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CORRIGENDA

p. 35, line 23, for (63, 54) read (63, 64).

p. 41, Vessel No. 65, delete XCVI.

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EDITORIAL

After 51 years without change, in this volume the Transactions appear in a new guise. At the time when the format hitherto used was adopted in 1913 the subject matter was largely written text. Lately, however, there has been an increasing number of illustrations, both line drawings and half-tone, but the size of page did not lend itself readily to these either from a practical or economic point of view. Accordingly, the Council has decided to adopt this new format. Furthermore, they have appointed a second or business Editor, whose sole duty is to see that all costs are kept to a minimum. As a further economy measure it is intended to print the list of members triennially only in future. It is hoped that by these changes, in spite of increasing printing charges, the Society will be able to maintain the present content and standard of its publication. While there is no intention to reduce the field covered, it may not be possible to provide space for Industrial Archaeology.

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

Presentations and Exhibitions should be sent to the Secretary and Exchanges to the Librarian, Ewart Library, Dumfries. Enquiries regarding purchase of Transactions should also be made to the Librarian. New members are invited to purchase back numbers (see back cover). Payment of Subscriptions should be made to the Treasurer, who will be pleased to arrange Bonds of Covenant, which can materially increase the income of the Society without, generally, any additional cost to the member.

This volume is made with the assistance of a generous Carnegie Grant. The illustration on the front cover is from the Article "The Early Church in Dumfriesshire" by the late W. G. Collingwood in Volume XII (1924-25) of these Transactions. It is of the Wamphray grave-slab, which dates to about 950 A.D., and which is unusual in having the Scandinavian dragon side by side with a pattern derived from Anglian leaf scrolls. It is therefore perhaps a reminder of how many differing influences and cultures have each contributed their own facets to the prehistory and history of our Society's area, and that the interest of our Members rightly also includes the whole environment in which man is set.

SOME RESULTS OF AN INVESTIGATION OF THE BIOLOGY OF THE SOLWAY FIRTH IN RELATION TO RADIOACTIVITY

By E. J. PERKINS

Department of Biology, University of Strathclyde, Glasgow

and

B. R. H. WILLIAMS

I.C.I. Paints Division, Research Laboratory, Freshwater Bay, Brixham, Devon

INTRODUCTION

During the period under discussion, insoluble or colloidal radio-nuclides, particularly Ru¹⁰⁶, predominated in the Solway Firth. These nuclides were examined almost exclusively, although some information with respect to Sr⁹⁰ was obtained.

It was shown by Scobie and Porter (1961) that Ru¹⁰⁶ derived from the Windscale Works could and did enter the Solway. Because it was transported upon sediment it was evident that the mechanism merited investigation. Despite fall-out from Russian weapons tests in 1961 and 1962, it was possible to continue this investigation not only because fall-out insolubles obeyed the same laws, but because on much of the shore the Windscale effluent could still be detected.

This paper represents a general discussion and summary of the Solway Firth investigation carried out by the Marine Biology Group, Chapelcross, during the period April, 1961 - April, 1964. The detailed conclusions derived have been reported in the series listed.

DISCUSSION

The Solway Firth can be considered a Type D estuary. Mixing due to the tides is intense and has broken down the stability which can result from a fresh water inflow. There is no stratification, and no bottom residual currents, instead a slow net drift to the sea results at all depths. The salinity decreases from mouth to head. In such estuaries, a soluble effluent is rapidly mixed vertically and horizontally. It is slowly carried towards the sea with the net drift. On the meagre evidence available, it was concluded that the mean time taken by a soluble effluent to travel from the release point at Seafield to the Southerness Point - Dubmill Point line is of the order of 20 days. This requires confirmation.

Since this system did not break down even under conditions of high run-off it is evident that transport of insoluble radioactive materials and their associated sediments is not by means of bottom residual currents. It is also evident that as the Solway Firth has been progressively filled with sedimentary materials, over the centuries, a powerful and persistent mechanism is involved.

Previous authors inclined to the opinion that transport due to longshore drift was the agent responsible. However, evidence for this mechanism can only be found on the south shore up to Grune Point, and only at the higher shore

levels. There is no doubt that the dominant agent of sediment transport is the tidal currents. The tidal wave is asymmetrical in most of the Solway Firth; the flood tide at springs may reach 6 knots at Powfoot for example, while at Newbie a differential of ca. 1.5 knots between maximum flood and ebb tide velocities was recorded. A difference between flood and ebb streams of not more than $\frac{1}{2}$ - $\frac{3}{4}$ kt even at springs is sufficient to ensure a steady net transference of sediment towards the inner part of an estuary. This mechanism is therefore a strong one in the Solway Firth. The results of the seabed drifter investigation and the distribution of sediments confirms that it is the dominant mechanism of sediment transport. It should be noted that this does not represent transport by a residual current. Indeed the reverse is true, since the net drift of water is towards the Irish Sea, while the drift of sediment is in the opposite direction, towards the head of the Solway Firth.

In addition, the flood streams of the Solway Firth itself have produced a dominant flood channel system, while in the N.E. Irish Sea the tidal currents have apparently moulded the loose sediment of the sea-bed where flood channel elements can be detected and are shown to be related to sea-bed drifter movements. Consideration of the changes in tidal height and range, from solstice to equinox and so on, suggest that maximum amounts of sediment should arrive around the time of the equinoctial tides. Little evidence is available for the fine sand content of these sediments, but the conclusion is true for sea-bed drifters and for silt. The relationship is not, however, straightforward as the budget of silt arrival in the period 1961-64, shows.

BUDGET OF SILT ARRIVAL — VISUAL OBSERVATION

Year	Equinox	Relative Amount
1961	March	+++
	September	°
1962	March	+
	September	++
1963	March	++++
	September	°
1964	March	°
	September	+

The results obtained from the sea-bed drifter investigation showed that while movements on the sea-bed in the N.E. Irish Sea represent the results of the action due to differences in flood and ebb tide velocities for much of the time, at other times an actual current may flow and sweep silt south and away from the Solway Firth. Since the mechanism which brought this about originated to the north and west of the Isle of Man, it does suggest that this may be due to variations in the flow of the Gulf Stream affecting flows in the North Channel. Further investigation of this aspect is, however, required.

Generally speaking the pattern of sediment distribution on the shore is one

with finer sediments at its head and coarser sediments adjacent to or in the channels. This is to be expected in an area where tidal mechanisms predominate. However, to the west of the area silt occurs on the sea bottom, held there by the dominant flood tidal streams and relative lack of wave action. This relative lack of wave action is significant since it results in the rather poor marshes of the Solway Firth and reduces the rate at which land reclamation can occur. Without silt to act as a fertiliser no land reclamation project can expect to make worthwhile progress, as a scheme carried out in Morecambe Bay showed (Steers, 1946). This finding has a further significance with respect to the disposal of insoluble radioactive effluents generally. In an area such as the southern North Sea where wave action is strong, and salt marsh development active, then an insoluble effluent released to the sea can be expected to find its way up to and be deposited up on the marshes relatively quickly, little being left on the sea bed. It is possible to visualise greater difficulty in such waste disposal here compared to the north-east Irish Sea, where wave action is relatively weak and much of such an effluent will come to rest on the sea bed, there to decay. In the Solway Firth itself, once within a line from Balcary Point to Harrington, silt and activity reach the upper shore levels relatively quickly. On the shore itself, as one might expect from what has already been said, and what is known of salt marshes, maximum deposition of silt, and Ru¹⁰⁶, takes place in the accretion edge and decreases in either direction away from it. To be more specific, the organisms primarily affected on muddy/sandy shores are *Corophium volutator*, *Macoma balthica* and *Spartina townsendii*, together with their associated organisms. On rocky shores the *Pelvetia canaliculata* and *Fucus spiralis* zones, particularly the latter, lie at the same level as the above zones on muddy/sandy shores and may be observed to receive large amounts of silt at appropriate times; while the specific activity of *Fucus spiralis* is normally the maximum recorded at any one time and any one place of the four zones of shore dwelling algae. Before deposition in these zones, the sedimentary materials may first be deposited in temporary or primary sites of deposition.

Investigation of the food chains in the Solway Firth has shown that while the flounder and plaice have a different feeding behaviour to the other species, there is apparently no one limiting food chain in the passage of radioactivity to Man.

Flounder and plaice differ from the other species in that they feed high up on the shore, the former in the *Corophium volutator*/*Macoma balthica* zone, the latter in the *Macoma balthica*/*Cardium edule* zone. It has been shown that the amount of Ru¹⁰⁶ activity taken up by the filter feeding bivalves is to some extent related to the amount of Ru¹⁰⁶ in the immediate environment of the animal, but that in these animals it tends always to be high since they select the finer particles carried by the feeding currents. Of the two fish, plaice and flounder, the latter is of greater importance in the Solway. It is of interest to note that

although the food of this fish feeds in a comparatively Ru^{106} rich environment, little gets through into the flesh of the fish and hence to Man; this holds true even at periods of heavy feeding and good condition in July. Such is a marked contrast to Sr^{90} which is concentrated along the food chain, and which at the time of heavy feeding and good condition in July may show an increase of some 5-7 times over the average level for the rest of the year. During the period of the investigation the maximum levels of Sr^{90} and Ru^{106} in flounder muscle were 0.25 uuc/gm wet weight and 0.5 uuc/gm wet weight respectively. Overall, it may be concluded that the levels of radioactivity in the Solway Firth at the present time are so low as to be of little concern. Should any future development in the area involving the discharge of radioactivity be contemplated, the most probable potential hazard from insoluble activity would be to those on beaches and those handling fishing gear. Bearing in mind that the present levels of activity are only a few times the natural background to which we are exposed continuously, and the fact that the two suggested methods of exposure would involve a comparatively small number of hours per year, an increase by several orders of magnitude of the discharge of insoluble activity might be possible. On the other hand, the potential hazard from soluble activity, such as Sr^{90} , would arise from the ingestion of fish containing this activity. The accepted levels, or derived working limits (DWL) as they are usually called, depend upon the amount of fish caught in the area and the relative amounts consumed in the area and at a distance from the area. However, if the derived working limits for the north-east Irish Sea area, a much more heavily fished area than the Solway are taken, an increase in discharge of soluble activity of between 1 and 2 orders of magnitude may be acceptable.

Other aspects of the investigation have shown that while adverse weather conditions can affect the kind of food taken by fish there are at this stage, no obvious consequences. Again not only the weather conditions, past and present, can affect the sexual development and growth of algæ for example, but position along the estuary may also affect these states. In such cases, it is not possible to define, relative to the biota, periods which are more or less favourable to effluent releases. The intermittent arrival of material from the N.E. Irish Sea alone makes this an open question.

One further consequence of the transport of silt has already been touched upon. Its effect in conferring fertility was noted, and it is worth pointing out that Burkholder and Burkholder (1956), Rochford (1958) and Ranwell (1964) showed its importance in relation to vitamin B^{12} , phosphate and nitrate respectively. Evidently what applies to the deposition of Ru^{106} is pertinent when considering the nutrients which are also associated with silt. Evidently, tidal transport mechanisms are necessary to carry sedimentary materials to a developing marsh, but it is the amount of wave action at the source of the fertilising silt which influences the richness of the marsh. Hence the contrast between the salt marshes bordering on the North and Irish Sea coasts of Great Britain.

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THE BEHAVIOUR AND ECOLOGY OF RESPONSES BY THE MICROBENTHOS TO LIGHT

By E. J. PERKINS

Department of Biology, University of Strathclyde, Glasgow

INTRODUCTION

Light as a stimulus in the behaviour of the zooplankton has long been recognised. Rose (1925) concluded that the majority of pelagic animals are adapted to an optimum intensity of light, each species and each individual having its own characteristic optimum intensity. Russell (1927a, b) summarised the work of himself and many others and stated that his conclusions were in agreement with those of Rose (1925). These, in order of importance, were:

1. Light, under average conditions, has a predominating influence.
2. Temperature, can be very important and temperatures in excess of 20°C can overwhelm the effect of light.
3. Other factors of the medium (concentration, aeration, etc.).

To these Russell added,

4. Geographical locality. Factors which may exert a powerful influence in one latitude, in another region may have little effect.
5. Type of environment, e.g. the difference between rock pools and open sea.

Literature on the reactions of the microbenthos to light is diffuse. Reactions to light were demonstrated in *Convoluta roscoffensis* by Bohn (1903) and Gamble and Keeble (1903), in particular the latter authors demonstrated a positive reaction to white and green light. Laurie (1913) and Herdman (1921) showed that the dinoflagellate *Amphidinium operculatum* reacted positive to low, but negatively to high light intensity. Bracher (1919) and (1929) showed that the flagellate *Euglena limosa* and diatoms responded positively to light. Spooner (1933) showed that the responses of the planktonic harpacticoid copepod *Euterpina acutifrons* were photopositive, but that those of the small bottom dwelling form *Nitocra typica* were photonegative. Russell (1936) showed that *Arenicola* reacted to light of ca 4950 Angstrom units. Aleem (1950) on the basis of the information available to him, put forward the hypothesis that the apparent tidal rhythm exhibited by the littoral diatoms at Whitstable, Kent, was the result of a positive response to light and a negative response to darkness. Perkins (1960) attributed the diurnal rhythm of littoral diatoms in the River Eden estuary, Fife, to a positive response to light and a negative response to darkness; he suggested that light intensity of not more than 2.5 ft.-candles was critical, values below the critical value producing the downward movement and above it the upward movement.

RESULTS

The investigation described below was concerned primarily with the micro-

benthos living in the shore at Whitstable, Kent, in the years 1954-55; some reference is, however, made to the R. Eden estuary, Fife.

Non-experimental laboratory and field work

A technique used at Whitstable, and in R. Eden estuary (Perkins, 1958a) consisted in bringing to the laboratory, samples of shore soil which were placed in dishes, covered with sea water, and allowed to settle. After settlement had taken place, these samples were examined and by means of pipettes the animals moving on the surface layer of the soil or swimming in the water were removed for identification. Clearly, such animals were exhibiting a positive reaction to light; the organisms recorded by this technique were:

Turbellaria	<i>Tisbe longicornis</i> T. and A. Scott
Nematodes	<i>Alteutha interrupta</i> (Goodsir)
Many unidentified	<i>Alteutha oblonga</i> (Goodsir)
<i>Chromadora nudicapitata</i> Bastian	<i>Parathalestris intermedia</i> Gurney
Ostracods	<i>Parastenhelia spinosa</i> (Fischer)
<i>Leptocythere pellucida</i> Baird	<i>Stenhelia palustris</i> Brady
Harpacticoid Copepods	<i>Amphiascella limicola</i> Brady
<i>Ectinosoma sarsi</i> Boeck	<i>Amphiascella debilis</i> (Giesbrecht)
<i>Ectinosoma herdmani</i> T. and A. Scott	<i>Mesochra lilljeborgi</i> Boeck
<i>Ectinosoma curticorne</i> Boeck	<i>Enhydrosoma curticauda</i> Boeck
<i>Ectinosoma gothiceps</i> Giesbrecht	<i>Rhizothrix curvata</i> Brady and Robertson
<i>Tachidius discipes</i> Giesbrecht	<i>Paronychocamptus curticaudatus</i> (Boeck)
<i>Microarthridion fallax</i> Perkins	<i>Asellopsis intermedia</i> Brady and Robertson
<i>Harpacticus littoralis</i> Sars	
<i>Tisbe furcata</i> (Baird)	

During the examination of the dishes, it was noted that many species of harpacticoid copepod, notably *Microarthridion* spp., lived in temporary pits in the substratum (fig. 1) with the anterior end facing upwards. Once noted, many

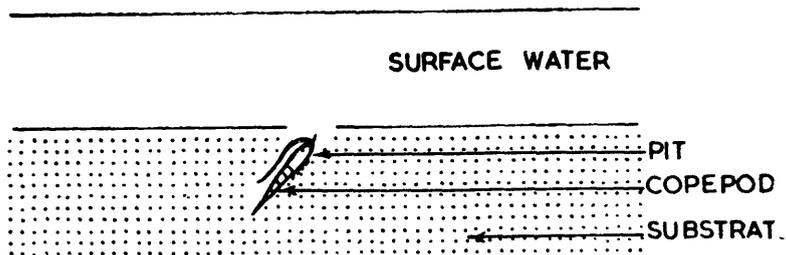


Fig. 1. The posture of harpacticoid copepods occupying pits in the substratum.

were instantly recognised by the pink ocelli, which glistened in the sunlight, like so many jewels.

Laophonte setosa Boeck and *Nitocra typica* Boeck on the other hand

exhibited negative light reactions; the latter confirming the observation by Spooner (1933).

While working on the shore at Whitstable and in the Eden estuary, it was observed that many forms, notably the ostracod *Leptocythere pellucida* and unidentified harpacticoids, freely left the soil to walk on the surface or swim in the thin layer of water above it. Nematodes were observed to move over the soil surface in the normal fashion; swimming movements were not observed in the field, but, in the laboratory, they were found to swim by a sigmoid motion similar to that of leeches.

For sake of completeness, although not of the microfauna, except at its most juvenile stages, *Corophium volutator* Pallas emerged from the substratum at Whitstable during periods of exposure, to plough about and leave a small furrow in the soil surface. This behaviour persisted except, for example, when the shadow of a hand passed over it as it walked along; as the shadow passed so the animal began to burrow vertically into the soil.

A littoral diatom population in the R. Blackwater estuary, Essex, was observed to have reactions similar to those observed in the R. Eden estuary, Fife (Perkins, 1960). Here as in the Eden, the diatoms were observed on the surface of the soil, in clear water of one to two feet in depth, before the tide had left that level of the shore, i.e. the diatoms had come to lie on the surface some time before the water had left the position. As in the Eden there was a stable soil and clear water above it.

It was observed at Whitstable and in the Eden estuary, that wind could have an indirect effect upon the diatom populations during the period of exposure.

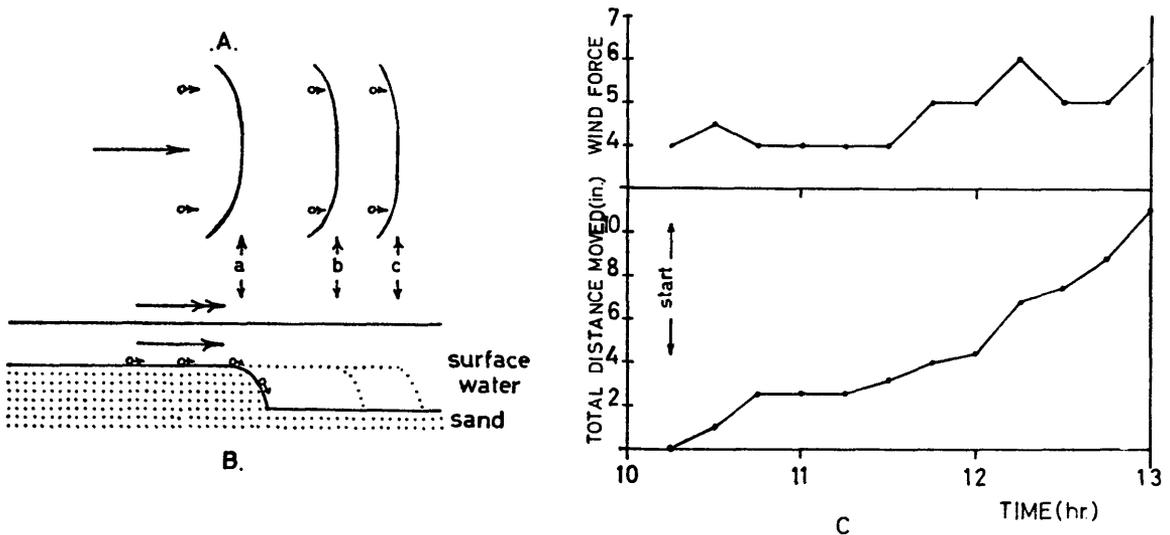


Fig. 2. Movements of soil on the shore, at Whitstable, Kent, due to the action of wind on standing surface water layers.

At Whitstable, the sandy flats had a well defined sand ripple system, which for reasons discussed by Perkins (1958a) rarely drained during the period of exposure; the depth of the water being of the order of 1 cm. During a wind of sufficient velocity, the sand ripple system tended to break down due to the flow of water across the shore in the direction of the wind. A diagram of this movement of soil due to wind acting on a surface layer of water is given in fig. 2 A, B. By marking the advancing edge of sand with tiny pegs, the effect of variations in wind velocity were investigated on 2.12.54 (see fig. 2C).

In the R. Eden estuary, it was found, in the subsidiary drainage area described by Perkins (1960), that while the flow of water in the pool of maximum

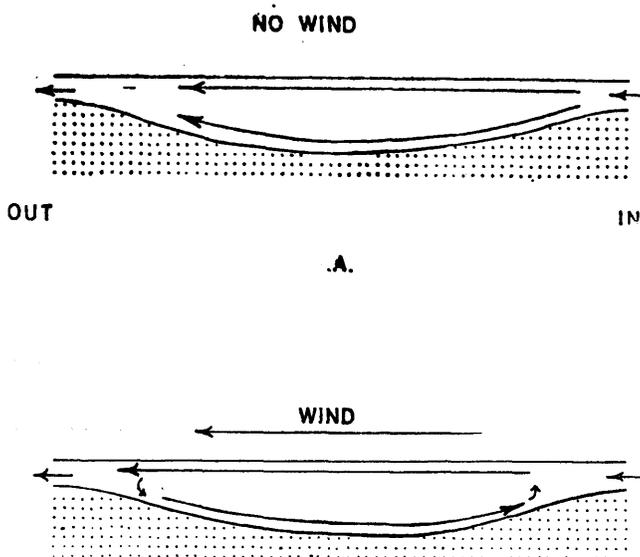


Fig. 3. Movements of water in a tidal pool in the River Eden estuary, Fife.
A. Flow in the absence of wind; B. Flow in the presence of wind.

depth 10cm. was normally that in fig. 3A, a wind blowing could increase the speed of the surface flow, but produce a reverse current on the bottom of the pool, fig. 3B. In general, the soil in the Eden was so stable that little soil was moved by such currents. However, on 9.1.57, an *Arenicola* was observed to defæcate into such a current. The soil thus moved inundated some diatom patches; the diatoms responded by moving upwards to the surface of the covering layer. In this context, it is perhaps reasonable to consider the photopositive reactions of diatoms to be in part an adaptation to meet and counter such adverse conditions.

To sum up, reactions to light, either positive or negative, are exhibited by a number of species from diverse groups of the microbenthos. It should be noted, that the species listed are those for which incontrovertible evidence is

available, however, there are, in addition, many species recorded by the author which probably exhibit photopositive reactions, but for the sake of accuracy these are not listed.

B. *Experimental study.*

Apparatus. A number of experimental systems were tested, and of these the most successful is described. Basically, it was a pneumatic trough 7 in. (17.8 cm.) long x 5 in. (12.7 cm.) wide x 5 in. (12.7 cm.) deep, blacked out except for a window 1 in. (2.54 cm.) long x 0.6 in. (1.5 cm.) wide and 0.2 in. (0.5 cm.) from the bottom of the trough (see fig. 4A). In early experiments this window was left clear, but due to undesirable reflection effects, it was painted white; this gave diffuse illumination and a minimum of disturbance due to unwanted effects. The species discussed below reacted positively both to the direct and to the diffuse illumination. This apparatus could be used at room temperature only.

For temperatures approximating to 0°C, the following arrangement was used. The trough used in fig. 4A was immersed in ice and water held in an outer and larger trough. To permit the free entry of light to the inner trough, a long, slim museum jar was placed between the inner and outer trough, and all three juxtaposed (see fig. 4B). At the same time, because the inner trough was almost completely surrounded good experimental conditions were obtained.

Illumination was by means of a Microscope Lamp. Light intensities, where measured, were obtained with an Ilford Photographic Light Meter placed against the window, inside the dry, empty, inner tank. The intensities quoted are, therefore, the maximum to which the organism reacted. Temperatures were obtained with a mercury in glass thermometer reading to 0.2°C.

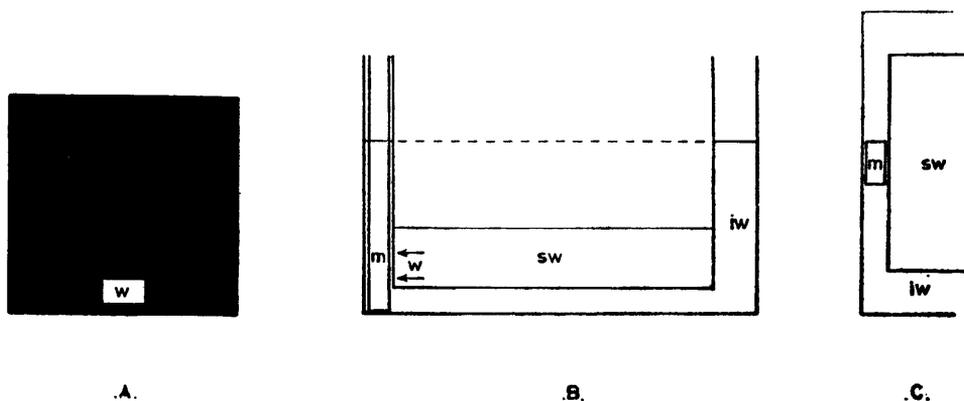


Fig. 4. Apparatus used for the study of the responses of microbenthos to light. A. Black-out trough with white painted window, B. Tank system used for temperatures ca. 0°C, and C. Plan of the window system in B. iw=ice and water, m=long, slim museum jar, sw=sea water in blackened trough, containing harpacticoid copepod, and w=white painted window.

The experiments were carried out in a large light proof box.

Experimental procedure. The harpacticoid copepods were kept in the dark for 10 mins., the light was then switched on for 5 mins. observation, switched off for 10 mins. rest, and so on. At the termination of the experiment, the animal studied was removed, and identified; on occasion an animal was "spoiled" here and identification was incomplete.

Experimental results. In general, as the light was switched on, the copepod displayed a taxis from the point of first appearance to the window, on arrival at the window it performed a kinesis which maintained it in the area of maximum illumination.

Regarding the reaction of copepods to varying illuminations and temperatures, it will be convenient to consider each species individually, thus:

Ectinosoma sp. was found to react photopositively at 20°C and a light intensity of 50 ft.-candles.

Tachidius discipes Giesbrecht. Males, non egg-bearing and egg-bearing females were all found to react positively to light at temperatures ranging from 0 to 21.5°C, and at a temperature of 15°C to light of intensities ranging from 2 ft.-candles to 2000 ft.-candles. Although this species is very active at 15°C say, its responses at 5°C or less are very sluggish, and very prone to resting. One, which had been conditioned in the refrigerator for 168 hours, was moderately active, and five which had been in the refrigerator 120 hours, were sluggish, but not given to resting; those which had been cold adapted for 24 hours were more sluggish and prone to resting. There was no reversal in the response to light, but there was clearly a falling off of the positive response due to sluggishness. It would seem, however, that while the response of *Tachidius discipes* is to a large extent dependent upon temperature, it can become adapted to cold and regain its activity.

Microarthridion fallax Perkins reacted positively to light at 50 ft.-candles intensity at temperatures of 20°C and 1°C. Both females and copulating pairs were strongly photopositive in response. As in the case of *Tachidius discipes*, this species was more active at high than low temperatures, when they were sluggish and prone to resting on the bottom.

Parathalestris intermedia Gurney was investigated only in the range 0–5°C and at 50 ft.-candles light intensity. It was always photopositive and was significantly more sluggish at 0-1°C than at 4-5°C, though a few were active at 0-1°C. All examined were female.

Stenhelia palustris Brady. An egg-bearing female was found to be photopositive at 18°C and unknown light intensity.

It will be seen from the results that these harpacticoid copepods were investigated in peculiar and haphazard fashion, but it should be remembered that they are extremely small and have first to be examined and then identified, this of necessity produces an uneven distribution of results.

In addition to the species listed, there were a number of harpacticoid cope-

pods which remained unidentified. The behaviour of these was similar to that of the species listed above, viz. photopositive, but more active at 18°C than at 3°C.

A series of experiments was also carried out using vertical illumination. Although, in some instances a harpacticoid copepod swam directly to the surface and remained there, or swam upwards and then clung to the sides, such behaviour played a minor role. The most obvious form of behaviour was persistent upward swimming and downward sinking of a kind described by Spooner (1933) as typical for the planktonic calanoid copepod *Centropages typicus*. It does not, therefore, seem likely that this behaviour could be attributed to a possibly poorly developed swimming ability in the harpacticoid copepods. The copepods considered showed more marked upward swimming and downward sinking movements in high compared with low intensity of illumination.

DISCUSSION

In addition to those harpacticoid copepods, e.g. *Euterpina acutifrons*, which spend the whole of their adult life in the plankton, there are many soil dwelling forms which spend at least some of their life in the plankton, while others never leave the bottom voluntarily. As one might expect, the responses of these forms to light vary similarly. Of the forms which have photopositive responses *Euterpina acutifrons* is wholly planktonic while adult (Spooner, 1933), although large numbers of nauplii dwell in the soil of the shore (Perkins, 1958a); *Tachidius discipes* is a facultative plankton-benthos dweller, while the strongly photopositive *Stenhelia palustris* is wholly benthonic. Other benthonic forms, e.g. *Nitocra typica* (Spooner, 1933); *Laophonte setosa*; and *Laophonte foxi* Harding (private communication, Professor H. Munro-Fox) are strongly photonegative in their response to light. It was shown by Perkins (1958a) that forms inhabiting the beach at Whitstable, Kent, and exhibiting a photopositive response all dwelt normally in the surface 2 mm. of soil. It is of interest that Aleem (1950) and Perkins (1963) showed that appreciable amounts of light could penetrate this depth of soil.

Perkins (1958b) stated that if shore temperatures fell below 4°C, the micro-fauna showed a marked downward migration. However, no reversal in response to light was shown by those harpacticoid copepods subjected to experiments in the temperature range 0-4°C. Whatever the mechanism of the response by which the downward migration is produced it is clearly not motivated by a change in response to light.

The work described in this paper was conducted during the tenure of a Research Studentship of the Nature Conservancy, to whom I am deeply indebted.

SUMMARY

Reactions to light are shown by many species of the microbenthos, some react positively, some negatively, and others have a response which is positive

to a given level after which a reversal takes place. In the harpacticoid copepod species, *Tachidius discipes*, *Microarthridion fallax* and *Parathalestris intermedia*, a movement downwards in the soil of the shore at or below 4°C, was shown not to be mediated by a change in light reaction at this temperature. The harpacticoid copepods show a range of response to light consistent with a group which contains wholly planktonic and wholly benthonic forms.

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FURTHER NOTES ON MINERALOGY IN DUMFRIES AND GALLOWAY

By JAMES WILLIAMS

F.S.A.Scot.

INTRODUCTION

After the 1963-64 redisplay of local minerals in the Dumfries Burgh Museum a catalogue for the complete collection, local and non-local, was planned and volume one (1000 specimens) is complete. It is hoped that eventually many of the better quality crystals and agates will be recorded as photographs or line-drawings—some of the drawings already completed have been used to illustrate the present paper. The extensive field-work commenced several years ago has continued and the more important results are described below.

SILICA MINERALS

Silica or silicon dioxide, SiO_2 is the commonest of all minerals represented in the Earth's crust. Apart from being the most common mineral it is of interest in that it occurs in a great variety of widely differing forms and colours.

Amethyst

The localities for amethystine quartz given in T.D.G.N.H.A.S. Vol. XLI., p.213, have been supplemented by several new, and some re-located, deposits.

1. The Kippford Shore—a single sample of pale coloured vein material, in quartz, has been recovered¹.

2. Lochside Motte, Dumfries, (Grid. Ref. NX958775). Approximately 100 samples of massive amethystine quartz have been recovered from the ground surrounding this site—(?) drift material.

3. Very small samples of pale-coloured amethyst have been recorded from Birrens Roman Fort, the Kinharvie Burn (New Abbey), and the Wauchope near Langholm. All these samples represent (?) drift material.²

4. Auchencairn Haematite Mine (Grid. Ref. NX771525). Very small samples of pale amethystine quartz are occasionally obtainable with haematite, barytes, and other varieties of quartz.

5. Several samples of worked amethyst, in mesolithic technique, have been recovered from the farm of East Preston (Grid. Ref. NX968564), near Southerness. Possibly drift or imported material from (?) Boreland of Southwick.

Agate

Agate, the semi-precious variety of banded chalcedonic silica, has been recorded from several localities.

1. Redkirk Point, Greta (Grid. Ref. NY302651), has yielded samples of well banded red and white vein agate associated with carnelian and jasper—(?) drift material.

¹ (?) Drift material from the Craignair district. See T.D.G.N.H.A.S. 1890, p. 181.

² The sample from the Wauchope was found with Criffel granite. See Sphene locality 6.

2. Sowie's Pot, near Langholm (Grid. Ref. NY370824)³. A vein of high quality colourless/white vein agate has been located—cavities within the vein yield pink calcite (Fig. 1A).

3. Skipper's Bridge, Langholm (Grid. Ref. NY371839). A small vein of dirty-white agate has been located beneath the bridge.

4. The Kinharvie Burn, near New Abbey, has yielded four more veins of agate⁴. This material is normally of poor quality but one of the veins produces a finely banded brown-pink/white variety.

Jasper

Jasper is a semi-precious variety of chalcedonic silica containing iron oxides—the normal colours are red, yellow and brown (a green variety is also rarely found).

1. The Kirkbean Burn. Veins of red/yellow material are common in the Birrenswark lavas—associated with carnelian.

2. The beaches and cliffs between Rascarrel and Orroland have long been famous for their jaspers—polished jasper is recorded as long ago as 1845⁵. Red and yellow varieties are common and a little of the pale green variety is to be had on searching carefully.

3. Redkirk Point, Gretna. Red/yellow jasper is occasionally found associated with vein agate and carnelian-drift material.

4. The beaches to the north of Port William, Wigtownshire, often contain water-worn pebbles of red and yellow jasper—associated with "beach flint."

Iridescent Quartz

Samples of iridescent quartz have been collected from the spoil-heaps at the Wanlock Dod and Whyte's Cleugh, Wanlockhead.

Smoky Quartz

Smoky quartz is a common mineral, the sub-varieties "Morion" and "Cairngorm" are classed as semi-precious stones, and the colour is most often due to minute inclusions of various minerals (Irradiation by radioactive minerals may also cause some "smokiness" in rock crystal). Fig. 1B.

1. The rich locality at the Kinharvie Burn, New Abbey, has continued to yield good display-quality material—many of the crystals are doubly terminated and the colour range is from very pale brown to perfectly opaque black. The tributary known as the Powmorin Burn was examined and a complex of manganese/quartz veins (?) re-located⁶.

2. A vein some fifty yards to the east of the Southwick Needle's Eye (Grid. Ref. NX915562) contains massive and crystalline smoky quartz—the massive material is pseudomorphic, by encrustation, after dolomite or calcite rhombs. Uranium minerals occur in this vein and the "smokiness" is almost certainly due to radioactive irradiation.

³ This is the same locality as that for the poor quality agate mentioned in T.D.G.N.H.A.S 1964, p. 214.

⁴ For previous work done at this locality see T.D.G.N.H.A.S. 1890, p. 178; and 1964, p. 211.

⁵ See the "New Statistical Account of Scotland," vol. IV, p. 361.

⁶ This material is very similar to that displayed in the Dumfries Burgh Museum (samples 171, 172) and may well be the locality for Dudgeon's material mentioned in T.D.G.N.H.A.S. 1890, p. 178.

3. Small samples of dark material have been obtained from the Wanlockhead/Leadhills area, Auchenleck Haematite Mine, Carsphairn lead mines, and from pegmatitic veins near Clatteringshaws Dam.⁷

Hacked Quartz

This variety of quartz is thought to be due to the percolation of silicon bearing solutions down the cleavage planes in calcite. The calcite is often removed and occasionally replaced by other minerals—often iron pyrites.

1. Wanlockhead area. The weathered spoil heaps at Whyte's Cleugh and on the Wanlock Dod have yielded many good samples of this variety of quartz—normally the cellular structure is filled by iron pyrites and rarely by (?) marcasite.

SILICATES

Sphene

Sphene, titanate and silicate of calcium (CaTiSiO_6), is not a common mineral in Scotland and is of great local interest in being the characteristic accessory mineral of Criffel Granite (Fig. 1D). The crystals, when seen in cross-section, are wedge-shaped (hence the name—Greek "sphenos" = a wedge) and red-brown in colour (very pale honey-brown in thin section). Being the characteristic accessory, sphene has shown that Criffel Granite has been carried over great distances during the glaciations—indeed samples have been recovered from the drift as far away as North Wales⁸, Liverpool, and Wolverhampton⁹. The following localities—from which crystals are easily observable in the hand specimen—have been visited during the last twelve months.

1. Aird's Point, New Abbey (Grid. Ref. NX990660). Small red-brown (pale honey-brown in thin section) crystals in a fine grained granodiorite¹⁰.

2. Loch Kinder Granite (disused) Quarry (Grid. Ref. NX964647). Pale yellow-brown crystals up to 3 mm. in length.

3. Kippford Granite (disused) Quarry (Grid. Ref. NX841553). Red-brown granules and small poor quality crystals.

4. On the Forestry road between Lochaber Loch and the farmhouse called Craigbill (Grid. Ref. NX938696) in the Forestry area of Mabie—red-brown crystals¹¹.

5. Craignair Granite Quarry, Dalbeattie (Grid. Ref. NX819609). Pale amber and red-brown crystals up to 4.5 mm. in length.

6. In granite boulders from the stream-bed of the Wauchope near Langholm—small red-brown granules and crystals. This identification of sphene locates these boulders to the Criffel granite mass which lies some thirty miles to the west.

⁷ The material from Clatteringshaws is very pale and occurs with very interesting quartz pseudomorphs after calcite or dolomite rhombs—the crystals show some secondary faces.

⁸ The material from North Wales was examined by Patrick Dudgeon of Cargen at the request of T. M. Reade and Prof. Bonney—see *The Quarterly Journal of the Geological Society (Lond.)*, vol. XXXIX, p. 119. The mineral Allanite—a cerium bearing epidote and very rare accessory mineral of Criffel granite—was also recorded. See *T.D.G.N.H.A.S.*, 1890, p. 177.

⁹ A large boulder of Criffel granite (5 feet x 3 feet) which now stands in West Park, Wolverhampton, was recovered from a cemetery in 1880.

¹⁰ See *T.D.G.N.H.A.S.* 1867, p. 26.

¹¹ Possibly Dudgeon's locality in *T.D.G.N.H.A.S.* 1890, p. 181.

7. Beeswing Granite Quarry (disused), (Grid. Ref. NX898685). Small red-brown crystals associated with pyrites, fluorspar, and epidote.

Epidote

Epidote, basic silicate of calcium, aluminium, and iron ($\text{Ca}_2(\text{AlFe})_2(\text{SiO}_3)_6$), is a common mineral and has been previously recorded for Creetown¹².

1. Beeswing Granite Quarry. Large pale-green, dull, radiating crystals, from a vein through granite, associated with pyrites, sphene, etc.

2. Craignair Granite Quarry, Dalbeattie. Small bright-green crystals in quartz.

Hedenbergite

The disused quarry atop the Heughs, Caulkerbush (Grid. Ref. NX923568). Close to the contact of the Silurian rocks with a porphyritic intrusion there is much calcite veining. These veins contain numerous small "blebs" (maximum diameter = 1 mm.) of a pale green mineral belonging to the Hedenbergite-Diopside series—the green colour is probably due to (?) chlorite.

Augite

The important locality—for augite crystals in an auto-brecciated basalt—at Bail Hill, Sanquhar (Grid. Ref. NX754143), was visited in the autumn and many good crystals of Augite, many showing twinning, were obtained.

Garnet

1. Clatteringshaws. Pegmatite veins in granite near the contact with sedimentary material yield transparent—but often shattered—crystals of red and brown-yellow garnets (the crystal form of the pentagonal dodecahedron is occasionally observable). Associates are muscovite mica (in plates up to 3 cms. across), and sillimanite.

2. Knocknairling, New Galloway. This famous locality for contact metamorphism was visited and crystals of red and brown-yellow garnets were obtained. Associates are Muscovite, Biotite, and Sillimanite.

IRON MINERALS

Haematite

Many localities for haematite have been examined during the last twelve months—a few of the more important are described below:—

1. Southwick Needle's Eye (Grid. Ref. NX914562)¹³. Veins to the east of the cliff Needle's Eye often contain red granular haematite associated with copper and uranium minerals.

A small (?) trial mine-working, along a vein of granular haematite, was discovered some fifteen yards east of the Needle's Eye (near the cliff top). The tunnel, horizontal and 104 feet in length, appears to be of some age and seems to have been re-exposed only recently due to earth-falls.

2. The Craiglebock Rocks, near New Abbey (Grid. Ref. NX990641). While

¹² See T.D.G.N.H.A.S. 1867-68, p. 38.

¹³ Amethyst and haematite occur some 75 yds. to the west of the Needle's Eye—see T.D.G.N.H.A.S. 1964, p. 213 and Heddle's "Mineralogy in Scotland," vol. I, p. 50. The amethyst from this locality was first described by Hay Cunningham in his "Geognostical description of the Stewartry of Kirkcudbrightshire," *Trans. Highland Agricultural Soc.*, vol. 8, p. 708.

preparing this Society's Excursion (May 9th, 1964) to these rocks the area was given a brief preliminary survey. The breccia, of shattered Silurian sediment, was found to be traversed by veins of brick-red dolomite—the colour appears to be due to admixed haematite (small pockets of specular haematite are occasionally found within the vein).

3. The Auchenleck Haematite Mine, Auchencairn¹⁴. This mine was active during the last century—the exact dates of the opening and closing of the mine are unknown although the mine was already in use by 1843 (New Statistical Account) but closed by 1896 ("Explanation of Sheet 5—Mem. Geol. Surv."). The ore, some 50-70 tons per week, was sent to the Birmingham area. There is little now to be seen apart from several "grassed" spoil-heaps and the occasional subsidence due to the collapse of the horizontal workings—the subsidence may be explained by the great width of the vein (an ore-bearing ground of 66 feet was reported in 1863).

However, the spoil-heaps still yield beautiful samples of black and red botryoidal haematite—rarely banded with yellow limonite¹⁵ (a little of the specular variety is also to be had)—associated with orange-pink barytes, smoky quartz, and rarely amethystine quartz.

4. Auchenfad, Mabie (Grid. Ref. NX949702), was the scene of some prospecting for iron during the last century. Little was found and only a few spoil heaps remain—these yield very poor samples of massive haematite.

Iron Pyrites

1. Arbigland Shore. The Lower Carboniferous Limestones near the "House on the Shore" (Grid. Ref. NX994574) are traversed by small veins of calcite—several contain massive and crystalline iron pyrites associated with Nailhead spar and (?) gypsum¹⁶.

2. Quartz/calcite veins traversing the Silurian rocks in the disused quarry behind the Grove Hospital, Dumfries, contain small, much oxidised, crystals of iron pyrites.

3. Beeswing Granite Quarry (Grid. Ref. NX898685). The granite in this quarry is much filled by iron pyrites—normally crystallised as the cube but combinations of the cube and octohedron have also been found. The pyrites is found associated with sphene, epidote, and fluorspar.

4. Oxidised samples of pyrites in "Hacked" quartz have been obtained from the New Glencrieff and Whyte's Cleugh spoil-heaps, Wanlockhead—portions of the material from Whyte's Cleugh may contain (?) marcasite.

Siderite

1. The Lower Carboniferous Limestones of Arbigland have yielded a few poor quality samples (nodules) of "clay ironstone."

2. While examining the remains of a drill core at the Crichope Linn,

¹⁴ See "Explanation of Sheet 5"—Mem. Geol. Surv. 1896, p. 40; and Hay Cunningham's "Geognostical Description.

¹⁵ Sample No. 90 of the mineral collection at Dr Grierson's Museum, Thornhill, is a particularly good example of this variety of haematite.

¹⁶ see T.D.G.N.H.A.S. 1890, p. 178.

Thornhill, small nodules of "ironstone" were observed at various levels in the Carboniferous strata.

MANGANESE MINERALS

Psilomelane

The Kinharvie Burn, New Abbey, has yielded further fine samples of black botryoidal Psilomelane (compare Fig. 1C)—associated with a little dialogite, some Kaolin, and much doubly-terminated Smoky Quartz¹⁷.

Pyrolusite

The old spoil-heaps on the Wanlock Dod (Grid. Ref. NS873136), and those at the head of Whyte's Cleugh, Wanlockhead, have yielded several small samples of black botryoidal pyrolusite.

ZINC MINERALS

Sphalerite

1. Wanlockhead. Work within this area has continued to yield good samples—especially at the New Glencrieff Mine where the spoil-heaps are being utilised for road metal, etc.

2. Carsphairn Lead Mines (Grid. Ref. NX530937). Although the spoil-heaps are very "clean" small samples of crystalline and fibrous sphalerite may be obtained.

3. Glendinning, Eskdale. (Grid. Ref. NY312965). Much of the vein material contains crystals and crystalline sphalerite—mainly "Black Jack" but a little "Honey Blende" also occurs.

Smithsonite

Wanlockhead—Whyte's Cleugh. Small samples of very pale green botryoidal Smithsonite, encrusting on quartz, have been obtained near the head of this cleugh.

LEAD MINERALS

Galena

1. Wanlockhead/Leadhills. Small weathered samples of massive and crystalline galena have been recovered from this area during the last twelve months.

2. Carsphairn Lead Mines. Small samples of massive and occasionally crystalline galena are to be had from the spoil-heaps. The spoil-heaps are very "clean" as regards sulphide minerals—e.g. galena¹⁸, sphalerite, and chalcopyrites—good samples of the gangue minerals are easily obtainable.

3. Glendinning Antimony Mine. Samples of massive galena, associated with stibnite, sphalerite, etc., be recovered from the old spoil-heaps.

¹⁷ See T.D.G.N.H.A.S. 1890, p. 176, and 1964, p. 211.

¹⁸ Galena has been recorded as crystals showing the combination of the cube and octohedron—see Hay Cunningham's "Geognostical Description," p. 731.

4. The galena from Skipper's Bridge, Langholm—described in T.D.G.N.—H.A.S., 1964, p. 214—was collected again this year and sufficient material for display purposes is now available at the Burgh Museum.

5. A small water-worn pebble containing finely dispersed particles of galena was recovered from a stream near Raehills, Dumfriesshire (?) drift material.

Jamesonite

Small good quality samples—showing a fine blue iridescence—have been recovered from the old spoil-heaps at Glendinning, Eskdale.

Caledonite

Many small samples of good quality massive material have been obtained from the spoil-heaps in and around Whyte's Cleugh, Wanlockhead—the spoil-heaps nearer the bottom of the cleugh being the more productive.

An "Artificial" Mineral from Wanlockhead

While examining the brick-built portions of the old smelting works at the Sowen Burn, Wanlockhead, the walls and bricks were discovered to be encrusted by a dirty-white, crystalline, lead compound. Unfortunately time has not permitted the material to be analysed¹⁹.

COPPER MATERIALS

Chalcopyrites

1. In a vein near the Southwick Needle's Eye. In small amount in calcite/dolomite associated with uranium, iron, and cobalt minerals.

2. At the Balcary Mine (Grid. Ref. NX818484) in small amount associated with barytes, quartz, malachite, "tile ore," and "pitchy copper ore."

3. In a quartz/calcite vein through the Birrenswark lavas near Skipper's Bridge, Langholm—with galena and a little malachite.

4. At Wanlockhead/Leadhills, Carsphairn, and Talnotry.

Malachite

Malachite, in small amount, has been recovered from Wanlockhead/Leadhills, Carsphairn, Skipper's Bridge, Balcary, and the Southwick Needle's Eye.

Cuprite var, "Tile Ore"

As earthy masses and encrustations at the Balcary Mine—associated with barytes, chalcopyrites, etc.

Chrysocolla

Small samples showing the mineral emerald-green and finely mammillated upon quartz—from Whyte's Cleugh, Wanlockhead.

URANIUM MINERALS

Uraninite

Several small veins containing uranium—mainly as Uraninite—iron, copper,

¹⁹ It should be noted that this is not the first time this material has been recorded—see T.D.G.N.H.A.S. 1919, p. 129.

and cobalt minerals have been examined in the area between the Southwick Needle's Eye and Port Ling. The vein opened by the Geological Survey at the Southwick Needle's Eye "radiates" at approximately sixty times the normal background. The Uraninite appears to be little oxidised but some (?) Uraconite may be present.

COBALT AND NICKEL MINERALS

Smaltite

A small portion of the radioactive vein at the Southwick Needle's Eye contains a little smaltite encrusted by Erythrite and rarely Annabergite.

Nickeliferous Pyrrhotite

The well-known locality near Talnoy Cottage (Grid. Ref. NX488715)²⁰ was visited—with some difficulty due to very heavy afforestation (the mine is found in a small clearing, some forty-five feet across, in the middle of a thick pine wood). The ore lying on the spoil-heaps is much oxidised but samples of magnetic, nickeliferous, pyrrhotite, associated with chalcopyrites, are easily come by.

Dudgeonite

Dudgeonite is a rare calcian variety of Annabergite first found by Patrick Dudgeon of Cargen at Newton-Stewart²¹. While visiting the Talnoy locality several small samples of this mineral, associated with annabergite, were obtained.

ANTIMONY MINERALS

This Society is extremely fortunate in possessing two good localities for antimony minerals within its area—the Knipes and Glendinning²².

Stibnite

1. Glendinning. Although the spoil-heaps at this mine are normally unproductive small samples of good quality stibnite—associated with galena, jamesonite, sphalerite, and rarely cervanite—can be obtained occasionally.

2. The Knipes, New Cumnock (Grid. Ref. NS657104). This old locality has produced some good material during the last year due to its isolated situation. The stibnite is found as long radiating crystals in quartz. Rarely, in small cavities, the crystals are bent and twisted about the long axis.

Cervantite

As already mentioned above cervanite is only found rarely at Glendinning—however, at the Knipes large samples of oxidised material are present and many show cervantite pseudomorphous after stibnite.

²⁰ For a full description of the mine, with analyses, see "The Economic Minerals of Scotland" (Mem. Geol. Surv.), vol. 17, p. 127.

²¹ See "Dudgeonite," by Heddle—*Min. Mag.*, vol. 8, p. 200, 1889.

²² For the history of the Glendinning Mine, see Article p. 140 infra.

Kermesite

Kermesite, the red oxy-sulphide of antimony, is found occasionally in oxidised samples of stibnite at the Knipes, New Cumnock.

Valentinite

Several very small samples of dirty-white "crusts" of Valentinite crystals have been obtained from the oxidised material at the Knipes.

ARSENIC MINERALS

Although an unsuccessful attempt was made to obtain samples of material from the well-known vein of mispickel in the Palnure Burn²³ several small samples of (?) mispickel were obtained from the outstanding metamorphic locality at Knocknairling, New Galloway.

BARIUM MINERALS

Barytes

Barytes is the only common barium mineral found in Scotland²⁴ and many localities are to be found within the Society's area.

1. The Auchencairn Haematite Mine. Barytes occurs as a bright orange-pink mineral—small crystals are occasionally found lining cavities.

2. The Cliffs between Rascarrel and Balcary are traversed, in many places, by veins of white and pinkish massive barytes—the veins at the Balcary and Orroland Mines contain copper minerals.

3. The cliffs at Burrow Head, Wigtownshire, are traversed in many places by thin veins of bright red barytes—coloured by (?) haematite—associated with Nailhead Spar.

4. Veins at the Mull of Galloway, Wigtownshire, have yielded a few small samples of white—occasionally iron stained—crystalline barytes.

CALCIUM MINERALS

Calcite

1. Southerness. The veins mentioned in these transactions, Vol. XLI, p. 214, were re-examined and have yielded many good samples of Nailhead Spar—a little Dog Tooth Spar is also available.

2. The Glencrieff Mine, Wanlockhead. As previously mentioned the spoil-heap at this mine is being used in the preparation of "grit" for roads and consequently fresh material is always available. The calcite appears to be mainly of the Dog Tooth Spar variety—often twinned on the base and overgrown by Nailhead Spar.

²³ See T.D.G.N.H.A.S. 1895, p. 160.

²⁴ Witherite is a very rare mineral for Scotland and has only been recorded for the New Glencrieff vein, Wanlockhead, and the Wembley Shaft, Leadhills.

3. Kelhead (disused) Limestone Quarry (Grid. Ref. NY145692). The Carboniferous Limestones at this locality occasionally contain veins of calcite which yield crystals of Dog Tooth Spar up to one inch in length.

4. Burrow Head, Wigtownshire. Small crystals of Nailhead Spar associated with brick-red barytes.

Gypsum

The calcite veins at Southernness and Arbigland mentioned previously have been found to contain small pockets of fibrous gypsum.

Apatite

Although J. K. Temple officially records apatite for the first time at Wanlockhead in 1956²⁵, there appears to have been an earlier source of the mineral at Leadhills. While re-cataloguing the mineral collection at the Dumfries Burgh Museum the Writer came upon a sample—now numbered 242—bearing the label "Phosphate of Lime, Leadhills" in a handwriting which dates to not later than 1860.

Fluorspar

Although Fluorspar has been recorded for Wanlockhead²⁶ there has been no previous record of it for Galloway. While examining outcrops of granite in the Beeswing/New Abbey area the disused quarry at Beeswing was visited. Small crystals (side = 1 mm.) of honey-yellow and colourless Fluorspar were found. A further, more thorough, search revealed several samples of pale lilac-pink massive material. This massive material is fluorescent (dull purple) under long wave U.V. light and also possesses a bright emerald-green thermoluminescence—and is therefore the variety "Chlorophane." The Fluorspar is found associated with pyrites, sphene, and epidote.

ACKNOWLEDGEMENTS

In the course of the year's work the writer has had to obtain assistance from many institutions and people in the locating, identifying, and drawing of mineral specimens and therefore takes this opportunity to thank them for their help and encouragement during the year.

²⁵ See *Trans. Roy. Soc. Edin.*, vol. LXIII, part I, No. 5, 1955-6.

²⁶ See T.D.G.N.H.A.S. 1927, p. 79; Heddle's "Mineralogy of Scotland," and "Special Report on the Mineral Resources of Great Britain" (*Mem. Geol. Surv.*), vol. 4—"Fluorspar," 1952, p. 130.

FURTHER NOTES ON MINERALOGY IN DUMFRIES AND GALLOWAY

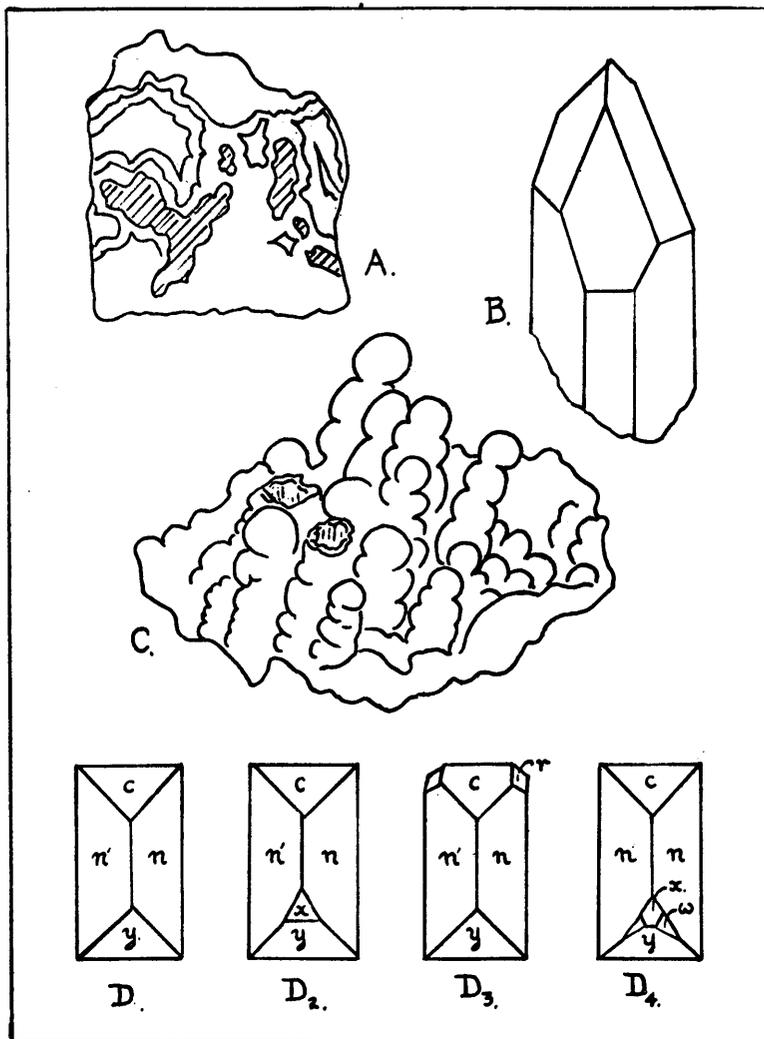


FIG. 1

A—Section of vein agate. Sowie's Pot, Langholm. Burgh. Mus. Coll. No. 124.

B—Rock Crystal. Burgh Mus. Coll. No. 599.

C—Botryoidal Psilomelane, The Hartz. Burgh Mus. Coll. No. 634.

D¹, D², D³, and D⁴ represent the crystal forms of sphenes present on a sample of "Syenite from Criffel." No. 438 of Dr Grierson's Mineral Collection.

FOOD VESSELS IN SOUTH-WEST SCOTLAND

By D. D. A. SIMPSON

Lecturer in Archæology, University of Leicester

Apart from the general list of Scottish Food Vessels prepared by Childe¹ and the description of Bronze Age pottery from Wigtown and Ayrshire², there has been no attempt to present a complete corpus of the material from this area since Abercromby's original work in 1912³. In his list, Childe enumerates forty-seven Food Vessels from the south-west. The present paper is based on a corpus of seventy-six pots, complete and fragmentary⁴. The term Food Vessel is used here in a catholic sense and as will be shown below, some of the vessels hardly warrant this nomenclature, but all pottery has been included which has been given this title by earlier workers, would be so classified in current terminology, or might be omitted by students of other forms of single grave wares.

An initial difficulty in such a study is the fact that one is dealing with pottery and little else. The amount of information associated with the discovery of each vessel is extremely limited—in most cases confined to a record of the rite, or whether the burial was in a flat cist or beneath a barrow. The majority of examples appear to be casual finds.

Apart from Glenluce, all the vessels appear to have been associated with some form of burial although no precise records exist for twenty-nine pots. On the whole, flat cists appear to be the rule rather than cairns, and at least one group was recovered from a pit grave (38-9). Cairns or barrows covering Food Vessel interments exist at seven sites (14, 19, 21, 22, 26, 46, 66). Inhumations appear to outnumber cremations. Where records are available, there appear to have been sixteen inhumations and eleven cremations. At eight further sites where the circumstances of the find have been recorded, no trace of a burial was noted. One may infer the former presence of inhumations in at least some of these cases. There is also a tendency for burials to be grouped into small cemeteries. This may be only two graves or as many as six at Mount Vernon and seven at Annathill.

With two exceptions, grave goods have not been recorded and these two finds shed little light on the date or cultural affiliations of the vessels with which they were found; however, at Bailieston, Glasgow, two vessels, and at Knocken, Lesmahagow, three pots were found in a single grave. Other useful sites are that at High Banks Farm, Kirkcudbright, where a Food Vessel burial lay beneath a cairn which also produced an inhumation with a Short Necked Beaker, although in fact the precise relationship between these two vessels is unknown; and that

¹ Childe, *Scotland Before the Scots*, 1946, p. 106ff.

² *Arch. Coll. Ayr and Gall.*, VI., p. 85ff; VII., p. 1ff.

³ Abercromby, *Bronze Age Pottery*, I., 1912, lists 16 vessels from the south-west.

⁴ A number of doubtful sherds have not been included, e.g. those associated with the cup marked stone from Cairnholy I. (*PSAS*, LXXXIII., p. 120) which may be of Fengate ware. The considerable number of cord ornamented sherds from Glenluce have also been omitted as this material is shortly to be published by Miss I. J. McInnes.

at Muirkirk, where a Food Vessel came from a cairn which also produced a cinerary urn, apparently in a contemporary position.

The pattern of settlement shows three concentrations; in the south, on the coastal plain and gravels of Wigtown and Kirkcudbright, in the low-lying Ayrshire plain and in the valley of the Clyde. Only three of the vessels were found above the 500 ft. contour, and the relationship between finds and river courses is apparent from the distribution map (Fig. 1). This pattern compares well with the distribution of Early Bronze Age metalwork figured by Dr Coles in this volume.

Type E or Irish Vase Food Vessels

Five of the Food Vessels in our area (6, 24, 54, 66, 67) belong to a well known series to which Abercromby gave the name Type E Food Vessel⁵ and which ApSimon has suggested be changed to Irish Vase⁶. Some eighteen pots of this type are known from Scotland and north-east England, and more than double that number among published material from Ireland. In north Britain they are found in both eastern and western provinces; in Ireland there are marked concentrations in Ulster and the Wicklow region with few intermediary finds between the two areas. The series is characterised by vase-shaped vessels, frequently with a pronounced and angular shoulder, whose height is greater than their rim diameter. The ware of the vessels is generally fine and well fired, with thin walls in comparison with other Food Vessel groups. The rim is frequently bevelled internally as a platform for decoration, but in only five vessels, all from north-east Britain, is the rim thickened after the manner of Yorkshire Food Vessels. Decoration is contrasting above and below the carination—the New Luce pot (66) is an exception, as here the ornament consists of an overall, horizontal, repeating pattern⁷. The commonest motifs are hatched triangles, lattice and ladder patterns used as the major band of ornament. Only one of the vessels is decorated on the base⁸. In Ireland the decoration is almost exclusively incised, with only rare instances of comb impressions. In Scotland, while incision is still the commonest technique, stamped incision and cord impressions occur on eight and six vessels respectively, in some cases in conjunction with incision. False relief occurs on only one Scottish and five Irish vessels and only four examples, including that from Craighbirnoch, have stops. Neither feature appears to be characteristic of the decorative repertoire of the group, and borrowings from the Irish Bowl and Yorkshire Vase series respectively must be the source. Although there is a general similarity in the decoration of pots both in Scotland and Ireland, in the former region the arrangement of decorative motifs shows greater variety than in Ireland, where there is a more obvious relationship among the decoration of different vessels. Two of the pots from eastern Scotland and

⁵ Abercromby, *op. cit.*, p. 116.

⁶ *Bull. Inst. Arch., Univ. London*, I., 1959, p. 29.

⁷ This feature is also found on a curious vessel from Oddington, Oxon. *Victoria County History of Oxon.*, I., 1939, pl. VIIa.

⁸ Greenwell, *British Barrows*, 1878, p. 422-4; incised cruciform design.

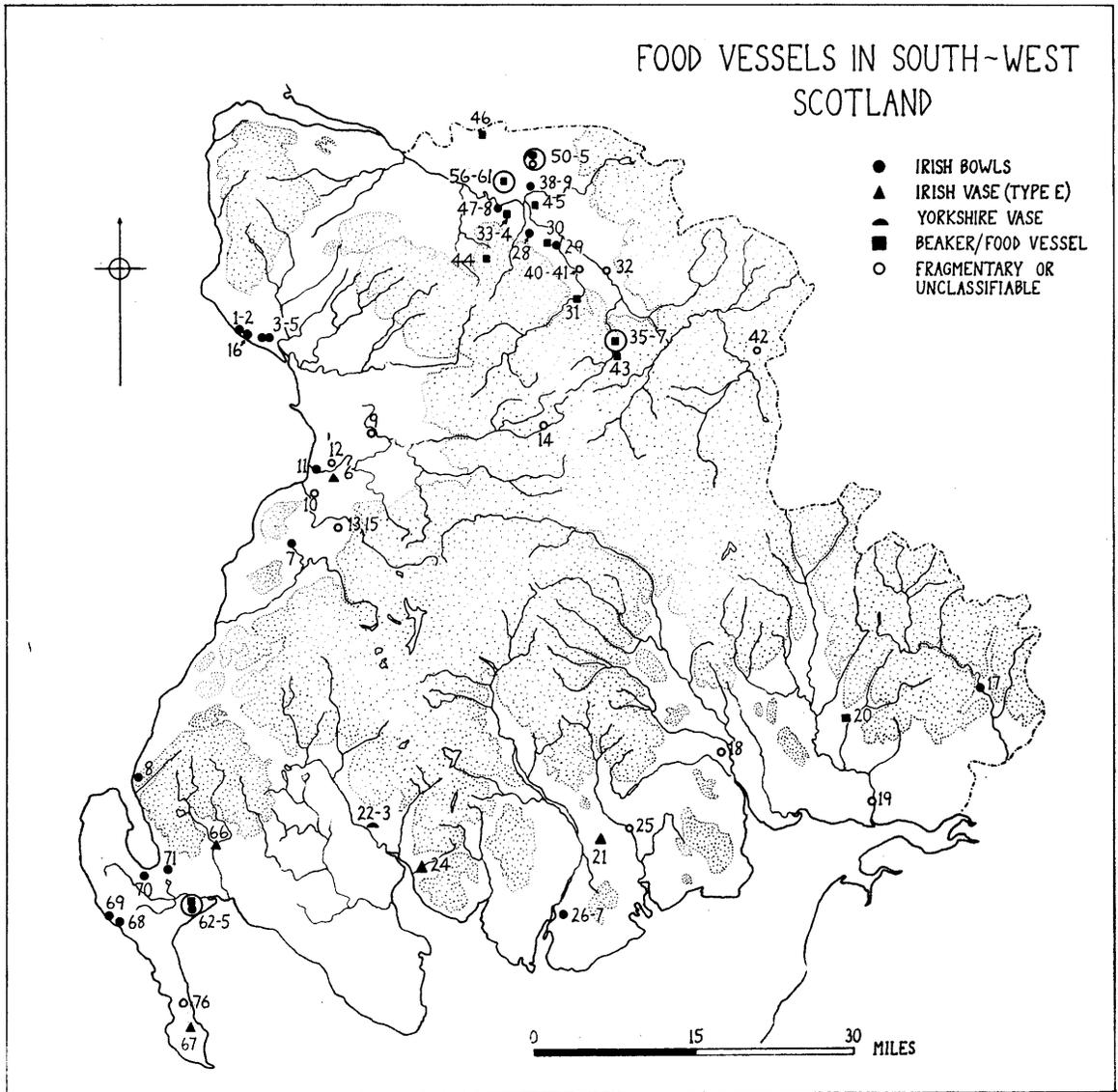


Fig. 1—Distribution Map : Land over 500 feet stippled.

five from the west approach most closely to the Irish series, but only the Cairn-gaan example (67) can be directly paralleled in Ireland⁹.

Only two of the Scottish vessels had associated grave goods; a stone axe at Craignish, Argyll¹⁰, and a flint knife at Edgerston, Roxburgh¹¹. The thin butted stone axe is an essentially Neolithic tool which does not appear to have survived long among single grave cultures and Piggott¹² considered three Short Necked Beaker graves, in which these axes occurred, as early in the series. Again, in Ireland, there are only two non-ceramic associations but both are important for the chronology of the series. The Food Vessel beneath the cairn at Toppett Mt., Co. Fermanagh, accompanied a male inhumation and a rivetted dagger with gold pommel mount¹³. The dagger is of a type diagnostic of the first phase of the Wessex Culture, currently dated to the period 1600-1500 B.C.¹⁴ Similar gold pommel mounts were found accompanying an inhumation and bronze dagger of Piggott's group II.¹⁵ under a cairn at Colessie, Fife¹⁶, and in a classic Wessex I. grave group at Cressingham, Norfolk¹⁷. The second association is of a faience bead which accompanied a Food Vessel and cremation in a cist at Ballyduff, Co. Wexford¹⁸. The faience bead was an unusually large example of two segments, which finds its closest parallels in the large segmented beads from Group D555 in Structure I. of the Fosse Temple at Lachish dated to the period 1450-1400 B.C.

Other possible chronological indicators are provided by the association of these Food Vessels, either directly with cinerary urns, or included in a cemetery where these forms predominate; and by the rite and nature of the interment. At Kilskeery, Co. Tyrone¹⁹, and Ballinglen, Co. Wicklow²⁰, the cists contained both a Food Vessel and a cinerary urn, while at five other sites the Food Vessels, which were exclusively of the type under discussion, were included in urn cemeteries²¹. Further links with cinerary urn traditions are provided by the inclusion of a miniature accessory vessel in the grave at Ballynahow, Co. Cork, and Greenhills, Co. Dublin²²—in the latter case the accessory vessel was a diminutive version of an Irish Vase—while the provision of pottery lids with the pots from Brackmont Mill, Fife, and Carn Thierna, Co. Cork²³, is reminiscent of the slabs of stone used in some cases to cover the mouths of cinerary urns. Finally, although cremations have been recorded with many Food Vessel groups, in six cases the Irish Vase actually contained the human remains—again inviting comparison with the urn tradition.

9 e.g. Tykillen, Co. Wexford: *PRIA* (3rd ser.), V., p. 338-47.

10 National Museum of Antiquities, Edinburgh.

11 *PSAS*, LXXXI., p. 191.

12 "Abercromby and After" in Foster & Alcock (Ed.), *Culture and Environment*, 1963, p. 73.

13 *PRIA* (3rd ser.), IV., p. 657.

14 Atkinson, "A Statistical Consideration of the Wessex Culture." Lecture delivered to the CBA, Bronze Age Conference, London, 1960. Case has recently suggested an earlier date for the beginning of the Wessex Culture. "Beakers and Metallurgy." Lecture delivered to the Prehistoric Society, March, 1965.

15 Piggott, *op. cit.*, p. 84.

16 *PSAS*, XII., p. 439-61.

17 *PPS*, IV., p. 93, fig. 22.

18 *JRSAL*, 1953, p. 50-6.

19 *UJA*, II., 1939, p. 65ff.

20 *PRIA*, XLII., p. 48.

21 Brackmont Mill, Fife: *PSAS*, LXXVI., p. 86; Letterkeen, Co. Mayo: *PRIA*, LIII., p. 89ff; Ballyshannon, Co. Donegal: *PRIA*, LXII., p. 165; Kilmakee, Co. Antrim: *UJA*, I., p. 127; Ballymacaldrack, Co. Antrim: *UJA*, IV., p. 63-6.

22 *PRIA* (3rd ser.), V., p. 338-47.

23 Borlase, *Dolmens of Ireland*, I., 1897, p. 12-13.

From the scant associations and with the aid of this additional funerary evidence, it would seem possible to attempt a tentative chronological sequence for this group. Unfortunately, no support can be derived from changes of pot form and decoration, such as the gradual smoothing of profile and replacement of the cavetto neck by an almost vertical form. The Toppett Mt. vessel may be dated to the sixteenth century B.C. and that from Craignish is unlikely to be later. Both these finds accompanied inhumations and imply that inhumation must come early in the series. Later would be those cremations in which the vessel lay beside the bones in a cist—the one association here suggests a Wessex II. date—and finally uncisted burials in which the Food Vessel itself serves as a funerary urn. How late these final burials may be, it is not possible to say in the absence of dateable associations for Food Vessels or Urns after the fourteenth century B.C.

ApSimon²⁴ would derive the Irish Vase from the Scottish Short Necked Beaker and would see the area of contact in north and east Ireland. While accepting his general thesis, it appears difficult to agree with the location of the development of the type. The Short Necked Beaker is rare in Ireland and of the published examples, only those from Lurgan and Loughash, Giant's Grave, are at all typical of the series in North Britain²⁵. Apart from the Lurgan pot, the Beakers which approach most closely to the Irish Vases, both in form and decoration, are found in Scotland, and more especially eastern Scotland²⁶. It is interesting to note that among this group of Short Necked Beakers is one from that same cairn at Colessie which produced the gold pommel mount, the two graves being almost certainly contemporary. The lateness of this Beaker and of a vessel from Buckie, Banff²⁷, is also confirmed by the cremations which accompanied them. Some of these vessels approach so closely the character of Irish Vases as to be readily included in either category, and emphasize the unreality of making a sharp distinction between the two types. If the Irish Vase is simply a late form of Scottish Short Necked Beaker and the development was achieved without any external influence (except for rare application of stops or false relief) then it is surely misleading to apply differing terms of what is simply a developing series, with the implications of differing cultural elements for which there is no evidence at least in the earlier stages of the so-called Vase series. Although it is possible that the transition from a "typical Short Necked Beaker" to a "typical Irish Vase" took place independently in several areas of North Britain and Ireland, the present distribution pattern of Short Necked Beakers points to Scotland, and probably the North-East as the most likely locale; an introduction of the type to Ireland would then have followed shortly after 1600 B.C.

²⁴ ApSimon, *op. cit.*, p. 30.

²⁵ De Paor, "Notes on Irish Beakers" in *Bericht über den V. Internationalen Kongress Für Vor-und Frühgeschichte, Hamburg, 1961*, p. 656-7, figs. 2-3.

²⁶ Abercromby, *op. cit.*, Pl. XVI., 205; XVIII., 226, 245.

²⁷ *The Reliquary*, I., p. 229.

Irish Bowls

Eighteen of the Food Vessels from the south-west (1, 4, 5, 7, 8, 11, 13, 17, 26, 28, 29, 32, 33, 34, 39, 40, 51, 62) fall within the category of the Irish Bowl Food Vessel, which term embraces the Tripartite Food Vessels described by Alison Young²⁸. It is uncertain whether a distinction should be made in the series between smooth profiled bowls or bowls with medial construction, and ribbed bowls. Some of the decorative schemes are shared by all forms, but others are exclusive to the smooth profiled examples which might justify their separation from other bowl types.

Only two vessels from our area, one from Annathill (51), the other from Glenluce (62), fall into the smooth profiled category. Neither is at all typical in its decoration. The pendant triangle pattern infilled with lines of comb impressions which forms the principal motif on the Annathill pot can be paralleled in two fragmentary vessels from a sandhill site on the Bann Estuary, Co. Derry²⁹; these latter also share a tailing off, or complete absence of decoration, on the lower part of the vessel. As a major motif, the pendant triangle and chevron pattern is noticeably rare on bowl Food Vessels. The second pot, from Glenluce, with its repeating pattern of broad horizontal grooves, separating short lengths of vertical comb or cord impressions, is even more difficult to parallel. A zoned, horizontal repeating pattern is characteristic of a large group of ridged or tripartite bowls (see below) but is otherwise unrepresented among the smooth profiled vessels. Similarly, although vertical ornament marks a series of smooth profiled vessels, this invariably occurs as two major bands of decoration separated by an undecorated area, medial construction or narrow zone of horizontal ornament, as in that from Port of Spittal (68). The vessel which approaches most closely to the Glenluce pot is one from Barsloisnoch, Argyll³⁰, which has a series of bands of short vertical grooves separated by horizontal rows of false relief impressions, but even here the distinction between upper and lower register is marked by an additional band of false relief ornament. The surface of the Glenluce vessel is badly weathered, but if the vertical ornament is indeed cord impressed, this again sets it apart from the majority of the bowl series where incision and, above all, comb are the normal decorative techniques.

The remaining bowls from the south-west are of ridged or tripartite profile and most are decorated with a repeating horizontal pattern of lines of comb impressions, separated by bands of false relief. This form of decoration is by far the most common in the bowl series, being found on twenty-eight Scottish vessels outside our area and on more than sixty published specimens from Ireland. There is no significant difference in the decorative arrangement in the two areas or indeed in the profile, other than a tendency among a number of Scottish vessels to be taller in relation to their width than their Irish counterparts (4, 5). Most of the examples from the south-west can be matched in both

²⁸ PSAS, LXXXV., p. 38-51.

²⁹ JRSAL, 1948, p. 148-50.

³⁰ Abercromby, *op. cit.*, Pl. XLVIII., 306.

the Irish and Scottish series but find particularly close parallels in vessels from Argyll³¹.

A vessel which stands apart from those described above is that from Blantyre (28), decorated in the unusual technique of triangular impressions; however, its major motif, a conjoined lozenge pattern, occurs on a large group of bowls in Ireland and some half-dozen Scottish pots. The treatment of this motif varies considerably. It may occur on the upper or lower body areas, or as a central panel of decoration on some tripartite vessels, and may take the form of extremely elongated panels³² or tightly repeated units resembling a flag pattern³³. In some smooth profiled bowls it degenerates into a series of sunken squares³⁴ or isolated oval rosettes³⁵. The majority of these vessels are more richly ornamented than the Blantyre example.

As with other Food Vessel types, the paucity of associations makes chronological limits difficult to define. Among bowls with a regular horizontal repeating pattern the most interesting and tantalizing association is that from Lug na Curran, Co. Leix, where the vessel was accompanied by two bronze rings of circular section, 3 in. diameter, and by "two little links of beads of some mineral substance of bluish colour and highly polished"³⁶; these objects were not preserved but from their description appear to be segmented faience beads. At Corky, Co. Antrim, the vessel accompanied a cremation and a small bronze knife with two rivets and a W-shaped hilt outline³⁷. Such daggers appear to be a purely insular development and, in view of their association in two cases with gold pommel mounts, are probably broadly contemporary with the first phase of the Wessex Culture³⁸. Another bowl in this horizontally ornamented series, found in a cist with a headless skeleton at Kinneff, Kincardineshire, was accompanied by two bronze rings of D-section 3 in. diameter³⁹. In the British Isles, D-sectioned rings appear to be peculiar to Scotland, occurring in graves with a vase-shaped Food Vessel at Ratho, Midlothian⁴⁰, a Short Necked Beaker at Crawford, Lanark⁴¹, and an unaccompanied cremation at Stobo, Peebles⁴². They also occur in hoards at Auchnacree, Angus, the Maidens, Ayrshire, and Migdale, Sutherland⁴³. Discussing the affinities of these armlets, Piggott compared them with the more massive C-shaped bracelets and rings of the later phase of Reinecke A on the continent and therefore contemporary with the first phase of the Wessex Culture⁴⁴. In publishing the Kinneff group, however, he suggested a date not earlier than the fifteenth century B.C. for the finds. This later date was based on the association of space plate jet necklaces with bowl Food Vessels; these are copies of the necklaces of amber with complex bored spacers of the

31 e.g. Loch Awe: PSAS, XX., p. 74; Kilmartin: Abercromby, *op. cit.*, Pl. XLIV., 238.

32 e.g. Kelshamore, Co. Wicklow: JRSAL, 1952, p. 153-162

33 e.g. Merginstown, Co. Kildare: JRSAL, 1933, p. 60.

34 Ballysadare, Co. Sligo: Abercromby, *op. cit.*, Pl. XLVII., 297.

35 Rubane, Co. Dublin. Belfast Museum, Unpublished. Drawing from Mr A. E. P. Collins.

36 JRHAAI (4th ser.), V., p. 446-7; Abercromby, *op. cit.*, Pl. XLIV., 248.

37 UJA, I., 1895, p. 98.

38 Piggott, *op. cit.*, p. 84.

39 *Invent. Arch.*, Great Britain, GB 34.

40 PSAS, LVII., p. 130.

41 PSAS, LXVIII., p. 185.

42 PSAS, II., p. 272.

43 *Invent. Arch.*, Great Britain, Migdale GB 26; Auchnacree, GB 27; The Maidens GB 31.

44 *Invent. Arch.* GB 27.

Wessex Culture, and Piggott suggests that the jet versions are likely to belong to the phase immediately following, or perhaps overlapping the second phase of that culture⁴⁵. However, at Kerguévarec, Finistère, a jet space plate was found in the stone chamber beneath a round barrow accompanied by three flat axes, five daggers and twenty-four barb and tang arrowheads⁴⁶. This group belongs to Giot's first series of Armorican Barrow Cultures⁴⁷, contemporary with Wessex I, and implying that the amber necklaces of Wessex were being imitated in jet during the first phase of that culture. Fusiform jet or shale beads of the type normally forming parts of such space plate necklaces were found with two further horizontally decorated bowls in Ireland⁴⁸.

Among the bowls decorated with conjoined lozenge patterns the only significant association is a ground stone axe and bone belt hook with the vessel from Killicarney, Co. Cavan⁴⁹. The belt hook consists of a rectangular plate of bone with two hooks worked from it on one face. Only three related belt fasteners have been found in Britain and all differ from the Irish example in having only a single hook. The best known example is that from the classic Wessex I. grave of Bush Barrow, only the sheet gold case of which survives⁵⁰. Another unlocated find from Wiltshire consists of a portion of the plate and hook of bone⁵¹. The third example was found inside a collared urn at Brackmont Mill, Fife⁵², and was again of bone, the hook being worked up from the same piece of bone as the rectangular plate. Only the Bush Barrow belt hook can be closely dated, but the form of the urn at Brackmont Mill would make a date in the sixteenth century B.C. appropriate here too.

For the bowls with vertical ornament as major motifs in the decoration, an interesting association is that from Labbamolaga, Co. Cork, of a fragmentary bone pin and a bone pendant with a vessel of this series⁵³. The pin is represented only by its shank which is circular sectioned, flattening towards the head and highly polished. The careful working suggests that it belongs to a small series in Britain, found primarily in Wessex Culture contexts, which copy metal prototypes⁵⁴. Bone pins with circular sectioned polished shafts and flattened perforated heads are also known from the continent in Unetice contexts⁵⁵. The pendant, made from the leg bone of a bird, had a large worn perforation at one end and a smaller one at the other. This object appears to be related to the ring pendants represented in England by an example from Stanton Harcourt, Oxon.,⁵⁶ found with a Bell Beaker and occurring in north Europe in Late Passage

45 Piggott in Wainwright (Ed.), *Prehistoric Peoples of Scotland*, 1962, p. 100.

46 *PPS*, V., p. 193-5.

47 Giot, *Brittany*, 1960, p. 130.

48 Ballybrew, Co. Wicklow: *PRIA*, XLIII., p. 255ff; Bunbrosna, Co. Meath: *PRIA*, XL., p. 308ff.

49 *JRHA* (4th ser.), V., p. 191-2.

50 Annable & Simpson, *Catalogue of Neo. & Bronze Age Coll., Devizes Mus.*, 1964, p. 99, fig. 176. These are to be distinguished from the smaller and commoner type of bone belt hook, e.g. p. 107, fig. 306, 313; p. 108, fig. 332.

51 Annable & Simpson, *op. cit.*, p. 108, fig. 331.

52 *PSAS*, LXXVI., p. 86.

53 *Journ. Cork Hist. Arch. Soc.*, LV., p. 15ff.

54 Annable & Simpson, *op. cit.*, p. 98, fig. 160; p. 110, fig. 358-9.

55 Billig, *Die Aunjetitzer Kultur in Sachsen*, Katalog, 1958, p. 177, Abb.109; see also Sprockhoff, *Die Nordische Megalithkultur*, 1938, Taf. 56, 5.

56 Grimes, *Excavations on Defence Sites*, 1960, p. 161, fig. 67.

Grave and Corded Ware contexts⁵⁷. The other associations in this series consist of a rhomboidal javelin head of Collin's type B which he has shown to be an integral component of the Carlingford Culture⁵⁸, an incense cup⁵⁹ and three disc beads⁶⁰. Other wares associated with bowl Food Vessel are equally scarce. At Gortacrom, Co. Tyrone, the Food Vessel was found in a cist with a fragment of an urn and at three other sites, burials with bowl Food Vessels antedated cremation burials in urns⁶¹. At Lough Gur, sherds of a bowl were mixed with those of Beaker and Class I. and II. wares⁶² and at Swarkeston, Derbyshire, beneath a barrow with Long Necked Beaker sherds⁶³. None of these ceramic associations need imply a date before 1600 B.C. and the grave goods with bowl Food Vessels, although few, suggest that the forms are broadly contemporary with the Wessex Culture of southern Britain.

No chronological significance can be attached to the burial rite in this group, as all decorative variants may accompany inhumation or cremation burials. The decoration of Irish Bowls does appear, however, to show some typological development, although this cannot be checked by dateable associations and some stages appear to be contemporary. The earliest vessels in the series, typologically, would be those decorated with a chevron or lozenge pattern as a major and broad band of ornament. From this phase, development might take the form of the multiplication of this design to produce an overall repeating pattern of small bands of decoration, or the conjoined lozenges might become separate panels. At the end of this latter line of development would be those vessels in which the isolated panels become vertically attenuated and degenerate into a series of grooves. It is this form which has been likened to the gold bowls of Montelius III. in northern Europe⁶⁴. The parallel in the decoration of the pottery and metal vessels is not a very close one, however, and features such as the everted rim and rounded base are alien to the Irish bowl series. None of the associations provides evidence for such long survival of Irish bowls.

The subject of the origin of the Bowl Food Vessel series cannot be discussed in detail here, but the very varying conclusions arrived at by different authorities is ample proof of the complexity of the problem. In general, these fall into three categories. The earliest, first propounded by Reginald Smith⁶⁵, and re-

⁵⁷ Sprockhoff, *op. cit.*, Taf. 63, 2.

⁵⁸ Collins, "Flint Javeline Heads in Ireland." Lecture delivered to Edinburgh Univ. Arch. Soc., 1959. The javelin head from Omagh, Co. Tyrone (Abercromby, *op. cit.*, Pl. XLVI., 281), is the only recorded example in jet or shale.

⁵⁹ Borlase, *op. cit.*, p. 211.

⁶⁰ Gemmel, Argyll. Fort William Mus., unpublished.

⁶¹ Labbamolaga, Co. Cork: *Journ. Cork Hist. Arch. Soc.*, LV., p. 15ff; Lyles Hill, Co. Antrim: Evans, Lyles Hill, a Neolithic Site in Co. Antrim, 1953, p. 48; Fournocks, Co. Meath: *PRIA*, 1958, p. 261.

⁶² *PRIA*, LVI., p. 341.

⁶³ *Journ. Derby. Arch. Nat. Hist. Soc.*, LXXX., p. 29.

⁶⁴ The similarity between Irish Bowls and some Nordic gold bowls was first noted by Menghin (*Altschlesien*, V., 1934, p. 188) and supported by Childe (*American Anthrop.*, n.s., XXXIX., p. 13). The gold bowls concerned are those from Gonnebek (Holstein), Langendorf (Pomerania) and Ebberswald near Berlin. The Gonnebek bowl most closely resembles the Irish Bowls. The two bowls from Ebberswald (*Ausgrab. und Funde*, III., 1958, p. 217, Abb.37) are even less like Food Vessels with their broadly flaring flat rims, rows of bosses and concentric circular ornament typical of the Nordic Bronze Age. All have a star pattern on their base but this is a widespread motif in European Bronze Age pottery and among metal vessels is also found on Fuchstadt cups (*Ausgrab. und Funde*, III., 1958, p. 226, Abb.44). Dr Eogan has drawn my attention to a group of gold bowls from Bihar, Roumania, which have Mycenaean affinities and which would provide a more convincing ancestry for the North European gold bowls.

⁶⁵ *Archæologia*, LXII., p. 340.

stated as late as 1948⁶⁶, would seek an origin in Beacharra ware. There is little to be said in favour of this derivation; the forms of Beacharra bowls, round bottomed with mouth narrower than the body diameter and ornament of channeling and cord impressions have nothing in common with the main Irish bowl series⁶⁷. In 1932, Sir Lindsay Scott⁶⁸ propounded the second theory of origins which is still accepted by some workers to this day⁶⁹. Scott saw all British Food Vessel Groups as representatives of continental ceramic forms and his Group Z vessels, the bowl forms, as derived from Palmella bowls; his principal argument was the frequent star and cruciform pattern on the bases of pots in the two regions. This general argument was repeated by Childe in his later works and has most recently been restated by Alison Young for the Scottish Tripartite Bowls⁷⁰. Some of the decorative features of Palmella bowls can certainly be found on Irish bowls, but these same pattern and techniques occur on Beaker pottery over a wide area in Europe, and the round base and shallow body of the Iberian bowls are quite unlike any of the British vessels⁷¹. In Spain, too, these bowls are habitually associated with Beaker forms which are unrepresented in the British Isles. The third theory of origin, deriving bowl Food Vessels from Long Necked Beakers, has been put forward recently by ApSimon⁷². He emphasized the importance of decoration with form as a subsidiary feature, when considering parallels and origins. He noted the shared motifs of the running chevron, lozenge, triangle and panelled and flag patterns on Long Necked Beakers and some Irish bowls, all executed in a comb or incised technique. The bowls which he regarded as being closest in their decoration to Long Necked Beakers are rather slab sided, bipartite pots reminiscent of a squashed down Beaker. He was obliged, however, to qualify his statement by saying that after the movement of Beaker makers to Ireland "it would hardly be surprising if, when leisure was found to recommence pot making, the product turned out a little different from that of the homeland." He pointed to the occurrence of the occasional bowl forms in many Beaker groups and regarded the bowl from Ridgeway Hill, Dorset, decorated with a major lozenge pattern similar to that on many Long Necked Beakers as important to his argument. A somewhat similar vessel comes from Tyrie, Aberdeen⁷³, but neither pot is particularly close in decoration to the Irish bowl series. Subsequent confirmation of this sequence would appear, however, to be provided by the discovery of sherds of bowl Food Vessels and Necked Beakers at a sandhill site at Dalkey Island, Co. Dublin, in

66 UJA, XI., 1948, p. 33.

67 One may note the superficial resemblance between the relief panels on a Beacharra B vessel from Ballyreagh (PPS, XXVI., p. 106, fig. 3d) to the panelled motif on some Irish Bowls and a very curious pot of vase shape decorated with comb, finger nail and vertical impressions found in a cist with a cremation at Losset, Co. Donegal (JRSAL, XC., p. 9ff). In form and decorative arrangement the vessel is very similar to a round bottomed pot from Ballymacaldrack (PPS, XXVI., p. fig. 3f). Although the latter pot is included in the Beacharra class it is an exceptional example and the vessel from Losset stands alone, possibly derived from Beacharra ware but contributing nothing to the general development of the Bowl series.

68 Proc. 1st Internat. Cong. Pre & Proto His. Sciences, London, 1932, 1934, p. 133-4.

69 e.g. Bull. Board Celt. Stud., XVII., Pt. 3, p. 198.

70 PSAS, LXXXV., p. 38ff.

71 e.g. Castillo, La Cultura del vaso campaniforme, 1928, Pls. XIII., XVII., XIX., etc.

72 ApSimon, op. cit., p. 31.

73 Proc. Anat. & Anthropol. Soc. Univ. Aberdeen, 1904-6, p. 138-41.

which transitional forms occur⁷⁴. While the sequence at this site does suggest an ancestry for bowls with major motifs of conjoined lozenges it does not settle the problem of those apparently contemporary bowls decorated with a repeating zoned pattern incorporating bands of false relief. Now decoration in this zoned manner, employing the same techniques as the Irish bowl makers, even to a tendency to vertical ornament towards the base, occurs on Beakers in the Rhineland and Holland. The late forms of Veluwe Beaker, for which a date contemporary with the Wessex Culture is suggested⁷⁵, not only share decorative similarities with Irish Bowls but also approach them very closely in actual shape⁷⁶. The other archæological evidence is in keeping with this suggested Veluwe contribution to the Irish bowl series. Vessels in Ireland suggest that their makers were concerned with the exploitation of the Irish gold and copper deposits and with the barter or trading of such characteristic products as lunulæ, decorated axes and halberds. The distribution of these objects shows the use of a trade route from the British Isles to central Germany by way of the Netherlands and Westphalia in the Early Bronze Age, and it is probably significant that the small group of imported Irish axes is found in that part of the Netherlands where late Beakers of Veluwe type are especially concentrated⁷⁷.

Beaker-Food Vessels

Under this somewhat clumsy heading may be grouped the majority of the remaining vessels from the south-west. The Beaker contribution is perhaps most marked in the two vessels decorated with horizontal twisted cord impressions from Glenluce (63, 54). Both are rather squat, cylindrical vessels with a raised moulding on the body just below the rim and a second moulding halfway down the body. These two vessels are the only restorable examples from Glenluce, but a number of other rim and body sherds seem to represent the same type of pot with raised horizontal mouldings on the body, apparently belonging to quite large pots with rim diameters in the region of 7 in.⁷⁸ Similar cord ornamented vessels with horizontal mouldings come from Skye⁷⁹ and Pitcaple Castle, Aberdeen⁸⁰, and are represented at another sandhill site at Hedderwick, East Lothian⁸¹. These vessels appear to be simply variants of the Cord Zoned Bell Beaker which is significantly of common occurrence on sandhill sites and has a more westerly distribution than other Beaker types in Scotland⁸². In addition to these moulded and corded vessels, Glenluce has produced many sherds which appear to belong to the more common form of Cord Zoned Beaker. Cordons

⁷⁴ Unpublished. I am grateful to the excavator, Mr G. D. Liversage, for showing me drawings of this material.

⁷⁵ *Palæohistoria*, IV., p. 34.

⁷⁶ e.g. Bursch, *Die Becherkultur in den Niederlanden*, 1933, p. 49, Abb.39, 4. Taf. III., 12, 15.

⁷⁷ *Palæohistoria*, VIII., p. 101-26; *Berichten van de Rijksdienst voor het Oudheidkundig Bodemonderzoek*, IX., p. 284-92. The appearance of these vessels in Ireland might then be equated with Case's "Impact Phase" of Irish metallurgy. Case "Beakers and Metallurgy." Lecture delivered to the Prehistoric Society, March 1965.

⁷⁸ These sherds are not illustrated here as they will shortly be published by Miss I. J. McInnes.

⁷⁹ Hunterian Mus., Glasgow. Unpublished.

⁸⁰ *PSAS*, LIX., p. 210. Decoration is here confined to the upper part of the body.

⁸¹ National Museum of Antiquities, Edinburgh. Unpublished

⁸² Map in Wainwright (Ed.), *Prehistoric People of Scotland*, 1962, p. 78, fig. 10.

appear on a number of Bell Beaker forms in Britain and recur quite regularly in Cord Zoned material from sandhill sites like Risby Warren, Lincs.⁸³ The two Glenluce vessels have thicker walls, relative to their size, than the normal Beaker, but again this feature can be paralleled in material from domestic sites.

Another group of vessels, all from the northern part of our area, consist of tall, vase-shaped vessels, in some cases with a rather slack profile or one which is broken up by a series of slight ribs or carinations (e.g. 15, 31, 36-7, 43, 57-8, 59, 60, 65). Decoration is restrained and consists of cord, or square, circular or triangular impressions and incision. It may be confined to the ribs, the area above the carination, or cover the whole body, in some cases with contrasting ornament above and below the carination. The patterns employed are uncomplicated and may consist of simple repeating rows of impressions, incised or cord impressed chevrons or lattice pattern.

Some of these vessels can be paralleled elsewhere in Scotland. The tall, tripartite pot, decorated with a roughly executed incised chevron pattern from Glenluce (65) is very similar to vessels from Easter Gollochy, Angus⁸⁴, Linlathen, Angus⁸⁵, and Skateraw, East Lothian, the latter described as a Beaker-Food Vessel by its excavator⁸⁶. Similar incised lozenge and chevron patterns are occasionally found on Necked Beakers in the British Isles from Wiltshire to Northumberland⁸⁷. This simple ornament tends to occur on slab sided, bipartite vessels with internally bevelled rims. Comparison of shape, technique and form of decoration make it clear that the ancestry of the Glenluce and similar vessels in North Britain must lie in such Beakers. The same must apply to five of the pots from the Mount Vernon cemetery (56-61). Most obviously related to these latter is (60) with its slack profile and triangular impressions above the carination, incised grid pattern below. The suggested Beaker origin for the other Mount Vernon vessels cannot be demonstrated clearly by a comparison with the Beakers themselves, but it is possible to see a typological development from those Food Vessels whose form and decoration does betray this ancestry. In the simply decorated Necked Beakers the profile tends to be slack and represented by a series of straight lines rather than curves. This gives rise to slight ribbing, a tendency already apparent in (60), and other vessels in the series show increasing emphasis of this feature, both by multiplication of the ribs and by decoration applied, sometimes exclusively, to them. It is probable that such a sequence would provide an origin for the so-called South English Food Vessel⁸⁸ although the intervening stages between Beakers and the vessels in their developed ribbed form have not been found in the south. The incised herringbone pattern on some of these tall, multiple ribbed vessels (43-4) need not imply contact with the makers of Yorkshire Vase Food Vessels. Such patterns are again found on rather

83 PPS, XXIII., p. 51, fig. 6, 31, 33.

84 British Museum. Unpublished.

85 PSAS, XII., p. 449, fig. 8.

86 PSAS, LXXIV., p. 141. The "Pot Beaker" from Kirkcaldy, Fife (*Invent. Arch. GB 32*) is another example of this type.

87 Annable & Simpson, *op. cit.*, p. 97, fig. 135.

88 e.g. Fargo Plantation: WAM, XLVIII., p. 357ff.

slab sided and angular Necked Beakers.⁸⁹ None of the vessels in the south-west included in this group have the developed thickening of the internal rim bevel which is such a feature of the Yorkshire series, nor do they have lugs even in vestigial form.

Yorkshire Vase Food Vessels

The contribution of this group to the Food Vessels of south-west Scotland is difficult to assess. Features such as lugs do appear to belong to the repertoire of the Yorkshire series, but their appearance on vessels in our region need not imply direct contact with eastern Britain. In particular the lugs or stops on bowl Food Vessels (4, 13, 17, 29) could well have arisen from contact between the makers of the two series of vessels in Ulster, and have been introduced from there to the south-west. Nor is it necessary to invoke Yorkshire Vase influence for the appearance of incised or cord impressed herringbone patterns, as these are found both on Beakers and Peterborough pottery; although it may be significant that the ornament on sherds from the only site which has produced a quantity of this latter ware in the south-west, consists of a haphazard arrangement of whipped cord impressions⁹⁰, unlike the more regular designs found on Peterborough ware found elsewhere in Britain. The two vessels from the cairn at Drannadow, Kirkcudbright (22-3), however, do appear to belong to this Yorkshire series. In particular the fragmentary vessel from the eccentric cist, with its grooved shoulder and developed and thickened rim can be matched among a large series of herringbone incised vessels from the Yorkshire Food Vessel province proper⁹¹. These two pots, like the examples from Yorkshire, were found beneath a large barrow.

From the above notes on south-west Scottish Food Vessels and their affinities a fairly complex pattern emerges. As might be expected, some of the vessels must reflect settlement from Ireland, while others mark the passage of Short Necked Beaker manufacturers to the west. An indigenous tradition is reflected, too, in the local production of wares developed from Necked Beakers; and a possible Yorkshire element has also been suggested. It is more difficult to interpret this material in human terms. The evidence at Cairnholy⁹² suggests that the makers of Beakers arrived in the area only at the end of the period of tomb building. Secondary Neolithic pottery, other than that from Glenluce, is virtually unrepresented in the south-west⁹³. Beaker settlement, with the notable exception of Glenluce, appears to have centred in the northern part of our area⁹⁴, and it is in just this region that the Beaker derived Food Vessels represent a

⁸⁹ e.g. Annable & Simpson, *op. cit.*, p. 93, fig. 107.

⁹⁰ McInnes, "The Prehistoric Pottery from the Sands of Glenluce." Unpublished MA thesis, Edinburgh, 1961.

⁹¹ Abercromby, *op. cit.*, Pl. XXXIII., 98; XXXIX, 174.

⁹² PSAS, LXXXIII., p. 120.

⁹³ Piggott, *Neolithic Cultures of the Brit. Isles*, 1954, p. 305, fig. 48. Also PPS, XXVII., p. 277, fig. 9. Recently Secondary Neolithic sherds have been found on the Shewalton Sands (information from A. E. Truckell) and less certainly at Kirkburn in Annandale (TDGAS, XL., 53). Also in Annandale a Rinyo Clacton vessel has been found apparently associated with a palisaded enclosure at Beckton, Lockerbie (TDGAS, XLI., 111).

⁹⁴ Map in PSAS, LXVIII., opp. p. 188.

continuity of this tradition (Map Fig. 1). In the south and coastal regions, settlement was largely from Ireland, and is part of a general spread of Irish bowl makers up the west coast of Scotland⁹⁵. The apparent diversity in these Food Vessels should not, however, obscure the underlying, indigenous, Beaker-derived tradition of the majority of vessels in the south-west. Even a superficial examination of the pottery and its affinities emphasizes this aspect of continuity. The makers of Food Vessels in south-west Scotland not only inherited the territory and trade routes of the Beaker folk but were their lineal descendants.

REGISTER OF POTTERY

Abbreviations:

Ab. followed by number. Abercromby, **Bronze Age Pottery of Great Britain and Ireland, Vol. I**, 1912, list of Food Vessels p. 156 ff.

B.M. British Museum.

Ch. followed by number. Childe, **Scotland Before the Scots**, 1946. List of Food Vessels p. 106 ff.

N.M.A. National Museum of Antiquities, Edinburgh.

Ayrshire

1. ARDROSSAN WATERWORKS. Inhumation in cist. Vessel decorated with a sharp toothed comb. Ab.362bis. Ch.304. B.M.
2. ARDROSSAN WATERWORKS. Inhumation(?) in cist which also contained a quantity of charcoal. Vessel decorated with blunt tooth comb impressions. Five unperforated stops. Ab.363. B.M.
3. STEVENSTON. Fragmentary. Vessel decorated with blunt toothed comb impressions and stamped incision. Kelvingrove Mus.
4. STEVENSTON. Fragmentary. Vessel decorated with blunt toothed comb impressions and false relief. At least one unperforated stop. Kelvingrove Mus.
5. STEVENSTON. In cist. This vessel is represented only in a drawing displayed in Kilmarnock Museum which is reproduced here.
6. CONTENT, ST. QUENOX. Vessel decorated with incision, horizontal channeling, twisted cord and circular impressions. Ch.301. N.M.A.
7. MAYBOLE. Vessel decorated with blunt toothed comb impressions and false relief. Ch.308. Hunterian Mus., Glasgow.
8. FINNART HILL. Inhumation(?) in cist 3 ft. by 2 ft. Vessel decorated with blunt toothed comb impressions, incision and false relief. **PSAS, LXXVIII**, p. 137.
9. COILSFIELD. In cist on the upper face of the capstone of which were cup and ring carvings, one with a channel. Childe records the rite as being cremation but there is no reference to this in the original report. The vessel does not appear to have been preserved and is represented only in the engraving which accompanied the original report. It is not possible to determine from this illustration what form of decoration was employed. **PSAS, VI**, p. 27. Ch.299.
10. DOONFOOT. In cist forming part of an urn cemetery. Vessel undecorated. Kelvingrove Mus.
11. AYR(?). Vessel decorated with horizontal bands of blunt toothed comb impressions and incision. Five unperforated stops. Hunterian Mus., Glasgow.
12. WALLACETOWN. Vessel decorated with blunt toothed comb impressions. Four unperforated stops. **PSAS, XXVI**, 58. Ab.359. Ch.306. N.M.A.

⁹⁵ The importance of this west coast route was emphasized by the late Sir Lindsay Scott, **PPS, XVII**, p. 31.

13. SKELDON. Vessel decorated on rim bevel and above carination with twisted cord impressions and below with incision. Four unperforated stops. Ayr Mus.
14. WETHER HILL, MUIRKIRK. The vessel lay beside a cremation in a cranny in the rock 4 ft. north of the centre of a cairn 30 ft. by 25 ft. The cairn also covered a cinerary urn which lay 7 ft. from the centre. Vessel ornamented with incisions. **PSAS, LI., p. 25; LX., p. 150. Ch.298. N.M.A.**
15. SKELDON. Vessel decorated with twisted cord and triangular impressions. Ayr Mus.
16. KIRKHILL, ARDROSSAN. Cremation in cist 2 ft. by 1 ft. 4 in. Vessel decorated with twisted cord impressions. **PSAS, V., p. 110. Ab.412. Ch.305.**

Dumfriesshire

17. CARLESGILL, LANGHOLM. Vessel decorated with blunt toothed comb impressions and false relief. Four perforated stops. Dumfries Mus.
18. PALMERSTON, MAXWELLTOWN. Cremation in vessel in pit grave. Part of an urn cemetery. Vessel apparently undecorated although the exterior shows signs of severe flaking and weathering which may have removed all traces of decoration. **TDGAS, XVII., 1932, p. 90. Dumfries Mus.**
19. NEWBY. "From a cairn." Single rim sherd decorated with whipped cord impressions. Estimated rim diam. $6\frac{1}{2}$ in. **TDGAS, 1st Series II., p. 12, and III., p. 11. Thornhill Mus.**
20. KIRKBURN, LOCKERBIE. In a small cist 2 ft. 2 in. by 1 ft. 4 in. which contained three fragments of cremated skull and a high phosphate content of the soil suggesting the former presence of an inhumation. The Food Vessel cist formed part of a complex site consisting of over sixty pits, some containing cremation or inhumation burials and Western Neolithic, Beaker and Cinerary Urn pottery. Vessel decorated with incision and stamped impressions. **TDGAS, XL., 1963, p. 55ff, and PSAS, XCVI. (forthcoming), N.M.A.**

Kirkcudbrightshire

21. MOLLANCE, CASTLE-DOUGLAS. In cist under cairn 52 ft. in diameter and 3 ft. 6 in. high. The cist also contained two sherds, each approximately 1 in. square, undecorated, and of a finer paste than the Food Vessel. The excavator inferred these sherds to be Beaker and that the cist had been built to contain a Beaker burial later re-used for the Food Vessel interment. Vessel decorated with stamped impressions. **TDGAS, XXX., 1953, p. 159-65. Kirkcudbright Mus.**
22. DRANNANDOW, MINNIGAFF. In central cist 2 ft. 6 in. by 1 ft. 9 in. under a cairn 46 ft. in diameter. The cairn covered a second Food Vessel burial (No. 23) in an eccentric cist. Vessel decorated with incisions. **PSAS, LVII., p. 69; TDGAS, XIV., 1930, p. 296. N.M.A.**
23. DRANNANDOW, MINNIGAFF. In eccentric cist 2 ft. 4 in. by 1 ft. $6\frac{1}{2}$ in. under a cairn 46 ft. in diameter. The cairn covered a second Food Vessel burial (No. 22) in a central cist. The fragmentary vessel is decorated with incisions. **PSAS, LVII., p. 70; TDGAS, XIV., 1930, p. 296. N.M.A.**
24. KIRKMABRECK, CREETOWN. Vessel decorated with incisions. **Ab.422. B.M.**
25. GLENARM, URR. Vessel decorated with twisted cord impressions. **Ab.343. N.M.A.**
26. HIGH BANKS FARM, KIRKCUDBRIGHT. Cremation in round cist beneath a cairn of earth and stones. The cairn covered a second Food Vessel cremation (No. 27) and a cist with a Short Necked Beaker inhumation. Vessel decorated with incisions, comb impressions, channeling and false relief. **Kirkcudbright Mus.**
27. HIGH BANKS FARM, KIRKCUDBRIGHT. Cremation under a cairn of earth and stones. The cairn covered a second Food Vessel cremation (No. 26) and a cist containing a Short Necked Beaker inhumation. Vessel decorated on the shoulder with a single row of circular impressions. **Kirkcudbright Mus.**

Lanarkshire

28. BLANTYRE, COATSHILL. Inhumation(?) in cist. Vessel decorated with triangular impressions. *Trans. Glasgow Arch. Soc.*, IX., p. 306. Ch.182.
29. HAMILTON. Vessel decorated with blunt toothed comb impressions and false relief. The remains of at least two lugs, one perforated, adhere to the body. Ab.261. Hunterian Mus., Glasgow.
30. HAMILTON. Vessel decorated with whipped cord impressions. Ab.262. Hunterian Mus., Glasgow.
31. STONEHOUSE. Vessel decorated with whipped cord impressions. (?)Ch.193. Hunterian Mus., Glasgow.
32. OVER DALSERF, HAMILTON. Vessel decorated with comb impressions on rim and area above carination, horizontal grooves below. Ab.350bis. (?)Ch. 190. N.M.A.
33. DALTON, CAMBUSLANG. In cist immediately outside which was a cremation. A second Food Vessel cist lay 6 ft. away (No. 34). Vessel decorated with incisions and triangular impressions. *Glasgow Herald*, Nov. 11th, 1930.
34. DALTON, CAMBUSLANG. In a disturbed cist. A second cist with Food Vessel (No. 33) lay 6 ft. away. Vessel decorated with whipped cord "maggot" impressions on rim and body. *Glasgow Herald*, 11th Nov., 1930.
35. KNOCKEN, LESMAHAGOW. Inhumation in cist with two other Food Vessels (Nos. 36-7). Vessel decorated with circular impressions. *Trans. Glasgow Arch. Soc.*, III., p. 500. Ch.197.
36. KNOCKEN, LESMAHAGOW. Inhumation in cist with two other Food Vessels (Nos. 35, 37). Vessel decorated with incisions. *Trans. Glasgow Arch. Soc.*, III., p. 500. Ch.196.
37. KNOCKEN, LESMAHAGOW. Inhumation in cist with two other Food Vessels (Nos. 35-6). Vessel decorated with incisions. *Trans. Glasgow Arch. Soc.*, III., p. 500. Ch.195.
38. BAILIESTON, GLASGOW. Uncisted cremation with a second Food Vessel (No. 39). Vessel decorated with twisted cord impressions. *Trans. Glasgow Arch. Soc.*, IX., p. 288. Ch.180.
39. BAILIESTON, GLASGOW. Uncisted cremation with a second Food Vessel (No. 38). Vessel decorated with twisted cord and (?)bone impressions. *Trans. Glasgow Arch. Soc.*, IX., p. 289-90. Ch.179.
40. PATRICKHOLM QUARRY, LARKHALL. Inhumation in short cist 4 ft. 2 in. by 1 ft. 6 in. Vessel decorated on body and base with blunt toothed comb impressions. *PSAS*, LXXXIII., p. 207ff. N.M.A.
41. PATRICKHOLM QUARRY, LARKHALL. Inhumation in short cist; the cist also contained fragments of cremated bone. Vessel decorated with comb, twisted cord and stamped impressions. *PSAS*, LXXXIII., p. 207ff. N.M.A.
42. RACHAN, BIGGAR. Vessel decorated with stamped impressions. Ab.337. N.M.A.
43. TEATHS FARM, LESMAHAGOW. In cist. Vessel decorated with incision on body and circular impressions on rim bevel. Kelvingrove Mus.
44. CATHKIN MOOR, EAST KILBRIDE. Cremation in Food Vessel in pit grave. Vessel decorated with incisions. *Ure, History of Kilbride and Rutherglen*, 1793, Pl. V., p. 215. Ch.188.
45. KYLE PARK, UDDINGSTON. Cremation in Food Vessel. Part of a cemetery of cinerary urns. Vessel decorated with incisions. Kelvingrove Mus.
46. CADDER. Cremation. From tumulus 30 ft. in diameter and 10 ft. high. Two large and two small urns were found in the mound. The surviving Food Vessel is one of the larger urns. Vessel decorated with incisions. *PSAS*, LXII., p. 230-1. N.M.A.
47. NEWTON, CAMBUSLANG. Vessel decorated with incision and a single row of twisted cord impressions at the carination. Four unperforated stops. Ch.186. Kelvingrove Mus.

48. NEWTON, CAMBUSLANG. Vessel decorated with twisted cord impressions on rim bevel and body. Four unperforated stops. Wilson, *History of Cambuslang*, 1929, frontis., p. 4.
49. ANNATHILL. Fragmentary vessel decorated with incision and comb impressions. Twelve slight stops. Kelvingrove Mus.
50. ANNATHILL. Vessel decorated with comb and finger nail impressions and incision. Kelvingrove Mus.
51. ANNATHILL. Fragmentary vessel decorated with comb impressions. Kelvingrove Mus.
52. ANNATHILL. Single body sherd decorated with comb impressions. Kelvingrove Mus.
53. ANNATHILL. Single body sherd bearing a broad shallow groove but otherwise undecorated. Kelvingrove Mus.
54. ANNATHILL. Fragmentary vessel decorated with comb impressions. Kelvingrove Mus.
55. ANNATHILL. Single body sherd decorated with twisted cord impressions. Kelvingrove Mus.
56. MOUNT VERNON. Inhumation in cist in sandpit. Vessel decorated with incisions on body and circular impressions on rim and shoulder. Ch.175. Kelvingrove Mus.
57. MOUNT VERNON. Inhumation in sandpit accompanied by a flint "knife." Vessel decorated with impressions made with a square tipped implement. Kelvingrove Mus.
58. MOUNT VERNON. In (?)cist in sandpit. Vessel decorated with whipped cord impressions. Kelvingrove Mus.
59. MOUNT VERNON. In (?)cist in sandpit. Fragmentary vessel decorated with circular impressions. Kelvingrove Mus.
60. MOUNT VERNON. In (?)cist in sandpit. Vessel decorated with triangular impressions on its upper part and incisions towards the base. Kelvingrove Mus.
61. MOUNT VERNON. Inhumation of child in cist in sandpit. Covering the body was a garment of moss fibres scarcely any of which survives. Vessel decorated with whipped cord and "maggot" impressions on body, "maggots" on rim bevel. Kelvingrove Mus.

Wigtownshire

62. GLENLUCE. From dunes. Vessel decorated with broad grooves and (?)whipped cord impressions. The surface of the surviving fragments is considerably abraded. N.M.A.
63. GLENLUCE. From dunes. Vessel decorated with twisted cord impressions. N.M.A.
64. GLENLUCE. From dunes. Vessel decorated with twisted cord impressions. N.M.A.
65. GLENLUCE. From dunes. Vessel decorated with incisions. *PSAS*, XCVI., notes (forthcoming). N.M.A.
66. CRAIGBIRNOCH, NEW LUCE. Cremation in cist 1 ft. 10 in. by 1 ft. 2½ in. under cairn 37 ft. in diameter. It is possible that the cremation was contained inside the pot, which was broken when found, but had fragments of bone adhering to its inner surfaces. Vessel decorated with false relief and incision. Two unperforated lugs. *PSAS*, LI., p. 26. N.M.A.
67. CAIRNGAAN, KIRKMAIDEN. Inhumation in oval stone grave 3 ft. by 2 ft. 6 in. Several "urns" were found in the grave but only one was preserved. Vessel decorated with twisted cord impressions and incisions. *PSAS*, XXI., p. 190-1; *Arch. Coll. Ayr & Gall.*, V., p. 45.
68. PORT SPITTAL, PORTPATRICK. Inhumation in cist. Also in the grave were three fragments of slate with a rectilinear pattern incised on them. Vessel decorated with shell or curved comb impressions. Ch.310. Kelvingrove Mus.
69. PORTPATRICK. Vessel decorated with comb impressions. Hunterian Mus., Glasgow.

70. LOGAN, STRANRAER. Vessel decorated with comb and triangular impressions. **PSAS, LXXXV.**, p. 42. Ashmolean Mus.
71. LOCHINCH. Inhumation in cist. Vessel decorated with comb and semi-circular impressions. **PSAS, XXI.**, p. 189-90; **Arch. Coll. Ayr and Gall.**, VII., p. 30, fig. 18; VI., p. 100. N.M.A.
72. CRAIGENHOLLIE, OLD LUCE. In a gravel pit near Glenluce Abbey. Vessel decorated with incisions. Ab.407. **PSAS, XIV.**, p. 189; **Arch. Coll. Ayr and Gall.**, VI., p. 101-2. Ch.313. N.M.A.
73. WIGTOWNSHIRE(?). Rim sherd decorated on bevel and outer surface with incisions. Stranraer Mus.
74. WIGTOWNSHIRE(?). Rim sherd decorated with incision on flat top of rim. Stranraer Mus.
75. WIGTOWNSHIRE(?). Rim sherd decorated with shallow groves. Stranraer Mus.
76. TERALLY MOTE. Two rims and two body sherds decorated with blunt toothed comb impressions. ex Hornel Collection. Dumfries Mus.

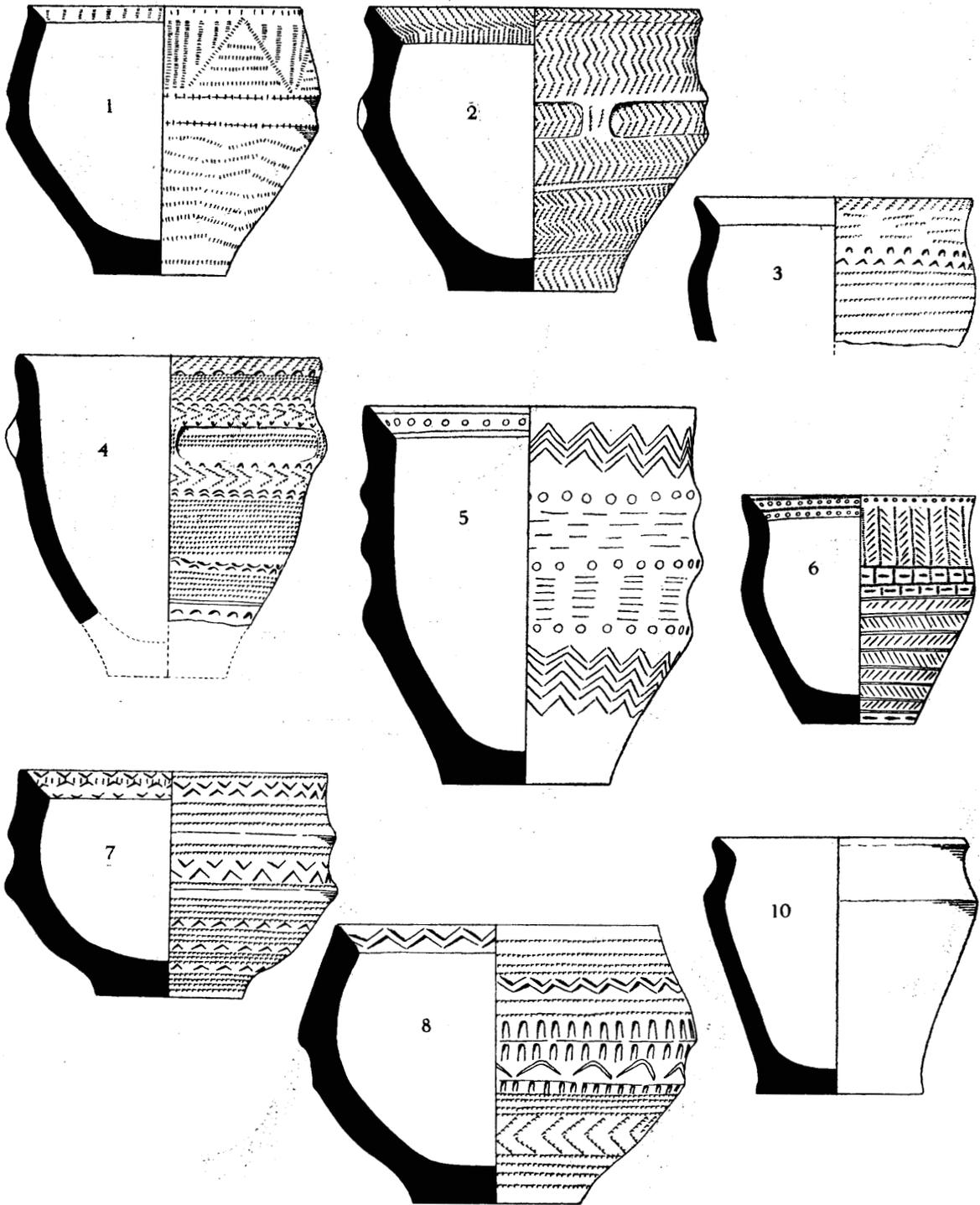


Fig. 2—all $\frac{1}{2}$ nat. size except No. 5, scale unknown.

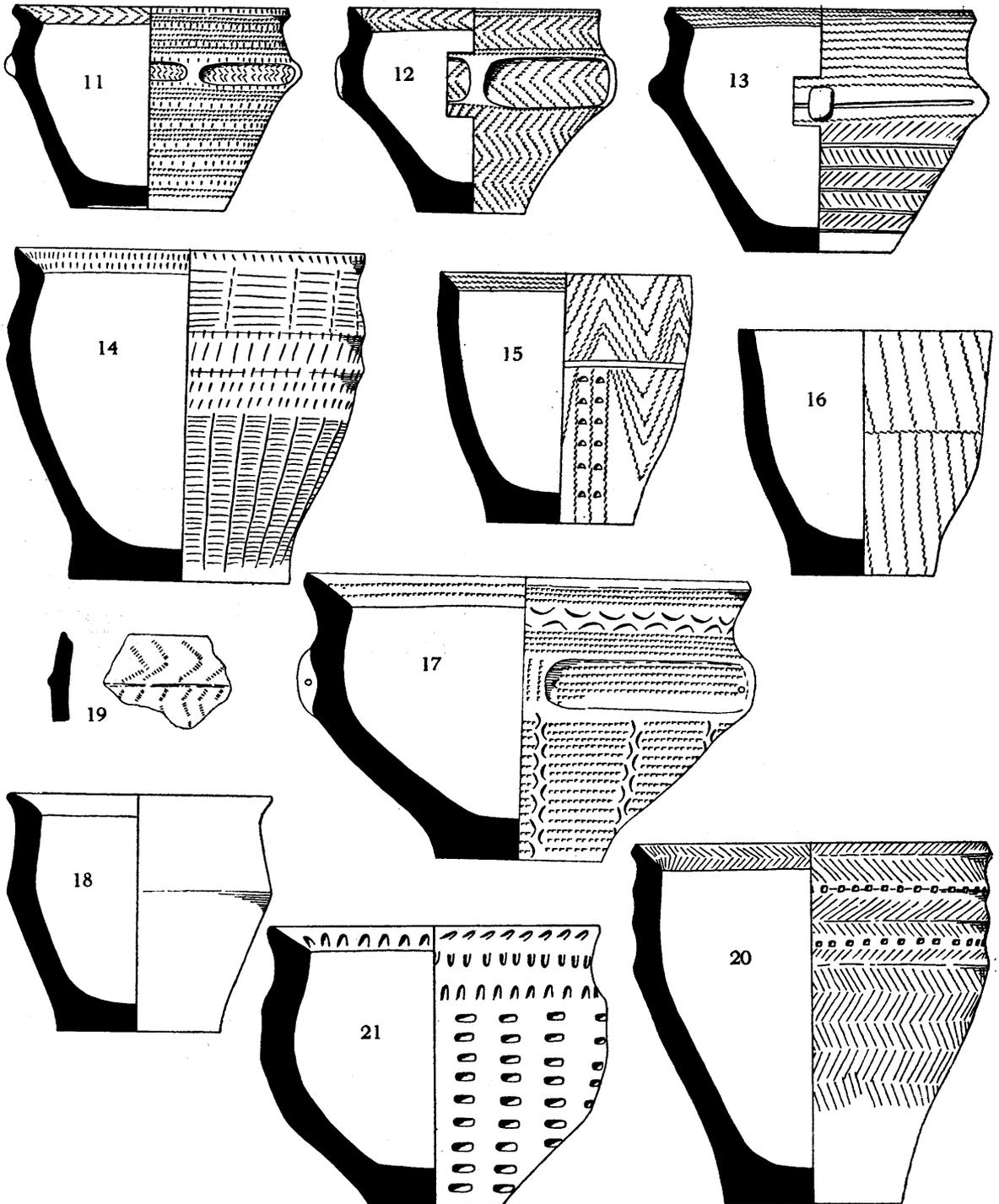


Fig. 3—all $\frac{1}{2}$ nat. size.

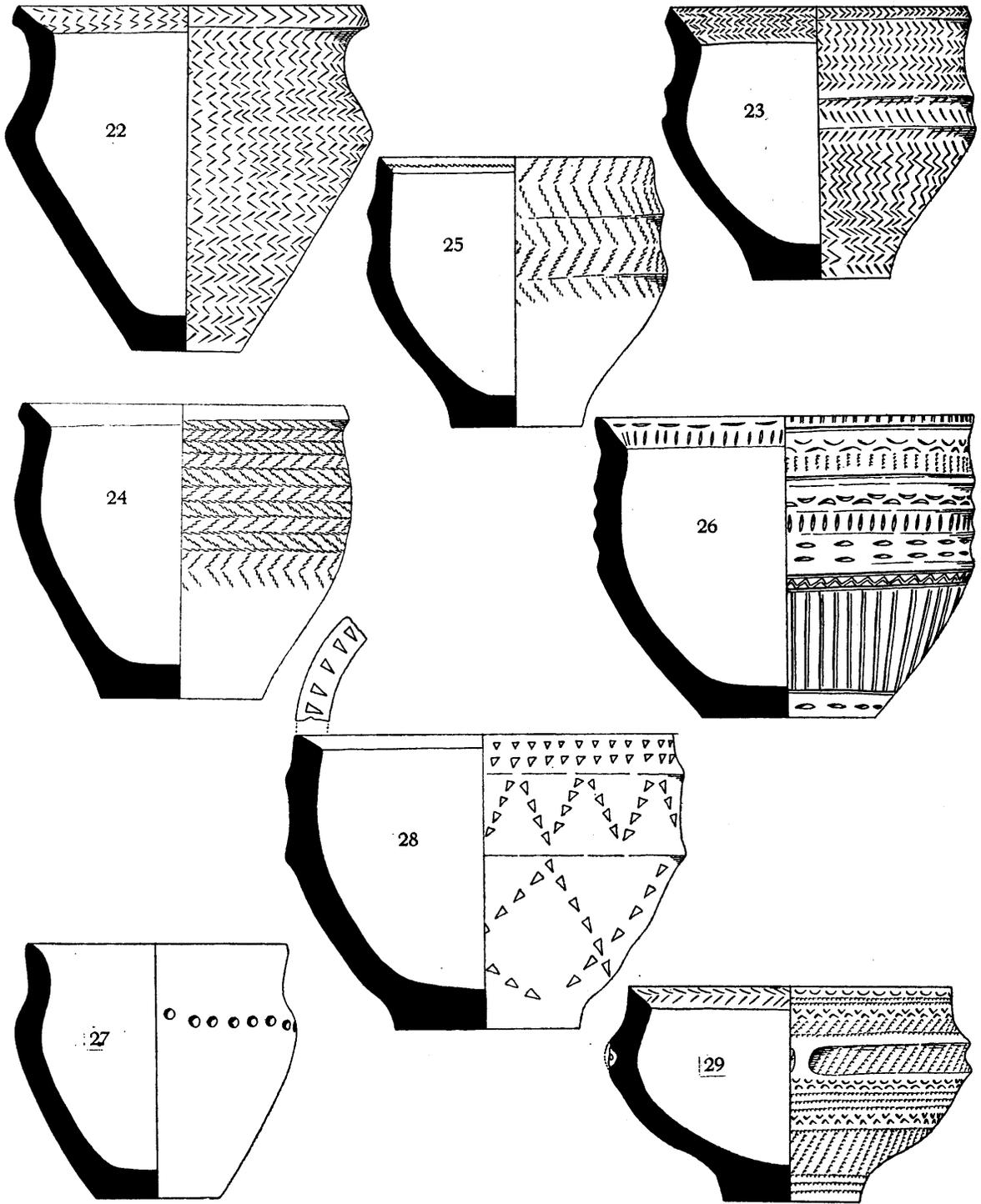
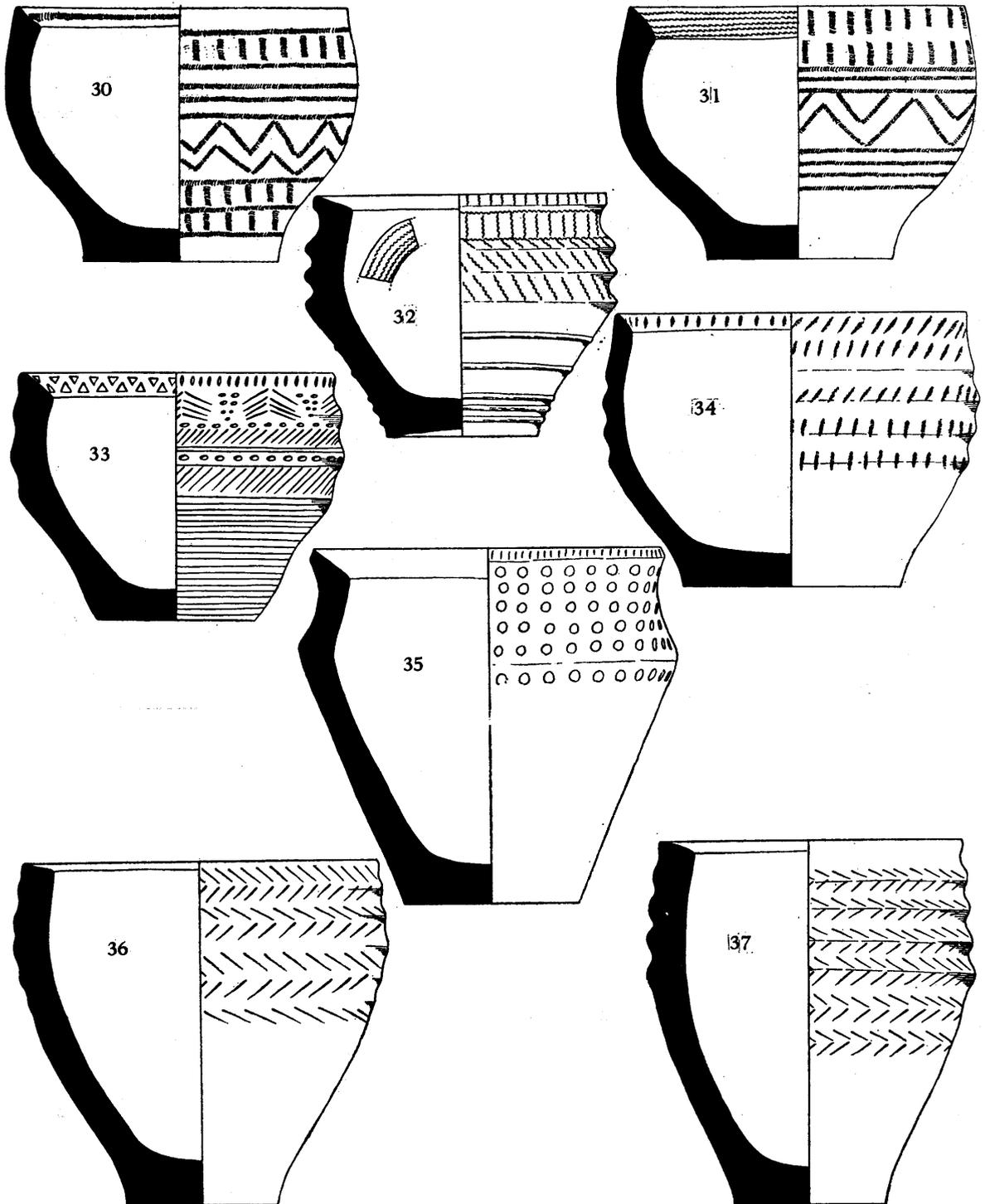


Fig. 4—all $\frac{1}{2}$ nat. size.

Fig. 5—all $\frac{1}{2}$ nat. size.

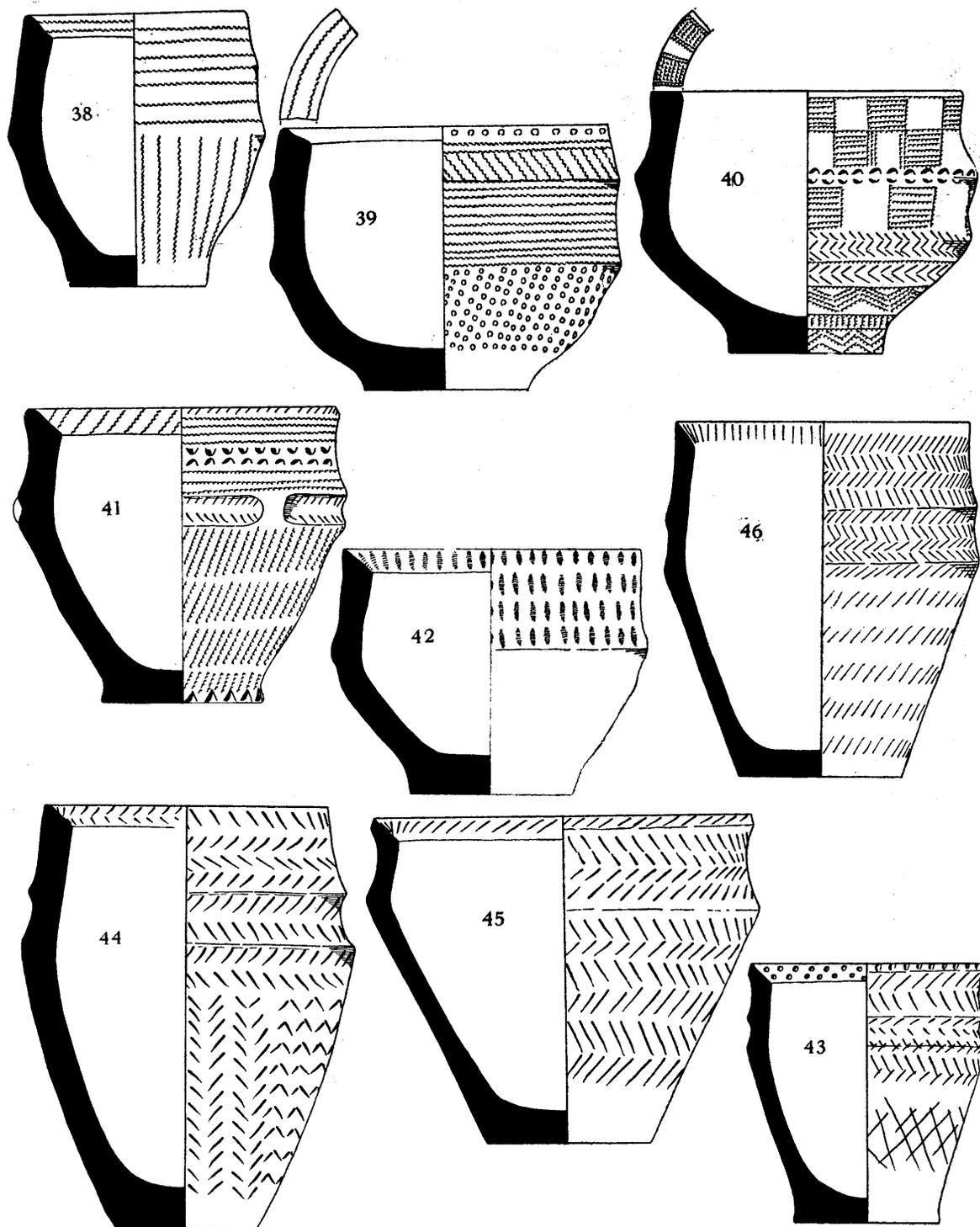


Fig. 6—all $\frac{1}{2}$ nat. size.

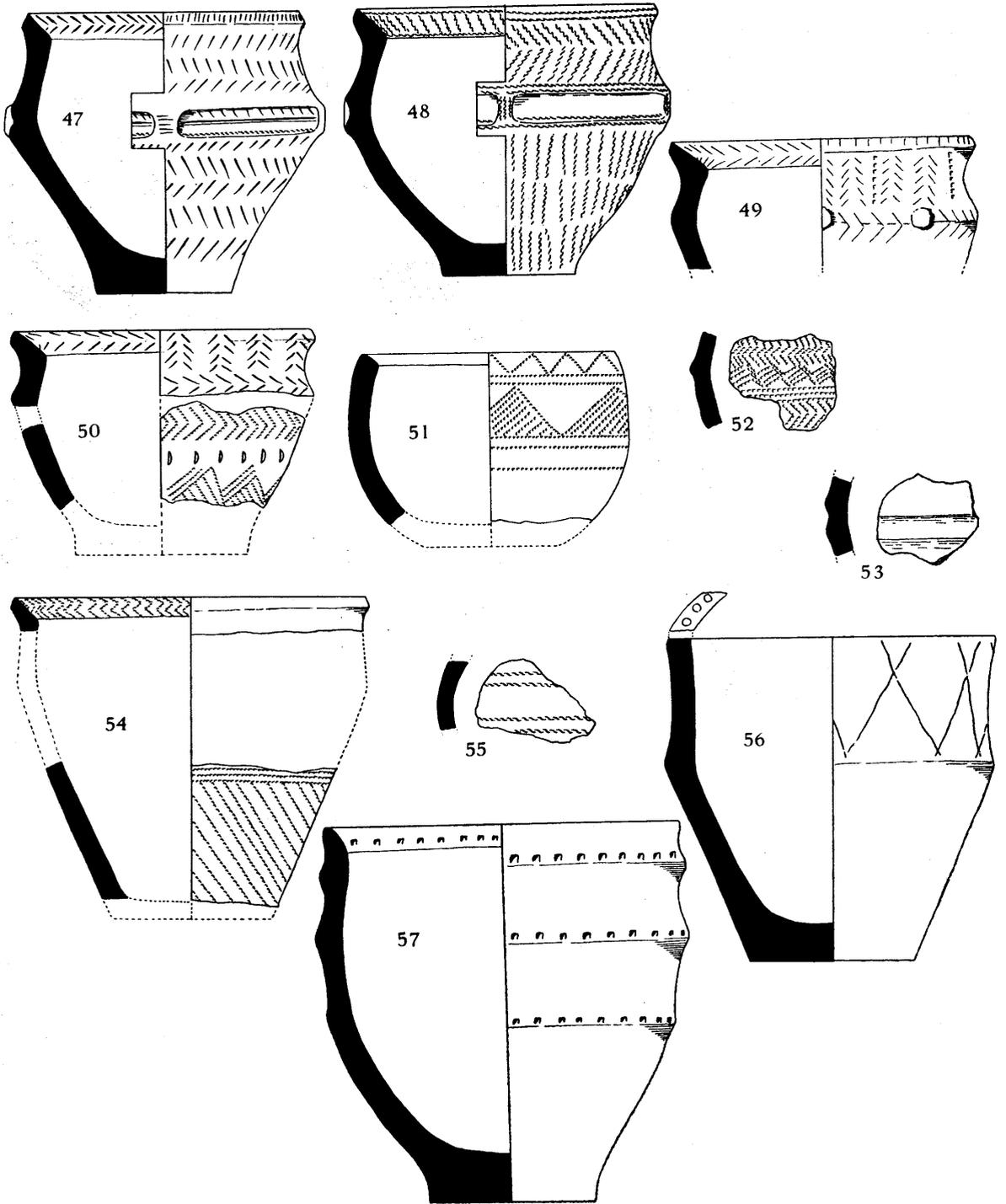


Fig. 7—all $\frac{1}{2}$ nat. size.

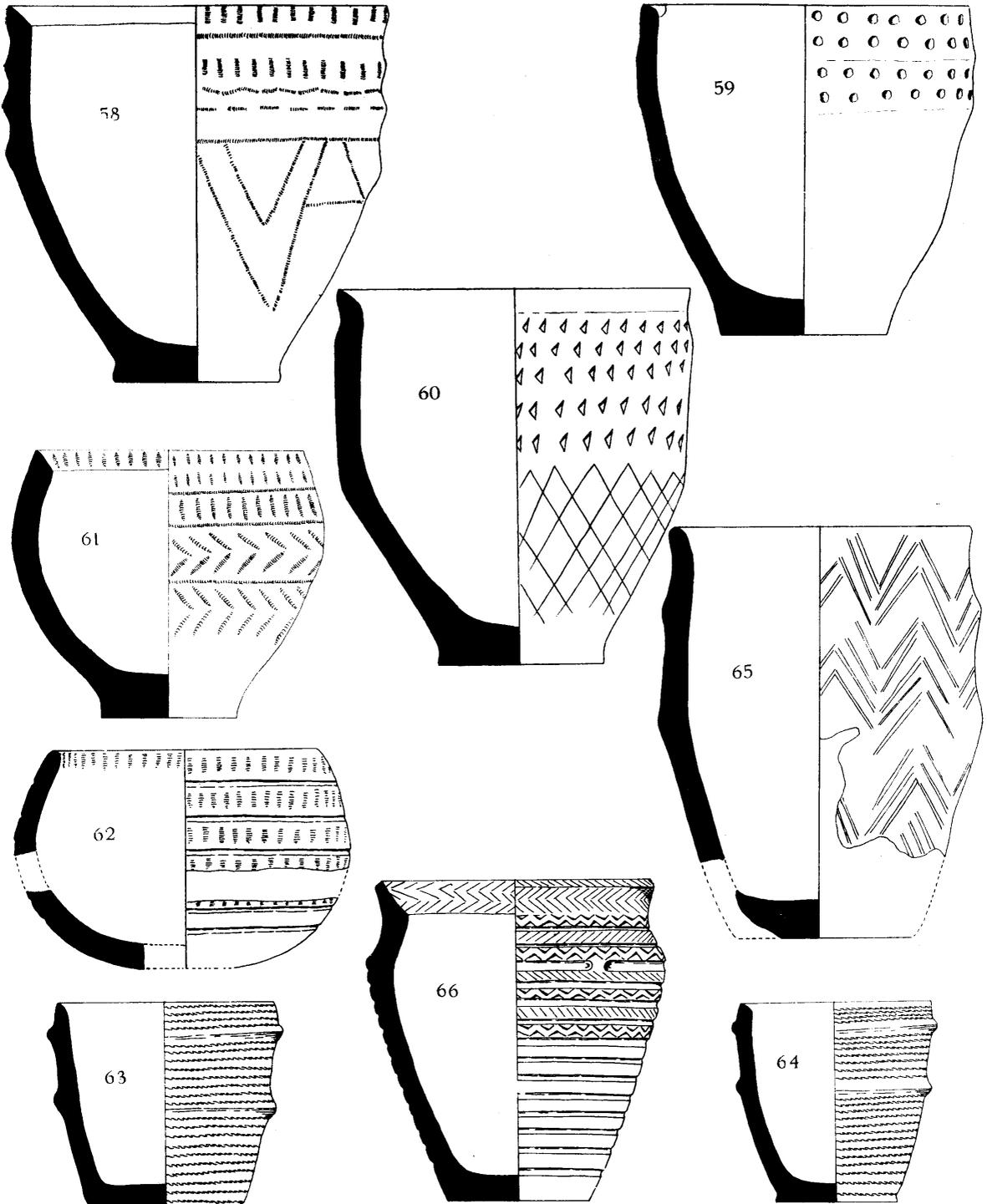


Fig. 8—all $\frac{1}{2}$ nat. size.

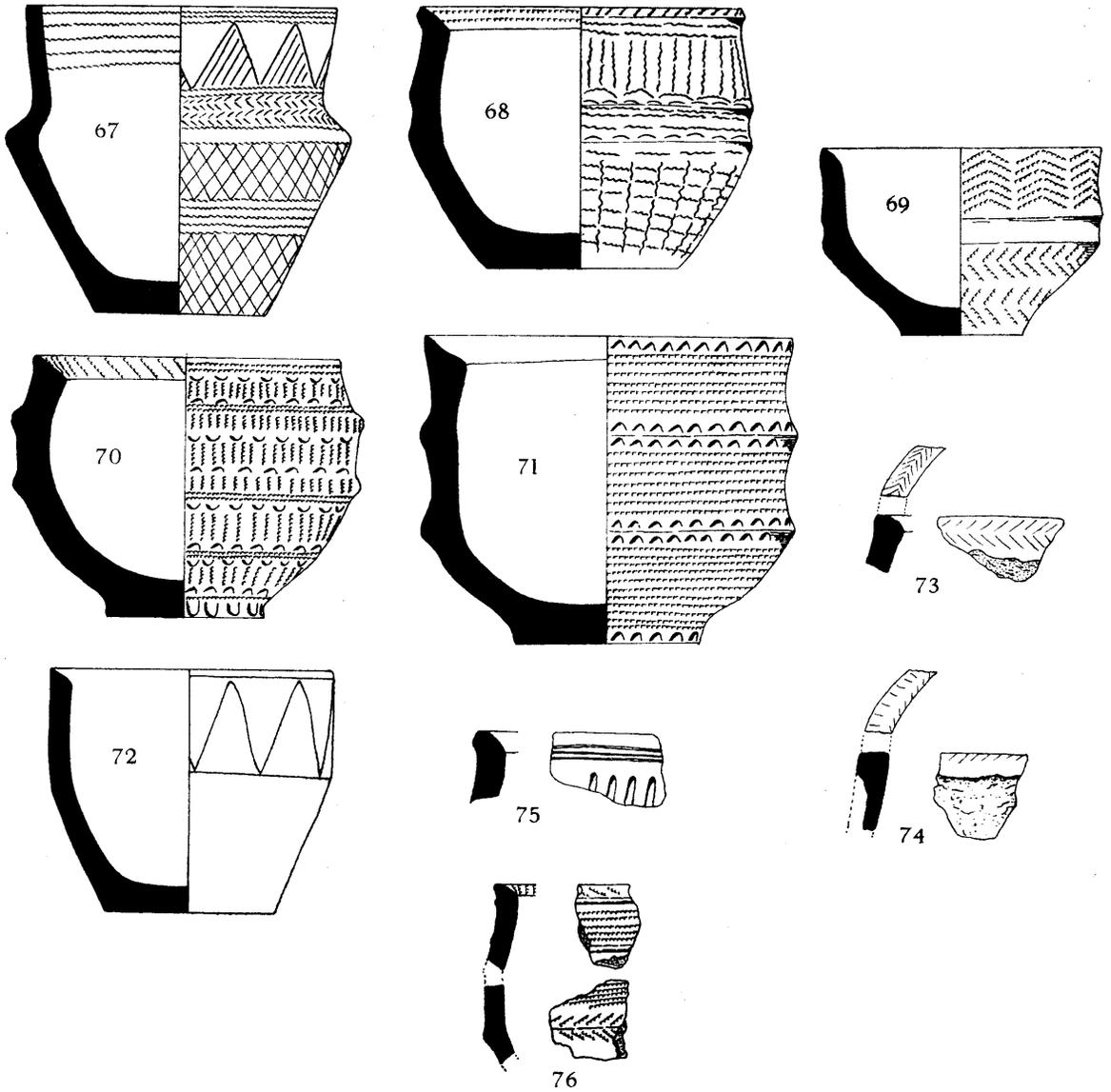


Fig. 9—all $\frac{1}{2}$ nat. size.

WHITESTANES MOOR

SITES 1 AND 80

AN ENCLOSED CREMATION CEMETERY

By MAJOR GENERAL J. SCOTT-ELLIOT, F.S.A.Scot. and DR IAN RAE

There are in Dumfriesshire a large number of fields of small cairns. The composition of these varies considerably, but some contain one or at most two large stone circles. These large circles consist of a stone bank up to 2 ft. high enclosing an area up to 30 ft. in diameter. So far none has been found in isolation, always in association with groups of the small cairns. In 1962 it was not known what these were and they were variously thought to be ruined sheep fanks or Hut Circles. South West of AE village and up on the ridge known as Whitestanes Moor, above Whitestanes Farm, lies one such cairn field¹, a large one. (Fig. 1)². It contains nearly a hundred structures of varying types, including one of the large stone banked enclosures. The others include smaller circular stone banked enclosures varying in size from 12 ft. up to 20 ft. overall, circular cairns of stones from 9 ft. diameter to 24 ft. and several more structures as yet unclassified.

The subject of this article is the large stone banked circular structure now known to be an Enclosed Cremation Cemetery, to give it its new name, and num-

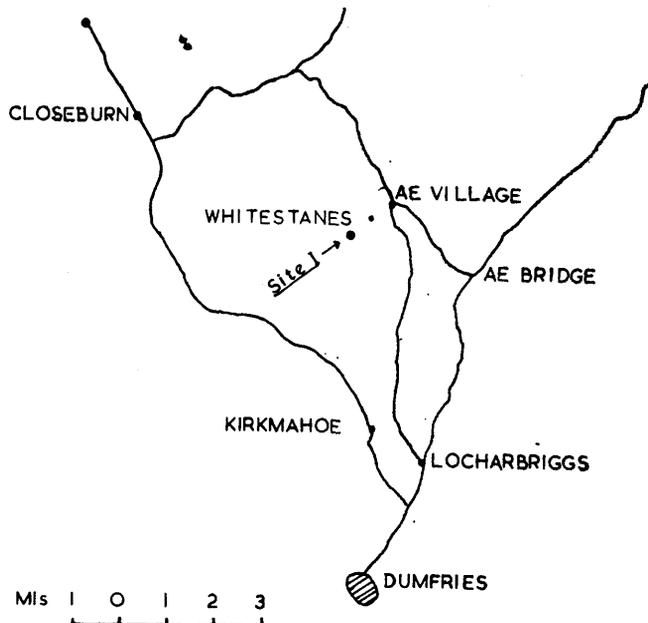


Fig. 1—Location of site.

¹ R. C. A. M. Scotland. Dumfries 344.
² Map Ref. 1 inch Dumfries Sheet 74. NX 967882.

bered as Site 1. Site 80, an oval-shaped mound with a pit to one side, is included because of its proximity.

Site 1 lies on the Eastern side of the ridge and has a Southerly and Easterly exposure. It is near the top at about 800 ft. above sea level, apparently a favourite height for these cairn fields in this part of the country. Looked at from the low ground to the East it appears to be right on the sky line.

The ground is heather covered and slopes very gently from West to East. Under the peat there is stony soil, in most places to a depth of about 18 ins., though it varies considerably. The hillside here is generally smooth with a few rocky outcrops.

In the summer of 1962 with the kind permission of the owner of the ground Mr Landale of Dalswinton and with the ready assistance and help of Mr Halliday and his family at Whitestanes, a start was made on the investigation of this site by Major General Scott-Elliot assisted by Dr Rae on behalf of the Dumfries and Galloway Natural History and Antiquarian Society.

Description.—The structure is a circular, turf covered stone bank, with heather and peat covering the interior. The bank stands up about 2 ft. above ground level. In one part of the circle, to the SW, there appeared to be a slight gap which was thought to be an entrance, which it turned out to be. The inside measurement was about 30 ft. and over all about 48 ft.

Once digging started it was evident that it was not a sheep fank and it was thought for a time that it was a hut circle. However, a visit by Mr Feachem put the investigation on the right lines. He suggested it might be a funerary site and so it turned out to be (Fig. 2).

In all, eight cremation pits containing human bones and two pits filled with black ash, but containing no bone, were found. One cremation pit contained a small 3 ins. Pygmy Cup, the first cup to be found on such a site in Scotland. There were no urn burials. Other finds included part of a Pygmy Cup, some pieces of a reduced urn, several flints, half of a small stone bead and various as yet unidentified burned remains, which may be hair, woollen material, skin, or leather.

A sample of carbonised wood from the pit which contained the Pygmy Cup, was sent to the Gakushuin University in Tokyo and was dated by Carbon 14 test to B.C. 1360 \pm 90³.

Construction of Stone Bank.—The bank forms a fair circle. It is 9 ft. to 10 ft. wide at the bottom and slopes up gently to a vertical height of 2 ft. (Pl. I). The stone bank had been laid on the turf, but some of the lowest stones had been bedded in. The outer and inner edges of the bank were marked at intervals by well set large stones, there was no attempt at curbing. On top of this had been piled, quite casually, other stones until the height was about 2 ft. Small stones had then been poured into the top to help to consolidate the mass. No earth had been used in its construction. It is of interest to note that when we were

rebuilding the 8 ft. gap we had cut through the bank, we used just this method and the completed result was very similar to the original.

To the SW. was an entrance. This was clearly defined by large upended stones on both sides, some 2 ft. high, many of which were standing in their original positions. The passage was 2 ft. 4 ins. in width. The inner end of the passageway appeared to have been extended some 2 ft. into the interior. The passage had been deliberately blocked with three very large stones at some time, presumably after the last burial.

Interior.—Peat and heather covered the interior. At the upper side, the western, the peat was 6 ins. deep, increasing steadily to the lower side where it was 12 ins.

The peat layer came away very cleanly from the level stony surface under it. This consisted of small whiteish sandstone chips and cobbles with occasional larger stones protruding, some of these were much harder stone, possibly whin.

From the beginning there appeared to be a roughly circular area in the centre of the site, different from the remainder of the interior. It appeared to be demarcated by protruding stones and seemed to be darker in colour. In fact, as the surface was scraped down it was found that most of this inner area was coloured by black ash and carbonised wood particles. The diameter of this area was about 10 ft.

Round pit C. and the area to the immediate west of it there appeared to have been an area of fire. There was much ash, discolouration of stone and earth to a depth of 6 ins. in places.

Pits.—Generally speaking the pits were similar in construction with slight variation in size and depth. They were 11 ins. to 16 ins. deep and 12 ins. to 25 ins. in diameter. Two only had capstones, Pits A and B.

In those with bones in them, Pits A, B, E, F, G, I, J, K, the bones were laid on the southern or south-western side of the pit.

In certain cases, Pits A, E, F. I. J1, the bone formed a compact impacted mass. In each of these cases the bone fragments, when cleaned, were found to contain earth mixed with the impacted bone and forced into the holes and crevices. Yet when found in the pit the impacted mass was surrounded with carbonised wood and black ash material, which prevented the bone material coming in contact with the pit side. In the case of Pit E, it was clear that the bone mass and the Accessory Cup found with it, had been contained in some form of bag, for neither the bone mass nor the Cup contained any of the surrounding jet black ash.

Of the bone from the pits, Dr T. F. Spence of the Department of Anatomy of Birmingham University says:—

“These cremated remains were examined by the methods outlined by Lisowsky and Spence in previous reports (Manderston, Saxton Beven, Kirkburn, etc.).

The bony fragments are dirty white to grey in colour. None of them

shows the "blueing" usually found on some of the bones which have been cremated. It may be that no part of the fragments were subjected to excessive heat. Some of the larger fragments shew an unusual type of "cracking," consisting of longitudinal breaks resulting in a crystal like formation at the broken edges. Some of the bones are not as brittle as is usual in this material.

In only three fragments was reconstruction possible. Material which is classified as "unidentifiable long bones" has been considered as identifiable for weight purposes.

My thanks are due to Mr Alastair MacLaren of the Royal Commission on the Ancient and Historical Monuments of Scotland for sending me these remains. I am also grateful to Miss Margaret Rose, B.D.S., of the Department of Anatomy University of Birmingham for help in identifying the teeth fragments."

Detailed comment by Dr Spence on the bones and teeth from each pit is included in the paragraph on each pit. The key used in describing the teeth is as follows:—

Right	upper	Left
87654321	|	12345678
87654321	|	12345678
	lower	

PITS IN DETAIL

PIT A was covered by a capstone 13 ins. by 8 ins. by 3 ins. The pit was shaped like an oval bell-bottomed pot, having a neck 12 ins. diameter, while at 13 in. depth the diameter was 16 ins.

Immediately below the capstone was yellow brown earth, moderately stony for 4 ins., then dark brown earth and some carbonised wood particles. The first piece of bone found was at 8 ins., thereafter the contents, except for bone, was black ash and carbonised wood, no stone.

Bone.—The bone, except for scattered fragments, was concentrated at the southern end of the bottom of the pit and was compacted, with individual bones broken up. It yielded for examination a small amount of unidentifiable long bone material and miscellaneous unidentifiable fragments.

The larger pieces of carbonised wood tended to be concentrated at the northern end of the pit.

Finds.—One piece of pottery, probably a piece of a Pygmy Cup was found up against the southern side of the pit 10 ins. below the capstone. The fragment is similar to but slightly coarser ware than the Pygmy Cup found in Pit E.

A small amount of charred hair or wool now being examined by the British Museum (Nat. Hist.).

A small stone sharpener.

PIT B was covered by a capstone of irregular shape 11 ins. by 11 ins. to 7 ins. by 2½ ins. thick. Lying directly under the capstone was a piece of quartz 2 ins. by 1 ins. The first 6 ins. of depth was light brown earth with some small stones. At 6 ins. some bone was found round the edges, particularly at the southern end, but there was no bone in the centre. Below 6 ins. was very black moist carbonised wood, some appeared to be unburnt and crystalline. The appearance of the pit was that of a post hole with bone laid round the post. The pit was 11 ins. by 13 ins. across the top and 13 ins. deep.

Bone Report.—A small amount of unidentifiable longbone material and miscellaneous unidentifiable fragments.

Teeth.—Part of lower molar root probably l.rt.6 or l.rt.7.

Root of lower left l.lt.3.

Part of lower molar root probably l.rt.6 or l.rt.7.

A root of lower left l.lt.2.

Part of the roots and crown of an upper molar.

Finds.—One flint chip.

PIT C shewed black at the surface. One small quartz pebble 1 in. by 1½ ins. was found just under the surface. The top 4 ins. was very hard and black, but contained no pieces of carbonised wood. At 5 ins. it became very stony. After 7 ins. it became jet black with much carbonised wood including some big lumps, some of which were unburnt. Width at top was 22 ins. by 17 ins., depth 16 ins.

Bone.—Very little, enough only to fill a dessert spoon.

PIT E was tucked right up under the inner edge of the stone banking. When scraping brought it to light it shewed originally as a 2 ins. black ring round a 14 ins. yellow earth centre. When the earth in the centre was removed it left a saucer-shaped hollow, very black and greasy. This black area was solid down for 7 ins. when the first flecks of bone began to appear. At 8 ins. the rim of a Pygmy Cup began to appear, with much bone round it (Pl. II). The bone mass was on the southern side of the pit, there was none at the north side which was entirely carbonised wood. This arrangement persisted to the bottom of the pit. There was, for this site, much bone, impacted, crushed together, forming a very solid mass. Among the bone was no carbonised wood and no black ash. There was however, earthy material of light brown colour among the bone and forced up into the cracks, hollows and crevices of the bones.

It may be that the bones and the Cup were placed in a container, laid on the south side of the pit. then carbonised wood was packed round firmly. Finally, more carbonised wood and ash in a bag was placed on top and the pit sealed. This is the impression given by this pit. It would account for the clean line between the outside earth and the black ash when scraping first revealed the pit, it would also account for the separation of the Cup and bone from the ash and carbonised wood. The pit was 20 ins. by 14 ins. by 14 ins. deep.

Bone Report:

Total weight	...	...	...	...	...	681.9 g.
Identifiable	...	...	...	...	...	488 g.
Unidentifiable	...	...	...	...	...	193 g.

The material is a relatively large amount for the site, unfortunately much of it is unidentifiable long bones.

Skull.—Many vault fragments with serrated sutural edges. Part of the left mastoid process is present, also part of the maxilla.

Vertebral Column.—There are two pieces which look like vertebral body, if so they may be the upper vertebrae (?) C2, C3 or C4.

Thorax.—Some rib fragments.

Upper Limb.—Part of the head of a humerus—it is not possible to state the side to which this fragment belongs. Some phalanges—a little reconstruction was possible.

(?) middle finger. Another part of a middle phalanx—very small—(?) immature, yet no sign of epiphyseal lines. A fragment of the right scaphoid. Part of a terminal phalanx.

Pelvis.—Two fragments of the ischial part of the hip bone. One may be a piece of ischial spine, while the other (?) could be part of the ischial tuberosity.

Lower Limb.—Some condylar fragments of the right (?) femur. Two fragments of the upper end of the tibia. Several phalangeal pieces—which though identified as "lower limb" may belong to the upper limb. There is little doubt, however, that the terminal (distal) phalanx of the great toe is present.

Teeth.—The root of an upper premolar probably up.rt.5 or up.lt.5.

Part of the crown and the root of a left lower premolar either l.lt.4 or l.lt.5.

The root of an upper left incisor.

Part of the alveolar border of the mandible with the roots of the left incisors in position l.lt.1, l.lt.2.

Part of the roots of a lower rt. molar.

Some unidentifiable root fragments.

Conclusions.—There is a great deal of adherent foreign matter on some of these fragments. As stated in the text a little reconstruction was possible.

It may be that this was a young adult female but the evidence is not strong. The middle phalanx could indicate a child (?). There were also some other fragments but it is difficult to identify them with any certainty.

Finds.—A 3 ins. by 3 ins. Pygmy Cup of fine buff ware, conical base, slight carination at mid point of wall: four oculi instead of the normal two: one pair of oculi horizontal, one angled down. (Pl. III).

One small calcined scraper.

One flint chip.

Some pieces of leather or skin not yet identified.

PIT F.—The top of this pit shewed dark brown when found. Some 4 ins. down were eight sticks of carbonised wood laid horizontally across the top of the pit in no pattern. Under this layer was a large piece of wood spanning the diameter, it was 21 ins. long and 3 ins. wide for most of its length. Under this was a mixture of bone, stones and wood. Lower, the bone was concentrated at the south western side. All the bone was much compacted. The pit was 23 ins. diameter 12 ins. deep.

Bone Report:

Total weight of fragments	...	...	...	...	204 g.
Identifiable	...	...	...	...	149 g.
Unidentifiable	...	...	...	...	55 g.

Many fragments have curved longitudinal cracks.

Skull.—There are only two vault fragments. These have serrated sutural edges. A small piece of the mandible is present—it is mainly the alveolar part and contains the sockets for (?) medial and lateral incisors, (?) right side.

Thorax.—Many rib fragments.

Upper Limb.—A fragment of the ulna.

Lower Limb.—A fragment of the femur.

Teeth.—(?) Lower right lrt.3, part of the root with apex missing.

Conclusions.—The majority of the fragments in this cremation consisted of unidentifiable long bones.

Only three pieces of skull were positively identifiable. It may be that these are the remains of a male—certainly some of the muscle attachments or insertions appear to be well marked. Pathology—nil. Age—unknown.

Finds.—One half circular stone bead.

Unidentified burned material (?) hair or wool.

PIT G.—When found, this pit was covered with earth and stone, black and hard. After 2 ins. the stones thinned out and the contents became soft, muddy, and black, with some medium-sized pieces of carbonised wood, one up to 5 ins. in diameter, lying horizontally at the west end. There was a scatter of bone round the periphery at 1 in. down but no bone in the centre till 7 ins. down, where there was a small quantity, very soft and mushy. Most of it lay in the centre and south-west of the pit. The pit was 18 ins. diameter and 15 ins. deep.

Bone Report.—On examination provided a small amount of unidentifiable long bone material and miscellaneous unidentifiable fragments.

PIT H. was located close to the centre of the site. It contained no human bone, but on the SW. side at 8 ins. to 10 ins. from the surface were found some animal or bird bones. They could not be recovered. Apart from this the pit contained black ash, soft and wet and what appeared to be vegetable material. The pit was 13 ins. by 8 ins. in diameter and 12 ins. deep.

Finds.—On the lip of the pit at surface level, on the east side were found five pieces of earthy material of a corky texture, two appearing to bear cord marks. These have been taken to be much corroded fragments of a reduced urn, though the authorities vary in opinion of this.

PIT I.—A small pit containing ash and carbonised wood, with bone concentrated on the SW. side, much compacted in a lump and much broken.

Bone Report :

Total weight of fragments	...	...	...	...	65 g.
Identifiable	...	...	...	...	25 g.
Unidentifiable	...	...	...	...	40 g.

Small amount. Some have elliptical cracks.

Skull.—Several vault fragments with serrated sutural edges. Only one of the facial elements, this being a part of the right orbital border.

Thorax.—Several rib fragments which appear to be (?) of R2 or R3.

Upper Limb.—A fragment of the head of the humerus (side unknown).

Part of a distal phalangeal segment.

Conclusions.—The majority of the cremated fragments were unidentifiable long bones.

PIT J/K.—These pits are taken together as they impinge upon each other. It is difficult to be certain which is the earlier but on balance it was thought that J. was the earlier and K. partly superimposed at a later date. The combined pit J/K was scraped down until after 4 ins. to 5 ins. bones appeared in the northern part of J and the southern

part of K. The bone from the two areas were recovered separately and are recorded below as J2 and K. It is possible that J2 and K are part of the same burial.

Below the bone found in the upper part of J was found a thick layer of carbonised wood fragments and ash. Under this layer was a compacted mass of bone lying at the southern end of the pit. This bone is recorded below as J1.

Pit J was roughly circular, 15 ins. diameter and 13 ins. deep. Pit K made a 7 ins. extension northward from J and was 5 ins. deep.

Bone Report J.2:

Total weight of fragments	...	...	...	...	95.4 g.
Identifiable	...	...	...	...	43.6 g.
Unidentifiable	...	...	...	...	51.8 g.

A rather more brittle selection than usual in this site. Have they been in contact with water or damp and then subsequently dried out again? Some of the (?) "heat" cracks are relatively straight—the reason for this is unknown.

Skull.—Some vault elements with serrated sutural edges.

Several fragments of maxilla, one may be the alveolar border of the incisor region. (?) Left and right fragments of the petrous temporal.

Thorax.—Some rib fragments.

Upper Limb.—Middle phalanx (?) may be index finger.

Conclusion.—Most of the fragments are of undefinable long bones.

The fact that both the L and R petrous temporals (or fragments of them) are present is suggestive of one individual (who was an adult). Sex unknown. No pathology.

Bone Report K:

Total weight of fragments	...	...	...	...	67.5 g.
Identifiable	...	...	...	...	45 g.
Unidentifiable	...	...	...	...	22.5 g.

Skull.—Two fragments of skull vault. Small fragments of right ramus of mandible.

Thorax.—Some rib fragments.

Teeth.—Crown and root of lower left incisor l.lt.1. Part of crown and root of an upper canine. One root of a lower molar.

Fragments of unidentifiable roots.

Conclusions.—The bulk of these fragments are unidentifiable long bones. Compared to other remains from this site they are small in size.

Bone Report J1:

Total weight of fragments	...	...	...	...	251 g.
Identifiable	...	...	...	...	117 g.
Unidentifiable	...	...	...	...	134 g.

Skull.—Many fragments of the vault with serrated sutural edges. A small piece of (?) mandible. A fair-sized piece of right petrous temporal, and a very much smaller piece of the (?) left. A fragment of the mastoid process—side unknown.

Thorax.—Several rib fragments.

Upper Limb.—A nearly complete right lunate bone.

Lower Limb.—Several fragments of femur—identified on size only. Two shaft pieces of tibia and two of fibula. Terminal phalanx (ungual) of the great toe. Side (?).

Teeth.—Two roots and part of the crown of an upper left molar. Part of the crown and the root of the lower left canine l.lt.3.

Conclusions.—A little evidence for osteoarthritis (?). Healed fracture of one fragment of skull vault (?). Certainly an adult—may be old (certainly over 25). Sex unknown.

Discussion.—Only one other structure of this nature has, as yet, been excavated in Scotland. This is one on Weirdlaw near Tweedsmuir in Peebleshire by Mr Alastair MacLaren in 1961.⁴ A C 14 test of carbonised wood from this site gave a date of B.C. 1490 \pm 90⁵. This is reasonably close to the date of B.C. 1360 \pm 90 for the Whitestanes site and ties down their period fairly well.

There are some eleven other known sites in Dumfriesshire which may be the same type of monument. One other was reported by Mr Jobey as found in the summer of 1964 in Northumberland and another which appears to be similar, was found south of Aberfeldy in Perthshire in 1964 by the writer.

⁴ To be published in P.S.A.S.

While the function of this type of structure seems clear, its place in the Bronze Age community is far from clear. This one contains only eight cremation pits. In this county they have, so far, always been found in association with fields of small cairns, yet of the thirty cairnfields so far examined, only eight have monuments like this of over 21 ft. in diameter. There are in a few fields numbers of smaller cairn rings which appear similar in construction to the large ones; they vary in size from 11 ft. to 20 ft. but so far none have been excavated, so it is not known if they are funerary or not.

A few facts emerge from the pit details which may perhaps indicate some of the burial procedure. The bone report seems to indicate that cremations had been carried out with a not very hot fire. If this were so, many of the bones would remain fairly intact and would be too large to fit into the pit, so they would have to be broken down. This could have taken place nearby and not in the fireplace. During the breaking down of the bones, probably with a large stone, earth would be forced into bone ends and cracks and the bones would be fractured down to the sort of sizes that were found. Having broken down the bone it would have been convenient to place the pieces in some form of bag. This could have resulted in the very compact, impacted bone mass found in five of the pits. It would also account for the lack of black ash in the bone mass, despite the fact that it was surrounded by ash and carbonised wood in the pit.

In all cases where there was much bone, it was found lying on the southerly side of the pit. It might be deduced from this that it was convenient, or ceremonially correct, to lower the bag of bone into the pit while facing in a northerly direction, then pack it round with carbonised wood and ash, presumably from the cremation fire.

SITE 80

This structure is situated just outside Site 1, to the east and almost contiguous with it. It consists of a mound with a hollow to the west of it. There are two other such structures in this same cairn field which appear similar in shape and size to this one⁵. As it was of unusual shape and was in close proximity to Site 1, it was decided to excavate.

The mound is earth built, oval in plan, 13 ft. by 7 ft. 6 ins. at widest, 1 ft. 6 ins. at highest (fig. 2.) The long axis runs approximately North by East. Just below the heather and turf covering, was a sparse layer of medium-sized stones 9 ins. to 12 ins. in size. These were set in peat-stained, grey, sandy soil. Below this to the eastern side of the central line, was a mixture of red earth and small stones, while to the west of this line the red earth was almost entirely stone free.

A thin spread of carbonised wood was found almost directly over and two

⁵ Code No.: N.P.L. — 57.

⁶ Since this paper was written a field of some 25 has been found near Sanquhar at N.G.R. 801105. No others so far are known in this county.

inches above, where later post hole No. 2 was found. When the old ground level was reached, six post holes were found evenly spaced at about 14 ins. on a near straight line on the centre axis of the mound. All were about 14 ins. deep and 8 ins. to 12 ins. wide. They tended to be oval-shaped with the long axis EW. In the bottom of No. 4 (counting south to north) were found pieces of wood about 1 in. by 1 in. The three southerly pits contained packing stones. Search was made at either end for the next post holes, but none were found.

Immediately west of the post holes was a low crude bank of earth and small stones set one upon another. West again of this was a 2 ins. by 2 ins. black line caused by staining, suggesting the bottom of a continuous light fence; to the south it ended between post holes 1 and 2 to the north opposite number 5.

Immediately west of the mound was a pit, the eastern edge of which was overlapped and clearly marked by the red earth of the edge of the mound. The pit was of irregular shape, 7 ft. long by 4 ft. 2 ins. wide at maximum width, and 2 ft. deep; the axis was N. by E. the same as the mound. It was filled loosely with medium-sized stones and had at surface level a marked sag in the centre. Apart from a small quantity of sandy wash, there was no earth among the stones. On the western and southern side the stones lining the top edge gave the impression of having been deliberately placed in position. Three in particular having the long flat face perpendicular, facing inwards and parallel to the line of the edge of the pit.

The bottom of the pit was typical of the local subsoil, being small sandstone cobbles let into and firmly fixed in the soil. Towards the northern end, on the slope down to the bottom, was an area of fire about 12 in. diameter thick in burned wood. Under the stone filling and on the very bottom of the pit was a 6 ins. layer of sludge.

Finds.—Two finds only were made:—

- (i) A knife sharpener in the NE. sector at old ground level.
- (ii) A piece of quartz 2 ins. by 2 ins., found below the turf and centrally placed.

Discussion.—For lack of any proof of connection, it was thought until recently, that this structure probably had nothing to do with Site 1. However, it has now been suggested that the post holes may be part of a rectangular palisade running round the cremation cemetery. Further investigation on this will have to be carried out, but there is no other mound or surface indication of similar structure anywhere else round Site 1.

Until the result of the investigation is completed it would be premature to speculate on the mound, the post holes, the crude bank and the line of stain to the west.

As far as the pit is concerned, there is no direct proof that it is connected with the mound: nor is there any indication of connection with the Cremation

Cemetery. It may be that the soil from the pit forms part of the mound, but it would have required more earth and stones than could have come from the pit to form the mound. The fireplace and the sludge at the very bottom of the pit are of interest. The surface sag of the stone filling suggests that the bottom of the pit originally contained material which has compressed as it rotted, so producing the sag.

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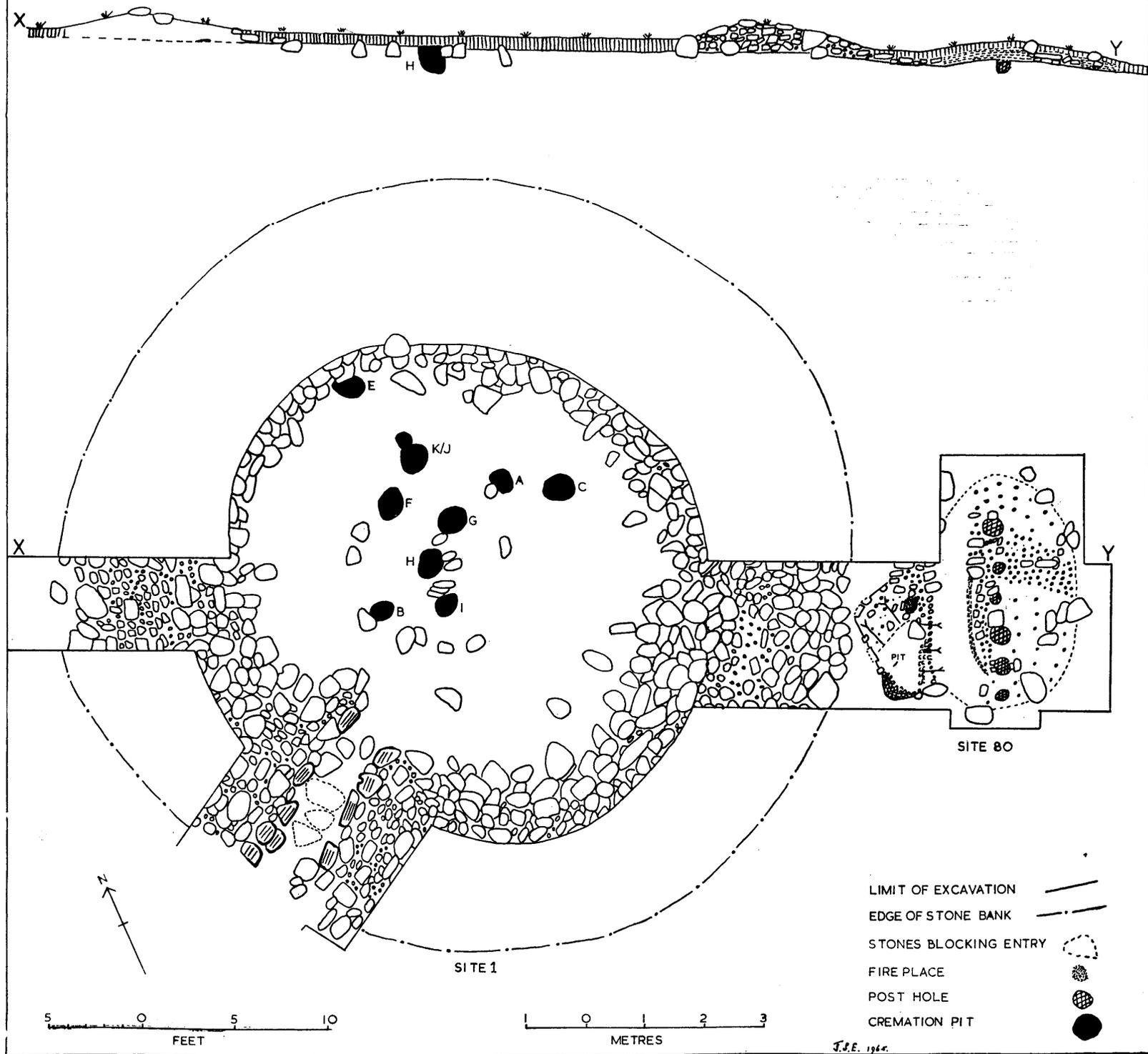


Fig. 2—Whitestanes Moor: General Plan of Sites 1 and 80.



Plate I—Whitestanes Moor: The encircling stone bank.

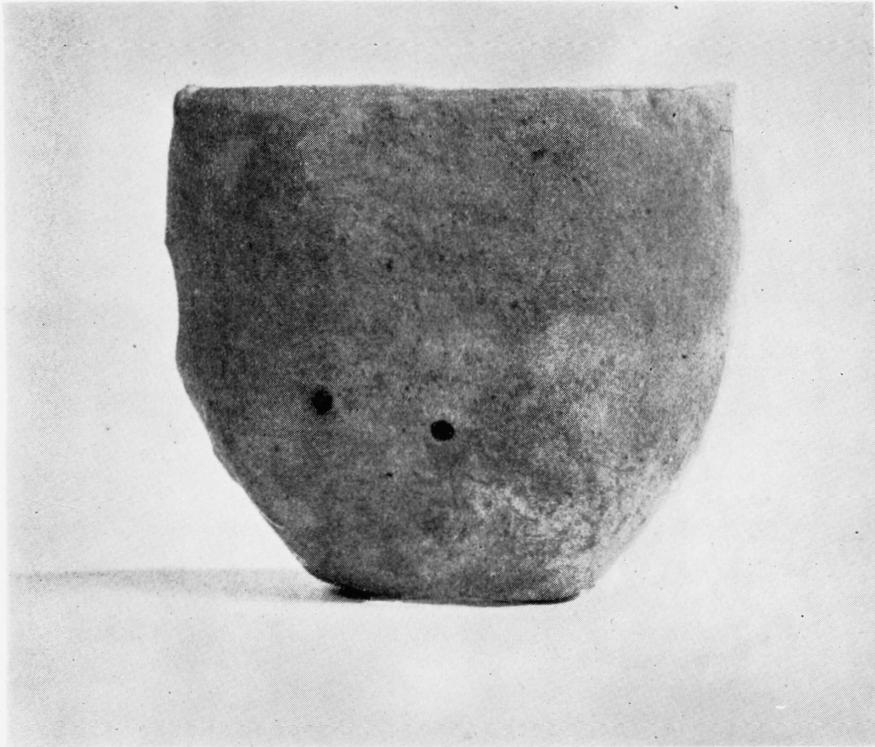


Plate III—Whitestanes Moor: Pygmy Cup showing oculi (full size).



Plate II—Whitestanes Moor; Pit E, facing East, showing Pygmy Cup in situ, bone and carbonised wood. Scale in inches.

BRONZE AGE METALWORK IN DUMFRIES AND GALLOWAY

By JOHN M. COLES, Ph.D., F.S.A.

Faculty of Archaeology and Anthropology, University of Cambridge

This paper is an attempt to bring together all the known Bronze Age metalwork from Dumfries and Galloway, and is, so far as is known, the first occasion of such a regional study.¹ The advantages of this approach are twofold; firstly, it gives the opportunity to compare distributions of successive isolated groups; secondly, it brings together all the available material in corpus form so that the entire range of material will be available for future study. While an attempt has been made to include *all* the Bronze Age metal work in this corpus, it is almost certain that some finds will have been omitted; these may be in private collections, or may have been recorded in insufficient detail in early publications. It is one of the aims of this paper to stimulate the publication or re-publication of such finds.

For convenience, the material has been divided into three groups, Early, Middle and Late, but it must be emphasised that the degree of overlap between these periods must have been great. The material included in this paper consists of stray finds and hoards of bronze or gold objects; metal grave goods such as razors and occasional knife-daggers have also been included in the corpus although these more correctly should appear and be considered in greater detail with their associated pottery vessels. The metal analyses of some of the earlier material have not been included, as these can only be considered in their Scottish context; this work is not yet fully available for study.

The paper is divided into six sections, the first examining the overall distribution of Bronze Age metalwork to see if any major shifts of population or trade can be picked out. There follows a discussion of the Early, Middle and Late Bronze Age material, then a brief summary and comparative chronology, followed by the catalogue.

I—DISTRIBUTIONS

The entire range of metalwork, when plotted on a map of Dumfries and Galloway, shows some interesting distributional aspects (fig. 1). Predominant is the lowland and riverine distribution of these finds, particularly the valleys of the Nith, Ken and lower Dee. Penetration to near the headwaters of the

¹ The three counties have been treated separately on several occasions:
Dumfriesshire: *Trans. Dumf. and Gall. Nat. Hist. and Ant. Soc.* xi 1923-4 107;
Kirkcudbrightshire: *ibid* xiv 1926-8 281;
Wigtownshire: *Arch. and Hist. Coll. of Ayr and Wigtown* ii 1880 6.

For assistance in examining material, and for permission to publish, I am grateful to the following: Mr Truckell (Burgh Museum, Dumfries), Mr Stevenson (National Museum of Antiquities of Scotland), Mr Case (Ashmolean Museum, Oxford), Mr Scott (Art Gallery and Museum, Glasgow), Miss Robertson (Hunterian Museum, Glasgow), Mr Paterson (Stewartry Museum, Kirkcudbright), Mr Brailsford (British Museum). Miss Henshall and Mr Cormack have also given valuable assistance in the mapping of finds.



Fig. 1 Bronze Age metalwork in Dumfries and Galloway.
Circles: Early Bronze Age. Squares: Middle Bronze Age. Triangles: Late Bronze Age.

Nith seems evident, contrasting strongly with the almost complete absence of finds from the Annan system except for its mouth. It might be suggested that the Nith valley allowed access to the central lowlands of Ayrshire, with only a relatively short haul between Carsgailoch Hill and Corsoncone Hill, along the line of the present-day A76. Such a route, connecting the Solway shores to the Ayrshire lowlands, may well have been preferred to the longer and more naturally dangerous coastal voyage around the Mull, or even that involving an overland passage from Luce Bay to Loch Ryan. That the latter, however, was also employed seems evident from the distribution of finds along a route from Glenluce, possibly using the Piltanton and Soulseat Burns, towards present-day Stranraer. The concentration of finds in this area is one of the most striking aspects of the Bronze Age in the south-west. Of minor importance, distributionally, are the number of finds along the River Cree, which is overshadowed by the concentration in the Machars, the only coastal area yielding any quantity of finds. While much of the Kirkcudbright shores could hardly be termed lowland, further east the coastal strip from the Nith to the Esk has not yielded a quantity of finds comparable to that from the Machars. The Wigtown Bay side of this peninsula has contributed sufficient material to make it unlikely that such finds on the Machars represent merely a part of a route from north-western England, or the eastern Irish Sea shores (including Wales), leading into Luce Bay and thence overland to the Clyde waters, avoiding the Mull of Galloway.

The overall distribution seems to point to certain significant low-lying areas, in which a high proportion of finds have been made. It remains to be seen if such significant areas, north of the Luce Sands, the Machars, the Ken and Dee valley, and the Nith valley, do indeed represent trade or travel routes, or else favourable settlement areas. The difficulty is that traces of settlements are so rarely discovered or dated to the Bronze Age. In their absence, we can fall back upon the distributional evidence of burials, whether cemeteries or single burials. This evidence is grossly incomplete, because of the large number of undated and undateable "cairns," potentially of the Bronze Age, that apparently exist in certain areas of the region. Distributions of these have not yet been made, but we do have maps of pottery finds of Beakers, Food Vessels and Cinerary Urns (r 78, 83, 87, 90; Letters refer to the Bibliography, page 89). Some of this pottery, of course, may be from domestic sites but in any case it combines to present the other aspect of Bronze Age material.

Overall, the pottery evidence of Beakers, Food Vessels and Cinerary Urns shows fairly close similarities in distribution to that of the metalwork. There are a number of finds in the area between Luce Bay and Loch Ryan, and the Nith valley too is well-represented by pottery finds. The scarcity of bronze finds in the Annan system is matched by a rarity of Beaker and Bronze Age pottery, although a number of Bronze Age vessels have recently been recovered at Dinwoodie Green and Kirkburn near Lockerbie. However, important differ-

ences between the distributions of these two types of material also occur. The Machars are almost totally devoid of pottery finds, the Cree valley and the Glenkens as well. Possibly more intensive field-work, and deeper ploughing, would reveal much more evidence of cemeteries, but the major differences are likely to remain. There is without doubt a sufficient quantity of material of both kinds to make it unlikely that the pattern will change abruptly. These differences in distribution may be due to the differing nature of the evidence, metal finds as opposed to burial sites. One might expect the cemeteries to represent areas of settlements more closely than stray finds of metal objects presumably lost in the course of hunting or working or fighting, or hoards of metalwork probably buried for safe-keeping either by a householder or a trader. Such an interpretation suggests that the metal finds need not necessarily represent favoured settlement areas.

The map also demonstrates the relative quantities of metalwork known from each period, Early, Middle and Late. Before direct comparisons can be made, however, it should be remembered that these periods are of unequal duration in the region. Nevertheless, and perhaps because of this disparity, certain observations can be made. Seemingly the most important is the shift in emphasis upon the Rhinns from the Early to the Middle and Late Bronze Age. Approximately one-third of all the Early Bronze Age finds from Dumfries and Galloway have been made in this restricted area, from Leswalt and Innermessan to the Sands of Luce, compared with only one-tenth of Middle Bronze Age finds, and a reversion to about one-quarter in the Late Bronze Age (from a rather wider area). It may however be argued that two of the six Middle Bronze Age finds are hoards, so that the disparity is not so marked if total objects are considered. Other than differences in this area, the spread of finds over the entire region is broadly equal, with only a few insignificant divergences. Finds of all periods occur in the Machars, in the Loch Ken area, and along the Nith. The Cree valley, however, seems hardly to be represented in the Early Bronze Age, contrasting with a number of Middle and Late Bronze Age finds.

One of the more important aspects of the map lies in the absolute numbers of finds from successive periods. This is a point made some time ago, reviewed more recently (f 19 with references), and presented in greater detail now. According to Childe, who based his approach on work by Fox, greater numbers of objects should have survived from each successive period of the Bronze Age. Thus, for the Cambridge region, the figures quoted were 26 flat axes, 82 Middle Bronze Age axes, and 190 socketed axes. Childe listed, from Dumfries and Galloway, 21 early axes, 37 winged axes and palstaves, and only 23 Late Bronze socketed axes. Similarly, he counted 3 daggers, 15 rapiers and only 8 swords. These figures all have to be revised in the light of recent discoveries, but while his counts for other areas, e.g., the north-east of Scotland, have been so revised that his argument fails (f 20), nevertheless in the south-west it seems that his ratios are more or less correct. According to the corpus, there are 34 flat and

low-flanged axes, 47 Middle Bronze Age axes, and only 27 Late Bronze Age socketed axes. These figures seem to support Childe's idea that the "provincial natives" were conservative and satisfied with their earlier forms of tools. Or it may be that the natives could not obtain the new forms, and were forced to be content with what they had. However, when we come to examine in detail some of the material that contributes to this theory, we will see that Childe was perhaps a bit harsh when he described the inhabitants of Galloway as "a backward group" lagging behind their contemporaries over the Solway. It may also be true that his basic premise was incorrectly applied to Scotland, because of the profound differences in the composition of hoards and presumed economic organization between southern England and the north (f 38). In the north there are relatively very few founders' hoards contrasted with their preponderance in the south, so that the number of finds bears no consistent relation to the number of objects in the two areas.

Throughout the Bronze Age, then, certain areas in Dumfries and Galloway seem to have been preferred for settlement or for use as trade or transport routes. These are the areas north of the Luce Sands, the Machars, and the territory within easy reach of the Cree and Ken Rivers, and the Nith River.

II—COPPER AND EARLY BRONZE AGE METALWORK (Fig. 2)

No Beaker burials with associated metal objects are known from Dumfries and Galloway, but there are several isolated metal finds that are probably repre-

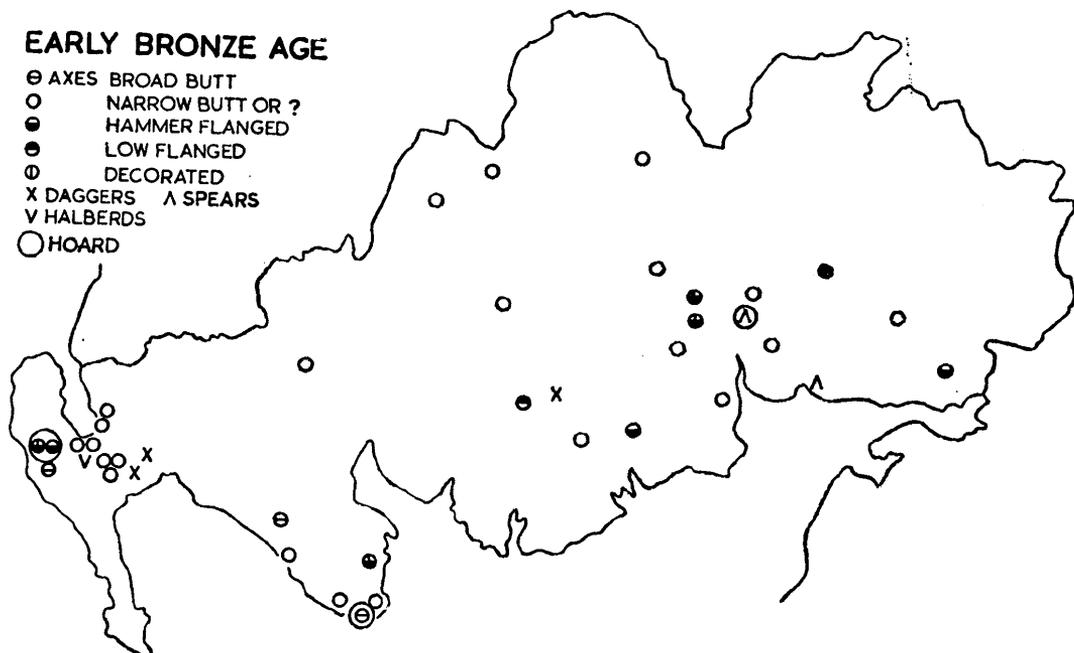


Fig. 2 Early Bronze Age metalwork.

sentative of Beaker influence. These are a dagger from the Luce Sands, a group of flat axes from Tonderghie, Wigtown, and one or two stray axes which may be classed as *broad butt flat axes* (b 260) or thick-butted axes (d 102). The butts of such axes are wider than those of the normal Early Bronze Age axes, and are often straight or squared-off rather than arched (fig. 3, 1-2). The axe face is normally only slightly curved, sometimes almost absolutely flat, and the blade, while curved, is not expanded to any appreciable degree. The axe, in shape, is an irregular trapezoid. In side-view, the axe is generally rather thick, and at the butt it may be either thick or thin. This latter variation is probably of some significance, but requires further study. There is no decoration of faces or sides. Ireland has yielded a very high proportion of the broad-butt axes from these islands, and some ultimate connection with Atlantic Europe seems probable, although in very early contexts the form is even more widespread (d 102). Analyses have shown that these axes are usually made of copper (b 298). The Tonderghie axes, six of them in a pot, are said to have been of copper, although the author of the original report of 1795 may well have ignored copper and bronze differences in order to differentiate between ferrous and non-ferrous metals. In any case, all the axes are lost and there only survives a drawing of one of them, which seems to resemble an irregular broad-butt flat axe. It may be of interest to note that the Tonderghie area is apparently a source of copper ores, the only one in the Machars, the other local sources lying mainly in western Kirkcudbrightshire (u 69-70) and being complementary in distribution to Early Bronze metal finds.

The other possible representatives of this tradition in our region are an axe of the requisite shape from Knock and Maize, and another from Barrach, Mochrum, both Wigtown (fig. 3, 1-2). The butt of the former is almost straight, and, even more convincing, is thick in side view. It would be interesting to have this axe analysed. The Barrach axe has a thinned butt in side-view, but by analysis is of copper with only a slight trace of silver and nickel. Less convincing as a broad butt axe is one from Newfield, Dumfries, which appears more as a typologically early flat axe of the succeeding narrow butt class.

The *narrow butt flat axes* are, as a general class, by far the most numerous of all Early Bronze Age axes. Although these vary in detail, as we shall see, in general they are thinner in side-view than broad butt axes, often have a wider and splayed blade, with therefore more deeply concave sides, and may have either evenly curved faces or a slight transverse bevel near the middle of the axe (fig. 3, 3-6, 8). They are often decorated, and some have hammered sides which produce slight flanges. The butt is narrow and arched. There is great variation within this general class; Britton has included them all in his 'Migdale group' (b 263, 270), while Butler has suggested a two-fold division into "developed flat axes" and "low-flanged axes" (c 28ff). The first of Butler's types would encompass all narrow butted axes except those that have flanges, generally only a millimetre or two in height and probably hammered up, although, as

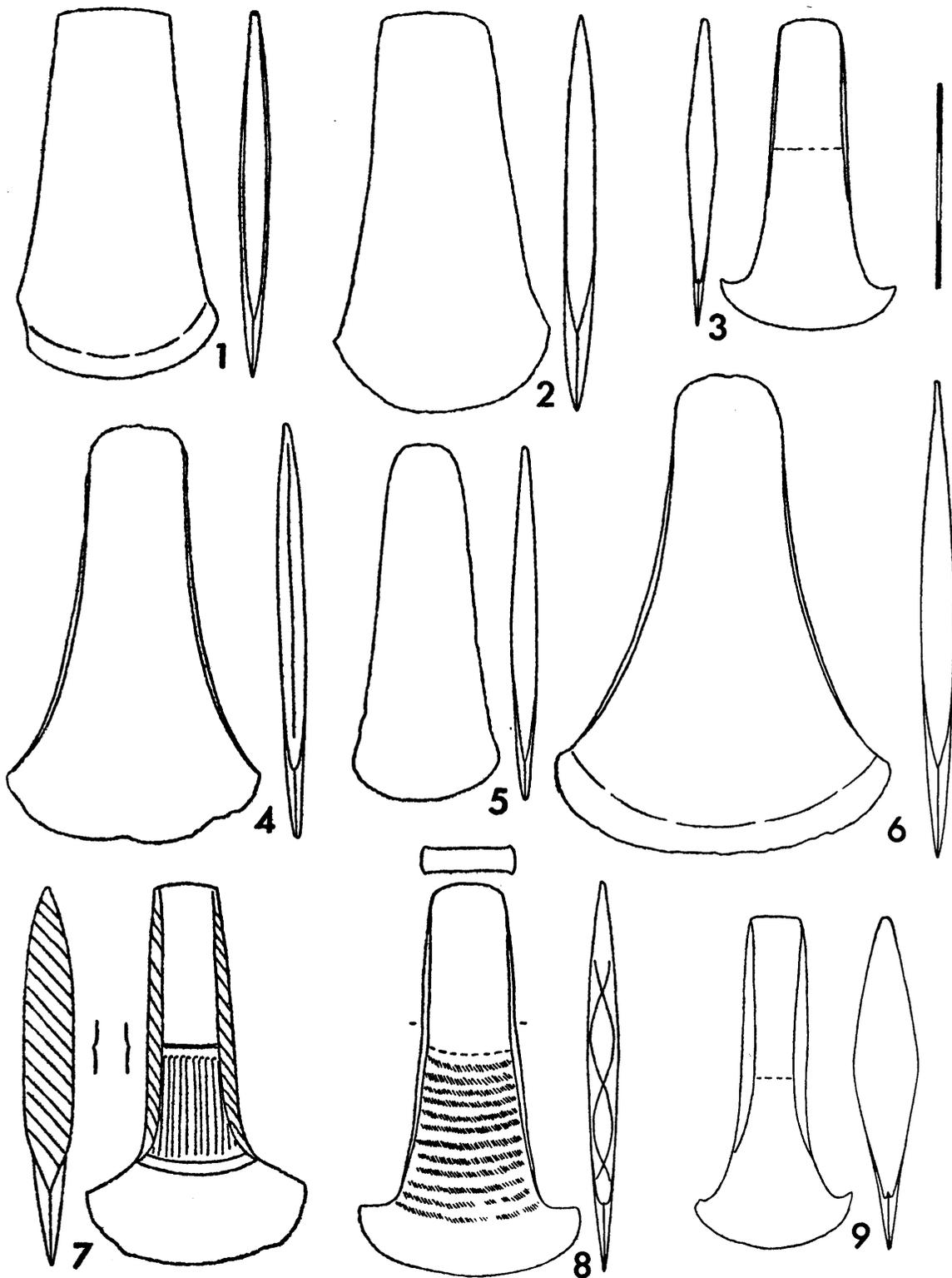


Fig. 3 Early Bronze Age metalwork (2/5).

1, Knock and Maize; 2, Barrach; 3, Colvend; 4, Dunscore; 5, Cree; 6, Boreland (1964-9); 7, Applegarth; 8, Steilston; 9, Barwhillantry.

Butler says, it is sometimes difficult to distinguish the technique. Both of his types may be decorated.

For Dumfries and Galloway, and for Scotland as a whole, the Early Bronze Age axes are of four main types, the broad butt flat axes, the narrow butt flat axes, the hammer-flanged axes and the low-flanged axes. Of these, the broad butt flat axes have already been discussed, and the second and third types are those under examination here. They conform to Butler's two types almost exactly, but are given different descriptive terms principally because "low-flanged" is better preserved for the fourth group. It must therefore be remembered that Butler's "low-flanged axes" are not the same type as my low-flanged axes. A correlation table is given below:—

<i>Britton</i>	<i>Butler</i>	<i>Present Paper</i>
Migdale group	{	Developed flat axes
		Low-flanged axes
Arreton type		High-flanged axes
		Narrow butt flat axes
		Hammer-flanged axes
		Low-flanged axes

The basis for the present terminology lies in a study of the entire Scottish Early and Middle Bronze Age metalwork, wherein the succession of classes of Middle Bronze Age flanged axes necessarily begins in the earlier period with the appearance of *cast* low-flanged axes. It does not seem suitable to adopt, for these, Butler's terminology of "high-flanged axes" when succeeding classes have "higher flanges."

The narrow butt flat axes of our region are all undecorated. There is considerable variation in size and to a certain extent in shape, but all belong to the widespread group of axes with no trace of hammered flanges, and with flat transverse and convex longitudinal faces (fig. 3, 4-6). In side-view they are elongated ovals. Most have arched butts although, as stated, there are a number with rather squarer butts possibly indicating some relationship with the earlier broad butt axes, although not necessarily an origin in such. The two axes from Boreland are among the largest flat axes from Scotland (fig. 3, 6). None of these axes are associated with other material in the region, but elsewhere in Scotland they have been found in hoards such as Migdale (Sutherland), Auchnacree (Angus), Colleopard (Banffshire), and Port Murray (Ayrshire) (b 300, 312ff.) most of which by their contents indicate a date within a range 1650-1350 B.C. It is not possible to date stray undecorated axes of narrow butt type with any greater precision.

Seven *hammer-flanged axes* in Dumfries and Galloway are known, of which four are decorated. The Low Glenstockdale hoard has one plain and one decorated axe. The axes have narrow butts generally arched, widened blades occasionally recurved, and almost all have faces bevelled back towards butt and blade from the thickest part of the axe near the centre (fig. 3, 3, 8) This bevelling is not however always evident and the side-view may appear only as

an elongated oval as before. The sides of the axes may be faceted longitudinally, or merely curved, but have been hammered (improbably cast) into slight and very low flanges, so that in cross-section the faces of the axe are slightly lower than these flanges. Decorated axes of this type belong to Megaw and Hardy's Type I (p 272), a type that also included our narrow butt flat axes with decoration. The four decorated axes from the region show considerable variation in style, with "rain" and "herringbone" pattern on one of the Low Glenstockdale axes, a hatched design on the Steilston axe (fig. 3, 8), and other motifs on the Terregles and Kevans axes. Only the Steilston and a Glenstockdale axe have decorated sides of lozenge design. Chronologically these axes are inseparable from the narrow butt type whether decorated or plain; the Colleonard (Banffshire) hoard has both types with decoration, and both are known to have been exported from Ireland and Britain to south Scandinavia, the Low Countries, south Hanover and central Germany (p 279ff, c 30ff), where associated material provides a date for this *trade* of *circa* 1650-1550 B.C. The south-west Scottish examples of decorated axes may have been produced in Ireland, although the numbers from Britain suggest that some local industries may also have contributed. Typologically of course the hammer-flanged axe is a development upon the narrow butt flat axe, but chronologically again a rather wide scale is indicated for its life in the region, from 1650-1350 B.C.

Of later date is the *low-flanged axe* of the Early Bronze Age (Class I in the Scottish scheme of cast-flanged axes, h). This is the "Arreton type" of Britton (b 284ff) and the "high-flanged axes" of Butler (c 44). Such axes are always narrow and sometimes arched at the butt, and are splayed at the blade with recurved edges common (fig. 3, 7, 9). The axe is often nearly parallel-sided for much of its length before widening suddenly near the blade. Most have faces bevelled from a central transverse line, but there is no true stop or bar. The flanges are prominent over most of the length of the axe except at the blade, and are either faceted or evenly curved. In the Scottish material there seem to be three distinct varieties dependent upon the shape of the blade in relation to the butt, and upon the flange heights. From Dumfries and Galloway there are only two such low-flanged axes known, a decorated one from Applegarth (fig. 3, 7), and a plain axe but with developed flanges from Barwhillantry (fig. 3, 9). Britton has pointed out that the British hoards containing such axes are mainly found in southern England, in contrast to those with the earlier forms of axe (b 290, 265), but until complete distributions are known, and the Irish material published, it is uncertain if this distribution shows anything more than an established Irish trade with the Wessex culture in its later phase. Certainly the distribution of decorated axes of the low-flanged type suggests an Irish source for at least the Applegarth example (p fig. 9). The basic form however of these axes may not have been an entirely indigenous development; Megaw and Hardy suggested continental inspiration leading to local British-Irish adaptation. The central European prototypes, if they be such, belong to the

sixteenth century B.C. and British hoards of low-flanged axes point to a time from 1550-1450 B.C. (b 286), although the type undoubtedly continued in use later than this.

Apart from flat and flanged axes, Early Bronze Age metalwork is rare in Dumfries and Galloway. As far as is known, there are only two *halberds*, two spearheads, and about half-a-dozen knife-daggers that can be assigned to this period. One of the halberds, from Galloway (fig. 4, 2), belongs to O Ríordáin's Type 4, the other (fig. 4, 1) is an intermediate form (g 273, 311). Although

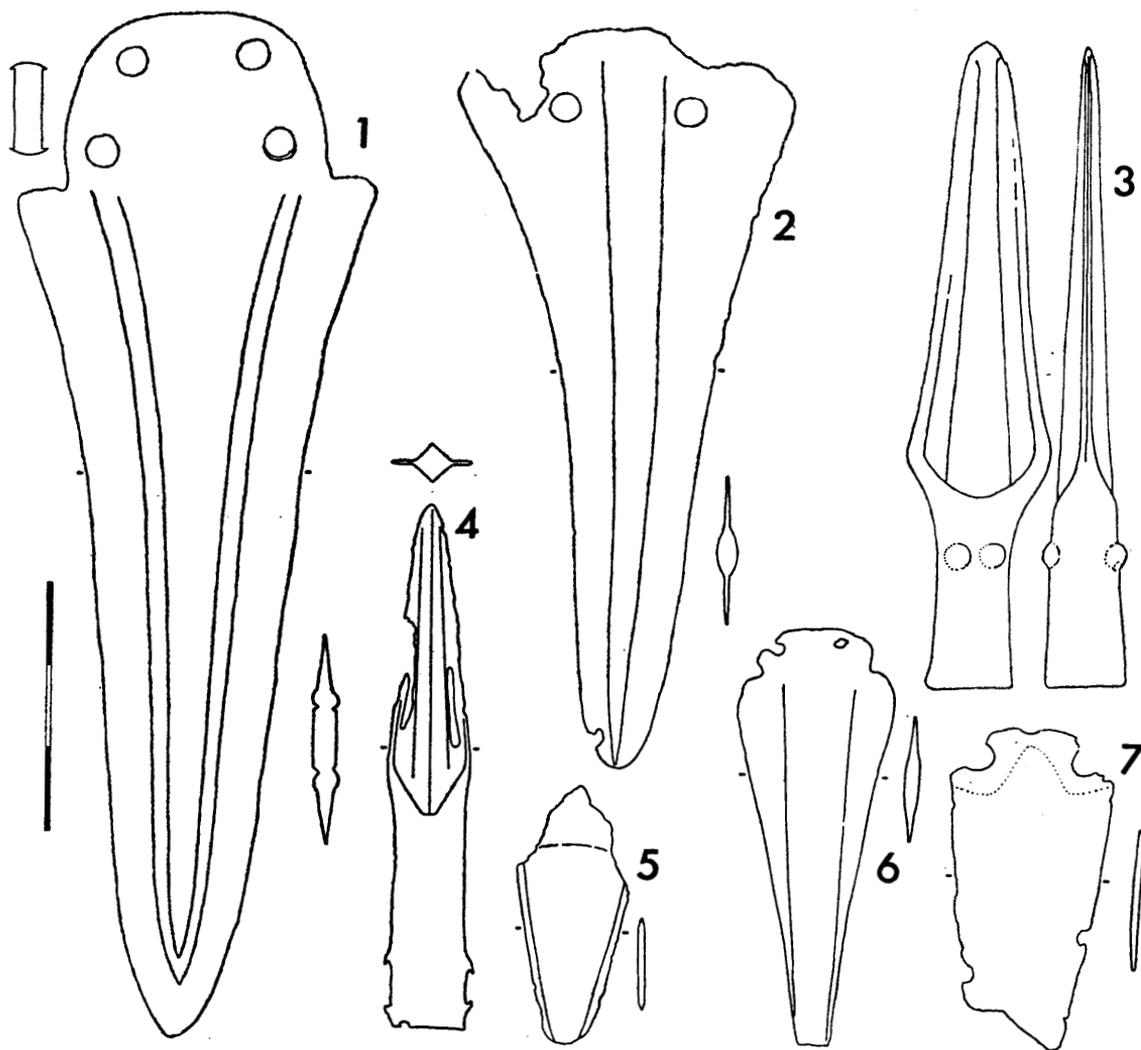


Fig. 4 Early Bronze Age metalwork (2/5).
1, Whiteleys; 2, Galloway; 3, Greyfriars; 4, Comlongan; 5, Glenluce; 6, Arieland;
7, Carlochán.

O Ríordáin suggested that the halberd originated in Ireland, to be copied and transformed on the continent, more recent work has shown that the situation was the opposite (c 22), and that the common Irish Type 4 halberd, characterised by three rivets, a midrib, and a slightly ogival outline, was a form developed in Ireland through influence from central European Early Bronze Age halberds. That certain Irish halberds were traded to the continent, along with decorated axes, is not disputed. Associated material in Britain (b 283) and Ireland (c 23) includes narrow butt flat axes and other material indicating a date for halberds within the Early Bronze Age, 1650-1400 B.C.

Two *spearheads* from the region are of Early Bronze Age type, although one was apparently deposited in the Greyfriars Dumfries hoard of the Middle Bronze Age. This spearhead (fig. 4, 3) is of Arreton Down type (b 289, pl. xxvii.) with a grooved ogival blade, a socket open only to the base of the blade, and two bosses (false rivets) on each face of the flattened socket. There are no rivet-holes, unlike the Arreton Down example, which is of the sixteenth or fifteenth century B.C.

The other early spearhead, from Comlongan Castle (fig. 4, 4), is of Ebnal type (b 289, fig. 17) with a triangular-shaped ridged blade, a socket flattened as it joins the blade in a wide V, and broken loops at the mouth of the socket. The Ebnal hoard suggests a date not far removed from that of Arreton Down, in the later Early Bronze Age.

Knives and daggers of the Early Bronze Age are not very common in our region; none are known from Dumfriesshire, and only three from Galloway. Two of these, from Carlochan and Dunragit, belong to a class of small, flat riveted knives that is common over much of Britain. These lack any midrib or grooving on the blade, and are sub-triangular in outline with a rounded heel (fig. 4, 7). The organic hilt was fixed to the blade by three rivets, arranged in an arc with the central and highest rivet set in a notch in the blade, rather than in a hole like the other two. Atkinson has divided these blades into two main classes, one with an omega-shaped hilt base, the other hilt joining the blade in a splayed W (a 9). Both Galloway examples belong to the latter class, which seems to be a north British and Irish speciality, and which may be dated on typological grounds to a time contemporary with the Wessex Culture, *circa* 1650 - 1400 B.C. (s 82ff). The Carlochan dagger comes from a cist in a cairn, and apparently was associated with an amber bead and what seems to have been an armlet comparable to the Early Bronze Age group of sheet-bronze armlets (b 279).

The other knife-blade, from Mid Torrs, Glenluce, is unlike this class in its absence of rivet-holes, its shallow concave hilt-mark and its tang (fig. 4, 5). It seems in fact to be a "Beaker dagger" or tanged flat dagger, a member of a large group of daggers known from Beaker burials and from stray finds (b 261, s 68ff). It may be remembered that by far the greatest concentration of Beaker pottery in our region comes from the Luce Sands. These daggers are almost always of copper, and although associations suggest a date early in the second

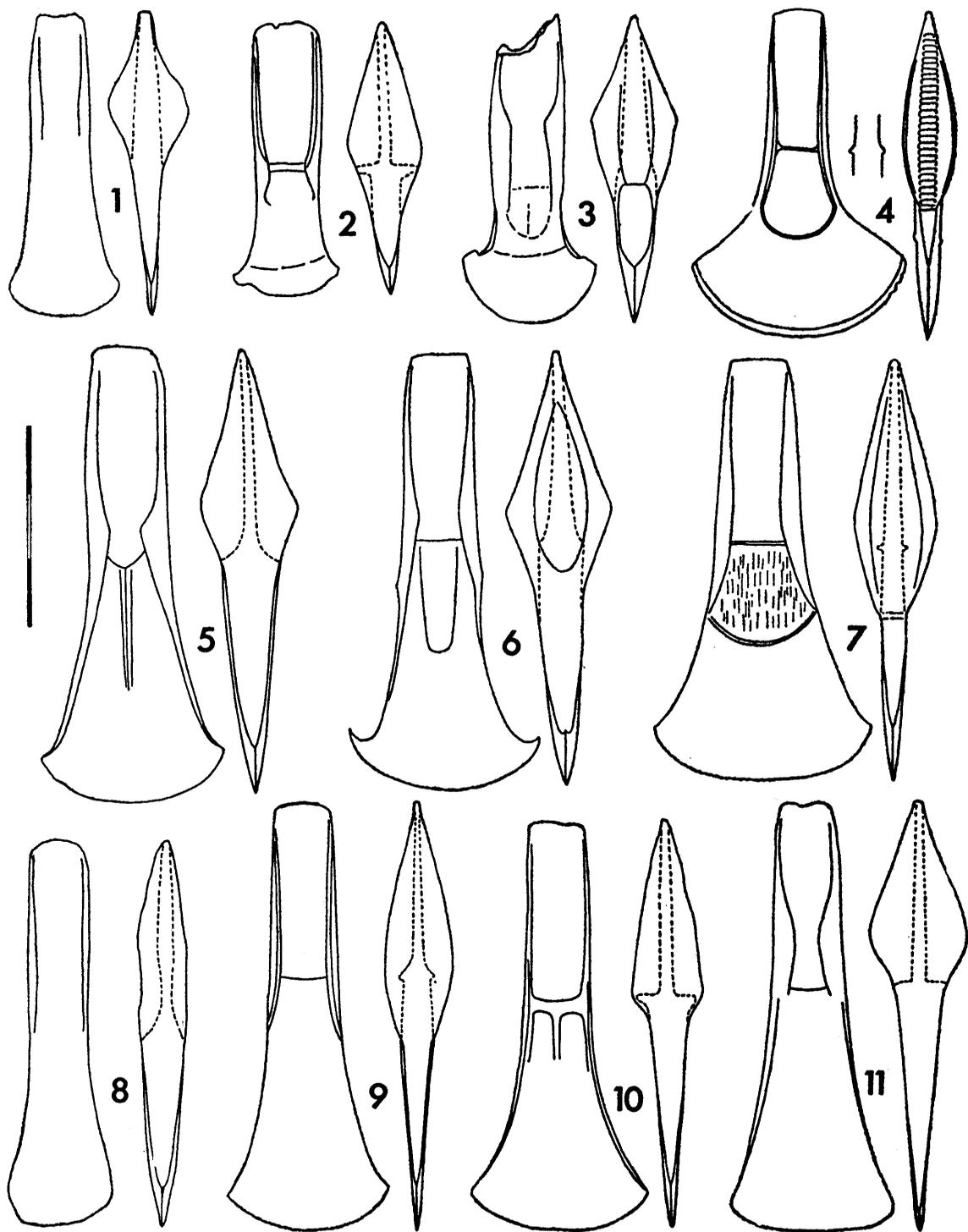


Fig. 6 Middle Bronze Age metalwork (2/5).
 1, Mouswald; 2, Greyfriars; 3, Canonbie; 4, Stair estates (1964-15); 5, Glentrool; 6, Barr;
 7, Closeburn; 8, Barhullion; 9, Birrenswark; 10, Genoch; 11, Cairnsmore.

Britain. Smith considers that an economy in metal would lead to the shortening of the flanges so that they were restricted to the hafted part of the axe. This seems a reasonable hypothesis, but is much too simplified. The differences between the low-flanged and the haft-flanged axes are not confined to the flanges, but are also evident in the blade shape and the decoration, for many haft-flanged axes are relatively narrow unlike the great majority of low-flanged axes, and hardly any typologically early haft-flanged axes are decorated while this is a feature of many low-flanged axes. The answer is clearly much more complicated than a simple evolution, and it may be that a more economical theory would see at least two classes of haft-flanged axes developing from narrow-butt flat axes or hammer-flanged axes, the blades of which are often narrow and not splayed, and which in some groups are undecorated. There is also an important difference in the flange form, and the Scottish material divides readily into two major complexes, the convex-flanged and the angle-flanged. Full discussion of all these classes and sub-classes will appear in *P.S.A.S. (h)*, but it is of interest that all of the major classes are represented in Dumfries and Galloway.

Typologically early in the haft-flanged class is a group of axes with narrow blades (almost always less than twice the width of the axe at its centre), with low convex flanges only extending halfway from the butt, and lacking any form of stop other than a slight bump-bar or a general imperceptible thickening of the axe near its centre to give a sunken haft area (fig. 6, 8). The axes are not decorated. Three axes of this type are known from Dumfries and Galloway, but are not differentiated on the map from a related form. The convex flanges of the latter are still rather low in their height above the axe surface. However, while some of the flanges are short, of haft-flanged length (fig. 6, 9), others are longer and these are clearly developed from the Early Bronze Age low-flanged axes, with decoration and splayed blades too appearing regularly (fig. 6, 4, 7). It is quite evident that there is no simple developmental sequence that will account for all the ramifications of Middle Bronze Age axes, and a more organic evolutionary development must have taken place, with interacting elements producing more and more varieties with time until certain forms became standardized. There are six of these more developed axes known from our region, two clearly evolved from the low-flanged axes, the others demonstrating more complex origins.

The second major group of haft-flanged axes is distinguished by its angled flanges, flanges that rise more steeply from butt and centre to meet at an angle. These flanges are therefore of greater height than the convex flanges of the preceding type. Only one example of the early form is known in the region, from Mouswald (fig. 6, 1), and this is identical to the narrow rather flat axes of the convex haft-flanged axes in every respect including lack of decoration, except that of the flanges which rise above the surface in angled fashion. The flanges of these axes are sometimes inturned by hammering or by the deliberate casting of a concavo-convex flange line on a certain sub-class and this feature

is developed in other flanged axes. The range of Scottish material of this form necessitates some sub-classification, and Dumfries and Galloway have yielded examples of most of these. Constant however are the angled flanges, most with a concavo-convex line (fig. 6, 3), or otherwise inturned, and the widened blade. Still subject to great variation is the area of the "stop" which may still be flat, but is generally sunk although not abruptly. Decoration occurs on certain sub-classes. Eleven of these axes are known from the region, four of which are small axes with recurved or wide-splayed blade, with sharply angled flanges and with the haft area sunk below the blade. The other axes are larger, one, from Derry, with triple converging ribs, and another, from Barr, with a raised arch-area of decoration below the sunk-stop (fig. 6, 6).

These axes provide the necessary typological ancestor for axes which are often called *wing-flanged*. This term is restricted to axes with certain specialised characteristics. The blade is generally narrow, less than twice the width at the stop, although a few axes have wider blades. The high and angled flanges have a concavo-convex line turning inwards over the haft area and leading into a constricted area. (fig. 6, 5, 11). This constricted area is the principal defining feature of the wing-flanged axe. The haft area is sunk below the blade surface and may lead evenly or abruptly to the blade. Decoration is rare. The axes are generally large, most around 6 ins. in length. Several sub-classes may be distinguished, including a very large group with thick flanges and ledge-like stop represented at Cairnsmore of Fleet (fig. 6, 11), and another large group with splayed blade (fig. 6, 5). The latter group has representatives in our region in the Balcarray, Caldonshill and Glentrool hoards. The associated material at Caldonshill is particularly valuable in determining contemporaneous classes of axes, and Glentrool is of considerable importance for chronology. The Glentrool hoard has been examined on several occasions and dated to the twelfth or eleventh centuries B.C. (f 17ff, w 11, c 218ff). Its material is discussed below.

Contemporary with wing-flanged axes are the *palstave* groups. They do not seem to have ancestral forms in the Scottish flanged axe complex, but fall within the general west European palstave family. No overall study of the British or Irish palstaves has yet been published so that the Scottish material for the moment must stand on its own. In recent years certain southern English types have been detailed (v 164) and a more comprehensive scheme has been outlined by Butler but this does not seem to be consistent over definitions (c 28, 48ff). Nevertheless, it is a valuable survey of the available material. Certain palstaves are unlooped and are defined as palstaves by the presence of a functional stop, a deep abruptly-angled sunken haft area which may be called a terrace-stop, or a hollowed area within the blade forming a shelter-stop. The flanges of these palstaves are generally convex-curved rather than angled. A number of sub-classes may be distinguished depending upon decoration and stop form. The Genoch palstave is a typical form (fig. 6, 10), but others occur with a flanged axe in the Greyfriars, Dumfries, hoard (fig. 6, 2). Chronologically, therefore, these

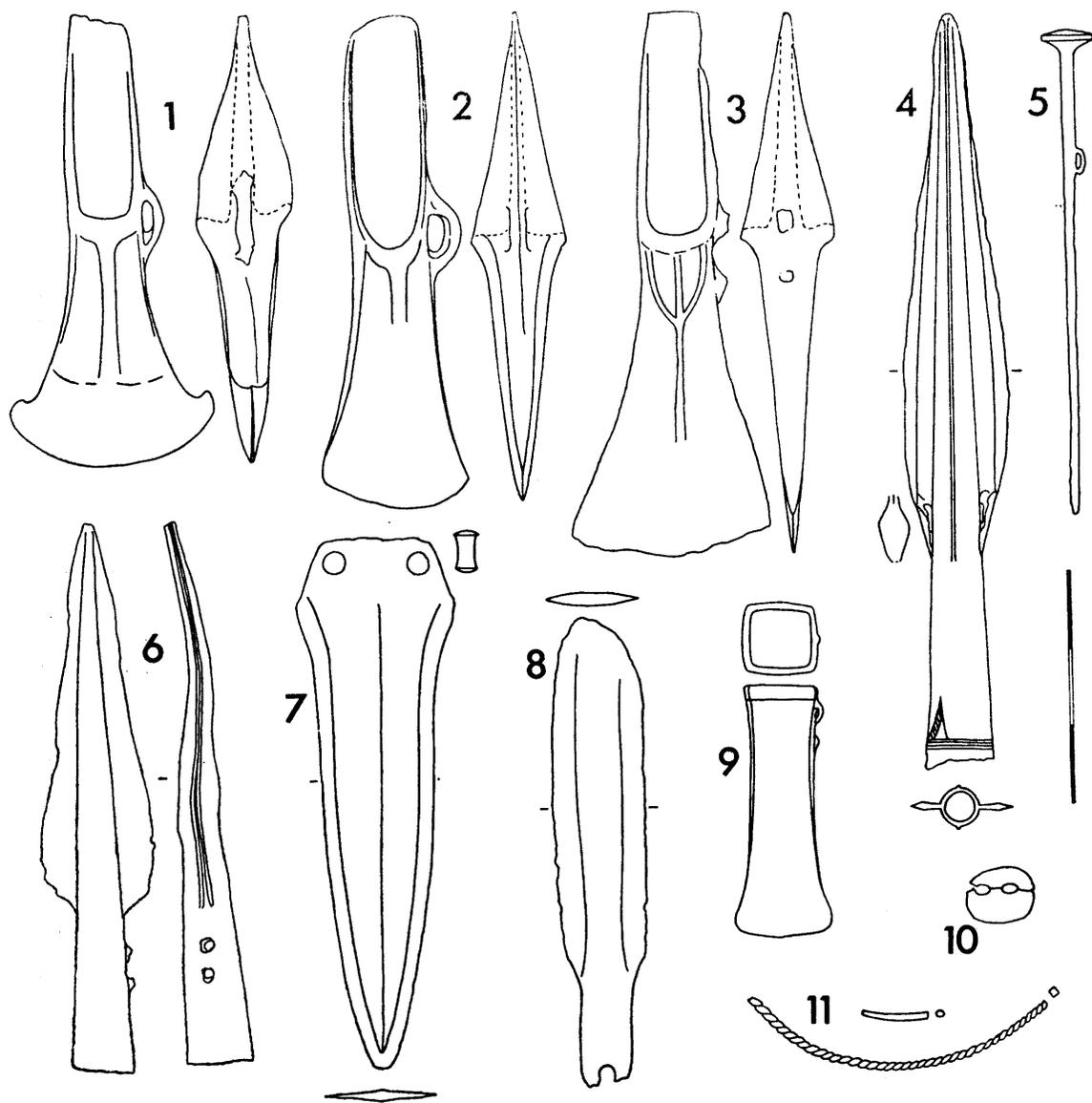


Fig. 7 Middle Bronze Age metalwork (2/5).
 1, Barskeoch; 2, Stair estates (1964-12); 3, Caldonshill (Kelvingrove); 4, 5, 8, 10, 11, Glentool; 6, Greyfriars; 7, Greta; 9, Annan.

palstaves should belong to the centuries after *circa* 1150 B.C. but in south-west Scotland they may have continued well into the first millenium.

Looped palstaves too must have the same range of date. In general these palstaves have straight-sided flanges leading directly to the stop which is often of the shelter-stop, or else the terrace-stop form. Almost all the palstaves of this class are decorated, either by a single rib or a trident variation. The axes are large, most slightly over 6" in length. Sub-classes are characterized by blade shape, and in our region three main forms are present, two with wide blades, the blades being more than twice the width of the axes at the stop. One group has blades with concave sides commonly recurved (fig. 7, 1), the other has straight or convex sides giving a crinoline outline to the axe (fig. 7, 3). Three of the former are known, from Barskeoch, Little Sypland Farm, and Annan, and at least seven of the latter, six from the Caldonshill hoard, the seventh from the Greyfriars, Dumfries, hoard. These associations suggest a time within the centuries after *circa* 1150 B.C., but of uncertain duration. The third form of looped palstave has a narrow blade (fig. 7, 2), and is of the same date.

The second major group of metalwork of the Middle Bronze Age consists of *daggers, dirks and rapiers*. These have recently been studied in two papers by Trump (w, x), although certain Scottish finds are not included in her lists or maps. From Dumfries and Galloway she maps six finds, but there are four or five others from the region. The distinguishing feature of dagger, dirk and rapier is their length, a dagger being less than 8½" from butt to tip, a dirk from 8½" to 14", a rapier over 14" long. Trump's Group I. consists entirely of daggers and dirks showing considerable variations in design and without doubt belonging to a period of experimentation in the development of the two and four-riveted weapons based upon continental forms (x 80, c 114) and dated in general terms to the fourteenth and thirteenth centuries B.C. One from Gretna (fig. 7, 7) is believed to be of Irish manufacture, another from Fairholm, Lockerbie, is less well-defined. But the Arieland Moss dagger seems also to be of Group I. with two notches in addition to the normal two rivet holes (fig. 4, 6). The British-Irish analogues have not yet been adequately studied, but it shows little common features with Early Bronze Age types and must be connected with the phase of local experimentation following the introduction of developed Early Bronze Age forms into Britain, as seen particularly in the late Wessex culture. A rather unusual type of three-riveted tanged dagger, from Low Torrs, also seems hardly to belong to the group of Early Bronze Age daggers noted above, as it has a well-defined midrib and three rivet-holes in the tang. Possibly this blade belongs to a time when midrib daggers and dirks were in use.

Trump considers that by 1200 B.C., distinctive British-Irish rapiers were in regular production, and she has been able to outline various regional groups, of which two are represented in our region. The widespread Chatteris class, rather an undifferentiated class, is composed of rapiers with trapeze-shaped hilts and two rivets, and five of these are known from Dumfries and Galloway, including

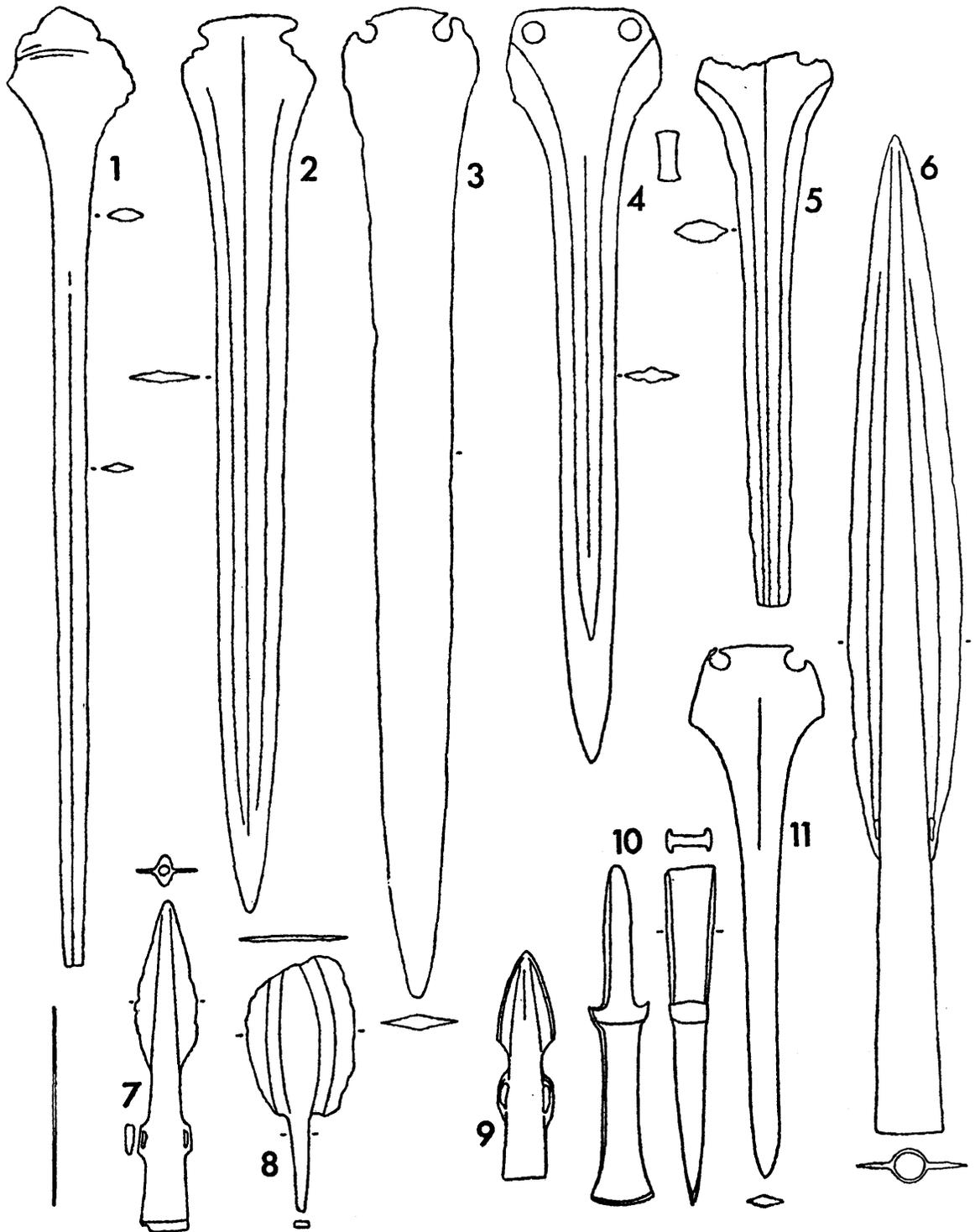


Fig. 8 Middle Bronze Age metalwork (2/5).
 1, Drumcoltran (Thornhill 13); 2, Cree; 3, Newabbey; 4, Nunton; 5, Drumcoltran (Thornhill 14); 6, Fell of Barhullion; 7, Comlongan; 8, Glentroot; 9, Annan; 10, Kirkconnel; 11, Kells.

one in the Glentool hoard (fig. 8, 3, 4, 11). All are considered to be of Irish manufacture, and although it is possible that this view is correct, one hesitates to always assign analogous material to Irish production; Scotland must, after all, have had to give something in exchange for the many objects apparently received, and there is nothing in the archæological record to show what this was. Glentool lies in the centre of the south-west copper ore region, but there is no evidence that these ores were being worked at this early date unless we can correlate the Tonderghie "copper" axes and adjoining ores.

A variant of the trapeze-hilted rapier, called the Thetford class, is also represented in our region in the Drumcoltran hoard where at least seven of this class were found. These rapiers have notches on the butt rather than rivet holes, and a well-defined midrib (fig. 8, 1, 5). Again all of these are considered by Trump to be of Irish manufacture although the relative numbers are not convincing. All of these rapiers, from Drumcoltran, Glentool, and the other sites, are dated to the twelfth century B.C., on the basis of a few associations for certain of the classes, and may lie behind the final period of rapier production in the eleventh century. A dirk from the River Cree (fig. 8, 2) and another from Tynron are the sole examples of this final dirk and rapier phase from the region; their dating seems fairly well established on the basis of associated finds in Britain at the Isle of Axholme, Lincs., and at Downham Fen, Cambs. (x 91).

Associated with a wing-flanged axe and a rapier at Glentool was a *spearhead* with loops at the base of the blade (fig. 7, 4). This type of spearhead has been listed and mapped (f 57, 75ff) but it is still uncertain if it is of Irish, English or local production. Although its associations in Britain suggest a date from *circa* 1200 B.C. (p 179), it must have been in production as early as *circa* 1350 B.C., to be exported to the continent at this time (c 98). Some of these spearheads are very long and may have been, like the protected-loop spearheads, designed for ceremonial use. One from Tinwald was associated with a bronze ring.

The other Middle Bronze Age spearheads are of two main types, both with loops on the socket below the blade, but one with a kite-shaped blade, the other leaf-shaped (f 18, 57). The kite-bladed spearhead, on the basis of distribution, seems to be of Irish manufacture including those from the Annan area (fig. 8, 9). The other type, however, is very common in Scotland and may well represent an alternative regional type (fig. 8, 7). Its associations in the south suggest the closing centuries of the second millenium B.C. (v 180), and to this time the dozen Dumfries and Galloway finds must belong (f 19). An atypical example from the Greyfriars, Dumfries, hoard (fig. 7, 6) was associated with four axes and a typologically earlier spearhead (fig. 4, 3). The latter, as stated, is an Early Bronze Age form belonging to the Arreton tradition in the south (b 289) and dated probably to the fifteenth century B.C. Its association with material of presumed twelfth century age is rather unusual, but so are the circumstances

of the hoard. All the Middle Bronze Age associations are discussed and correlated below.

A considerable range of bronze *chisels* exists in the region. Some of these can be dated either typologically or by association. One from Dungyle, Kelton, is included in the catalogue under Early Bronze Age flat axes by its similarity to the latter. Another, from Blairbuy, has a splayed blade and small loop, like a socketed axe lacking the socket, and, if Bronze Age, should be late within it. A flanged adze-like chisel from Kirkconnel is probably of the Middle Bronze Age by its resemblance to flanged axes (fig. 8, 10). The Glentrool chisels belong to the late Middle Bronze Age by association and the Balneil, New Luce, chisel is of the Early or early Middle Bronze Age by association with a Cordoned Urn, bone crutch pin and quoit faience bead. The Mid Torrs, Glenluce, chisel may have been found with a V-bord jet button. The other chisels cannot be dated with any certainty. Also included as grave goods with Early or Middle Bronze Age urns were three razors, two knife blades, a bronze awl, and a steatite mould for casting either a palstave or an anvil.

One of the outstanding pieces of Bronze Age metalwork from Dumfries and Galloway is the Auchentaggart *gold lunula* (plate IV, right). Such lunulae are rare in Scotland but relatively common in Ireland, so that one presumes that all the North British examples are of Irish gold and manufacture. Although the overall British-Irish distribution of lunulae, jet and amber spacer-plate necklaces is a self-complementary one, the evidence of association suggests that the lunulae and jet necklaces are later than the south English amber necklaces of the Wessex Early Bronze Age and were current *circa* 1350-1250 B.C. (r 100, but see c 179). Although not encompassed by this paper's title, it may be noted that jet beads are quite common in Dumfriesshire and particularly Wigtownshire, consisting mainly of barrel beads, some V-shaped perforated disc buttons, and several necklaces of disc beads with triangular toggle. Both barrel and disc beads are probably roughly contemporary with the lunulae.

The only other gold object known from the Middle Bronze Age in the region is the now lost fragment of a triangular-sectioned bar *torc*, which had recurved ends of oblong section. From the description of this in 1885, it appears to have belonged to the late Middle Bronze Age gold *torc* groups, sometimes called Tara *torcs* (t 6, 58), although Eogan distinguishes two main types within the bar *torc* group (j 281). By rather limited associations, such *torcs* as the Stoneykirk example should belong to the eleventh or tenth century B.C.

Associated groups of material are the best guide for chronology, and from the Middle Bronze Age we are fortunate in having five such assemblages:—

			wing-flanged axe	unlooped palstave	looped palstave Caldonshill type	rapier	looped spearheads	other metal objects
Balcarry ...	...	...	3					
Caldonshill	...	...	1	1	6			
Greyfriars	...	...		2	1		1	2
Drumcoltran	...	...				10		
Glentroot	...	...	1			1	1	10

Of these, two consist of bronzes of uniform type, Balcarry with three wing-flanged axes, Drumcoltran with about ten Thetford class rapiers (fig. 8, 1, 5). Their position within the Middle Bronze Age depends upon other associated finds containing both their own types and other material. Balcarry should be roughly contemporary with the Caldonshill and Glentroot hoards through their common axe class, and Drumcoltran too should fall generally within this phase because of its sharing with Glentroot of Group II rapiers although these are of different classes. As can be seen from the table, the Greyfriars hoard has two links with Caldonshill in their unlooped and looped palstaves, and so should be contemporary through Caldonshill with Glentroot. The elements within all these hoards that provide firm dating evidence are the looped Caldonshill-type palstaves, and several of the components of the Glentroot hoard.

These palstaves are of a type that is found in hoards in the south and east of England, and are dated through associations of the twelfth and eleventh centuries B.C. (v 167, c 218). Such a date is suggested by the appearance in these associated finds of objects, mainly decorative, directly stemming from north-eastern Germany, where they belong to Period III of the North European Bronze Age (c 218). The Caldonshill palstaves then presumably represent contact between south-west Scotland and southern England at a time when the latter was in receipt of new continental elements. That some of these elements penetrated to our region is shown by the Glentroot hoard and by a stray find from Annan (fig. 7, 9). This is a *socketed axe* of north German form (the Hademarschen type), which was locally copied (the Taunton type) so that both closely-similar styles are present in Britain. The Annan axe seems to be of the continental type (f 17, c 75, 268).

The Glentool hoard possesses a wing-flanged axe (fig. 6, 5), a basal-looped spearhead (fig. 7, 4), a rapier, a tanged knife and two razors, part of a bronze necklet and a looped pin, four chisels or punches, a bronze pendant (fig. 7, 10), one blue glass and a dozen amber beads (f 18, 113-4). The *tanged knife* (fig. 7, 8) is duplicated in the Monkswood, Somerset, hoard which belongs to the "Ornament Horizon" of the twelfth and eleventh centuries B.C. (v 144ff). Tanged bifid *razors* first appear in late Middle Bronze Age contexts in southern England (v 158) and the Glentool examples (fig. 8, 8), typologically of transitional type between the Middle Bronze Age Class I and the bifid Class II razors, also have analogues in the south (f 47). The twisted bar *necklet* (fig. 7, 11) also has south English relations, principally in the Somerset area, but all of these are believed to have been derived ultimately from Denmark and Schleswig-Holstein in Period III times (c 137, 271). The *pin* from Glentool has a flattened head and a stem-loop (fig. 7, 5). Such a form is unique in Britain, but there are two others known from Ireland; a small group in East Germany, of Period II and III age, probably lie behind the Glentool and Irish finds (f 18, c 148, 271). The other objects in the Glentool hoard are not important for dating purposes, other than the glass bead which seems to support a date nearer 1200 B.C. than 1000 B.C. (d 102), but the amber beads remind us again of the north European area. Taken as a group, the Glentool assemblage must date to the twelfth or eleventh century B.C., and this also must be the approximate date of the other hoards described above.

IV—LATE BRONZE AGE METALWORK (fig. 9)

There are four major groups of material of the Late Bronze Age in Dumfries and Galloway. These are socketed axes, swords, spearheads, and gold objects. In addition, a number of finds of other metal types are known. The earliest known *socketed axe* from the region, and from Scotland, is the Annan axe of the Middle Bronze Age. There is one other axe, however, that also must belong to a time preceding the appearance and development of purely native British and Irish forms. This is the Carse Loch axe (fig. 10, 1) which is a Scandinavian type of Period IV, of the tenth and ninth centuries B.C., and which may have played a part in the development of certain ribbed axes of the developed Late Bronze Age in Britain (f 26, c 91). These axes, generally with three ribs pendant from either the moulded mouth or a second and thinner moulding below the mouth, are fairly common over much of North Britain and Ireland, and regional groups have been distinguished (f 26-7 with refs.). From Dumfries and Galloway, of five ribbed axes, four seem to belong to the Yorkshire group, with double moulding at the socket mouth (fig. 10, 3), while the Genoch, Inch, axe may belong to the Welsh group, with only one heavy mouth moulding and loop springing from this, rather than from below (fig. 10, 8).

Allied to these simple ribbed axes, including less typical examples (fig. 10, 9),

are those with rib-and-pellet or rib-and-circle decoration. Most of the Scottish decorated axes have splayed blades reminiscent of the Irish form rather than the south English form which normally has a narrower blade. Of two such axes in our region, the Knock and Maize specimen (fig. 10, 6) shows quite remarkable stylistic similarities with an axe from Edenmore, Co. Donegal, and the Annan axe is also more elaborate than usual (f 36-7).

A third group of socketed axes consists of those with near-rectangular sections. This form, with heavy moulded mouth and thinner moulding below, to which the upper arm of the loop joins (fig. 10, 2), is common in western Europe, and, of course, the Yorkshire type ribbed axes described above are merely an ornamented version of the basic form. Plain axes of this group, the rectangular-sectioned axes, are not very common in Scotland, but two occur in our region as well as a number of presumably local versions (fig. 10, 4) bearing unmistakable relations with the basic type (f 31). One of these, from Annan, may also be related to a group of multi-moulded axes found principally in north-eastern Scotland (f 45).

Another type of socketed axe, the faceted type, can be sub-divided into two major forms, the broad hexagonal-sectioned and the narrow octagonal-sectioned forms (j 293, c 86). No complete study of these has been made, and there are two suggested sources, south-eastern England and Ireland. The Dumfries and Galloway finds are all of octagonal-section with wide circular mouth (fig. 10, 5) and form an outlier to the main east Scottish distribution

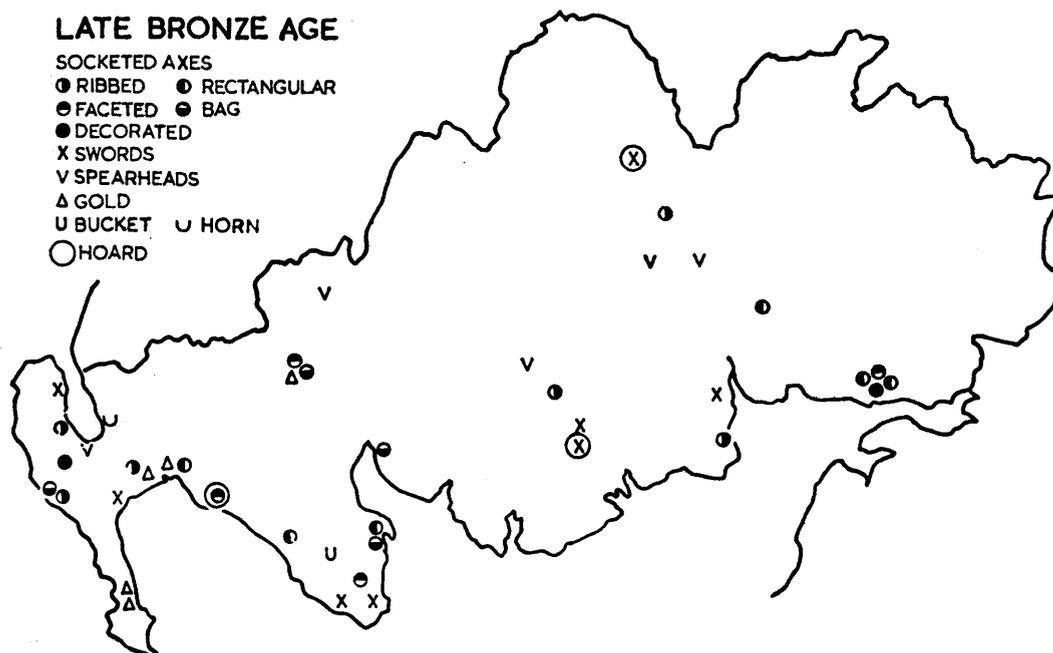


Fig. 9 Late Bronze Age metalwork.

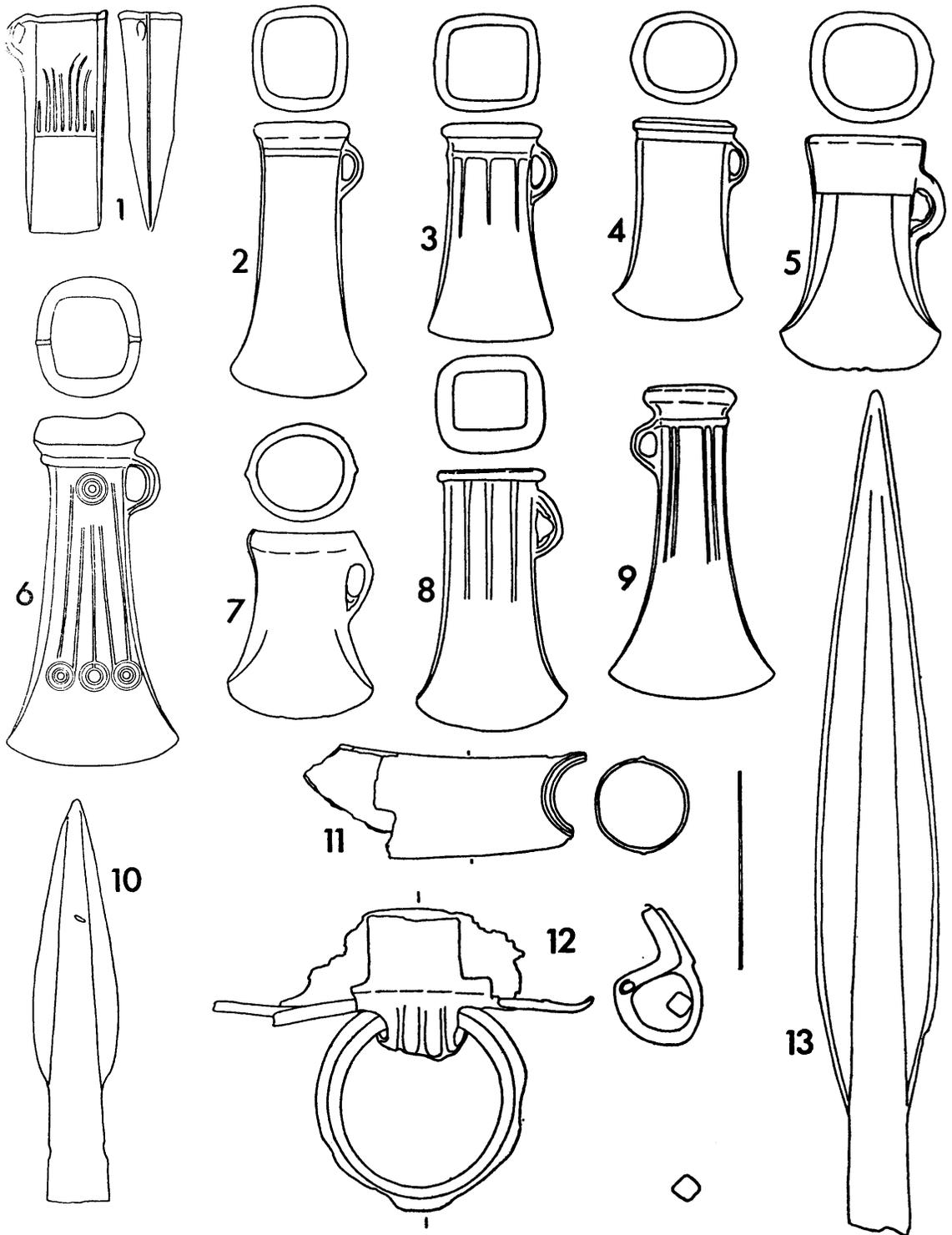


Fig. 10 Late Bronze Age metalwork (2/5).

1, Carse Loch; 2, Annan; 3, Kilmotrie; 4, Derry; 5, Annan; 6, Knock and Maize; 7, Kevans; 8, Genoch; 9, Auchencairn; 10, Balmaclellan; 11, Inermessan; 12, Dowalton Loch; 13, Dunscore.

(f 32, 59). Three were found together at Gillespie, of which two seem to have come from the same mould.

Of undoubted Irish origin is the bag-shaped axe, with oval mouth end section, and widely splayed blade (fig. 10, 7). The Scottish distribution points to two main areas where these axes were employed, south-western Scotland and the Laich of Moray, although local copies were extensively used in the east (f 33, 60). Other than the Carse Loch axe which must have been manufactured in the tenth or ninth centuries, the ribbed, rectangular-sectioned, faceted and bag-shaped axes cannot be dated with certainty to a time earlier than the mid-eighth century B.C. All of their associations in Scottish hoards belong to the Duddingston phase or later, a phase marked by the appearance in Scotland of some few founders' hoards of scrap metal, and of almost all of the developed forms of Late Bronze Age metalwork (f 53-4).

The bronze *swords* from south-west Scotland also date from this phase. All belong to the Ewart Park type, which developed out of the preceding British leaf-bladed swords of the ninth century B.C., although the sub-stages, if any, of this process have not yet been documented. The Irish equivalent to the Ewart Park sword is Eogan's Class 4 (j 293). These swords are generally rather short, with simple curved blade section, with shoulders not particularly angular in outline, and with only a small number of rivets attaching the organic hilt. It is uncertain if the Dumfries and Galloway swords belong to an Irish or British group. They are not very common in southern Scotland, except near Edinburgh (e 185). Two, now lost, were found together near Drumlanrig, and one from Kelton was associated with a bronze ring, perhaps part of a sword-belt. Typologically, a sword from Carlinwark Loch (fig. 11, 2) seems to be the earliest form in the area, with nine rivet holes in the angular shoulders and hilt marked in casting, although only five of these were subsequently drilled out. Another

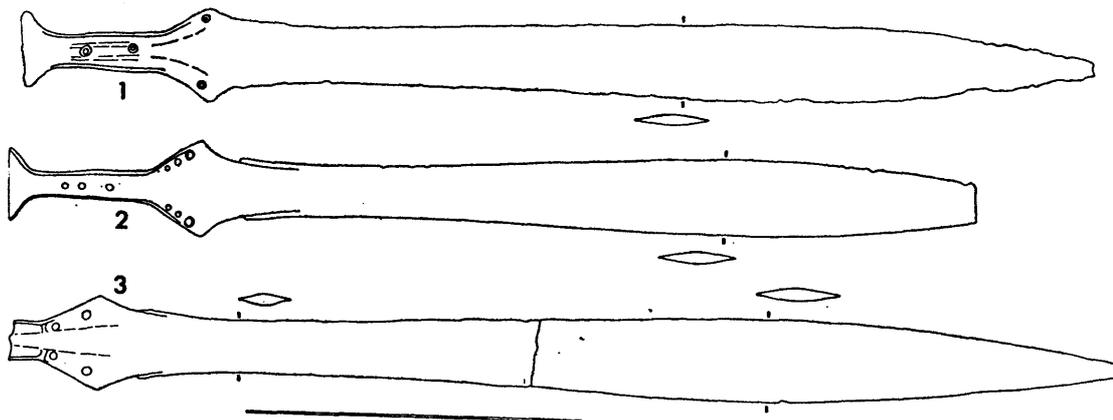


Fig. 11 Late Bronze Age metalwork (4).
1, Glenluce; 2, Carlinwark; 3, Dowies Burn.

variety, with less accentuated shoulders, is represented by the Dowies Burn sword (fig. 11, 3), and a late form, with slackened outline and fewer rivetholes, by the Glenluce sword (fig. 11, 1) and the remade Felhaar sword.

Spearheads without loops are not common in Dumfries and Galloway, particularly in relation to the earlier looped varieties. There are about twenty looped spearheads compared to only eight of the leaf-bladed riveted type. The Late Bronze Age spearheads range in length from about 4½" to over 12", and it has been suggested that different functions were performed by these extremes. Most of the spearheads from the region are of the common type with rather slender leaf-shaped blade and socket of circular section (fig. 10, 10, 13); their associations elsewhere in Scotland do not extend earlier than the mid-eighth century (f 61, 75). No certain ferrules are known from the region; the Torrs ferrule is not now considered to be of the Bronze Age (f 81).

Other Late Bronze objects from Dumfries and Galloway include the bronze *ring* from Kelton, found with a sword, the ring and staple of a beaten bronze *bucket* from Dowalton Loch, and part of a cast bronze horn from Innermessan. The bucket fragments (fig. 10, 12), not included by Hawkes and Smith in their important paper on British-Irish metal vessels, are comparable to the Duddingston Loch bucket remains and date from the late eighth century B.C. (m 189). It is possible that the Dowalton bucket came from a crannog in the Loch. The side-blow *horn* from Innermessan (fig. 10, 11) is unfortunately incomplete so that it is impossible to determine to which typological class of Irish Bronze Age horn it belongs (g 354); that it was made in Ireland seems incontestable, as there is only one other documented British find compared with something over one hundred known Irish horns. We may presume, on the basis of intact side-blow horns, that the note it produced was somewhere between g and d'.

Other Irish connections are evident in the type and distribution of *gold ornaments*. Of provenanced finds in the region, western Wigtownshire has a majority, while for Scotland as a whole, it is significant that only in the east do bronze copies of gold objects appear (f 62). The forms represented in Galloway include a "*lock-ring*" from Glenluce, consisting of a penannular construction of sheet gold with hollow triangular section and decorated with longitudinal flutings. This may be dated to the centuries from about 750 B.C. (f 35). One piece of *ring-money* is known from Galloway; this is a small penannular rod of bronze covered over with gold leaf (plate IV, left). The type is again Irish, and Scotland seems to have received more than its share of base-metal-cored objects of this type, whatever its use (f 91). *Penannular armlets* are another Irish gold form, and generally are round-sectioned with terminals evenly expanded. Two unexpanded armlets were found in a cairn at Penninghame (plate IV, left), and there are two or three other finds from the south-west (f 34, 62). One from Galloway may have had its terminals expanded only outwards, in which case it would belong to a very limited group of gold armlets of Covesea type (f 39, 93) and be not earlier than *circa* 700 B.C. on the basis of associated material in north-

east Scotland. Another Irish form, the gold "*cloak-fastener*," is represented in Galloway by three examples, only one of which has survived (plate IV, left). The shape of these objects has been described as like a drawer-handle; they have trumpet-like expanded terminals set nearly in one plane and are predominantly an Irish type of the centuries from *circa* 750 B.C. (n 217, 218).

V—BRONZE AGE METALWORK: SUMMARY AND CONCLUSIONS

The earliest metalwork in Dumfries and Galloway seems to be the Beaker-related broad butt flat axes and the tanged dagger, all of which come from Wigtownshire and are probably of Irish manufacture. They perhaps belong to the seventeenth and sixteenth centuries B.C., although potentially the axes in particular might be even older than this. These finds represent the introduction of metal and metal-working into south-west Scotland. There is as yet no evidence that the local copper ores were worked at this time, and it is unfortunate that the Tonderghie hoard is not available for analysis.

Following this phase there developed a quite highly-specialized metal industry in Scotland, documented by a number of hoards and moulds in the north-east, which undoubtedly contributed to the appearance in the south-west of a number of narrow butt flat axes and hammer-flanged axes. A few of these are decorated and may represent Irish influence although it is of course also possible that such decoration was executed locally. The two halberds from our region may also have been made in Scotland; one certainly does not seem to be of standard Irish type. The axes and halberds were probably current in Britain from *circa* 1650-1350 B.C., and the riveted knife-daggers should also be of this date. The low-flanged axes, again occasionally decorated, belong to a later tradition in Britain, and their normal range should be from *circa* 1550-1350 B.C.

It is obvious that there is no precise moment when Early gives way to Middle Bronze Age, and the preceding types undoubtedly continued in use into the late second millenium B.C. A number of such early types have in fact been found in Late Bronze hoards, such as a halberd with socketed axes in Norfolk, and a reputedly similar association in Islay, Argyll. The process of development does not operate at a constant rate, so that we should expect to find considerable overlapping in time between earlier and later forms. The Greyfriars, Dumfries, hoard, containing an Early Bronze Age spearhead and late Middle Bronze Age axes, may not represent the collection of old metal for scrap, the explanation for the Norfolk and other hoards, but may in fact demonstrate the contemporaneity of typologically chronologically distinct forms.

It has been shown that Middle Bronze Age metalwork is relatively more common in Dumfries and Galloway than in other regions of Scotland and England. However, far from supporting Childe's suggestion of a retarded and unprogressive people, it seems equally as possible that the nature of the Middle Bronze Age metalwork available was such as to delay the introduction, or at

least the adoption, of the new forms of the Late Bronze Age. Recent work on the Irish later Bronze Age material has also demonstrated that, in terms of the south English sequence, the early phase of the Late Bronze Age is very poorly represented, and that the preceding phase, the late Middle Bronze Age, was one of outstanding technological and typological advances. It therefore may be true to say that the nature and quality of the early Late Bronze Age equipment, as much as its quantity, was responsible for the prolongation of typologically earlier forms in Ireland as in Scotland. It is becoming evident that the framework of the Bronze Age for southern England is hardly suitable for the north, and that even the broad divisions do not apply.

Typologically the dagger from Gretna, the Auchentaggart lunula, and certain of the haft-flanged axes, are the earliest evidence of Middle Bronze Age metalwork in Dumfries and Galloway. All of these may have been in production by *circa* 1400 B.C., and it is probable that some basal-looped spearheads were also in use by this time, as some were exported to the continent in the fourteenth century and later (c 98). Their associations in Britain belong to the twelfth and eleventh centuries. Presumably the other looped spearheads belong to this general time range as well. The rapiers from Glentroul and Drumcoltran, the Annan socketed axe, the wing-flanged axes and the palstaves from Caldonshill and other sites seem to be firmly dated to these last two centuries of the second millenium B.C. The River Cree rapier and the gold torc from Stoneykirk, by association and typology, probably are of the eleventh century.

The main division in the Bronze Age seems to come, not between Early and Middle, nor Middle and Late, but within the Middle Bronze Age, at 1200 B.C., when new important features make their first appearance. These include the socketed axe, the wing-flanged axe and looped palstave, and the developed forms of rapier. In Ireland the innovations are even more notable and include many new gold ornaments as well as technological advances (j 285). The Glentroul hoard and the Annan axe show that south-west Scotland also participated in the new developments, stemming ultimately from northern Europe, but perhaps immediately from Ireland and south-west England.

Perhaps one of the more interesting aspects of this study is the demonstration of the degree of Irish influence that was exerted upon Galloway and, to a far less degree, Dumfriesshire. Broad butt flat axes and the later decorated axes, possibly the halberds, mark this influence in the earlier Bronze Age, but the major period of contact and trade seems to have been the Middle Bronze Age, bringing certain haft-flanged and wing-flanged axes, dirks and rapiers, some looped spearheads and gold ornaments to the region. The partial dependence upon Irish sources continued through the Late Bronze Age, as shown by bag-shaped axes and gold in Wigtownshire, although a majority of finds of this period are probably derived from other sources. The region must always have had to rely upon outside sources for some raw materials, if not copper and gold, both of which were available locally (although not necessarily worked), then certainly tin which might have been of Cornish or continental origin (r 89).

Late Bronze Age metalwork is relatively poorly represented in Dumfries and Galloway, and there is only one find, the Carse Loch axe, that can be dated earlier than the eighth century B.C. with any justification. Short of postulating a depopulation of the region, and all of Scotland too, we can only assume that the developed Middle Bronze Age forms, the winged axe and palstave, the rapier, the looped spearhead, continued in production and use from the twelfth to the eighth century B.C. One association, from Corsbie Moss, Berwickshire, shows that the looped kite-bladed spearhead continued in use to be associated with a ninth century sword (f 21, 107). There are only a few Scottish finds that can be grouped as an initial phase of the Late Bronze Age, from *circa* 900 B.C. (f 54), and most of the others are dated from the mid-eighth century. This is the initial date for socketed axes of all types except those noted above, for most Scottish swords and unlooped spearheads, and for finds of Irish gold ornaments. Several of the swords from Dumfries and Galloway may belong, on typological grounds only, to the earlier eighth century.

The terminal date of the Late Bronze Age in the region depends upon the appearance of iron-using communities, and while there is no evidence for any of the specialized later phases of the Late Bronze Age (Covesea: 700 B.C., Adabrock: 600 B.C., Tarves: 500 B.C. (f 54)), without doubt the general forms of weapons and tools continued to be made and used up to their replacement by iron objects, perhaps as early as the third or second century B.C., perhaps even later. A similar situation existed in Ireland, where the Dark Age of pre-history is the later first millenium B.C. (j 323).

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VI—CATALOGUE

Notes: This is arranged by periods, Copper and Early Bronze Age, Middle Bronze Age, and Late Bronze Age, followed by a list of metal objects that are of uncertain type or age.

Divergencies between the overall Bronze Age map (fig. 1) and the detailed period maps (figs. 2, 5, 9) are due to the inclusion on the former of objects that may be assigned without difficulty to a general period, but are excluded from the more detailed maps because of uncertain type, e.g., Innermessan socketed axe of unknown type but almost certainly of the Late Bronze Age.

Abbreviations used in the Catalogue and Bibliography:

Museum:

BM British Museum
NMA National Museum of Antiquities of Scotland

Reference:

Ayr & Wigt. **Archæological and Historical Collections relating to the counties of Ayr and Wigtown**
Evans J. Evans, **Ancient Bronze Implements . . .** (1881)
PPS **Proceedings of the Prehistoric Society**
PSAS **Proceedings of the Society of Antiquaries of Scotland**
TDG **Transactions and Journal of Proceedings, Dumfriesshire and Galloway Natural History and Antiquarian Society**
Wilson D. Wilson, **Prehistoric Annals of Scotland** (1863)

COPPER AND EARLY BRONZE AGE

Site	References	Museum	Type
Flat and Low-flanged Axes			
Applegarth, D	Evans fig. 25	NMA DC 22	low-flanged, decorated
Brockhillstone, D	PSAS lix 1924-5 234	NMA DA 88	narrow butt
nr. Drumlanrig, D	Evans fig. 19	Ashmolean 1927. 2712	narrow butt
Hayfield Farm, Kirkpatrick-Fleming, D	TDG xxvi 1947-8 124	Dumfries	hammer-flanged
Newfield, D		Dumfries	narrow butt
South Cowshaw Farm, Tinwald, D	PSAS lx 1925-6 31		
Steilston, D		Dumfries	hammer-flanged, decorated
Trohoughton, D		Dumfries	narrow butt
Airds, New Abbey, K	PSAS xxx 1895-6 313	NMA DA 65	narrow butt
? Balmaclellan, K		A. Shaw, Balmaclellan	
Barwhillantry Hill, K		Kirkcudbright 2594	low-flanged
Barclay Farm, Colvend, K		Kirkcudbright 3836	hammer-flanged
Nr. Brockloch, Carsphairn, K	PSAS lxxviii 1933-4 352	NMA DA 99	narrow butt
Drum Farm, Lochrutton, K		Dumfries	narrow butt
Nr. Dungyle, Kelton, K	TDG xxvii 1948-9 206		narrow butt
Gilsburn, Holm of Dalquhairn, K		A. Anderson, Eskdalemuir	narrow butt
Mainshead of Terregles, K	PSAS xxxii 1897-8 244	NMA DA 67	hammer-flanged, decorated
Barrach, Mochrum, W	PSAS xiv 1879-80 131	NMA DA 1	broad butt
Boreland Farm, Inch, W		Stranraer 1964-8	narrow butt
Boreland Farm, Inch, W		Stranraer 1964-9	narrow butt
Corsewall, Loch Ryan, W	PSAS ii 1854-7 305	Earl of Stair	
Nr. Craigcaffie, W	PSAS xii 1877-8 570		
Drumdoch, Inch, W		Kelvingrove	narrow butt
Innermessan, Inch, W	PSAS xiv 1879-80 131	Stranraer 1964-10	narrow butt
Isle of Whithorn, W	PSAS xxi 1886-7 194		
Kevans, Whithorn, W	PSAS ii 1854-7 307	NMA DA 47	hammer-flanged, decorated
Knock and Maize, Leswalt, W	PSAS xiv 1879-80 130	Stranraer 1964-7	broad butt
Low Glenstockdale, W	TDG xxvi 1947-8 124	Stranraer 1947-1	hammer-flanged, decorated
Low Glenstockdale, W		Stranraer 1947-2	hammer-flanged
Cree Moss, Penninghame, W.	PSAS xiv 1879-80 130	NMA DA 35	narrow butt
? Port William, W		Miss Selby, Port William	
nr. Stranraer, W		St. Albans	narrow butt
? nr. Stranraer, W	Ayr and Wigt. ii 1880 6		melted down
Tonderghie, W	PPS xxix 1963 311		six broad butt axes
Stair Estates		Stranraer 1964-11	narrow butt

Copper and Early Bronze Age—(Contd.)

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Site	References	Museum	Type
Daggers			
Carlochan Cairn, Crossmichael, K	PSAS xxxi 1896-7 184	NMA DI 3	
Dunragit, Glenluce, W	PSAS lxvi 1931-2 19	NMA DI 7	
Mid Torrs, Glenluce, W	PSAS xiv 1879-80 137	NMA BH	
Halberds			
Whiteleys Moss, Stranraer, W Galloway	PSAS vii 1866-8 423 PSAS viii 1868-70 33	NMA DJ 1 NMA DJ 5	
Spearheads			
Comlongon Castle, D Greyfriars' Church, Dumfries	PSAS lx 1925-6 27	Ashmolean 1927. 2721 Dumfries (cast)	

MIDDLE BRONZE AGE

Site	References	Museum	Type
Flanged axes			
nr. Annan, D	PSAS lv 1920-1 11	NMA DC 98	looped palstave
Birrenswark, D	PSAS xxii 1887-8 390	NMA L 1933. 2110	haft flanged
nr. Birrenswark, D	TDG xi 1923-4 108	NMA DC 27	haft flanged
nr. Birrenswark, D	TDG xi 1923-4 108	NMA L 1933. 2109	haft flanged
Canonbie, D	PSAS xix 1884-5 163	NMA DC 52	haft flanged
Greyfriars' Church, Dumfries, D	PSAS lx 1925-6 27; TDG xi	Dumfries 9018	haft flanged
Greyfriars' Church, Dumfries, D	1923-4 108; TDG xxvi	Dumfries 9014	palstave
Greyfriars' Church, Dumfries, D	1947-8 123	Dumfries 9017	palstave
Greyfriars' Church, Dumfries, D		Dumfries 9015	looped palstave
Kirkless, Durrisdeer, D	PSAS xxii 1887-8 376	Thornhill 2	haft flanged
Mouswald, D	TDG vi 1887-90 213	NMA DC 63	haft flanged
Park of Closeburn, D	PSAS xxii 1887-8 376	Thornhill 4	haft flanged
Raeburn Bog, Eskdale, D	PSAS xxii 1887-8 376	Thornhill 1	haft flanged
Springfield Hill, Dunscore, D	PSAS lx 1925-6 31	NMA DC 109	haft flanged
Townfoot Loch, Closeburn, D	PSAS xxii 1887-8 376	Thornhill 3	haft flanged
Cairnsmore of Fleet, K	TDG x 1921-2 223	Dumfries 52	wing flanged
Dalry, K	PSAS vi 1864-6 332	NMA DC 33	haft flanged
Drigmorn, Minnigaff, K	PSAS xxxviii 1904-5 117	NMA DC 83	haft flanged
Glentrool, K	PSAS xciii 1959-60 113	NMA DQ 240	wing flanged
Kilnotrie, Crossmichael, K	TDG xv 1898-9 35	NMA DC 17	palstave

BRONZE AGE METALWORK IN DUMFRIES AND GALLOWAY

Middle Bronze Age—(Contd.)

Site	References	Museum	Type
Little Sypland Farm, K		Kirkcudbright 3244	looped palstave
Millpool Farm, Kirkpatrick-Durham, K	PSAS xlvi 1911-12 179		haft flanged
River Dee, nr. Hensol, K	PSAS xlv 1910-1 223		—
Balcarry Farm, Old Luce, W	PSAS xiv 1879-80 131	BM 75.11-13.1	wing flanged
Balcarry Farm, Old Luce, W	PSAS xiv 1879-80 131	BM 75.11-13.2	wing flanged
Balcarry Farm, Old Luce, W	PSAS xiv 1879-80 131	BM 75.11-13.3	wing flanged
Barhullion, Glasserton, W	PSAS xiv 1879-80 131	NMA DC 60	haft flanged
Barr, Penninghame, W	PSAS xxiii 1888-9 150	NMA DC 58	haft flanged
Barskeoch Moss, Kirkcowan, W	TDG xxvi 1947-8 124	Dundee	looped palstave
Caldonshill, Stoneykirk, W	PSAS xl 1905-6 11	NMA DQ 206	looped palstave
Caldonshill, Stoneykirk, W	PSAS xl 1905-6 11	NMA DQ 207	looped palstave
Caldonshill, Stoneykirk, W	PSAS xl 1905-6 11	NMA DQ 208	looped palstave
Caldonshill, Stoneykirk, W	PSAS xl 1905-6 11	NMA DQ 209	wing-flanged
Caldonshill, Stoneykirk, W	PSAS xl 1905-6 11	NMA DQ 210	palstave
Caldonshill, Stoneykirk, W		Kelvingrove	looped palstave
Caldonshill, Stoneykirk, W	PSAS lxiv 1929-30 297		looped palstave
Culnoag, Sorbie, W	PSAS xxiii 1888-9 150	NMA DC 61	looped palstave
Derry, Kirkcowan, W		NMA DC 59	haft flanged
Genoch, Inch, W	PSAS xxxv 1900-1 12	NMA DC 79	palstave
Glasserton, W		Hunterian B 1914. 276	haft flanged
Innernessan, W	PSAS xlvi 1911-2 90	NMA DC 95	haft flanged
prob. Caldonshill, W		Mann Coll.	looped palstave
? nr. Stranraer	Ayr and Wigt. ii 1880 8		—
? Wigtownshire		Stranraer 1951-18	looped palstave
Stair Estates		Stranraer 1964-12	looped palstave
Stair Estates		Stranraer 1964-13	haft flanged
Stair Estates		Stranraer 1964-15	haft flanged
Socketed Axe			
Annan, D	PSAS lv 1920-1 11	NMA DE 80	
Daggers, Dirks and Rapiers			Group
Fairholm, Lockerbie, D	PSAS lxii 1927-8 142	NMA DJ 17	I
Gretna, D	PSAS xiv 1879-80 96	NMA DJ 22	I
Maqueston, Tynron, D	PSAS lxi 1926-7 163	Dumfries	III
Arieland Moss, Kelton, K	PSAS lxxxii 1947-8 321	NMA DJ 41	?I
Dalbeattie, K	Evans 252	BM WG 1236	II
Drumcoltran, K	PSAS xxvii 1892-3 105	NMA DQ 319	II

Middle Bronze Age—(Contd.)

Site	References	Museum	Group
Drumcoltran, K	PSAS xxvii 1892-3 105	NMA DQ 320	II
Drumcoltran, K		NMA DJ 30	II
Drumcoltran, K		Thornhill 12	II
Drumcoltran, K		Thornhill 13	II
Drumcoltran, K		Thornhill 14	II
Drumcoltran, K		Kirkcudbright 2870	II
Drumcoltran, K	PSAS xlviii 1913-4 333		
Drumcoltran, K		taken to America	(two rapiers)
Glentool, K	PSAS lv 1920-1 13	NMA DQ 238	II
Kells, K		Kirkcudbright 844	II
Kells, K		Kirkcudbright 844A	II
Lower Nunton Farm, nr. Doon Bay, K		Kirkcudbright 5092	II
New Abbey, K		Dumfries	II
River Cree, K	PSAS lvii 1922-3 138	NMA DJ 29	III
Low Torrs, Glenluce, W		St. Albans	
Class			
Spearheads, looped			
nr. Annan, D	PSAS lv 1920-1 12	NMA DG 83	III (kite blade)
nr. Annan, D	PSAS lv 1920-1 11	NMA DG 82	III
nr. Annan, D	PSAS lv 1920-1 11	NMA DG 81	III
Comlongon Castle, D		Ashmolean 1927.2722	IV (leaf blade)
Caerlaverock, D	PSAS xxii 1887-8 376	Thornhill 9	IV
Fairholme, Lockerbie, D	Evans 322	BM 71.12.19.1	IV
Greyfriars' Church, Dumfries	PSAS lx 1925-6 27	Dumfries (cast)	IV
Tinwald, D	PSAS xxii 1887-8 376	Thornhill 10	III A (basal loop)
Barend Moss, Balmaghie, K	PSAS xxii 1887-8 399	Kirkcudbright 448	IV
Glenkens, K	Archaeologia x 1792 480		IV
Glentool, K	PSAS lv 1920-1 29	NMA DQ 239	III A
Kells, K	PSAS xxii 1887-8 399	Kirkcudbright 845	IV
Rerrick Parish, K	PSAS xxii 1887-8 399	Kirkcudbright 510	IV
Spearford Bridge, K	PSAS xxii 1887-8 376	Thornhill 8	IV
Balgown Moss, Kirkcolm, W	PSAS xvii 1882-3 283	NMA DG 47	IV
Fell of Barhullion, Glasserton, W	PSAS xiv 1879-80 113	NMA DG 52	III A
Merton Hall, Penninghame, W	PSAS xiv 1879-80 137	NMA DG 19	III A
Stranraer, W		St Albans	IV

Middle Bronze Age—(Contd.)

Site	References	Museum	Class	Remarks
Gold Lunula Auchentaggart, Sanquhar, D	PSAS xiv 1879-80 174	NMA FE 3		
Gold Torc Stoneykirk, W	Ayr and Gall. v 1885 38		(uncertain)	
Razors				
Shuttlefield, Lockerbie, D	PSAS xiv 1879-80 280	NMA	I	
Glentroot, K	PSAS lv 1920-1 29	NMA DQ 242	I/II	
Glentroot, K	PSAS lv 1920-1 29	NMA DQ 250	I/II	
Sandmill Farm, Stranraer, W	PSAS lxxvi 1941-2 79	NMA EQ 487	I	
Galloway	PSAS xxviii 1893-4 239	NMA DI 6	I	
Chisels (not all of the Middle Bronze Age, but grouped here)				
nr. Picts' Dyke, Kirkconnel, D	PSAS lxii 1927-8 150	NMA DO 39 (cast)		flanged adze
Glentroot, K	PSAS lv 1920-1 29	NMA DQ 244		rect. section
Glentroot, K	PSAS lv 1920-1 29	NMA DQ 245		rect. section
Glentroot, K	PSAS lv 1920-1 29	NMA DQ 246		rect. section
Glentroot, K	PSAS lv 1920-1 29	NMA DQ 247		rect. section
Munches Hill, Buittle, K	T. Dumf. and Gall. 1896-7 29			
Balneil, New Luce, W	PSAS I 1915-6 302	NMA EQ		tanged; crem.
Blairbuy, W	PSAS xxiii 1888-9 221	NMA DE 51		looped
Glenluce, W	PSAS xxi 1886-7 193	Kelvingrove 1931.647		tanged
Mid Torrs, Glenluce, W	PSAS xv 1880-1 269	NMA BH		flat; grave?
Miscellaneous				
Glentroot, K	PSAS lv 1920-1 29	NMA DQ 243		looped pin
Glentroot, K	PSAS lv 1920-1 29	NMA DQ 241		tanged knife
Glentroot, K	PSAS lv 1920-1 29	NMA DQ 254		bronze plate
Glentroot, K	PSAS lv 1920-1 29	NMA DQ 248		twisted bronze bar
Glentroot, K	PSAS lv 1920-1 29	NMA DQ 251		glass bead
Glentroot, K	PSAS lv 1920-1 29	NMA DQ 249 and 255		amber beads
Mid Torrs, Glenluce, W	PSAS xxii 1887-8 67	NMA EQ 201		knife; grave
Genoch, W		Ayr		awl; urn
Tinwald, D	PSAS xxii 1887-8 376	Thornhill 11		bronze ring
Low Glengyre Farm, Kirkcolm, W	PSAS lvii 1922-3 98	NMA CM 29		steatite mould; grave
Kirkburn, Lockerbie, D	PSAS xcvi 1962-3 (1965)	NMA		two blades; urns

LATE BRONZE AGE

Site	References	Museum	Type
Socketed Axes			
Annan, D		Dumfries	decorated
nr. Annan, D	PSAS lv 1920-1 11	NMA DE 77	rectangular
nr. Annan, D	PSAS lv 1920-1 11	NMA DE 78	faceted
Annan, D	PSAS lv 1920-1 11	NMA DE 79	rectangular
Auchencairn Hill, Closeburn, D	PSAS xxii 1887-8 376	Thornhill 6	decorated
nr. Torthorwald Castle, D		BM 88.7-19.16	rectangular
? Dumfriesshire		Dumfries 58	rectangular
Carse Loch, K	TDG xv 1898-9 36	NMA DE 5	Scand. IV
Kilnotrie, Crossmichael, K	TDG xv 1898-9 36	NMA DE 3	ribbed
Muirfad, Kirkmabreck, K	PSAS xxiii 1888-9 150	NMA DE 53	bag
Derry, Mochrum, W	PSAS xxiii 1888-9 150	NMA DE 50	rectangular
Genoch, Inch, W	PSAS xxxv 1900-1 12	NMA DE 63	ribbed
Gillespie, Old Luce, W	PSAS xlv 1910-1 418	NMA DQ 228	faceted
Gillespie, Old Luce, W	PSAS xlv 1910-1 418	NMA DQ 229	faceted
Gillespie, Old Luce, W	PSAS xlv 1910-1 418	NMA DQ 230	faceted
High Knockglass, W	PSAS xiv 1879-80 113		bag
Innernessan, Inch, W	PSAS xiv 1879-80 135		—
Kevans Farm, Garlieston, W	PSAS lxiv 1929-30 297	Stranraer 1945.20 A	bag
Kirkland, Leswalt, W	PSAS xvi 1881-2 11	NMA DE 22	ribbed
Knock and Maize, Leswalt, W	PSAS xiv 1879-80 112	Stranraer 1964.14	decorated
Lagganmore, Portpatrick, W	PSAS xxxv 1900-1 12	NMA DE 64	ribbed
Palmallet Farm, Garlieston, W	PSAS lxiv 1929-30 297	Broughton House, K	rectangular
Penninghame, W	PSAS xxiii 1888-9 150	NMA DE 48	bag
Penninghame, W	PSAS xxiii 1888-9 150	NMA DE 49	faceted
betw. Stranraer and Portpatrick, W	PSAS xii 1876-8 570		faceted
Whithorn, W	PSAS xxiii 1888-9 150	NMA DE 47	faceted
Glenluce, W		St. Albans	rectangular
? Dumfriesshire		J. M. Wilson Coll.	prob. fake
Swords			
Cauldholme, Drumlanrig, D	PSAS lvii 1922-3 146	? Drumlanrig Castle	
Cauldholme, Drumlanrig, D	PSAS lvii 1922-3 146	? Drumlanrig Castle	
Dumfriesshire	PSAS vi 1864-6 112	NMA DL 30	
Carlinwark Loch, K	PSAS x 1872-4 261	NMA DL 26	
Kelton, K	PSAS xix 1884-5 327	NMA DQ 118	
prob. New Abbey, K		Dumfries	
Cairnside, Kirkcolm, W	PSAS xix 1884-5 63		
Dowies Burn, Glasserton, W	PSAS xiv 1879-80 139	NMA DL 39	

Late Bronze Age—(Contd.)

Site	References	Museum	Class	Remarks
Felhaar, W	PSAS xxiii 1888-9 221	Kelvingrove		
Glenluce, Clayshant-Lodney, W	PSAS lxiii 1928-9 20	NMA DL 56		
Spearheads				
Dalswinton, D	PSAS lix 1924-5 11	NMA DG 86	V	
Dunscore, D	PSAS xxii 1887-8 376	Thornhill 7	V	
Dumfriesshire		Kilmarnock	V	
Balmaclellan, K	PSAS iv 1860-2 417	NMA DG 44	V	
Buchan, Glentroot, K	PSAS ix 1870-2 357	NMA DG 30	V	
nr. Stranraer, W	PSAS xxx 1895-6 7	NMA DG 64	V	
Wigtownshire	PSAS xxx 1895-6 7	NMA DG 65	V	
? Wigtownshire		NMA DG 15	V	
Gold				
Ecclefechan, D	Min.Bk.Soc.Ant.Lond. vii 196			? armlet
Boreland, Old Luce, W	Ayr. and Gall. v 1885 38			armlet
Glenluce Sands, W	PSAS lvii 1922-3 316			"lock-ring"
High Drummore, W	PSAS xxxix 1894-5 8	NMA FE 72		cloak fastener
Kirkmaiden, W	PSAS lxxxii 1947-8 293			armlet
Penninghame, W	PSAS xxv 1890-1 417	NMA FE 57		2 armlets
Galloway	Wilson i 1863 456			armlet
Galloway	Wilson i 1863 461			2 cloak-fasteners
Galloway	PSAS xxvi 1891-2 213	NMA FE 58		"ring-money"
Miscellaneous				
Kelton, K	PSAS xix 1884-5 327	NMA DQ 119		bronze ring
Dowalton Loch, W	PSAS vi 1864-6 124	NMA HU 5		bucket staple and ring
Innermessan, W	PSAS xxiii 1888-9 224	NMA DO 27		bronze horn

UNCERTAIN DATE OR TYPE

Location	References	Remarks
Castlemains, Lochmaben, D	PSAS i 1851-4 139, TDG xi 1923-4 108	bronze spearhead
Macnaughton Fort, K	PSAS xxvii 1892-3 112	spearheads, ? gold.
Drangower Farm, New Luce, W	Ayr. and Wigt. ii 1880 13	spearhead
Mull of Galloway, W	Ayr. and Gall. v 1885 38	"gold ornaments"

Uncertain Date or Type—(Contd.)

Location	References	Remarks
Galloway	Biblio. Topog. Brit. ii pl. vi, fig. 8	2 "funicular bracelets"
Dumfries Torrs, Glenluce, W Dumfries, Old Bridge	PSAS xxviii 1893-4 180 PSAS xv 1880-1 273 TDG i 1862-3 49; xix 1906-7 205	chisel ferrule bronze celt
Galloway Kirkland Farm, Kirkconnel Auchenbainzie	TDG i 1862-3 50 TDG xiv 1897-8 30 TDG xiv 1897-8 30	bronze sword in cairn "large bronze sword or spear" decorated bronze axe ("orna- mented with oblique lines radiating from the rib to each side")
Holywood Kirkyard, D nr. Lochmaben, D Loch at Lochmaben, D Kirkconnel Park, New Abbey Banks of River Cree	TDG xi 1923-4 108 TDG xi 1923-4 108 TDG xi 1923-4 108 TDG xiv 1926-8 289 TDG xiv 1926-8 290	dagger sword two spearheads two swords (assoc.) "halbert," "hatchet," etc., in tumuli
nr. Gelston Balmae Kells, K	TDG xiv 1926-8 290 TDG xiv 1926-8 291 PSAS xxii 1887-8 399	helmets and implements in cist crescentic gold "plate" "spearhead"; this is probably a dirk (Kirkcudbright 844) bronze celt
Corsewall, Loch Ryan, W.	PSAS ii 1854-7 305	

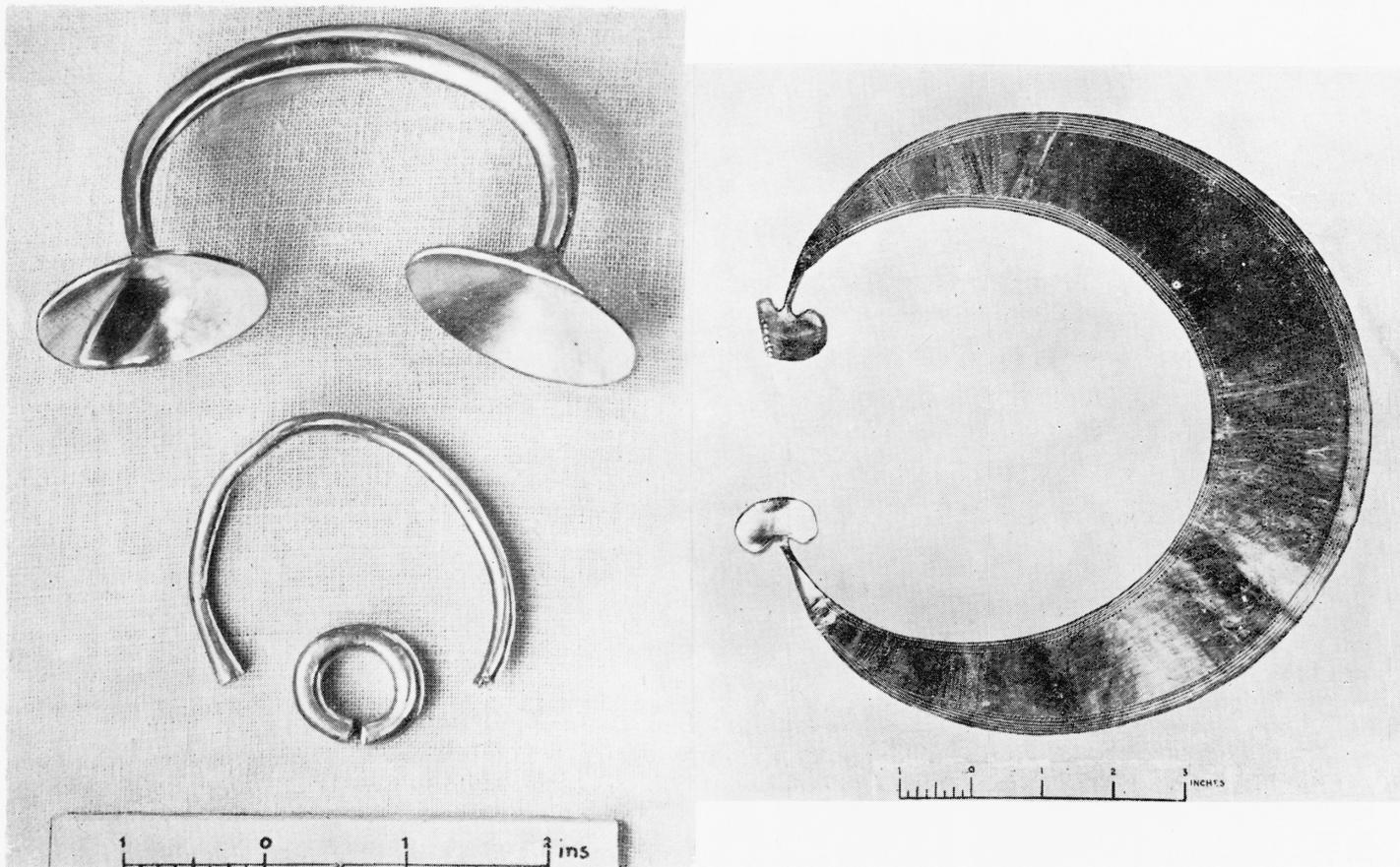


Plate IV Bronze Age metalwork—gold (right): Lunula from Auchentaggart
(National Museum of Antiquities of Scotland)
(left): (top) High Drummore; (middle) Penninghame; (bottom) Galloway
(National Museum of Antiquities of Scotland)

A BRONZE RING-BROOCH FROM LUCE SANDS, WIGTOWNSHIRE : ITS AFFINITIES AND SIGNIFICANCE

ETIENNE RYNNE

National Museum of Ireland

SUMMARY.—In 1964 a small bronze ring-brooch was found at Luce Sands. Its morphological and artistic affinities are examined, and it is suggested that this brooch is one more piece of evidence in favour of an Irish settlement in that part of Galloway during the 5th and 6th centuries A.D.

Objects of all periods, but mainly prehistoric, have often been found in Luce Sands, near Glenluce, Wigtownshire, perhaps most frequently within recent years by Mr W. F. Cormack, Vice-President of this Society, who makes regular searches there, by kind permission of the Officer Commanding, Royal Aircraft Establishment, West Freugh. In the Spring of 1964, Mr Cormack discovered a small bronze, penannular ring-brooch of Early Christian type lying on the sand on the southern side of an eroding dune (approximate Nat. Grid ref: NX 131545). There were no associated finds or signs of any dwelling or other structure at this spot, although about 200 yards to the north-west is an area prolific in prehistoric relics but which, however, has yielded little or nothing of Early Christian date.

Realising its apparent Irish affinities, Mr Cormack and Mr A. E. Truckell, Curator of the Dumfries Burgh Museum where the brooch is now on exhibition, invited the writer to describe and discuss it in these *Transactions*, and greatly facilitated study by lending it temporarily to the National Museum of Ireland.

When discovered corrosion had turned the brooch a rather attractive greenish colour but had rather badly eaten into the outer edge of the ring and had even more severely affected the pin (Plate V). The ring was decorated all over its front face and traces of decorated areas could also be seen on the pin, at its head and from the point where it crosses the ring to its tip, that is, on those parts of the pin which would have been exposed during wear. After consultation with Mr Truckell and Mr Cormack the brooch was chemically cleaned in the Museum laboratory.

DESCRIPTION

The ring is small and flat, with disc-like terminals. The only variation in thickness is at the junction of the hoop with the two terminals where there are sloping transverse ridges which not only demarcate the hoop from the terminals, but would also have served to prevent the pin from slipping off the ring when in use. Plain on the back, the front of the hoop and terminals is decorated, the decoration apparently being executed in the casting although undoubtedly subsequently touched up by tooling. The hoop, which is of uniform width, is decorated with an unbroken band of closely-set radial grooves, the intervening

spaces appearing as ridges. This band is bordered by a groove parallel to the inner and outer edges of the hoop for most of its circumference, except where it comes to a point at the ends. Each terminal is decorated with a circle enclosing a concave-sided equal-armed triangle, the points of which touch the circle. The triangle is plain and unornamented but its background, i.e. the area between the sides and the circle, is decorated with varying numbers of closely-set, parallel grooves and ridges similar to those on the hoop. In places the ornamentation gives the impression of having been stamped on to the bronze; this is, however, most unlikely, but may give an indication as to the manner in which the ornamentation was applied to the lead pattern which was probably used to make the clay casting-mould.¹

The pin is rather badly eaten away in places by corrosion and is missing its point. For a short distance below the head, where it would have been covered by the garment when in use, it is undecorated and is oval in cross-section. It expands towards the head which is attached to the ring by being loosely looped around the hoop. The head of the pin is flat on the underside, but on the upper surface it has a pointed oval depression bordered by a moulding formed by two closely-set grooves along its length. The pin also flattens and expands slightly just before where it crosses the ring. This area is decorated on its front with a single groove outlining a pointed oval area along its length. Neither of the pointed oval areas on the head or shank of the pin appears ever to have been otherwise decorated, although the corrosion creates some uncertainty as to this. When viewed horizontally the pin is seen to undulate gently exactly at the place where it crosses the ring. That this, a not uncommon feature in ring-brooches, was obviously intentional is clear from the fact that having crossed the ring the pin returns to the same plane as before.

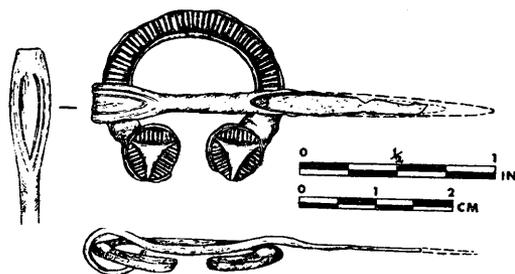


Fig. 1—Bronze ring-brooch from Luce Sands (1/1).

The ring is 2.5 cm. (i.e. just under 1 inch) in maximum width across and 2.1 cm. from top of the hoop to bottom of the terminals; the hoop is 4 mm. wide and the terminals are 8 mm. in diameter; it is 2 mm. thick except at the ridges where it is 2.5 mm. The pin is 4.4 cm. (i.e. just under $1\frac{3}{4}$ inches) long at present,

¹ For the method of casting bronze ring-brooches see L. Alcock, *Dinas Powys* (Cardiff 1963), 121-2, with which the writer is in agreement except for the suggestion that "open clay moulds" rather than bivalve moulds were used.

but possibly originally measured as much as about 5.3 cm.; it is 2.5 mm. wide at its narrowest part below the head, expanding to maximum widths of 5.75 mm. and (originally) 4.5 mm. at the head and centre of the shank respectively.

DISCUSSION

It is clear from several features that this object must be regarded as a brooch and not as a ring-pin, notwithstanding its small size. It was obviously made to function in the normal, orthodox manner of the true penannular ring-brooch, that is, the pin was pushed through a short length (or lengths, if used for fastening) of the garment and the shank passed through the gap (4 mm. wide) between the terminals, the ring being swivelled so that the end of the pin slid over one of the terminals and its adjacent ridge and rested on the hoop, a manoeuvre facilitated by the undulation in the shank at this point. It would not matter in which direction the pin of this particular brooch was pointed when being worn, although it seems to rest somewhat more comfortably in position across the ring when the point is towards the right (i.e. to the left side of the ring), a fact which was noticed both before and after cleaning; uneven corrosion could account for this, however, as no obvious signs of uneven wear could or can now be seen (Fig. 1).

Morphology :

Although there are other small ring-brooches from both Great Britain and Ireland there are few which are quite as small and as light as this brooch from Luce Sands. Furthermore, it is not easy to closely parallel this brooch among the known small or larger ring-brooches, although it can be fitted fairly readily into one of the recognisable series, namely with those penannular ring-brooches which have disc-like terminals. Such brooches have been recognised as a separate class in the most recently published typology of penannular brooches, a class covered by types H2 and H3, the difference in the two types being that the terminals of the former are plain and those of the latter decorated.² No close dating has been advanced for this type although it is suggested that it may be Romano-British in origin, while the title of the paper identifying the type suggests that it may have been commonest during the 5th and 6th centuries. The Luce Sands brooch, however, presents certain features which are not really characteristic of Type H2-H3 and by examining these in some detail we may be able to fix it more firmly in its proper typological and chronological position.

The hoop of the Luce Sands brooch is atypical of the type in being decorated and in its thin, flat cross-section. Generally speaking, it is rare for early penannular brooches with large terminals to have a thin flat hoop and when decoration does appear on the hoop it is usually a post-casting addition. On the other hand, it became the usual thing for the finely-decorated annular and

² E. Fowler, "Celtic Metalwork of the Fifth and Sixth Centuries A.D.", *Arch J.*, 120 (1963), 111, fig. 1. In an earlier scheme the same writer called these types H1 and H2 respectively, cf. *PFS*, 26 (1960), 153, fig. 1.

penannular ring-brooches and ring-pins of late seventh, eighth and early ninth centuries to have such decorated hoops. The hoop of the Luce Sands ring-brooch differs from these later brooches, however, in being of uniform width and thickness, the later specimens almost invariably having a slightly thicker, sometimes slightly wider, and always clearly demarcated, panel of ornament at the top of the hoop opposite the gap between the terminals. The absence of the latter feature from the Luce Sands brooch appears to be significant and can perhaps be used to help suggest a date for it.

It is not certainly known when the special panel at the top of the hoop first appears on ring-brooches, but it never occurs on penannular brooches of the zoomorphic type, a type which covers the first six centuries, at least, of the Christian era.³ Many of the zoomorphic brooches, however, have hoops decorated with closely-set incised transverse lines, sometimes only for short lengths near the terminals and at the top of the hoop⁴ or sometimes continuously except for short intervals near the terminals and at the top of the hoop.⁵ It may well be that the special panel of decoration at the top of the hoop of the later brooches had its origin in these intermittently decorated hoops, the merely artistic differentiation at the top of the hoop becoming a morphological differentiation; this innovation would have created a better sense of balance with the terminals as seen when worn with the pin crossing the ring, a balance that would perhaps be more readily appreciated on the thin, flat hoops of the later brooches. It is perhaps possible to see this feature in evolution on a bronze penannular ring-brooch (Fig. 2) found in a bog at Killescragh, Co. Galway,⁶ which has a transversely rippled hoop reminiscent of the "milled" hoops of some of the zoomorphic brooches but which swells slightly where it has an extra wide

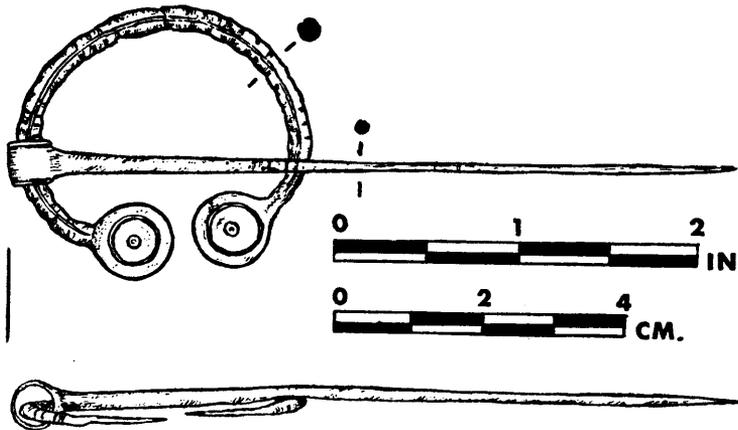


Fig. 2—Bronze ring-brooch from Killescragh, Co. Galway.

³ For the best account of these brooches, although the typology and dating are no longer generally accepted, see H. E. Kilbride-Jones, *PRIA*, 43C (1937), 379-455; this deals with the Scottish examples although Kilbride-Jones has also discussed them in *PSAS*, 70 (1935-36), 124-138.

⁴ e.g. *Ibid.*, fig. 20, no. 60.

⁵ e.g. *Ibid.*, fig. 21, no. 64.

⁶ Unpublished: in the National Museum of Ireland (reg. no. 1953:26).

space between the rippling, directly opposite the gap between the terminals. This latter brooch is of the same type as the Luce Sands brooch, having flat disc-like terminals, but perhaps its closest parallel may be a ring-pin from the earliest period, Period 1a, at Lagore Crannog, Co. Meath,⁷ for which period the excavator has suggested a date of about 650 A.D., although current opinion tends to push this date back about half a century or more. Probably one of the earliest examples of the developed panel at the top of the hoop is that on a small penannular ring-brooch from Co. Antrim, the ornithomorphic terminals of which enable us to suggest a date in the first half of the 7th century for it.⁸ The small penannular ring of a ring-brooch found in the galleried dun at Kildonan Bay, Kintyre, may also be an early example in the development of this feature as "midway between the two terminals there appear to be indications of the former existence of a small decorated panel."⁹ A date in the latter half of the 7th century was suggested for the Kildonan brooch, which seems probable, although should one wish, the revised dating of about 550-650 A.D. suggested by the excavator¹⁰ for Ballinderry Crannog 2, Co. Offaly, where an apparently related brooch was found,¹¹ allows one to suggest a date of at least a century earlier for the Kildonan brooch.

Disc-like terminals on ring-brooches are of two types. One type has a plain or decorated flat upper surface, while the second type has a central boss normally surrounded with concentric mouldings. The first is undoubtedly the earlier type and, as already mentioned, probably has Romano-British origins. The origin of the second type is not clear, but it may possibly derive from the flat disc-like terminals of the earlier type, with the addition of a central boss in imitation of the amber eye of ornithomorphic terminals such as on the Co. Antrim brooch already cited, which in turn seems to have Frankish or other Migration Period origins. The Luce Sands brooch readily takes its place with brooches of the earlier type, its carefully constructed and executed decoration placing it near the end of the series. No brooch of this type can be closely dated unless, perhaps, the similarity of the Killescragh brooch with the Lagore ring-pin (see above) allows a date of about 600, at latest, to be postulated for it. A date towards the end of the 5th century has been very tentatively suggested for another brooch of this class,¹² while a fragment of a clay mould used for casting such a brooch was found during the 1913 excavations at the Mote of Mark, in the Stewartry,¹³ the main occupation of which can be dated on historical and

7 H. O'N. Hencken, *PRIA*, 53C (1950), 73, fig. 15, no. 1531.

8 In the British Museum (reg. no. 1898.6-18.8); cf. R. A. Smith, *Br. Mus. Guide to Anglo-Saxon Antiquities* (1923), 133-4, fig. 174, or H. O'N. Hencken, *op. cit.* (1950), 64, fig. 10.B.

9 H. Fairhurst, *PSAS*, 73 (1938-39), 215, fig. 10, no. 6, and Appendix by H. E. Kilbride-Jones on pp. 224-5.

10 H. O'N. Hencken, *op. cit.* (1950), 18. Dr Raftery, Keeper of Irish Antiquities, National Museum of Ireland, has recently suggested that this period of occupation of the crannog may date back to the 2nd century A.D. (cf. E. MacWhite, *Zeitschrift für Celtische Philologie*, 28 (1961), 302), but until the appearance in print of all the premises leading up to this conclusion it would perhaps be wiser not to base any arguments on it as yet.

11. H. O'N. Hencken, *PRIA*, 47C (1942), 40, fig. 15, no. 716.

12 G. C. Boon, *Med. Archae.*, 3 (1959), 87 for date, and 82, pl. III, B2 for brooch.

13 A. O. Curle, *PSAS*, 48 (1913-14), 144, fig. 14, no. 6.

archaeological grounds from about 475 to 675 A.D.¹⁴ The Kildonan and Ballinderry brooches (see above) are the earliest dateable examples of brooches with the second class of disc-like terminals, and they seem to date to some time after about 550 A.D.; outstanding later examples of this class include the brooches from Ervey Crannog, Co. Meath,¹⁵ and Croy, Inverness-shire.¹⁶ It seems probable, therefore, that the earlier type overlaps somewhat with the later type, the former ending about 600 and the latter beginning about 550 and lasting for almost three hundred years.

The form of the pin of the brooch from Luce Sands is less informative, as the manner of attaching pins to the hoops of ring-brooches has not, as yet, received adequate study to allow of precise dating. The simplest method of all is, of course, that of the Luce Sands brooch, i.e. by looping a flattened end around the hoop, which, as one would expect, seems to be a long-lived and widespread form. The earliest examples seldom have the loop decorated, however, and at this stage of our knowledge it must suffice to suggest that the type of decorated pin-head on the Luce Sands brooch is unlikely to date from before 400 A.D. The expansion of the pin at the point where it crosses the ring is also a long-lived feature, occurring in such early contexts as the Roman fort at Newstead¹⁷ and continuing until the early 9th century at least.¹⁸ Decoration, but not expansion, occurs at this point on the shanks of several of the pins of the more ornate Irish (but not Scottish) zoomorphic brooches,¹⁹ and it is possible that the decorated flattened expansion on some of the pins of non-zoomorphic brooches results from an amalgamation of the two features, possibly first occurring during the 5th century. The undulation of the shank is, apparently, of even less chronological significance, except that it is a feature which seldom occurs on brooches dated later than about 800 A.D. It is quite a common feature on earlier brooches, particularly on the earliest small penannular brooches and on the somewhat later zoomorphic brooches. The only other possibly significant morphological feature of the pin is its length. Although long pins are known on ring-brooches of all periods and from all areas, they are the exception rather than the rule except in Ireland where the pins are almost invariably long.

Arguing, therefore, on the premises outlined above, it might be suggested, *on morphological grounds alone*, that the Luce Sands ring-brooch probably dates to some time when flat disc-like terminals were still popular, when thin flat

14 This dating is based on information from Mr Charles Thomas, University of Edinburgh, and on his paper, "Dunadd and the Mote of Mark: a re-assessment," read to the Society of Antiquaries of Scotland on the 14th of December, 1959. I am very grateful to Mr Thomas for permission to refer to this paper and to quote (see footnote 81) from it.

15 J. Raftery, *JRSAI*, 90 (1960), 35, fig. 29.

16. Published many times, including J. Anderson, *PSAS*, 11 (1874-76), 588, fig. 1; R. A. Smith, *Arch.*, 65 (1913-14), 236, fig. 10, top; H. O'N. Hencken, *op. cit.* (1942), 40, fig. 16, top left; *Brooches in Scotland*, Nat. Mus. Antiqs. of Scot. (1958), pl. 9,b.

17 J. Curle, *A Roman Frontier Post and Its People: The Fort of Newstead* (Glasgow 1911), 327, pl. LXXXVIII. no. 7.

18 e.g. on the brooch found with a Viking tortoise brooch at Pierowall, Westray, Orkney, for which see R. A. Smith, *op. cit.* (1913-14), p. 234, fig. 8, or J. Anderson, *Scotland in Early Christian Times*, 2nd ser. (1881), 29, fig. 22, and on the brooch found near Perth, for which see J. Anderson, *ibid.*, p. 21, fig. 15.

19 e.g. H. E. Kilbride-Jones, *op. cit.* (1937), fig. 15, no. 44 and fig. 18, nos. 53 and 54.

decorated hoops had become fashionable, but before a special panel of ornament at the top of the hoop had been accepted as a common feature, and when the head and centre of the shank of the pin were flattened, expanded and decorated. Of course, the Luce Sands brooch could be an exception in any or all of these features, but, assuming that it is not, a date some time between about 400 and 600 A.D. may be suggested for it.

Art :

The art motifs appearing on the Luce Sands brooch are the band of closely-set grooves and ridges on the hoop and the concave-sided triangle enclosed within a circle on each of the terminals; the plain pointed oval areas on the pin may safely be excluded from discussion of art-motifs. The decoration seen on the hoop is a fairly common motif on metalwork of the Early Christian Period and, of itself, is not very useful as a dating factor. Its occurrence on the hoop of ring-brooches may, however, be of some significance as being perhaps related to the transverse lines incised on many of the hoops of the zoomorphic brooches. Even closer parallels occur on some of the earliest English types of zoomorphic brooches,²⁰ and an apparently close parallel is that on the Scottish brooch from Castlehaven Fort, in the Stewartry.²¹ This brooch is included in Type D7 of the most recent typology, where it is suggested that the known brooches of the type "point to close links between various areas of the Celtic West and late-Roman Britain," and that "it seems very probable that the type was produced at the end of the 4th century, examples being taken to the West as part of the loot of Irish raiders."²² It seems possible, therefore, that this type of decoration may be a Romano-British feature which was introduced to Scotland and Ireland, from England, about 400 A.D. and which was perhaps retained there for some time. Apparently somewhat similar decoration to that on the hoop of the Luce Sands brooch occurs, for instance, on the pin of the ring-brooches from Co. Antrim and Ervey Crannog (see above) and also on the pin of the smallest of the surviving three brooches found at Rogart, Sutherland,²³ which can be dated to about 800 A.D.

The motif on the terminals is much more significant and, although found on objects of widely separated dates, is of importance in estimating the date and possible significance of the Luce Sands ring-brooch. Concave-sided triangles, within a circle or not, are found intermingled in the curvilinear Celtic art from La Tène times until about 800 A.D., in a fairly continuous line throughout. Despite the simplicity of the motif and the undoubted possibility that it could have evolved indigenously from compass-work at any given time and place, it seems possible to isolate its occurrence to certain areas and periods, and likewise seems justifiable to emphasise its absence from the art of the non-Celtic world.

²⁰ e.g. *Ibid.*, fig. 29, nos. 99 and 103.

²¹ cf. E. Fowler, *op. cit.* (1963), fig. 4, no. 8.

²² *Ibid.*, p. 113.

²³ cf. R. A. Smith, *op. cit.* (1913-14), 236, fig. 9, no. 3, or J. Anderson, *op. cit.* (1881), 10-11, fig. 7.

The motif has been briefly commented upon by Peter Meyer,²⁴ who points out that one of its earliest occurrences is on the openwork bronze phalerae from the well-known chariot-burial of Somme-Bionne, Marne, in eastern France,²⁵ which can be dated to about 370 B.C.²⁶ (see Fig. 4, A). Other bronzes of this early period with similar or related examples of the motif include two found in the River Rhine,²⁷ one from Ville-sur-Retourne, Ardennes,²⁸ and, possibly, a girdle-hook from Schwabsburg,²⁹ all from roughly the same general area, while a bronze object from Comacchio, in northern Italy,³⁰ also has a related triangle incorporated in its design. An apparently related openwork bronze disc, likewise incorporating concave-sided triangles in its design, was found in the River Thames, at Hammersmith,³¹ thus providing the link between this and the subsequent appearance of the motif on later English metalwork (see below). The ornamentation of the Somme-Bionne and other pieces was designed geometrically with a compass,³² as was not uncommon for much La Tène art of all periods, and it would, indeed, appear that the concave-sided triangle originated in compass-work, probably in Greece and the eastern Mediterranean countries at an even earlier date.³³

The motif is next noticed on La Tène metalwork in southern Britain where there are at least two examples dating from before the birth of Christ, on the now-lost bronze dagger-sheath found in the River Witham, Lincs.³⁴ (see Fig. 4, B), which can probably be dated to the 2nd century B.C.,³⁵ and on the bronze sword-scabbard from Meare, Somerset,³⁶ which dates from the 1st century B.C. The other Early Iron Age examples are to be found on the early 1st century A.D. bronze mirrors from Colchester, Essex (see Fig. 4, C), Birdlip, Gloucs., and Trelan Bahow (sometimes referred to as St. Keverne), in Cornwall,³⁷ while obviously closely related but not identical examples occur on the mirrors from Desborough, Northants., and Old Warden, Beds.³⁸ Most of these English examples have a plain triangle with a hatched or otherwise filled background, within a circle.

The motif, as can be seen from the above account, is apparently confined to southern England during this early period. The only evidence for it in Scotland at this stage is, perhaps, on the small bosses on the decorated bronze plate on the

²⁴ P. Meyer in *Evangeliorum Quattuor Codex Durmachensis* (The Book of Durrow), Urs Graf-verlag edition (1960), vol. II, p. 155.

²⁵ P. Jacobsthal, *Early Celtic Art* (Oxford 1944), pl. 106, nos. 169a, b, c, f; pl. 113, no. 180; pl. 118, no. 192.

²⁶ *Ibid.*, p. 143.

²⁷ *Ibid.*, pl. 118, nos. 190 and 191.

²⁸ *Ibid.*, pl. 119, no. 194.

²⁹ *Ibid.*, pl. 167, no. 351.

³⁰ *Ibid.*, pl. 203, no. 401e.

³¹ R. A. Smith, *Br. Mus. Guide to the Antiquities of the Early Iron Age* (1925), 147, fig. 170.

³² For a reconstruction of the method used to decorate the finest of the Somme-Bionne phalerae see O. H. Frey, "Eine etruskische Bronzeschnabelkanne," *Annales Littéraires de l'Université de Besançon*, 2e. sér. 2:1 (1955), 22, Abb. 9.

³³ cf. P. Jacobsthal, *op. cit.* (1944), 73, pl. 242,a.

³⁴ C. Fox, *Pattern and Purpose* (Cardiff 1958), 38, pl. 10.e.

³⁵ E. M. Jope, *PPS*, 27 (1961), 339.

³⁶ S. Piggott, *PPS*, 16 (1950), fig. 3, no. 3A. The sword-scabbard from Hunsbury (Northants.) is illustrated in E. T. Leeds, *Celtic Ornament*, (Oxford 1933), fig. 13, and J. R. Allen, *Celtic Art in Pagan and Christian Times* (London 1904), 132, as bearing this motif also, but this is not shown in any of the many other illustrations consulted and appears, therefore, to be inaccurate.

³⁷ C. Fox, *op. cit.* (1958), fig. 51, pl. 56b,F; pl. 57,b; and pl. 7,a, respectively.

³⁸ *Ibid.*, pl. 57,c, and pl. 56a,H, respectively.

mirror from Balmaclellan, in Kirkcudbright,³⁹ probably dating from the 1st century A.D., which closely resemble the small central boss on the umbo of the somewhat earlier bronze shield from the River Witham, Lincs.,⁴⁰ although in neither case can the feature really be described as a true example of the motif under review. The motif does not appear on any of the Irish material of this period, although some of the decorated circles on the bone slips from Loughcrew, Co. Meath,⁴¹ seem to show a relationship with the same type of art-motifs.

The motif occurs, however, on somewhat later Irish metalwork although the enclosing circle is generally absent, for instance on the terminals of some of the zoomorphic brooches⁴² (see Fig. 4 D), where concave-sided triangles often occur in pairs. It is, unfortunately, not yet possible to satisfactorily date the various types of zoomorphic brooches, although it would appear likely that there is general agreement that all of the specimens bearing this motif date before c. 600 A.D. and that some probably date from much earlier,⁴³ the latter possibly being among the few connecting links in the chain of the continuation of this motif from Early Iron Age to Early Christian times.

The marigold, rosette, or hexafoil motif seems to be closely connected with the concave-sided triangle motif, and, indeed, the latter to a great extent owes its origin to the former motif. Fundamentally, there are two varieties of the hexafoil motif, Types A and B (Fig. 3).⁴⁴ Both are within a circle and are easily made without changing the radius of the compass. In Type A it is clearly the pointed oval petals which are of prime importance, but in Type B it is obvious that the concave-sided triangular spaces between the petals will tend to overshadow the hexafoil proper. Some of the earliest examples of Type B clearly demonstrate

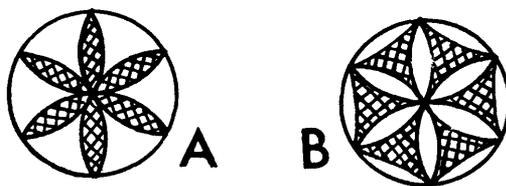


Fig. 3—Types of hexafoil motif.

this,⁴⁵ and it is also to be seen on much of the later Irish metalwork. Hexafoils are (sometimes) found on the back of the terminals of the later Irish zoomorphic brooches,⁴⁶ on the two bronze latchet-brooches from Newry, Co. Down,⁴⁷ and

³⁹ cf. J. Anderson, *Scotland in Pagan Times: the Iron Age*, (1883), 127, fig. 104.

⁴⁰ C. Fox, *op. cit.* (1958), 26-27, pl. 15.b.

⁴¹ H. S. Crawford, *JRSAI*, 55 (1925), 15-29, figs. 46, 47, 52, etc.

⁴² e.g. H. E. Kilbride-Jones, *op. cit.* (1937) fig. 10, nos. 30 and 31; fig. 13, nos. 36 and 37; fig. 15, no. 43.

⁴³ Particularly those with short thick "heads" (e.g. *ibid.*, fig. 10, nos. 30 and 31) rather than those with larger flatter "heads."

⁴⁴ After H. E. Kilbride-Jones, *PSAS*, 71 (1936-37), 221, fig. 7, c and d; and H. O'N. Hencken, *PRIA*, 43C (1936), 197, fig. 46, A and B.

⁴⁵ e.g. P. Jacobsthal, *op. cit.* (1944), pl. 242, a.

⁴⁶ e.g. H. E. Kilbride-Jones, *op. cit.* (1937), fig. 21, no. 64, or H. Hencken, *op. cit.* (1942).

fig. 13.

⁴⁷ F. Henry, *JRSAI*, 66 (1936), pl. XXVI, 6.

on hanging-bowl escutcheons⁴⁸ (not found in Ireland but probably of Irish workmanship), in all of which the concave-sided triangles dominate the petals, and for which objects a date between about 400 and 700 would not appear unreasonable.

There are many other examples of the concave-sided triangle motif to be found on Irish metalwork, but the above will suffice to demonstrate its fairly frequent use there at approximately the period in which the Luce Sands brooch was made.

The case in Scotland is, however, quite different for, apart from the Luce Sands ring-brooch, the motif is not known, to the writer at least, on other Scottish metalwork.

The same is true for England, although the motif appears on some of the hanging-bowl escutcheons found there; these, however, do not appear to indisputably form part of an unbroken continuum of English art but fit more easily into the known development of Irish art (see above).

The triangular motif under review was often used during the last century and a half of its life, i.e. from about 650 to 800 A.D., as a method of filling an otherwise awkwardly empty space in a field of ornament, rather than as an independent or semi-dependent unit. The ornament is generally of scrollwork of the divergent spiral type, but interlaced patterns are sometimes so treated also, although rarely. The triangles so used are sometimes straight-sided, but their use in this manner clearly relates them to the concave-sided variety. Examples of this use of the motif are to be found on some of the finest examples of Irish metalwork of the early 8th century, notably on the back of the Tara Brooch (on the special panel at the top of the hoop and on the hoop itself),⁴⁹ on the Ardagh Chalice (on the upper ring-mounting of the neck⁵⁰ and on the richly decorated disc-mounting under the foot-cone⁵¹), on the finest of the belt-buckles from Lagore Crannog,⁵² and on the back of the two shrine-fragments now in the Musée des Antiquités Nationales at St. Germain-en-Laye, France.⁵³ The triangle, concave- or straight-sided, does not seem to have been used in this manner on Scottish or English metalwork⁵⁴ of the period, with the exception of the Steeple Bumpstead boss⁵⁵ which is most probably of Irish origin.⁵⁶

The story of this motif in the art of the illuminated manuscripts of the Early Christian Period presents much the same picture as in that of the metalwork. The earliest occurrence of the motif is in the Book of Durrow which can be dated to some time around 670 A.D. The motif occurs in its fully independent

⁴⁸ *Ibid.*, pl. XXVI, 1 and 2.

⁴⁹ This is perhaps clearest to be seen on the drawing in G. Coffey, *Guide to the Celtic Antiquities of the Christian Period preserved in the National Museum, Dublin* (2nd edit. 1910), pl. II.

⁵⁰ Lord Dunraven, *TRIA*, 24:3 (1874), pl. IV, centre left.

⁵¹ F. Henry, *L'Art Irlandais*, 1 (Zodiaque edition, 1963), pl. 33.

⁵² H. O'N. Hencken, *op. cit.* (1950), 66-67, fig. 11, no. 323, pl. XIV, 3.

⁵³ J. Hunt, *PRIA*, 57C (1956), 153, pl. II.

⁵⁴ It has been suggested to the writer that a form of the motif occurs on the 7th century Anglo-Saxon Kingston Brooch, for which see D. M. Wilson, *The Anglo-Saxons*, (London 1960), pl. 35. The alleged parallel, although obviously also compass-designed, has expanding rather than pointed ends and any resemblance seems to be fortuitous.

⁵⁵ R. A. Smith, *op. cit.* (1923), 137-9, fig. 189, nos. 1 and 4.

⁵⁶ R. A. Smith, *PSAL*, 2nd ser. 28 (1915-16), 87-94.

form within a circle on two of the pages, the "Page of Spirals" and the Beginning of St. John's Gospel⁵⁷ (see Fig. 4, F). The motif as an independent unit within a circle does not appear in any of the other manuscripts consulted for this survey, although it does appear at one remove in the Gospels of St. Chad (in Lichfield Cathedral)⁵⁸ and in the St. Gall Gospels (Codex 51),⁵⁹ the former dated to about 700 A.D. and the latter to about 750 A.D., where the concave-sided triangle is used as the central filling of three tightly-coiled "hair-spring scrolls," each coil

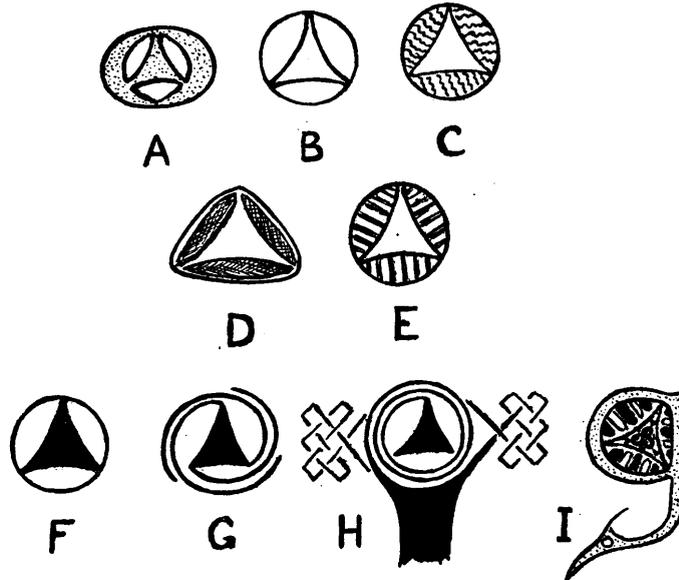


Fig. 4—Some examples of the concave-sided triangle motif:—

A. Somme-Bionne, France; B. River Witham dagger-sheath; C. Colchester mirror; D. Zoomorphic brooch from Ireland; E. Luce Sands brooch; F. Book of Durrow; G. St. Gall Gospels; H. and I. Book of Kells.

springing from one of the points of the triangle (see Fig. 4, G). Another version of this is evident in the Book of Kells, dated to some time about 800 A.D., where in one instance at least, a concave-sided triangle is suspended inside an encircling scroll springing from its top (see Fig. 4, H).⁶⁰ Otherwise the closest the motif comes to being treated as an independent unit within a circular area is when it is used to fill the round parts of capital letters such as the C's, E's, P's and Q's. This occurs very frequently in the Book of Kells,⁶¹ but not, apparently, elsewhere;

⁵⁷ *Evangeliorum Quattuor Codex Durmachensis* (The Book of Durrow), Urs Graf-verlag edition (1960), vol. I, folios 3v and 193r, respectively.

⁵⁸ On the Chi-Rho page. cf. *Evangeliorum Quattuor Codex Lindisfarnensis* (The Book of Lindisfarne), Urs Graf-verlag edition (1960), vol. II, pl. 54, or L. Bieler, *Ireland: Harbinger of the Middle Ages*, (English edition 1963), pl. facing p. 104.

⁵⁹ *The Irish Miniatures in the Abbey Library of St. Gall*, Urs Graf-verlag edition (1954), pl. II, folio 3; pl. IV, folio 7; pl. VI, folio 79, and pl. XI, folio 208.

⁶⁰ *Evangeliorum Quattuor Codex Cenannensis* (The Book of Kells), Urs Graf-verlag edition (1951), at the top of a capital H on folio 121r.

⁶¹ *Ibid.*, folios 15r, 40v, 47v, 66r, 67r, 76v, 99r, 107v, 108r, 108v, 112v, 113r, 116v, 122r, 122v, 123r, 139v, 143v, 149v, 177v, 184v, 193v, 204v, 214r, 230v, 235v, 251v, 258r, 270r, 272r, 275v, 304v, 313r, 327v and 337v.

one example in the Book of Kells is somewhat reminiscent of the motif as displayed on the Luce Sands ring-brooch (see Fig. 4, E), having its background filled with parallel lines⁶² (see Fig. 4, I). Apart from the above, the only other use of the motif in the illuminated manuscripts is as a useful design for filling empty spaces in fields of ornament generally, as already noted for the metalwork, of curvilinear scrollwork but sometimes of interlace or in the corners of a frame. This occurs on nine pages in the Book of Durrow,⁶³ on two pages of the Book of Lindisfarne,⁶⁴ on two pages of the St. Gall Gospels (Codex 51),⁶⁵ on numerous occasions in the Book of Kells,⁶⁶ and perhaps in one or two other manuscripts.⁶⁷

This is not the place to discuss the origins of the art of these illuminated manuscripts but, accepting that it was all executed by Irishmen or under very strong Irish influence, whether in Ireland or Northumbria, it is nonetheless clear that the motif under review is very frequently used in those manuscripts traditionally associated with monasteries in Ireland and only very rarely in those associated with monasteries in England. This, when the occurrence of the motif as represented in the metalwork of the period is taken into account, suggests that the motif had become an Irish characteristic and, *en passant*, further suggests that the scriptoria of the Books of Durrow and Kells (and also St. Gall?) are to be sought in Ireland rather than in Britain.

From the evidence presented above it would appear that Scotland played no part in the spread and development of this motif in the insular art of the Early Christian Period. This is only slightly alleviated when the evidence of the stonework of the period is examined. Apart from hexafoils of Type B which occur on a few slabs and crosses in Ireland⁶⁸ and the Isle of Man,⁶⁹ the triangle, concave- or straight-sided, appears only twice on stone to the writer's knowledge, and both times in Scotland. The better example is on the slab with a lively hunting scene and other designs, including interlace and scrollwork, from Hilton of Cadboll, Ross-shire.⁷⁰ The second example, also among scrollwork, is on the cross-slab at Shandwick, Ross-shire.⁷¹ There is no hint of the motif in the

⁶² *Ibid.*, folio 47v.

⁶³ *Op. cit.*, folios 3v, 15r, 18r, 21v, 23r, 86r, 126r, 191v and 193r.

⁶⁴ *Evangeliorum Quattuor Codex Lindisfarnensis* (The Book of Lindisfarne), Urs Graf-verlag edition (1960), vol. I, folios 29r and 95r.

⁶⁵ *Op. cit.*, pl. V, folio 78 and pl. XI, folio 208.

⁶⁶ *Op. cit.*, folios 7v, 32v, 33r, 34r, 47v, 49r, 49v, 53r, 55r, 57v, 58r, 59r, 71v, 72v, 84v, 86r, 88v, 90v, 91v, 98r, 99v, 103r, 104r, 105v, 107v, 108v, 114v, 115r, 119r, 121v, 140v, 141v, 143r, 145r, 145v, 146r, 149r, 160r, 161r, 164r, 169r, 171r, 174v, 177v, 182v, 187r, 188r, 202r, 214r, 258r, 261r, 263v, 265r, 265v, 266r, 267r, 270r, 272r, 282v, 283r, 290v, 304v, 311r, 337r, and 337v.

⁶⁷ As will be readily appreciated, it has not been possible to examine all the many illuminated manuscripts of the period in the same detail as any of the above-mentioned for which excellent facsimilae editions exist, but a glance through reproductions of various pages from other manuscripts suggested that the motif was not common elsewhere, only being noted twice, on the page of the Gospels of St Chad mentioned above (see footnote 58) and on folio 30b of the Psalter Cotton Vespasian A I (cf. J. Bronsted, *Early English Ornament* (London 1924), fig. 84).

⁶⁸ An example of this in Ireland, where the triangular spaces between the petals are of obviously much greater importance than the petals themselves, is the seven-petalled example on an erect slab at Carnonagh, Co. Donegal, for which see H. S. Crawford, *Carved Ornament from Irish Monuments* (Dublin 1926), 21, pls. XIX and XX.

⁶⁹ The best example on the Isle of Man is on the slab at Maughold, for which see P. M. C. Kermodé, *Manx Crosses* (London 1907), III, or P. M. C. Kermodé and W. A. Herdman, *Manx Antiquities*, 2nd edit. (Liverpool, 1914), fig. 39.

⁷⁰ J. Anderson and J. R. Allen, *The Early Christian Monuments of Scotland* (Edinburgh 1903), part III, pp. 61-63, fig. 59, or J. Anderson, *op. cit.* (1881), 105, fig. 76.

⁷¹ J. Anderson and J. R. Allen, *op. cit.* (1903), part III, pp. 69-70, figs. 66A and 70, or J. Anderson, *op. cit.* (1881), 117, fig. 79.

repertoire of the Pictish artist, and the Picts can, therefore, be safely omitted from all discussion concerning the decoration of the Luce Sands ring-brooch, despite hints and suggestions that there may have been a small group of Picts isolated in Galloway at the period with which we are dealing.⁷²

Reconstructing thus the history of the concave-sided triangle motif, it would appear likely that it originated in the Rhineland about 400 B.C. from compass-drawn designs ultimately deriving from Greece and the Near East. On arrival in the south of England it achieved a separate identity, crystallising itself into an independent art-motif within a circle during the 2nd century B.C. and disappearing from the repertoire there towards the end of 1st century A.D., but not before it had been adapted by the Irish who continued to use it as an independent or semi-dependent motif until about 750 A.D. and as a virtually dependent space-filler until about 800 A.D.

Arguing from the premises outlined above, it might be suggested, *on artistic grounds alone*, that the Luce Sands ring-brooch probably dates to some time when the idea of decorating the hoop of ring-brooches with transverse lines was in vogue and had reached the non-Romanised Celtic West, and when the concave-sided triangle enclosed within a circle was still likely to be used as an independent art-motif. Outside dates, therefore, of about 400 and 750 A.D. seem justified for it, with a preference for the earlier half of this period perhaps prevailing.

CULTURAL BACKGROUND

The above discussion of both the morphology and art of the Luce Sands ring-brooch leads us to suggest a date in the 5th or 6th century for it. It only remains to attempt to fit it into its proper cultural context to see if it can provide any significant evidence which might be useful in advancing our knowledge of the period.

To do this the rulers of Galloway, and more particularly of the Rhinns, during the 5th and 6th centuries A.D. must first be determined. Roman control of the area had always been minimal, as may be seen from the strong defences along the southern shore of the Solway. It has been suggested that from the fifth century onwards the area may have been under the control of Rheged, although the evidence that this part of Scotland formed a western extension of that British kingdom is slight,⁷³ mainly based on such suppositions as that the name of a small village near Glenluce, Dunragit, is to be interpreted as "Fort of Rheged"⁷⁴.

If this territory during the 5th and 6th centuries was not under Rheged control, then who ruled it? The evidence, as has been pointed out above, is

⁷² See J. MacQueen, *St. Nynia* (Edinburgh 1961), 33-47, for full discussion and rebuttal of this theory.

⁷³ For a map of Rheged incorporating this western area see A. H. A. Hogg, *Antiquity*, 39 (1965), 54, fig. 1.

⁷⁴ This theory was first mooted in W. J. Watson, *History of the Celtic Place-Names of Scotland* (1926), 156, but see A. H. A. Hogg, *op. cit.* (1965), 54 for reasons why the evidence suggested by the place-name "Dunragit" is not strong, and J. MacQueen, *op. cit.* (1961), 55-64 for full discussion and rebuttal of the theory.

against the Picts, and it is also known that the Saxon Northumbrian expansion into the area did not occur until towards the very end of the 7th century. Before arriving at an answer a non-political factor must first be taken into account, namely, the foundation in 397 A.D. of *Candida Casa*, at the Isle of Whithorn, by St. Nynia, or Ninian as he is more commonly (if not entirely correctly) called. With this event began the Whithorn Mission which evangelised Galloway and, as has recently been argued, which had an important share in the evangelisation of Ulaidh in north-eastern Ireland,⁷⁵ although another recent authority had virtually denied all Gallovidian-Irish connections at this period.⁷⁶ To this writer it seems very probable that Ulaidh and Galloway were closely connected at this period, although not necessarily during pre-Patrician times as tentatively hinted at by one authority.⁷⁷ support for this belief stemming from at least two sources: place-names and archaeology.

The place-name evidence has been ably argued by MacQueen⁷⁸ who points to the presence of Gaelic place-names in the Rhinns and who believes that they indicate a settlement from the Dal Araide in north-eastern Ireland during the 5th and 6th centuries A.D.⁷⁹

The archaeological evidence is even stronger. The close Hiberno-Scottish cultural relations at this period are well known, both archaeologically and historically, and, as has been seen from the discussion of the form and decoration of the Luce Sands ring-brooch, cannot be ignored. As has often been emphasised, the North Channel "was not a separating but a unifying factor"⁸⁰ and "the narrow stormy seas between north-eastern Ireland and south-western Scotland were traversed constantly."⁸¹ The material remains discovered in Galloway point, on the whole, towards Ireland rather than towards the rest of Scotland.⁸² This is evident not only from other areas in Galloway but also from Luce Sands itself where, quite apart from the ring-brooch which is the subject of this paper, two small penannular bronze ring-brooches of zoomorphic type, both identical, were found.⁸³ These two brooches⁸⁴ are of a type common enough in Ireland, a particularly close parallel being found during the excavation of the crannog of

⁷⁵ E. S. Towill, *UJA*, 3rd ser. 27 (1964), 103-116.

⁷⁶ P. A. Wilson, *TDGNHAS*, 3rd ser. 41 (1962-63), 156-185.

⁷⁷ E. S. Towill, *op. cit.* (1964), 111 and 116.

⁷⁸ J. MacQueen, *op. cit.* (1961), 45-47.

⁷⁹ This theory is reinforced by the most recent publication dealing with the place-name evidence, W. F. H. Nicolaisen, *Scottish Studies*, 9 (1965), 91-106, although in an earlier article, *Scottish Studies*, 4 (1960), 49-70, Nicolaisen also argued for an influx of Gaelic speakers from Ireland during the early 10th century.

⁸⁰ E. S. Towill, *op. cit.* (1964), 116.

⁸¹ N. K. Chadwick, *Celtic Britain*, (London 1963), 49.

⁸² Mr Thomas (see footnote 14), when speaking of "the basic everyday objects" found at the Mote of Mark, says that they seem "to have more in common with post-Roman Ireland than with the very imperfectly-known material culture of Strathclyde."

⁸³ Neither is included in H. E. Kilbride-Jones, *op. cit.* (1935-36), but in footnote 2 on page 124, he makes it clear that he is dealing with only thirteen out of the fifteen then known Scottish zoomorphic brooches, the other two belonging to a later episode in the history of the series. The brooches dealt with are argued to date from the 1st to the 4th centuries A.D., which would place the two others, probably those from Luce Sands, in the 5th and 6th centuries.

⁸⁴ For the one which still retains its pin see G. Wilson, *PSAS*, 15 (1880-81), 274, fig. 12, or E. Fowler, *op. cit.* (1963), 107, fig. 2, no. 11; for the one now missing its pin see *PSAS*, 80 (1945-46), 156, and *Brooches in Scotland*, Nat. Mus. Antiqs. of Scot., (1958), pl. 4, c. A point of minor interest is that the pin on the former brooch weathered differently than the ring, just as was noticed on the 1964 discovery, in both cases suggesting that the alloy used for the pins differed slightly from that used for the rings, a fairly common feature on Irish ring-pins and ring-brooches.

Ballinderry 28⁵ which, as has been mentioned already, can be dated to the period c. 550-650 A.D. Here we have surely, further evidence of contact between Ireland and Luce Sands during the very period under discussion.

It would appear, therefore, that there is sufficient evidence of varying sorts and degrees of reliability to suggest that, during the period under discussion, there was, in fact, an Irish settlement in this part of Galloway. That this settlement never gained the historical notoriety of an Irish colony as did the kingdom of Dalriada to the north, in Argyll, may be because it was not so much a settlement in a "take-over" sense as one connected with the peaceful missionary endeavours shared by both south-east Ulster and the rest of Galloway, as mentioned above.⁸⁶

We see, therefore, from the historical and other evidence considered above, that during the 5th and 6th centuries the area around Luce Sands was probably in very close contact with Ireland, although probably not ruled by an Irish king, both areas apparently forming a close cultural unit bridging the North Channel. All the Irish characteristics noted on the new ring-brooch from Luce Sands, therefore, readily fall into position and the brooch takes its rightful place as one more piece of evidence to be used in the archaeological jig-saw which will some day provide a more complete and accurate picture of early Galloway.

ACKNOWLEDGEMENTS

I would like to avail of this opportunity to thank all those who have helped me with this paper, particularly Messrs Cormack and Truckell, of this Society, who have been more than kind in asking me to undertake it and who have been extremely generous with their help in all things concerning it. Dr John X. W. P. Corcoran, F.S.A., of Glasgow University, also deserves very special mention for his continual encouragement and help, and for his most useful comments on the typescript. I wish also to thank Dr Françoise Henry, M.R.I.A., F.S.A., of University College, Dublin, and R. L. S. Bruce-Mitford, F.S.A., Keeper of British and Medieval Antiquities in the British Museum, for kindly discussing the artistic problems of the brooch with me; I should perhaps emphasise that neither was in complete agreement with me in all respects, and the conclusions reached must remain my sole responsibility. All the line-drawings in this paper are the work of Miss Peggy McGurk, to whom I would like here to acknowledge my grateful thanks.

ABBREVIATIONS USED

Arch.	Archaeologia
Arch.J.	The Archaeological Journal
JRSAI	Journal of the Royal Society of Antiquaries of Ireland
Med.Archae.	Medieval Archaeology
PPS	Proceedings of the Prehistoric Society
PRIA	Proceedings of the Royal Irish Academy
PSAL	Proceedings of the Society of Antiquaries of London
PSAS	Proceedings of the Society of Antiquaries of Scotland
TDGNHAS	Transactions of the Dumfriesshire and Galloway Natural History and Antiquarian Society
TRIA	Transactions of the Royal Irish Academy
UJA	The Ulster Journal of Archaeology

⁸⁵ H. O'N. Hencken, *op. cit.* (1942), 38, fig. 15, no. 512.

⁸⁶ If this be so, then it could mean that Watson may be correct in identifying Rosnat with *Candida Casa* on the strength of the word being a diminutive of *ross* signifying "a little cape" (*op. cit.* (1926), 159), despite objections made that it is Goedelic and not Brythonic (see P. A. Wilson, *op. cit.* (1962-63), 163, fn. 17).

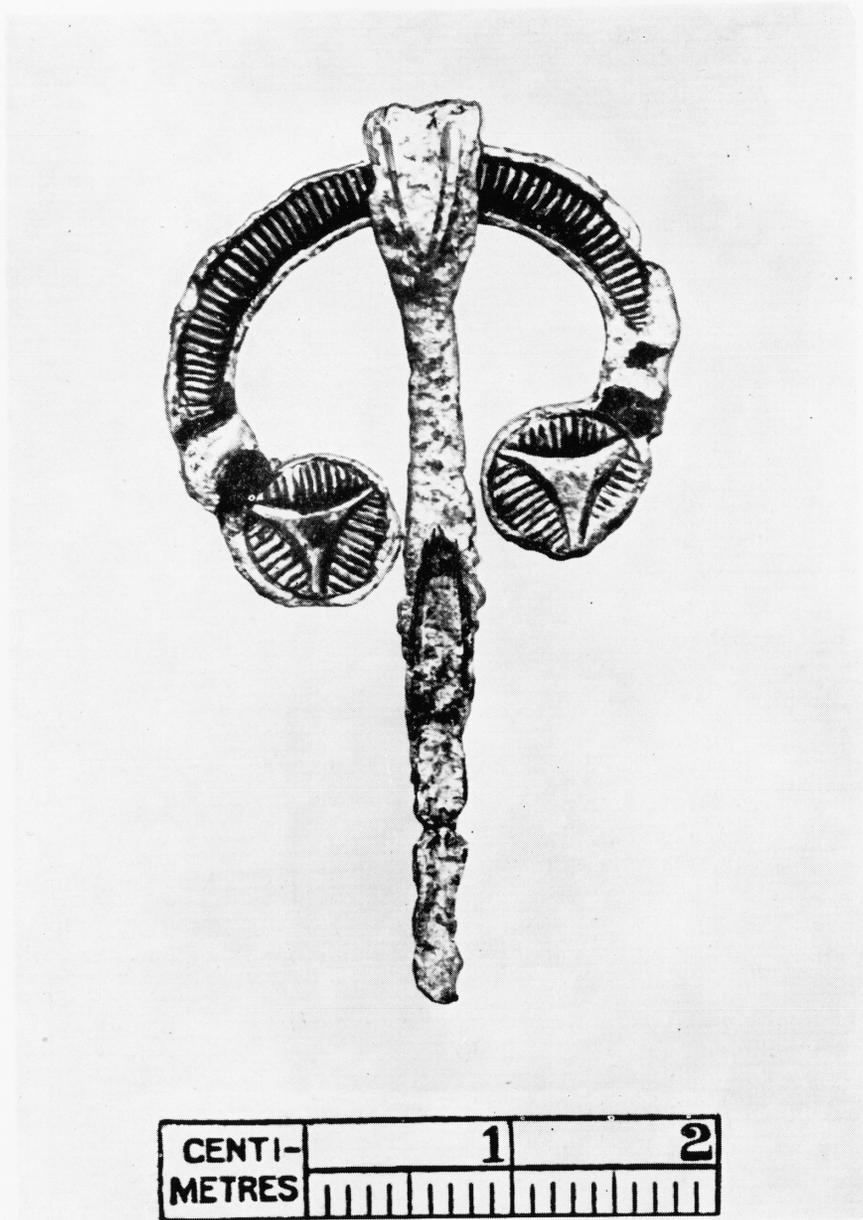


Plate V—Bronze ring-brooch from Luce Sands. (Before cleaning.)

Photo: Nat. Mus. of Ireland.

THE CUSTOMS ACCOUNTS OF DUMFRIES AND KIRKCUDBRIGHT, 1560-1660

By ATHOL MURRAY, PH.D.

At first sight it is surprising that there should be less information about the trade of the Solway ports during the century after 1560 than in the century before that date. Nevertheless, material concerning the customs of Dumfries is scanty enough, while there is even less about those of Kirkcudbright. Some of this has already appeared in print, but the most important documents are printed for the first time with this article.

Between 1560 and 1579 no accounts were rendered in Exchequer for the customs of Dumfries. It appears that some time between 1567 and 1576 Sir William Murray of Tullibardine, the Comptroller, leased to George Maxwell, burgess of Dumfries, the customs of "all maner of stapill guidis and customabill mercheandice passand furth of this realme be land or se furth of Drumthreis and boundis thairoff and of all Inglis guidis cummand furth of Ingland to Scotland at the West Marchis of the samin within the boundis of the wardandrie," for £40 a year. In a petition to the Lords Auditors of Exchequer he complained of interference from the customars of Edinburgh and Kirkcudbright, who had refused to pass goods customed by him without further payment. He had received surety for the customs of certain goods, but more duty had been exacted upon them when they reached Kirkcudbright and, in all, he had only been able to collect £4 10s. The reference to the customars of Edinburgh shows that goods must have been passing from Dumfries or the Borders to that city overland. The action of the customar of Kirkcudbright, however, may have been connected with the disputed jurisdiction over the west coastline between Dumfries and the Abbey Burnfoot at Dundrennan, which had figured in the case of the *Grace of God* in March, 1566.¹

There is no record of any action on Maxwell's petition and he himself had ceased to be customar by June, 1577, when Archibald Douglas was in office. On 22nd January, 1579, the latter rendered his account, lodging his customs book, which is extant.² This showed that during the previous nineteen months duty had been paid on 8 sacks and 19 stones of wool, 2 barrels of tar, 5 barrels of vinegar, 13½ barrels of "ploumdames" (prunes), 11 gross of leather points (laces), 10½ dozen blue bonnets, 1 dozen black bonnets, 19 dozen leather belts, 8 "buists" (boxes) of combs, 6 stones of lead, 4 stones of alum, 5 stones 5 lb. of pepper and ginger, 6 reams of paper, 4 gross of cards (for carding wool), 3 barrels of herring, 52 stones of "lint" (flax), 36 bolts of "worsattis" (worsted), 1½ barrels of oil,

¹ Scottish Record Office (SRO), Exchequer Petitions (E.10), section 1, No. 11. See also *Transactions*, xxxiii, 133-4. The jurisdiction over this part of the coastline was of importance to Dumfries, the Nith being unsuitable for larger vessels.

² This customs book is preserved in the SRO (E.71/10/1) and is printed in Edgar's *Introduction to the History of Dumfries*, ed. R. C. Reid, App. B, 261-8. There are slight discrepancies between it and Douglas's account, as printed in *Exchequer Rolls* (ER), xx. 296.

96 lb. of hemp, 60 "dozen" (i.e. 720 ells) of linen cloth, 14 stones of brass and 7 dozen papers of pins. Although his total receipts of £45 7s 10½d included £21 5s for unspecified English goods, it is evident that some of the commodities listed in detail must have been imports from England, these being the only imports on which duty was payable. Douglas's next accounts, for the periods January, 1579-January, 1580 and January-August, 1580, showed the same commodities, but in smaller quantities. On 21st August, 1581, he appeared before the auditors and "made fayth be his grete ayth" that he had not intromitted with the customs since 2nd September, 1580, the date of his last account, but obliged himself to "gif in the names of the personis marchandis and the quantitie of the guidis transportit be thame furth of this realme, quhairof thay haif nocht payit the customes, to the effect the saidis lordis auditouris may tak ordour with thame thairanent."³

Evidently the auditors were unable to find who was responsible for the customs between August, 1580, and August, 1581. In the latter month, however, the office of custumar was conferred on James Geddes of Barnbackle, apparently an unpopular choice. His first account, for the year August, 1581-August, 1582, was very similar to those rendered by Douglas, the total collected being £42 11s 9d.⁴ From 1st October, 1582, however, he became accountable to the Convention of Royal Burghs, by virtue of a lease of the whole customs of Scotland, granted by the King to four commissioners representing the burghs.⁵ Before long Dumfries endeavoured to get rid of him. On 17th July, 1584, the Convention ordered that when he next accounted he was to bring his "custome stamp or seill" and be discharged from his office. The provost, bailies and council of Dumfries were to present two qualified persons to be custumar and comptroller. Geddes, however, proved hard to dislodge. On 3rd December, 1585, the commissioners for Dumfries complained that their town "was and is gretumlie preiugitt in thair liberties and previlegis," in that Geddes, "being ane stranger and gentilman of the cuntrie," had been preferred to the town "anent the tak of the Kingis maiesties customes." The other commissioners found the complaint "resonabill," but deferred action until the next Convention. Nearly two years later, on 3rd November, 1587, the Convention remitted the election and admission of a custumar of Dumfries to the provost, bailies and council, but the end of the burghs' lease in October, 1589, found Geddes still in office.⁶

During the year, October, 1589, to October, 1590, duty was paid on a variety of woollen cloth, described as "gelt," "sky" and "stemming," as well as 220 dozen hooks and 22 dozen scythes.⁷ That these were imports is shown by Geddes's customs book for the period 1st July, 1592, to 1st August, 1593, which lists as "Ingless gudis" 180 dozen hooks, 6 dozen scythes, 166 pieces of "kelt,"

³ ER, xx, 314, xxi. 1. 550. The customs book for 1580 (E.71/10/2) is printed in Edgar, *loc. cit.*, 268-270.

⁴ ER, xxi. 215-6.

⁵ Recs. of Convention of Royal Burghs, i. 158-161.

⁶ *Ibid.*, 191, 196-7, 204, 258.

⁷ ER, xxii. 92.

20 pieces of "stemming," 27 pieces of Yorkshire cloth and 38 pieces of "clath callit wotschod or skay." The book for 1593-1594 contains only hooks, "kelt" and "stemming."⁸ In the year July, 1596, to July, 1597, the customs collected at Dumfries amounted to £20 19s 4d, which may be compared with £390 collected at Dumbarton and £6155 at Edinburgh. During the two years 1595-1597 receipts at Ayr amounted to £86 16s, while there is no record of any duty being collected at Irvine, Kirkcudbright or Wigtown. It will be observed that trade was still concentrated on the east coast ports and that even by west coast standards the volume of trade at Dumfries was small, being confined to a range of imports, such as woollen cloth, scythes and sickles, that was even more limited than it had been in 1580.⁹ Some allowance should be made, however, for inefficiency in collection, if not for deliberate fraud on the part of the merchants.

In 1597 the customs administration underwent a reform long overdue. The duties on exports were increased substantially and, for the first time, duties were imposed on imports, not merely from England but from all parts.¹⁰ Unfortunately, at this point the Dumfries accounts fail altogether. On 16th July, 1601, Geddes appeared in Exchequer, alleging that he had nothing to charge himself with, because no goods had been exported since his last account on 6th July, 1597.¹¹ By this date, however, another general lease had been granted of the whole customs of Scotland. Geddes may have continued to hold office under the tacksmen; certainly in 1611 his son, John Geddes of Barnbuckle, was sub-tacksmen for Dumfries, together with Edward Johnson of Ryall, Francis Irving, burghess of Dumfries, and William Haining, commissary clerk. They had jurisdiction over the whole sheriffdom, including Annandale, Eskdale, Ewesdale and Wauchopedale, but by 1618 the boundaries of the precinct had been extended to take in Liddesdale.¹² Before May, 1613, however, the sub-tack was in other hands. Robert Pringle was "custumer of the four futtit beistis transportit in England and importit in Scotland" and Edward Hamilton was custumar of Dumfries. On 31st July, 1618, the principal tacksmen obtained decree against them for sums which they had failed to pay in 1613.¹³

Even allowing for the increased duties payable since 1597, there is evidence that the Union of the Crowns in 1603 was followed by an expansion of Scottish trade. The tack of the whole customs of Scotland, for which the burghs had paid a mere £4000 a year in 1583, brought in £24,000 in 1600, £63,333 6s 8d in 1606 and in 1617 no less than £140,000, although this last total is rather less impressive when converted to its sterling equivalent of £11,666 13s 4d.¹⁴ By 1617, however,

⁸ Printed *infra*, Nos. 1-2. These books were lodged by Geddes with his account for the period 1 Oct. 1590-31 Aug. 1594. *ER*, xxii, 424.

⁹ *ER*, xxiii 182-4. It should be noted, however, that the customs accounts did not include imports from places other than England.

¹⁰ *Acts of Parliament (APS)*, iv, 130. The books of rates in force in 1597 and 1612 are printed in *Ledger of Andrew Halyburton*, pp. cxii-cxvi, 287-341.

¹¹ *SRO. MS Exchequer Roll (Ex. Roll) No. 537.*

¹² *SRO. MS Exchequer Act Book (Ex. Act Bk.) 1611-1624 (E.4/4)*, fols. 94, 290.

¹³ *Ex. Act Bk.*, fol. 245. Pringle and Hamilton were not local men, the latter being described as brother of Robert Hamilton, burghess of Dundee. *Ibid.* fol. 290.

¹⁴ *ER*, xxi, 249; *Ex Rolls Nos. 541, 549, 566.* In 1617 the tack duty included payment for the impost on imported wines.

it had become apparent that the Crown could receive greater profit by ending the general tacks. Accordingly some ports, notably Leith, reverted to direct collection, while the customs of others were leased to individual tacksmen. Thus in the year November, 1617, to November, 1618, Pringle and Hamilton paid £2886 13s 4d for the customs of Dumfries.¹⁵ On 8th December, 1618, their tack was renewed for a period of five years, the yearly payment being increased to £3000.¹⁶

While these figures are evidence that the trade of Dumfries had expanded considerably, information about its nature and direction is largely lacking. In 1613 the former sub-tacksmen obtained general letters of horning, with which they proceeded to charge a large number of persons for duties allegedly unpaid in 1611 and 1612. Some of those charged endeavoured, for the most part successfully, to have the charges suspended, on the grounds that the payments claimed had either been made or else were not due at all. In itself this litigation is of little interest but indirectly it sheds some very welcome light on Border trade. The parties seeking suspension included not only five burgesses of Dumfries but also fourteen merchant burgesses of Edinburgh and no less than fifty-seven "men of Glasgow."¹⁷ This last group included persons from as far afield as Kilmarnock and Falkirk, who were probably no more than pedlars or packmen, but the Edinburgh burgesses appear to have been substantial merchants, who were each charged with non-payment of duty on up to 11 packs of English cloth. It appears that there was a considerable traffic in cloth overland from England by the west coast route. In other cases the disputed sums were duty on cattle. Sir Robert Scott of Thirlestane successfully resisted a claim for payment for six score beasts, which he was alleged to have "transportit" to the fair of Carlisle on 13th October, 1611.¹⁸ Again, the sub-tacksmen tried to prove that John Rome, merchant burges of Dumfries, had exported 320 nolt to England on 30th September, 1612, and had imported 120 from England about six weeks before that. George Rome was alleged to have imported 120 nolt on 15th June, 1612, 107 on 31st July and another 140 on 30th September. For his part, he claimed that he had only imported 45 nolt, producing as evidence a "ticket," extracted from the customs book of Carlisle.¹⁹ The case is of interest as showing the cattle trade operating across the Border in both directions, unlike eighteenth century droving, which was almost exclusively south-bound.

From 1614 onwards a series of accounts provides some information about exports from Dumfries. The tacks of the customs did not include the bullion duty on exports, for which the customars were still required to account in Exchequer. Various statutes, from the fifteenth century onwards, had required merchants exporting goods to bring back a proportional amount of bullion, partly to provide for the needs of the mint and partly to prevent the country being drained of precious metals to pay for imports. There is every reason to believe

¹⁵ Ex. Roll No. 569.

¹⁶ Ex. Act Bk., 1611-1624, fol. 290.

¹⁷ *Ibid.*, fols. 81-106.

¹⁸ *Ibid.*, fol. 101.

¹⁹ *Ibid.*, fols. 83-86.

that these statutes were largely ineffective before the beginning of the seventeenth century. In January, 1598, however, the Auditors of Exchequer drew up a new "A.B.C. of the bullion" or list of commodities for which bullion must be paid to the mint,²⁰ and from 1610 onwards the customars' accounts of bullion were entered in the Exchequer rolls. The first Dumfries account, for the year 1st November, 1613, to 1st November, 1614, shows that 10,560 sheepskins and 1000 hides were exported. In the following year 31,200 sheepskins and 160 hides were exported from Dumfries and 23,640 sheepskins and 100 hides from Kirkcudbright.²¹ No figures are available for 1615-1616 but in 1616-1617 bullion was paid for 13,800 sheepskins at Dumfries and 12,680 at Kirkcudbright. In 1617-1618 the list of exports was somewhat longer: for Dumfries 21,600 sheepskins, 100 ells of cloth called "Kendell cottoun," 660 hides, 11 lasts (132 barrels) of herrings and 21 stones of wax, and for Kirkcudbright 24,060 sheepskins, 210 hides and 5 lasts (60 barrels) of herrings.²²

Although interesting, the figures for exports provided by the bullion accounts are somewhat misleading, because they are incomplete. The account for 1621 shows that bullion was paid for 15,060 sheepskins and 550 hides exported on two ships, but comparison with entries in the customs book elicits the fact that further consignments of sheepskins, amounting in all to 3820, were also exported during the year.²³

This customs book, taken in conjunction with other records, provides several interesting facts about the trade of Dumfries at the period. For instance, it is evident that the burgh depended on ships from other ports for its overseas trade. Thus the bark, *John* of Glasgow, sailed from the Clyde on 4th December, 1620, with 156 barrels of herrings for France. On the return voyage, she carried a cargo of wine, some of which was unloaded at Dumfries on 25th February, 1621, and the remainder, presumably, carried back to the Clyde. On 15th March the *Harry* of Ayr took cocket at Ayr for 20 dakers of hides, 12 barrels of herrings and 30 bolls of bear. This cargo was probably carried to Ireland, for on 2nd April the ship arrived at Dumfries with 3000 rabbit skins and 1200 "girth stingis" (wood for barrel hoops). On 27th July the *Grace of God* of Renfrew took on a cargo of sheepskins and hides, and next day 400 bolls of salt were entered inwards on the *Good Fortune* of Glasgow. On 26th August an unnamed ship brought in 3500 deals (planks). Then the *John*, which had sailed for Flanders at the end of May with sheepskins and hides, arrived back at Dumfries on 2nd September with a miscellaneous cargo, after which she returned to the Clyde, to take on board another cargo of herrings on 12th October, 1621.²⁴

From the cargo brought in by the *John* it is possible to judge how far

²⁰ APS, xii, general index, s.v. "Bullion"; Ex. Act Bk., 1597 (E.4/3).

²¹ *Infra*, Nos. 4-5. In counting sheepskins the "long" hundred (120) was used, but the figures quoted have been adjusted to modern computation.

²² Ex. Rolls Nos. 566, 569. "Kendell cottoun" was a woollen fabric of the nature of frieze, originally made at Kendal in Westmorland.

²³ *Infra*, Nos. 6-7.

²⁴ *Infra*, Nos. 6-7; Dumbarton Customs Bk. (E.71/9/2); Ayr Cocket Bk., 1577-1632 (B.6/29/1).

Dumfries was dependent on the import of foreign commodities. In two cases, the goods were described simply as "ane trie of small cramrie" or, in more prosaic terms, a barrel of small merchandise. Small quantities of pots, pans, brass, tar and ropes were imported, together with sugar, hops, pepper, raisins and prunes. Alum would be used for tanning hides and other commodities seem to have been connected with the cloth industry, namely "litt" (dye) and other dyestuffs, such as brazil, madder and copperas. The cargo also included between 43 and 50 barrels of soap,²⁵ a commodity which a contemporary Scot described as being composed of "suche pestiferous and filthie ingredientis as no civile kingdome, yea the verry rude barbarianis will nocht allow or permitt the lyk to be sauld amangis thame." As the writer was himself seeking a monopoly for his own soap, he must be suspected of exaggeration when he asserted that the obnoxious foreign variety was manufactured solely for sale in Scotland and was imported by unpatriotic merchants, who preferred "thair awne privat gayne to the honnour, credite and reputatioun of thair native cuntry . . . , bot withall the use of this pestiferous and noysome saip within this kingdome produces mony shamefull and havie imputationis aganis the same, especiallie be strangeris hanting and frequenting this kingdome, quha may not abide the stinking smell of the naiprie and lynning clothes waschin with this filthie saip." After some experience of the home-produced soap, the burghs of Ayr, Dumfries, Kirkcudbright, Wigtown and Whithorn obtained leave to resume imports from Flanders, on the ground that these were less expensive than transporting soap overland from Leith.²⁶

With the possible exception of the *Harry*, the customs book makes no mention of ships trading with Ireland. Other sources, however, name Dumfries, Kirkcudbright and Wigtown among the ports engaged in this trade, and in 1623 Dumfries merchants were among those who complained that they had been made to pay double custom on goods imported from Ireland "to be transportit to forayne cuntreys," which suggests the existence of a re-export trade in Irish products.²⁷ Perhaps the Irish trade and the coastal traffic across the Solway were lumped together with goods crossing the Border overland. In this connection, some difficulty arises from the failure of the customs book to distinguish between imports and exports. English cloth, hooks and scythes clearly fell into the former category, sheepskins, hides and linen cloth into the latter. The separate record kept of duty paid on livestock in 1621 was solely for exports to England, this traffic apparently being confined to the summer months. Sheep were sent south mainly in June, with relatively few in July, and none thereafter. On the other hand, although the movement of cattle also began in June, it reached its peak in September. In all, between 2nd June and 19th October, 1621, duty was paid on 4640 sheep, 280 lambs, 65 horses and 2531 nolt (head of cattle).

²⁵ 42 barrels were listed as "saip" and another 8 as "saip and litt."

²⁶ *Reg. of Privy Council (RPC)*, xii. 106, xiii. 250.

²⁷ *RPC.*, xiii, 242, 553.

One commodity, which did not appear in the customs book, was wine. The great impost of wine formed a separate branch of revenue, first levied in 1590, at a somewhat earlier date than the other import duties. In 1597 an Act of Parliament permitted noblemen and freeholders to import for wine their own use free of custom,²⁸ a concession which was the more valuable because of further duty, the small or petty impost, was exacted on retail sales.²⁹ Until 1617, when direct collection was substituted, the great impost was leased to tacksmen. In the first year of direct collection, November, 1617-November, 1618, the customars of Dumfries accounted for £1186 16s as the impost on 37 tuns of imported wine, deducting £37 as their fee and £25 for a tun bought by the laird of Drumlanrig. In the following year 43 tuns were imported, of which 2 puncheons were bought by the laird of Amisfield.³⁰ The wine account for 1621 shows that the 28 tuns and 3 hogshead imported formed a single consignment for one merchant, John Hairstanes, who sold six hogsheads or puncheons to the Earl of Nithsdale and two to Sir William Grierson of Lag. It seems probable that the wine was purely for local needs, perhaps including those of Kirkcudbright. By contrast, during the year November, 1620, to November, 1621, 263 tuns were imported at Glasgow, Dumbarton, Ayr and Irvine, and no less than 1302 tuns at Leith.³¹

Although it is probable that some of the goods on which duty was paid never came near Dumfries itself,³² the burgh was head port of a precinct which contributed a substantial sum in revenue to the Crown. In 1621 the customars on the East Marches "from the Wheel Causeway to Berwick" paid £500 tack duty for custom of "four-footed beasts" and collected a mere £36 for other goods. On the west coast Dumfries, at a tack duty of £3000, ranked second to Glasgow and the Clyde (£3600), well above Ayr (£1333 6s 8d), Kirkcudbright (£1066 13s 4d) and Irvine (£166 13s 4d). Comparison with the east coast ports is more difficult, as several ports were under the same tacksmen, but the tack duty for Dundee, Perth and Arbroath was £6000, for Aberdeen and the other ports between Montrose and the Spey £3760 and for the customs of coal and salt exported from the Forth ports above Queensferry £3000. Although the total duties collected in the ports of Fife between November, 1620, and November, 1621, amounted to only £2843, on the other side of the Firth of Forth, Edinburgh and Leith produced £24,310 out of the total customs revenue of £52,646. Their share, however, had fallen from 76.7 per cent in 1597 (£6155 out of £8034) to 46.4 per cent, while that of the west coast ports had risen from about 5 per cent to 17.4 per cent.³³ On the other hand, Edinburgh and Leith collected 64 per cent of the wine impost, £42,187 out of £65,702, while the west coast ports only contri-

²⁸ RPC, iv. 514; APS, iv. 136.

²⁹ In July 1614 the burgh of Dumfries was granted a tack of the new petty impost and excise of £4 per tun of wine "ventit, run, toppit and sauld in smallis" within the burgh and the sheriffdom of Nithsdale. Ex. Act Bk., 1611-1624, fol. 156. See also Edgar, *loc. cit.*, 270-272.

³⁰ Ex. Rolls Nos. 568, 571.

³¹ *Infra*, No. 8; Ex. Roll No. 576.

³² Duty on goods definitely imported or exported to Dumfries itself by sea amounted to £400, as against £1900 for cattle crossing the Border.

³³ Ex. Roll No. 576; ER, xxiii. 182-190. It is impossible to arrive at an exact figure for the west coast ports in 1597.

buted 14.7 per cent, their joint total of £9473 10s being little more than the sum collected at Dundee. The grand total of customs and wine impost in 1620-1621 was £118,347 18s 10d, of which Edinburgh and Leith contributed 56 per cent and the west coast ports 15.75 per cent.³⁴

It is possible that the tack duty paid for the west coast ports was too high. In 1624 £600 was deducted from the £3600 payable for Glasgow, because of "the rarity and exportation and importation" of goods and merchandise.³⁵ If the total of £2789 7s 6d, shown at the end of the Dumfries customs book for 1621, is correct, it shows that Pringle and Hamilton were losing money on their tack, for which they were paying £3000. For whatever reason, instead of running for the full five years, it was terminated after three. On 12th February, 1622, Archibald Stewart, servitor to the Earl of Angus, and John Stewart, his brother, were granted a tack of the customs within the sheriffdoms of Berwick, Roxburgh, Dumfries, the stewarty of Annandale and the lordship of Liddesale, for three years from 1st November, 1621, at a tack duty of £3700.³⁶ Accounts of goods exported were entered in the Exchequer rolls until 1624, but it is impossible to say with certainty whether these apply to the port of Dumfries.³⁷

As we have seen, Kirkcudbright ranked well below Dumfries and slightly below Ayr, according to the tack duty payable in 1621. Information about the customs of the port is largely lacking in the half century after 1560. Thomas Maclellan of Bombie, who rendered his first and only account in 1582,³⁸ had been custumar since 1555 and probably retained the office until his death in 1597. In 1602 it was held by the tutor of Bombie, William Maclellan of Auchlane, but soon afterwards the general tacksmen of the customs brought to an end the control which the Maclellans had exercised since 1525. By 1609 they had installed as their deputy Robert Gledstanes, who was succeeded by David Arnot of Chapell in July, 1610. From November, 1617, Arnot himself held the tack of the customs for £1000 per annum, increased in the following year to 1600 merks (£1066 13s 4d), his jurisdiction extending not only over Kirkcudbright itself but also over Wigtown and Whithorn, "the Kers of Thorne, the fute of the watter of Ur, the Ile of Hestoune, the portis, heavines and harberies of Portpatrik, Portmossoke and sua mekill of the loch of Lochryane as is within the boundis of Galloway to the merche of Carrick."³⁹

The fact that the Maclellans made no payments in the Exchequer after 1582 does not mean that they had failed to collect the duties at the port. In March, 1602, some salt imported by an Edinburgh merchant in the *Margaret* of Queensferry was arrested at the instance of the tutor of Bombie and his deputy, for duties allegedly unpaid by him on goods exported in a ship of Dysart in the previous August, and the deputy custumar sought payment from a burgess of

³⁴ Ex. Roll No. 575. There is no wine account for Kirkcudbright.

³⁵ Ex. Roll No. 585.

³⁶ Ex. Act Bk., 1611-1624, fol. 318.

³⁷ Dumfries was the only sea-port in these counties, except for Eyemouth, which was under separate administration. The wine accounts from 1623 to 1629 were expressly for Dumfries.

³⁸ ER, xxi. 204.

³⁹ Ex. Rolls Nos. 555, 557, 569.; Ex. Act Bk. 1611-1624, f. 335.

Ayr for English cloth imported in September, 1600.⁴⁰ In fact, the burgh records provide evidence of a fair amount of trade during the last quarter of the sixteenth century and the first half of the seventeenth century. In 1582 four ships arrived with wine, iron and salt. Seven were recorded in 1614, one of which, a French ship, the *Phisane*, brought three cargoes of salt in January, September and November. Although a local vessel, the *Elizabeth*, was employed in the wine trade between 1600 and 1602, the burgh, like Dumfries, was largely dependent on ships from elsewhere. Some of these were French, including two from La Rochelle and a number from the Breton port of Le Croisic and Le Pouliguen, near Saint Nazaire. As one would expect, Scottish vessels figure in the records, including some from East coast ports. For instance, the *James* of Pittenweem sailed from Ayr on 18th December, 1581, with a cargo of cloth and arrived back at Kirkcudbright on 12th April, 1582, with wine and iron. On 11th August, 1595, the *Flower de Lyce*, of Leith, brought in a cargo of salt, afterwards proceeding to Ayr, where she took cocket on 17th October for an outward cargo of cloth and herrings.⁴¹ It is evident that vessels for further up the west coast found Kirkcudbright a convenient port of call. In 1592 Ayr, Glasgow, Irvine and Dumbarton accused the burgh of extortion in taking four bolls of salt from each ship and bark arriving within thair "harbrie."⁴²

The burgh records give information about imports of wine⁴³ and salt from France, salt from England and "merchandis geir" from Flanders, but there are only a few references to exports, such as "Robert Wallace schip that tuik the skynniss to Flanderis," in 1617.⁴⁴ A better idea of the extent of the export trade can be gained from the bullion accounts, which begin in 1609.⁴⁵ Between July, 1609, and July, 1610, 9 hundred and 5 score sheepskins (1180) were customed and in the following year 2160, for which Arnot delivered 4 lb. 8 oz. of bullion to the Mint. The number of sheepskins exported fell from 41,400 in 1611-1612 to 30,400 in 1612-1613, but this was offset by other goods, namely 520 hides and 200 ells of white woollen cloth. In 1613-1614 exports included not only sheepskins but also small quantities of rope, brazil (dye), linen cloth, salt, thread, coals, wool, brass and tar.⁴⁶ As some of these were obviously imported commodities, it may be that we have here a record of a re-export trade, probably to Ireland and the Isle of Man. The burgh records provide further evidence of traffic with both places.⁴⁷ The bullion accounts from 1614 to 1621 have already been examined in connection with those of Dumfries. Suffice to say that the entries in them are confined to sheepskins, hides, wool and herrings, with small quantities

40 Kirkcudbright Town Council Records (Kirkcudbright Recs.) 1576-1604, 413-415.

41 *Ibid.*, 159, 161, 163, 166, 314, 329, 341, 373, 397; Kirkcudbright Recs., 1606-1658, 145-161, 203.; Ayr Cocket Bk, 1577-1632.

42 Recs. of Convention of Royal Burghs, i. 380.

43 Between 1618 and 1629 only one wine account for Kirkcudbright appears in the Exchequer rolls, namely 1624, when 33 tuns and 2 puncheons were imported. Ex. Roll No. 584.

44 Kirkcudbright Recs., 1606-1658, 13, 145-161, 214, 216, 238, 284, 218, 424, 677.

45 These accounts were nominally for Galloway, as well as Kirkcudbright, but the latter appears to have been the only place with a substantial export trade.

46 Ex. Rollis Nos. 555, 557, 559, 561, 563.

47 Kirkcudbright Recs., 1606-1658, 164, 211, 303.

of cloth, salmon and, surprisingly, feathers. The last account was enrolled in 1626.⁴⁸

On 13th December, 1627, Arnot granted a bond, which he failed to implement, to give in an account of his intromission with the customs. By November, 1628, he had been succeeded as tacksman by Hugh, Viscount Airds, who in the previous year had received a commission to regulate trade with Ireland.⁴⁹ On 28th November, 1628, another general tack of the customs was granted, but Kirkcudbright remained separate under Viscount Airds, who paid a tack duty of 2000 merks (£1333 6s 8d) until 1634.⁵⁰ In that year the merchant and financier, Sir William Dick of Braid, became general tacksman of the customs and wine impost, Kirkcudbright being one of the ports under his control. There is no record of his administration of the port, but in December, 1634, he granted a sub-tack of the Border customs to Robert Pringle of Stitchell and John Pringle, his eldest son, for 10,500 merks (£7000). The sub-tack duty for Glasgow was £4000 and for Ayr and Irvine £2133 6s 8d.⁵¹ In fact there is some evidence of a decline in the trade of Kirkcudbright. The burgh records contain fewer references to shipping and an account presented by William Glendonyng, custumar at the port, shows that during the two years, November, 1639, to November, 1641, the duty collected amounted to only £246 16s 4d gross (£180 3s net). In the second year eight boats or barks imported or exported salt, coals, hides, wood and a few head of cattle. These were presumably trading with England or Ireland, because special mention is made of "ane bark that went to Flanderis" with 10,800 sheepskins, bringing back timber and other unspecified goods.⁵²

By November, 1646, Dick was bankrupt and the tack of the customs passed into other hands. It appears, however, that Kirkcudbright was not typical of Scottish ports and that the customs revenue was largely unaffected by the Civil War. The new tacksmen were prepared to pay nearly £150,000 for the customs and wine impost, about £15,000 more than Dick. In turn they granted sub-tacks to William Livingston of Airds of the customs of all ports between the "watter mouth of Clyde . . . and the watter mouth of Nith" (except Portpatrick) for 3700 merks (£2466 13s 4d) and to Col. William Douglas of Kelhead, Sir John Charteris and Col. William Lockhart of Lee of the Border customs.⁵³ As the latter were paying £8000, their profits must have been badly affected when, on 26th June, 1647, the export of cattle, horses and sheep was forbidden, Charteris being one of those empowered to enforce the prohibition.⁵⁴

As we have seen, in 1647 the ports of Galloway were put under the same tacksman as those in Ayrshire. When Cromwell established free trade between

⁴⁸ Ex. Rolls Nos. 579, 582, 585, 591.

⁴⁹ Customs Accounts (E.73) No. 4; Ex. Roll No. 597; RPC (2nd series), i. 621-5.

⁵⁰ Ex. Rolls Nos. 604, 607, 609, 613. Dumfries and the Borders were also under a separate tack until 1631.

⁵¹ Ex. Act Bk., 1634-1639, fols. 36, 43, 46.

⁵² *Infra* No. 10. The ship from Flanders appears in *Kirkcudbright Recs.*, under date 28 July 1641 (p. 646).

⁵³ Ex. Act Bk., 1642-1647, fols. 284, 307, 323. Charteris and Douglas had both held sub-tacks under Dick.

⁵⁴ *Ibid.* fol. 345.

England and Scotland in 1654, a separate customs establishment ceased to be justified and Dumfries was incorporated with Ayr and "all the shoare that bounds and terminates the shores of Kyle, Carrick and Galloway," Thomas Tucker, who reported on customs and excise in Scotland in 1656, found the region "fuller of moores and mosses then good townes and people." Ayr was the only port with its own ships, "which are employed most comonly in a coasting trade to Glasgow and sometimes with coales for Ireland." In the year from 1st October, 1655, to 1st October, 1656, the total product of customs and excise for the whole district was only £435 9s 2d sterling, far less than any other port, with the possible exception of Inverness. Even though customs officers were stationed only at Ayr, Portpatrick and Kirkcudbright, Tucker considered that the revenue "will not doe much more then defray the charge which is necessarily expended on them."⁵⁵

Tucker's report provides a valuable, if gloomy, picture of the trade of the region. Stranraer "would prove a pretty harbour for shelter of vessells in time of storme to putt in there, which is certainly very seldome and rare, in respect there is not now nor ever was any trade to bee heard of here." While Garvillan was a small creek, "whether boates come and goe from Ireland," Portpatrick was "much frequented" by those trading, "because of its nearnesse to that countrey and conveniency of transporting horse, cattell and other materialls for planting thither, which is the sole trade of these parts as there is noe harbour, soe no vessell of any burden can possibly come in." The next ports were Whithorn and Wigtown "to the latter of which there comes sometimes ane small boate from England, with salt or coales," At the foot of the Water of Fleet was a creek "not worth the nameing." Kirkcudbright, however, was "a pretty and one of the best ports on this side of Scotland, where there a few, and those very poore, merchants, or pedlars rather, tradeing for Ireland." A few small boats came from England with salt and coal to the small creeks of Balcary, the Water of Urr and Southernness. Lastly, Dumfries was "a pretty mercat towne but of little trade, that they have being most part by land for Leith or Newcastle. The badnesse of comeing into the river upon which it lyes, hindering theyr commerce by sea, soe as whatever they have come that way is comonly and usually landed at Kircowbright."⁵⁶

These conditions, which could hardly grow worse, may have improved after 1656. Certainly in the year following the Restoration, between 21st August, 1660, and 15th September, 1661, the collector of customs in Galloway "from the bridge of Dumfries to Glenapp in Carrick" received £5327 10s for 10,655 beasts exported, £52 for 52 horses and £19 for 66 barrels of oatmeal.⁵⁷ Soon afterwards the customs administration was reorganised, Kirkcudbright being joined to Dumfries and separate collectors being appointed for Portpatrick and the South

⁵⁵ Misc. of Scottish Burgh Recs. Sec., 28-29, 38-46.

⁵⁶ In 1622 it was still necessary to bring goods to Dumfries by lighter from Kirkcudbright or "Hasting" (Heston Island). *Ibid.* 93.

⁵⁷ Ex. Roll No. 664.

Borders. This reorganization provides a convenient point to terminate the present study.

APPENDIX : ORIGINAL DOCUMENTS⁵⁸

1. Customs Book of Dumfries, 1592-1593 (E.71/10/3)

The compt of Ingles gudis custumit at Drumfreis fra the fyrst of July in the yeir of God j^mv^clxxxij yeiris to the fyrst of August in the yeir of lxxxiiij yeiris as followis, quhilkis ane yeir and ane monyth.

Hwkis⁵⁹

Jhone Poull⁶⁰ xx doz.; William Rychartsoun xx doz.; John Geibsoun xv doz.; William Hope xij doz.; Gelbart Makclene viij doz.; Thomas Davidsoun x doz.; Robert Lawsoun viij doz.; Jhone Brown⁶¹ xvj doz.; Jhone Deiksoun viij doz.; Jhone Gelespie xij doz.; Jhone Arvyng viij doz.; David Bell vj doz.; Anttoun Weld xj doz.; Johne Jhonstoun xxiiij doz.

The nowmer of houkis ix^{xx} of doz.,⁶² the cowstoum thairof is iijli., compt the doz. to iijj d.

Sythis⁶³

Jhone Gebssoun ij doz.; Jhone Poull j doz.; Jhone Brown j doz. ½ doz.; Johne Rychartsoun ij doz.; William Hope j doz.; Thom Dawidsoun j doz. ½ doz.; Jhone Reige ½ doz.; Robart Lawsoun ½ doz.; Gybie Makcleyne j doz.; Willie Rychartsoun ½ doz.; Georde Phareis ij doz.; France Arvyng ½ doz.; Jhone Jhonestoun j doz.; Arche Reige j doz.

The nowmer is vj doz. of sythis, the custowm of the doz. iij s. iijj d. Summa fyftie there (sic) schelleng iijj d.

Kelt⁶⁴

Harbart Maxwell xvj peice; Jhone Gebssoun xvij peice; Jhone Brown xvj peice; Jhone Poull xv peice; Matho Tait iijj peice; Gawyng Lorymer v peice; William Bell vij peice; Thomas Davidsoun viij peice; Jhone Jhonestoun xiiij peice; Arche Reyge iij peice; Georde Phareis xvj peice; France Arving v peice; Robart Lawsoun iijj peice; James Weld xv peice.

The nowmer of kelt viij^{xxvj} peice, the custowm of the peice tua s. Summa vij li. xij s.

Stemming⁶⁵

James Weld v peice; Jhone Poull j peice; Jhone Rychartsoun j peice; Matho Tait j peice; Gawing Loriemer j peice ½ peice; Thom Dawiesoun j peice; Jhone Jhonestoun ij peice; William Hope iij peice; France Arving ij peice; Geibie Maccleine ij peice; Johne Breiche ½ peice.

Nowmer of stemmyng xx peice, custum of peice iijj s. Summa iijj li.

Yorkschayre clath

Georde Phares vj peice; France Arving iijj peice; William Rycharsoun iijj peice; Jhone Brown v peice; Jhone Jhonstoun j peice; James Weld vij peice.

Nowmer of Yorkscheir clathis xxvij peice, custum of peice vj s. Summa viij li. ij s.

Clath callit wotschod or skay⁶⁶

Robert Heislope iijj peice; William Rychartsoun iij peice; Jhone Gebssoun iijj peice; Jhone Poull iijj peice; Thom Davidsoun ij peice; Jhone Brown ij peice ½ peice; Wille Bell iijj peice; Matho Tait iij peice; Jhone Jhonstoun iij peice; Georde Pharys iijj peice; France Arwyng v peice.

⁵⁸ The original documents are preserved in the Scottish Record Office: Customs Books, First series (E.71), Customs Accounts (E.73) and Bullion Accounts (E.74).

⁵⁹ Hwkis: perhaps reaping hooks.

⁶⁰ In the MS books each merchant's name appears on a separate line. See *Transactions*, xl. 140-146, where the form of the customs books is discussed.

⁶¹ Here "Brown," but later in the book clearly "Brown."

⁶² i.e. 9 score dozen (2160).

⁶³ Sythis: scythes.

⁶⁴ Kelt: black or grey cloth or frieze.

⁶⁵ Stemming: coarse worsted cloth.

⁶⁶ Wotschod: worsted. Skay: meaning uncertain, perhaps blue cloth, i.e. sky-coloured.

The nowmer of wotschod and skay is xxxviiij peice and ane half, custum of the peice iij s. iiij d. Summa vj li. ij s. viiij d.

Summa totales (sic) fourtie pound viij s. The customer fye tilbe deduceit xx s.

James Geddes of Barbauchill with my hand.

2. Customs Book of Dumfries, 1593-1594 (E.71/10/4)

The Inglis gudis custumit at Drumfreis fra the first off Agust in the yeir off God 1593 to the first off November⁶⁷ in the yeir off God 1594.

Huickis

Mathou Peull xij doz.; Johne Richertson x doz.; Williame Johnestoun xij doz.; David Bell ix doz.; Robert Richertson x doz.; Frances Ouring xv doz.; Thomas Davidson x doz.; Johne Kartpatrick xiiij doz.; Archbald Rig x doz.; William Carriddis ix doz.; Robert Lasoun ix doz.; Adam Cursall xvj doz.; Mathou Tait x doz.; Thomas Potter xiiij doz.; Gilbert McKlin ix doz.

Summa v^{xx} viij dozen. Inde custuma lvj s.⁶⁸

Kelt

Williame Johnestoun x peice; Williame Hop viij peice; Thomas Davidson v peice; Thomas Potter iij peice; George Fareis x peice; Mathow Tait iij peice; Adam Merchell vj peice; Cristie Merchell vj peice; Williame Houp xij peice; Alexander McGoun viij peice; Johne Gipson x peice; Williame Carriddis vij peice; Adam Corsill x peice; Francis Eroun⁶⁹ x peice; Johne Mordoch iij peice; David Bell iij peice; Johne Mourdouch ij peice.

Summa v^{xx}viiij peice. Inde custuma xj li. xvj s.

Stemming

Williame Johnestoun iij peice; Francis Eroun v peice; Williame Richertsoun vj peice; Robert Hislop iij peice; Archibald Rig v peice; Johne Gipson vj peice; Mathow Peull v peice; Johne Mondell iij peice; Robert Richertsoun v peice; David Gordoun iij peice; David Bell ij peice.

Summa l peice. Inde custuma x li.

Summa totalis xxiiij li. xij s. Feodum customarii xxij s. viij d. Rotulatori xxij li. ix s. iij d.⁷⁰

3. Bullion Account for Dumfries, 1613-1614 (E.74/1/4)

The compt of the gudis transported att the port of Dumfreis betwix the first of November 1613 to November j^mvj^c & fourtein, gifin up be Edward Hamiltoun and Robert Pringill, customeris depute att the saed port.

Item of schein skins awcht thowsand awcht hundreth⁷¹

Item of hydys saivin daekeris⁷²

The bulioun quhair of extendis to twa pund fyve unces and ane half.

I am satisfied of the bulioun foirsaid and dischaerges the saedis customeris thair of, consentis thir presents be inrolled in the chekker rolis. **George Foulis.**⁷³

4. Bullion Account for Dumfries, 1614-1615 (E.74/2/4)

The compt of the goodis and marchandice shippit at Dumfris betuix the first day of November 1614 and the first day of November 1615 yeiris, conforme to the particular compt maid, subscreyveit and presented be Eduard Hammiltoun and Robert Pringil, customeris deputtis thair, extendis to tuintie sax thowsand sheip skynnys and saxtene daicker of hyddis and to sax pund threttene unces viij deneiris of bullione. **Alexr. Huntare.**⁷⁴

⁶⁷ This should probably be September, as Geddes accounted on 31 August 1594. ER, xxii. 424.

⁶⁸ The totals are added in a different hand.

⁶⁹ Initial H deleted. "Eroun" or "Ouring" appears to be identical with "Arving" in No. 1 and was probably Francis Irving, who was a sub-tacksman of the customs in 1611 and also appears in the customs book for 1621.

⁷⁰ Total £24 12s, customar's fee 22s. 8d., [paid] to the Comptroller £23 9s. 4d.

⁷¹ In counting sheepskins the "long" hundred (120) was used, making an actual total of 10,560.

⁷² I.e. 70 hides, the dicker containing 10 hides.

⁷³ Master of the Mint.

⁷⁴ Not identified, perhaps an Exchequer clerk.

Ressaivitt fra Edward Hamyltoun, customer forsaed, the bulioun of the waeris contenit in this compt and dischaerges him and the saed Robert Pringle thairof, and am content and consentis thir presentis be inrolled in his majesties chekker rolis. **George Foulis.**

5. **Bullion Account for Kirkcudbright, 1614-1615 (E.74/2/7)**

The compt maid and presenttit be David Arnott of the marchandice shippit and transportit at the hevin and poirt of Kirkcudbrycht betuix the first day of November 1614 and the first day of November 1615 extendis of sheip skynniss to xix^mvij^c and of hyddis ten daiker and in bullione to fyve pundis tua ounces viij deneiris. **Alexr. Hunttare.**

I am satisfied be ane band of the bulioun addebtitt be the saed Daived Arnott, customer foirsaid, conforme to this compt, and am content and consentis thir presentis be registrat in his majesties chekker rolis. **George Foulis.**

6 **Customs Book of Dumfries, 1621 (E.71/10/5)**

1621. Robert Pringill and Edward Hamiltoun thair compt of the nolt and scheip and utheris transportit in England be way of the west marches, anno 1621 yeiris.

2 Junii 1621

Andro Wilsoun vij^c scheip,⁷⁵ iij^{xx} iij li.⁷⁶; Adame Thomsoun 30 scheip, iij li.; John Cavart 40 scheip, iij li.; John Rome v^{xx} nolt, 50 li.; Thomas Glencors iij^{xx} nolt, xxx li.; Thomas Litel iij^{xx} nolt, xxx li.; William Reidpeth 40 scheip, iij li.; John Cavart 80 scheip, viij li.

19 Junii

Andro Wilsoun 1000 scheip, j^{xx} li.; Archie Thomsone 30 scheip, iij li.; John Batie 80 scheip, viij li.; William Broun 180 scheip, xx li.; William Armestrang 60 scheip, iij li.; William Glendining 160 scheip, xvij li.; John Blaiklok 100 scheip, xij li.; Gilbert Atchisoun, Inglisman, 10 naigis, x li.; George Steill, Inglisman, 6 naigis, vj li.; Andro Lettymer, Inglisman, 8 naigis, viij li.; George Grhame 6 naigis, vj li.

23 Junii

William Reidpeth, Inglisman, 80 scheip, viij li.; Andro Wilsoun 800 scheip, iij^{xx} xvj li.; John Cavart 80 scheip, viij li.; John Grhame 100 scheip, xij li.; John Blaiklok 40 scheip, iij li.; John Spens 50 scheip, x li.⁷⁷; Archie Thomsoun 300 scheip, xxxvj li.; John Rae 40 scheip, iij li.

7 Julii

Robert Andersoun 40 nolt, xx li.; John Rome 60 nolt, xxx li.; Gilbert Atchisoun, Inglisman, 12 naigis, xij li.; Robert Horsbrucht 40 nolt, xx li.; George Steill, Inglisman, 8 naigis, viij li.; Richert Underwood 7 naigis, vij li.; George Grhame 8 naigis, viij li.; Andro Lettymer 200 lambis, xij li.; Adame Thomsoun 40 lambis, ij li.; John Batie 60 scheip, vj li.; William Armestrang 40 scheip, iij li.

21 Julii

John Grhame 60 scheip, vj li.; John Diksoun 10 nolt, v li.; Andro Johnsoun 15 nolt, vij li. x s.; John Bell 10 nolt, v li.; William Hayning 30 nolt, xv li.

29 Julii

John Rome 80 nolt, xl li.; James Edmistoun 40 nolt, xx li.; Thomas Haliday 8 nolt, iij li.

15 August

Walter Scot 5 nolt, ij li. xs.; Thomas Haliday 10 nolt, v li.; Peter Forystht 12 nolt, vj li.; John Rome 100 nolt, iij^{xx} li.; Thomas Glencors 60 nolt, xxx li.; William Newall 12 nolt, vij li.; John Cavart 20 nolt, x li.; Adame Litill 20 lambis, j li.

8 September

William Gellie 40 nolt, xx li.; Andro Wilsoun 75 nolt, xxxvij li. x s.; John Cavart 30 nolt, xv li.; Adame Thomsoun 20 nolt, x li.; Archie Thomsoun 10 nolt, v li.; John Batie 15 nolt, vii li. x s.; James Moffet 12 nolt, vj li.; John Bell 30 nolt, xv li.; Cuthbert Patisoun 60 nolt,

⁷⁵ Actually 840, in counting sheep and nolt the "long" hundred (120) was used.

⁷⁶ i.e. £84.

⁷⁷ This should be £5.

xxx li.; Andro Johnsoun 50 nolt, xxv li.; William Armestrang 20 nolt, x li.; Adame Litill 5 nolt, ij li. x s.

12 September

John Grhame 40 nolt, xx li.; John Blaiklok 30 nolt, xv li.; Cuthbert Patisoun 20 nolt, x li.; Thomas Haliday 20 nolt, x li.; Fergus Lin 50 nolt, xxv li.; John Spens 26 nolt, xiiij li.; John Rome 180 nolt, jc l; Thomas Glencors 100 nolt, iij^{xx} li.; William Hayning 100 nolt, iij^{xx} li.; Robert Andersoun 140 nolt, iiiij^{xx} li.; John Geilles v^{xx} nolt, 50 li.; Thomas Litill 140 nolt, iiiij^{xx} li.; John Scha 60 nolt, xxx li.; William Reidpeth 30 nolt, xv li.

19 October

John Bell 20 nolt, x li.; Adame Litill 6 nolt, iij li.; Andro Johnsoun 18 nolt, ix li.; Gilbert M'Clen 24 nolt, xij li.; Thomas Haliday 28 nolt, xiiij li.; John Rome 100 nolt, iij^{xx} li.; Thomas Glencors v^{xx} nolt, 50 li.; Thomas Litill 100 nolt, iij^{xx} li.

Robert Pringill and Edward Hamiltoun thair compt of the small customes⁷⁸ of Drumffreis, 1621 yeiris.

28 Januar 1621

William Weir viij^{xx} elnes lyming clayth, ij li. xiiij s. iiiij d.; George Irving 100 scheip skinis,⁷⁹ ij li.; Robert Patersoun 60 scheip skinis, j li.; William Greir 100 elnes lyming clayth, ij li.

2 Februar

William Irving 160 scheip skinis, iij li.; Symon Steill 300 scheip skinis, vj li.; George Irving 60 scheip skinis, j li.

xj Februar

Symon Steill 200 scheip skinis, iiiij li.

27 Februar

Franceis Irving 2 pakis Inglishe clayth, xviiij li.

3 Marche

Symon Steill 100 scheip skinis, ij li.; Robert Patersoun 80 elnes lyming clayth, j li.; vj s. viij d.; John Cairlyll 160 scheip skinis, iij li.; David Irving 60 scheip skinis, j li.; George Irving 200 scheip skinis, iiiij li.; George Hill, 100 scheip skinis, ij li.; Gawin Steill 100 scheip skinis, ij li.; Thomas Housoun 5 endis fustan, ij li.

9 Marche

Franceis Irving 360 scheip skinis, vj li.; Robert Patersoun 5 endis fustan,⁸⁰ ij li., mair j ferdle⁸¹ hardwair, ij li.; Symon Steill 100 scheip skinis, ij li.

2 Apryll

The entrie of the guid bark callit the Harie of Air, quhair of Chairlis Nicoll wes maister. Item enterit be Thomas McMollan thrie thowsand cyning skinis, mair xij^c girth stingis, j li. iiiij s.⁸²

3 Apryll

William Williamsoun 200 scheip skinis, iiiij li.; James Maxwell j pak j ferdle Inglishe clayth, xij li. x s.; John Craik 2 pakis Inglishe clayth, xviiij li.

9 Apryll

William Williamsoun 400 scheip skinis, viij li.; Symon Steill 300 scheip skinis, vj li.; James McGowan 100 scheip skinis, ij li.

26 Apryll

William Cairlyll 5 pakis huikis and sythis,⁸³ ix li.; John Ritchartsoun 2 pakis Inglishe clayth, viij li.; George Rig 2 pakis Inglishe clayth, xviiij li.

29 Apryll

William Cairlyll 3 pakis huikis and sythis, v li. viij s.; John Palmer 6 pakis lamb skinis, v li. viij s.

⁷⁸ Probably meaning customs on small consignments, certainly not "small customs" in the sense of local tolls.

⁷⁹ Actually 120 (long hundred), the duty on 60 sheepskins being £1.

⁸⁰ i.e. 5 ells of fustan.

⁸¹ Ferdle: a bundle or pack.

⁸² Cyning skinis: rabbit skins. Girth stingis: wood for making barrel hoops.

⁸³ Huikis: probably reaping hooks. Sythis: scythes.

2 Maii

Thomas Housoun 5 pakis huikis and sythis, ix li.; William Merteine 7 pakis huikis and sythis, xij li. x s.; Symon Steill 2 pakis huikis, iij li. xij s.; John Palmer 2 pakis lamb skinis, j li. xvj s.; Edward Irving 6 pakis huikis and sythis, ix li.; Andro Wilsoun 20 pakis woll, xl li.

27 Maii

Symon Steill 2 pakis lamb skinis, j li. xvj s.

25 Maii

The entrie of the guid bark callit the John of Glasgow, quhairof Thomas Muir wes maister, boun to Flanderis. Item enterit be William Irving, John Rome, Stewin Lowrie and Franceis Irving, v^mix^c scheip skinis, lix li., mair enterit be thame 47 daiker hyidis, xxij li. x s.

28 Maii

Symon Steill 4 pakis lamb skinis, iij li. xij s.; John Wilsoun j ferdle hardwair, ij li. x s.

First Junii

John Richartsoun 200 scheip skinis, iij li., Symon Steill 2 pakis lamb skinis, j li. xvj s., mair 6 pakis huikis and sythis, x li. xvj s.

10 Julii

William Weir 300 elnes⁸⁴ lurning clayth, vj li.; George Hill 300 elnes lurning clayth, vj li.; Gawin Steill 160 elnes lurning clayth, iij li.; David Irving at sindrie tymes 100 elnes lurning clayth, ij li.; William Greir 160 elnes lurning clayth, iij li.; Robert Paterson 100 elnes lurning clayth, ij li.

27 Julii

The entrie of the guid bark callit the Grace of God of Ranthrow, quhairof John Monfodd wes maister, boun to Flanderis. Item enterit be Franceis Irving, Stewin Lowrie, Thomas McMollan, John Irving, John Craik, vj^mvij^c scheip skinis, iij^xvij li., mair 8 daiker hyidis, iij li.

28 Julii

The entrie of the guid schip callit the Guid Fortoun of Glasgow, quhairof Robert Hunter wes maister. Item enterit be George Kennedie iij^c bollis salt, xl li.

13 August

John Batie 100 elnes lurning clayth, ij li.

23 August

John Diksoun at sindrie tymes 300 elnes lurning clayth, vj li.

26 August

The entrie of the guid schip callit the [—]⁸⁵ of [—], quhairof [—] wes maister. Item enterit be Thomas Mirrie iij^mvc daillis, xxxv li.

First September

William Weir 300 elnes lurning clayth, vj li.; Thomas Gilkers 180 elnes lurning clayth, iij li. vj s. viij d.

2 September

The entrie of the guid bark callit the John of Glasgow, quhairof Thomas Muir wes maister, cum fra Flanderis. Item enterit be Franceis Irving 5 barrellis saip, iij li. vj s. viij d., mair 3 barrellis litt⁸⁶ ij li., mair iij^c weight cappras⁸⁷ ix s., mair iij^c weight meidwp,⁸⁸ j li. x s.; item enterit John Irving 3 barrellis saip, ij li., mair j barrell litt, xij s. iij d., mair ij^c weight hoipsis,⁸⁹ xij s., mair iij^c weight meidwp j li. x s., mair 20 pund weight succour,⁹⁰ xij s. iij d., mair 50 pund weight rasinis, iij s., mair j^c weight plumdameis,⁹¹ viij s., mair iij^c

⁸⁴ Actually 360 ells (3 "long" hundreds), the duty on 60 ells being £1.

⁸⁵ Blanks in MS.

⁸⁶ Litt: dve.

⁸⁷ iij c weight cappras: 3 cwt. of copperas. The "weight" appears from later entries to have been equivalent to 1 lb.

⁸⁸ Meidwp: almost certainly madder.

⁸⁹ Hoipsis: hops.

⁹⁰ Succour: sugar.

⁹¹ Plumdameis: prunes.

weight cappras, ix s.; Item Stewin Lowrie ij^c weight hoipis, xij s., mair 4 barrellis saip, 2 barrellis litt, iij li.; Item David Bellis 3 barrellis saip, ij li., mair 2 barrellis litt, j li. vj s. viij d., mair iij^c weight meidwpe, j li. x s., mair ij^c weight blew brizell,⁹² ij li. viij s.; Item William Cairlyll 2 barrellis saip, j li. vj s. viij d., mair j barrell litt, xij s. iij d., mair ij^c weight meidwp, j li., mair 4 dozen kairdis,⁹³ xvj s.; Item Symon Steill 6 barrellis saip, iij li., mair 3 barrellis litt, ij li., mair ij^c weight hoip, xij s., mair ij^c weight meidwp, j li., mair 30 pund weight pepper, iij li. vj s. viij d., mair vj^c weight alme,⁹⁴ ij li. viij s.; Item Gilbert McQuhone 5 barrellis saip, iij li. vj s. viij d., mair 2 barrellis litt, j li. xij s. iij d., mair iij^c weight meidwpe j li. x s., mair j^c and 50 weight cappras, iij s. vj d.; Item John Craik 3 barrellis saip, ij li., mair 2 barrellis litt, j li. vj s. viij d., mair ij^c weight hoipis, xij s., mair ij^c weight blew brizell, ij li. viij s., mair iij^c weight meidwp, j li. x s., mair iij^c weight cappras, ix s., mair ane trie small cramrie,⁹⁵ iij li.; Item John Rome 8 barrellis saip and litt, v li. vj s. viij d.; Item John Williamsoun 6 barrellis saip, iij li., mair 4 barrellis litt, ij li. xij s. iij d., mair 4 barrellis tarr, ij li. xij s. iij d., mair 2 dozen pottis, j li. x s.; Item Hew Costan 3 barrellis tarr, ij li., mair ij^c weight hoipis, xij s., mair ij^c weight meidwp, j li., mair 3 dozen kairdis, xv s., mair j^c and 50 pund weight brass, iij li., mair ij^c weight alme, xvj s., mair 2 barrellis litt, j li., vjs, viij d., mair j^c & 50 pund weight blew brivell, j li. xvj s.; Item Thomas McMollan 3 barrellis tarr, ij li., mair 10 barrellis [saip], 5 barrellis litt, x li., mair ij^c weight alme, xvj s., mair ij weight cappras, vj s., mair ij^c weight blew brizell, ij li. viij s., mair iij^c weight panis,⁹⁶ vj li., mair iij^c weight towis,⁹⁷ j li. iij s., mair iij^c weight meidwp, j li. x s., mair ane trie small cramie, ij li.; Item James Maxwell j barrel saip s. iij d.

6 September

David Bakster j^c elnes lyning clayth, ij li.; William Greir j^c elnes lyning claith, ij li.; Thomas Housoun 50 elnes lyning clayth, xvj s. viij d.; Robert Neilsoun 80 elnes lyning clayth, j li. vj s. viij d.; William Weir j^c elnes lyning clayth, ij li.; James Moffet 5 pakis woll, x li.; Patrik Broun 4 pakis woll, viij li.; James Wyllie 2 pakis woll, iij li.; Adame Scot 3 pakis woll, vj li.

13 September

John Richartsoun 2 pakis English clayth, xvij li.; George Rig j pak English clayth, ix li.; William Cairlyll j pak English clayth, ix li.; John Craik 2 pakis English clayth, xvij li.

15 September

Thomas Gilkreis, j ferdle cramrie,⁹⁸ ij li.; Edward Irving, j ferdle cramrie ij li.

25 October

William Greir 80 elnes lynning clayth, j li. vj s. viij d.; Robert Patersoun 80 elnes lyning clayth, j li. vj s. viij d.; John Batie j^c elnes lyning clayth, ij li.; John Diksoun j^c elnes lyning clayth, ij li.

Robert Pringill; Edward Hamiltone

Totalis — 2789.7.6⁹⁹

7. Bullion Account for Dumfries, 1621 (E.71/10/7)

25 May 1621

The entrie of the guid bark callit the Johne of Glasgow, quherof Thomas Muir wes maister, boun to Flanderis. Item enterit be William Irving, John Rome, Stewin Lowrie and Franceis Irving, v^mix^c scheip skinis, mair enterit be thame 47 daiker hyidis.

27 July, 1621

The entrie of the guid bark callit the Grace of God of Ranthrow, quherof John Monfod wes maister, boun to Flanderis. Item enterit be Franceis Irving, Stewin Lowrie, Thomas

⁹² Brizell: brazil (a dvestuff).

⁹³ Kairdis: cards, probably for carding wool.

⁹⁴ Alme: alum.

⁹⁵ Ane trie small cramrie: a barrel of small merchandise.

⁹⁶ iij^c weight panis: dripping and frying pans were rated for duty upon the cwt.

⁹⁷ Towis: ropes or hemp.

⁹⁸ j ferdle cramrie: 1 pack or bundle of merchandise.

⁹⁹ From the figures at the foot of each page (not printed here), it appears that this total should be £2762 3s. 8d.

McMollan, John Irving and John Craik, vj^mvij^c scheip skinis, mair enterit be thaim 8 daiker hyidis.

Edward Hammiltoune

Apud Edinburgh xj December 1621. Comperit Edward Hamltoun and maid faith this compt producit be him is just and trew and nothing omittit quhilk may defraud his majestie of the bullioun.¹⁰⁰

This compt within wryttin of the goodis schippit and careit furthe of the countrie from Dumfreis betuix the last daye of October 1620 and the first of November 1621 extendis to tuelff thowsand and vj hundrethe of woll skynnys withe fyftie fyve daicker of hyddis and extendis to paye of bullione foure yund foure ounces and xvj deneiris.

Alexr. Hunttare¹⁰¹

15 December. I haive ressaivitt the bulioun contenitt in this compt and am content and consentis thir presentis be inrolled in the rollis of his majesties Exchekquer.

George Foulis

8. Wine Account for Dumfries, 1621

On the 25 of Febrowar 1621

The entrie of the bark callit the Johne of Glasgow, quhair of Thomas Muire wes maister. Item entrit be Johne Hairstanis tuentie aucht tun and thrie hogit¹⁰² of wyne at 32 lib. 8 s. the tun. Summa is ix^c xxxj lib. x s.

Edward Hamiltoune

Quhair of thair is to be defaisit for the erll of Nithsdail sex hogit and for Sir Wilyem Greirsoune of Lag twa hogit all cuntrey wynis.¹⁰³

At Edinburgh xj December 1621

Summa of wyne xxvij tun iij punscheons, is in money ix^cxxxj li. x s. Quhair of defeasit his fie xxvij li. xv s., for noblemens tickets, tua tun of cuntrey bind¹⁰⁴ at xl li. Sua restis viij^clxij li. xv s.

9. Wine Certificates, 1621¹⁰⁵

I James Maxwell, brother germane to Robert earle of Nithsdail, testefeis that I causit may servant by and resave frome John Hairstaines sax peices of wyne cuntrey bind and that for the provision of the said earle of Nithsdail his awin hous this present yeir 1621 yeiris, quhilk I testefie to be of werritie upone my credit, honour and conscience be thir presentis subscrivit with my hand.

James Maxwell

I Sir William Greir of Lag testefeis that I causit my servant buy and resave fra John Hairstaines twa hogheid of cuntrey wyne for the provisioun of my awin hous this present yeir 1621 yeiris, quhilk I testefie to be of werritie upone my honour and credit be thir presentis subscrivit with my hand.

Lag

10. Customs Account for Kirkcudbright, 1639-1641 (E73/9/7)

Ane compt of the resait of the customes be me William Glendonyng, fra Halowmes 1639 til Halowmes 1641 yeiris.

¹⁰⁰ There is an illegible signature.

¹⁰¹ Not identified.

¹⁰² Hogit: hogshad, here apparently equivalent to a puncheon.

¹⁰³ "All cuntrey wynis," added in another hand.

¹⁰⁴ Cuntrey bind: the smaller measure, as opposed to the larger measure or "Bordeaux bind."

¹⁰⁵ These certificates were produced with the account, to verify the allowance for wine sold to noblemen and gentlemen.

Item resavit fra Johne Hutchisone quhich he upliftit fra Halowmes			
1639 to Halowmes 1640 conforme to his compt ¹⁰⁶	£26	13	4d.
Mair for a bark of salt brocht in the said yeir and omittit be him ...	£8	—	—
Mair resavit of tua litil barkis for smal salt	£8	—	—
Mair of a boat quhairin thair was 1200 rungs, 16 d[oz]. carries ¹⁰⁷			
with 12 spaidis, 12 plew beims	£2	16	—
Mair of a boat of coalis with sum smal salt	£2	8	—
Mair a bark of smal salt	£4	—	—
Mair of a boat quhairin 1000 rungs, 10 d. carries 7 tant hydys ...	£2	8	—
Mair of a boat quhairin 30 staigs and stot beistis ¹⁰⁸	£18	—	—
Mair for a boat of smal salt	£4	—	—
Ane bark that went to Flanderis with skinis, quhairin 9000 skinnis,			
quhich is of custome and bullions	£111	12	—
And importit in hir sum dailis with sum gross geir, ¹⁰⁹ quhilk			
extendis to	£58	19	—
		246	16 4
Quhair of rebate for collection	066	13	4
So rests frie money for anno 1640 and 1641	180	3	4

W. Glendonyng; W. Shilthomas witness

Edinburgh 3 July 1647. Comperit personalie in Exchequer William Glendonyng, custumer at Kirkcudbrycht fra November 1639 to November 1641, who maid faith that the compt befor wrettin of exportatioun and importatioun is just and trew and nathing cmittit furth thair of to his knowlege quhairby the Kings Majestie may be defraudit of the just custome and bullion, as he sall answer to God.

W. Glendonyng

(On back) Received Februarie 1642 to compt heirof 100 lib.

¹⁰⁶ In margin: "Frie money."

¹⁰⁷ Carries: Wooden poles or spars as used in making carts or carrs (sledges).

¹⁰⁸ Staigs and stot beistis: bulls.

¹⁰⁹ Gross geir: bulky goods.

SIR JOHN CLERK'S JOURNEY INTO GALLOWAY IN 1735¹

Transcribed and edited by W. A. J. PREVOST

INTRODUCTION

In 1721 Sir John Clerk journeyed into Galloway to visit his brother-in-law, the Earl of Galloway, at Glasserton. His journal, containing many comments and descriptions, was printed in these Transactions series 3, vol. xli. After a lapse of fourteen years the baronet again journeyed into Galloway, but on this occasion it was at the earnest request of the Earl² whose house at Glasserton had recently been destroyed by fire. "The old man had it long in his head, as you know," wrote Brigadier Stewart to Sir John, "to build a little convenience for himself at Glassertoun with butt tuo or three spare roomes for his bairns or friends when they come to see him . . .,"³ but the Countess was hoping against hope that the old house could be rebuilt. Sir John's advice in such matters was authoritative and decisive in so far as rebuilding was concerned. Moreover he was in touch with well-known builders in Scotland and it is safe to say that the outcome of this visit were designs for a new house, produced by John Douglas and William Adam in 1735 and 1737 respectively. In the end it was John Baxter, mason, who designed and built Glasserton House for Lord Garlies⁴ in 1740-2.⁵

Sir John left his house at Penicuik on 24 April and that evening reached Drumlanrig where he stayed till 2 May, attending to the Duke of Queensberry's affairs. He was one of the Duke's commissioners and, as Sir John himself relates, "the only reasone of my taking the truble" was that, shortly before he died, the old Duke of Queensberry "obliged me solemnly to promise that I should never be wanting to assist . . ." his son and family.⁶ This promise was kept most conscientiously, for not only did the baronet attend at Drumlanrig every year "to drudge at the Duke's affairs," but he was also a willing adviser to the young Duke. It is noteworthy that evidence of Sir John's industry and interest is preserved among the Drumlanrig archives, and two boxes of papers in the Scottish Record Office, Nos. 111 and 112 in the catalogue of the Clerk of Penicuik Muniments, contain memorandums, reports on woods, correspondence concerning the Wanlockhead mines, and many letters dealing with the Drumlanrig estates.

Sir John Clerk's writings are entertaining and to read them is rewarding.

¹ Scottish Record Office. Clerk of Penicuik Muniments (GD 18), No. 2112. "Memoirs of a jurnie to Drumfrise shire and Gallouay in 1735."

² James, 5 Earl of Galloway, who succeeded his brother in 1693. Died in 1746.

³ Clerk of Penicuik No. 5246/5/188. Letter dated 10 Jan 1735 from Brig. Stewart, Sorbie, to Sir John Clerk, Edinburgh.

⁴ Alexander, Master of Garlies (circa 1694-1773), succeeded his father as sixth Earl of Galloway in 1746.

⁵ John Fleming. *Robert Adam and his Circle*. 331. P. H. M'Kerlie, in his *History of the Lands and their Owners in Galloway (1870-79)*, ii, 441, writes that the house was erected about 1770, near the site of the old house, of which no trace "now" remains.

⁶ Clerk of Penicuik's *Memoirs 1676-1755* (Scottish Hist. Soc. 1892), 77.

His comments are shrewd and his descriptions accurate, and though this 1735 journal is only of local interest, it may draw attention to the part he played in the story of Dumfriesshire. I have made no alterations to Sir John's spelling beyond modernising his use of "u" for "w," as in "uhite," "Neu Toun Stuart," "Galloway," etc. I have introduced my own punctuation and use of capital letters.

THE JOURNAL

As I hapned to be one of the Duke of Queensberry's commissioners I was desired to meet with the rest of his Grace's friends at Drumlanrig upon the 24 April 1735. Accordingly I set out from Penecuik in a chaise about 7 in the morning. In 4 hours I came to Bigar and at Couter 2 miles further I took horse and rode to Ellnandfoot where I baited. This place is in Crauford moor, close by the River Clyde, and remarkable for nothing so much as being in the center of fine moor game, as I used frequently to experience some years agoe when my father and I came to the shooting.

About 5 I mounted and about half an hour after 8 in the evening I came to Drumlanrig. The way was very ruged, being an old Roman road where nothing remain'd but the stones that had been laid under the gravel. Upon this road, near to Duresdeer, I passed by a square Roman fort consisting of a single ditch and earthen bank. This fort no doubt served to guard the pass through the mountains down Clyde and so along to the Roman Wall between Clyde and Forth.

At Drumlanrig I met only with Mr Patrick Boyle, advocat,⁷ who is brother to the Earl of Glasgow and one of the Duke's commissioners.⁸ Next day we summon'd in the tenants of the Baronie of Drumlanrig and Sanquar and lookt into the chamberlain's accompts which we stated by way of debiter and creditor.

On the 26 we were upon these accompts from morning to night except at dener when we were oblided to wait on some of the Duke's nighbours, particularly Sir T. Kilpatrick of Closeburn⁹ and Mr Fergusone of Craigdaroch.¹⁰

On the 27 being Sunday we went to Duresdeer kirk which is the Duke's parish kirk and where the burial place of the family is. Here is a very fine marble monument being a representation of the late Duke, my very good friend and patron, and his Dutchess. There are some little angels on this monument that are fine pieces of sculpture. The whole was performed by a famous forreign sculptor Van Ost.¹¹ There is a vault below where the coffins are kept. The kirk and steeple were lately built and are the best of their kind in Scotland.¹²

⁷ Patrick Boyle passed advocate 15 Jan 1712, and made a lord of Session 19 Dec 1746, when he took the title of Lord Shewalton. He died, unmarried, at Drumlanrig 31 March 1761. He was brother to John, 2nd Earl of Glasgow. William Anderson, *The Scottish Nation*, ii, 309a.

⁸ Sir John records that in April 1737 he was again at Drumlanrig for 10 days, "and only Mr Boyle . . . assisted me as one of the Commissioners. There were 3 or 4 others who never attended." *Clerk, Memoirs*, 146.

⁹ Sir Thomas Kirkpatrick, 3rd Bart, 1704-1771.

¹⁰ Alexander Fergusson of Craigdarroch, MP for Dumfries Burghs 1715-1722. Died 1749.

¹¹ John Van Nost (1684-1729), the elder, was born at Malines and worked in England for many years. Rupert Gunnis, *Dictionary of British Sculptures*.

¹² C. T. Ramage, in *Drumlanrig and the Douglasses*, writes that the church was built in 1669. There was a steeple about ninety feet high which was removed before 1876.

On the 28 I drudged at the Duke's affaires from morning to night as before. On the 29 I did the same and had the Duke's affairs on Annandale before me. On the 30 business went on as before.

On the 1 of May I laboured hard with my colleg and got all affaires of importance brought to a conclusion.

We were all this while very sumptuously entertain'd, for the Duke allowes a good table to be kept, not only on our account but for the entertainment of all his good nighbours, for we were seldom fewer than a dussan at table.

The Duke's estate is about 8000 lib str, but a great dale goes off for chamberlains, ministers, wood foresters and workmen of all kinds, so that he seldom touches above 5000 lib.

On Fryday the 2 of May, at the earnest request of my brother in law My Lord Galloway, I tooke journie in the morning by 7 for his house. About 9 I came to Craigdaroch and breakfasted with Mr Fergusone, his lady and son. His house is a new convenient building of 60 feet in length and 40 in breadeth. The place where it stands is very strait and narrow but not disagreeable.¹³

About 11 in the forenoon I mounted and came to the old clachan¹⁴ about 1. This little town belongs to my Lord Galloway. I stayed here about an hour and walked on foot to see a little mote or mount near to the kirk. It is round and surrounded with a ditch. From several observations I have reasone to belive that all these mots were places of worship amongst our fore-fathers and all they had for their kirks. There is one of these at the kirk of Biggar, one at Carnwath, one at Glencross, one, and indeed a famous one, at the Water of Ore between Drumfrise and Kirkcudbright near to the kirk of Ore. These are the high places of the Antients. Those of Old Sarum in England is the largest and highest in Britain.

I mounted at the Water of Ken and had a monstrouse bad road to the Brig of Dee, and from thence to Minygaff. All the way is either full of precipices or rocks. The pass called the Sadle Loup is here about 4 miles from Minygaff. Nothing in the Alps is worse.

Minygaff is a little country town situated on the Water of Cree. The tyde flows near to it. On the other side is another country town called New Town Stuart. From thence to Clery, the seat of my Lord Garlies, eldest son to my Lord Galloway, is a fine road of 3 miles. Both sides are finely inclosed and belong to the Galoway family.

The Clery is a poor habitation but not small, for there is abundance of lodging about it but ill disposed and ruinous. On the south side of the gardens is the Moss of Cree, a vast slou of about 5 miles round and 20 foot deep of black moss, yet by draining several good improvements have been made out of it and many more will be made in time. Planting going well here but not in the

¹³ For a more recent description of Craigdarroch House, see P. W. L. Adams, *A History of the Douglas Family of Morton*, 325.

¹⁴ Dalry.

moss where there is no earth. This moss is washed by the sea on the East and South sides. I came to the Clery about 9 and found no body at home but my Lady who is a daughter of the family of Dindonald.¹⁵ His Lordship was at first married to a daughter of the Earl Marishal¹⁶ and had several children, but none are alive save a son and a daughter. I was very kindly entertained by my Lady and went off next morning by six, after I had viewed a place near the house where my Lord intends to build a new house as he has much need.

Near the Clery on the way to Wigtown on the right hand amongst corn grounds I observed a vast circle marked out with great stones. Such circles are Danish as is believed. Its certain they are very antient and are either burial places or for holy worship. I believe they were for both uses and are a part of their religious architecture which we observe in many places both of England and Scotland.

From the Clery I had a fine road of about 3 miles all along to Wigtown. This is a pleasant village situated on the sea side but has little or no trade. From Wigtown I rode along by Baldune on my way to Whitehern. Baldune is a very fine seat, having a navigable river on one side and the sea on the other. The inclosures are the finest in Galloway, lying for the most part on the sea side. The black cattle and sheep that are kept here bear the greatest price of any in Scotland. The first are of a midle kind finely shaped, the last carry wool equal to any sheep in England.¹⁷

About 10 I came to Sorbie, the house of my brother in law Brigadier Stuart,¹⁸ where I breakfasted. The honest Brigadier declines much in his health, yet he wou'd come along with me to Whitehern where we arrived about twelve.

Here I found my Lord Galloway and my Lady very poorly lodged, for their great house of Glasertoun was burnt down in Agust last.¹⁹ His Lordship, as he always did, received me most kindly and we dined together in his little town house. In the afternoon I went with his Lordship to see the ruines of Glasertoun which is about a mile off. This house was accidentally burnt by my Lady her self from going up to one of her wardrobes at night. She dropt, it seems, the snuff of a candle amongst linings which in a few houres consumed the house and everything in it to ashes. My Lord and my Lady being in bed narrowly escaped with their lives. Nothing was saved except some of their old papers. All the gold and silver coine was melted down and little of it got amongst the rubbish. The loss was above 5000 lib str and some say near to 10,000 lib. Amongst the gold found here there were some 5 Guinea pieces which were delivered back to

¹⁵ Catherine, youngest daughter of John Cochrane, 4th Earl of Dundonald (1689-1720). She married, in 1729, Alexander, Lord Garlies, who was afterwards 6th Earl of Galloway.

¹⁶ Anne, 2nd daughter of William Keith, 9th Earl Marischal.

¹⁷ Basil Hamilton of Baldoon (1696-1742) was engaged in the rebellion of 1715 and his estates were forfeited, but in 1732 an Act of Parliament was passed rescinding his forfeiture. M'Kerlie, *op. cit.*, i, 388.

¹⁸ John Stewart of Sorbie was made a brigadier on 10 June 1702. He represented Wigtownshire in Parliament from 1702-1727. Died 22 April 1748. *Scots Peerage* iv, 163.

¹⁹ Glasserton was burnt down in 1730, according to Sir Andrew Agnew, *A History of the Hereditary Sheriffs of Galloway* (1864), 527.

my Lady as having been hers. I saw some of these half melted and some parts were vitrified. This was occasioned by a vast quantity of candle which was kept above my Lady's closet.

This is the third time I have been at Glasertoun and may probably be the last. It has a most dismal aspect, yet the walls entire.

The situation is very bad, wherefore I endeavoured to persuade my Lord not to build here any more.

It was on account of giving advice to my Lord about his building that I was called in to Galloway. I had no mind to the journey because of the bad roads, but I cou'd not refuse to meet on my good friends here.

At night I returned back to Whitehern and by the way saw some of my Lord's marle pits. The marle here is very fine, white, mixed with shels and I believe the sediment of Noah's flood, tho 10 or 12 fathoms at least above the level of the sea. Wherever in this country there is any bog or moss there is a sediment of marle under it, but this is not to be found in Anandale or Drumfrise shire so far as I cou'd observe.

On Sunday the 11th I went with my Lord and my Lady Galloway to the kirk of Whitehern. This is a part of the great ruines of the monastry and Episcopal seat of the most antient Bishops in Britain, the *Episcopi Candida Casa*.

It is observable that in Ptolemey's Geography this place is called . . .,²⁰ white house, no doubt because the house or monastry appeared very white at a distance, from the shell lime with which it was cast. It retained the same name amongst the Saxons and was called in their language Whithern or *Candida Casa* and now by corruption Whithern.

The ruines of the monastry are very great and are now almost buried under ground. The soile is hard and thin here but that which influenced the monks to choise this place for a seat was the burial place of the holy man St. Ringan or St Ninianns who is said to have died here.

The Episcopal see of this place is very antient but sometimes the *Episcopi Candida Casa* were called *Episcopi Gallovidia*.

The steaple in old times served for a direction to sailors but it fell down lately and broke down some part of the church.

The town of Whithern is not a great dale better than the village of Lonhead or Laswade. However it is a royal burgh and I my self represented it at the time of the union parliament in Scotland.

On Sunday afternoon I walked out with my Lord and viewed the fields about, which are high, dry and stony but command a pleasant prospect over Solway Frith into Cumberland, and the Isle of Man stands in open view, being a mountainous land at the distance of about 7 leagues.

On Munday the 12th I designed to have come off but was prevailed upon by my Lady Galloway to stay on condition that she wou'd go with me to

²⁰ Sir John's Greek spelling is omitted. This Greek word is printed in C. H. Dick's, *Highways and Byways in Galloway and Carrick* 231, together with an explanation.

Glaser-toun wher she had not been since the fire. She accordingly went but her heart misgave her by the way, so that it was with difficulty I cou'd get her to look on the ruines.

She had been possessed with a notion that the ruines cou'd be repaired from which I endeavoured to dissuade her, for that these reparations must cost more than a new house and besides, as they were very large, they wou'd bring her into vast expenses. The reasons I gave my Lord and her took place and at last I endeavoured to persuade them that it was not fit for them to build at all there, since probably Sorbie, on the death of their brother the Brigadier, who declined very fast, wou'd fall into their hands. I showed them that if they built there, no less than a house between 60 and 70 feet by 40 cou'd give them any tollerable convenience. I demonstrated the inconvenience and expence of beginning to build in their old days and thought it wou'd be better for them to patch up some little house at Whithern for their present use, and in the mean time to build a family house at Clery. Full of this opinion I left them on Tuesday morning the 13 and went to breakfast at Sorbie. My Lord accompanied me but finding his brother had some things to communicat to me in privat, he left me about half a mile from the house. I was something trubled upon leaving so kind a friend for we had lived with more than a common friendship and affection since our first acquaintance which was in 1701.

I both breakfasted and dined with Brigadier Stuart, having bespoke the Customs House boat to carry me to Kirkcubright in the afternoon, a little voyage of about 7 leagues.

Our conversation turned entirely about the settlement of the Brigadier's affaires. Colonel Maxwell of Cardness, who married a near relation of his, was present.²¹

In the afternoon about 3 the Brigadier and the Colonel accompanied me to a place called Pouten, about 2 miles of, where I went on board the King's boat commanded by one Mr Douglass with 6 hands.

We set sail after takeing my last farewell of the honest Brigadier. The wind was favourable, so in about an houer I came to the point of land called the Ross, and from thence sailed up the river of Kirkcubright which is distant from the sea about 5 miles. This is a little town of very little trade but is pleasantly situated.

About a mile from it is a house belonging to Mr Basil Hamilton of the Hamilton family. This is a very pleasant seat and has an island and the river in view of it.²² This island is at the mouth of the river. I was told that in the river there is always near 3 fathoms water and several excellent salmon fishings.

²¹ Lt. Col. William Maxwell of Cardness, who died 16 June 1752 in his 89 year. He married Nicolas Stewart who died 30 Sept 1766 at Dumfries. She was the daughter of William Stewart, of Castle-Stewart, and Elizabeth, daughter of John Gordon of Cardness. William Stewart was brother of 3rd Earl of Galloway. M'Kerlie, *op. cit.*, iii, 27-28, and Burke's *Peerage*.

²² The Priory of St Mary's Isle and the lands belonging to it were bought by the tutors of Basil Hamilton in 1704 from Patrick Heron of that ilk. *Scots Peerage*, vii, 519-520.

Next morning being Wednesday the 14 I took journey for Drumfrise, for my horses had been sent the day before by land. The way between Kirkcubright and Drumfrise is very fine. I rode to the last in 5 houres tho a journey of 29 miles. By the way there is a very pleasant lake with 2 islands covered with wood, in or at a place called Carlin's Werke.

The mote of Ore, being an old religious mount, I observed on the Water of Ore about 12 miles from Drumfrise.

I came to Drumfrise about eleven in the forenoon and made several visits there. I invited all my acquaintances in the town to denner, and at night after 5 I rode to my own little house of Drumcrief which is 16 miles distance from Drumfrise.

At Drumcrief I stayed a day to confer with my tenants and workmen there, and on Fryday the 16 I came home to Penecuik in good health.

LAUS DEO.

THE GLENDINNING ANTIMONY MINE (LOUISA MINE)

By ALEX McCracken, B.Sc.

ACKNOWLEDGEMENTS

The writer wishes to thank Mr Masheter, Georgefield, owner of the Louisa mine, for his help during the preparation of this article; and Mr Beattie, Westerkirk Mains, for his assistance in producing the Appendix on the Jamestown Library.

LOCATION (Nat. Grid Ref. NY 312965.)

The antimony mine is situated near the head of the valley of the Glenshanna Burn (a tributary of the Meggat Water), in the side of Grey Hill. It is some three-quarter mile from the farm of Glendinning, in the parish of Westerkirk, and a fairly good track runs up the N. side of the Glenshanna Burn to the mouth of the mine, some 950 ft. above sea level. Smelting of the ore has been carried out in a field by the side of the Meggat, at the lower end of this track, and traces of this operation still survive.

GEOLOGY

The country-rock in the area is Silurian greywacke, which forms most of the Eskdale hills. The mine has been driven straight into the hillside along the line of a large fault-plane, and the minerals found occur in pockets in the crush breccia. The principal antimony ore is stibnite (antimony sulphide, Sb_2S_3), which is reported to have occurred in masses up to 20 ins. in thickness. Galena (lead sulphide, PbS); jamesonite (lead sulphantimonite, $Pb_3FeSb_3S_{14}$); Calcite, ($CaCO_3$), etc., are also recorded. Some of the ore seems to have been a very complex mixture of stibnite, galena, and zinc blende (zinc sulphide, ZnS), but at least some of the stibnite was found more or less pure, enabling the miners to select high-grade ore for smelting. No samples of the ore can now be obtained from the mine itself, due to the flooding and collapse of the workings, but a few good specimens can be picked up on the spoil heaps outside. The present owner, when considering the possibility of re-opening the mine, sent away a sample of the stibnite to the St Helen's Smelting Company for analysis. The assayer's report which they returned gave the composition:

Antimony	...	...	53.15 per cent.
Arsenic	...	...	1.32 per cent.
Lead	...	...	2.60 per cent.
Copper	...	...	Trace
Nickel	...	...	Trace
Zinc	...	...	0.09 per cent.
Iron	...	...	2.13 per cent.

The report stated that though this showed a high quantity of impurity, the ore was of marketable value. The lead and arsenic would have to be removed during the refining process, and so would reduce the value of the ore.

HISTORY

The Statistical Account, published in 1794, shortly after the mine was opened, states that the ore was first discovered in 1788, although Sir James Johnstone of Westerhall, then the owner of Glendinning, had been searching for lead for more than thirty years previously. It is not known what gave him the idea that lead should be found there. Perhaps ore had been discovered in the gravel washed down by one of the many streams in the area. The mines at Leadhills and Wanlockhead were extremely prosperous at this time, the wars against America and France having increased greatly the demand, and therefore the market price for lead. The Geological Survey and the New Statistical Account both give 1760 as the date of discovery. All sources, however, agree that the actual mining was commenced in 1793, a Company being formed for the purpose.

Of the four shares in the Company, named the Westerhall Mining Company, Sir James Johnstone held two, the other two being held by a Captain Cochran and a Mr Tait. Between 1793 and 1798, about 100 tons of antimony were produced, worth at that time £8,400. On Crawford's mineralogical map of Dumfriesshire, published c. 1804, appears a section of the mine, drawn by General Dirom. The owner of the mine is quoted as Sir William Pulteney. Sir William was Sir James' brother, and succeeded to the baronetcy of Westerhall. He married the heiress of Pulteney, Earl of Bath, and took her name. The estate returned to the Johnstone name in 1803, when Sir William was succeeded by a nephew.

Between 1798 and 1888 there are no records of any working in the mine, although a hand-drawn section, dated 1868, is preserved in the Ewart Library. In 1888, however, the mine was re-opened by Sir Frederick Johnstone. He believed that the miners of the previous century might have passed over the most valuable lodes. However, in 1891 the mine was again closed, after some 88½ tons of antimony were produced. The cost of moving the ore from the mine to the smelting works made mining uneconomical.

In 1919 a new mining company (the Westerhall estates having been broken up in the meantime) was formed to work the mines. The old workings were drained, and new shafts sunk to levels well below the original workings. A paraffin engine was used to compress air, which drove the draining pumps and ventilated the tunnels. Work finally stopped in 1922 for financial reasons. The "captain" of the mine, Mr Rowe, with three men, did some prospecting in 1927, and claimed to have discovered other veins of ore. He stated that the financial failure of the 1919-1922 workings was due to re-opening the old workings rather

than commencing on fresh ground. However, he apparently lacked financial support, and did not begin full-scale operations.

In 1940, the workings were examined, with a view to re-opening as a contribution to the war effort, but nothing resulted.

In 1950 the present owner of the mine had it inspected, to see if re-opening would be feasible. It was decided, however, that the present small demand for antimony would not warrant the expenses which would be incurred. There the matter rests at present.

PROCESSING OF THE ORE

The 1794 Statistical Account gives a very clear and full description of the treatment of the ore at that time. The antimony was sold as sulphurated antimony (at £42 per ton), or as regulus of antimony (i.e. pure antimony) at £80 per ton.

To produce sulphurated antimony, the ore was first crushed and washed, and then placed in a pot with a perforated base. This pot was placed inside a second pot, and heated in a furnace. The stibnite, having a low melting point, flowed into the outer vessel, leaving any lead and zinc impurities behind. This purified stibnite was sold as sulphurated antimony.

To prepare regulus of antimony, the ore was first crushed and washed, then placed in a crucible together with iron, and an alkaline flux (not named, in the Account, but probably lime). The iron combined with the sulphur, freeing the antimony. The fluid metal was poured into a mould, and, when cooled, was removed and again crushed. It was then placed in a second crucible, this time with pure antimony and an alkaline flux. After heating in a furnace, the molten metal was poured into conical moulds. When cool, this procedure resulted in casts of regulus of antimony "having the form of a large sugar loaf and a fine starry surface." Among the uses quoted for antimony metal are "speculums, bell metal, and types for printing."

During the 1888-93 workings, the ore seems to have been sent away for processing, no doubt making use of the new railway from Langholm to Carlisle, opened in 1864. The cost of transporting the ore is given as one of the reasons for work being halted. It is possible, however, that the stibnite was purified at the mine, before being dispatched.

Between the years 1919 and 1922, all the ore raised was picked over, bagged in cwt. sacks, and sent off to a smelting company for processing. A small furnace was used at the mine, and samples of ore from each batch were tested for purity of content, before the ore was dispatched.

METHOD OF WORKING

General Dirom's section of the Louisa mine shows that to begin with the mine was worked on three levels. The top and bottom levels were entered by drift shafts from the surface (the bottom level having its mouth right at the side of the Glenshanna Burn, which would aid drainage). The middle level was

reached via the other two. Shafts going still deeper to a fourth, uncompleted level are shown. The stibnite, as already stated, occurred in pockets, and the shafts were driven horizontally, until a suitable pocket was reached. The ore was then extracted, leaving a room-like cavity in the tunnel. When all the ore had been removed, the shaft was continued until the next pocket was uncovered. No records of the 1888-93 method of working have been found, but presumably it would be accomplished in a similar way.

During the last period of working, the lowest, fourth level, well below the level of the Burn, was opened. A vertical shaft from the surface was used to enter this tunnel, which had to be constantly pumped dry. The shaft was some 150 ft. deep, and the miners descended by means of a series of short ladders (each 12-14 ft. long) placed between ledges in the sides of the shaft. When mining ceased in 1922, the lower workings filled with water, and when the equipment was being dismantled and sold a few years later, the pumps could not be recovered. So there, presumably, they still remain.

WORKERS

The Statistical Account gives a very clear picture of conditions in 1793, when the mine was opened. About 40 men were employed in the mining and

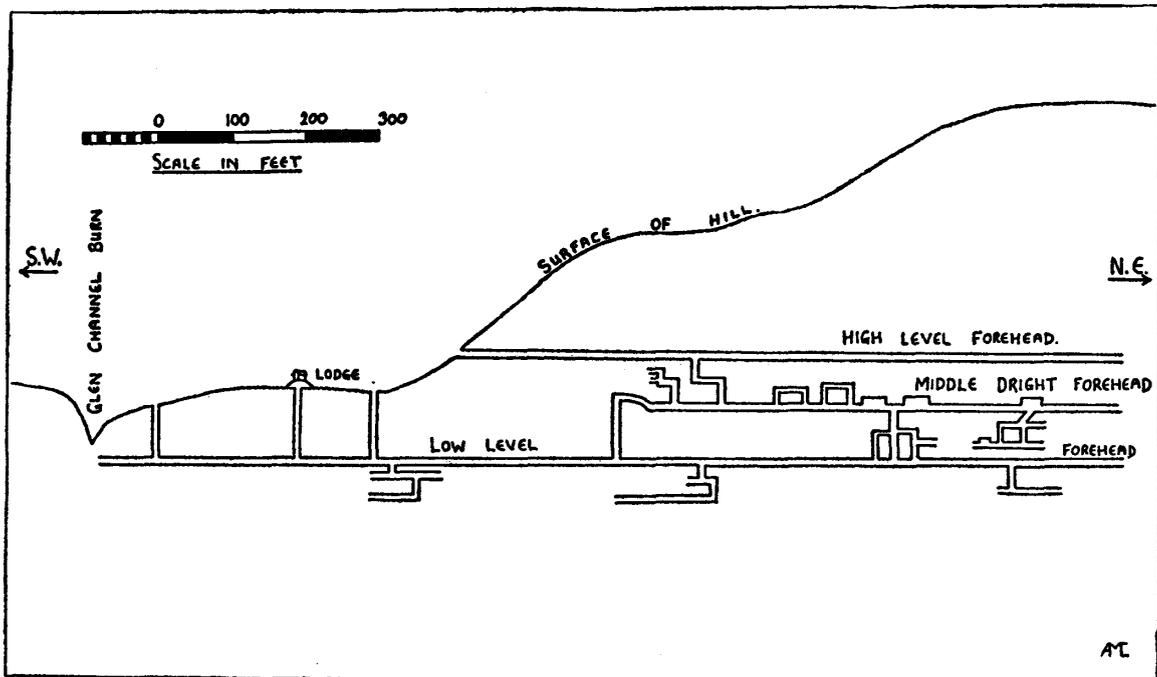


Fig. 1—Glendinning Antimony Mine. General Dirom's Section.

smelting of the ore, and to house them, and their families, the mining company built a new village, named James Town, on the banks of the Meggat just below Glendinning. The company linked this village with Waulk Mill (near the farm of Georgefield) by laying $3\frac{1}{2}$ miles of road (and building four stone bridges) down the E. bank of the Meggat. A school was built, the company granting "considerable advantages" (which are unspecified, unfortunately) to the teacher; a library was started, with a gift of £15 worth of books. By the time of the Account, this library had expanded to 120 volumes. (See Appendix.) The miners worked 6 hours per day, and were paid £23-£26 per year. The company contributed £10 per year, and the miners 1/- each per quarter, to a welfare fund for the relief of miners unable to work because of ill-health or old age.

Each miner was able to graze a cow (£1 per year), and supply it with hay during the winter (10/- per year), while he could cultivate as much land as he required (at a rent of 10/- per acre) for growing potatoes and cabbages. The company also built a storehouse in which it was intended to keep grain, bought cheaply during summer, for resale to the workers during periods of scarcity, "at the rate at which it was purchased."

No records could be found of the 19th century miners, except that the manager had an iron hut at the mine, and that a considerable pile of debris, in the form of food tins, jars and bottles, was left by the workers.

No records of the 1919 workers could be traced, either, and none of the miners survive in the district. Some of them appear to have come from Cornwall. A little information was obtained, however, from local people who had visited the mine through interest, or in the course of business. The miners were accommodated in corrugated iron huts, erected at the mine. (The wife of the engineer is said to have been unable to sleep because of the noisy pumping engine.) Local miners went home at week-ends, returning to the mine on Sunday evenings. The managers, being fortunate enough to possess a car, stayed in a Langholm hotel, and so were able to travel to work daily. About 50 men were employed at this time.

PRESENT REMAINS

Little is now left of the first, and probably largest, antimony mine in Britain. The field where the ore was smelted has already been mentioned. There are still some small heaps of slag, many of the fragments preserving the shape of the crucibles from which they were taken. The foundations of a small building (a furnace?) poke through the turf.

The track leading to the mine is in good repair, being still used by the farmers. At two places on the S. bank of the Glenshanna Burn, the hillside has been cut away, and small spoil heaps formed, probably by the efforts of Mr Rowe and his three prospectors of 1927.

The high level shaft of the mine is still open for a short distance. Its floor is almost horizontal, cutting straight into the hillside. 82 ft. from the tunnel

mouth, the shaft forks. The right branch continues for a further 83 ft. then terminates abruptly. The left branch, the original high level adit, goes on for a further 136 ft. until the collapse of the tunnel blocks the remainder. At 44 ft. from the end of this branch, a large hollow in the tunnel wall has been carefully built up with blocks of stone. This is almost certainly the site of a shaft descending to a lower level. When the present owner of the mine first visited it, his son was able to descend such a shaft, via a ladder still in position, to the middle level.

Running as it does along a fault plane, water is able to seep through the crush breccia into the mine. At several places, fairly strong flows trickle from the roof and down the walls. Many small stalactites have formed. Sheets of calcite have coated the walls and floors, while in a few places, little pockets of calcite-coated pebbles (resembling small sugared almonds) occur.

A double row of wooden props, protruding from the N. bank of the burn, marks the position of the entrance to the low level adit. A strong stream of water emerges from the collapsed tunnel mouth, suggesting that the tunnel beyond might still be open. On higher ground, just across the burn, the small, brick-built explosives store still survives, the only building remaining on the site. About 10 yards from this store, a very roughly cut shaft mouth is still open, and appears to head towards the burn. This might be a trial shaft of the 20's or a ventilation shaft for the new bottom level. At two places upstream, samples of ore and traces of smelting are visible.

The spoil heaps, only partly grown over, contain very little ore. Nor are any traces evident in the walls of the high level adit, and it seems likely that this was merely a trial tunnel, excavated to strike the best ore, which was worked in the lower levels. (The 1868 section, in the Ewart Library, does show one part of this shaft where ore has been removed. It also shows the position of a proposed new level, with its mouth well downstream, and some 100 ft. lower than the mouth of the bottom level described above. This section may have been prepared for a proposed re-opening of the mine, for which no other evidence survives.) The large spoil heap, immediately under the mine mouth, shows a considerable subsidence in the centre, the remains of the deep vertical shaft of the 20's. The offices, etc., were erected on this heap, but no trace of them remains. At the N. side of the heap is a small, rectangular pool, its sides built up of earth and clay, which must have been used to collect the water needed for washing the ore. This has lately been partially demolished in the course of drain-cutting.

FUTURE OF THE MINE

It seems most unlikely that the Glendinning mine will be re-opened in the foreseeable future. The present demand for antimony is small, and imported ore, though expensive, is sufficient to meet all requirements. Nevertheless, if a large

and steady demand for antimony metal ever occurs, Glendinning could once more become the centre of a thriving mining community.

APPENDIX

WESTERKIRK LIBRARY

The library was first instituted at Jamestown, in the year 1792, for the use of the miners of the Glendinning antimony mine. When the company which carried on the work was dissolved, the library was moved, in 1800, to Kirktonhill. In 1841 the books were moved to the new schoolhouse at Old Bentpath. In 1862 a new building was erected, financed by public subscription, to house the library. This building remains in use at present.

EXTRACTS FROM THE MINUTE BOOK OF THE JAMESTOWN LIBRARY

James Toun 20th Jan 1793

The miners in this place received from the Westerhall Mining Co the following Books for our Mutal Improvem.

Tillitson, Sermons.	Robertsons History of Scotland
Guthries Grahamar	Handmaid to the Arts
Dodsleys Preceptor	Lavoisiers Chemestry
Fourcroys Chemestry	Fergusons Lectures
Cromsteads Minerology	„ Select Exercises
A Treatise on Virtue	Henkel on the Pyrites
Cotes Lectures	Senecas Morals
Raes Wisdom of God &c	Durham on the being &c
Spectator	

The following Gentelmen hearing of the Company's Good Intention thought fit to present the Miners with the following Books. Mr Martin Minister Langholm Hales Contemplations Mr Otto Millots History of England. Mr Little Minister Westerkirk Horn on the Psalms. Lewis Grant Butler at Westerhall Boustons four fold state. Likewise by Mr Otto Wisharts Discourses Constitution of America and Herveys Meditation. Mr Henderson Williams Mineral Kingdom.

James Toun August 1st 1793

We the miners in this place finding the Book sent us by the Company & others will tend greatly to our Improvement have thought proper to Advance Five Shillings each man for purchasing more Books & ordered the following to be sent for directly. By Mr Henderson to Peter Hill Bookseller Edin^b,

Humes Hist of England W Smolets Continwa (tion?) 16 (vols) ...	£4
Ridpaths Border History 1Vol	„ 17 —
Ancels Seige of Gibraltar 1Vol	„ 4 „ 6
Sir Charels Grandison 2Vol	1 „ „
Roderick Random 2Vol	„ 5 „
Perigrene Pickle 4Vols	„ 8 „
Erskine principal of laws	„ 6 „ 4
Excursion to Margate	„ 2 „
Life of Peter Williamson	„ 1 „ 4
Burns Poems 2 Vols in one	„ 6 „ 6
Memoirs of Barrington	„ 1 „
Lamonts Sermons 2Vols	„ 12 „
Fools of quality 5Vols	„ 12 „ 6
Gregorys Comparative View	„ 2 „
Thomsons Seasons	„ 2 „ 6
Lindsay's of Pitscotie's Hist of Scotland	„ 3 „
Mason on Selfknowledge	„ 2 „ 6
Knox's Elegant Extracts Verse	„ 9 „ 6
„ ————— prose	„ 9 „ 6
„ ————— Epistles	„ 8 „ 6
Man of Feeling	„ 2 „ 3
Blairs Sermons 3 Vols	„ 17 „ 6
Jaler 2 Vols	„ 5 „ 6
Rambler 2 Vols	
Junies Letter 3/- Nettelton on Virtue 2/-	„ 5 „
Ganganells Letters 3 Vols	„ 15 „
History of the Devil	„ 2 „ 6
	<hr/>
	£13 „ 12 „ 6
Deduction allowed @ 8 P. Cent for money	£1 „ 1 „ 9
	<hr/>
	£12 „ 11

James Toun Oct^r 1st 1793

The Miners this night having met & Exchanged Books thought it fit to form them selves into a Socety when Electing David Elliot Preses Will^m Hair Clerk Rich^d Armstrong Librarian John Pott Treasurer Rob^t Dykes D^d Thomson Adam Touloup John Pott W^m Greive Members of the Committee D^d Thomson & Ja^s Johnston Inspectors & W^m Weir Officer for the Curr^t Quarter.

James Toun 1st Nov^r 1793

Held the Socetys monthly meeting & Exchange of Books & fined Geo Jackson Rich^d Armstrong Mathew Elliot Rob^t Dykes An^w Johnston D^d Elliot one penny Each for Blots in Books & Ja^s Johnston one peny for not Return of Books.

James Toun 5th Nov^r 1793

Held the monthly Commitie when the following Members were present D^d Elliot John Pott W^m Veitch Adam Touloup Rob^t Dykes W^m Greive & ordered Mr Henderson to send for Stackhouses History of the Bible & Abelairds Letters Likewise Ordered the Treasurer to buy some Candles paper & pens for the use of the Society.

James Toun Feb^v 1st 1794

Held the Socetys monthly meeting & Exchange of Books fined John Beattie one penny for a Blot in a Book. At the same time Received the Books from Mr Hill ordered on the 5th Nov^r

Stackhouses Hist of the Bible	£1 „ 10 „
Abelairds Letters	„ 2 „ 6
	<hr/>
	£1 „ 12 „ 6

Likewise ordered Mr Henderson to write to Leadhills for a Copy of the society's Laws there. James Menzies signifies his intention of becoming a Member at 1st qur meeting.

James Toun 1st March 1794

Held the Societys Monthly meeting & Exchange of books having Received a Copy of the Laws sent for was read by order of the preses & Likewise ordered every member to peruse the same & Judge if they be a proper Cod of Laws for the Regulating of our Soceity & ordered the officer to Intimate that a General meeting of this Society is to be held at the Schoolhouse on the 15th Curr.

James Toun 5th August 1794

Held the monthly Commitie Eight members being present when John Moffat Informing the preses & other members of his intention of Claiming his Uncles right the Commitie gave there asent that he being heir to the said Will^m Armstrong thinks fit that the said John Moffat should be admitted a member of this Society at there first meeting & hopes he will be a useful member & will Conform to all the regulations of this Soceity.

James Toun 7th Oct 1794

Held the Seoceitys quarterly Meeting when all the Members being present & Continued Walter Greive Officer for the Current qur at same time gave the Treasurer orders to get 4 Lib of Candles & two Carts of Coals & Three Candle Sticks.

James Toun 7th July 1795

. . . . at same time the Soceity thinking it very Necessary that they should have these Foundamental Articles Written on Vellum and have ordered it to be got @ the first opportunity

James Toun 11th Jan^y 1797

. . . . The Society having unanimously resolved to Abridge the Old Laws so that every member may have an opportunity of having a Copy have Ordered the Commitie to attend on monday first with Mr Scott and Mr Henderson James Park & John Grant to assist them

James Toun 1st June 1797

. . . . Received the Books Commisioned by Js Park Bought of Archibald Constable Book-seller Ednh

Mosheims Church History	...	...	...	...	...	£2
Smiths Wealth of Nations	...	...	...	...	...	1 „ 1
Robertson Hist. India	...	...	...	...	...	„ 7 „ 6
Farquhar's Sermon's	...	...	...	...	...	„ 7 —
Dagleish Sum of Cristianity	...	...	...	...	...	„ 11 —
160 copies Printing the Laws of James Toun Library	...	...	...	...	...	1 „ 5 —
						<hr/>
						5 „ 11 „ 6
Carriage of the above books	...	...	...	...	...	1 „ 2
						<hr/>
						£5 „ 12 „ 8

At Same time the Soceity resolved that every member to have a Copy & pay Threepence a Copy for the same

James Toun the 24 May 1799

Held a Meeting of the Society this night to conider of Removing the Library from this place when a Majority Voted for the Books to stay in this place.

Jamestoun the 14 Jan^y 1800

Matt. Elliot Treasurer for last year paid into the hand of Ioⁿ Moffet the sum of £7 „ 11 „ 4 $\frac{1}{2}$ and the Meeting Agreed to have all thier Books Bound that had ocaion befor any more was Purched and have Agreed to take the Books to the Kirktownhil.

A NEOLITHIC AXE ROUGHOUT

By A. E. TRUCKELL

On 24th December, 1964, an unfinished Neolithic axe found the previous day while extending the garden of "Cairnsmore," Terregles, Dumfries, was handed in to the Burgh Museum (fig. 1).

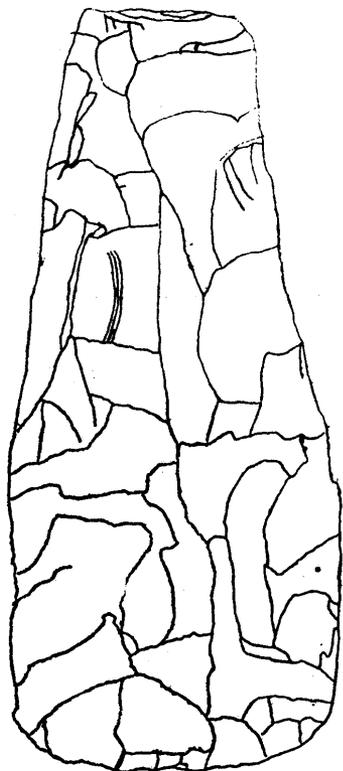


Fig. 1—Axe Roughout from Terregles (½)

It appears to be of Westmorland (Group VI) stone: unfinished Neolithic axes are not common in our district, the only other example in the area at the moment being the small very rough axe from Beckfoot, Annan. The present example is much nearer its final shape than the Beckfoot axe, and the bold flaking technique shows up well.

It is known that these axes were finished locally but being of some value not many escaped being finished and used after import.

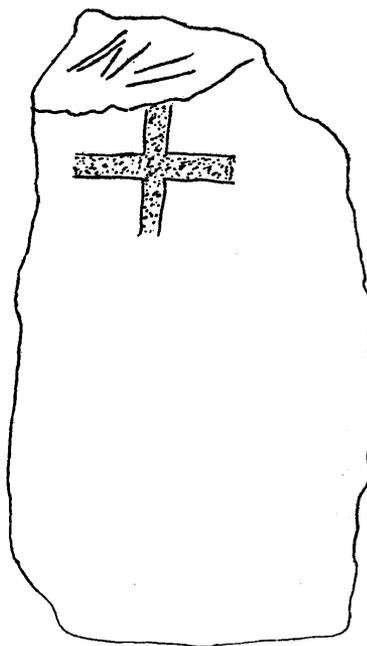


Fig. 2—The Foregirth Cross.

NORTHUMBRIAN COINS FROM LUCE SANDS, WIGTOWNSHIRE

By W. F. CORMACK, F.S.A., Scot.

Although Wigtownshire was under Northumbrian rule from approximately 700 to 900, the evidence is from literary sources and ecclesiastical sculpture. There is virtually no numismatic evidence. In Vol. XXXIX of these Transactions there was however recorded the discovery in Luce Sands of one of the small copper or base silver coins known as a

sceat or styca. This is one of a small number known from that source, and the discovery of a second by the writer in 1962 prompted this note. This second coin is of the same ruler, Eanred but is by the moneyer Monne. It was found some 200 yards south-west of the first coin so renders it unlikely that they are part of a dispersed hoard. Scrutiny of the labels on two further coins from this source in the Kelvingrove Museum moreover shows that these were found on or near a site known to L. Maclellan Mann as "Bronze Plate Hill," described by him as being on the Stoneykirk/Glenluce Parish Boundary. Since this Boundary lies some $\frac{1}{4}$ mile south-west of the find spots of the coins found by the writer it is now quite clear that these four coins are not all part of a dispersed hoard, but probably are stray losses from occupation. Their failure to turn up from elsewhere in our Society's area could be due to their insignificant size and appearance.

Furthermore, among the coins in the Hunterian Museum are four coins of this series presented by Dr George Neilson, from an unknown provenance. Inspection of the excellent illustrations in the recently published Sylloge seems to reveal that certain of these coins are sand blasted on one side—particularly Nos. 147 and 154. Since this is also a feature of the two coins found by the writer of this note, and Dr George Neilson was connected with this part of Scotland, it is here suggested that these four coins are very probably also from Luce Sands. A full list, including those in the National Museum of Antiquities of Scotland, would then be as follows:

No.	Ruler	Moneyer	Location	Reference
1.	Ethelred 1, 789-96	Ceolbald	Kelv.	?
2.	Ethelred 11, 841-4	Eardwulf	do.	Scot. Ex. p. 833
3.	Eanred, c. 808-41	Fordred	Dumf.	These Trans. Vol. XXXIX and D. & E. 1962.
4.	do.	Monne	do.	D. & E. 1962.
5.	Arch. Wigmund, 837-54	Coenred	N.M.A.	P.S.A.S. LXXXV, 170
6.	do.	Ethelweard	N.M.A.	do.
7.	Ethelred II	?	N.M.A.	do.
8.	Eanred	Eadwin	Hunt.	Sylloge No. 147
9.	do.	Fordred	do.	do. No. 154
10.	Ethelred II	Tidwulf	do.	do. No. 225
11.	do. (2nd reign), 844-9.	Eardwulf	do.	do. No. 253

Abbreviations: Kelv. = Kelvingrove Museum, Glasgow; Scot. Ex. = Scottish Exhibition Cat., Glasgow, 1911; Dumf. = Dumfries Burgh Museum; D. & E. Discovery & Excavation (Scotland); N.M.A. = National Museum of Antiquities of Scotland; Hunt. = Hunterian Museum; Sylloge = S. of Coins of the British Isles, Hunterian & Coats Collection, Part I.

A CROSS STONE AT FOREGIRTH, LOWER NITHSDALE

By A. E. TRUCKELL

During 1825-27 Thomas Johnston of Milnhead, Kirkmahoe, was recording various antiquities in Dumfries and Galloway. He was a friend of Riddell of Friars' Carse and helped him erect the fine "Druidical Circle" there in 1826.

Johnston's notes were found a few years ago in the Riddell material in the library of the Society of Antiquaries of Scotland, and Mr Angus McLean and the writer followed Johnston's tracks, checking up on his reports (this Society's Transactions, Vol. XXXVI, new series, p. 98).

Considering that he was an antiquary of the high romantic period, his mind full of "Druidical Temples," "Altars of Dedication," "Altars of Sacrifice," and "Hieroglyphics," a remarkable proportion of his sites proved to have something in them, though not always what he thought.

On Foregirth farm he recorded a "Temple" on the strength of two "Pillars," mentioning that one bore a cross and was five feet long; the other smaller pillar bore possible cup-marks. Johnston "set them up," implying that he had found them lying flat. Enquiry was therefore made at Foregirth, but Mrs Slaven, the farmer's wife, though keenly interested, could not think of any stone answering the description.

In the summer of 1964, however, she telephoned the Museum that the Ordnance Survey Archaeological Department, also working on Johnston's notes, had been making enquiries, and that her husband had remembered a cross-marked pillar which had lain half-buried at the foot of the farm garden and which he had recently, on extending the garden, pulled through the fence into the adjacent pig paddock.

A visit was accordingly paid to Foregirth in late August, and Mr Slaven took the party to the pig paddock just over the garden fence where, near the fence, was the "pillar," a grey 5 ft. 1 in. whinstone boulder of pillar shape, with a foot long cross of 2½ inch wide lightly pecked bands clearly visible (Fig. 2).

Such rough monuments cannot be exactly dated: but the use of a natural stone (and the presence on the "top" of the pillar of what appear to be prehistoric axe-sharpening grooves suggest that it may have stood there before Christian times), and the plain cross in pecked technique, are early features: one thinks of the simple Ruthwell cross (these Transactions, vol. XXVIII, p. 158) and the Staplegorton cross (vol. XXXIII, 179), which have been dated to roughly 600 A.D. by Dr Raleigh Radford. The cross, at any rate, is the first of any date to be recorded for Lower Nithsdale.

Foregirth (map ref. 953836) stands less than a mile south of the Roman fort at Dalswinton and near the line of the Roman road. The steading, at the foot of the garden of which the cross lay before being moved a few feet to its present position, occupies the raised end of a low tongue of land projecting into marshy flats near the river; and the steepness of the climb to the steading strongly suggests artificial scarping. The site therefore is easily defended: the name Foregirth—probably Norse and meaning Sheep Enclosure—at least suggests some kind of enclosure in the tenth or eleventh century.

Mr Slaven hopes to re-erect the pillar; with its broad-based shape this would be quite easy.

REVIEW

The Roman Fort at Castledykes, Anne S. Robertson; Oliver and Boyd, 30s.

Miss Anne Robertson is well-known to many people in the South-West for her work with John Clarke at Milton and—in the last few years—for her inspired leadership of the Field School in Scottish Archaeology for a month at Birrens Roman fort each summer: and her talent as a speaker has brought large audiences when she has addressed the local Antiquarian Society.

Widely known as an eminent numismatist, keeper of the famous Hunter Coin Cabinet of the Hunterian Museum of Glasgow University, keeper of the Cultural Collections there, and Reader in Roman Archaeology, this energetic lady is no newcomer to dirt-archaeology: she has been in charge of the Field School in Archaeology since its inception in 1948, but was excavating long before that, between the wars; and one of these inter-war excavations, begun in 1937 and 1939, and extended through the post-war years 1950-55, is the subject of the book under review.

Castledykes, Corbiehall, Carstairs, overlooking the Clyde, was a large and important Roman fort, with occupations extending from the early 80's A.D. to the late second century.

In good arable land, it has been much ploughed away: but much remained—ditches, the sleeper trenches of huts, stone foundations of the Antonine period, and a great variety of pottery, iron, bronze, lead, and the famous capricorn sculptured stone, to present a very full picture to the meticulous and highly trained eye of Miss Robertson.

What is more, her warm personality, her own fascination with the work, come through in her every line as she explains the whole complex story with the attractive clarity and simplicity which is her special gift, and with a wealth of plans, sections, and drawings of finds.

For anyone with an interest in Roman Scotland—and that means a great many people nowadays—this book is a must, and very well worth the money—all the more as the names of Birrens, Dalswinton, Carzield and Glenlochar constantly crop up throughout the text—for the great amount of work done in our area in the past seventy years, from Barbour's pioneer work at Birrens in 1895 onwards, ensures that South-West Scottish sites provide parallels for many of the objects found.

A. E. T.

PROCEEDINGS, 1964-65

9th October, 1964.—The Annual General Meeting of the Society was held in the Ewart Library at 7.30 p.m., the President, Major-General J. Scott-Elliot being in the Chair. The Accounts of the Hon. Treasurer were adopted and the list of Office-bearers recommended by the Council was confirmed. Fourteen adult and three junior members were elected.

Mr Alexander Fenton, Assistant Keeper at the National Museum of Antiquities of Scotland, lectured on "Farm Servant Life from the 16th Century." His talk was illustrated with some fine coloured and black and white slides.

23rd October, 1964.—Mr James Alder, a Northumberland artist, lectured on his study, lasting over eight years, of the Dipper. He showed a very fine series of coloured slides. Four adult and one junior members were elected.

6th November, 1964.—Mr Charles Daniels, Assistant Keeper of the University Museum, Newcastle, lectured on the excavations carried out during the past four seasons on the Roman Fort of Broomholm at Langholm. His lecture was illustrated by an excellent series of slides and plans.

20th November, 1964.—"The Natural History of some Scottish Woodlands" was the subject of the lecture given by Mr J. Grant Roger of the Nature Conservancy, who dealt mainly with woodlands in the Highlands and North of Scotland. A magnificent series of slides showed the different varieties of woodlands to be found in these regions and the associated ground flora.

4th December, 1964.—This meeting took the form of a Members' Night with contributions from three members of the Society. Mr B. F. D. Harris showed a most interesting colour film which he had made of Dumfriesshire with recorded commentary. Mr W. F. Cormack gave a talk illustrated with splendid colour slides on "Some recent archaeological discoveries" and exhibited some typical artefacts from the large quantity of flint and chert implements recovered from the apparent Mesolithic site at Dalton Hook. The programme concluded with a very fine series of coloured slides of nature photography by Mr David Cunningham. Three adult members were elected.

15th January, 1965.—Owing to the unavoidable absence due to illness of Dr Nicolaisen, the scheduled speaker, Mr Truckell kindly agreed to lecture at very short notice on the "Dumfries Burgh Records of the 16th Century." Reading from his own transcriptions and from the original records, Mr Truckell gave a vivid picture of the life of our town 400 years ago. Five adult members were elected.

- 29th January, 1965.**—Dr J. D. Lockie of the Department of Forestry and Natural Resources of the University of Edinburgh lectured on "Birds and Beasts of Prey," illustrating his lecture with very fine coloured slides. two adult members were elected.
- 12th February, 1965.**—Mr J. G. Scott, Curator of the Departments of Archaeology, Ethnography and History, Glasgow Museum and Art Galleries, lectured on "The Excavation of the Crannog at Loch Glashan, Mid Argyll," and illustrated his talk with his lecture with very fine coloured slides. Two adult members were elected.
- 26th February, 1965.**—Dr W. G. Jardine of the Geology Department of the University of Glasgow (substituting for Dr W. G. Tremlett) lectured on "The Ice-Age—past or present?" His lecture was illustrated with maps and charts and coloured slides of various local sites. Three adult members were elected.
- 12th March, 1965.**—Mr James Banks, a member of the Society's Council, lectured on "Structure of Plants and their Cultivation," illustrating his lecture with diagrams and colour slides. One adult and one junior member were elected.

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