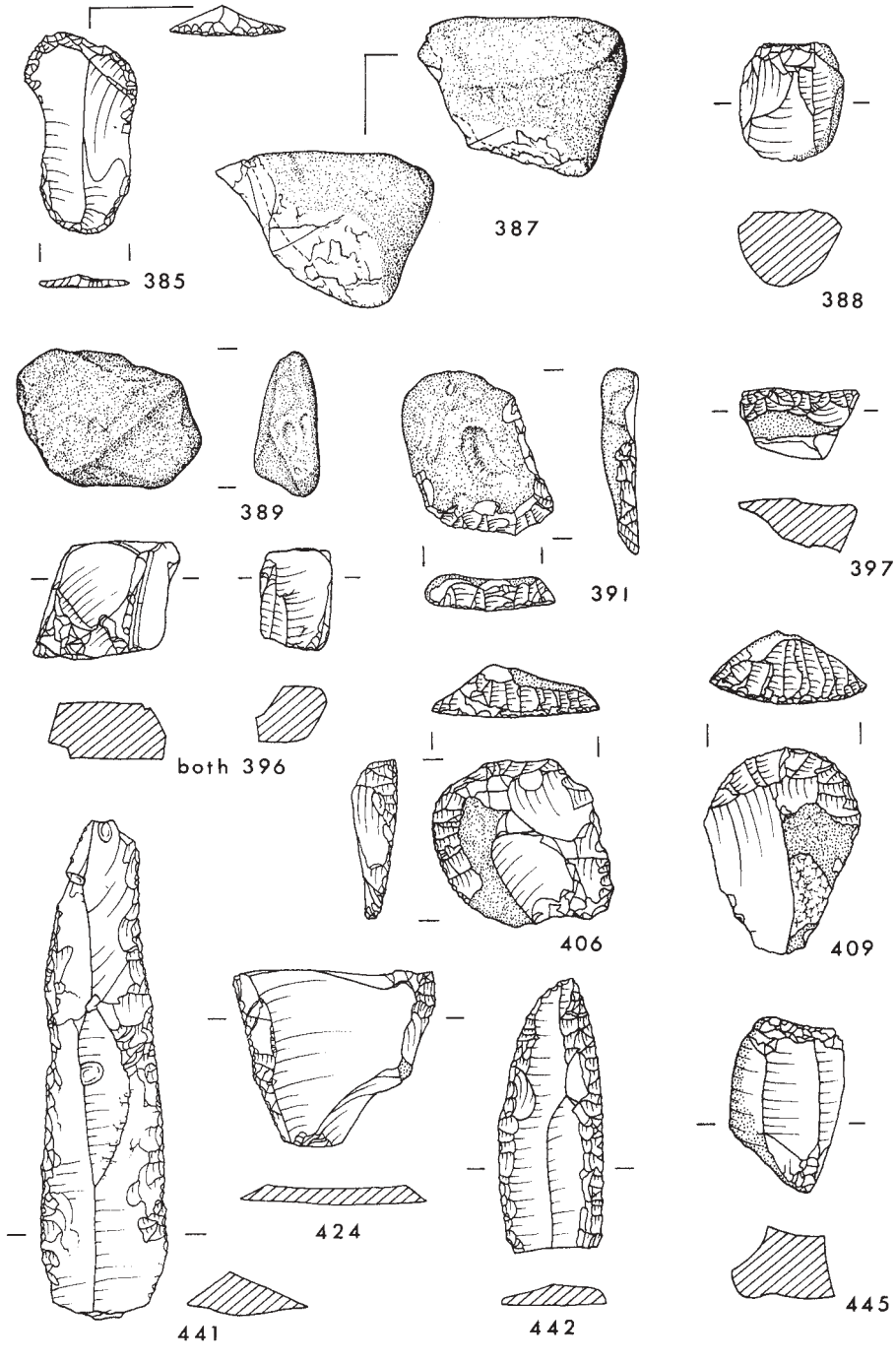

Figure 29 Lithic material from Site J.Scale 2:3.

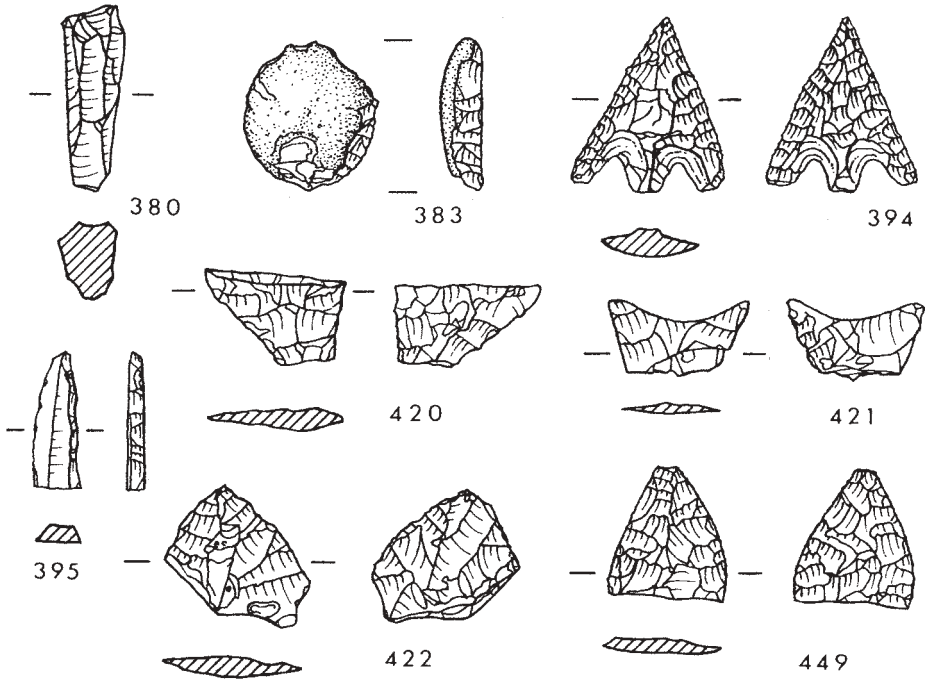

Figure 30 Lithic material from Site J. Scale 1:1.

Finds (Archive report: lithics: 358 - 466; pottery: 467 - 496)

Lithic assemblage (Table 4; Figs. 29 - 30) by C R Wickham-Jones

Raw Materials

As in Site C2, the main raw material used for flaked stone tools was flint. Flint could be obtained locally in the form of waterworn pebble nodules, and most of the tools could have been made from these. There are, however, at least three pieces that seem to be made of imported flint (424, 441, 442), while several scrapers (eg 409) are larger than most of the surviving complete nodules (though it may be argued that larger nodules would be unrepresented in a worked assemblage). The source of the imported flint is unknown, but the geographical location of Luce Sands makes Antrim flint an obvious possibility. As only a small number of tools are made of this flint it seems that it did not play an important part in the lithic technology of the site.

Other raw materials include mudstone, and small quantities of chert (eg 380) and coarse grained stone. There are several pebbles and chips of quartz but these appear to be natural. All probably derive from local sources.

Knapping Techniques

The assemblage includes examples of pebble nodules, both complete (eg 389) and split (eg 387), and, as in Site C2, some show evidence of earlier flaking (eg 395, 445) indicating the re-use of previously worked flints. It is tempting to infer that beach pebbles were not always plentiful so that the knappers had at times to turn to old worked pieces large enough to permit further flaking.

The frequency with which 'cores' are simply split pebbles with a couple of removals points to the difficulties of working an intractable raw material. Most cores have only one platform with flakes removed from only one side (eg 388), the other usually retaining its original cortex. Only one core exists with two platforms, which are at 90° to each other. The last flakes removed from a core are generally small and this, together with the difficulties of removal shown by severe damage at the platform edge (as on 388) must point to the reasons for core abandonment.

Working with raw material as limited in nodule size as this flint, imposed limitations on the resulting industry. One of the most immediate effects lies in the disproportionately large number of secondary flakes, as it was almost impossible to obtain flakes with all the cortex removed. Out of the 107 waste flakes from the 'hollow', 59 (55%) were secondary, 20 (19%) were primary, and 28 (26%) were inner flakes. Examination of the retouched tools shows a degree of selection as the number made on inner flakes rises to 16 (47%) while 12 (35%) are upon secondary flakes and 6 (18%) on primary flakes.

With regard to removal, most flakes have prominent bulbs of percussion, indicating hard-hammer technique though there is also evidence, in the form of diffuse bulbs, for the use of soft-hammer and punch technique. There is also evidence for bipolar flaking, and this, together with indirect percussion (the use of a punch), would be well suited to the working of a pebble industry.

Condition

Many pieces, both tools and waste, appear to show the effects of uncontrolled exposure of flint to high temperatures. Unlike the assemblage from Site C2, where it was argued that a proportion of the flint showed evidence of deliberate heat pre-treatment, none of the pieces from the Site J 'hollow' had the characteristic shiny flaking scars produced by this technique. However, the heating does not appear to have been random, as 79% of the tools from the 'hollow' show heat damage in contrast with 39% of the waste. The explanation for this bias is unclear, but it is possible that a particular kit of tools and flakes was accidentally damaged by fire, and then discarded along with other material into the 'hollow'. This suggestion is given some support by the scorched condition of most of the pottery from the 'hollow'.

Tools

Even discounting those tools possibly made of imported flint, it seems that larger and inner flakes were selected for secondary working. Most of the waste flakes are chunky, and few bear macroscopic signs of use. Nevertheless, without a detailed microscopic analysis, the possibility of unrecognised, unretouched tools cannot be ignored.

The recognisable implements may be divided into three categories, of which scrapers form the largest with a total of twenty-five, nineteen from the 'hollow'. Both end (409) and side (383) scrapers are found as well as implements with the two combined (eg 406). However, no great typological or functional importance can necessarily be attached to the position of the worked edge. The most common scraper is made on a fairly massive flake, with or without original cortex, with a deeply retouched convex scraping edge at the distal end, and an edge angle varying from 66° - 76°. Several are broken so that only the distal end remains. The break may be from use, though it occurs at varying intervals along the length of the tool, and in most cases the remaining portion of the scraper is still sizeable when compared with unbroken examples.

The scrapers tend to be larger than most of the other tools and waste. It is possible that they too were made on imported flint but larger blanks may have been selected, or pebble nodules themselves may have been considered as blanks and flakes removed as necessary. This would account for the fact that a larger proportion of scrapers are made on 'inner' flakes and it would be a method particularly suited to a pebble-based industry. The retouch of the scraper edge is generally shallow and irregular

and usually mashed at the edge by macroscopic damage, which may be due to use. Without a detailed functional analysis, however, little can be said regarding the function of the tools.

Five broken pieces were recovered from Site J that would conventionally be termed leaf-shaped arrowheads (they may have been used for other functions). Four were found in the fill of the 'hollow', the fifth in a buried soil horizon. They include three distal points (371, 422, 449) and two proximal ends (420, 421). Each has been finely worked to less than 5mm thickness, but unfortunately no complete example has survived, preventing accurate classification.

Two blade tools are present in the assemblage from the 'hollow' (441 - 442). Though one is broken and the other practically complete, they are similar to each other. Both are made on thick flakes with shallow irregular retouch along both the left and right sides which converge to a blunt point at the distal end. A third blade tool (395) is of a different type: much smaller and with different retouch (smaller, steeper and more regular) on one side of the blade only. This would seem to be a residual microlith from Mesolithic occupation of the area.

Eight miscellaneous retouched tools are present in the assemblage from the 'hollow'. Seven (including 412, 413, 419, 424, 427, 440), are broken so that the tool form is unrecognisable; the eighth (391) is an irregular tool with no ready parallels. Two further miscellaneous tools (458, 460) were recovered from the buried soil (in two of the smaller excavated strips).

Finally, one barbed and tanged arrowhead (394) was found; this has been finely worked on a thin flake, with fine denticulation on both edges.

Mudstone

Mudstone was presumably available locally, but it is hard to think of a use for such a soft stone. There is one distinct retouched tool: a side scraper, 397, and a few pieces with small areas of retouch; however, most of the mudstone assemblage consists of unaltered flakes and chips. All the pieces have some matt and some vitreous scars, and it is possible that the stone was heated in order to consolidate it and enhance its usefulness. Unfortunately, the paucity of evidence and lack of modern experimental work mean that this remains untested. The scars on the mudstone show bulbs of percussion and often have ripple marks as in flint, indicating that it fractures conchoidally like flint and other siliceous materials. The distribution of worked mudstone from the excavations was strictly limited the only occurrence, apart from Site J, being a single fragment from Site A (Table 1).

Catalogue

The lithic material from Site J is summarised in Tables 4A - 4C. Only those pieces which have been illustrated are catalogued here. (Figs 29 and 30)

Table 4A: summary of lithics from Site J[1]

	J1 Main area	**J[2] Minor strips**
Flint		
Unworked waterworn pebbles	8	2
Cores from waterworn pebbles	32	16
Other cores	2	-
Primary flakes	31	13
Secondary flakes	121	51
Inner flakes	25	17
Inner blades	1	-
Tools[3]	14	2
Burnt: cores	1	1
Burnt: primary flakes	10	1
Burnt: secondary flakes	30	9
Burnt: inner flakes	18	6
Burnt: tools	27	-
Total: flint	***320***	***118***
Other flaked stone		
Mudstone	166	-
Quartz	12	2
Chert	2	-
Coarse flaked stone	4	-
Tools	4[4]	-
Total: other flaked stone	***188***	***2***
Overall totals	***508***	***120***

Notes
1. Archive catalogue nos 358-466: see Tables 4B-4C for further details of lithics from Site J1
2 Totals from minor excavated strips combined.
3. Tools: see Table 4C for the categories of tools recovered.
4. Mudstone tools (397-398)

Table 4B: summary of lithics from Site J1[1]

	Main buried soil	Main fill of hollow	Basal deposit in hollow	Total
Flint				
Unworked waterworn pebbles	-	4	2	6
Cores from waterworn pebbles	1	14	-	15
Other cores	-	1	-	1
Primary flakes	2	9	1	12
Secondary flakes	7	25	5	37
Inner flakes	-	10	-	10
Tools[2]	2	3	2	7
Burnt: cores	-	1	-	1
Burnt: primary flakes	-	7	2	9
Burnt: secondary flakes	-	13	1	14
Burnt: inner flakes	-	14	3	17
Burnt: tools	-	19	8	27
Total: flint	***12***	***120***	***24***	***156***
Other flaked stone				
Mudstone	-	122	29	151
Quartz	1	-	-	1
Chert	1	-	-	1
Coarse flaked stone	-	-	3	3
Tools	-	4[3]	-	4
Total: other flaked stone	***2***	***126***	***32***	***160***
Overall totals	***14***	***246***	***56***	***316***

Notes
1. Table does not include unstratified pieces from preliminary cleaning of erosion edges, sections, etc.
2. Tools: see Table 4C for the categories of tools recovered.
3. Includes one mudstone scraper (397) and 3 mudstone flakes with small areas of retouch.

Table 4C: tools from Site J1[1]

	Main buried soil	Main fill of hollow	Basal deposit in hollow	Total
Category				
End scrapers	1	7	4	12
Side scrapers	1	4[2]	-	5
End/side scrapers	-	1	-	1
Other scrapers	-	2	-	2
Leaf-shaped arrowheads / points	-	3	-	3
Barbed-and-tanged arrowheads	-	1	-	1
Miscellaneous retouch[3]	-	8[4]	6[5]	14
Totals	***2***	***26***	***10***	***38***

Notes
1. Table does not include unstratified pieces from preliminary cleaning of erosion edges, sections, etc.
2. Includes one scraper on mudstone flake (397): see Figure 29
3. Includes ?tools where deliberate and 'spontaneous' retouch not distinguishable.
4. Includes 3 mudstone flakes with small areas of retouch.
5. Includes 2 blade tools (441-442): see Figure 29.

(Fig. 29)

385 Inner; grey; distal retouch; small retouch on proximal and sides; waisted; 68°; 41:24:6. End scraper.

387 Core from split waterworn pebble; failed strike; 44:40:27.

388 Core; light grey; single platform; 2 strikes; bipolar; 25:22:16.

389 Example of waterworn flint pebble.

391 Primary; light grey; slightly patinated; retouch proximal and right side; right side concave; p:66°; rt:78°; 32:33:9. Miscellaneous tool.

396 Mudstone; two examples of flaked mudstone.

397 Mudstone; flake; retouch on side; 96°; 27:12:12. Side scraper.

406 Secondary; burnt; crazed and calcined; retouch distal and left; 67°; 33:35:11. End and side scraper.

409 Secondary; dark grey; burnt; crazed and calcined; retouch distal; 71°; 42:33:15. End scraper.

424 Inner; translucent grey; broken; proximal surviving; retouch left, (small) and right (larger); rt:52°, l:32°; 37:41:5. Miscellaneous tool.

441 Inner; blade; cream; burnt; crazed and calcined; lightly patinated; broken; 2 fitting pieces surviving; distal tip removed; retouch right and left sides; rt:30°, l:35°; 100:27:10. Blade tool.

442 Secondary; blade; light grey; slightly corticated; broken; distal surviving; retouch right and left sides to blunt point at distal; rt:61°, l:50°; 55:22:7. Blade tool.

445 Core; grey; slightly corticated; abraded previous flaking; single platform; three strikes; bipolar; 36:25:18.

(Fig. 30)

380 Core; chert; dark grey; two opposing platforms; many strikes; 25:10:9.

383 Primary; grey; broken; proximal surviving; retouch right side; 61°; 18:18:7. Side scraper.

394 Inner; cream; lightly corticated; bifacial retouch; denticulate edges; 23:20:4. Barbed and tanged point.

395 Inner; blade; honey colour; broken; distal surviving; retouch right side; 18:6:3. Retouched blade (microlith).

420 Inner; white; burnt; crazed and calcined; broken; proximal surviving; bifacial retouch; 14:9:4. Bifacial tool (leaf point).

421 Inner; white; burnt; crazed and calcined; broken; proximal surviving; bifacial retouch; 10:18:2. Bifacial tool (leaf point).

422 Inner; white; burnt; crazed and calcined; broken; distal surviving; bifacial retouch; 18:20:3. Bifacial point.

449 Inner; pale grey; broken; distal surviving; bifacial retouch; 17:15:3. Bifacial point.

Pottery (Fig. 31) by T G Cowie

Introduction

Approximately twenty-one sherds and over 300 fragments and crumbs of pottery were recovered from Site J, the majority from the buried soil over, near to or within the fragmentary subsoil 'hollow' (Site J1). The Site J assemblage differs strikingly from Sites C2 and E, both in the proportions of the types of fabrics represented and in the surviving condition of the sherds. The published catalogue includes only those sherds and fragments which retain significant features, plus a representative selection of body sherds.

Form

The published catalogue of sherds recovered from Site J includes material identified as belonging to a minimum of thirteen vessels: these are mostly represented by single small rim sherds, so that details of the proportions and sizes of the vessels are almost entirely wanting. Eleven rims, including all those recovered from the 'hollow' are remarkably homogeneous in respect of form, fabric and condition. Several sherds are only distinguished by minor differences, and most of the rims (Fig. 31), represent a variation on a broadly similar type, namely a fairly upright, externally thickened or expanded form ('club rim'). Catalogue numbers 470 - 475, 477 and 481 all fall into this category, though the overall form of these vessels is uncertain. The exterior of 476 is more squared off, while 481 may have had a slightly more everted upper profile than the others. 469 is an exceptional piece - a small sherd from a vessel with rolled-over rim, but its fabric and condition are indistinguishable from the others. 487 is a body sherd from the shoulder of a vessel - possibly that represented by 470 - and suggests that most sherds could have belonged to simple or slack shouldered bowls.

Part of one everted rounded rim (496), from the buried soil in one of the small excavated strips, has more in common with the assemblages from Site C2 and E: its form, fabric and the presence of decoration set it apart from the main body of sherds from Site J. A very abraded sherd from the rim of a beaker (482), is also exceptional.

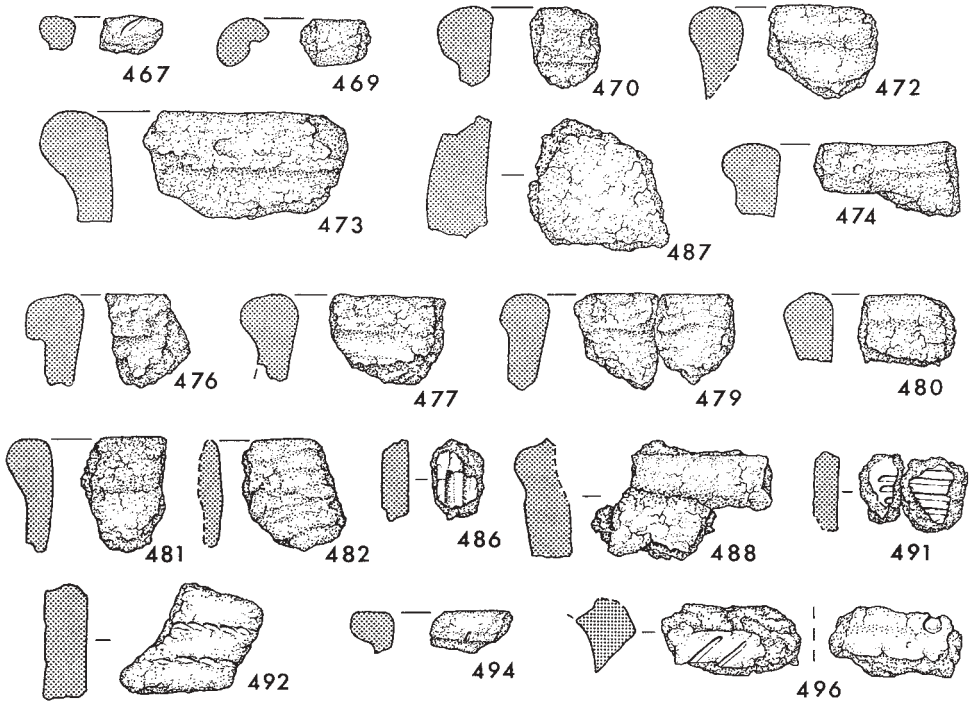

Figure 31 Pottery from Site J.Scale 1:2.

Fabric

As noted, most of the pottery from Site J, possesses a distinctive fabric. On the main area in particular, virtually all the pottery from the subsoil 'hollow' (apart from a few crumbs) has a friable fabric which is profusely tempered with fine inclusions (especially a very pronounced mica content) giving it a consistency not unlike that of an over-fired 'Digestive' biscuit. This micaceous fabric distinguishes most of the Site J material from the pottery recovered from Sites C2 and E, which fell into two principal groups characterised, on the one hand, by sherds with a hard fine clay matrix tempered with grits of variable size and abundance, and, on the other, by a body of sherds (confined to Site E), with a similar, though harder, finer, and grittier composition. Apart from Site J, the sole examples of micaceous fabric from the area were a few crumbs from Site G. In part, the extreme friability of the material is due to the effects of heating, but the fabric is also thinner and more finely tempered than the other pottery groups, and this distinction is reinforced by both differences in form and by the absence of decoration.

Decoration

Only three pieces of micaceous fabric are decorated, again in marked contrast to the assemblages from Sites C2 and E. The small size of the rim fragments, 467, leaves the nature of the decoration in some doubt, but the surviving traces suggest no more than, at most, a simple arrangement of fingernail impressions or nicks around the edge of the rim. Two body sherds 486 and 491 have traces of grooved lines of uncertain orientation, but possibly representing both horizontal and vertical decorative arrangements. The pieces are unfortunately so friable and fragmentary as to leave in doubt both their position on the vessels concerned and the precise nature of the ornament.

Decoration occurs sporadically on some of the material attributed to the other fabric groups: bone (483, 496); twisted cord impressions (492); and incisions (496) all invite closer comparison with the decorated material from Site C2, with which these pieces also share an overall similarity of fabric.

Condition and Context

Most of the pottery recovered from Site J, including the minor areas, consists of the micaceous fabric, most of which was recovered from the 'hollow' (Site J1), or in circumstances which make its attribution to this feature virtually certain. Its friability and frequently scorched appearance suggest the effects of considerable heat, but there were no obvious indications that this had taken place within the surviving area of the 'hollow'. As much of flaked stone assemblage had apparently undergone a similar process of heating, it is possible that the bulk of the artefacts in the 'hollow' represent disposal of ?accidentally fire-damaged material into the feature. The primary function of the 'hollow' remains uncertain.

Most of the remainder of the pottery from Site J has much more in common with the fabric groups represented on Sites C2 and E. It is notable that these fabrics were absent, with the exception of a few indeterminate crumbs, from the 'hollow'. Most were recovered from the body of the main buried soil, and a few, in an even more abraded condition, from its surface. There was clearly a general scatter of fragmentary abraded pottery over a sizeable area of the ancient land surface.

A single eroded rim sherd of Beaker (482) was found in the collapsed edges of the dune at Site J1.

Catalogue (Fig. 31)

467 Rim fragment; rounded, slightly everted rim; traces of ?fingernail jabs.

469 Rim fragment; probably externally 'rolled' rim.

470 Rim sherd; upright externally expanded ('club') rim; possibly decorated, but indeterminate.

472 Rim sherd; upright slightly flattened, externally expanded rim, possibly same vessel as 470.

473 Rim sherd; upright, rounded, externally expanded rim.

474 Rim sherd; upright, externally expanded rim.

476 Rim sherd; upright, flattened, externally expanded.

477 Rim sherd; upright, slightly flattened, externally expanded.

479 Rim sherds; upright, externally expanded.

480 Rim sherds (only one illustrated); probably from same vessel; rounded, upright, externally expanded.

481 Rim sherd; slightly everted, rounded, externally expanded.

482 Rim sherd of beaker; decoration too worn for identification.

486 Two body sherds; one decorated; 'jabbed' grooves.

487 Body sherd; shoulder, possibly same vessel as 470.

488 Body sherd with external cordon.

491 Body fragments; ext: light horizontal grooves or strokes.

492 Body fragment; cord impressions.

494 Rim fragment; probably externally flanged ('rolled out') rim; fingernail impressions on 'flange', possibly accidental.

496 Fragment probably from rim/neck of everted, internally bevelled rim; slashes on 'bevel', bone-end or stick impression on external surface.

Report on charcoal samples (Sites A, C2, E and J) by R P J McCullagh

Table 5 lists the species composition of each sample identified.

Most of the charcoal appears to be unabraded indicating little mechanical damage since it was burnt. Most specimens were from twig wood or small branches (diameters <30mm) and normally fragments rather than complete rods. Only two fragments originated from large pieces of timber: one piece of *Quercus* sp from Site C2 was derived from a timber at least 100mm in diameter, while a fragment of *Quercus* sp from Site J had an estimated minimum diameter of 150mm and was of mature wood.

The species record shows a fairly typical spread of forest trees. Although the predominance of oak and hazel may differ in detail from the pattern of the pollen record for the western seaboard (Birks 1977), selective factors may have biased the assemblage. It is likely that all species were growing within the catchment of the site; the possible occurrence of *Ulmus* sp (elm) from Site J is noteworthy. The sub-family of *Pomoideae* includes a number of species which are very difficult to distinguish on the basis of anatomy, the trees mostly likely to be present would be *Sorbus aucuparia* L (rowan) or *Cretaegus monogyna Jacq* (hawthorn), an assumption based on the modern population distribution (Perring and Waters 1976).

As oak is both abundant and predominant in a majority of samples it was either the most locally abundant or the preferred species (cf the soil micromorphological and pollen analyses). While it is useful as structural timber, the burnt remains are of brushwood and must have been either a by-product of exploitation or burnt waste; its presence on site could reflect its use as fuel, or accidental burning.

Table 5: summary of charcoal identifications

Site	Alnus	Betula	Corylus	Fraxinus	Pomoideae	Prunus	Quercus	Salix	unid	Weight (gms)
A Pit 1			25%				75%			102.6
A Pit 2							100%			11.7
C2 Buried soil (B horizon)			4		1		11	1	4	9.7
C2 Buried soil/top of hollow	2				2		10			10.3
C2 Hollow layer 1			5		1		15		2	9
C2 Hollow layer 2			1				9			6.4
C2 Pit							100%		(peat)	27.9
E Buried soil			6		1		5		1	6.3
E Base of buried soil (feature?)			1 + nut		1		6		2	2.8
J1 Upper buried soil horizon			6				28	2	1 ?ulmus	24.5
J1 Main buried soil	9	2	2		2		16			17.6
J1 Upper fill of hollow							100%		(peat)	19.9
J1 Basal fill of hollow			3 + nut				1			5.3
Total	11	2	30	0	8	0	101	3	10	
%	6.6	1.2	18.8	0	4.8	0	61.6	1.8	6.06	

3. Soils of the buried land surface at Torrs Warren

by C. J. Bown with contributions by
Dr S. E. Durno, J. C. C. Romans and L. Anderson

Introduction

This study of the soils formed part of the investigations carried out in 1977. In deep exposures, both the dunes and the underlying material appeared to be wind-blown sands to a depth of 10m - 15m. In every exposure there was a complex dark layer representing the buried profile of a well-developed soil. Most of the archaeological finds originate from this layer and in one exposure (Site D) it was associated with the remains of a cairn. In some exposures there were one or more bands in which the sands were darkened by humus above this principal layer, but these horizons, like the profiles at the present land surface, indicate very immature soils and weak pedological development.

The complex dark band has various horizons and clearly represents the principal soil in the sequence; together with the buried land surface on which it occurred it is the main concern of this report. The relief of this former surface appears to have been undulating, but both smoother and less irregular than the present surface.

Soil types

The character of the layer varies in different exposures, and two closely related soil types have been recognised and classified according to the system followed by the Scottish Soil Survey (Bown 1973): a humus-iron podzol, which is the more extensive; and a peaty podzol present in a few exposures only (see also Bown et al 1982, 103 - 104).

See Appendix 1 for soil profile descriptions.

Humus-iron Podzol (Profile 1A)

In most exposures the humus-iron podzol comprises a very dark brown or black humose sand layer, the remains of a former horizon of raw humus accumulation, or H horizon, on the buried surface (Fig. 32). Below this is a layer of grey sand, the A_2 horizon, from which particle coatings and weathering products have been leached. The lower boundary of the A_2 horizon is irregular and wavy and the grey sand changes abruptly into the dark reddish-brown sand of the $B_{2\text{-}1}$ horizon. In some cases the materials along the boundary are partially cemented to form a weak discontinuous iron pan. The B horizons are characterised by the accumulation of weathering products, some formed in the horizon itself and others redeposited after leaching from the surface layers. The upper of these dark reddish brown layers, the $B_{2\text{-}1}$ horizon, is enriched with secondary or redeposited organic matter, the dark colour of which masks the bright colours of the ferric oxides of iron. The amount of secondary organic matter declines in the $B_{2\text{-}2}$ horizon and the bright colours of the ferruginous weathering products are apparent. The B_3 horizon is transitional in character to unaltered sand but the brown and yellowish brown colours indicate some accumulation of ferric weathering products. When the soil occurs in elevated positions and has been subjected to prolonged drying out, the B horizons are hard and appear to be cemented by the organic and inorganic weathering products. At about 70cm - 90cm below the upper boundary of the organic accumulation in the H layer the effects of sub-aerial weathering and soil formation can no longer be detected and the light brown colours of the wind-blown sand continue without further change to the base of the exposure.

Peaty Podzol (Profile 2A)

In some positions that were low lying on the former land surface peaty podzol profiles have been identified. The upper horizon of the soil is a well developed peaty layer which retains moisture and in the buried profiles has led to the formation of ochreous mottling and gley features in the sand overburden. The A_{2g} horizons usually present in peaty podzol soils could not be identified in the profiles examined, probably because of invasion and masking by humus migrating from the H layer. The peaty horizon therefore rests directly on the sharply defined, irregular, strong, thin iron pan. Below the iron pan the soil was grey and greyish brown with distinct gley features. The former B horizons, enriched in secondary humus and ferruginous weathering products, seem to have become gleyed under the influence of the moisture retained at high levels by the H horizon. Below this upper part of the B horizon affected by gleying, the B_{2-2} and B_3 horizons show the dark brown, strong brown and yellow brown colours due to the accumulation of organic matter and weathering products as in the similar horizons of the humus-iron podzol profiles. Below the B horizons are the unweathered wind-blown sands that are the parent material of the soil.

Immature Soils

In some sections there are one or more bands of weakly developed, immature soils similar to the present day Links soil occurring at the surface. These soils probably represent land surfaces that existed for relatively short periods after the burial of the principal land surface and prior to subsequent burial by further accretions of wind-blown sand. The present Links soil has a very shallow layer of humose sand, a mixture of dark coloured raw humus and sand overlying an A horizon in which there is some accumulation of brown organic matter and formation of weak structure but little evidence of weathering or movement of weathering products. This horizon rests directly on the unaltered sands which form the parent material.

Soil Chemistry

The clay and silt contents of these very sandy soils is less than 5%. The base exchange properties are therefore mainly associated with the organic matter which, despite the humose appearance of some horizons, is generally present in low amounts except in the H horizon of the peaty podzol profile where it is 13%. In the H horizons of the humus-iron podzols organic matter content is 3% to 4% and in the A_2 and A_{2g} horizons it is less than 2%, but there is an increase in the B horizons to 2% to 3%, mainly of translocated organic matter. The soils are acid with pH values measured in water of 4.5 to 5.5. Both the base exchange capacity (less than 10me/100g) and the base saturation (generally 25%) of the exchange complex are very low except in the H horizon of the peaty podzol where the exchange capacity is 25me/100g. In all horizons the carbon:nitrogen ratio of the organic matter is wide, as would be expected under acid conditions. The amounts of total phosphorus are very low throughout the profiles and, under the conditions of free natural drainage and accumulation of sesquioxidic weathering products, the availability to plants of this phosphorus is likely to be extremely low.

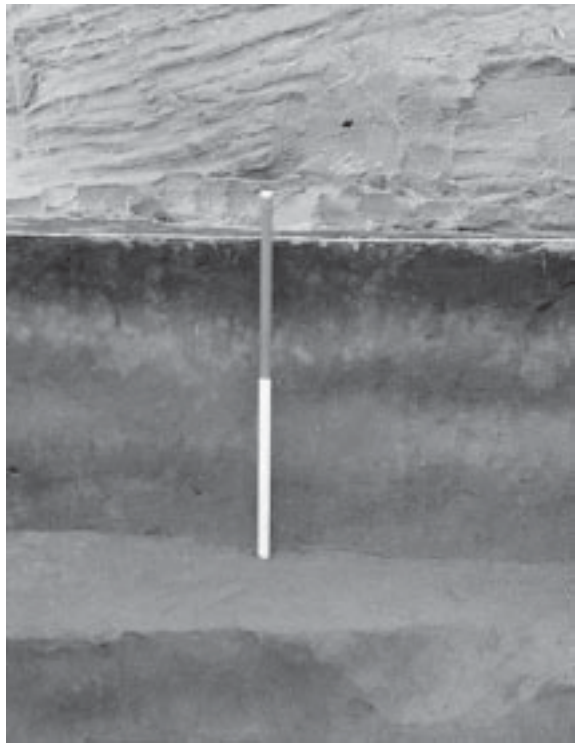

Figure 32 Torrs Warren: humus-iron podzol profile

Pollen Analysis by Dr S E Durno

The most important features of the pollen analysis of the H horizon of the peaty podzol (Table 6) are the low percentage of tree pollen and the high values of *Ericoid, Alnus* and *Betula*. The low proportion of arboreal pollen in the sum total for all pollen, together with the very high frequency of *Ericoid* indicates heath or moorland dominated by *Calluna*. The frequency of *Betula* suggests that the trees grew at no great distance from the site or were possibly scattered over the heath itself. The relative abundance of *Alnus* - not a tree of moorland - indicates that suitably wet habitats existed nearby (eg marsh or the banks of water-courses). The moderate amounts of *Corylus* could well have come from less wet locations adjacent to the moorland.

Although herbaceous pollen is not abundant, some of the taxa recorded may be weeds of cultivation and this may have some significance in the context of human occupation in the relevant area.

Table 6: Pollen analysis of the H horizon, peaty podzol (profile 2A)

Arboreal pollen (A.P.) sum 15% of total

	% A.P.		% A.P.		Herbaceous % A.P.
Betula	30	Ericoid	526	Succisa	7
Pinus	1	Gramineae	8	Potentilla	2
Alnus	57	Cyperaceae	8	Ranunculaceae	1
Ulmus	8	Filicales	17	Plantago lan.	1
Quercus	3	Sphagnum	7	Compositae:	
Fagus	1			Achillea type	2
Coryloid	55			Taraxacum	4

Micromorphological examination of the buried soil surface at Torrs Warren
by J.C.C. Romans and L. Robertson

Soil micromorphological analysis was undertaken on a set of undisturbed samples from both of the buried soil profiles examined by Bown. Twelve samples from the humus-iron profile ranged from 8cm above the buried surface to 100cm below; in the case of the peaty podzol profile, nine samples were collected ranging from 2cm above the buried surface to 77cm below. Further details of the samples, the experimental methods used in preparing the thin-sections, and their characteristics are to be found in the archive report.

The approximate mineral composition of the dune sand was determined from a single 300 grain traverse on the basal slide from each profile. The results were very similar and have been combined in the following table.

Table 7: Mineralogical composition of the dune sand

	%
Quartz	76-80
Lava rock fragments	5-6
Felspars (dominantly plagioclase)	2-3
Zircon	ca 1
Small amounts of pyroxene, biotite and magnetite	< 1
Other rock fragments probably including schist, granite, greywacke and other sediments	10-12

Thin-section examination showed that at both the sampled sites the history of soil profile development was very similar. The initial development of a brown forest soil under mixed deciduous forest is indicated by the presence of small scattered fragments of oak charcoal from 1cm - 13.5cm in the humus-iron podzol profile and from 9.5cm - 21cm in the peaty podzol profile; wood charcoal from other unidentified species widens the spread pattern to 0cm - 26cm and 3.5cm - 35cm respectively.

The surface horizon of the humus-iron podzol profile revealed a pattern of oriented clay deposition in association with oak charcoal. This was very similar to that previously en-

countered in buried soils of the Neolithic period at Dalladies (Romans *et al* 1973) and Fochabers (Romans and Robertson 1975b), where it has been correlated with 'slash and burn' cultivation. The presence of pollen derived from 'weeds of cultivation' (identified by Dr S.E. Durno) in the surface layer of the peaty podzol profile and the finds of cereal grains previously reported from this area by Jessen and Helback (1944, 21) would support this interpretation, but would not exclude the possibility of shallow ploughing to 8cm - 10cm (for further discussion of oriented clay in soil pores see Romans and Robertson 1983, 63 - 64, 69 fig 1b).

Whatever the mechanism, initial woodland clearance is suggested, followed by some recovery indicated by the distribution of finely comminuted wood charcoal to 26cm in the humus-iron podzol profile and 35cm in the peaty podzol profile well below the probable depth of early cultivation and in association with rewelded wormcast material. Eventual soil exhaustion and reversion to heath is indicated by the development of podzolic surface layers. But as the destruction of oriented clay deposited in pores at 14cm in the humus-iron profile was incomplete it is suggested that podzolisation was not very far advanced when the surface was buried by further deposition of wind-blown sand. The presence of tiny wood charcoal fragments in the first few centimetres above the old land surface of the profile may also indicate some local blowout of the heathland surface at this time.

Conclusions by C.J. Bown

The soils of the buried land surface at Torrs Warren are mature with well-differentiated, clearly developed horizons, indicative that this land surface persisted for a period of hundreds or thousands of years. Some reservation must be maintained, however, concerning the age and length of the period of formation of these soils since on such very coarse-textured materials leaching and the development of a podzolic profile can proceed more rapidly than is usually the case on materials with a greater content of fine particle size fractions.

The humus-iron podzol and peaty podzol soils normally develop under a vegetation of coniferous woodland or *Calluna* heath and the results of pollen analysis tend to confirm the existence of the latter on this land surface.

In Scotland, and Britain generally, humus-iron podzol soils generally form under conditions of moderate rainfall, 750mm - 1000mm per annum, rather than under high precipitation.

Both the profile morphology and the chemical analyses suggest that the fertility of these soils was extremely low, and they are unlikely to have yielded crops other than on a very short-term basis, even with a temporary increase in soil nutrient status due to the addition of plant ash or animal manure.

4. Pollen stratigraphy of a dune slack deposit at Torrs Warren in relation to the former land use of the dunes

by Dr Patrick Newell

Introduction

In view of the proposed destruction of the semi-natural habitat within the strip of the dunes due to be affected by the range development, it was decided to extract a peat core from the large slack deposit nearby for pollen analysis. This was carried out by D.E. Robinson and T.G. Cowie in August 1979. From this it was hoped to infer a vegetational history that might provide an environmental setting to enhance the archaeological evidence for former human activity in the area.

The site

Location

The position of the sampling site (NX 132 541) is shown on Fig. 1.

Local stratigraphical context

The stratigraphy and chronology of the Luce Bay coastal deposits are not well understood, but may be summarized briefly.

The transect (see Fig. 7) illustrates the topography of the older dunes, slack and foredunes. The older dunes have been built on arcuate ridges of beach gravel. It seems likely, from what is known of the coastal deposits at Luce Bay and in the Solway to the east, that the raised-beach gravels were laid down during the maximum Post-glacial marine transgression, about 5000 radiocarbon years ago (Jardine 1980, 52). The marine regression from this time eventually exposed the area on which the foredunes subsequently became stabilized (Mather 1979, 325 - 329; but see also Jardine and Morrison 1976, 184, 186).

The slack may owe its position to a trough in the earlier foredunes and this perhaps reflects an undulating gravel surface beneath. The greatest depth of peat found during engineers' investigations here was approximately 3.5m. A hand auger was used to obtain this depth and the peat was thought to overlie sand (DOE 1975).

The results of the pollen and macrofossil analyses, described below, do not indicate any plant community typical of a saline habitat. On the basis of the radiocarbon date from the basal sample (see below), and given that peat had begun to accumulate, it may be inferred that some time before 2850 BP, the dune system was relatively stable at the sampling site and separated from any direct influence of the sea.

Present-day vegetation

The Torrs Warren dune system is mainly acid in reaction, though there is an area of calcareous shell-sand near Ringdoo Point.

The dominant vegetation of the slack deposit in the area sampled is a *Molinia-Myrica* (purple moor grass - bog myrtle) association, with sallows (*Salix cinerea /S. aurita*) growing on the seaward side where drainage is very poor, and, inland, a bracken (*Pteridium aquilinum*) invaded heath which extends into the high dunes. There are drier, bracken-covered ridges within the marshy area. The interest of the vegetation cover today for the interpretation of the pollen analyses lies in the distribution of types roughly parallel to the seaboard. Taking a transect from the road to the sea, including the position of sampling, there is firstly the variety of dunes and sandhills mainly covered by heather (*Calluna vulgaris*) and bracken, then the large slack deposit, and finally the foredunes. The coastal fringe of foredunes has been stabilised by marram (*Ammophila arenaria*) and sand couch-grass (*Elymus farctus*). Between it and the slack, heath has developed in places, and elsewhere there has been colonisation by creeping willow (*Salix repens*).

The broad distribution of local vegetation types and the position of the coring site mean that the composition of the pollen and spore rain will have varied depending on the direction of the prevailing winds. If these were from the south of an approximate SW to NE line drawn through the coring site, catchment of the rain from plants on the foredunes would have been favoured, but when from the other half of the compass, the bias would be toward the high dune and inland vegetation. The slack vegetation would always have made a comparatively high contribution.

The pattern of vegetation found on dunes may be largely dependent on their age, since dune formation tends to proceed towards the sea, with progressive stabilisation of the older dunes. Thus there may be a variety of vegetation types of differing maturity represented in the pollen and spore rain and the area of suitable ground available for plant colonisation may increase (cf Salisbury 1952, 297). In addition, the local level of the water table may be very significant in determining the vegetation established.

Much fuller descriptions of the vegetation may be found in Idle and Martin (1975), Ratcliffe (1977, 30) and a map showing the distribution of broad types is given in Mather (1979, 324; 326; see also Doarks et al 1990).

Methods

Sample Collection and Sediment Description

A single complete set of cores was extracted from the deepest part of the deposit that could be found, using a Russian peat sampler. The top 20cm of loose litter was not sampled.

Simply described, the sediment is a highly decomposed peat or mud, with varying amounts of macroscopic plant remains and fine sand (see Newell 1985, 33 for a detailed sediment description following the method of Troels-Smith 1955).

Radiocarbon Dates

Two radiocarbon dates were obtained:

Lab ref	Depth (cm)	Radiocarbon years (BP)	Mean BP	Calibrated date range BP(@ 2σ)
GU-1399	99.3-110	1480±110	1450	1220-1690
GU-1355	221.5-230	2780±130	2960	2700-3370

From these, assuming the surface of the sediment to be undisturbed and assigned a date of 1980 AD, the following approximate deposition rates (calendar years/cm) were calculated:

	Mean Rate	**Range (from errors @ 2σ)**
1450 BP - 1980 AD	14.2	11.9 - 16.4
2960 BP - 1450 BP	12.4	8.3 - 17.8

In calculating a time-scale, the radiocarbon dates were converted to calendar dates after the method of Clark 1975 (for further discussion see Newell 1985, 26 - 27, 34). Re-calibration of the two radiocarbon dates using current calibration methods gives broadly comparable age ranges, but it has not been practicable to revise the discussion and this should be borne in mind when referring to the estimated durations of the pollen zones. Similarly, the construction of a reliable absolute time-scale is dependent on the availability of multiple radiocarbon dates: this was not possible in this case and the time-scale for the pollen sequence must therefore be treated with due caution (cf Tipping 1994, 3-5, 34-5).

Experimental methods

See Newell 1985, 19 - 26 for full details of the experimental methods (including details of sample preparation; surface samples; sediment description and the pollen and macrofossil analyses).

Presentation of Results

The pollen types of Faegri and Iversen's (1975) key generally describe those identified here and form the headings on the pollen diagrams. Exceptions to this are the Campanulaceae type, which is subdivided into *Campanula* and *Jasione* by Faegri and Iversen, though not by Moore and Webb (1978), who have a *Campanula* type only; and *Rumex crispus*-type which is defined by Birks (1973). Cerealia-type is a Gramineae grain large enough to be considered a possible cereal pollen. Plant nomenclature follows Clapham *et al* 1981.

Zonation of the Pollen Diagram (Fig. 33)

The diagram has been divided into local zones solely on the basis of changes in the pollen stratigraphy (cf West 1970). The following abbreviations are used: TLP = Total Land Pollen; TPS = Total Pollen Sum; AP = Arboreal Pollen, NAP = Non Arboreal Pollen.

Zone TW-1 (230cm - 198.5cm; 2800 BP uncal - 2500 BP uncal/1100 BC - 700 BC)

The zone is characterized by an increase in *Betula* from <5% to <50% (TLP, unless otherwise specified the percentages quoted hereafter have been calculated on this basis). *Quercus* remains approximately constant at >10%, rising very slightly at the top of the zone. As *Calluna* declines there is a rise then fall in the Gramineae, and similarly, *Salix*. The herbs reach a maximum value of c.40% (TPS), with the Gramineae being the principal contributor. Comparatively high values of *Rumex* (5%), and *Pteridium* (10%) are noteworthy, as is the presence of *Anthoceros punctatus*. By the end of the zone, arboreal pollen has reached a value of >70% (TPS).

Zone TW-2 (198.5cm - 144.25cm; 2500 BP uncal - 1900 BP uncal/700 BC - 0 BC)

The high percentage of AP maintains roughly the same level throughout the zone. It is mainly *Quercus*, though there is a slight increase in *Alnus* pollen from the previous zone. *Betula*, by contrast, almost disappears from the record after two samples, as do *Salix* and *Calluna*. Gramineae values

fluctuate a little around 10% and form most of the herb pollen count. The presence of *Potamogeton* continues at low values comparable to the previous zone, apart from the maximum (7%) at 196cm.

Zone TW-3 (144.25cm - 125cm; 1900 BP uncal - 1700 BP uncal/0 BC - 200 AD)

The first spectrum of the zone shows a sharp drop in *Quercus* pollen, but with more *Alnus* and *Gramineae* than in TW-2. Initially, these three types have roughly equal values. Of the herbs, Campanulaceae has its maximum value (9%) and *Plantago lanceolata* is at 4%. This marked change is seen in the summary diagram where, for two samples, total herb pollen is 46% and 28% (TPS). Subsequently, the Gramineae values are lower, then slightly higher, following the trend of the *Quercus* values. The main feature of the zone is the predominance of *Alnus* (75% max) after the first sample. Latterly, as it declines, *Quercus* and Gramineae show a small increase in their values. *Salix* is more prominent than in the previous zone, as is Coryloid pollen, though neither reach the amounts recorded in Zone TW-1. The group of greater values of Filicales spores coincides with the high *Alnus* values. *Hydrocotyle* takes its maximum value (9%) at the level of the last sample in the zone.

Zone TW-4 (125cm - 99.5cm; 1700 BP uncal - 1400 BP uncal/200 AD - 600 AD)

The fall in AP pollen continues as Gramineae rise. The high values of Gramineae and low values of trees characterize the zone, in which compared to TW-3 and TW-5, there are greater values of *Calluna*, Cyperaceae, and *Sphagnum*. The tree pollen is almost uniformly low: *Betula*, *Quercus*, and *Alnus* are all at c.5%, with *Betula* increasing just before the next zone. The highest record of *Melampyrum* (5%) is at 101cm, and of *Sphagnum* (18%) at 105cm.

Zone TW-5 (99.5cm - 44cm; 1400 BP uncal - 600 BP uncal/600 AD - 1400 AD)

Tree pollen regains dominance at the start of the zone, but though the percentage (TPS) is higher here than in TW-2, there are markedly reduced percentages at 69cm and 53.5cm, and the trend is for tree pollen to diminish during the zone. Most of the tree pollen is *Betula*. *Quercus* is always present (rising to 34% at 77cm) and so, to a lesser extent, is *Alnus*. Gramineae values increase towards the end of the zone, with Coryloid contributing 25% at its maximum value, when *Betula* has its lowest percentage in the zone. It later recovers, as Coryloid becomes reduced. *Sphagnum* has a conspicuously high value (17%) at the last level of the zone.

Zone TW-6 (44cm - 0cm; 600 BP uncal - Present/1400 AD - 1980 AD)

The beginning of the zone is drawn before the rise in *Calluna*, Cyperaceae, *Plantago lanceolata, Potentilla*, and the decrease of all tree types. In general there are comparatively high values of *Calluna*, Gramineae, Cyperaceae and the tree pollen values are <15% (TPS) after the first sample. The records of *Plantago lanceolata* (36%), *Lycopodium clavatum* (13%), *Lotus* (5%), are maximum values. Considering the zone as a whole, *Pteridium* is more noticeable than in any previous zone, though remaining fairly low.

Inferred vegetational history and discussion

The pollen sequence from Torrs Warren was found to span only the last 3000 radio carbon years. Although a degree of correlation is possible with the archaeological record of later periods, the inferred vegetational history could not be related directly to the results of the fieldwork undertaken in 1977, where evidence of earlier activity predominated. Nevertheless, the results do have a useful bearing on the environmental background to the earlier prehistory of the area: this aspect is considered in the concluding general discussion.

Figure 34 View of the main area investigated in 1977: Site C2 is in the process of excavation in the foreground, while Sites A and J can be seen in the background.

Previous work in the Luce Sands locality

West Freugh mire

The mire between Torrs Warren and West Freugh Airfield, now largely ploughed over, was examined by Hulme (in Bown and Heslop 1979). The peat stratigraphy and macrofossil content were recorded, but no pollen analysis was carried out.

The West Freugh mire began accumulating on clay and is now at a maximum depth of approximately 2.5m from the undisturbed surface, which is similar to the maximum depths so far recorded in the main peat deposit of the Warren (DOE 1975). The bottom of the mire basin at West Freugh is at a level of 8m (26ft) OD. A general sequence has been deduced from seven sites on the mire and is given as follows.

The pioneer vegetation seems to have been a birch-rush carr, on the basis of the wood and seeds found. The peat is highly decomposed and amorphous (2.8m - 2.0m). Remains of *Molinia caerulea* and sedge then become dominant, associated with a large number of taxa including *Potentilla erecta* and *Juncus* seeds, ericaceous twigs and frequent *Sphagnum* sect. Acutifolia leaves (2.0m - 1.6m). Subsequently, abundant *Sphagna* spp. remains were recorded, with those of *Phragmites australis* (reed) occurring between 1.5m - 1.2m, up to the present day surface, which is dominated by *Calluna, Erica tetralix* (cross-leaved heath),

Eriophorum vaginatum (common cotton-grass, hare's tail), *Myrica gale* and locally *Molinia*. Where the latter two species grow together in abundance, the surface vegetation is comparable to that of the Torrs Warren sampling site.

Other sites in Torrs Warren

Two pollen counts were obtained from humus levels separated by blown sand in connection with the excavation of a hoard of 15th-century coins and other remains (Dimbleby, in Jope and Jope 1959, 278 - 279). The lower layer yielded a result of *Calluna* 33% , with Gramineae c.44% (TLP); the upper, *Calluna* c.45% and Gramineae c.28% (TLP). It was inferred from the context of the coin hoard that the upper heath vegetation had formed prior to c.1495 AD, and that the building remains and other associated finds dated from the later-13th or earlier-14th century AD. The structure may have continued in use into the earlier part of the 15th century (*ibid* 262).

As described above, a pollen count was made by Durno on samples from the humus layer in the peaty podzol profile examined by Bown as part of the 1977 fieldwork. By analogy with the archaeological stratification, this humus layer is at least of Bronze Age date and represents a heath vegetation (the Ericoid pollen is approximately 75% TLP).

In both previous reports, the comment is made that the soils were developed on terrain of a different topography to that seen in the dunes today. Exposures and levelling of the relevant horizons suggested an undulating surface for the earlier profiles, while the humus layers which developed before the beginning of the 16th century were also seen to extend horizontally several hundred feet in several directions from the Jopes' site.

Finally, there is a record of 'peat, brown, fibrous and tree roots', for a depth of 0m - 1.8m, within the slack area, about 320m NE of the sample site (DOE 1975).

Inferred vegetational history

The chief difficulty when inferring past vegetation lies in deciding on the position of the sources of pollen rain. At Torrs Warren it is assumed that most of the pollen has come from the vegetation of the dune system. That is, it is the local and extralocal components of the pollen rain (*sensu* Janssen 1966) that are mostly represented (for further discussion of this problem see Newell 1985).

Reference is made to those species most likely or only likely to have been represented.

Zone TW-1 (230cm - 198.5cm; 2800 BP uncal - 2500 BP uncal/1100 BC - 700 BC)

It was not possible to sample the very bottom of the peat deposit, though it is unlikely that more than 10cm is missing. Peat infilling requires stability and for this the water table must have been relatively high, thus allowing colonisation by plants characteristic of such habitats. Here *Salix repens* may have helped to stabilise the area of peaty sand. *Salix* pollen is likely to be under-represented (cf Bradshaw 1981; also indicated by modern surface samples), so that perhaps willow trees and bushes were growing at the site in addition to the creeping willow. The presence of some oak suggests that the dunes themselves may not have been entirely treeless at the start of the sequence.

The open nature of the vegetation at the beginning of peat formation is not only suggested by low tree pollen values, but also by the comparatively high values for heather at the start of the zone, and the amounts of grass and ribwort (*Plantago lanceolata*) pollen, together with the peak of *Pteridium* spores. Of the Campanulaceae, *Campanula rotundifolia* (harebell) or *Jasione montana* (sheep's-bit) are characteristic of drier, open ground and would perhaps have been growing on a higher ridge of sand and gravel. It is possible that the heath represented at the beginning of zone TW-1 may have been a result of earlier clearance and subsequent grazing, but this is considered fully in the final discussion.

Potentilla (P. erecta, tormentil or *P. palustris*, marsh cinquefoil), *Lythrum (L. salicaria,* purple loosestrife), *Filipendula (F. ulmaria*, meadowsweet), *Hydrocotyle (H. vulgaris*, marsh pennywort) and *Potamogeton* (pondweed) pollen; a fruit of *Lycopus europaeus* (gipsywort); and *Juncus* sp. (rush) seeds represent plants typically of a damp habitat, most likely to have been growing on the surface of the incipient bog. Shallow pools of water may be indicated by the, generally small, values of pondweed pollen.

By the end of the zone, the high percentage of birch pollen suggests that birch trees had reached the slack area and were probably growing on the shallow peat, where they would compete with any willow trees or bushes. The high representation of birch pollen may be in part due to better dispersal, and production when the trees became more numerous, but their growth may also have shaded out the willows of whatever form. Their proximity to, or presence on, the site is also indicated by the wood, budscales, *Betula* sp. fruits, and dicotyledonous leaf fragments recorded latterly in the zone.

It may have been that, as today in most areas, the fringe of the dunes towards the sea was always treeless and a suitable habitat for *Plantago lanceolata* and *Anthoceros punctatus* (hornwort). In this zone, however, the records for the liverwort occur when *Plantago lanceolata* takes higher values, before the temporary dominance of birch. From the three lowest samples the *Juncus* seeds that were identified are referable to *J. effusus* (soft rush) or *J. conglomeratus* (conglomerate rush). No seeds of rushes characteristic of a specifically maritime habitat were observed.

The peat at West Freugh, as recorded in a single transect, has a maximum depth comparable to that of the Torrs Warren slack deposit. In contrast, it is predominantly a *Sphagnum* (bog moss) peat, perhaps a consequence of the peat forming in a depression whose base may be mainly of clay. Drainage may have been difficult or slow, depending on the number and nature of the outlets. Nevertheless, its change from a birch-rush carr to an often acid peat vegetation may have been related to a regional rise in the water table at the start of the Sub-atlantic period, which, by the same argument, may have been a contributory factor in the establishment of the slack vegetation.

Zone TW-2 (198.5cm - 144.25cm; 2500 BP uncal - 1900 BP uncal/700 BC - 0 BC)

For the next c.700 years, oak became the dominant tree, succeeding birch, the pollen values of which fall to <5% for the whole of this and the following zone. The macrofossil assemblage and the surface sample analysis (Newell 1985, 114 - 115), provide good evidence that the trees were growing on, or very close to, the coring site. Grass pollen is low, having fallen as the tree cover became more complete at the end of the previous zone. It is interesting to note how a high percentage of tree pollen is accompanied by a lower number

of taxa in the pollen sum, a feature that may be seen at each occurrence of tree dominance in the pollen record. This might suggest partial exclusion of the regional pollen component, a factor which may have combined with a reduction in the number of species able to live in a more shaded habitat. However, it could simply be a statistical effect, resulting from the greater amounts of tree pollen arriving at the site.

Alder trees were probably growing with the oaks in places, or perhaps with willows in wetter situations nearby. The presence of *Potamogeton* pollen is maintained from the previous zone, indicating poorly drained areas near the site, a conclusion supported by the records of *Glyceria fluitans* (flote-grass) fruits.

Absolute counts also indicate the increased tree pollen production as oak became dominant. The pollen records may be mainly representing a persistent local oak scrub (which can produce very high oak pollen counts), but if not, it is reasonable to suppose that there were larger areas of oak woodland. During this time, considerable soil development and fixing of dune sand could have taken place. However, the foredunes, seaward of the slack, may have remained an open landscape.

There is no obvious indication of renewed interference with the vegetation during approximately the first 1000 years of the sequence, and this is perhaps supported by the relative scarcity of archaeological finds datable to the 1st millennium BC.

Zone TW-3 (144.25cm - 125cm; 1900 BP uncal - 1700 BP uncal/0 - 200 AD)

The greater values of alder pollen and the decline of oak suggest a replacement of values, the one by the other. The absolute counts show this to be the case. An absolute increase in Gramineae, *Plantago lanceolata* and Campanulaceae pollen accompanies the replacement. The latter two indicate areas of drier, unshaded ground; the former a more open canopy. A component of the pollen rain still derived from plants preferring a drier soil, such as the ridges of sand and gravel (as suggested for Zone TW-1) or areas of open dunes. Using the calculated sediment deposition rate, a time of about 30 years separates the highest oak value and the beginning of the rise in alder.

There is no good evidence that the water table rose during the previous zone (TW-2), though there may have been pools of water in places. The instability of a dune system, however, particularly perhaps towards the sea, allows the possibility of sudden flooding due to a change in a local water course. This would have been sufficient to kill off a number of oaks and temporarily open the tree canopy, which may have permitted a larger alder pollen rain from an established stand nearby, formerly screened by oaks.

Alternatively, a rapid spread of alder because of wetter ground, would increase its contribution to the pollen rain, thereby screening the oaks, if they continued to flourish. The orientation of any small stream or flush through the slack might be expected to have run parallel to the axis of the slack (cf the course of Red Burn, Fig. 1). This could carry alder seed from a more distant locality and deposit it on soil now suitable for successful germination and seedling growth. The outer trees of any oak stands may then have died and their new limits would be bordered by alder trees. In any event, it would seem that the water table was now higher and the increase of willow and probably bog myrtle pollen favours this interpretation.

While it is possible, there is no evidence that the oak cover was reduced as a result of human clearance; it was not a complete clearance, there is no evidence for burning, nor is there any telling archaeological evidence for occupation of the area during this period.

Zone TW-4 (125cm - 99.5cm; 1700 BP uncal - 1400 BP uncal/200 AD - 600 AD)

The inference from the values of *Sphagnum* spores and *Hydrocotyle* pollen, together with the macrofossil assemblage, is that there was increased surface water on the slack compared to the previous zone; also that the water may have been poor in nutrients, more acid in reaction, possibly stagnant and thus anaerobic. The increased sedge pollen values are probably related to a wetter regime on the slack. This change would appear to have begun by the last level in the preceding zone, when movement of sand within the dune system may have caused any flow of water through the slack to become impeded.

The decline in tree pollen does not appear in detail on the diagram, but during this zone neither the pollen nor the macrofossil evidence point to there having been sizeable stands of any tree species by the slack. Lacking a flow of water and adequate supply of nutrients, it is unlikely that alder would have continued to grow. Without the effects of filtering, or over-representation due to nearby trees, the pollen component from the dunes was almost certainly higher during this zone. Heather prefers a drier soil than could have developed on the slack, unless there were raised areas, proud of the surface water. The heather pollen values may thus represent its presence on the dunes, which seem to have been subject to some erosion, given the increased quantity of sand in the slack sediment. A proportion of the grass pollen was probably coming from the dunes too, and not all from *Molinia*, for instance, on the slack. These percentages for grass and heather may mean that there was grazing on the dunes preventing the establishment of birch.

Both the oak and alder pollen percentages drop from TW-3 to TW-4, so it is possible that trees were cleared during this time. During the period (zone TW-4) when it is suggested that a part of the Warren may have been used as pasture land, the only evidence of fire is the very small fragments of burnt plant remains at one level, which were probably blown onto the slack.

Archaeological discoveries indicate human activity in the area during the first millennium AD. A Roman cremation burial dated to the late-2nd/3rd century AD was found approximately 200m west of Horse Hill. Mrs C Dickson has identified charcoal associated with the cremation deposit as alder, birch, oak, willow and elm (Breeze and Ritchie 1980). A few other Roman artefacts have been found in the area (Curle 1932, 375 - 377).

Other indications of activity in the dunes during this zone include a limited range of artefacts of the Post-Roman/Early Historic period. These include a rim sherd of ‘E’ ware from near Mid Torrs (Thomas 1981, 22) and two bronze ring brooches (Rynne 1965, 1968). One was found some 800m to the N of the coring site, the second approximately 200m to the NW.

Extensive clearances registered in regional pollen diagrams are believed to date to a time which partly coincides with the period of Zone TW-4 (Newell 1985, 37 - 43; cf Newell 1990, 46-55).

Zone TW-5 (99.5cm - 44cm; 1400 BP uncal - 600 BP uncal/600 AD - 1400 AD)

At the start of TW-5, as during the first zone, birch invades dwarf-shrub and herbaceous communities. The time-scale for sediment deposition indicates that this transition could have taken less than 50 years, though in TW-1 it had taken much longer. The first three levels of this zone have the highest records of tree pollen for any zone and the number of taxa (TLP) at these levels is correspondingly low. From the small amount of sand in the sediment, wood and dicot. leaf fragments, budscales, and especially birch fruits and catkin scales, it is clear that the site was covered by a canopy of birch trees.

Birch shaded out heather and grasses whether growing on the peat or the dunes. The slack may have been drier, and birch was able to spread onto it with no competition from alder. The oak record is more pronounced than alder and it may have grown more extensively than at first apparent, being under-represented on account of the very local cover of birches. Certainly at 77cm it has a value that suggests that it could have provided competition. The now relatively deep and acidic peat of the slack would have favoured local birch and if the soil had been impoverished during the possible grazing of Zone TW-4, birch would tend to grow better than oak. Today, the oak scrub at High Torrs grows much less strongly than the birch.

For something like 500 years birch was dominant close to the site, nevertheless at 69cm there is a hint of some disturbance to the tree cover, where it looks as if the succession to oak may have been deflected, and a much clearer sign at 52cm and 53.5cm. At the second occurrence, more open ground allowed expansion of grasses and bog myrtle. A significant reduction in birch pollen takes place, perhaps partly due to the proportional representation of the diagram. Further absolute counts would aid interpretation here, though it is unlikely that bog myrtle, grasses, dock and also bracken would react simultaneously, unless areas nearby had become less shaded. A higher water table might have favoured bog myrtle over birch on the slack.

Most of the grains of Coryloid type at 52cm were identified as being probably those of bog myrtle on the criterion of pore morphology (Moore and Webb 1978, 53).

It is interesting to note that the beginning of higher grass values from between 66cm and 52cm belongs to a period between c.1050 AD - 1250 AD, using the estimated time-scale, since the Warren is believed to have become part of the Glenluce Abbey holdings at this time (Idle and Martin 1975, 10; Rusk 1930, 69 - 70). Part of the dunes may have been used for grazing, though there is still a fairly high representation of birch, and some oak. The building found whilst excavating the coin hoard may have been in use throughout the period 1200 AD - 1400 AD and was interpreted as a possible hunting lodge built on a grassy heath (Jope and Jope 1959).

Zone TW-6 (44cm -0cm; 600 BP uncal - Present/1400 AD - 1980 AD)

Throughout the discussion of the above zones it has been supposed that the land surface of the dunes was relatively regular, if undulating, and that during times of apparently stable vegetation cover, appreciable soil development took place. This is based on field observations of some, not all, of the fossil soils with approximately horizontal strike or dip. There is sometimes more than one fossil soil in a section (cf Smith 1908, 37 - 38, who supposedly

recorded four). The coin hoard of c.1495 AD (Jope and Jope 1959) was cut into an approximately horizontal humus layer, and the depth of the sand overlying the hoard must post-date it. The Jopes's proposition that the high dune area had been built up relatively recently is therefore accepted here. If the stripe of sand recorded in the core at 30.0cm - 30.8cm is a result of a catastrophic sand blow (or a series of such) on the Warren, then this occurred, as could be expected, when the landscape was essentially treeless.

There is no obvious reason why birch trees, at least, should not have continued to grow with oaks from the end of Zone TW-5, unless the dunes were being grazed. Following clearance perhaps, grass and heath covered the dunes and the overall landscape was probably like that of TW-4, only it appears that heather was now more important. The diagram indicates an association of *Potentilla* (presumably *P. erecta*) with the heather. Different intensities of grazing are possibly shown by the absolute concentrations of herb and dwarf-shrub pollen grains during Zones TW-4 to TW-6. If the pollen record is mainly showing local changes, heavy grazing or burning would result in much reduced flowering of grass and heather and their concentrations shortly before 30.0cm - 30.8cm are indeed very low.

Evidence of burning is recorded in the macrofossil diagram in this zone (TW-6) and if frequent would prevent mature *Calluna* bushes being established. This would encourage the spread of *Potentilla* because of the reduced dwarf-shrub canopy, and at 16cm, a correspondingly low value of *Potentilla* (<1%) is associated with a high one for *Calluna*. This coincides with the maximum percentage of *Lycopodium clavatum* (stag's horn clubmoss), a plant of heathy habitat. These assemblages may imply a resistance to fire by tormentil and would support the idea of a succession with no human interference in Zone TW-1, where *Potentilla* is also <1%. The peak of *Plantago lanceolata* must be partly due to local over-representation, but it still indicates open ground, probably maintained by grazing. This could also explain the smaller peak of *Lotus* (probably therefore *L. corniculatus*, birdsfoot trefoil; or *L. uliginosus*, large birdsfoot trefoil) recorded at the same level.

Idle and Martin (1975, 5 - 6) cite two documentary sources of 1560 and 1572, which include references to two farms "Hiddir" (High) and "Over" (Low) Torrs, and they infer that formation of the high dunes took place after the second date. However, there was clearly some form of land management prior to 1560 AD and the thin sandy layer in the sediment occurs at a date close to the middle of the 16th century on the estimated time-scale. Over-grazing and wind storms may have combined to cause sand blows of sufficient severity and frequency to form the irregular dunes that are the most conspicuous feature of the landscape now. Blow-outs and widespread dispersion of sand also happened earlier, as shown by the observations of sand separating layers of soil development.

A range of mediaeval objects, generally belonging to the 13th to the 16th centuries, is known from Luce Sands, but in most cases their precise findspot is unknown. The nearest location to the coring site is Knockdoon, some 660m north of High Torrs Farm, comprising a find of pottery fragments. Slightly further away, other recorded find spots include 'Mid Torrs', and Horse Hill or thereabouts (Williams 1977).

A valuable account of the land-use history from the 16th to the 19th century by Idle and Martin (1975, 6 - 7) includes a reference to a violent sandstorm in 1756, and the complaint that good pasture was lost because of sand deposition. In 1791 the *Statistical Account*

includes the earliest mention of a rabbit warren: rabbits would have been a significant influence in grazing grassland and heath. The same account tells of land being drained, manured and enclosed.

The vegetation in Zone TW-6 was probably very similar to the present, with erosion and blow-outs continually changing the topography. There is slightly more grass and less heather pollen in the last two levels than earlier in the zone, but this may only be near to the coring site. Most of the sedge pollen was perhaps from common cotton-grass (*Eriophorum angustifolium*) which fruits prolifically in parts of the dunes, where there is a wet peaty soil, rather than *Carex arenaria* (sand sedge).

5. General discussion

by Trevor Cowie and Patrick Newell

I. THE RESULTS OF THE ARCHAEOLOGICAL FIELDWORK

The archaeological evidence reviewed here may be set into the relative sequence shown in Table 8.

Evidence of Neolithic settlement (Sites C2, E, J)

The main archaeological features located in 1977 were the subsoil hollows on Sites C2 and J, and a further possible depression in the subsoil on Site E. Comparison of the pottery and chipped stone recovered from these throws some light on their relative date.

The severely truncated remains of the hollow on Site J mainly produced friable 'micaceous' pottery characterised by sherds of plain vessels with club-like rims. Apart from a tiny fragment recovered from Site G, nearly 200m distant, this fabric was not otherwise represented among the pottery found in 1977. Although the overall form of the vessels is uncertain, they can be assumed to have been simple Early Neolithic bowls of the general type discussed by McInnes (1964, 42 - 47: Class I). The profiles of 470, 473, or 481 can be paralleled with McInnes's catalogue nos 17 - 18, for example, while 476 bears comparison with her catalogue no 26. This group of sherds represents the earliest pottery recovered in the course of the fieldwork. Radiocarbon dates indicate that the bowl tradition may have had a currency of several centuries, following its appearance during the later 4th millennium BC uncal (cf Kinnes 1985, 23, illus 4). A relatively early Neolithic date for the Site J hollow is reinforced by the flint assemblage, which includes several broken leaf-shaped arrowheads.

The subsoil depression in Site E produced several simple undecorated or only lightly decorated rims (eg 329 - 333) and two lugs (335 - 336) for which the comparative material is again to be found among the contents of McInnes's Class I (1964, 42 - 47: specifically her category of 'small bowls'). However, the most distinctive pottery recovered from this feature consisted of relatively fresh sherds, representing a variety of heavily thickened rim forms with the profuse impressed decoration typical of McInnes's Class III wares (1964, 49 - 54). Little should be read into this association, as the context of the sherds is not certain; it is possible that the dip in the subsoil could have represented the 'leading edge' of a further hollow, but further investigation was precluded by the inaccessibility of the site.

Table 8: Tentative correlation of results

ENVIRONMENT	ARCHAEOLOGICAL EVIDENCE[1]	DATE[2]
Maximum marine transgression: formation of raised beach		c 4000-3750 cal BC
‘		
Marine regression resulting in availability of sand supply for dune formation on raised beach deposits	Mesolithic activity? (little evidence from 1977 areas)	
‘		
Soil development on undulating dunescape. Mixed deciduous woodland on forest brown earth soil	Evidence of Neolithic settlement **Site J**: hollow with associated Early Neolithic bowl pottery, lithics	by later 4th millennium cal BC
	‘ **Site C2**: hollow with associated Late Neolithic Impressed pottery, lithics	by mid 3rd millennium cal BC
	Site E: mixture of early and later pottery	
	Scatter of mainly late Neolithic pottery and lithic material eg **Sites B2, D, J**	
	Grooved Ware absent from 1977 areas	
	Beaker sherds from **Sites D, G, J** but otherwise absent from 1977 areas	
‘		
Progressive degradation of soil » development of heathland (increasing acidification of soil)	Bronze Age burials (**Site D**: burial cairn + urn).	by 2nd millennium cal BC
	***Site A**: hearths*	*Date not known*
	*Cultivation traces on **Sites E, H and J** = catalyst for erosion?*	*Date not known*
‘		
?localised blow-outs		
‘		
?inundation of old land surface by sand but perhaps only partial	Abandonment of area?	
Pollen zone TW-1 Heath conditions may have been maintained in parts of the dune system		1100-700 BC
‘		
Pollen zone TW-2 Stabilisation » recolonisation (birch » oak succession)		700-0 BC
‘		
Pollen zone TW-3 Natural replacement of oak by alder local to sampling site?		0-200 AD
‘		
Pollen zone TW-4 Clearance of woodland? Pasture indicators?	Renewed human activity? eg Roman burial at High Torrs (Breeze & Ritchie 1980)	200-600 AD
	‘ eg finds of Early Historic metalwork	
	***Site J:** hearth (upper land surface)*	*Date not known*
‘		
Pollen zone TW-5 Increased tree cover (at least local to sampling site) but later return to more open grassy heath		600-1400 AD
	Torrs Warren becomes part of holdings of Glenluce Abbey: land possibly used for grazing	
	Construction and use of possible hunting lodge (Jope and Jope 1959)	
‘		
Pollen zone TW-6 Open heath. Destructive sand blows	Medieval/Post-medieval finds. See Idle and Martin 1975 for further details	1400-present

Notes

1. Including sites from other parts of the sand dune system referred to in the text.
2. The dates for the pollen zones must be seen as tentative; there is no dating evidence for events shown in italics.

In the case of Site C2, however, the hollow produced a largely homogeneous assemblage of McInnes's Class III pottery (1964, 49 - 54, figs 5 - 8). This category of Late Neolithic pottery belongs to the general family of so-called Impressed Wares or Decorated Styles (Kinnes 1985, 23 - 24), and, besides Luce Sands itself, is still best-known in Scotland from collections recovered from coastal sand-dune areas such as Hedderwick, East Lothian (Callander 1929), and Brackmont Farm and Tentsmuir, Fife (Longworth 1967). However, these largely unstratified collections and the occasional stray find have begun to be augmented by material recovered from excavation. In addition to the pottery reported here, relevant assemblages include Grandtully, Perthshire (Simpson and Coles 1990), Meldon Bridge, Peeblesshire (Burgess 1976) and Wellbrae, Lanarkshire (*Disc Excav Scot* 1991, 65; Alexander in prep). A number of sites in Northern England are also relevant here: these include the small group recovered in the 19th century at Ford, in Northumberland (Longworth 1969), Thirlings in the Milfield Basin, also in Northumberland (Miket 1976), and a recently discovered pit group from Old Grove in Cumbria (Shell Chemicals UK Ltd 1993, 8).

In general, these 'Impressed Wares' form the northern counterpart of Peterborough wares further south, but variations in the forms of the pots and the relative frequency of decorative techniques suggest a variety of local sub-styles (McInnes 1969).

There are relatively few radiocarbon dates associated with this tradition of pottery. A series of determinations from the post-pits of the stockade and several features in the interior of the timber enclosure at Meldon Bridge, Peeblesshire (Burgess 1976) range from 2736±90 BC uncal and 2726±180 BC uncal (SRR-644, SRR 643) to 2132±90 BC uncal (SRR-645). However, the main cluster of dates: five ranging from 2336 - 2132 BC uncal, would tend to favour currency of the 'Meldon Bridge style' in the second half of the third millennium in radiocarbon years (Burgess 1976, 173 - 176; 1980). This would be in keeping with the few other dates available from samples associated with related pottery from Scotland and Northern England (eg Grandtully, Perthshire: 1970±100 BC uncal (Gak-1396) and 2130±190 BC uncal (Gak-1398) - Simpson and Coles 1990, 35; Thirlings, Northumberland: 2130±130 BC uncal (HAR-1451) - Miket 1976, 119). The pottery evidence would suggest that the infill of the Site C2 hollow is Later Neolithic.

Site J also produced a few sherds of pottery with a fabric similar to that predominant on Site C2; significantly, these tended to be retrieved in an abraded condition from the fossil soil, and thus stratigraphically later than the hollow. Such sherds appear to represent part of a scatter of Later Neolithic pottery spread widely over the area (cf sherds from Sites A, B2 and D).

With such a fragmentary sample of features from a limited number of sites all physically divorced by erosion - both in the recent and distant past - it is impossible to be certain of the relationship of these features to the original foci of settlement in the area. Furthermore, the absence of detailed records of find-spots (not least for want of suitably detailed maps) makes correlation with earlier discoveries near impossible. In particular, it would have been of considerable interest to pinpoint the find-spot of the sherds described by Callander (1933, 235 - 240) in view of their close similarity to pottery from Sites C2 and E. However, anecdotal evidence suggests that this area of Torrs Warren has consistently been a source of Late Neolithic sherds (W F Cormack *pers comm*).

Relative to their size and/or the area available for excavation, these three features produced sizeable assemblages of Neolithic material, but interpretation is constrained by the absence of faunal remains in the acidic soil conditions, and by erosion which has left their wider context so uncertain. Unless features, such as pits or post holes, were deep enough to penetrate the fossil subsoil, they would be unlikely to have left much trace and their survival is dependent on factors such as subsequent land-use, or erosion. This vulnerability was demonstrated by the vestigial remains of the pit and gully uncovered on Site C2 and by the discovery of the two isolated pits at Site A (though there were no artefacts in their fill, there is no reason why the two pit-hearths at Site A should not also be early). It is thus impossible to suggest any precise reconstruction of the pattern of Late Neolithic settlement.

However, this fragmentation of the evidence is not an unusual problem: in a review of the settlement evidence for later Neolithic Britain, McInnes has noted that it is very often limited to pits and hollows associated with pottery and domestic debris of the period or to concentrations of pottery and flints in association with hearths and blackened soil (1971, 118 - 122). Manby too, in reporting on Neolithic occupation sites on the Yorkshire Wolds, has noted how only the indestructible residue of occupation and features penetrating below the level of the plough have survived (1974; 1975).

McInnes refers to 'occupation layers' on both the Burnt Dune and Pin Dune sites investigated by Atkinson (1964, 41), though their precise nature is unclear. Nowhere in the course of the work undertaken in 1977 were any deposits noted which could be described as 'occupation layers'; they possibly relate in some way to the relatively richer spread of artefacts, burnt and unburnt stones, and organic rich soil comprising the fill of features such as hollows in the fossil subsoil, or the surviving remains of spreads of material at the base of the buried soil. It is possible the narrowness of the strips investigated in 1951 could have inhibited recognition of large shallow features.

In the case of Site C2, it was suggested that a flint knapper may have been working on the floor of the hollow. At least some of the flint debitage appears to have been subjected to deliberate heat pre-treatment, possibly using heated stones as the medium for preparation of the raw material. It was noted how such pre-treatment would have offered a means of rendering a poor quality raw material - in this case, beach pebble flint - more tractable for working. Whatever its primary function, however, the fragmentary nature of the pottery suggests that it, with the bulk of the lithics and charcoal fragments, and no doubt other organic material (such as faunal remains), reached the pits as rubbish and hearth sweepings.

Although the wider contexts of these indications of occupation were not located, or did not survive, the artefact assemblages recovered are of considerable interest. None of the features was excavated in its entirety, but the finds from Sites C2 and J represent the first published groups of Neolithic material from Luce Sands to be recovered from unitary contexts. Since, as Kinnes (1985, 24) pointed out, our understanding of the Impressed Wares/ Decorated Styles is constrained by the poverty or fragmentary nature of the assemblages, the pottery from Site C2 forms a significant associated group.

Discussion of the artefacts from Site C2 raises two important aspects. As Figs. 13A - 13B demonstrate, the distribution of finds was closely localised to the hollow itself, reinforcing the observation that, in the absence of active erosion, location of archaeological

features in the Warren is very hit-or-miss. In view of the fact that Torrs Warren is well known for having produced sizeable quantities of Grooved Ware and Beaker pottery in the past (McInnes 1964, 66 - 68; 78 - 80; Ritchie 1970; Ritchie and Shepherd 1973), these types are notable by their near absence in the area investigated. No definite Grooved Ware sherds were found, while only a handful of worn Beaker sherds were recovered from the whole area (single sherds from Sites D and J, and two sherds and a fragment from Site G). This may reflect the problem of intercepting features.

This problem has a significant bearing on another issue. Luce Sands has often been cited as an area of dense prehistoric settlement. However, the hollow on Site C2 shows that a single feature of relatively limited extent can yield nearly 2000 pieces of pottery and a lithic assemblage of over 1140 pieces. Claims regarding settlement have therefore to be tempered by the recognition that, given the right combination of weather conditions before and during fieldwork, sand-dune environments may offer biased opportunities for the retrieval of surface finds. The assemblages of pottery (and other types of artefact) from Luce Sands certainly indicate occupation throughout the Neolithic and much of the Bronze Age, but that is technically all they show, and it would be misleading to equate the quantity of pottery with density of settlement when little comparative fieldwork has been carried out in surrounding arable areas but see now MacGregor *et al* 1996; MacGregor 1997.

In this regard, mention must be made of the impressive cropmark complex recently discovered just S of Dunragit: aerial survey has revealed the existence of a triple circle of pits at least 300m in overall diameter with an avenue of similar pits leading towards a presumed entrance, while cropmarks in surrounding fields have revealed what appear to be hengiform structures and further pit alignments (RCAHMS 1993, 10 - 11, 22). Parallels for such monuments include the excavated timber enclosure at Meldon Bridge, Peeblesshire (Burgess 1976), and the suggestion that the Dunragit cropmarks represent a Late Neolithic/Early Bronze Age ceremonial and funerary complex is a compelling one. Mention must also be made of the intriguing series of pits excavated at Mye Plantation: these are thought to be the remains of a series of pit-falls for trapping game. Waterlogged stakes, apparently sharpened with a stone axe, were found at the bottom of four of the pits, which may have been linked by a fence at the surface. A few sherds of Late Neolithic pottery were recovered from one of the pits and also on the old ground surface sealed by upcast from another of the pits (Mann 1902; *Disc Excav Scot* 1951, 15; RCAHMS 1987, no 463).

The Bronze Age cairn (Site D)

Within the area investigated in 1977, the sole evidence for later prehistoric activity is represented by the remains of the small cairn originally investigated in 1964 (Cormack 1968; RCAHMS 1987, no 113). This remains the most recent addition to a considerable number of Bronze Age burials recorded from the area of the Sands since the 19th century but once again, these form part of a wider pattern of recovery in the district (conveniently listed in RCAHMS 1987: for burials from Torrs Warren see nos 140 - 145, 148).

Cultivation marks (Sites E, H, J)

Traces of cultivation were recorded at Sites E, H and J. At Site J these mainly comprised several alignments of ard-marks revealed within the buried soil, whereas the traces found at

Sites E and H comprised ridges c.2m from crest to crest on the buried land surface. Such undulations could have survived as *surface* features for a considerable time prior to inundation.

No secure *terminus ante quem* was obtained for any of these features, a problem common to sites of this nature elsewhere (Halliday *et al* 1981, 55), but on balance the circumstantial evidence would favour a prehistoric date. The evidence of soil pollen and soil micromorphology points to clearance of the woodland and possible cultivation of the buried soil in prehistory whereas the pollen analysis of the slack deposit suggests that open heathland conditions prevailed by the start of local pollen zone TW-1 (prior to a prolonged period with few indications of settlement in the area). Mention may also be made of the grain impressions on Bronze Age pottery from Luce Sands (Jessen and Helbaek 1944, 21), though these do not necessarily imply that cereals were grown on the dunes themselves. However, there must be a reasonably strong possibility that agricultural activity on increasingly poor and fragile sandy soils could have been the catalyst for early blow-outs among the dunes. It is also tempting to suggest that the scatter of Neolithic pottery and other artefacts may be the result of manuring practices. The stratigraphic location of the small cairn investigated by Cormack indicates that the main buried soil in this area (Site D) was inundated by blown sand no earlier than about the mid-second millennium BC (uncalibrated), but the problem of dating the sand inundation is discussed below.

Upper soil formation with traces of hearth or pyre

At Site J an intact dune profile indicated that following erosion and deposition of windblown sand, a stable surface was subsequently re-established. Undated activity is marked by the setting of a small hearth, associated with calcined bones representing both animal and human bone, and the possible erection of a windbreak.

II. THE ENVIRONMENTAL FRAMEWORK OF EARLIER PREHISTORIC SETTLEMENT IN LUCE SANDS

Soil development and vegetational history

It was hoped that pollen analysis would provide some insight into the vegetational history of Torrs Warren over as long a period as possible, and thus an environmental background to the evidence of human activity and settlement represented by the archaeological record of the area in general and the results of the excavations in particular. As reported in Section 4, the pollen sequence from the dune slack was found to span only the last 3000 radiocarbon years, though within this period the pollen analysis has shown that at times vegetational change at Torrs Warren has been marked. It is difficult to assess how widespread these changes might have been on the dunes, but fluctuations from heath to woodland, a reversion to some heath, then woodland to heath can be inferred from the pollen assemblages at least on a local scale. The possible human role in effecting these changes has been considered in the discussion of each local pollen zone.

Although significant correlation with the archaeological record of later periods has been possible, the inferred vegetational history could not be directly related to the results of the fieldwork undertaken in 1977, where evidence of Neolithic-Bronze Age activity predominated. However in the light of our understanding of how the dunes may have been veg-

etated from later prehistoric times to the present, and taking into account other strands of evidence now available, these results bear cautious extension to the earlier prehistory of the dunes.

The parent dune sands of the system have been built on raised beach gravels, likely to have been laid down during the maximum Post-glacial marine transgression, about 5000 radiocarbon years ago (Jardine 1980, 52). In the course of describing the lithic assemblages from Sites C2 and J, attention was drawn to the occurrence of previously worked and re-used pieces. Although close characterisation of these industries is difficult, it is possible that some pieces represent reworked material of much earlier date - perhaps even from exposures of Mesolithic date. In particular, attention may be drawn to the microlithic blade tool from Site J (Fig. 30: 395). The provenance of the 'few flints ...which appear to be of Mesolithic type' from Luce Sands is not accurately recorded (Coles 1964, 67 - 68), but the usual location of Mesolithic sites in this region is on the terrace above the '25 ft beach' deposits (cf Jardine and Morrison 1976, 188). McInnes also notes that, in the more mobile conditions of the 1950s, scatters of Mesolithic flints were retrieved from 'areas of water-worn shingle blown clean of sand...evidence of old shore lines now remote from, and much higher than, the sea (1964, 40).

It is probable that subsequent marine regression not only made available a supply of sand for dune formation but also exposed the area on which the foredunes became stabilized (cf Mather 1979, 325 - 329). Analysis of the slack deposit indicates that at least by the first millennium BC (uncalibrated), the vegetation of the mature dune system appears to have been separated from any direct influence of the sea. Since stands of trees developed later, there may have been some woodland cover before the period represented by zone TW-1. The initial presence of heath in the pollen profile may therefore have been due to earlier clearance, so that when the area was abandoned, or the pressure of grazing relieved, it was eventually recolonised by birch.

The suggestion that there were trees on the dunes before the beginning of the sequence is supported by the results of the soil micromorphological analysis, from which it was concluded that a brown forest soil had developed which could have supported oak trees and perhaps other species, the charcoal of which was not identified. On the evidence of the stratigraphy of the archaeological features in the fossil subsoil, it may be inferred that this tree cover would have been present by the Neolithic (4th/3rd millennia BC uncalibrated). Soil micromorphological analysis by Romans and Anderson produced indications of clearance by fire: though direct evidence for its date and duration is wanting, it would seem reasonable to associate primary clearance with the Neolithic settlement of the area.

The detailed mapping of the dunes undertaken for the purposes of the development suggests that this earlier prehistoric land surface presented a gently undulating, relatively stable terrain; however, it is unlikely to have remained completely static, especially following the advent of human settlement in the area. Eventual soil exhaustion and the formation of heathland is indicated by the development of podzolic surface layers, but the results of the soil micromorphological analyses suggest that podzolisation was not far advanced when the surface began to be buried by deposits of wind-blown sand. In particular, the presence of tiny wood charcoal fragments in the first few centimetres *above* the old land surface of the humus-iron profile, appears to indicate some local blowout of the heathland surface. On

such inherently vulnerable surfaces, it is very likely, but currently unproven, that the catalyst for the occasional small-scale blow-outs would have been human agencies, such as cultivation or stock grazing.

At present, it is not possible to date the initial inundation of what may be referred to as the 'main' fossil soil by wind-blown sand, a process which could in any case have been gradual rather than catastrophic (cf Cruickshank 1980, 31). However, on one site at least a terminus post quem is available for this event. It is clear that the main old land surface in the vicinity of Site D remained exposed and largely free of blown sand until at least the mid- to later second millennium BC (uncalibrated), when the construction of a small cairn took place (Cormack 1968). Inside, a small bucket urn was deposited. While such urns are relatively featureless, the type is broadly datable to the 17th - 13th centuries BC (uncalibrated) (cf Burgess 1980, 93).

Later development of the dune system

The suggestion that there may have been only one major earlier prehistoric land surface, at least until the later second millennium BC (uncalibrated), is lent some support by the observations of earlier writers. In the first of two papers on Luce Sands, Smith (1891, 294) observed that:

> '... in Torrs Warren there are generally three layers of soil formed at different levels... A very marked feature in connection with these soil-layers is that the flint chips and implements occur only on the top of the bottom layer and in no case did we see them above any of the others.'

However, in a subsequent paper, Smith records that unspecified 'older antiquities' had been recovered from several of the soil bands, but the relationship of these to each other is not entirely clear from his description of the site, nor from his schematic figures (1908, 38).

Smith, and others, noted the presence of up to four buried soil horizons in the dune system (cf Smith 1891; 1908; Callander 1911), a tenet sustained more recently by Idle and Martin (1975, 5). What is clear is that in the course of the 1977 fieldwork, finds of prehistoric pottery or worked flint were recovered *only* from what has been described as the 'main' buried soil profile, particularly, of course, from the features on Sites C2, E and J. It has also been noted that on most of the other sites the recovery of flint flakes and occasional abraded sherds appeared to point to a widespread scatter of uncontexted material - ancient detritus - usually lying within the thickness of the soil profile (eg Sites A, B and G). If present at all, later material, such as slag, was consistently lying on the *surface* of this layer where it is likely to have accumulated as a result of erosion of overlying deposits.

It has been argued that the combined evidence points to there having been, at least until the later 2nd millennium BC (uncalibrated), only one major land surface in the area of the dune system. How can this be reconciled with the accounts of earlier visitors or fieldworkers? What can now be seen to represent the surviving fragments of this ancient surface, consistently formed on a parent body of wind-deposited dune sand undulating between 13m and 18m OD, might well have appeared to earlier fieldworkers as discrete horizons occurring at markedly different elevations within the dune system. However, this is not to deny that in places, but by no means everywhere, successive soil developments may be present in a

single vertical exposure (see for example the sequence recorded by Jope and Jope 1959). What is suggested is that it is necessary to distinguish a major, earlier prehistoric fossil soil, representing a prolonged pedological development from a number of more immature horizons, reflecting subsequent soil developments during relatively more ephemeral episodes of vegetational stability.

In the light of the pollen profile from the slack, an approximate date may be suggested for at least one of these periods of stability and incipient soil formation. The pollen profile shows no obvious indication of human interference with the vegetation during the first 1000 years of the sequence, and this may be supported by the relative scarcity of archaeological finds from the sands datable to the 1st millennium BC (uncalibrated). During local pollen zone TW-2, it is possible that recolonisation of the dunes (by plants) and soil development could have taken place; if so, it is possible that the 'upper soil horizon' recorded at Site J could reflect a phase of stability in the dune system. In 1977, only the remains of the undated hearth or pyre were located on this upper soil horizon, but it may represent the formation of a more stable land surface by the first millennium AD following a phase of erosion which could have inundated areas of the earlier heathland with sand. If so, this upper soil horizon may provide the context for Early Historic/Early Medieval finds from the area; at present this can be no more than speculation - but it would bear further investigation.

This upper land surface would have been inherently weaker than its predecessor. Later episodes of erosion could have been introduced, maintained and aggravated by a variety of anthropic and/or biotic factors (discussed by Idle and Martin 1975, 5 - 8) until a stage was reached when more radical - possibly at times catastrophic - processes of erosion and redeposition gained a near irreversible hold, almost certainly abetted by the downturn in climatic conditions which characterised the so-called 'Little Ice Age', the main phase of which has been dated to c.1550 AD - 1700 AD (Lamb 1977, 449 - 473).

Conclusion

The fieldworker in Torrs Warren today becomes familiar with a terrain characterised by sharply differentiated dune relief, but this is likely to be the result of relatively recent geomorphological activity (Fig. 34). Torrs Warren was more inviting to early peoples and it is probable that earlier prehistoric settlement took place within the context of a relatively stable dune system, with a brown forest soil supporting a cover of mixed oak woodland. The combination of marine resources, land for grazing and browsing, tree cover providing raw materials for shelter and fuel, and fresh water perhaps flowing along courses not traceable today or from springs, may account for the abundance of archaeological finds at certain periods in the prehistory of Torrs Warren. However, the sheer number of finds may provide a somewhat skewed picture of the local prehistoric archaeology, masking the fragmentary survival of their original contexts, and it is on the arable hinterland of the dunes - especially around Dunragit with its rich complex of crop-marks - that future research could more profitably focus.

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Appendix 1
Soil Profile Descriptions

Buried Humus-iron Podzol (Profile A)

Drainage: free

Parent Material: wind-blown sand

Horizon	**Depth (cm)**	
H	0.3	Very dark brown (10YR2/2) humose loamy sand; weak fine subangular block; friable; organic matter very high; a few live marram grass roots; no stones; no earthworms; no mottles; moist. Clear change over 1cm into
A_2	3-7	Dark grey (10YR4/1) medium sand; massive/single grain; friable; organic matter low; no stones; a few roots; no mottles; moist. Clear change over 1cm into
B_{2-1}	7-18	Dark reddish brown (5YR3/2) loamy sand; very weak medium block; slightly firm; organic matter high; few live roots; no mottles; moist. Gradual change over 6cm into
B_{2-2}	18-29	Dark reddish brown (5YR3/3) medium sand; massive; slightly firm; organic matter moderate; a few live roots; no mottles; moist. Gradual change over 7cm into
B_{2-3}	29-45	Dark brown (7.5YR4/5) sand; massive/single grain; slightly firm; organic matter low; a few roots; no mottles; moist. Gradual change over 12cm into
B_3	45-69	Brown (7.5YR5/5) medium sand; massive/single grain; slightly firm; no organic matter; roots rare; no mottles; moist. Gradual change over 15cm into
C	69+	Light yellowish brown (10YR6/4) medium sand; single grain; friable; no organic matter; roots rare; no mottles; moist.

Buried Peaty Podzol (Profile 2A)

Drainage: free in the B horizon

Parent Material: wind-blown sand

Horizon	**Depth (cm)**	
Overburden	30±13	Brown (10YR5/3) medium sand; friable; single grain; no organic matter; a few marram grass roots; no stones; no mottles; moist. Gradual change over 7cm into

Overburden	13-0	Greyish brown (2.5Y5/2) medium sand; single grain; friable; no organic matter; a few marram grass roots; no stones; common medium distinct reddish brown (5YR5/5) mottles; moist. Sharp change over 1cm into
H	0-6	Black (N2/0) peat; massive; slightly plastic; roots rare; moist to wet. Sharp change over even boundary into
B_1	6	Thin iron pan
B_{2g}	6-13	Light grey (10YR7/1) and dark greyish brown (10YR4/2) medium sand; single grain; friable; organic matter very low; roots rare; light and dark patches, some gleying but no ochreous mottles; moist. Gradual change over 6cm into
B_{2-2}	13-37	Brown (7.5YR4/3) sand; massive; friable; organic matter moderate to low; a few roots; no mottles but some patches of B3 horizon material in old channels; moist. Gradual change over 10cm into
B_{2-3}	37-52	Strong brown (7.5YR5/6) sand; massive; friable; organic matter low; no roots; no mottles; moist. Gradual change over 12cm into
B_3	52-79	Yellowish brown (10YR5/5) sand; massive; friable; no organic matter; no roots; no mottles; moist. Gradual change over 15cm into
C	79+	Brown (10YR5/3) sand; single grain; friable; no organic matter; no mottles; moist.

Soil at present land surface

Links: Immature soil

Drainage: free

Parent material: wind-blown sand

Horizon	**Depth cm**	
A_{1-1}	0-4	Very dark brown (10YR2/2) humose sand; abundant bleached sand grains; weak medium crumb; friable; organic matter very high; frequent roots; no stones; no mottles; moist. Clear change over 2cm into
A_{1-2}	4-20	Brown (10YR4/3) sand; very weak medium block; friable; organic matter low; many roots of *Calluna*; no mottles; moist. Clear change over 5cm into
C	20+	Pale brown (10YR6/3) sand; massive; friable; no organic matter; a few roots; no mottles; moist.

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SQUARE BARROWS IN DUMFRIES AND GALLOWAY

by David C Cowley
Royal Commission on the Ancient and Historical Monuments of Scotland,
John Sinclair House, 16 Bernard Terrace, Edinburgh, EH8 9NX.

Cemeteries of round and square barrows have become a familiar feature of the archaeology of northern and eastern Scotland, but until relatively recently no examples have been recognised in Dumfries and Galloway. As a result of a RCAHMS archaeological survey project covering a block of ground between the Water of Fleet and Creetown a possible cemetery of this kind was identified on aerial photographs near Gatehouse of Fleet. Subsequent inspection of aerial photographs in the National Monuments Record of Scotland (NMRS) across the rest of the region revealed two examples near Thornhill. Two single square barrows came to light during the preparation for the publication of a further RCAHMS survey of the much larger area of Eastern Dumfriesshire (RCAHMS 1997). The aerial

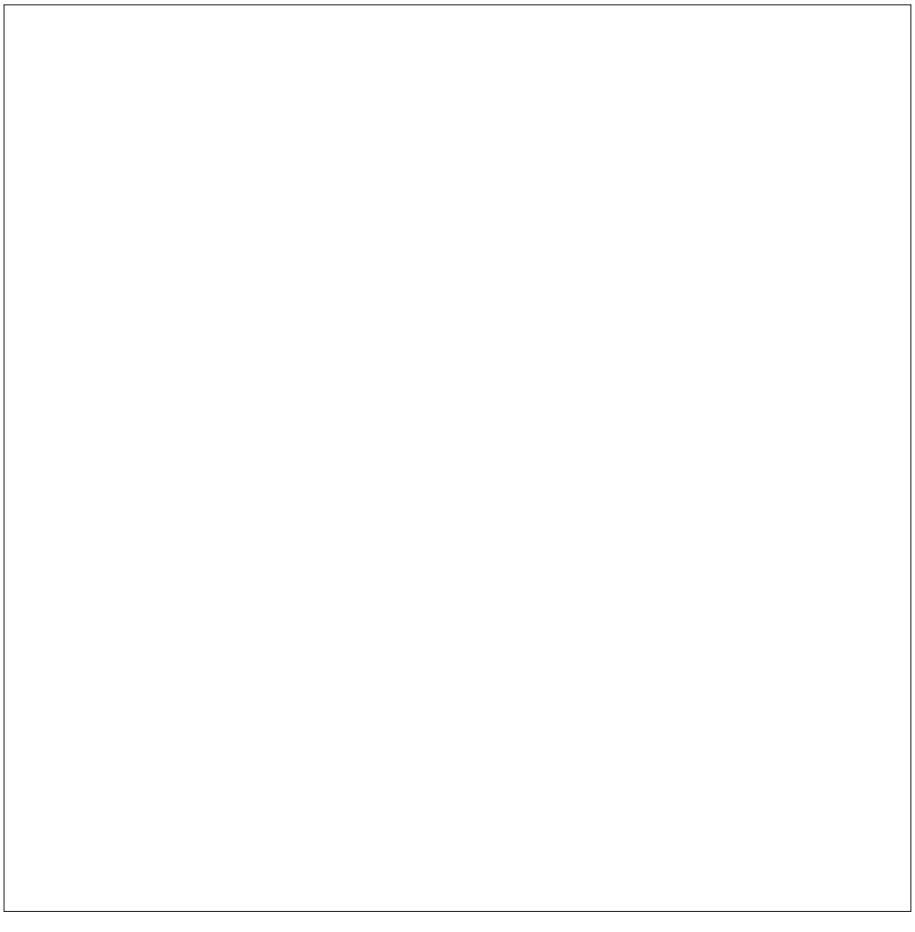

Figure 1. Barwhill. Computer-aided rectified plot of cemetery,
Roman road and possible prehistoric settlement (Based on the OS map, Crown Copyright).

photographs on which these sites have been identified are the product of an ongoing programme of aerial reconnaissance by RCAHMS. The main sites described below have been fully referenced; the name is followed by the NMRS site number, the National Grid Reference and the aerial photograph number. Other sites referred to in passing have been referenced by their NMRS number alone.

Barwhill, Gatehouse of Fleet (NX 55 NE 19, NX 596 571; RCAHMSAP: KB 1104-7, A69055-8)

This cemetery (Figs 1 and 2) is situated on a broad terrace on the east bank of the Water of Fleet and has been recorded both as cropmarks and as parchmarks in pasture. It comprises a cluster of five barrows to the west of the modern cemetery, with a sixth barrow lying to the north-north-west. A narrow ditch (about 1m to 2m across) defines each barrow, five of which measure between 6m and 10m across (within the ditch), while the sixth measures about 3m across. One of the barrows is clearly square, while three appear to have at least one straight side. What may be a causeway interrupts the ditch at an angle in one of these barrows. The other two barrows are round. Set centrally within each barrow there is a burial pit measuring up to 2m across.

Figure 2. Barwhill. Aerial photograph looking north across the narrow ditches (the outer possibly a palisade) of what may be a later-prehistoric settlement. Three barrows are visible to either side of the Roman road (visible as three darker marks on the photograph) with the lighter smudges of quarry pits to the north.

The line of a Roman road (Glenlochar - Gatehouse of Fleet - Loch Ryan; NX 55 NE 24) is visible on the aerial photographs as a series of elongated cropmarks flanked by quarry pits measuring between 7m and 11m across. At the south-east end of the road there are a scatter of pits of unknown function. A subsquare enclosure (NX 55 NE 9, NX 5962 5706), possibly a later-prehistoric settlement, is situated on the edge of the terrace to the S of the barrows. In the north-west corner of the interior there are the faint markings of what may have been a timber round house measuring about 10m in diameter (not shown on Fig. 1). Broad cultivation ridges are visible on the ground.

Home Plantation, Thornhill (NX 89 NE 64, NX 870 959; RCAHMSAP: A22858, A22859)

A cemetery (Figs 3 and 4) of seven ditched barrows is visible as a series of parchmarks in pasture on oblique aerial photographs, lying some 400m to the north-north-east of the late 9th or early 10th century AD cross (NX 89 NE 6) beside Nith Bridge. The barrows lie on well-drained gravel ridges to either side of an old river channel on the west bank of the River Nith; five lie between the embankment beside the Nith and the old channel, the two others to the west of the channel.

Except for one which is trapezoidal, all the barrows are irregular on plan but demonstrate at least a tendency towards rectilinearity; five have either parallel ditches and/or a near right-angle turn in the line of the ditch. The seventh barrow has one straight side. Each of the barrows is defined by a narrow ditch, and six measure between 3m and 5m across within the ditch. One barrow is larger than the others and is rectangular, measuring about 6m from E to W by 3.5m transversely. The ditches of four of the barrows are interrupted by a causeway at one corner. Burial pits are visible within three of the barrows.

Figure 3. Home Plantation. Computer-aided rectified plot of cemetery
(Based on the OS map, Crown Copyright).

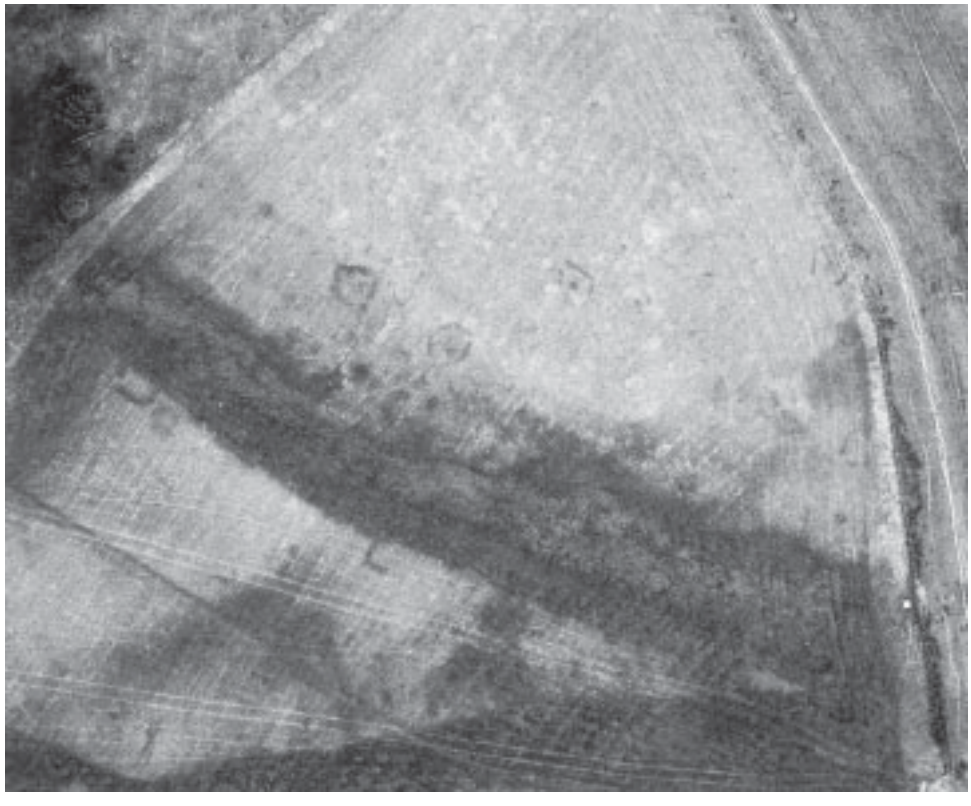

Figure 4. Home Plantation. Aerial photograph of the barrow cemetery, highlighting the old river channel.

Blackmire Scar, Thornhill (NX 89 NE 63, NX 862 960; RCAHMSAP: A22854-6)

On a terrace beside Blackmire Scar, some 800m to the west-north-west of Home Plantation, rather poor markings in a cereal crop reveal what may be another cemetery. Eight ring ditches, measuring between about 4m and 10m in diameter, are visible, two of which contain burial pits. One of these lies a little to the south of the main cluster of markings and features at least two straight sides. At least one of the other ring ditches has a straight side, although without a burial pit its identification as a barrow remains somewhat ambiguous.

Lochbrow, Johnstonebridge (NY 08 NE 37, NY 0948 8923; RCAHMSAP C206)

The clearer of two single square barrows which have been identified in the course of the RCAHMS survey of Eastern Dumfriesshire (RCAHMS 1997) has been recorded as a well-defined mark in a cereal crop on the west bank of the Annan. It lies to the south of a pitted cursus and to the north-north-west of a large circular barrow. The barrow is subsquare and measures about 4m across within a narrow ditch. An indistinct marking in the centre of the interior may have been a burial pit.

Holywood, Dumfries (NX 97 NW 46, NX 9485 7959, RCAHMSAP B23143)

The second site to be identified by the Eastern Dumfriesshire survey lies to the west of the southern cursus at Holywood. The cropmark lacks the clarity of the example at Lochbrow, but the barrow may have been subsquare, measuring about 6m across with a central burial pit.

The listing of sites above is not exhaustive and further cemeteries will undoubtedly turn up as existing photographs are re-examined and new aerial prospection is undertaken. There are, however, some other sites which may form part of the same broad group and these will be described briefly. The morphology of the sites described above is fairly diverse and, although a tendency towards rectilinearity has been taken as a common element, the presence of round barrows in these cemeteries in Scotland as a whole warns against any exclusivity in classification. Cemeteries of small round barrows may therefore be variations on a theme within a broadly based burial tradition, for example the row of four small round barrows at Trailflatt (NY 88 SE 43 and NY 88 NW 24) north-west of Lochmaben. At Little Lochans (NX 05 NE 38 and 42) to the south of Stranraer there is a group comprising two squarish barrows and two round examples, one of which lies within a larger round ring ditch. Two round barrows (one may have a flattened side) at Challoch (NX 06 SW 26) to the north-west of Stranraer are situated within and beside a cemetery of elongated grave pits which are aligned from approximately east to west, and although the juxtaposition does not imply a direct association, it further highlights the potential range of sites which may form part of a common burial tradition.

Discussion

Ditched round and square barrow cemeteries are a recurrent feature in the cropmark record of the eastern half of Scotland to the north of the Forth and east of the Highland line with a thin scatter of upstanding sites, most of which lie inland (Ashmore 1981; Maxwell 1987; Murray and Ralston forthcoming; Stevenson 1984; RCAHMS 1994 a). The barrows frequently occur in groups (isolated examples by definition being harder to find) and rarely measure more than 8m across, although some may measure up to 15m across (RCAHMS 1994 b, 18). Causeways are visible at the angles of some square examples, a feature shared by the cropmark and upstanding examples. Several of the upstanding square barrows have stones set at the corners. A central pit is a recurrent feature in the cropmark examples contributing to their identification as barrows. Although there is little direct dating evidence, a date in the 1st millennium AD is most frequently suggested (RCAHMS 1994 b) with much of the discussion focusing on their Pictish associations, although the potential of wider links has been outlined (e.g. Ashmore 1981; Close-Brooks 1984, 94; Murray and Ralston forthcoming).

The sites that have been described above are not typical barrow cemeteries of the type found to the north of the Forth. They do, however, share certain of the same characteristics. Some of these characteristics are also common to a scatter of earthwork ditched barrows and small cropmark ring ditches which have been recorded across the Borders. There is little that can be said about the cropmark examples beyond that they are relatively small, measuring less than about 8m in overall diameter, and that the ditches are continuous. The

earthwork examples are thinly scattered across the Border Hills and are predominantly circular. Some on Broughton Knowe and Langlaw Hill in Peebleshire however, have the suggestion of flattened sides (NT 03 NE 19, 40; information from S. Halliday). The cairn excavated by Jobey (1966) at Alnham in Northumberland also has certain characteristics in common. A ditch surrounding the cairn is five-sided on plan with shallow facets between the slightly bowed sides. The kerb of the cairn, which is set inside the ditch, incorporated four orthostats arranged in a roughly rectangular setting, A pin, possibly dating to the first century BC, and perhaps originating in Yorkshire, was found under the cairn, together with what may have been a cremation. An embanked square enclosure on the south-east flank of Burnswark Hill is also interesting in this context. The enclosure overlies the Roman fortlet and pre-dates Alexander Gordon's plan of 1721. It measures just over 9m across and contains what are likely to have been six graves, aligned from east to west (Barbour 1899, 229-30), and may have been an Early Christian burial ground (Jobey 1978, 79). Amongst the sites recorded as cropmarks in the south-west there are a few small square enclosures which could provide analogies; at Aird Cottage (NX 06 SE 93) to the east of Stranraer an enclosure measuring about 10m across contains a series of elongated pits which could be graves. These enclosures invite comparison with Irish (O'Kelly 1967) and Welsh (Brassil *et al.* 1992; see below) sites which have been interpreted as Early Christian Cemeteries.

Geographically, Dumfries and Galloway is relatively distinct from the rest of Scotland, bounded by hills to the north and east, and it is difficult to know in what direction the most useful analogous material might lie. The distribution of typical square and round barrow cemeteries lies to the north of the Clyde-Forth line, while the Yorkshire Wolds, where a square barrow tradition with its roots in the Iron Age is well established (Stead 1991; Wait 1995), lies to the south-east. The distribution of La Tène and Arras derived artefacts which might originate from, or have been influenced by areas in England where there is a square barrow tradition, concentrates to the south of the Clyde-Forth line (MacKie 1995, 659-60). The morphological similarities may suggest that the sites in south-west Scotland represent a variation on a long-lived and wide-spread burial tradition, which spread across Northern England and Scotland between the middle of the first millennium BC and the second half of the first millennium AD. Similar sites have also been recorded in Wales, with one excavated site revealing what may have been an Early Christian cemetery (Brassil *et al.* 1992). The squarish barrows, and the various attributes they exhibit, may only have been a part of a wider repertoire within a long-lived, varied, burial tradition that included small round barrows, grave pits and small square burial enclosures. However, excavation will be needed to establish whether the morphological similarities are indicative of further affinities.

Acknowledgements

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The Place-Name and Port of Menybrig, Leswalt

by Daphne Brooke
Craignair, Auchencairn, Castle Douglas

The obsolete Brittonic place-name Men-y-Brig in the Rhins of Galloway has received little attention. Its site was identified in the last century in general terms only yet it seems to have been a place of strategic and economic importance and demonstrable antiquity.

Documentation

Men-y-brig is not recorded before 1426, when James I confirmed a grant of the lands of Leswalt and Menybrig to William Douglas of Leswalt by Margaret, Duchess of Touraine, erecting the estate into a barony. William Douglas had previously resigned the lands into her hands as his superior.[1] In 1455, while William Douglas of Leswalt's son and successor George had sasine, the Crown seized the lands when confiscating those of the ninth Earl of Douglas but restored them the next year on the evidence of the Duchess of Touraine's charter.[2] George Douglas died without issue c 1462-63 and the Crown took the barony into ward and granted it to the Queen Mother. Lord Kennedy asserted a rather tenuous claim to inherit it and from 1450 onward, as Chamberlain for 'Carrick, Leswalt and Menybrig', he was responsible for collecting the rents on behalf of the Crown from lands he claimed to be rightly his. The dispute for possession between the Crown and the Kennedys continued for forty years. Meanwhile the Agnews had become hereditary sheriffs in 1452 with the title 'Sheriff of Wigtown, Constable of Leswalt, and Baillie of Menybrig'.[3]

The relevance of these details is the light they throw on the value of the barony. Its lands occupied the centre of the northern peninsula of the Rhins and stretched across Loch Ryan into the parishes of Inch, Stoneykirk and Glenluce. In 1466 Exchequer recorded the annual rents as amounting to £140, a very large sum at the time. The name Leswalt is Brittonic (Leswalt c.1275 *SHS* Misc vi) the generic corresponding to the Welsh *llys* -'court'. The wealth and size of the barony and its two Brittonic names suggest an erstwhile lordship of much greater antiquity.

Derivation and Meaning

The place-name Menybrig was recorded at least eight times between 1426 and 1500:

Menibrig	1426	*RMS* ii
Menbrig	1450	*ER (Exchequer Rolls)* v
Menebrig	1468	*ER* vii
Menybrig	1485	*ER* ix
Men-y-brig	1487	*ER* x
Mennybrig	1487	*RMS* ii
Monybrig	1499	Sc.Record Office GD 25 ii 19

1 Thomson, JM (ed) *Register of the Great Seal of Scotland* (RMS ii 86) new edition 1984. The name of the barony sometimes included a third (Gaelic) name - Barquhanny.
2 *ER* vi
3 Agnew, Sir Andrew *The Hereditary Sheriffs of Galloway* Edinburgh 1893, vol i p 261.

Menybrig 1499-1500 *RMS* ii

M'Kerlie records a late 17th century form Monibridge.[4]

Meny-y-brig apparently derives from the Brittonic maen-y-brig. The generic *maen* 'stone', usually 'standing stone', occurs several times in Galloway in place-names applying to important estates (eg Monreith). The specific *Brig* presumably derives from the Celto-Latin **briga*, a common Brittonic place-name element meaning 'hill', 'top' and sometimes 'hillfort'.[5]

Old Welsh retained the r in the definite article (*ir*, later *yr*) even if followed by a consonant, whereas middle and modern Welsh drop the r before a consonant.[6] Jackson instanced Pennersaughs in Annandale, Triermain in Cumbria and the obsolete Trevercarcou (Balmaclellan) in Galloway as examples of how the Old Welsh form has been preserved.[7] To this Terregles should be added, for it was Trevereglis c 1275 (*SHS* Misc v), and even the distorted modern form retains the r of the definite article. Menybrig, on the other hand, is recorded only in the Middle Welsh form.

This does not necessarily mean that it had not passed through the OW stage. The medieval forms of several compound Brittonic place-names of SW Scotland, that were recorded in the 12th century, show the transition from OW to MW: Trailflat and Trailtrow in Dumfriesshire were *Traverflet* in 1195 (*RRS* ii) and *Trevertrold* c 1120 (*ECS*). Tynron in Nithsdale was *Treveronum* c 1120 (ECS) and *Manhinion (Craighlaw) in Wigtownshire was *Manhincon* in 1296 (*CDS* ii), but *Monihuncioun* in 1470 (*RMS* ii) and *Monyhuncion* in 1475 (SRO GD 109.269). The inference is clear that had records of Menybrig survived from the 12th century, it is possible - indeed likely - that the record would have taken an OW form.

A comparison of Men-y-brig with the *Brigomono* of the *Cosmography of Ravenna* leaves little doubt that the two names are the same. Brigomono is Latinized: the elements *mon* or *maen* and *brig* are cast in what looks like the Latin ablative, (but may have been a scarcely declinable oblique case such as Rivet and Smith ascribe to many British and Continental place-names of the Roman period). There is no definite article since that did not exist in Latin and the two elements have been transposed. Brigomono appears to be masculine or neuter, whereas Briga was feminine, but this grammatical laxity is what Rivet and Smith lead us to expect of such texts as the *Cosmography*. The two place-names *Brigomono* and *Menybrig* remain recognisable as one and the same. The *Cosmography* dates from the 7th century, but drew upon older material so that the place-name Men-y-brig seems to have derived from the Roman period, probably from a Roman (originally Flavian) road map.[8] Rivet identified Brigomono with Rerigonium, but the late medieval forms of Men-y-brig demonstrate that the two stems rigon- and brig- were distinct.[9] The port of Menybrig may nevertheless have served Rerigonium much as Leith serves Edinburgh and Piraeus served classical Athens.

4 M'Kerlie, PH *History of the Lands and their Owners in Galloway* Edinburgh 1878
5 Rivet, ALF and Smith, C *The Place-Names of Roman Britain* London 1979, p 277
6 Watson, WJ *History of the Celtic Place-Names of Scotland* Edinburgh 1926, p 358 and Ekwall, E *Concise Oxford Dictionary of English Place-Names* Oxford, 4th edition 1960, p 480
7 Jackson, KH *Language and History in Early Britain* Edinburgh 1953 p 10n
8 Rivet and Smith p 280
9 Rivet and Smith p 447

Site and Significance

The Victorian writers, Sir Andrew Agnew and P.H.M'Kerlie, are not always to be depended on for their historical accuracy, but their knowledge of local topography should be reliable. Both knew of Menybrig, at any rate as part of the name of the barony of Leswalt. M'Kerlie identified it as in the Larbrax district on the coast of Leswalt but said 'the lands forming the old property have been absorbed into others and the name is lost'. By his account the lands of Larbrax comprised Stewart's Larbrax, Glaik Larbrax and Larbrax Gressie or Balgracie.[10] Immediately to the south of Glaik, in the district now known as Knock, there is a standing stone (260m from the farmhouse of Knock and Maize NW 9983), the monument known locally as the Rough Cairn (NW 9836) and at least two ancient forts.[11] The standing stone is erect on a slight rise but the rise is scarcely significant enough to justify a name meaning 'the stone of the hill' so, if this is the stone from which the name Menybrig originated, it is more likely to have meant the 'standing stone of the fort'.

Lapasperi

Interest has centred in the past round the passage in Bernard of Clairvaux's *'Life of St.Malachy'* describing Malachy's sojourn after visiting Cruggleton, waiting for a ship to Ireland at *Lapasperi.*[12] *Lapasperi* has usually been regarded as contracted from Latin genitive *Lapis asperi* '(the place of) the rough stone'. Bernard was writing in Latin and apparently translated a Celtic place-name on the basis of Malachy's report. Bishop Forbes considered that *Lapasperi* was 'probably some bay opposite Ireland near Portpatrick'.[13] It has consistently been assumed that the Latin represented a Gaelic place-name still current and Sir Andrew Agnew proposed *cairngarroch* as the Gaelic equivalent. He pointed out that there were three Cairngarrochs in Wigtownshire including one now 'anglified as Rough Cairn'.[14]

It is perhaps only marginally relevant here whether the stone from which the district of *Lapasperi* drew its name is to be identified with Rough Cairn or the standing stone at NW 9983, or some other landmark and which of these monuments was the original Menybrig. It is evident however that although *Lapasperi* must have originated as the name of a stone, by the time St.Bernard was writing it had become the name of a district, more precisely a port. This was also true of Menybrig. The district in both instances must have been the same whatever it was called and, despite the discrepancy in the meanings of the two place-names, the 12th century name *Lapasperi* was almost certainly intended to represent the ancient name Menybrig.

The Marker Stones and the Port

The importance of this area in the early twelfth century has been emphasized by the discovery about 1950 of two medieval marker stones incised with crosses and dating from c 1100.[15] They were found to be marking an old route which Ralegh Radford described as

10 M'Kerlie vol 2
11 RCAHMS *Archaeological Sites and Monuments of Scotland: West Rhins* (see map)
12 Lawlor, HJ (ed) *St Bernard of Clairvaux : Vitae S Malachiae.* Migne, PJ Patrologia Latina 1920
13 Forbes, AP *Kalendar of Scottish Saints* Edinburgh 1872
14 Agnew p 58-59
15 Radford, CAR 'Two Unrecorded Crosses Found near Stranraer' *TDGNHAS* 1950 vol 27

running 'from the head of Loch Ryan to a landing place on the sandy strand just north of Port Patrick' - that is to say Knock Bay and Broadsea Bay immediately south of Glaik.

These wide open shores of sand and pebble stretching almost continuously for four miles provided almost ideal conditions for embarkation and landfall so long as journeys between Galloway and Ireland were undertaken by currach. Having no keel, the currach could not be moored at anchor in port, but had to be beached above the line of high tide. The advantage of the vessel's exceptional buoyancy in open water was partly off-set by its difficulties of going about.[16] Tim Severin described how though the Brendan 'would point her bows bravely enough into the wind', she, instead of going about, would 'slide sideways across the water like a tea-tray'. Tacking into narrow spaces was therefore, if not impossible, at any rate difficult. This disadvantage was however, minimised when, rather than attempting to manoeuvre into harbour, it was possible to make landfall on an open beach. Such places are rare in Galloway so it is plain that currach-users must have valued these western shores as compared with the havens and inlets accessible to keeled craft.

The currach was of course only one type of craft that plied in the water of Solway and the Irish Sea. Keeled craft propelled, like the currach, under sail and oars, had brought goods to Galloway from the Mediterranean at least from sub-Roman times. Anglian mariners and later Scandinavians with their superior naval technology, had commanded the seas in their turn. For them the natural harbours of Loch Ryan and the Isle of Whithorn and dozens of smaller inlets, offered access and security in bad weather. All these craft and their crews will have avoided where possible the hazard of the tidal race round the Mull and to a lesser extent round Burrow Head. Portage overland, often a necessary expedient, could be a difficult business with timber craft. Among the advantages of the currach was that, whatever its size, it was light by comparison and could be ported relatively easily. It was its general convenience and sea-worthiness however that ensured its use over a very long period.

The evidence advanced here suggests long continuity for the port of Menybrig. The form Brigomono assures its existence in the 7th century and probably two or three centuries before, and it may have been closely associated with the *oppidum* of Rerigonium. St.Malachy's stay at Lapasperi suggests if not conclusively, that it was at Menybrig that he waited for a ship and any doubt about its continuance as a port in the 12th century is extinguished by the marking of the route from Loch Ryan with new crosses around 1100. Whether it was still a port in the fifteenth century, the documents do not say, but the dual style of the barony of Leswalt and Menybrig suggest that Menybrig was still contributing significantly to the wealth and importance of the lordship.

My thanks go to Ian Fraser of the School of Scottish Studies who has read this paper in draft. Any errors are of course mine.

16 Severin, T *The Brendan Voyage* London 1978

EXCAVATIONS at CRAIGCAFFIE TOWER, by STRANRAER

by Jo Moran and Dave Pollock
Rathduff, Fethard, Co. Tipperary, Ireland

Abstract

During limited excavations at Craigcaffie Tower in 1988 parts of an enclosure ditch, yard surfaces, out-buildings and fragmentary remains of a formal garden were uncovered. The substantial enclosure ditch was not defensive but rather a decorative landscape feature doubling as a drain.

Introduction

Craigcaffie Tower stands as an isolated building on low ground 3½ km north of Stranraer (fig. 1). A late 16th century construction date is indicated by the decorative moulding around one window (paralleled at Edinburgh Castle) and a 1570's date-stone on the north gable. Although the surrounding land came into the hands of the Neilson family in the early 14th century, the present tower appears to be the earliest building on the site. The tower was built by the Neilsons and remained part of their estate until passing first to the McDowells in 1759 and then to the Stairs in 1791. The building was used as living accommodation into the early 20th century.

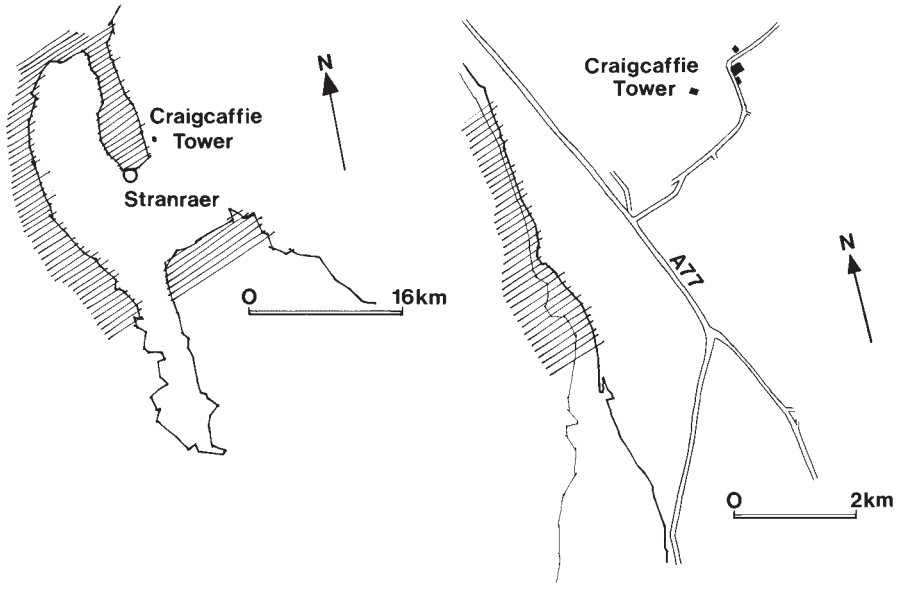

Fig. 1 Location of Tower

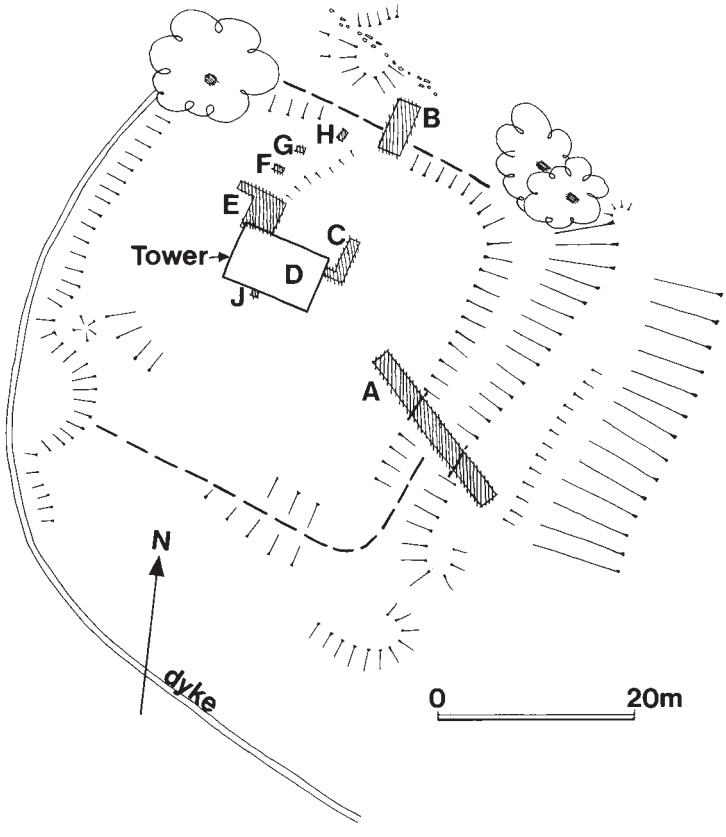

Fig. 2 Position of trenches and enclosure ditch

In October and November 1988 limited excavations were undertaken ahead of the tower's rehabilitation. Trench D was opened inside the tower to look for early floors at ground level. Trench A was opened to investigate the potential enclosure ditch on the line of a proposed electricity main cable (fig. 2). Trench B was located on the site of a proposed septic tank over the south ditch. Trenches C and E were cut to investigate surfaces immediately outside the tower and four small sondages F, G, H and J were opened to assess the extent of a late cobbled surface and check the depth of garden soil on the south side of the tower.

Inside the Tower (Trench D)

The ground floor entrance to the tower opens onto the foot of a spiral staircase and a doorway leading to the left into a main, barrel-vaulted, chamber. A smaller, corbel-roofed, chamber is entered from the main room. (fig. 3)

Two gunloops survive in good condition in the wall of the main chamber, a third has apparently been partly blocked and partly cut away to provide a later window and a poten-

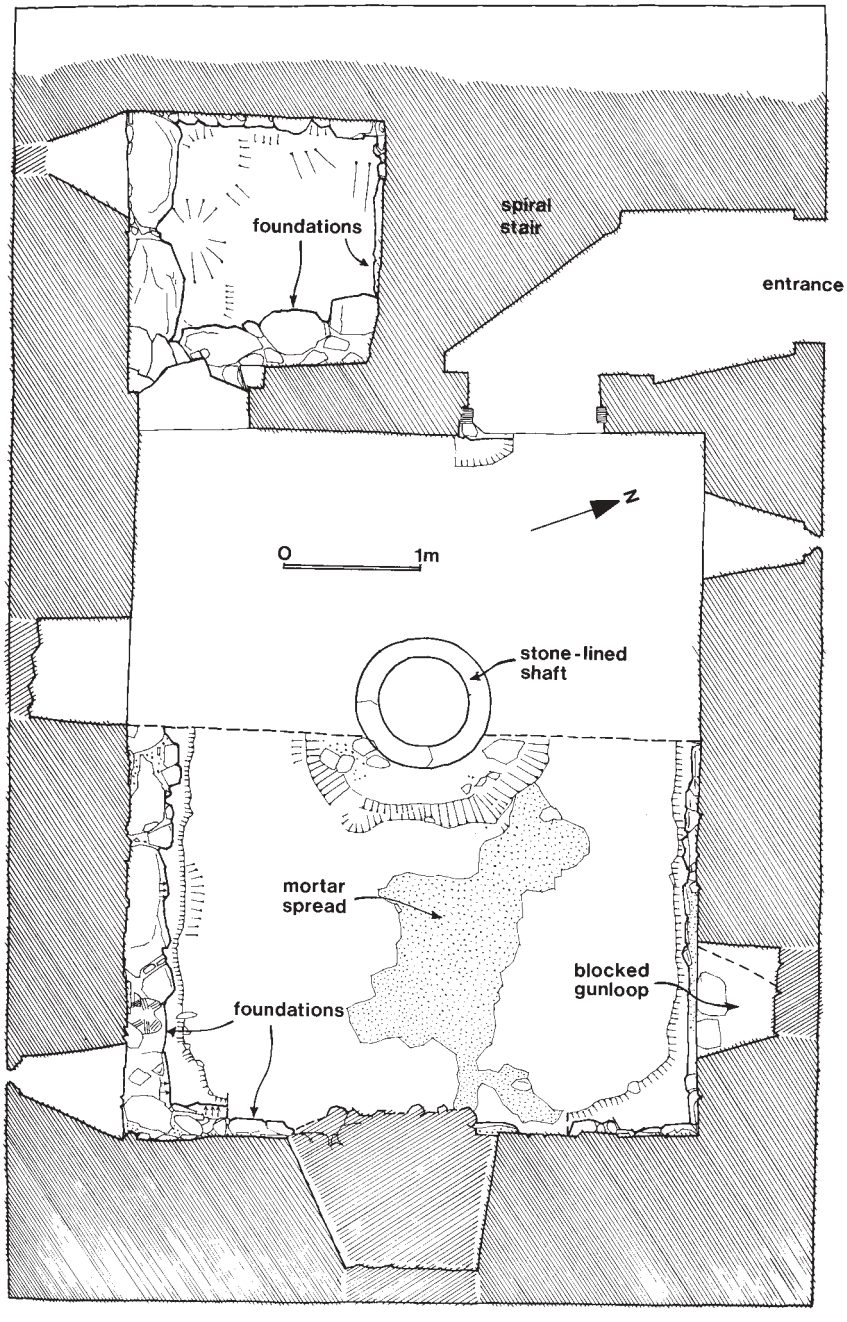

Fig. 3 Ground floor plan (Trench D)

tial fourth (in the smaller chamber) may have had the decorated loop stone removed to provide a small narrow light.

The present floor in the entrance passage, a mixture of brick and rectangular slabs, has absorbed the lowest step of the spiral staircase and produces a surface level with the raised threshold into the main chamber. Removal of part of this surface failed to find the original floor; this had been removed prior to resurfacing.

Within the main chamber a spread of mortar may be associated with the original floor. This sealed the backfilled foundation cut against the east gable and was cut by a later central pit (fig. 3). The mortar spread is unlikely to have been part of the floor surface; it was probably debris from pointing and finishing the inside of the barrel vault and walls, subsequently sealed by a (stone slab?) floor which has not survived. No finds were recovered from the mortar spread.

The chamber floor was removed before a central pit was cut. Gravel upcast from the pit was spread over the mortar to the north and east, over slightly disturbed natural gravel to the south and over gravel backfill against the walls. The boundary between backfill in the foundation cut of the tower and subsequent upcast from the central pit was indistinct, supporting the theory that an original floor was removed shortly before, or contemporarily with, cutting the pit.

The central pit contains a stone-lined cylindrical shaft 1.0m deep (subsequently deepened to 1.1m) and 0,6m in diameter internally, with a raised lip. The Inventory for Wigtownshire, prepared early this century, refers to the shaft as a draw-well (RCAHMS 1912, 20). This interpretation is unlikely. Although the shaft has been deepened recently (in the pursuit of buried treasure?) its base was dry and there is no likelihood that the local watertable has dropped since the shaft's construction. Rather the watertable has risen with the infilling of the enclosure ditch (see below). A more likely interpretation of the shaft is as a cool store. The remains of iron spikes in the vault over the shaft are still likely to be part of a drawing arrangement but not for the raising of water. There is no close dating evidence for the shaft; only a few fragments of green bottle glass were removed from the construction upcast (but see below, Trench A).

In the main chamber, upcast gravel and the earlier mortar spread were overlain by patches of dirty clay, washes of lime and patches of dross. There is no evidence for a substantial floor being laid after the insertion of the central shaft; the patches and lenses of material indicate sporadic repair and patching of an earth floor and repointing and replastering of the walls and ceiling.

Sealing these layers was a dry organic deposit associated with keeping chickens in the tower. With this deposit there was a great deal of animal disturbance damaging the underlying layers. As a result the finds recovered from the patches of earth flooring were contaminated with more recent material.

An alcove in the east gable wall may be original but has been seriously altered. Part of the outer wall face and much of the wall core has been removed at ground floor level and above and a wooden lintel has been inserted probably in an attempt to create a ground floor fire place.

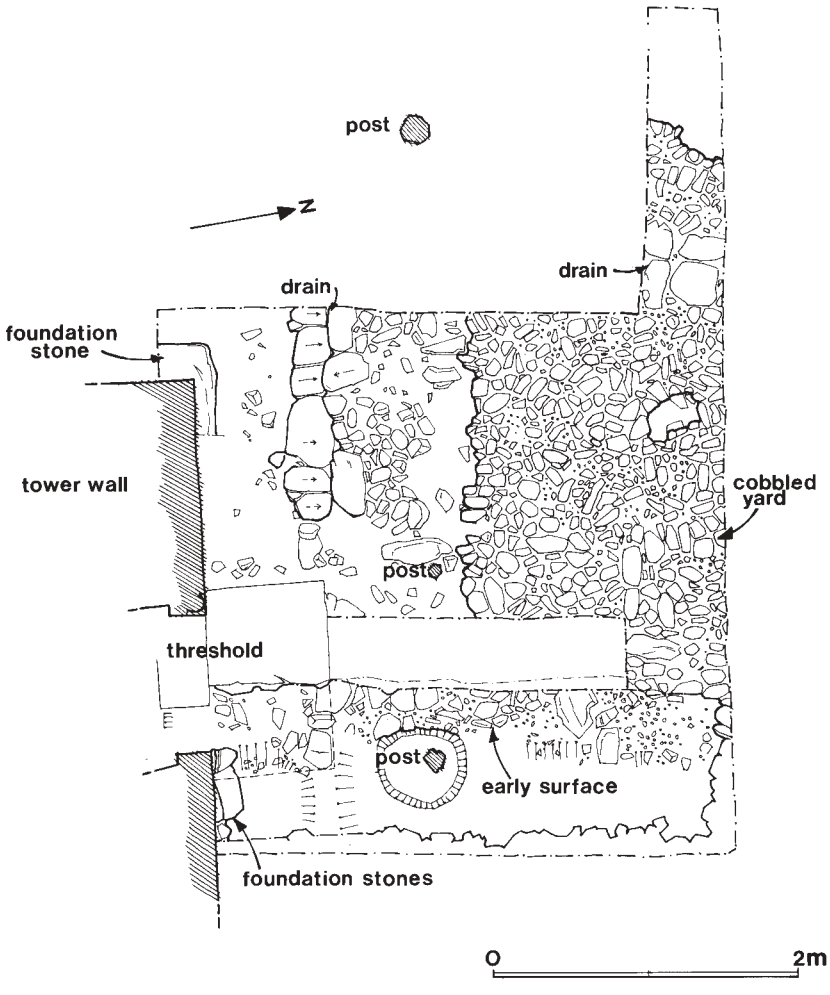

Fig. 4 Trench E plan

Floor level at the entrance to the tower has been raised. The original threshold stone has been removed and replaced by a pair of stones in the doorway, raising the level to match the later cobbled surface outside (fig. 4)

The corbelled ceiling of the smaller chamber on the ground floor reaches a height level with the top of the barrel vault in the main room. It has been suggested that the central capstone of the corbelling was a trap door (RCAHMS 1912, 20) but this is unlikely. With the stone removed, the rim of the resulting hole would be rough and unstable. Furthermore the base of the central slab is almost 0.6m below the wooden floor above and 0.3m below apparently rough stone-work. The central stone was not designed to be removed.

The floor of the small chamber has been excavated before 1988, probably in pursuit of a non-existent well below the ‘trap door’. Around the walls the foundations were exposed

0.1m below the threshold; in the centre of the room the excavation reached a further 0.2m. No floor survived.

Stone foundations underpin the main walls of the tower and the crosswall. The foundations are apparently wider below the south wall than below the north, and built of unbonded stone. Their depth was not checked during excavation.

Outside the Tower (Trenches E, C and Sondages F to J)

Trench E, outside the entrance to the tower, exposed part of a cobbled yard with surface drains (fig.4), presumably part 'of what may have been a courtyard containing a well' recorded in the inventory of 1911 (RCAHMS 1912, 20). The surface was disturbed against the tower wall and, at 1.6m away from it, along the line of a fence standing earlier this century. From the east side of the entrance a late but pre-fence cut has torn out the cobbled surface; the cut is visible at ground level as a slope curving round towards the south end of trench B (fig. 2), and probably marks the west side of a late garden; the depth (0.3m) and thoroughness of disturbance is in keeping with spade cultivation.

4m west of the cut the cobbled yard has again been robbed and disturbed. No cobbled surface survived in sondage H, suggesting that a relatively small area of cobbling remains. There was no similar surface in trench C by the northeast corner of the tower.

A surface drain running NW/SW was intercepted in trench E and sondage F. Another, running parallel with the tower wall, partly survived in the gap between disturbance against the wall and disturbance along the fence line. This drain was demolished immediately outside the doorway and, to the east, in the garden cut (see above).

The original entrance threshold was well below the cobbled surface; use of the cobbling and drains was associated with the raised threshold and raised floor inside (see above). The early threshold stone did not survive; it was presumably removed when the inside floor and outside ground level were raised.

Part of an earlier outside surface of rough stone and pebbles pressed into natural gravel, was exposed outside the doorway. The narrow strip of surface exposed was c.0.15m below the cobbled yard, and must have been associated with the early threshold. East of the doorway the surface was removed by late gardening (see above), to the west it was not exposed during excavation.

Tower foundations were exposed in the garden cut immediately east of the doorway, and the corner foundation stone was uncovered. Otherwise no attempt was made to excavate the below-ground stone courses around the door.

Much of trench C coincided with the late fence line enclosing the tower, marked by postholes and rotten post stumps (fig.5). The fence was cut through a late gravelly soil similar to the gravelly soil in trench A and the soil in the 'garden cut' at the east end of trench E. Between the fence and the tower this layer overlay a thin deposit of dross containing several sherds of creamware which in turn overlay trampled gravelly soil containing a single sherd of green-glazed pottery. The dross sealed the foundations of the tower but the gravelly soil was indistinguishable from the backfill of the foundation cut.

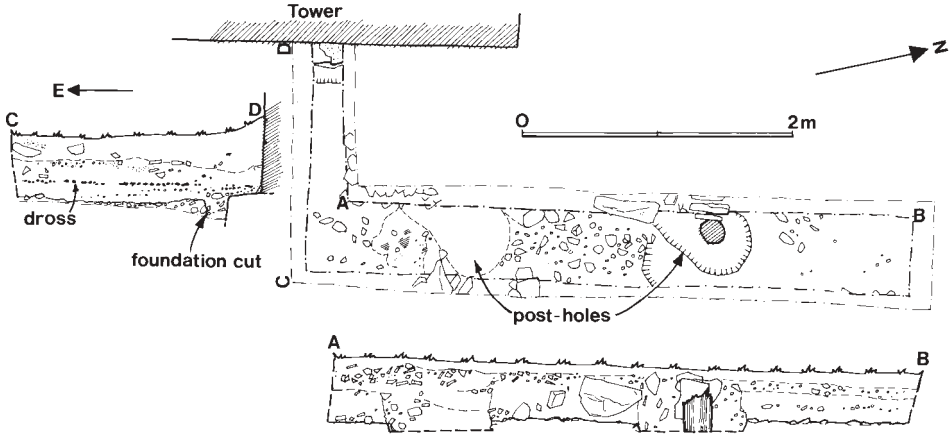

Fig. 5 Trench C, plan and sections

Beyond the fence line, to the north, the late gravelly soil overlay a layer of soil similar to one in trench A. This layer produced no finds and was interpreted as the remnants of garden soil pre-dating the infilling of the enclosure ditch (see below).

In so narrow a trench it was impossible to recover traces of an early garden layout (c.f. Trench A below), but the absence of a relatively gravel-free horizon below the dross suggests a gravel path against the east wall of the tower contemporary with the 18th century and earlier garden.

There was no evidence of walls or surfaces associated with a single-story building recorded as a ruin in 1889 (McGibbon & Ross 1889, 389). The building may well have been further north, represented by walling uncovered in trench B.

Outside the Tower. (Trench B)

During excavation the proposed threat to this part of the site (a septic tank) was relocated. As a result one of the two walls found and an adjacent box-drain, were left *in situ*. Only a small part of the trench was bottomed.

The outer face (but not outer lip) of an enclosure ditch was exposed below silts and deliberate infill. This ditch can be followed as a slight depression around three sided of the tower (fig.2), and was sectioned in trench A (see below).

In trench B the ditch cut was overlain by a layer of gravelly silt up to 0.1m deep which produced two sherds of late or post-medieval green glazed pottery (fig.6). This weathered material was sealed by a thin (3 to 4cm) layer of gravelly soil interpreted as turf and associated topsoil stabilizing the ditch face.

A thick layer of stone and soil overlay the “turf/topsoil”. Much of the stone was angular rubble, and while most was recovered from the upper part of the layer, the erratic angles of the rest of the stones suggested deliberate dumping over a short period rather than a gradual

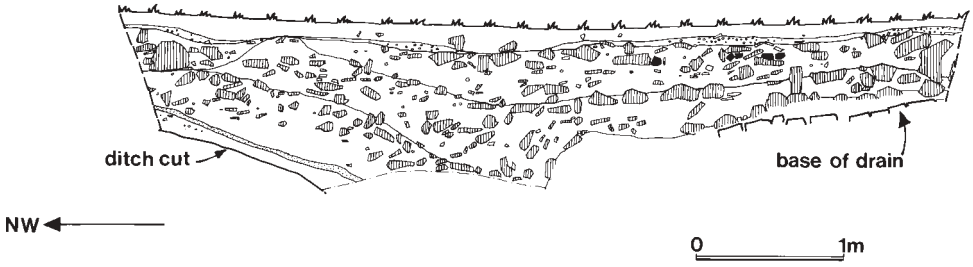

Fig. 6 Trench B, section from west

accumulation. Pottery from this deposit included late Staffordshire-type slipwares, Buckley-type coarse earthenwares, fine white salt-glazed stonewares and a single sherd of stoneware copying a German (Vesterwald ?) type. The narrow range of types and absence of creamware suggest a deposition date in the second half of the 18th century well before 1800.

A substantial wall was built over the rubble and a box-drain constructed along one side (fig. 7). Broken creamware vessels were built into the foundations of the wall. More rubble raised the ground on either side of the wall to the top of the drain, producing a rough trampled stone surface (fig. 6).

The box-drain survived to its full northerly extent in the trench, draining into the rubble infill of the ditch but the wall had been first robbed then cut through by a recent pit.

Before the wall was robbed a new (but again rough stone) surface was laid on its east side. The west edge of the new surface respected the edge of the robbed-out wall (Figs. 6 and 7). The build-up between the surfaces produced late Staffordshire-type slipwares, glazed coarse earthenwares, dot and diaper/basket pattern fine salt-glazed stoneware plates, feather-edge creamware plates, fragments of an Elersware tea/coffee pot and copies of chinese porcelain in porcelain and earthenware (treated with blue rectifier). The pottery was probably dumped within a decade either side of 1800.

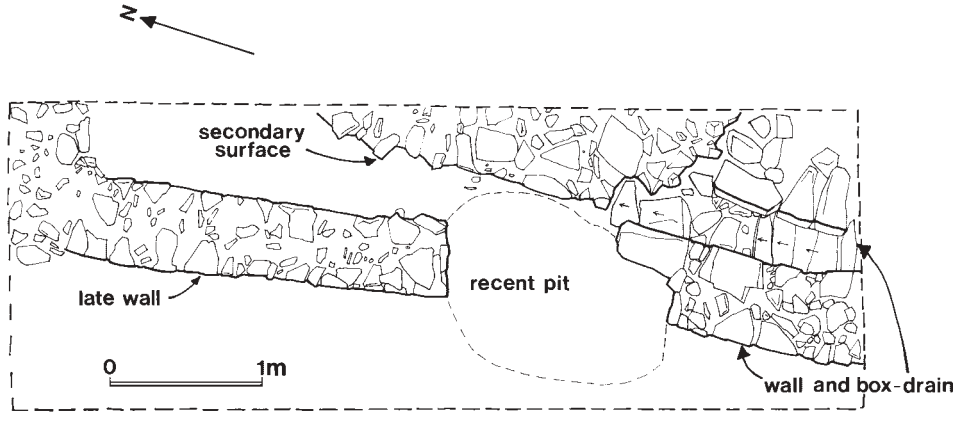

Fig. 7 Plan of walls, box-drain and surface

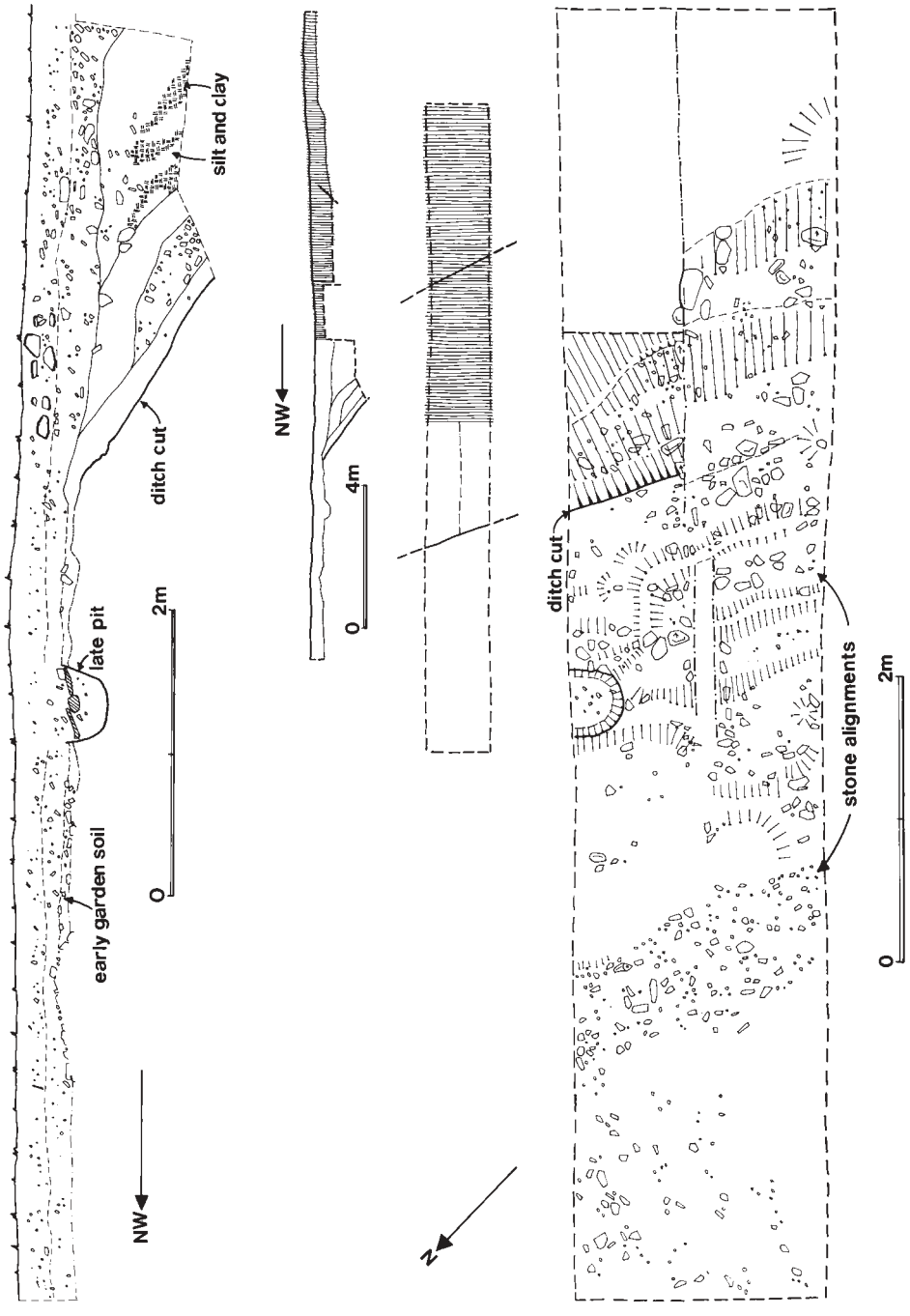

Fig. 8 Plan and section, northern half of trench A.

Relatively little green bottle glass was found associated with the pottery. The fragments recovered were from cylindrical wine bottles. The only surviving neck was slightly pinched above the shoulder. A manufacture date of 1770-1800 would not be unlikely.

In the limited excavations undertaken on the north side of the tower no early out-buildings were found. The present topography suggests that the enclosure ditch ran unbroken along this side, presumably crossed by a bridge. This bridge, its associated entrance into the yard and the arrangement of the buildings around the yard, remains conjectural.

However, material from trench B has provided us with coarse dates for the infilling of the enclosure ditch, starting in the third quarter of the 18th century and coming to an end c.1800. The starting and finishing dates may be significant, reflecting the two changes of ownership of Craigcaffie in the 18th century (1759 and 1791). The second half of the 18th century was a time of rapid physical change in the countryside when at least the major local landowner 'divided and inclosed his lands, drained swamps and marshes (Sinclair 1983, 405). Building over the enclosure ditch on the north side and returning the other sides to farmland would be appropriate at this time.

The assemblages of the material from the ditch are archaeologically valuable, representing midden from a house of some standing. Of the pottery already mentioned most is English, some may derive from the new Glasgow workshops. The high quality of material is endorsed by the stem and feet of two wine glasses recovered from the earlier deposit.

Trench A

A long trench was opened on the east side of the tower to cut the enclosure ditch obliquely (fig.2). This alignment, following the proposed electricity cable rather than the proposed water pipe, was chosen to make clearer any insubstantial features associated with the ditch. For economy the middle of the ditch was left unexcavated. Narrow cuts were made down the inner and outer faces of the ditch, and these had to be abandoned at the disappointingly high level of the local watertable.

The surviving inner face of the ditch cut through natural gravel (fig.8). Topsoil and hillwash overlying the gravel was either removed at the time (unlikely) or turned over by gardening once the ditch had been opened (see below). The outer ditch face cut surviving topsoil/hillwash and natural gravel below (fig.9). Upcast from the ditch was dumped on the outside as a bank represented as soil overlain by gravel.

Whilst the boundary between upcast soil and gravel is relatively distinct, the boundary between *in situ* and upcast soil (i.e. the old ground surface) is not. Either the ground had been under arable cultivation shortly before the ditch was cut or the established turf was removed.

On the west side of the ditch there was no bank or enclosing wall. A truncated layer of garden soil overlay natural gravel and lined the ditch face. Within this soil stones were generally restricted to bands aligned with the ditch, and the irregular base of the soil produced a pattern of ridges and hollows apparently caused by root and animal-action but again aligned with the ditch (fig.8). These features would be in keeping with a formal

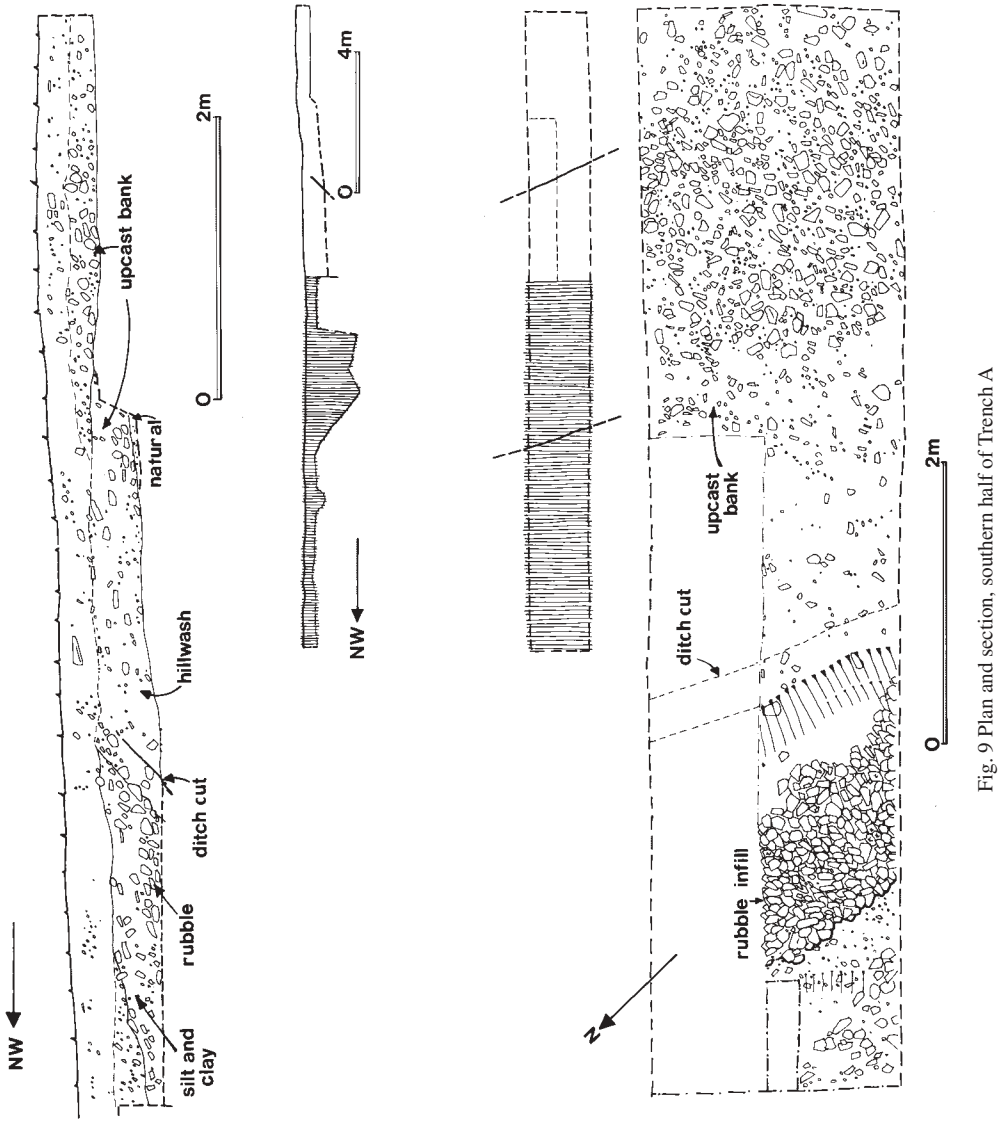

Fig. 9 Plan and section, southern half of Trench A

garden incorporating hedges. Whilst such remains cannot be expected to provide a coherent pattern in so small a trench, it was felt that area excavation within the enclosure would have presented overall patterns capable of being arranged into a sequence of garden development.

There was no sign of a clean or recut on the inner face of the ditch. The soil cover associated with the original garden was partly overlain by stonier soil containing fragments of roofing slate. This layer is unlikely to represent a major event and is better interpreted as gradual silting and time-to-time cleaning of the main garden area to the west. In turn, this stony layer was sealed by fine charcoal-flecked soil representing continuing silting and gardening activity. No finds were recovered from the three layers of garden soil on the inner face of the ditch. On the outer face gardening was represented by one, relatively thin, layer of soil. This layer was sealed by voided rubble, stone collected from field clearance and dumped to provide a land drain within the ditch (fig.9). The garden soil may have been truncated by a cut for the drain. Amongst the rubble was a great deal of bottle glass. The bottles had been cylindrical, with high string rims, some rims rounded down, and one neck slightly pinched above the shoulder. They were potentially manufactured within the period 1750-1800. Also dumped amongst the rubble were fragments of green/blue window glass, a single abraded claypipe bowl (mid 17th century ?), a great deal of coarse glazed Buckley-type earthenware, fine white salt-glazed stoneware and tin-glazed earthenware (Delftware). The absence of creamware, paralleled by the early infill layer in trench B, suggests a similar deposition date (early in the second half of the 18th century).

The rubble by the east face and the garden soil by the west face of the ditch were in turn sealed by a deliberate dump of soil containing lumps of cream-coloured clay. Although this layer contained no finds it must immediately post-date (i.e. within a few days) the rubble land drain. The lumps of cream clay were indistinguishable in colour and inclusions from the clay used as flooring within the tower (Trench D). Since this clay did not appear elsewhere on site it provides a tentative link between the tower and enclosure ditch, suggesting that the original basement floor was removed and the central shaft inserted before the enclosure ditch was backfilled in the second half of the 18th century.

The silty backfill was in turn sealed by a gravelly soil. This layer was more gravelly to the east. Towards the west it merged with the soil overlying traces of gardening. It represents the final backfill of the ditch, disturbed by later cultivation. The gravel at the east end would have been drawn from the upcast bank on the outside of the ditch.

Over the ditch and to the west the upper part of final backfill was reworked into the present topsoil. On the east side of the ditch, where the residual upcast bank still presents a slight ridge final backfill has been totally reworked into present topsoil.

Topsoil from most trenches produced pieces of burnt flint and fragments of a fused glassy material, both potentially associated with the burning of lime imported from Ireland and used to neutralise the acid soil.

Recent activity in the field was represented by a rubbish pit and the remains of a handful of metal and wooden tent pegs recovered from the present topsoil. The rubbish included sauce bottles, food tins and a small whisky bottle in keeping with a Boy Scout camp.

Acknowledgements

We are indebted to Pamela and Walter Walker, owners of Craigcaffie Tower for financing the excavation and post-excavation work and for giving up several days to dig. Thanks are due to Damien Ronan, the third member of our digging team, and to Michelle Crichton who spent several days in the trenches. Thanks are also due to the Whithorn Trust for use of their equipment, to George Haggarty for his very helpful comments on the pottery, to Chris Tabraham, to Bill and Sheila Cormack, to Gordon Hodge and to Packard Harrington.

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A GALLOWAY LORD MAYOR OF LONDON
Sir William Stewart 1644-1723
by F.J. Stewart

The fourth son of John Stewart of Shambellie (the second by his second marriage) was William, born in 1644. He is so named and described in his in his father's Heritable Bond of Provision of 28th October 1648 appointing the lands of Corbellie and Garloaff in favour of the eldest son of the marriage, John, whom failing to the second son, William. He was to become probably the most eminent member of the family of Stewart of Shambellie of all time (so far!), ending up as, among other things, Lord Mayor of London.

He first appears in legal documents as proxy to his father in a Tack or Lease in 1659 (regd. 22nd Jan. 1688). He was the writer of a deed signed at Shambellie in 1661 and witness to a Bond granted by his father in 1662; and he was again the writer of a deed recording a Loan of £25 by his half-brother, Archibald Stewart of Culgruff to Thomas Kincaird, chirurgeon burgess of Dumfries (regd. 29th Jan. 1672).

In 1669 the same Archibald signed a Deed of Corroboration as cautioner or guarantor for William. It seems that William had obtained a Loan of 84 pounds 14/10d Scots three years earlier from Thomas Laurie, Merchant burgess of Edinburgh. What with 40 pounds being added as a penalty for non payment and, presumably, further loans, the total debt had increased by 1669 to 284 pounds Scots. Archibald had first bound himself as cautioner in 1668 but was now being forced to corroborate his guarantee by securing the debt over his own lands of Carse of Killiling, parish of Holywood, Dumfriesshire etc. The Loan must have been repaid and Archibald's lands released, as there is no further reference to it.

Although, among the Shambellie papers, there are several interesting Accounts and documents relating to William's later life it is remarkable how little is known about his early career. It seems that he moved to London as a fairly young man and became a barber-surgeon (or chirurgeon). Originally, a barber-surgeon had two specific functions - shaving beards and dressing hair on the one hand; and performing minor surgical operations on the other, especially the operation of blood-letting which, at that time, was still considered the only cure for fevers, pneumonia etc. The barber's pole with its red and white spiral is said to symbolise the winding of a bandage around the arm prior to blood letting.

One imagines that William must have had some training for his profession but it is not known where, nor where in London he started to practise it, although it was probably at St. Bartholomew's Hospital. The first recorded fact is that he was admitted to the freedom (i.e. he became a liveryman) of the Barber-Surgeons' Company of London in 1686 at the age of 42. It seems likely that, even by that date, with the advance in surgical knowledge and technique, barbers and surgeons were already becoming strange bed-fellows, (they certainly would be today,) although it was not for another 60 years - twenty years after William's death - that the final break came about, on the grounds that the business or trade of a barber was 'foreign to and independent of the practise of surgery'. Even so, the Company of Barbers still survives in its ancient Barber-Surgeons hall in Monkwell Square, Cripplegate, EC2.

There is no doubt, however, that it was in the surgical side that William was primarily interested, so much so that in 1712 he was elected President of St. Bartholomew's Hospital, a position which he held until his death.

By now he was in his late 60s and clearly a man of some distinction and substance. He lived in a rented house in Mark Lane but he owned several houses in his own right, probably bought as investments. Reference is made to two Brickhouses in Ludgate Hill which he let out at £68 a year and a house in Leadenhall Street let out at £30. He also owned an estate at Long Bennington in Lincolnshire with a small manor house and a rental of £512.15/, though whether this was for investment purposes or simply for the status symbol of being a landed proprietor is not clear. There is certainly no indication that he ever resided there himself and he had to hire an agent in Grantham to look after it for him. On the other hand he did pay frequent visits to what today would be called his 'holiday home', consisting of a dwelling house with outhouses and a garden at Epsom.

He became a very successful and much respected man, not only in his own profession but in business circles as well. He bought a large holding of Stock in the South Sea Company, incorporated in 1710 to trade in the Pacific and along the east coast of South America, and still held the Stock at his death before that particular Bubble burst. He was also one of the original Directors of the East India Company on its formation in 1698. The qualification for being a Director was to hold a minimum of £2000 of Stock - a substantial sum in those days. He retired as a Director by rotation in 1701 but was re-elected for two further four-year terms of office, from 1704 to 1708 and from 1716 to 1720.

He was also a great philanthropist. There are several records of payments, some of up to £50 a year, which he made to the Charity Schools in St. Bartholomew's and St. Thomas's Hospitals, to the Charity School in Red Cross Street, Cripplegate and to the London Workhouse which was then situated next door to him in Mark Lane, also in Cripplegate. There is even an entry in his Account Book undertaking to pay £40 a year for the rest of his life for teaching 6 poor children from his Lincolnshire estate in Long Bennington. It was probably this concern for poverty, of which he must have seen much around him, which eventually led him into local politics. In 1711 he was appointed an Alderman of the ward of Cripplegate, another position which he held until his death. In the following year he was elected a Sheriff of London and Middlesex for 1711-12 and it was during this period of office that he was knighted after presenting a Loyal Address to the Sovereign (Queen Anne) at St. James's Palace on 14th June 1712. He stood as a Tory Member of Parliament for the City of London, but apparently without success.

Much of this information and of what follows has been taken from Beavan's *Aldermen of the City of London* and Baddeley's *Aldermen of Cripplegate.*

In 1720, being aged 76 and the second most senior Alderman in the City, Sir William was proposed as Lord Mayor of London, but this raised a problem. The custom at that time required that the Lord Mayor must be a liveryman of one of the first twelve Companies of the City but the Company of Barber-Surgeons was not one of them. Accordingly Sir William was swiftly 'translated' to the Goldsmiths' Company, which was. The Goldsmiths welcomed him, immediately made him free of their Company on 27th July 1720 and, only four

days later, dutifully elected him their Prime Warden. According to the Annals of the Barber-Surgeons' Company (p 562):-

'The Goldsmiths' Company decided, although Sir William was only a member of their body by translation, to show him all the customary civility, and they offered him the use of their Hall for his year of office, at a rent of £130.'

'The Wardens were desired by the Court at the same time to ascertain from the Lord Mayor elect what he was prepared to pay towards the expense of a Show and, after some deliberation, Sir William replied £60.' The Company, it is expressly stated, were at that time not in a pecuniary position to bear the expense of a Show, but nevertheless it would seem that they did their best, as will be seen below.

But £60 was not Sir William's only expense, of course, as is clear from his Account Books. For a start he had to buy for himself a new full-bottomed wig for 15 guineas and another light wig, also full-bottomed, for 18 guineas. He handed his housekeeper, Ann Smedley, 11 guineas to buy herself 'a saline gown' and he reluctantly produced a further 5 guineas for his niece Lillias ('Cousin Lilly') for a gown 'even though, I'm told, she has 9 or 10 compleat sutes of wearing aparell of different collours besides her fine head lining & lace suteable'. Then £20 was required for his footman 'to buy him a hatt trimmed with silver lace and a pair of scarlet stockings', and the same for his coachman as well as 'a new frock (coat) and a livery as formerly.' He bought a gold chain of office at a cost of £140-8-2, just as in 1711 he had had to buy another gold chain of office when he became Sheriff of London and Middlesex. The Goldsmiths' Company charged him £71-18-4 as a 'fyne' or entrance fee, when he was translated to them, so the Company did not come out of it too badly after all. Finally, to keep the record straight, he paid 6 guineas to a William Price 'for painting my coat of arms in Glass for the Church windows in St.Bartholomew's.'

The great day arrived, Monday the 30th of October 1721, Lord Mayor's Day[1]. What followed was graphically described in the Memorials of the Goldsmiths' Company:-

'The Foot Marshall drew up the Arm Bearers and Banner Bearers in their blew gowns and capps, being 52 in number, who were followed by the Companies almsmen: and then came the Gentlemen Ushers in velvet (or black) coats and gilt chains, the Budge Bachelors in - gowns, and the Rich Bachelors in - gowns: after whom came the New Livery, and the rest of the Company, the youngest going foremost; and so waited on Sir Wm. Stewart, Knight, Lord Mayor at Drapers' Hall (the Drapers' Company dining at Goldsmiths' Hall which could not be got ready for his Lordshipp), and from Drapers' Hall this Company preceded his Lordshipp to the 'The Three Cranes' where they took barge, went to Westminster, relanded at Blackfriars, returned to Drapers' Hall, and from thence went to the 'Horne' Tavern in Fleet Street to dinner, at which place the Rich Bachelors, Budge Bachelors and Gentlemen Ushers were before treated while the Company were on the water.'

Which no doubt explains a note among Sir William's papers that although the Lord Mayor's feast cost only £67-7/-, the Company 'drank a hogshead (52½ gallons) of port, 6 gallons of mountain, 6 gallons of white port and 3 gallons of canary.'

1 Nowadays Lord Mayor's Day is on 9th November.

Sir William never married but from the rather haphazard Accounts which he kept in his later years one can get some indication of the life-style of a comparatively well-to-do bachelor in London in the early 1720s. In his house in Mark Lane there was his housekeeper 'Mistress' Ann Smedley who had been with him for over twenty years. Her salary is not given, but there were three other maid servants at wages of 5 guineas a year each, plus their keep. There was a gardener at Epsom, a Mr. Start, who received £20 a year, but this included 'his wife's allowance for looking after the house there and her board wages in my absence.'

Details of his annual expenses make interesting reading. Taxes on his several properties amounted to £200 and, in addition to the rent of his house in Mark Lane, he paid an insurance premium of £5-3-8 on a value of £800. There were various small charges for local services such as the church in London, the sexton, the scavenger, the orphans, the windows, the Minister at Epsom, the poor of the parish there, highway repairs, the dungman and so on, as well as 'Box money distributed at Xmas about £12', all totalling £69-12/-.

Then there were charges for two coachhouses for a 'Coach and Charriott with appurtenances' and for oats, hay, shoes, beans, bran etc. for the horses; and odd sums paid to the coachman for wheels, oil, grease, tar, brushes and, surprisingly, £6 to a farrier for bleeding etc., amounting in all to £103-10/-. The coachman was paid a wage of £8 a year, a further £8 for his washing and £12 for 'a compleate Livery with a box coat, frock laced and half stockings.' There was also a footman who received a wage of £7, though this included 'washing his linning' and a further £10 for his livery of a house coat complete.

Things in general were much cheaper in those days, of course, but some were cheaper than others. For instance, 'a barell of strong beer containing 41 gall.' cost only £2. In the last year of his life Sir William estimated his income at £1463 and his expenses at £669, leaving a surplus of £794 'for housekeeping.'

Sir William, having no children of his own, seems to have taken a great interest in the welfare of his nephews and nieces and he was very generous to them, particularly to the children of his two brothers who had predeceased him. Margaret, the daughter of his elder brother, John Stewart of Corbellie, had married a London attorney, William Tims, who practised in Wood Street and was to become Sir William's own lawyer; and the three children of his younger brother, Walter Stewart of Marwhirn viz. Marion, Lillias and William. Marion had married her half-cousin, William Stewart of Shambellie who had for many years been Secretary to the 1st and 2nd Dukes of Queensberry and was mainly resident in London; Lillias (Cousin Lilly) was still unmarried and living in Scotland but Sir William was giving her an allowance of £50 a year 'for apparels'; and when William - yet another William - arrived in London looking for a job, his uncle first paid William Tims £210 to take him on as an apprentice in 1717 and then, when he had qualified as an Attorney five years later, lent him £1850 to purchase, with Tims' assistance, an appointment with the unfamiliar name of 'Clerk of the Papers at the Poultry Counter.' He was also paying him an allowance of £30 a year. (The Poultry Counter, it turns out, was in fact a City prison).

All of these were eventually to benefit under Sir William's Will. He left a legacy of £2000 to each of them, although Margaret and Marion had to share their legacies equally with their respective children, and in William's case the loan of £1850 was to be regarded as a payment to account.

Sir William died on 29th April 1723, only a few months after he had demitted the office of Lord Mayor. He was aged 79 and his Will, signed only a month before on 28th March, was proved in the Prorogative Court of Canterbury on the 21st May following. There is a copy of it among the Shambellie papers. He appointed as his executors William Stewart of Shambellie, William Tims his lawyer and William Stewart his nephew, all referred to above. Apart from the legacies of £2000 to members of the family he made a number of bequests to the Charities in which he had been involved during his lifetime:-

'Towards the relief of the Poor, Sick and Lame at St. Bartholomew's Hospital £700; Towards the relief of the Poor, Sick and Lame at St. Thomas's Hospital £100; To Christ's Hospital and the Hospital of Bethlem, Bridewell £100 each; To the London Workhouse and the Poor of the Scotts' Corporation in London £50 each; and to the poor of the Parish where I happen to die and am interred, to the poor of the Parish of Allhallows Staining in London, and to the poor of the Parish of Epsom £10 each, declaring the same may be distributed amongst the most necessative poor of each parish as the Minister and Church Wardens shall direct and appoint.'

There were also some more personal bequests. The executors were each left £100 and, in addition, William Stewart junior received 'my gold watch' and William Tims 'my sapphire stone ring'. There were legacies of £50 each to his brother Walter's widow, to another niece, Agnes and to his two surviving sisters, Nicholas and Florence. But the best of all was 'to my good Old Servant and housekeeper, Mrs. Ann Smedley £500 over and above the wages I have computed as due to her £120, in all £620; and I give to the said Ann Smedley my Red Damask bed and the appurtenances thereunto belonging, and also my biggest 'silver can'.

The residue of the estate after payment of all debts, bequests and expenses was to be divided equally between his two nieces, Mrs. Margaret Tims and Mrs. Marion Stewart and their respective children, of whom Margaret had five and Marion four. In the end, after all the properties had been sold, the residue amounted to over £17,500 of which each of the two families received a half, in addition to their legacies of £2000.

Sir William is said to have died in his house in Mark Lane, though there is some evidence that he may have been staying in Epsom at the time. At any rate, his funeral did not take place until 7th May 1723, eight days after his death. By all accounts it was quite a lavish affair (the Undertaker's bill alone coming to £224). Baddeley's Aldermen of Cripplegate Ward gives a description of it. The hearse started from Mark Lane and was preceded by 100 Blue-coat boys from Christ's Hospital and 50 boys belonging to the London Workhouse, each with a wax taper in his hand, and was followed by relations and friends all dressed in black. Sir William had provided £150 in his will for 'mournings' but this proved inadequate. William Tims received £113 for mourning clothes for himself and his wife and children and William Stewart of Shambellie £72 for the same. His nephew William was paid £21 and so, of course, was 'Cousin Lilly' for yet another new gown. The men servants had to be fitted out with special new suits and stockings and the women servants, too, with dresses, quilted petticoats, shoes and cloggs; and scarves had to be provided for the six Aldermen Pallbearers, the four Clergymen, the City Marshall and the two Stewards of the Blue-Coat and Workhouse Hospitals.

The procession headed for the Guildhall Chapel where the body was interred with due ceremonial under the supervision of a Swordbearer (since this was the burial of an Alderman) in a vault specially constructed for the purpose. Above the vault was placed a memorial tablet with an Inscription on it in Latin which has been translated as follows:-

Here Lies Buried
William Stewart, Knight
Fourth son of John Stewart of Shambelly,
a noble family of Scotland in the
Province of Galloway
who
Brought honour, dignity and splendour
to a branch of his profession as
President of St. Bartholomew's
He governed London as a Sheriff and
later as Mayor with such firmness and
wisdom that even in the most difficult
times the peace, liberty and tranquillity
of the City remained intact.
He was a keen, hard-working and devout
Supporter of the Anglican Church
He died
Within a year after his strenuous term
of office as Mayor
29th April 1723 aged 79
His relatives being mindful of his private
generosity to them no less than of
his outstanding qualities, have
dedicated this monument to him

When the Guildhall Chapel was later demolished the tablet was removed to the Church of St. Lawrence Jury across the road in Guildhall Street, but that Church was unfortunately destroyed in the bombing of London during World War II and apparently the tablet with it.

There is a fine portrait of Sir William in Shambellie House (artist unknown) dressed in a red gown and wearing one of his full-bottomed wigs in the style of the times.

JAMES BARBOUR,
Architect, Civil Engineer and Archaeologist

by Antony Wolffe, Architect
The Tollhouse, Gatehouse of Fleet, DG7 2JA

This paper was prepared in 1996 so that the achievement of the archaeological excavation at Birrens by James Barbour a century before could be seen in the context of his life and work as architect and engineer in Dumfries.

Records available at present limit this account to a general outline and short appraisal of the life of James Barbour and his contribution to architecture. Born in 1834 in Dunscore Parish, James and his twin brother Robert were the younger children of Mr Barbour, farmer in Shangan, a gentleman of strong character and marked individuality. He was one of the founders of the Reformed Presbyterian Church in Dunscore, which was later known as the Craig United Free Church. Thus the boys were brought up as Reformed Presbyterians but James later joined the Established Church and for many years was a member of St Michael's Church in Dumfries.[1]

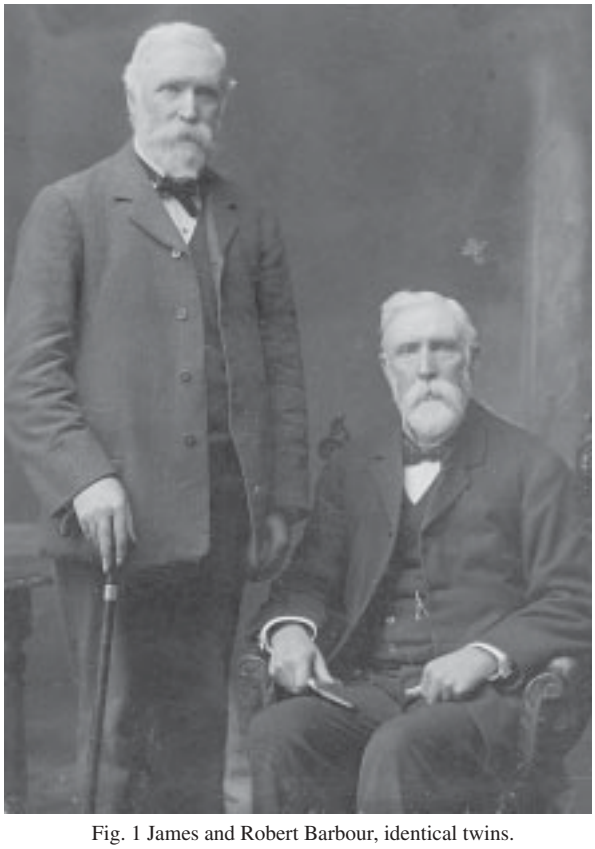


Fig. 1 James and Robert Barbour, identical twins.
(Photo courtesy of the Barbour family.)

1 *D&G Standard & Advertiser* - May 8, 1912

Apart from early schooling at Glenesslin Primary School, we know little of his education. It is probable that he served his architectural apprenticeship in Dumfries with Walter Newall in the early 1850s when Mr Newall was in his 70s and had his office in George Street.[2] Newall was both engineer and architect and James Barbour also practised in both capacities and was referred to as James Barbour C.E. but it has not been possible to establish that he had any formal qualifications or belonged to any professional institution. He also gained experience in a Glasgow office and studied drawing in the Glasgow Art School before returning to Dumfries to start his own practice in 1860, at the early age of 26. The first office was at 27 Buccleuch Street.[3]

Between 1866 and 71 the practice was in the High Street and James Barbour then acquired No 33 Buccleuch Street (becoming 53 Buccleuch Street after 1898) where he had his office for the rest of his life[4] and it was continued there by his partner John McLintock Bowie until 1917 when it moved to 27 Castle Street.

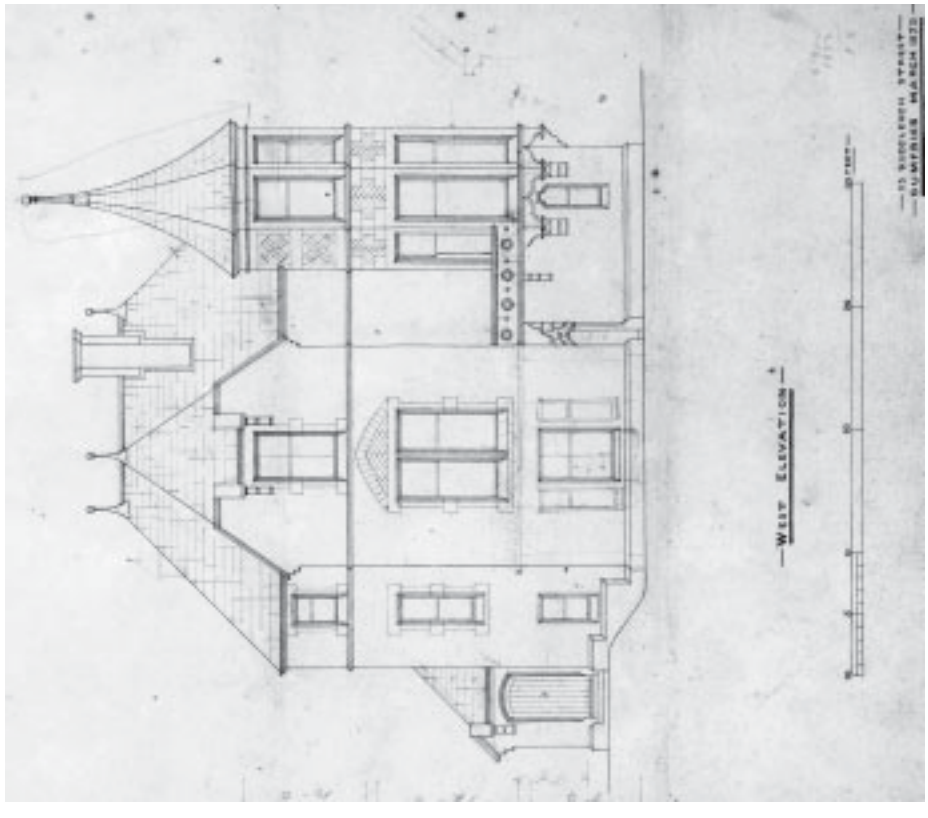
Before 1872 there is no separate address where James Barbour lived so that house and office may have been combined until he married the daughter of Mr Halliday, who had an ironmonger's business in Church Crescent. From that time the Barbours lived at St Christopher's, a house built by Barbour on the corner of English Street and Hood's Loaning, which is now incorporated in the Cairndale Hotel.[5] With a rateable value of £60, it was a substantial 3 storey house similar to Park House built at about the same time (see Figs 2,3,4). An octagonal tower on corbels at the SW corner with five windows in the drawing room and principal bedroom above is the main feature of the design extant today. Note the pattern of slates on the roofs and the detailing of stonework surrounding windows with large panes of glass.

When James Barbour started his architectural practice in 1860, his brother Robert was already in business on his own as a draper in the High Street.[6] About 20 years later in 1878-9 James designed and built the 'Harrods of Dumfries' in Buccleuch Street which has remained the Department Store of R.Barbour & Sons to this day, and is now managed by the great great grandson of the founder of the business.[7]

Mr and Mrs James Barbour of St Christopher's had two sons and a daughter. The elder son, also James, went to South Africa where he became engineer to the Corporation of Port Elizabeth.[8] Robert, the younger son, emigrated to New South Wales,[9] but the daughter remained at home and Miss Barbour of St Christopher's was a member of this Society after her father's death in 1912.[10]

Her uncle Robert had pre-deceased his brother in 1910.[11] His obituary in the *Courier & Herald* records that the twin brothers were very much alike in physical appearance. They

2 W J Wolffe - Paper on W Newall in NMRS
3 *Valuation Roll* 1860 - SD&C Archive
4 *D&GS&A* - May 8, 1912
5 *Valuation Roll* 1872 and O.S. Sheet XLIX - 15.22 Dumfriesshire 1894 O.S. Sheet LV - 3.2 Dumfriesshire 1894
6 Robert Barbour - *D&GS&A* 21.9.1910
7 Do - *SD&C Archive* - Buccleuch Buildings, 24-36 Buccleuch St., Dumfries Items 561-3, 1897-1936
8 James Barbour, Jnr - *D&GS&A* 8.5.1912
9 Robert Barbour - *D&GS&A* 8.5.1912 and McGibbon & Ross *C&DA* 1897 Vol. V, p.232 - Bankend or Isle Castle - Dumfriesshire 'endebted .... to Mr Barbour, jnr. Architect, Dumfries, for the sketch of the panel containing the arms.'
Vol. V, p.309 - Kirkconnell Tower, Kirkcudbrightshire 'We are endebted to Mr Robert Barbour, Dumfries, for the drawings of Kirkconnell Tower, also for obtaining for us from Mr R Maxwell Witham, the present proprietor, notes regarding the history of the family.'
10 Miss Jane McKay Barbour - elected to membership of D&GNH&A Soc in 1910
11 1910 Robert Barbour Obituary - *Dumfries Courier & Herald*



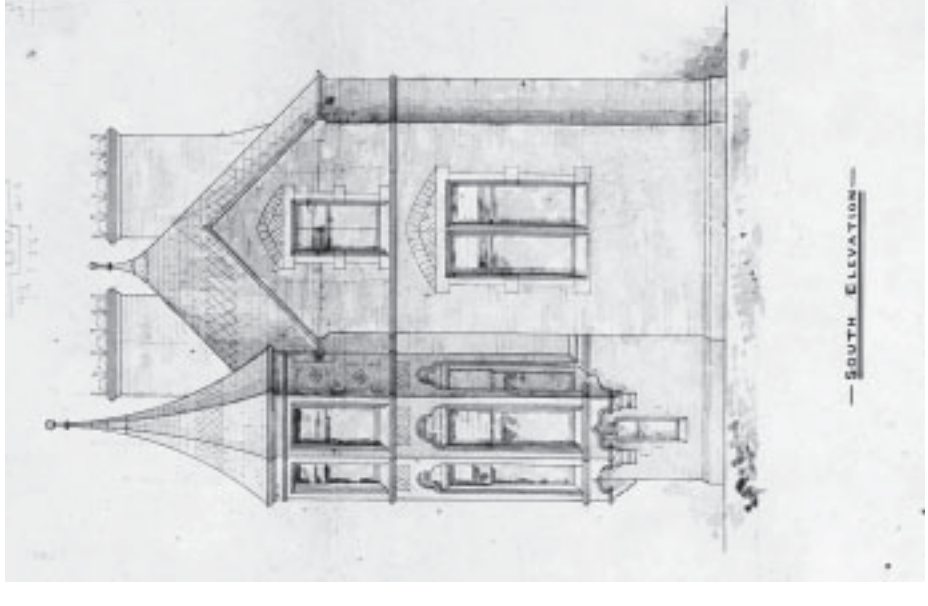


Fig 2 Elevations of St. Christopher's, English Street, Dumfries 1872.
James Barbour's own residence – now part of the Cairndale Hotel. Crown copyright reserved.

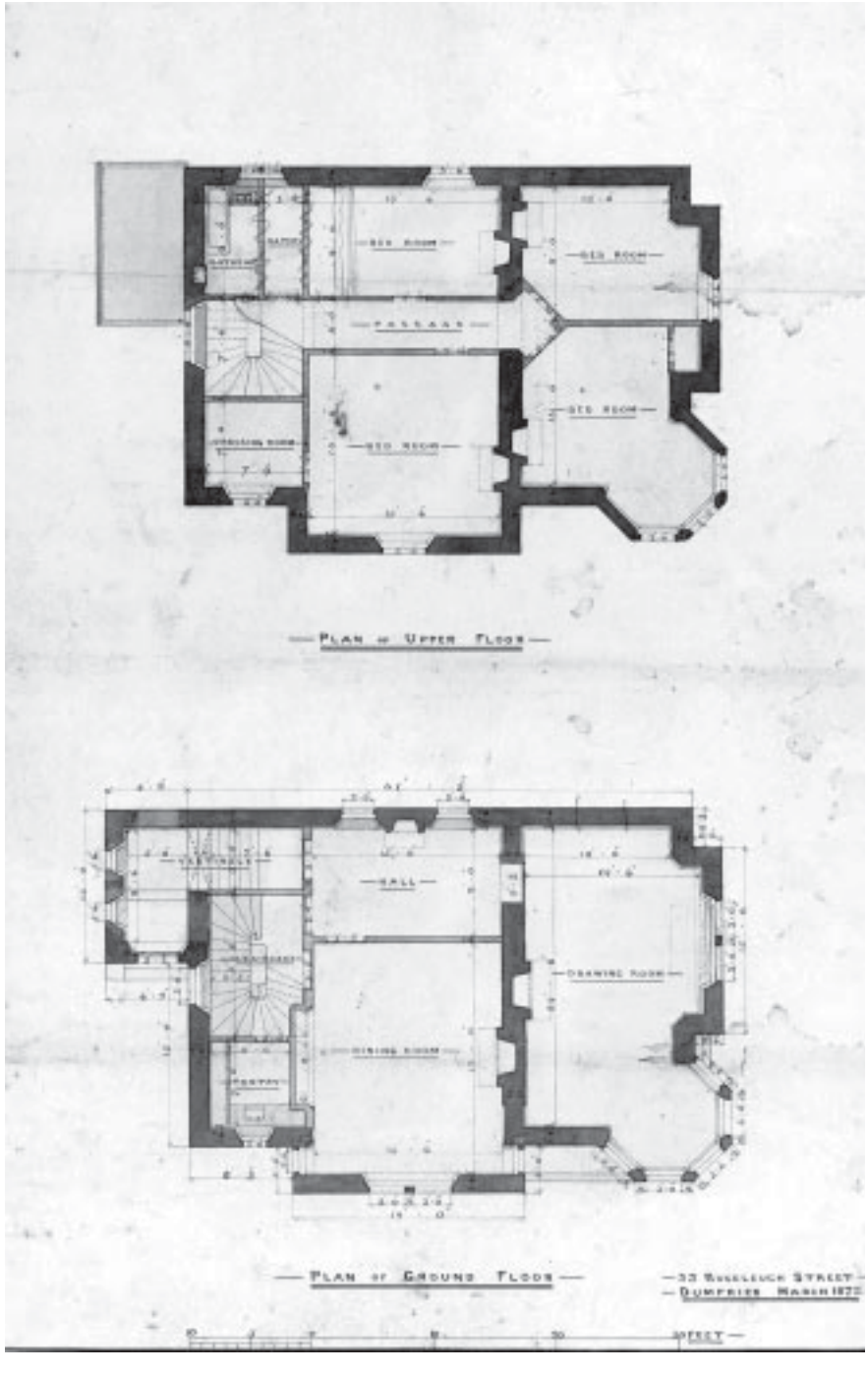


Fig. 3 Plans of ground and upper floors of St. Christopher's 1872. Crown copyright reserved.

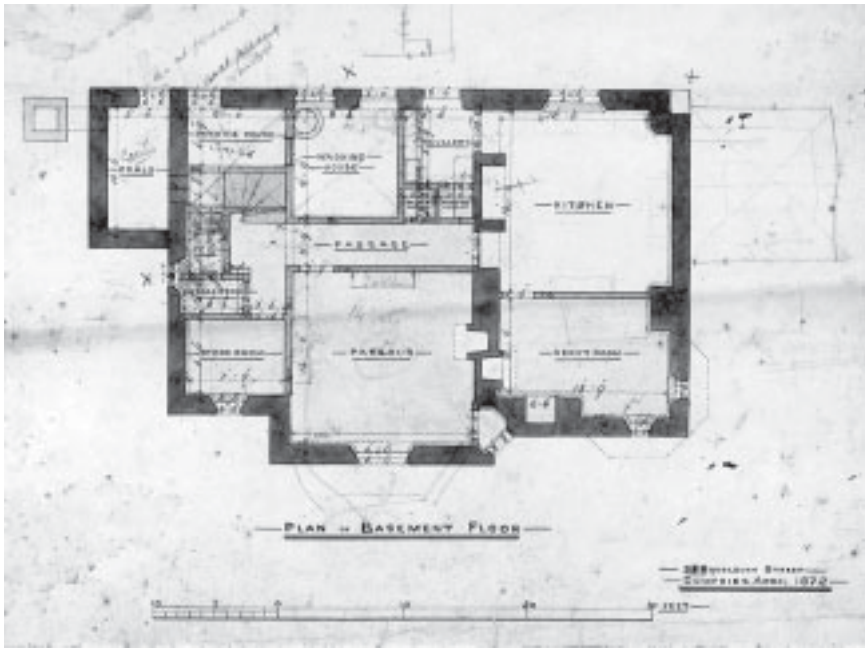


Fig. 4 Plan of basement floor of St. Christopher's 1872. Crown copyright reserved.

were men of unusual stature, and even in old age "handsomely striking". But you need more than good looks to build up an architect's practice and James was able to attract clients and patronage from the landward estates, the County Council of Dumfries, Town Councils throughout the South West and from the business community. He gained the remarkable, perhaps unique, reputation for the contract price of work to be within the estimate of cost which he had placed before his clients.[12]

In the 1860's the United Presbyterian and Free Church congregations built a number of new churches and manses designed by James Barbour who had been brought up as a member of the U.P. Church. Of nine churches built by him in the first ten years of his practice, eight were U.P. and only one at Castle Douglas was for the Established Church.

The Townhead South Free Church in Nith Place (Fig 5) is one of the early churches by Barbour built in 1862-5.[13] Its prominent position at the foot of High Street next to the Georgian house of Hastie & Brodie asserted itself with twin gables in red sandstone in the Decorated Gothic style. The contrast of the big five-light window in one gable with the large circular rose-window above the front door in the other was a novel feature in Dumfries (the church was demolished in 1995).

12 May 1912 - James Barbour Obituary - *D&GS&A, DC&H*
13 *SD&C Archive - BofS, D&G*, p.44 et sec also p.251

Fig. 5 View of Townhead South Free Church, Nith Place, Dumfries: built 1862-5, demolished 1995. (Photo, A.C. Wolffe)

The tall birdcage bellcote is echoed in the octagonal bellcote in Maxwelltown West Church, Laurieknowe, another Free Church built by Barbour in 1865-6 also in red sandstone with Decorated Gothic detail.[14]

The United Presbyterian Church in Castle Douglas built by James Barbour in 1870 was his last U.P. Church. Thereafter all church work was for congregations of the Church of Scotland. More than a dozen churches were altered, extended, re-roofed and/or re-pewed. Three new churches were built to replace former churches as at Closeburn, Tundergarth and New Abbey.

One of these is the parish church at Closeburn on ground adjacent to the former church of which the east gable is still standing. The first drawing of 1876 (Fig 6) is a conventional Gothic parish church. In 1877 the design was changed to a cruciform plan with the main entrance through the tower at the NW corner (Figs 7,8) and the church was built to this plan in 1878 of local red sandstone. Oak and thistle carvings at the springing of the arch over the door, angle buttresses at the corners and gargoyles at the tower parapet are carefully detailed and executed with great skill. The stone tracery of the windows introduces a distinctive style which Barbour develops further at Tundergarth (1899/1900).

14 *Buildings of Scotland - D&G* - p. 43 & 243

Fig. 6 Closeburn Parish Church: design of 1876. Crown copyright reserved.

Senior to Lorimer, James Barbour is at home in the arts and crafts movement of his time and led in developing the many skills that add up to the quality of his buildings. A total of 26 churches over 50 years is a fine record of buildings all in stone mainly in the Gothic manner with natural woodwork in the roof and pews, plaster work of a high order and leaded glass in windows. This was the time of craft revival with decoration inside as well as outside - crow stepped gables, bellcotes or turrets, enliven the skyline with late Victorian exuberance.

As architect and engineer to Dumfries County Council, James Barbour was well placed to take on new schools under the Education Act of 1872 and he builds a range of schools in a variety of styles from Tudor and Schoolboard Gothic to Art Nouveau.[15]

15 *Buildings of Scotland - D&G -* pp. 78, 271, 445

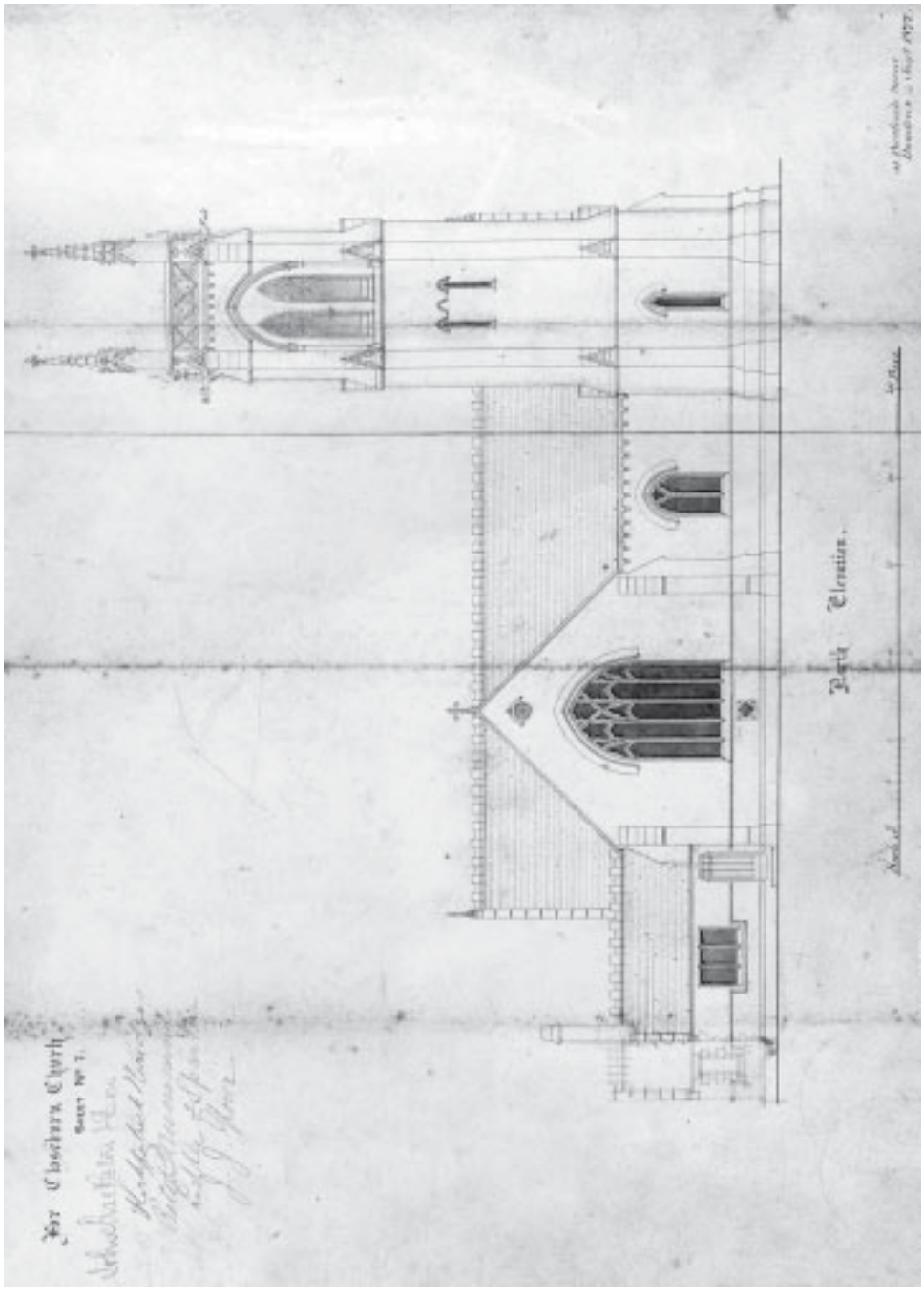


Fig. 7 Closeburn Parish Church: as built 1877. Crown copyright reserved.

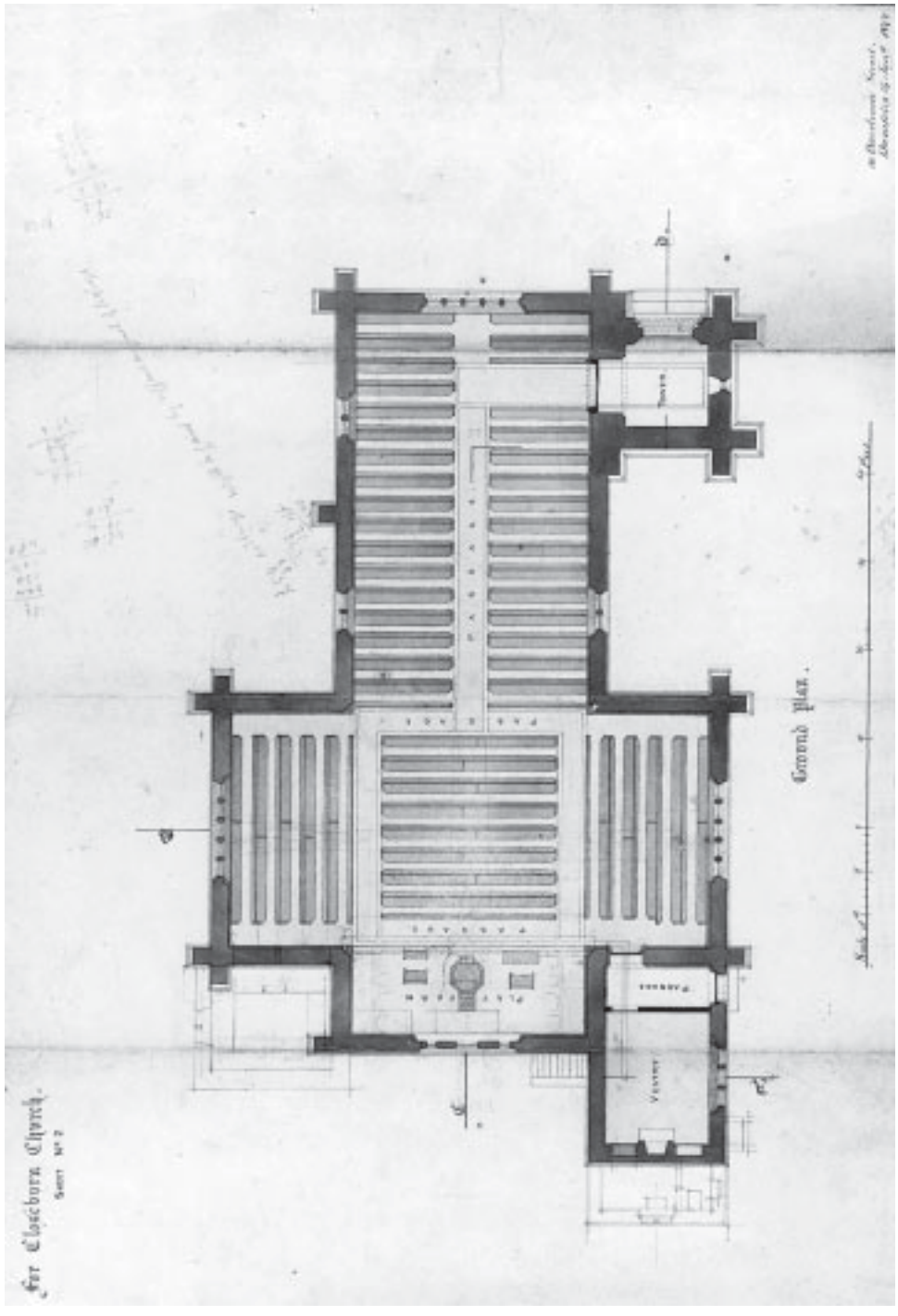


Fig. 8 Closeburn Parish Church: plan 1877. Crown copyright reserved.

Police Stations are styled from the picturesque to the castellated and the Police Barracks on English Street - now part of Dumfries and Galloway Council Offices - are convincingly Baronial. At Thornhill Police Station (Fig 9) the crenellated parapet and crow-stepped gables are appropriate for the image of castellated security.[16]

The new Town Hall in Castle Douglas was built in 1862 with an italianate front of smooth ashlar sandstone, arched windows and a fine Burgh crest above the main door.[17]

Later in his career, alterations were made to the Town Hall in Moffat which had been built as the Baths in 1824. Here Barbour respects the classical formality of the original building and alters the front by changing the main entrance and adding a bay on both sides (Figs 10,11).[18]

Most of Barbour's work was in Dumfriesshire and Galloway (See Appendix C) except for St Bride's in Pembrokeshire and Luffness House at Aberlady in East Lothian.

In all his work the plan is carefully worked out to suit the site and rooms are designed for their purpose and in the right relationship to one another. In this way Barbour buildings are sensible and give satisfaction - they work. At the same time they are designed to give pleasure by the use, both inside and outside, of the texture of materials and decorative features of various styles.

In 1896 John McLintock Bowie joined Barbour's office and in 1902 became a partner to establish the firm of Barbour & Bowie. Bowie was a fully qualified architect and Fellow of the RIBA at a time of increasing professionalism. There was no architects' department in Local Authorities or even a Burgh Surveyor in Dumfries - Mr Bowie was appointed to act in this capacity and as Master of Works.[19]

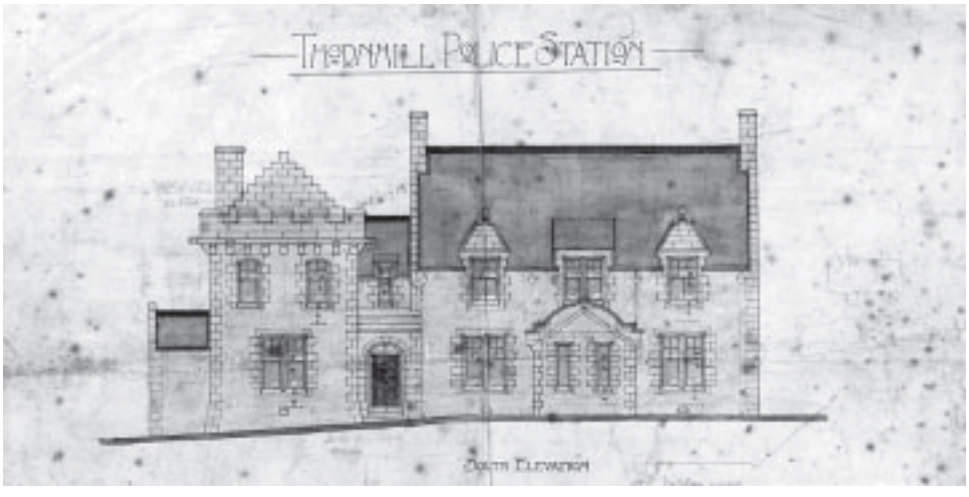


Fig. 9 Thornhill Police Station: south elevation 1908. Crown copyright reserved.

16 Ibid - pp. 76 & 265, 593
17 Ibid - pp. 77 & 169
18 Ibid - p. 440
19 John McLintock Bowie 1871 - 1957

If there was no competition with a public sector in Barbour's time there were several firms competing in Dumfries such as A B Crombie and F J C Carruthers and for larger commissions city practices would often be preferred. Throughout his life the Crichton Royal Institution was carrying out substantial building projects. With the in-house expertise of John Davidson and later James Flett, and the larger works by Sydney Mitchell from Edinburgh, there was not much left for local firms, and Barbour's contribution is limited to the Upper Brownhall Lodge, the Main or Low Lodge on Glencaple Road and works on some cottages.[20]

In the centenary year of the excavation of Birrens the professional life of James Barbour is of interest as the backcloth of his abiding and lifelong interest in historic and archaeological studies.

The *Transactions* as well as the Minute books and Scrapbooks of the Society record his many contributions on a wide range of topics. If Sir Walter Scott made us aware of the romance of our past, James Barbour used his architectural and engineering disciplines of measuring and surveying to analyze old structures and he developed this expertise in the study of the ruins of Lincluden Priory. He was able to establish two phases of building of which the first was in the 13th and the second in the 15th century.[21]

Another instance is the prolonged debate over the original form of the Old Bridge in Dumfries in which James Barbour convincingly argued against ten arches and established the case for a nine-arch bridge.[22]

Appendix A gives a list of papers by James Barbour published in the *Transactions* of this Society - and is taken from the Index 1862-1912 published in 1968.

Appendix B records J.Barbour's membership of the Society and the offices held by him (information supplied by J Williams, Editor of *Transactions*).

Appendix C gives a list of drawings by Barbour 1860-1912 in the archives of Sutherland, Dickie & Copland at 31 Castle Street, Dumfries. It is known that Barbour prepared drawings for other commissions which are not in the Castle Street archive, such as drawings for works at Crichton Royal Institution or design drawings for Dalgonar House at Dunscore (not executed). Such unrecorded drawings can only be a small number in relation to the list of over 400 items in this appendix. Works carried out by Barbour & Bowie during James Barbour's life are included, but jobs stated to have been done by John McLintock Bowie are not stated.

James Barbour died on 5 May 1912 at the age of 78 while on holiday with his daughter. Until just over a fortnight before he had been daily in his office in Buccleuch Street. The obituaries in the *Standard and Advertiser* and the *Courier & Herald* refer to him as architect and civil engineer of prominence with a distinguished place in his profession and widely known as an erudite and zealous archaeologist. During 52 years in practice he made a worthy contribution to the architecture of South-West Scotland at the height of the Victorian and Edwardian era.

20 Archive of Dumfries & Galloway Hospitals at Crichton Royal Museum
21 *Transactions* 11.4.18
22 *Transactions* 11.4.37; 11.20.114

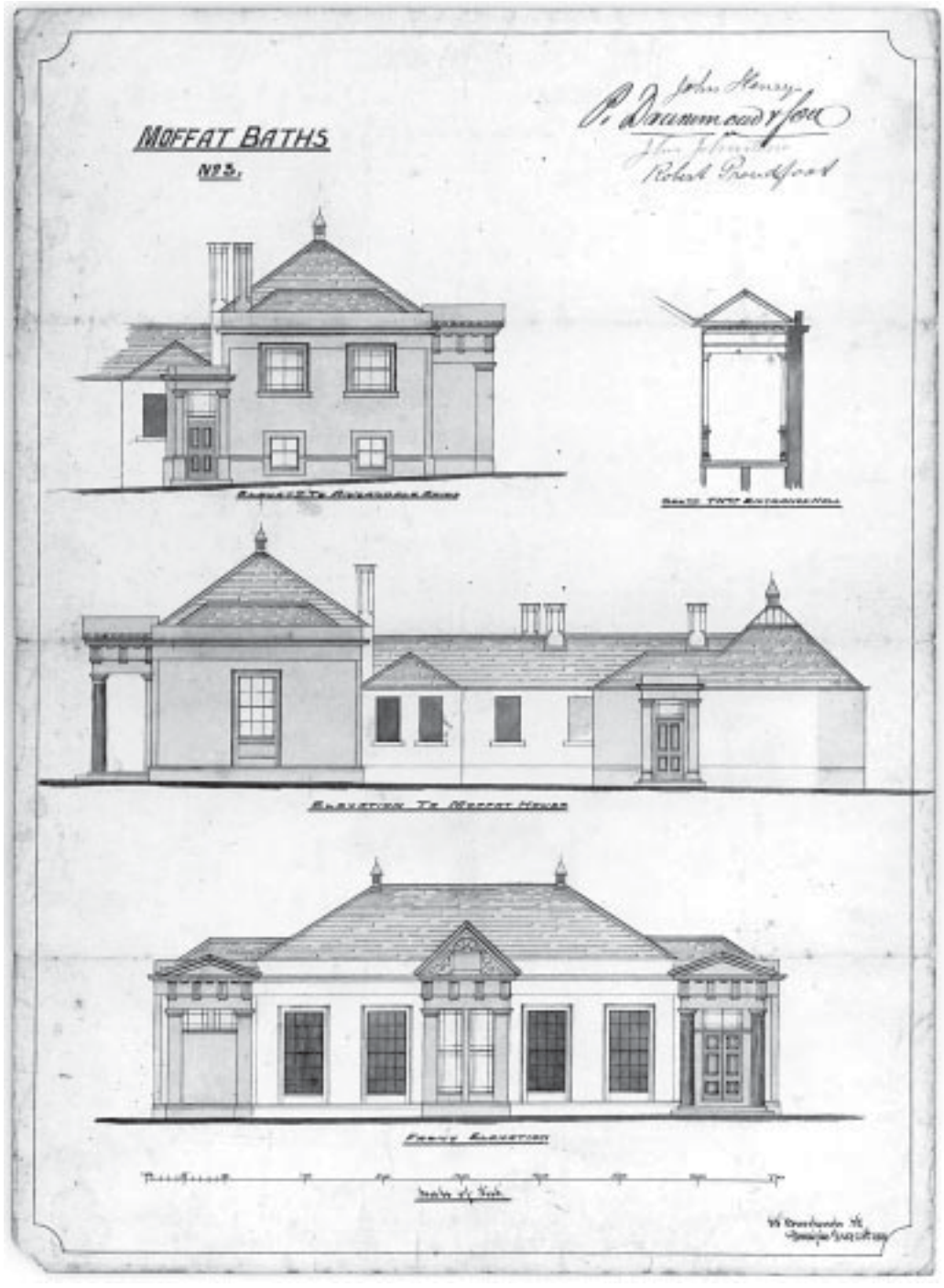


Fig. 10 Moffat Baths: built 1824, enlarged and altered by James Barbour, elevations 1881.

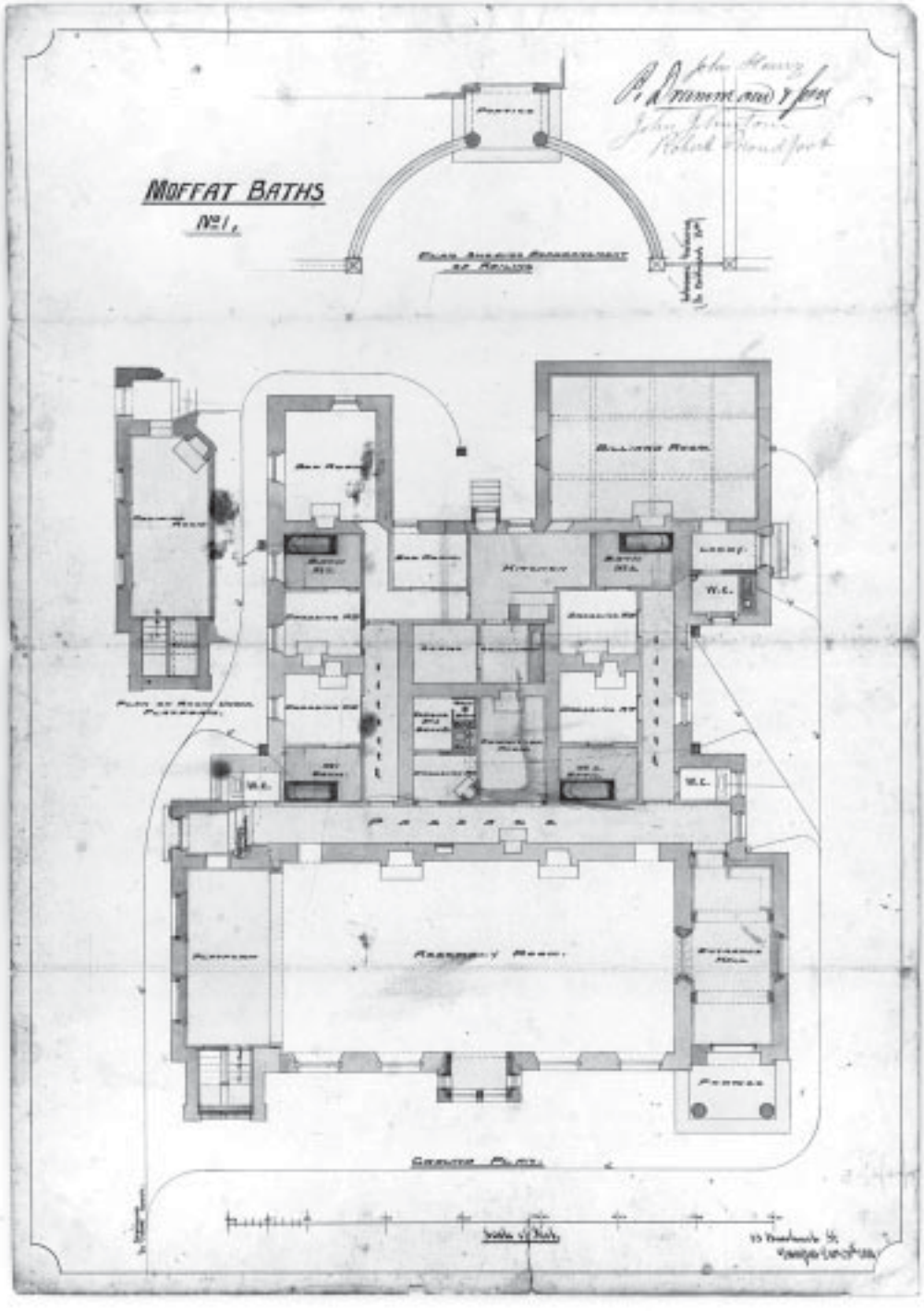


Fig. 11 Moffat Baths: plans 1881. Crown copyright reserved.

The Presidential Address by Hugh S Gladstone of Capenoch, MA, FRSE, FZS, FSA (Scot.) in the *Transactions* of 1912-13 records:- 'Only on May 5th of this year we lost another member of the earlier Society, James Barbour,who joined us on March 2nd, 1866. His antiquarian researches formed the subject of upwards of twenty papers published in our Transactions. His death robs us of one of our most venerated and active members.'

The same *Transactions* for 1912-13 have the following entry on p.362 under 'Presentations':-

'[by] Miss Barbour, St Christopher's.

MS. Sermons by Rev. William Halliday, a native of Dunscore parish; MS. Notes and Papers of the late James Barbour; Carved Stones from the New Church, Dumfries, the New Wark, Dumfries, and the Roman Camp at Birrens.'

In November 1912 Peter Stobie & Son, Auctioneers and Valuers of High Street, Dumfries, held 'a sale by auction at St Christopher's English Street of Books, Pictures and Antique Furniture belonging to the late James Barbour, FSA (Scot.) including Valuable Works on Architecture and Archaeology...' The Catalogue of this sale with about 250 items ranges from Vitruvius and Palladio to Pugin and other authors on architecture, to Sinclair's *Statistical Account*, 1791-9, in 21 volumes and many books on history and of local interest. Some 40 pictures of churches, castles and portraits were sold and the last item in the catalogue was James Barbour's Bechstein Grand Piano for which an offer of £35 did not reach the reserve price. *D&GS&A* 30.11.1912. Mr Kirkpatrick Dobie kindly made this catalogue available, a copy of which is also in the Ewart Library. (Db151(017)p).

Last year Penguin Publications brought out the volume of *Buildings of Scotland in Dumfries & Galloway*. James Barbour, with 50 entries. is the most prolific architect whose well designed and well built churches, schools, houses, police stations and wide range of estate and farm buildings are a proud legacy.

Aknowledgements

I am indebted to James Williams, editor of these *Transactions,* for launching me on this paper about two years ago and for supplying useful records of James Barbour's contributions to the Society and his service as Vice President for many years. Mr Douglas Barbour kindly has given information on the Barbour family. Unfortunately no painting or photograph definitely, of James Barbour has been found, figure 1 being a photograph of him and his identical twin brother Robert.

The archives of the practice of James Barbour and his successors as Barbour & Bowie, and now Sutherland, Dickie & Copland, are at 31 Castle Street in Dumfries. The drawings are indexed and Mr Copland has readily given access. The examples in this paper are reproduced with his permission and he has agreed to the list of Barbour's drawings given in Appendix C. His help throughout the preparation of this paper has been most valuable and is greatly appreciated. The assistance of Mr Ralph Coleman and staff of the Ewart Reference Library and of Mrs Morag Williams, archivist of Dumfries & Galloway Hospitals, is acknowledged with thanks.

Abbreviations in Notes:

NMRS - National Monuments Record of Scotland

D&GNH&A SOC - Dumfriesshire & Galloway Natural History and Antiquarian Society

D&GS&A - Dumfries & Galloway Standard & Advertiser

D&GC&H - Dumfries & Galloway Courier & Herald

SD&C Archive - Sutherland, Dickie & Copland Archive

BofS,D&G - Buildings of Scotland, Dumfries & Galloway

JMcLB - John McLintock Bowie

C&DA - Castellated and Domestic Architecture of Scotland, David McGibbon and Thomas Ross, Edinburgh, David Douglas, 1887

APPENDIX A

PAPERS BY JAMES BARBOUR IN THE *TRANSACTIONS* OF THE DUMFRIESSHIRE & GALLOWAY NATURAL HISTORY & ARCHAEOLOGICAL SOCIETY

Session(s)	Title	Ser./Vol.	Page
1883-86	Notes on Lincluden Abbey	II/4	18
	Dimensions of the Old Bridge of Dumfries	II/4	37
	The Town's Common Mills and their History	II/4	58
	Lovely Polly Stewart	II/4	95
1887-90	The Old Church of Dumfries	II/6	42
	A Relic of Burns - original portrait of Clarinda	II/6	131
	Edgar's MS History of Dumfries	II/6	255
1892-93	The Campanology of Dumfriesshire and Galloway - the Bells of Dumfries	II/9	130
1893-94	Old Water Supply of Dumfries and Water Supply of the Town	II/10	121
1895-96	A'Lorburne	II/12	96
	Recent Excavations at Birrens: The Interior Buildings	II/12	158
1896-97	The Ancient Burial recently discovered at Locharbriggs	II/13	74
1897-98	Excavations at Raeburnfoot, near Eskdalemuir	II/14	17
	The Church Bells of Holywood and Kirkmahoe and the church and Municipal bells of Lochmaben (in two parts)	II/14 II/14	82 97
1899-1900	Origin of the Ruthwell Cross	II/16	28
	Excavations at Birrens-wark[sic]	II/16	41
1900-01	Concerning the Market Cross [of Dumfries]	II/17/1	85
	First Account of the Excavations of Lochrutton Crannog	II/17/2	128
	Further Excavations at Lochrutton Crannog	II/17/3	246
	How the Royal Burgh of Annan built a Bridge	II/17/4	320
	Vestiges of the Castle of Dumfries [field meeting - see p. 365]	II/17/4	362
	Burial Urns found in Maxwelltown Park	II/17/5	377
	Extracts from Annan Burgh Records from 1682-1712	II/17/5	390
1905-06	The Castle of Dumfries	II/18	48
	The House of the Maxwells of Nithsdale at Dumfries	II/18	186
1906-07	Fort at Knockbrex [note]	II/19	124
	Place-names - Hazliebrae	II/19	194
1907-08	Devorgilla Baliol and the Old bridge of Dumfries	II/20	114
	The Old Burgess roll of Annan [summary]	II/20	170

1908-09	The Capture of the Covenanting Town of Dumfries by Montrose, The King's Lieutenant. General, in the year 1644, and his ejection therefrom	II/21	26
	The Recent Fire in the Town-hall of Dumfries and a previous fire which concerned the Town	II/21	87
	Notes on Raeburnfoot Camp, Eskdalemuir	II/21	137
1909-10	Dry Rot in Timber	II/22	49
1910-11	The Greyfriars Convent of Dumfries	II/23	18
1911-12	The Carlyle Farm and dwelling place at Birrens; Agricola's Well on Birrenswark Hill; A German Company's copper mine at Torbeckhill - all in the parish of Middlebie	II/24	163

APPENDIX B

(Information supplied by James Williams)

Dumfriesshire & Galloway Natural History & Archaeological Society

6 March 1866 James Barbour elected as member of 'original' Society of 1862-68

3 December 1880 'James Barbour (architect), ordinary member' of Society as re-established in 1876

Years of Election to Office

1883	Member of Committee
1884-86	Vice-President
1887-89	Member of Committee
1890-91	Vice-President
1892-95	Member of Committee
1896-99	Vice President
1901	No entry
1902-07	Vice-President
1908-11	Hon. Vice-President

There is no published obituary in the *Transactions.*

APPENDIX C

DRAWINGS OF WORKS BY JAMES BARBOUR
IN THE ARCHIVES OF SUTHERLAND, DICKIE & COPLAND
AT 31 CASTLE STREET, DUMFRIES

Year	Archive Ref.	Subject
1860	638	Villa
	1346	Viewfield Cottage
1861	1348	House at Westhill
1862	377	Stables at Drumpark
	856	Castle Douglas Town Hall
	1342	House at Bankend
1863	179	Mr Caig's Ho. Lover's Walk
	1251	Shambellie - Porter's Lodge
	1428	House?
1864	467	Chapelton
	510	Earthworks Newtonaird
	513	Moniaive Police Station
	1106	Barjarg Tower
	1132	Mr Sinclair's House, Moffat
	1242	Gas Works House, Dumfries
1864-67	515	Springfield Gretna Police Station
1865	446	Free Church, Maxwelltown
	1116	Nether Kier (Keir)
	1125	Cleuch Cottage
	1133	Wm Murray's Ho. Moffat

Year	Archive Ref.	Subject
	1355	Black Horse Close Housing
1866	1185	March Hill
	1354	House at March Hill
	1360	House for Mrs O'Neil
	1361	House at Milnthird
1867	38	Boarding School
	70	Townhead U.P. Church
	401	Eastlands Industrial School
	571	Glenesslin
	1120	Rammerscales House
	1199	Portrack House
1868	173	Moffat Police Station
	524	Lockerbie Police Station
	527	Kirkmichael Police Station
	649	Castle Douglas Church
	793	Cottage Newtonaird
	794	House Do.
	1112	The Drum, Barjarg Estate
	1123	Auchnage, Barjarg Estate
	1134	Wm Rae's House, Moffat
	1163	Steelstova Cottage
	1180	Laneside Cottage
	1261	Nethertown House
	1359	House for R K Walker
1869	68	Maxwelltown Manse
	185	Ecclefechan U.P. Manse
	419	House for Slatehouse
	568	Ellengowan for J H McGowan
	979	Mission Hall, Maxwelltown
	1126	Hayshed for Laggan - Barjarg Estate
1870	471	Torthorwald Manse
	637	Cottage at Rosebank, Lockerbie
	936	Barclay Farm
	1124	Lodge for W F Hunter Arundel
	1164	House at Cowrigg, Torthorwald
1871	61	Colvend Manse
	175	Moat House, Dumfries
	566	Plough Hotel, Dalry
	639	Rosebank House, Lockerbie
	883	Tallowquhairn, Arbigland
	1114	Hayshed, Barjarg
	1186	House for Mrs Sloan, Sanquhar
	1190	Laurelbank House
	1253	Burnock for Mr Stuart
	1276	Hermitage Farm, Dalbeattie
1871-75	653	New Abbey Church
1871-86	99	Porter's Lodge, Drumpark Mains
1871-96	633	Irongray Church
1872	150	St Christopher's, English St.
	427	Cottage at Kelton
	1344	House for Maxwelltown
	1345	Kipp House
1872-73	126	Amos House, Moffat
	953	Auchencairn Farm
1872-87	1272	House at Spottes
1873	168	Clydesdale Bank, Lockerbie
	437	Cottages, Glenlee
	438	Gardener's Cottage, Glenlee
	570	House for C D Forbes
	778	Terregles Manse
	961	Preston School, Kirkbean
	970	Kirkgunzeon School
	1081	Hightae School
	1099	Kinharvie
	1122	Barn, Barjarg
	1170	Greenbog Cottage
	1314	Captainton
1874	431	Conhuith Farm Buildings
	508	Eaglesfield Police Station
	1357	Church Street & Bridge Street
	1358	Brighouse, Borgue
1874-75	980	Mission Hall, Maxwelltown
1874-76	1172	House at Poldean
1874-78	1248	Houses Loreburn St. Mr Caig
1874-90	1257	Houses at Hunterheck, Drumcrieff
1875	146	Castle Douglas School
	151	Thomson & Allan, Ironworks
	170	Carruchan Cottages
	870	Lower Porterbelly, Terregles
	1121	Gardener's Cottage, Barjarg
	1179	House for Mr Davies
	1356	Workers Houses, Church St.
1875-76	930	Laurieknow School
	1103	Closeburn Church
1876	127	House for John Baird, Lockerbie
	647	Dryfesdale Parish Church
	750	Closeburn Church
	1200	Portrack House
	1209	Royal Bank, Ecclefechan
	1243	Cargen Cottages
1876-77	454	Closeburn Church
	1341	Gillesbie House
1877	86	Appin Lodge
	87	Cottage at Appin
	131	Belzies, East Tinwald Estate
	148	Hermitage
	166	South Kiblain
	171	Provost Gilles House
	203	Heathfield
	364	Annan Water School

Year	Archive Ref.	Subject
	428	County Bldgs Strongrooms
	432	Glenhow Farm Buildings
	512	Raehills Mansion
	878	Conheath Stables
	960	Free Church Mission Hall, New Abbey
	1073	Houses for Mr McLarin, Dalbeattie.
	1258	Oakridge, Drumcrieff
	1259	Breckonside, Drumcrieff
	1280	Langholm Drainage
1878	509	Ecclefechan Police Station
	865	Troskiehouse
	866	Viewfield
	867	Mains - Kenmuir Estate
	1111	Glenlaugh, Barjarg
	1119	House Do
	1148	Dumfries Caul
	1198	Portrack House.
1878-79	795	House, Newtonaird
	1366	Barnsoul Cottages
1878-81	895	Irongray Manse
1879	144	Slacks, E. Tinwald Estate
	426	Cottage at Kelton
	430	Barbush Farm Buildings
	433	Glenlee Mains
	532	Kirkmahoe Manse
	567	Hillside - Annan
	982	Kirkmahoe Manse
	1193	Raehills Mansion
	1194	Do Washing House
	1225	House at Goodhope
1879-80	19	Castle Douglas Church
1879-81	881	Maxwellfield, Arbigland
1879-85	1367	Girthead Farmhouse
1880	135	Two Merkland - Auchencairn
	154	Upper Kirkcudbright Estate Auchencairn
	155	Do Do
	180	Mr Caig's House, Lover's Walk
	422	House for Mrs Murray, Lockerbie
	425	Teacher's House, Corrie
	569	House for Mr Drummond, Moffat
	929	For Kelton
	1162	Rockhall House
	1191	Shinnelwood House
	1203	Brockhall
	1425	Steilston Estate, Holywood
1880-81	968	Penpont School
1880-82	1343	Beattock Cottages
1880-85	1241	Midpark
1880-91	650	Castle Douglas Church
1881	128	New Mains
	164	Moffat Baths
	176	House for Mrs McJanet, Moffat
	342	Do Do
	421	Adams Square, Dumfries
	973	Barndennoch School
	1363	Beattock House Lodge
	977	Public Hall, Sanquhar
1882	399	Hope Lodge, Moffat
	466	Chapelton
	640	Rosebank House, Lockerbie
	1074	Station Hotel, Dumfries
	1078	Sanquhar Police Station
1882-92	1212	St Ninian's, Moffat
1882-94	522	Lockerbie Police Station
1883	971	Schoolmaster's Ho. Kirkgunzeon
	1131	Abbey Farm, Holywood
	1210	Dr Grierson's Museum, Thornhill
	1252	Shambellie Grange
	1268	Millhill
1883-84	1351	House at Penpont
1884	57	Applegarth Church
	90	Auchencheyne
	525	Moffat Police Station
	533	Balmaclellan Church
	634	Dornock Church
	651	Balmaclellan Church
	861	Do
	869	House for Mr Henderson
	923	Auchencheyne Manse
1884-85	60	Morton Church Morton
1885	152	Barhill
	205	Auchenfranco
	337	Glencairn Church
	978	Public Hall, Sanquhar
	1115	Gracefield
	1244	Erkingholme - James Burnet
1885-87	157	English St. & Newmarket St.
	1117	Nether Keir
	1452	Cassalands Feus, Hermitage Dr.
1886	184	Breconside Farm Steading
	366	Moat, Auchenfranco
	974	Kirkcudbright Academy
	1075	Police Station, Dunscore
	1188	Cottages for Johnstons Trust
1886	1097	Troqueer Church
1887	983	Mission Hall, Dornock
	1260	Town House for Mr Curie

Year	Archive Ref.	Subject
1887-88	969	Craig Manse, Dunscore
1888	265	Ho. for Dobie, Castle Douglas
	398	36-38 High Street
	444	Land at Annan
	460	MacConnel Ho. Ecclefechan
	517	Auchencastle
	1127	28-29 Church Street
	1130	For Mr Dobie, Castle Douglas
	1175	House for Mr Wardhaugh, Do
	1195	Tongland Mission Hall
1889	530	Kirkmahoe Church
	1182	Woodcroft, Kirkconnel Estate
1890	129	68-74 N. Queensberry St. & Loreburn St.
	132	Ryemuir Stables
	182	Millbrae, Maxwelltown
	207	68-74 N Queensberry St. & Loreburn St.
	1238	Do Do
1891	133	House for Dr Grange
	136	Polharrow School
	511	Annan School
	951	Benedictine Convent
	1184	Marchhill
	862	St Andrew's School
1892	64	Carnsalloch
	69	Morton Mission Hall
	935	Dumfries Bridge
	947	Firthhead, Dalbeattie
	981	Dalry Town Hall
	1187	Workmen's Houses, Kirkconnel
	1196	Larriston
	1249	Newfield Farmhouse
1893	289	Dalbeattie Public School
	1173	St Andrew's Church Sisters Ho.
	1270	Lochside Drainage
	1277	Orroland House
1893-94	376	Buittle Manse
	645	Caerlaverock Church
1894	161	St Andrew's School, Dumfries
	685	Glasgow Street School
	1412	Property of James Henderson
1894-95	145	Forest Farm, Dalswinton
1895	263	Crawfordjohn Manse
	623	Dalbeattie Manse
	753	St Andrew's School
	1177	House at Hazelbrook , Maxwellton
1896	475	Townfoot Farm, Glengaber
	516	Dairy at Auchen Castle
	586	Annan District Water Supply
	1171	Cottage at Palmerston
	1263	Troqueer Churchyard
	1265	Greensands (Burgh Surveyor's Office, Dumfries)
	1266	The Flats, Dalbeattie
	1267	Offices at Elmbank
	1278	Cottage Villa at Orroland
	1374	Porch
	1433	Dumfries Royal Infirmary
1896-98	1299	Townfoot at Glengaber
1896-1900	738	D & G Royal Infirmary
	83	Dumfries Public Wash Ho & Baths
	142	Rogerson Warehouse
	563	Buccleuch buildings
	642	Rosebank Gate Lodge
	734	Villa at Cassalands
	1100	Kinharvie
	1213	House for Robert Rogerson
	1214	Offices for Robert Rogerson Stores
	1264	Dumfries Public Wash Ho & Baths
1897-98	461	Mains of The Hills Farm
1898	30	Laurieknowe School
	163	Tinwald Church
	545	Standard Printing Works
	1139	Dalbeattie Public School
	1168	Villa on Old Edinburgh Road
	1169	Do Do
1899	134	Ruthwell School House
	523	Laurieknowe School
	1255	Baker's Ovens for Provost Chicken
	1256	Martingarth, Kirkconnel Estate
	1317	St Andrew's Pro-Cathedral
1899-1900	140	Crichton School, Sanquhar
	644	Terregles Church
1899-1901	699	Fruids Park, Annan
1900	12	Dalbeattie School
	63	Cumlongan Castle
	344	Auchencrief Farm, Carnsalloch Estate
	450	Byre at Auchencrieff
	469	Irving St. Congregation Church
	643	Rosebank Gate Lodge
	648	Lochmaben Parish church
	896	Irongray Manse
	948	New Stables at Firth Head, Dalbeattie
	972	Kirkgunzeon School
	1250	East Morton Street & South Dumlanrig St. Thornhill
	1378	Post Office, Dalbeattie

Year	Archive Ref.	Subject
	1448	Annandale Dairy Co
1900-06	641	Rosebank House, Lockerbie
	535	Buittle Church
	537	House at Craigdarroch
	632	Underwood Stables
	1083	Kirkconnel School
	1152	Sanquhar School
	829	Eskdale Infectious Diseases Hospital
1902	5	Buittle Church
	261	Ruthwell & East Raffles, Water Supply
1902-06	646	Ruthwell Church
1902	443	Macaras Premises, Moniaive
1903	423	Irongray Churchyard (B&B)
	522	Lockerbie Police Station
	864	Gardener's Cottage at Newlands
1904	92	Middlebie Manse (JB & Bowie)
	174	Moffat Police Station Do
	340	Cowhill Tower
	613	New Church in Lawrie Close, Middlebie
	631	Colvend Church
	666	St Bride's, Pembrokeshire
	946	Do Do
	1016	Do Do
	1245	Business Premises for T & Y Carlyle
	1431	Brydekirk Waterworks, Annan
1904-05	736	D & G Royal Infirmary (B&B)
1904-06	124	St Bride's, Pembrokeshire
	967	Gate Lodges, C.R.I.
	1134	Wm Rae's House, Moffat
1904-11	119	Dumfries Courthouse
1905	325	St Bride's, Pembrokeshire
	343	Noble Hill
	440	High Townhead, Dalswinton
	860	Cottage at Newlands
	919	St Bride's, Pembrokeshire
	1178	Hardgate School
	1254	Chickens Bakery in College St.
1906	93	Ruthwell Church
	597	New Stable on Rotchell Road, Maxwelltown
1906-07	156	Luffness
1907	35	Dalbeattie Primary School
	84	Kinharvie
	308	Highlaw, Lockerbie
	452	Luffness
	472	Torthorwald Manse
	768	Foxwood

Year	Archive Ref.	Subject
	855	Gretna Church
	868	Overton, New Galloway
	915	Wallace Hall Academy
	1107	Ecclefechan Drainage & Water Supply
	1158	Stores for T Biggar & Sons, Dalbeattie
	1183	Industrial School, Dumfries
1907-14	1101	Kinharvie
1908	223	Free Church in George St. Dumfries
	911	5 Portland Pl. Maxwelltown
	1108	Eaglesfield Special Water Supply
1908-09	192	Thornhill Police Station
1909	130	Glaisters, Corsock
	593	House in Albert Road, Dumfries
	630	Wallace Hall Academy
	683	Craig, Balmaclellan
	1080	Wallace Hall Academy
	1375	Free Church, Dumfries
1909-11	178	Moat House Hostel
	534	Kells Church, New Galloway
1909-12	928	Dalbeattie Public School
1910	410	Borgue Academy
	561	Buccleuch Buildings
	574	133 High Street, Dumfries
	698	House at Drumstinchell
	1270	Mabie, Dumfries
	1417	House at Mabie, Dumfries
1910-11	636	Clarencefield Police Station
	682	Kells Church, New Galloway
1911	195	Carlyle's Stores in Loreburn St.
	435	Do Do
	742	D & Gall. Royal Infirmary
	882	Nurse's Cottage, Dunscore
	1155	Corbieton Farm, Castle Douglas
1911-12	141	Wesleyan Methodist Church
	556	New Abbey Church
	579	Glenae
	1096	Neptune Park, Kirkcudbright.
1911-15	1211	Kingholm Quay
1912	153	Beechwood, Kirkcudbright
	338	Kirkmichael House
	389	Institute Building in Glasgow St. Maxwelltown
	453	Kirkmichael House
	526	Moffat Police Station
	614	Free Church House in George St
	733	St Andrew's R.C. Church
	799	Rosefield Mills (B&B)
	1269	Assembly Rooms, Dumfries
	1275	Hermitage Farm, Dalbeattie
1912-15	739	D & Gall Royal Infirmary

MINERALOGY OF A QUARTZ-HEMATITE VEIN AT AUCHENLOSH QUARRY, DALBEATTIE, DUMFRIES & GALLOWAY REGION

by
J Gordon Todd[1] and Michael McMullen[2]

Introduction

Auchenlosh quarry and landfill site [NX 8530 6125] which is currently owned by Armstrong Waste Management, is intermittently worked for granodiorite of the Criffel-Dalbeattie plutonic complex. The rocks are those of the last emplacement known as the Main Granodiorite and are of Lower Old Red Sandstone age.[3] The quarry lies 1.6km south-east of Dalbeattie on a minor road off the B793 to Caulkerbush. During 1993/94 a quartz/hematite vein up to 1m wide with a strike of 343° /163° was exposed on the eastern quarry face. Specimens were collected over several visits for later examination and the mineralogy is detailed below.

Mineralogy

Hematite Fe_2O_3

Rarely as reniform masses up to 25mm directly in contact with the granodiorite of the vein wall. More commonly as a red earthy vein infill. Second generation hematite forms globular lustrous platy aggregates up to 3mm on and in quartz crystals. Microcrystalline specular hematite often selectively coats only some of the termination faces of individual quartz crystals.

Hydroxy-fluorapatite $Ca_5(PO_4)_3(F,OH)$

Occurs as white to creamy microcrystalline aggregates on quartz crystals. Close examination (x70 magnification) shows individual hexagonal crystals to 0.1mm with basal pinacoid terminations. Identification was by x-ray diffraction[4].

Quartz SiO_2

Crystalline quartz forms the main mineral component of the vein. Fine large museum quality specimens up to 40cm across were collected. Individual crystals measured up to 28mm but more commonly <10mm. The colour varies from clear through milky white, amethystine, smoky or chocolate brown to the black morion variety. The larger crystals frequently show colour zoning. Crystals commonly have inclusions of or are coated with specular hematite. Specimens were lodged with the Hunterian Museum, University of Glasgow.

Second generation microcrystalline quartz (individual crystals <0.2mm) occurs as an overgrowth on the main quartz crystals and on the hematite spheroids. These quartz crystals are colourless, very gemmy and occasionally doubly terminated. Hematite inclusions or overgrowths are rare.

Discussion

Although the granodiorite of Criffell has been quarried for many years for monumental stone, building-stone and aggregate at Craignair [NX 8180 6080], 1.3km west of Dalbeattie[5], the authors are unaware of any large mineralised veins occurring at this locality. Veins of chevron amethyst and cavities of hematitic crystallised amethyst occur in a brecciated granodiorite at Boreland of Southwick[6] [NX 9215 6040] while well crystallised smoky to black quartz associated with romanechite and manganite is recorded from the same granite mass at Kinharvie burn[7] [NX 9260 6500]. In addition, fine crystals of amethystine quartz have been found in veins in the Main Granodiorite of Screel Hill [8] [NX 7795 5533].

1. 'Eastfield', Tandlehill Road, Kilbarchan, Strathclyde PA10 2DQ
2. 12 Hoskings Close, Stone, Staffs ST15 8FS
3. British Regional Geology - *The South of Scotland* (3rd Edition), HMSO 1971, p.55
4. John Faithfull, Curator of Minerals, Hunterian Museum, University of Glasgow
5. British Regional Geology - *The South of Scotland* (3rd Edition), HMSO 1971, p.103
6. *Trans Dumfriesshire Galloway Natur Antiq Soc* 41, 1962-63, p.209
7. McMullen & Todd, UK Journal Mines & Minerals 8, 1990, p.43
8. *New Stat. Acc. of Stewartry of Kirkcudbright*, Pub, William Blackwood, Edinburgh 1845, p.361

The vein at Auchenlosh Quarry is unusual compared to the veins at other known localities because of its excellent exposure and its large size. It is visible from quarry top to base, about 12m and can be traced in a northerly direction for approximately 50m. The width varies considerably from a 1m maximum to 10cm as the vein swells and pinches.

The mineralisation at Auchenlosh does not appear to be associated with a granitic pegmatite as the grain size of the quartz, plagioclase feldspar and biotite mica within the host rock is not increased in the vicinity of the vein. It is likely that the mineral assemblage was deposited by hydrothermal solutions on the walls of a large fissure sometime after the emplacement of the Main Granodiorite. The coating of hematite on selected faces of the quartz crystals suggests a unidirectional flow for the depositing fluid. The sequence of mineral deposition is hematite first then quartz followed by second generation hematite and quartz and finally hydroxy-fluorapatite. The paragenesis suggests several phases of hydrothermal activity. The source of the minerals if probably the host rock itself ie the granodiorite as apatite and iron-ores are common accessory minerals in the Lower Old Red Sandstone intrusions of the south of Scotland [9].

Acknowledgements

We would like to thank Dr David Anderson for providing the references on Boreland Burn and Screel Hill amethyst locations.

9. British Regional Geology - *The South of Scotland* (3rd Edition) HMSO 1971, p.54

COWDENS QUARRY - A TEMPORARY EXPOSURE IN THE BIRRENSWARK LAVAS

by
Michael McMullen[1] and J Gordon Todd[2]

In 1993/94, during construction of the new M74 in Annandale District, Dumfries and Galloway Region, Balfour Beattie excavated a temporary quarry at Cowdens [NY 1658 7708] between Ecclefechan and Lockerbie. The quarry, on the north-east side of the existing A74(T), worked the Birrenswark lavas of Lower Carboniferous age for road building material.

Jedburgh and Dalmeny type microporphyritic basalts[3] with phenocrysts (up to 2mm long) of labradorite, olivine and augite were exposed and in one section of the quarry the basalts were seen to overlie the Carboniferous sandstones.

Lenticular pods of jasper up to 1m long and 0.15m thick were best developed in the eastern quarry face. The jasper is generally rich yellow with occasional red whorls and white to grey branded chalcedony. The material is reminiscent of the Burn Anne jasp-agate of Lower Old Red Sandstone lavas, Galston, Ayrshire[4] in terms of colour and lapidary quality.

In a deeper bay in the south-east section of the quarry the lavas were highly vesicular with flow aligning of the amygdales. Individual amygdales ranged from 3mm to 60mm and were filled with grey and white banded agate, brown chalcedony (carnelian) or drusy colourless quartz crystals. Most of the agates had cryptocrystalline quartz centres. Quartz crystal geodes up to 100mm across containing scalenohedral ('dog-tooth') calcite crystals to 13mm were a rare occurrence.

The contact between the basalts and the underlying sandstones were best exposed in the south-west quarry face. There was no obvious thermal alteration of the sandstones which appeared to be non-fossiliferous.

At the time of writing (October 1995), the site had been reinstated by Balfour Beattie Contracting and collecting is no longer possible.

1. 12 Hoskings Close, Stone, Staffs ST15 8FS
2. 'Eastfield', Tandlehill Road, Kilbarchan, Strathclyde PA10 2DQ
3. British Regional Geology - *The South of Scotland* (3rd Edition) HMSO 1971, p86
4. Heddle M.F., *Mineralogy of Scotland* (J.G.Goodchild Ed.) Douglas Edinburgh 1901, Vol 1, p.80

ARAUCARIA ARAUCANA, CHILE PINE or MONKEY PUZZLE

Some thoughts aroused by its seedlings

by

Mrs Mary Martin

It was a great surprise to us to find two seedling monkey puzzle trees in our garden [at Robertland, Amisfield] one hot summer day in 1995. They were close to the ground in a grassy place at the side of the car park. They were 5 ins. in height and 45 inches apart, just close enough to glance from one to the other and see them like a pair of identical twins. They were easily seen as two circles about the size of 10p pieces [25mm] made of very sharp pointed, radially arranged, light, green, narrow, stiff, glossy leaves.

Tall Chile Pines are by no means native conifers of our British Isles although they have become familiar sights growing in parks and gardens, especially under the more apt name of Monkey Puzzle - once an English gentleman was heard to remark that such trees would certainly puzzle a monkey. Actually it is now two hundred years since the Chile Pine was first introduced to Britain. The days of successful sailing ships had opened new routes to the west that attracted explorers and naturalists alike, and conifer botanists soon saw chances of looking for softwood types of timber so much needed for the British timber trade. Incidentally, Britain has only three indigenous conifers and Scots Pine is the only one suitable for that trade, the others are Juniper and Yew. After its introduction and trials Chile Pine was not chosen for trade but was classed as an interesting ornamental. The botanical trials must have taken years to complete while merchants waited for results that pointed favourably towards them. It was not until decades had passed that this evergreen dome-topped conifer was found to be a much too slow grower from seed to timber production to suit the trade. By the middle of the eighteenth century and onwards there are enough records to show that the trees were in demand as show pieces in the gardens of mansion houses thereby giving rise to nineteenth century critics who say they give a Victorian fashion to a place. Possibly all modern trees will be the progeny of successful fertile seedlings over the last two centuries.

Other exceptions among conifers are the radial form of growth of the branches from the trunk and the trees are dioecious (having sexes on different trees). The seed contains a 1½ inch long kernel, starchy and tasting like chestnuts. It was discovered to be good to eat and became part of the diet of the Araucarian West Indians who lived and worked with the trees where they grew prolifically. There is a Province of *ARAUCA* about 37 degrees south of the Equator which sounds as if that is one of the good places where, quote from a Library book phrase 'they clothe the coastal ranges.' The tree is hardy and the smooth textured timber is used for joinery in the homeland of Chile. *Araucaria araucana* grows over the Argentinian border.

It was a thrill for us to have these two new plants to come into our garden and I set myself the task of looking at them from a botanical point of view to prove that they grew from fertile seeds. I felt it necessary to carry out an exploratory dig on the one that was only a handwidth from the base of the parent tree by probing the ground for any hard object immediately below. All was clear and I felt the soil by rubbing it gently and by moving the base of the little jaggy plant slightly I saw a brown lump just below the start of the upward growing leaves where there were one or two marks showing an even earlier set of leaf scales were withering to brown. The knob was a puzzle at this point and it might have been an injury. I proceeded down to where the thick root was going and my hand felt a sudden brittle quantity of dry soil drop into the palm. I didn't even need a lens to make out tiny white fragments in the handful that could only be the remains of root hairs that drew in the first moisture to nourish germination. It was time now to stop and think of the sense of what was being seen from the knob level downwards. The knob had been the seed that had fallen from a ripe and fertile cone. It was most fortunate that there was the other untouched seedling which proved to have a similar knob at top earth level. I continued the gentle excavation until I'd made a 3 x 9 in. slit round the pencil-thick root and stopped for fear of breaking it. Having satisfied myself about seedling reproduction rather than a root sucker method I replaced the soil that had been taken out plus just enough more to hide the knob. It had been a big seed provided with a kernal to give a good start - I am puzzled at this stage, was the food to be used for the descending root or might it not have been intended to make chlorophyll for the upward stem?

With the trees being dioecious it had never become a certainty which tree tree might be which but now it has been decided for us and we can have a new interest watching what happens at the edges of green branches in places below the domed top. The swelling cones take three years to ripen and finally turn brown before either falling off or disintegrating.

It is known that fully fertile cones disperse or drop some 200 seeds which turn out to be quite complex things. Each shaped part contains one swollen pea-sized seed with the 1½ in. kernal next to it and that appears to be darkish red, then there is a 1½ in. wing extension of a thin, flat woody material all shapely and dark brown. Fertile

or not, these eventually fall to the ground making a scatter or little heaps to be raked up from time to time. The tree's leaves do not fall every years but only when the long, smooth, curved branch begins to fail do they come down. On tidying the ground below the female tree one can find the complete mixture and it has been only then I have found the three parts of the seed mixed with dead leaves. The long lasting tough debris has to be disposed of, they make good treads down a flight of woodland steps planned and carried out by Mary and Alan Williamson the owners of the two little trees.

Postscript - October 1996

Fortuity is not acceptable in a botanical study and now, fifteen months since beginning, I have to admit that I assumed our two trees would be one male and the other female. That may have been the easy way to make a start but it was incorrect.

My study has not been delayed through the problem that was mine when I first saw these real little things. My problems are now trying to unravel those that make Monkey Puzzles have problems. My observations were to come from looking carefully at the formation and development of the cones all the time from one to three years apparently, and constantly understanding the refuse that falls.

Searching below the 'other' tree produced surprises because bits of old similar cones were quite plentiful. For a short space of two days my mind hung in a state of suspense, there was no progress because I was shut in by my own ignorance. I had not studied these trees and only recognised their particular shape when passing by. Two days was not very long to wait when, on being driven through a one-time attractively tree planted policy that would bring joy to posterity, I was delighted to see a closely set group of four or five Araucarias displaying two types of cones.

I could now proceed with a diary of developing changes and dating of treetop cones until they drop. Our two trees were pretty carefully watched this year and it has turned out as a useful training with results ranging from poor to a glimmer of hope, but alas there was no fertility for one particular cone on the 'other' tree. It dropped at the very end of September or into the beginning of October and scattered all its two hundred pieces covering an area of a few square yards. Using binoculars showed it had kept a lighter brown colour with all its top prickly points keeping their shiny gold tips. Those cones that did not finish either faded away and fell as a litter on the grass, but two remained in place changing colour to dull dark brown and fell as solid dried out cones, very prickly but laid aside as useful specimens. Within the last four months both encouragement and discouragement have come to hand. The first is that a pollen producing male tree has been found at one mile distant as the crow flies from here (1.8 miles by road) and wind pollination is an acepted fact for the species. That was in August when cones with withered filaments and anthers were found on the ground. Live pollen might show at a much earlier date. The opposite to hope is that I was given a most attractive Pocket Guide to Trees, pub. 1995, very factual and good cone illustrations but I'm not giving in on its support for root suckers till ours are exposed.

…The two seedlings look thriving, each having put out three branches radially. I think there is the need to watch them closely for another season, they are not identical. The one examined more closely measures 6 $^{1}/_{2}$ ins. in height, the other measures just under 6 ins. but has a sturdier look.

References:

1. On the shelves of the Ewart Library in Dumfries and in the new Lochthorn Library near Locharbriggs there are books on Trees that are grown in British Gardens, in this case one must look up the Index for either *Araucaria araucana* or Monkey Puzzle, (showing the wide adoption of such a good name), to find a chapter about its importance and uses to the Chilean people.
2. Forestry Commission Booklet No 15.: *Know Your Conifers*, 1966. It is only mentioned in the introduction as an introduced ornamental.
3. Forestry Commission Booklet No 33, Second Impression 1975, *Conifers in the British Isles, a Descriptive Handbook* by Alan F.Mitchell, B.A., B.Agric.(For). This is still used as the standard book for Conifer identification. On page 52 he writes "The first 5-10 years are spent reaching to above grass-height".
4. *4 Gardens in One, The Royal Botanic Garden Edinburgh, HMSO*, first published 1992. Concise and interesting details of R.B.G. History and now taking a new stride into Conservation.

LAGWYNE CASTLE
(NX 558 939)

by
Alastair M. T. Maxwell-Irving, FSAScot
Telford House, Blairlogie, Stirling FK9 5PX

The main claim to fame of the 'castle' of Lagwyne, half a mile NW of Carsphairn, is that it was for a short time the home of John Loudon MacAdam, the celebrated road-builder and creator of the 'macadamised' road. There is, in fact, no evidence that Lagwyne was either a castle or tower-house or that any building existed on the site before the 18th century.

This branch of the MacAdams lived first at Waterhead, a remote spot 3½ miles to the north, where John MacAdam was a tenant of the Sinclairs of Earlstoun in the middle of the 16th century.[1] Both Waterhead and

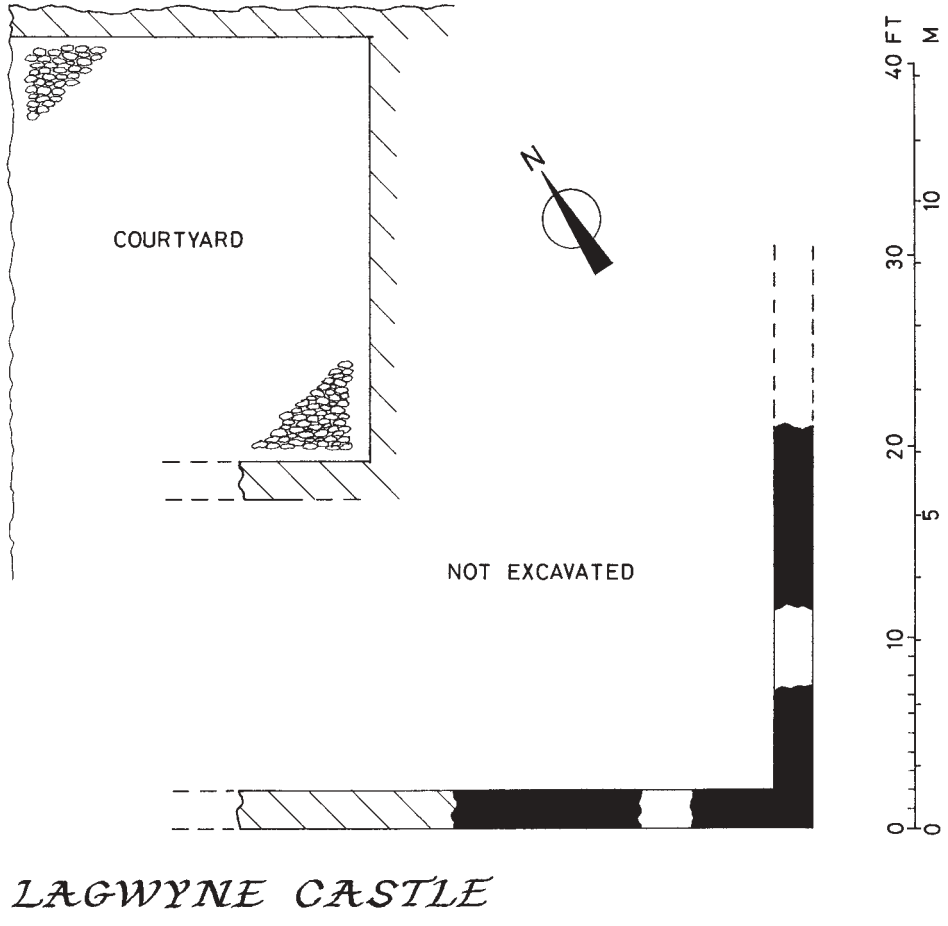


Fig. 1 Lagwyne Castle: Plan.

1 John MacAdam's father is said to have been one Adam MacAdam, the first of the name. According to some accounts he was a Macgregor who fled south and changed his name, but the veracity of this story is highly questionable and probably originates with the proscription of the Macgregors in 1603 and a fabulous account of the family's history dating only from the time of James II. See Black, G.F. *The Surnames of Scotland* (1946), 449 and *The Compact Edition of the Dictionary of National Biography* (1975), 1265.

Lagwyne formed part of the barony of Earlstoun at that time, having formerly been included in the lands that made up the ancient Forest of Buchan.[2] Then, in 1569, John MacAdam's son Andrew obtained a Crown charter of the 4½ merk lands of Waterhead, on the resignation of Michael Gilbert, goldsmith.[3] Thereafter the MacAdams continued to live at Waterhead until Gilbert MacAdam, fourth in descent from Andrew, was banished from the Country for his Covenanting activities.[4] Gilbert was succeeded by his son James, also an ardent Covenanter, who had sasine in 1681.[5] He was succeeded in turn by his son James and grandson, also James, who had sasine of the lands of Waterhead of Deugh in 1744.[6]

It was the last-named James who decided to leave Waterhead and move to a more convenient location at Lagwyne, another of his properties, where he either built or enlarged the house whose ruins are seen today.[7] According to some accounts, the reason for the move was an extravagant lifestyle leading to financial embarrassment, but it was more likely the cost of the new house and its subsequent destruction not long afterwards, as well as a number of other financial ventures that overstretched his resources, which led to the eventual embarrassment.

Lagwyne Castle, as it is known, stood on rising ground on the left bank of the Water of Deugh. Only part of the site has been excavated, but the surviving remains comprise a substantial part of the SE and SW walls to a height of two storeys, the foundations of the walls in the re-entrant angle and part of the adjacent, cobbled courtyard. The building appears to have been built on the L-plan, but as the ground to the NE and NW was cleared to a lower level when the later cottage was built, probably out of stones from the castle, one cannot be certain how far the building originally extended on those sides.

One wing of the 'L' was evidently 23ft 3in wide, running NE-SW, while the other, which was 19ft 3in wide, extended to the NW at its S end. The walls, which are 2ft thick, are built of roughly squared and coursed greywacke rubble. All the dressings have gone. The SE wall extends from the S corner for a distance of 21ft, after which foundations continue for an indeterminate distance beneath a later drystone wall. The wall has one break where

Fig. 2 Lagwyne Castle: General view, from the south, of surviving walls.

2 M'Kerlie, P.H. *History of the Lands and their Owners in Galloway* III (1877), 288.
3 *The Register of the Great Seal of Scotland* (1984), IV, No.1870.
4 M'Kerlie, *op. cit.*, 293.
5 Ibid.
6 Ibid, 291
7 *The Imperial Gazetteer of Scotland*, I, 255.

Fig. 3 Lagwyne Castle: Detail of south-west wall.

there was presumably a window on each of the ground and first floors. The SW wall extends from the S corner for 19ft, with one break where, like the adjacent wall, there was a window on each of the lower two floors, and then continues as a foundation for another 11ft 3in before the ground is cut away. This wall has sockets for the first floor joists. There is no evidence of where any fireplaces or other features were located.

Within the re-entrant angle, where only the foundations of the walls survive, there is a cobbled courtyard at an appreciably higher level than the ground floor of the house. It measures 22ft 2in from NE to SW and extends for some 20ft to the NW before the ground is cut away. The foundations of another wall along its NE side probably belongs to the former courtyard wall.

It was apparently not long after the new house of Lagwyne was built that it suffered from a disastrous fire and was abandoned. This is reputed to have occurred in 1757.[8] Unable to meet the cost of repair and increasingly burdened by other debts, James decided to sell the estate or at least to wadset it. The purchaser was John Dalrymple of Stair, who eventually had sasine in 1764.[9] Later, Waterhead was purchased by John MacAdam of Craigengillan, a cadet of the family, who had sasine in 1778.[10]

After parting with Lagwyne and Waterhead, James MacAdam moved to Blairquhan, near Straiton in Ayrshire, where he rented the house.[11] It was there that he died in 1770. James was well connected by marriage, his wife being Susannah, daughter of John Cochrane of Waterside and a cousin of the Earl of Dundonald.[12] In 1763 he had been one of the founders of the first bank in Ayr.[13]

James's younger son, John Loudon MacAdam, was born in 1756, but it is not known for certain whether he was born at Waterhead or Lagwyne, as it was apparently around the time that his father moved house. After his father's death, John was put in the care of an uncle in New York.[14] He prospered there as an 'Agent for the sale of prizes' during the American War of Independence and married an American lady, Gloriana Nicoll, from Long Island. Returning to Scotland c. 1785, he purchased the estate of Sauchrie in Ayrshire. He moved to Falmouth in 1798 to take up the appointment of Agent for revictualling the navy and in 1815 was appointed surveyor of the Bristol roads. Eight years later he presented his system for the surfacing of roads to a Committee of the House of Commons and it was this system, known as 'macadamising', which was subsequently adopted for surfacing the principal streets in all the major cities.[15] He died in 1836.

John Loudon MacAdam's system for surfacing roads was later extended to all the principal roads in the kingdom and his grandson William MacAdam of Ballochmorrie, in Ayrshire, in due course became Surveyor-General of Turnpike Roads in England.[16]

Acknowledgement.

I would like to thank Mr. Richard Gregory of Lagwyne Cottage for his assistance on site and give him credit for excavating the courtyard.

8 M'Kerlie, *op. cit.*, 293.
9 Ibid, 291.
10 Ibid.
11 Dict. Nat. Biog. *op.cit.*, 1265.
12 Burke's *Landed Gentry* (1863), II, 923, 'M'Adam of Waterhead'.
13 Dict. Nat. Biog. *op.cit.*
14 Ibid.
15 Ibid.
16 Burke, *op. cit.*

Ayrshire Archaeological & Natural History Society Monograph Series. Soft-back publications; various prices in the range £1-£6.00, and available from Ronald W.Brash, Publications Distribution Manager, 10 Robsland Avenue, AYR KA7 2RW.

Among the numerous exchange volumes received by this Society are those of our near neighbour the **Ayrshire and Archaeological and Natural History Society**. That Society has a long publishing history and a number of years ago moved to the production of annual monographs. All these volumes are well produced upon good quality paper (frequently with colour illustrations) - and offer, at reasonable cost, the potential for a "good read" within a variety of diverse subjects. Some recent volumes, of potential interest to our members, have included **The Stone Ages in Ayrshire**, (1989 37pp) A.Morrison and I.Hughes; **Shipping Trade of Ayrshire**, (1991 48pp) E.J.Graham; **Plant Life in Ayrshire**, (1992 32pp) R.Kirkwood; **Barony of Alloway 1324-1754**, (u.d. 40pp) A.Hendry; **Robert Adam in Ayrshire**, (1993 35pp) M.H.B.Sanderson; **The Cumnock Pottery**, (1993 76pp) G.Quail; **Tolls and Tacksmen**, (1994 55pp) D.McClure and **Smuggling and the Ayrshire Economic Boom**, (1994 55pp) L.M.Cullen. The most recently received volume, Monograph 15: **John Smith (1846-1930) of Dalry, Geologist, Antiquarian and Natural Historian** (1995 53pp. £6.00) deals with the personal history and geological contributions of a truly enigmatic polymath who contributed so much, and within so many fields, to our scientific knowledge of Ayrshire. After three scene setting contributions from A.B.Wilson (**Smith The Man** and **Smith The Geologist**) and Ian Rolfe (**John Smith - Self-made Scientist**) there follow individual articles on **Discoveries of Trace Fossils from the Old Red Sandstone and Carboniferous Rocks of S.W.Scotland** (John Pollard); Glacial Drift and Marine Shells (Douglas Peacock); **The Semi-Precious Stones of Carrick** (Brian Jackson); and **Alarms and Excursions** by Jenni Pollard - a short but interesting account of John Smith's contributions in the 1920s to the emancipation of the female student of geology and science. John Pollard's article on **Trace Fossils** has some particularly local cross-referencing to Smith's early work on the Dinantian Stratigraphy at Arbigland in Kirkbean parish - which should be read in conjunction with Franz Froelicher's article on that subject within volume 59 of our own *Transactions.*

J.Williams

Historic Stranraer: E.P.Dennison Torrie and Russel Coleman. Historic Scotland, 1995, £14.95

Historic Stranraer represents an old friend in new, upmarket clothing since it is part of the latest phase of the Scottish Burgh Survey, which covered 56 towns between 1978 and 1990, including Kirkcudbright, Lochmaben and Wigtown. The modestly produced and priced plastic-sleeved volumes of that previous incarnation have been succeeded by a highly professional but inevitably more expensive production.

However, if appearances have altered, the purpose of the series remains the same. The target audience is local authority planning departments and the intention is to identify areas in the town of archaeological interest, which would therefore require sensitive treatment in the event of development. This primary purpose determines the layout of the book and the latter has disadvantages for the general reader. Some sections are self-contained for ease of reference with a consequent element of repetition. Further, in those sections historical information is given in the top half of each page and archaeological information in the bottom half, which is coloured grey. Inaccuracies in the general index page references and the town map in the end papers also detract from the reader's pleasure.

Historic Stranraer is, nevertheless, an interesting and valuable book for the general reader, who will find it well worth while to tolerate those drawbacks. The authors have conducted extensive research, making use of the most authoritative sources, both written and oral. Their approach is a laudable one, not only setting individual buildings in the context of the town's development but also setting Stranraer itself in the context of the geology, geography, climate, archaeology and early history of Galloway. Add to that a list, arranged by period, of archaeological finds in and close to the town; an index of street names, both current and former, with an explanation of their origins; and a glossary of technical terms, and you have a work which will surely become and remain the standard work on Stranraer's history for a very long time.

The book gives an illuminating account of the development and morphology of the town from the first documentary evidence to it in the early fourteenth century. Surprising to the visitor will be the discovery that Stranraer originally was a maze of burns and watercourses, all now almost entirely underground. Central also to the burgh's history from the start, as the authors make clear, was the Irish connection, commemorated in the now-vanished

street names Little Ireland and Little Dublin. The extensive modern port area makes it difficult to believe that the town's development was for long restricted by the council's inability to finance the construction of a harbour, a story fully narrated by Torrie and Coleman, who recount how even after the building of the East or Railway Pier the council's failure, for lack of finance, to keep it in proper repair led to the railway company successfully to petition parliament to be allowed to take it over. The multi-million pound developments of recent years surely prove how beneficial this step has proved for the town.

Several of the characteristic structures of a self-respecting burgh are clearly visible in modern Stranraer, notably the castle and the tolbooth. But the book points out that others are conspicuously absent, even their sites being unknown: the Chapel of St John, crucial to the town's origins, the market cross and the original tolbooth. On this level of individual buildings, *Historic Stranraer* is as satisfying as when surveying the larger Galloway context. It will be a pity if the formidable price (£14.95 for 80, admittedly A4, pages) prevents the book reaching the wider readership it deserves.

Jack Hunter.

Torhousemuir Historical Account. Richard D.Oram, MA PhD. Report on Programme of research undertaken by *Retrospect Historical Services* on behalf of *Scottish Natural Heritage*, February 1995.

This is an exceptionally good account of the estate of Torhousemuir running from the late middle ages until the twentieth century - it covers the creation of the various farms and crofts upon the estate and the heavy settlement from Ireland in the early nineteenth century - a settlement altogether exceptional for the area. The creation of farms and crofts from the moorland, some of them arable, some of them herding, is followed in detail and the lives of the settlers is shown minutely. The standard of living is mostly surprisingly high for the early nineteeth century. Sources are well followed - *The Old Statistical, The New Statistical Account,* and particularly the censuses show a remarkable detail. The families upon the individual farms are shown in the appendices and all in all it brings the development of an estate, and the life of the people within people in it, in remarkably clear detail. Indeed much more than you might have expected from an area such as the moorlands of Wigtownshire.

Much of the information comes under the ownership of Capt., later Lt. Col., McHaffy who was directly responsible for the transplantation of people from Ulster into Torhousemuir. The development of the estate is followed, in considerable detail, into the early twentieth century - and, indeed until after the second World War. All in all, it presents a window on the development of an area of Wigtownshire which would be hard to equal anywhere and must be praised as a remarkably complete piece of research

The report is in the form of an A4 typescript and extends to 26 pages of text and discussion supported by two appendices: Appendix 1 provides detailed tabular extracts from the 1841 and 1881 censuses (including a list of farmers and crofters at the later date). Appendix 2 lists names and addresses of surviving inhabitants.

For those who wish to consult the study copies have been lodged with both the Dumfries Archive Centre and the Reference Department of the Dumfriesshire & Galloway Regional Libraries at Catherine St., Dumfries.

A.E.Truckell.

Tynron Glen by John Shaw. Typescripts in Ewart Library, Dumfries; in Dumfries Museum; and in The Archive Centre, Dumfries.

John Shaw came to live in Tynron Glen in 1980 and he taught geography at Crawfordton House School until its closure in 1995. It was William Andrew Wilson's books that first stimulated his interest in the area's history, albeit they gave an often romanticised view.

The encroachment of forestry on Pinzarie Hill in the Glen in 1986 motivated Mr Shaw to map the mediaeval field system before it was buried beneath the plantations. Over subsequent years, further aspects of life in the glen were researched and material collected, with the resulting work forming an outstanding, comprehensive record of the parish.

Dealing first with the physical aspects of geology and geography, Mr Shaw then moves on to early settlement and later evidence of the Roman, Norman and Mediaeval presence in the glen. The section on mediaeval fields

and agriculture is particularly interesting. Advancing through the eighteenth and nineteenth centuries, he charts the realities of life that Tynronians experienced during those times. As with any historical account, more anecdotal material is available from the twentieth century and this chapter contains moving reminiscences of life on a farm in the glen before the Second World War.

Although this account is specifically of Tynron Glen, it must be of interest to all who wish to learn more about the development and the later decline of rural populations in south-west Scotland. Many of the facts and issues will be common to many of our valleys and glens and this fascinating, well-illustrated account will appeal to a wide audience.

Marian Rochester

The Presence Of The Past - *Christian Heritage Sites In The Rhins Of Galloway:* Father John McLean, of St Joseph's Church in Stranraer. John Donald, 1997, £9.95

This is a charming little book, its 181 pages well worth the price asked. Father McLean is a careful researcher and a talented artist: for most of the 44 sites he gives clear sketch-maps based on the Ordnance, showing exactly how to reach them: and there are many fine drawings of buildings, early crosses, and places. He mentions the burials at Terally found in trenching for a water-main - I well remember walking down that trench, with the skulls on one side and the foot-bones on the other! St Medana's Cave near the tip of the Mull - Kirkmadrine and its stones - the Standing Stones of Laggangarn - Saulseat - Glenluce Abbey - the range is great and conjures up the special atmosphere of the Mull.

A.E.Truckell.

Mrs Mary Martin (1905-1996)

Mary Martin died suddenly, at the age of 91, still active and interested in plants and the natural world around her.

She was born and brought up in Glasgow. In 1930 she graduated from Edinburgh with First Class Honours in Agricultural Zoology. Her speciality had been Economic Entomology and she retained a fascination for all small animals, except worms, throughout her life. In 1931 she qualified to teach Science and Agriculture in secondary schools and started her teaching career at Helmsdale, Sutherland. During the school holidays she worked as a potato inspector in Perthshire, where she first met her husband Stuart (President of our Society 1965-68).

They were married in 1939 and moved to Dumfriesshire where Stuart taught first at Lochmaben and then Lockerbie. Having brought up a family, she started supply teaching and worked as a primary school teacher in Lochmaben until she retired. It was at this time that she took up botany.

Mary and Stuart became joint Botanical Recorders for Dumfriesshire for the Botanical Society of the British Isles following the death of Dr Milne-Redhead in 1974. She was a keen member of this Society from 1947 publishing three articles in the *Transactions*: Pteridophytes in V-c 72, Dumfriesshire, Vol. 57, 1982; Wildplants of Dumfriesshire (V-c 72), Vol. 60, 1985; Plants and some additional information to two checklists of Flowering Plants and Ferns in Dumfriesshire, Vol. 67, 1992. In note form at her death were the two short papers on the Rev. William Little and *Araucaria araucana*, which are printed in this volume but did not have the benefit of her prior revision. She served as a member of Council and as Vice-President during the 1960s.

After Stuart died she continued as Botanical Recorder. She took botanical meetings for both Societies and assiduously checked up old and new plant records. Her own first county records were mostly water plants in which she was interested, Alpine Pondweed and Six stamened Waterwort from the Mill Loch, Lochmaben and Nuttall's Waterweed in Kirkloch Brae. A born teacher, she enthusiastically encouraged less experienced botanists and often delighted our Society meetings with exhibits. Some of these were pressed specimens which she found whilst sorting out old collections in Dumfries Museum.

Latterly when Mary moved to stay with her daughter, she gave up being Botanical Recorder, but was still interested in nature. She reported on the red squirrels in her garden and was a member of the Scottish Wildlife Trust Red Squirrel Group. She was keen to show visitors the Monkey Puzzle seedlings which had sprung up in her lawn which mystified her, because despite searching she could only find female trees in the vicinity.

Mary was a real enthusiast, quietly assertive but self effacing and very good company. She will be sadly missed by her many friends. She is survived by her daughter and two sons.

O.Stewart and J.Muir.

Tom Collin.

Tom Collin, formerly Honorary Curator of The Stewartry Museum, Kirkcudbright, and a member of the Society since 1973, died on December 6th 1996 at the age of 87. He remained, as always, remarkably active until a few weeks before his death. Looking little more than 67, he had the agility and pace of a man of 37, and celebrated both his 80th and 85th birthdays by climbing Merrick with his friends.

Although born in Eyemouth, he spent most of his life in Kirkcudbright, having come to the town in 1935 in the early years of a successful career in banking. It was his profession which led to his first association with the Stewartry Museum, serving as Treasurer to the museum's governing body, The Stewartry Museum Association. In 1964 he was posted away to Ballantrae, but he and his wife, Margaret, who died in 1993, returned to Kirkcudbright on his retirement from banking in 1970. In the same year he became Honorary Curator of the museum and over the next 20 years he quietly revitalised it by careful management of the limited resources available and by meticulous attention to the display of the collections. His achievement was recognised in 1975 when the museum was awarded a Special Prize in that year's 'Museum of the Year Awards'. In 1981 he wrote and published the booklet *Bridging*

the Dee at Kirkcudbright and in 1991 was co-author with Dr R.N.Rutherfurd of *The Story of Kirkcudbright Lifeboat Station 1862-1991.*

As well as his museum work, Tom Collin served Kirkcudbright in a number of different ways during his lifetime, having been a Kirkcudbright Town Councillor, Deacon Convenor of the Six Incorporated Trades, President of the Rotary Club, Secretary of the Stewartry branch of the Royal National Lifeboat Institution, Treasurer of the former St.Mary's Church, as well as an Honorary Sheriff Substitute at Kirkcudbright Sheriff Court.

In 1989/1990 he oversaw the transfer of The Stewartry Museum and its collections to the care of the former Stewartry District Council. At this point he retired as Curator and was shortly after appointed as the Council's Museum Curator. Tom's interest in the museum never waned, and he was always available as an unpaid consultant. Above all he remained a continual supporter and a fount of enthusiasm. For me, and for all the museum staff who had the pleasure of knowing and working with him, the example of his 20 year stewardship will always remain for us an essential part of the 'ethos' of The Stewartry Museum.

David Devereaux.

James Robertson, O.B.E., B.Sc., J.P., F.I.C.E.

James Robertson became a member of this society on 20th March 1936: He had come to Dumfries as a member of the Dumfriesshire County Council Roads Department in 1929 and by the mid 1930s had become County Road Surveyor - at that time perhaps the youngest in Scotland. When he commenced work most of the county roads had gravel surfaces and during his time all these were tar-macadamed. Financial restrictions had not made things easy - in the 30s the only significant work was the construction of a short stretch of model dual-carriageway at Johnstone Bridge. During the war further difficulties were experienced in maintaining the road systems for heavy wartime traffic. In the immediate post-war period of hope plans were prepared to dual-carriageway the A74 complete with a cycle track and footpath - only to be shelved by post-war austerity. However, by the time of his retirement in 1967, work had commenced.

In addition to his membership of this society, he was also instrumental in creating the *Dumfries & Galloway Architectural and Engineering Society* 1946. Under his initiating presidency it was able to bring speakers to Dumfries to allow members of differing professions to hear lectures on topics which they would not otherwise have heard due to the then restrictions on travelling.

Within this society he was a force for many years: It is remembered that in the late 40s and early 50s, on John Clarke's digs at Milton (Tassiesholm), always when work started there was the stock of picks, shovels, spades, stakes, rope: there was the high-sided wooden caravan for shelter: there were the ranging-poles, the dumpy level - all courtesy of the County Council Roads Department - the work could not have been done without them. About the same time many happy days were spent with R.C. Reid and A.E.Truckell in search of Roman roads and forts around Roberton on the Clyde or up towards Kilmarnock.

Mr Robertson delivered lectures to the society on several occasions - firstly in December 1946, when he talked on *Further notes on Old Roadways in Dumfriesshire*. Although the bulk of James Robertson's researches were of a literary and record nature, it should not be forgotten that in the late 40s he also conducted excavations on road structures at Annanhead Moss. His knowledge of the Roman, mediaeval and early modern roads and bridges in the area was great - much of it was published in his latter years. His period as President, 1968-71, was a successful and active one for the Society: His presidential address, on 8th October 1971, was on the subject of *Landmarks around Dumfriesshire.*

A.E.T., J.W.

Publications in *Transactions*

Notes on the Roman Roads through Annandale. Vol. 24, pp.10-17

Roman Roads in S-W Scotland (4) From Castledykes (Corbiehall) to Crawford (as co-author with C.A.Ralegh Radford, R.C.Reid and A.E.Truckell) Vol. 31, pp 30-34.

Wanlockhead Roads. Vol. 54, pp.161-164.

Other Publications

In 1993, under the editorship of his son Gordon, he published *The Public Roads and Bridges in Dumfriesshire, 1650-1820*, pp 266, G.C.Book Publishers Ltd, Wigtown.

Proceedings 1995-1996

13th October 1995
Presidential Address: Dr.J.B.Wilson - ‘The Place of Lochmaben in Scottish History’.

27th October
Speaker: Prof.R.H.Campbell - ‘Rural Society in the South-West before 1914'.

10th November
Speaker: Mr.Heath Brown - ‘Red Alert - Red Squirrels in Peril’.

24th November
Speaker: Mrs.L.Fryer - ‘The Shetland Hand-knitting Industry, 1600-1950'.

8th December
Speaker: Mr.J.McCleary - ‘Moths’.

12th January 1996
Speaker: Mr.David Tattersfield - ‘People and Plants of the High Atlas’.

26th January
Speaker: Dr. Edwina Proudfoot - ‘Cemeteries and Evidence of Early Christianity’.

9th February
Members’ Night
(abandoned due to weather)

23rd February
Speakers: Mr. and Mrs.Norman Hammond - ‘The Marine and Maritime Lichens of the Galloway Coast’.

8th March
Speaker: Dr.S.M.Schwartz - ‘Slave Captain - The Career of James Irving of Langholm’.

23rd March
Speaker: Mr.Trevor Cowie - ‘From Tinkers to Titles - The Archaeology of Fake Bronze Age Axes from Scotland - a Victorian Whodunnit’.
This meeting was held in Kirkcudbright.

Publications funded by the Ann Hill Research Bequest

The History and Archaeology of Kirkpatrick-Fleming Parish

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

No. 2* Kirkpatrick-Fleming Poorhouse, by D.Adamson.

No. 3* Kirkpatrick-Fleming Miscellany

Mossknow Game Register 1875.

Diary of J.Gordon Graham 1854.

edited by D.Adamson and I.S.MacDonald.

No. 4* Middlebie Presbytery Records, by D.Adamson.

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.

No. 6 Kirkpatrick Fleming Dumfriesshire – An Anatomy of a Parish in South-West Scotland

by Roger Mercer and others

Nos. 1 to 5 are crown quarto in size with a 2 colour titled card cover.

No. 6 is A4 hardback and is out of print. A re-print in soft cover is in preparation.

Publications marked * are reprinted from the *Transactions.*

The Records of Kirkpatrick-Fleming Parish

No. 1 Old Parish Registers of Kirkpatrick Fleming, 1748-1854. Indexed and in 5 parts

No. 2 Kirkpatrick Fleming Census 1851

No. 3 Kirkpatrick Fleming Census 1861

No. 4 Kirkpatrick Fleming Census 1871

No. 5 Kirkpatrick Fleming Census 1841

No. 6 Kirkpatrick Fleming Census 1881

No. 7 Kirkpatrick Fleming Census 1891

No. 8 Kirkpatrick Fleming Gravestone Inscriptions

The Record series is duplicated in A4 size with a titled card cover.

For prices and availability of both series apply to
Mr R.H.McEwan, 13 Douglas Terrace, Lockerbie DG11 2DZ.

Publications of the Society

Transactions and Journal of Proceedings: 1st Series - (a) 1862-3*, (b) 1863-4*, (c) 1864-5*, (d) 1865-6*, (e) 1866-7*, (f) 1867-8*. **New or 2nd Series** - (1) 1876-8*, (2) 1878-80*, (3) 1880-3*, (4) 1883-6*, (5) 1886-7*, (6) 1887-90*, (7) 1890-1*, (8) 1891-92*, (9) 1892-3*, (10) 1893-4*, (11) 1894-5*, (12) 1895-6*, (13) 1896-7*, (14) 1897-8*, (15) 1898-9*, (16) 1899-1900*, (17) 1900-5 (in 4 parts)*, (18) 1905-6*, (19) 1906-7, (20) 1907-8*, (21) 1908-9, (22) 1909-10, (23) 1910-1*, (24) 1911-2*. **3rd Series** - (i) 1912-3*, (ii) 1913-4*, (iii) 1914-5*, (iv) 1915-16*, (v) 1916-8*, (vi) 1918-9*, (vii) 1919-20*, (viii) 1920-1*, (ix) 1921-2*, (x) 1922-3*, (xi) 1923-4*, (xii) 1924-5*, (xiii) 1925-6*, (xiv) 1926-28*, (xv) 1928-9*, (xvi) 1929-30*, (xvii) 1930-1, (xviii) 1931-3*, (xix) 1933-5*, (xx) 1935-6*, (xxi) 1936-8*, (xxii) 1938-40*, (xxiii) 1940-4*, (xxiv) 1945-6*, (xxv) 1946-7*, (xxvi) 1947-8*, (xxvii) 1948-9* (Whithorn Vol. I), (xxviii) 1949-50*, (xxix) 1950-1* (with Index of Vols. i to xxvii), (xxx) 1951-2*, (xxxi) 1952-3* (Hoddom Vol. I), (xxxii) 1953-4, (xxxiii) 1954-5, (xxxiv) 1955-6* (Whithorn Vol. II), (xxxv) 1956-7*, (xxxvi) 1957-8, (xxxvii) 1958-9, (xxxviii) 1959-60, (xxxix) 1960-1* (with Index of Vols. xxvii to xxxviii), (xl) 1961-2 (Centenary Vol.)*, (xli) 1962-3, (xlii) 1965 (new format), (xliii) 1966, (xliv) 1967, (xlv) 1968, (xlvi) 1969, (xlvii) 1970, (xlviii) 1971, (xlix) 1972 (with Index of Vols. xxxix to xlviii), (l) 1973, (li) 1975), (lii) 1976-7, (liii) 1977-8, (liv) 1979 (Wanlockhead Vol.), (lv) 1980, (lvi) 1981, (lvii) 1982, (lviii) 1983, (lix) 1984 (with Index to Vols. xlix to lviii), (lx) 1985, (lxi) 1986, (lxii) 1987, (lxiii) 1988, (lxiv) 1989), (lxv) 1990 (Flora of Kirkcudbright Vol.), (lxvi) 1991 (Hoddom Vol. II), (lxvii) 1992, (lxviii) 1993, (lxvix) 1994 (Birrens Centenary Vol. with Index of Vols, lix to lxviii), (lxx) 1995 (Barhobble Vol.), (lxxi) 1996..

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Single Volumes (to non-Members) - £6 for one; £5 for 2nd; £4 for 3+, all plus post. & packing.
Runs of Volumes - on application to the Hon. Librarian.

A List of the Flowering Plants of Dumfriesshire and Kirkcudbrightshire, by James McAndrew, 1882.*

Birrens and its Antiquities, by Dr J.Macdonald and James Barbour, 1897.*

Communion Tokens, with a Catalogue of those of Dumfriesshire, by Rev. H.A.Whitelaw, 1911.*

History of Dumfries Post Office, by J.M.Corrie, 1912.*

History of the Society, by H.S.Gladstone, 1913.*

The Ruthwell Cross, by W.G.Collingwood, 1917.*

Records of the Western Marches, Vol. I, "Edgar's History of Dumfries, 1746", with illustrations and ten pedigree charts, edited by R.C.Reid, 1916 *.

Records of the Western Marches, Vol II, "The Bell Family in Dumfriesshire", by James Steuart, W.S., 1932.*

Records of the Western Marches, Vol III, "The Upper Nithsdale Coalworks from Pictish Times to 1925", by J.C.McConnel, 1962, £2.00 plus postage.

Notes on the Birds of Dumfriesshire, by H.S.Gladstone, 1923*

A Bibliography of the Parish of Annan, by Frank Millar, F.S.A.Scot, 1925*

Thomas Watling, Limner of Dumfries, by H.S.Gladstone, 1938*

Index to Transaction, Series 1 and 2, £2.00 plus postage and packing.

The Marine Fauna and Flora of the Solway Firth Area, by Dr E.J.Perkins, 1972, 112pp. £2.00 plus postage and packing. **Corrigenda.***

Birrens (*Blatobulgium*), by Prof. A.S.Robertson, 1975*

Cruggleton Castle. Report of Excavations 1978-1981 by Gordon Ewart, 1985, 72pp 33 figs. £3.50 plus £2 post and packing to members. £4.50 to non-Members plus post and packing.

Kirkpatrick Fleming, Dumfriesshire - an Anatomy of a Parish in south-west Scotland, by Roger Mercer and others.

* Indicates out of print, but see Editorial.

Reprints **"The Early Crosses of Galloway"** by W.G.Collingwood from Vol. x (1922-3), 37pp text, 49 crosses ilustrated and discussed, £1.00 plus post to Members.
"Flowering Plants etc. of Kirkcudbrightshire" by Olga Stewart, from vol. lxv (1990), 68pp, Price on application to Hon. Librarian.

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