

## IV.

THE STONE INDUSTRIES ASSOCIATED WITH THE RAISED  
BEACH AT BALLANTRAE. BY A. D. LACAILLE.*Read February 24, 1945.*

## INTRODUCTION.

1. The coastal and estuarine tracts of Wigtownshire and south Ayrshire are particularly interesting for their links with Ireland. Several of their prehistoric aspects have been so well studied lately that much is now known of the cairn-builders and their successors in this part of Scotland. Little has been said, however, of the forerunners and connexions of all these people. Hence, special importance attaches to those Scottish relics which have Irish counterparts and are referable to the first settlers on our south-west coast after the disappearance of the ice.

Glimpses of the primordial colonists have occasionally been provided by stone implements picked up on the so-called 25-foot raised beach, that conspicuous feature of the region. This archæological material, which may lie in museums or collectors' cabinets, ought long ago to have been brought to notice if only to stimulate serious inquiry. Much of it could now be assigned to its true horizon because of the standards established on the Irish side of the North Channel and helped by recently published findings in Scotland. It should be easier also to place many future discoveries, since a large collection of stone artifacts from Ballantrae on the coast of Carrick now adds considerably to our knowledge. This assemblage points to as early an occupation as any in Scotland, and proclaims the successive arrivals of settlers in the area during the early Post-Glacial period.

Ballantrae has been mentioned in these *Proceedings*<sup>1</sup> in connexion with certain specimens in the collection of our late Fellow, Rev. Dr. Wm. Edgar. To him we owe a description<sup>2</sup> of some microliths from the locality, and but for his untimely death we should have expected further reports from his pen. That I am able to lay these notes on his unrecorded and most instructive series before the Society is due to the kindness of his sister-in-law, Miss J. H. M. Cullen, of Glasgow and Beith, who most generously lent me all his material. To the Trustees of the late Lord Leverhulme I am indebted for a grant which allowed me to survey the district.

2. The collection results from the gleaning of soil upturned by the plough on the top of the early Post-Glacial deposits lying below the 50-foot contour

<sup>1</sup> My "Scottish Micro-burins" in vol. lxxvi. (1941-42), pp. 103-19, *passim*.

<sup>2</sup> *Trans. Glas. Arch. Soc.*, vol. ix. pt. iii. (1939), pp. 184-8.



(Photo. by Alexr. D. Henderson, Maybole.)

The early Post-Glacial raised beach south of Ballantrae.

to about 20 feet above O.D. The implementiferous stretch averages a quarter of a mile in breadth and is approximately a mile and a half long (Pl. V). It extends south-westerly from near the Laggan Burn, a left bank

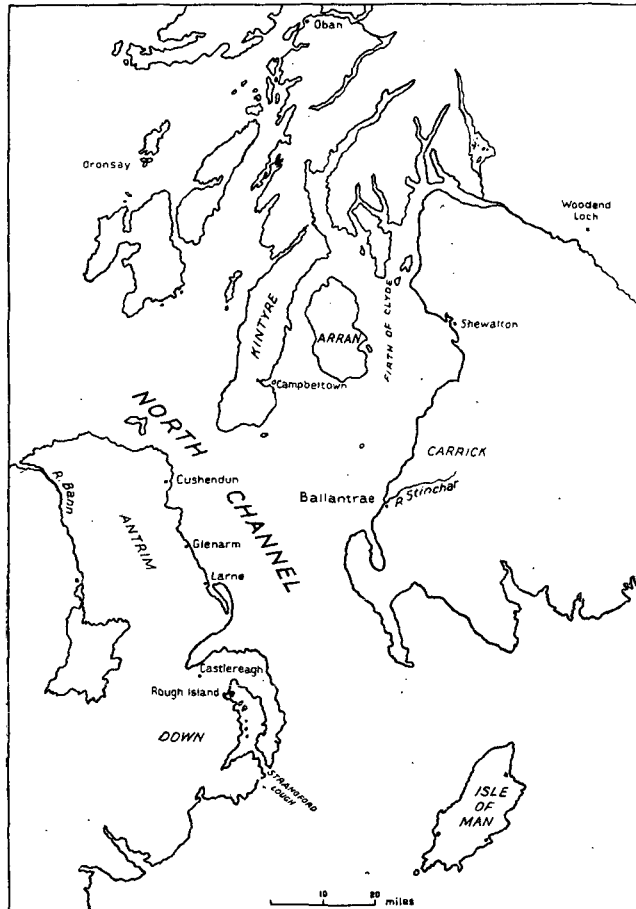


Fig. 1. Map showing the North Channel and some of the principal early Post-Glacial settlements.

tributary joining the River Stinchar three furlongs above Ballantrae Bridge, to near the Downan Burn which discharges into the sea near the headland of that name.

Between these limits the well-defined marine terrace indicates that the sea or an estuary extended inland during the Post-Glacial submergence. This phenomenon is equated with the transgression of the Littorina Sea which in Northern Europe dominated the Atlantic climatic phase, that

period when moist warm conditions obtained from about 5000 to approximately 2500 B.C.

3. To the south the ground rises sharply from the 50-foot contour and abounds in the drifts of the last glaciation of the region. Along the coast north and south of the Stinchar a phenomenon of the deglaciation is recorded locally in the traces of strand-lines above the early Post-Glacial beach or wave-cut platform. These denote the maximum of the Late-Glacial sea and stages in the land recovery which followed.

North of the Stinchar, up the Firth of Clyde, encroachment of the early Post-Glacial sea is registered in the coastal strip by a narrow selvedge cut in the boulder clay above the present beach, and between this and a steep cave-perforated cliff whose crest corresponds in places with the 150-foot contour. Ballantrae village (behind which rise the ruins of Ardstinchar Castle) stands on the early Post-Glacial beach at 31 feet above O.D. on the right bank of the river near its mouth. Whereas the surface of the raised beach on the north side of the Stinchar is flat, that of the equivalent formation on the south has been considerably eroded. East of the village the marine and low river terrace merge indistinguishably below the escarpated slope. This continues up the curving valley with its hilly background in the east. Thus, the lower Stinchar glen descending into a bay protected on three sides is well sheltered.

The river flows south-westerly to within a few yards of its old mouth which is now closed by a great bar of gravel, and about 1000 yards from the bridge. It then abruptly changes direction to north by west for about half a mile and joins the Firth of Clyde through an opening it has carved since 1859.<sup>1</sup>

4. From the foregoing it will be inferred that Ballantrae provided an ideal environment for human settlement in early Post-Glacial times. The facies of most components of the Edgar Collection supports this inference, and indicates that the place was colonized by exponents of two cultures earlier than that of the chambered-cairn builders. Of the characteristic artifacts which permit us to arrive at this conclusion many are quite new to Scottish archæology. Since their counterparts are abundant at littoral sites in Antrim and Down, it may be that we need look no farther for the point whence the early waves of immigration into south Ayrshire were impelled. These movements of peoples would be the forerunners of the many that served to link Ireland and Scotland so closely. In any case, around the mouth of the Stinchar the early colonists would find an environment reproducing precisely that afforded at so many places on the Irish side of the North Channel.

5. The distribution of the artifacts, as noted by Edgar, shows that the most prolific area is the seaward stretch between the Downan Burn and

<sup>1</sup> *Mem. Geol. Surv. Scot.*, sh. 7, Ayrshire: South-Western District, 1869, p. 15.

Greddock. There 3138 specimens were collected; near Greddock but 30 were picked up; and still farther upstream, towards the Laggan Burn, the Garleffin ground yielded 165 objects. Thus, no less than 3333 pieces rewarded Edgar's keenness. Of this number, 2011 are definable objects, and 1322 miscellaneous waste bearing signs of workmanship. It is highly satisfactory that the rejected struck pieces, fragments of flakes, and chips were not overlooked. Occurring in large concentrations with many cores and recognizable forms, they suggest working-sites. The analysis of the collection (Table I, p. 85) shows how discoveries from the different stretches compare.

6. Edgar's collection is made up of various groups. (i) One consists of artifacts which are exactly paralleled by Early Larnian (Mesolithic) products from littoral deposits in Northern Ireland and Kintyre. (ii) Another includes the counterparts of tools which are positively assignable in Antrim and Down to industries later than Larnian but earlier than those of the full Megalithic complex, and regarded as Neolithic in age. The size of the raw material is reflected by the implements referable to these two categories; compared with the Irish specimens ours are smaller. (iii) There occur implements of familiar Bronze Age type, characteristic workmanship and fresh appearance. Since these number only 38, the predominating aspect of the collection is archaic. (iv) A considerable microlithic element is present. It enhances the impression of antiquity conveyed by the notable assemblage.

#### MATERIALS.

The needs of the prehistoric knappers were met by flint almost to the exclusion of other stones. Though not all of uniform quality or (when exposed) shade, much of the flint represented by the artifacts is of the same high grade as that used in the littoral industries of north-east Ireland.

There is strong evidence from other sites on the shores of the Firth of Clyde that flint was imported from Antrim. It may be, therefore, that some of the flint used at Ballantrae was brought by man from across the North Channel. On the other hand, drifts at Ballantrae, and along the coast southward as far as Loch Ryan, contain flints. According to Professor J. K. Charlesworth<sup>1</sup> these were dredged and carried by ice from the

<sup>1</sup> *Trans. Roy. Soc. Edin.*, vol. lv., pt. i. (1926), pp. 8-9. The flints become larger and more numerous as the drifts are examined south. They are found with chalk fragments along the eastern shore of Loch Ryan. It is in the complex drifts of the Rhinns, however, that they are largest and most numerous and mixed with a great variety of other erratics. They occur in the raised and modern beaches round the head of Luce Bay and in the sandhills of Torrs Warren (*ibid.*).

As might be expected, great numbers of the ice-carried flints bear scars testifying to their encounter with other stones in the course of transport. Naturally, countless flakes so struck off occur in the affected areas. It is such pieces which have given rise to the incautious speculations of enthusiasts who would see in these objects, core and flake, the work of man. Of course, I do not forget the much rolled flint *artifacts* which have occasionally been found in or upon the Post-Glacial raised beach in south-western Scotland. These belong to quite another category, for there is reason for assigning most to *late* Mesolithic industry. It is hoped to deal with these when opportunity offers.

TABLE I.—ANALYSIS OF THE EDGAR COLLECTION (BALLANTRAE).

	MAIN SITE.						GREDDOCK.			GARLEFFIN.			SUMMARY.		
	Flint (patinated).	Flint (various).	Chert.	Pitchstone.	Quartz.	Chalcedony.	Totals for Site.	Flint (patinated).	Flint (various).	Totals for Site.	Flint (patinated).	Flint (various).	Chert.	Totals for Site.	Totals for Categories.
Flakes	primary (retaining crust), struck from pebbles	18	10	..	..	..	28	..	..	..	..	..	..	28	28
	do. do. flake-scarred	24	29	1	..	..	54	..	..	..	..	..	..	3	56
	struck from cores, under 1.5 cm.	84	90	1	..	..	175	..	1	1	..	..	..	2	179
	do. 1.5 to 2.5 cm.	121	294	2	1	..	418	6	1	1	1	20	..	21	446
	do. do. with trimmed edges	9	14	..	..	..	23	..	1	1	..	4	..	4	28
	do. 2.5 to 4 cm.	29	99	1	..	1	130	1	1	..	..	11	..	11	143
	do. do. with trimmed edges	8	7	..	..	..	15	..	..	..	..	7	..	7	32
	do. 4 to 6 cm.	4	..	..	..	..	4	..	..	..	..	1	..	1	6
	do. do. with trimmed edges	..	..	..	..	..	..	..	..	1	..	1	..	1	2
	do. broken (butt-ends)	28	50	..	..	..	78	..	..	..	1	1	..	4	82
do. do. with trimmed edges	..	5	..	..	..	5	..	..	..	..	2	..	2	7	
do. broken (tips)	17	41	1	..	..	59	2	4	6	..	3	..	3	68	
do. do. with trimmed edges	1	4	..	..	..	5	..	..	..	..	2	..	2	7	
end- "thumb-nail" (on flakes)	21	23	..	..	..	44	..	..	..	..	25	..	25	69	
Scrapers	8	6	..	..	..	14	..	..	..	..	3	..	3	17	
side-compound	10	5	1	..	..	16	..	..	..	..	2	..	2	18	
round	2	7	..	..	..	9	..	..	..	..	2	..	2	11	
concave	7	4	..	..	..	4	..	..	..	..	3	..	3	7	
Notched flakes ( <i>lames à coche</i> )	..	4	..	..	..	11	..	1	1	..	2	..	2	14	
Perforators	2	1	..	..	..	3	..	..	..	..	1	..	1	4	
Gravers	..	3	..	..	..	3	..	1	1	..	..	..	..	4	
"Larne picks"	2	3	..	..	..	5	..	..	..	..	..	..	..	5	
Tanged points	2	..	..	..	..	2	..	..	..	..	2	..	2	4	
<i>Tranchets</i>	2	2	..	..	..	4	..	..	..	..	2	..	2	6	
"Fish-tail" scrapers	2	2	..	..	..	4	..	..	..	..	..	..	..	4	
Microoliths	1	2	..	..	..	3	..	..	..	..	..	..	..	3	
Micro-burins	33	97	..	..	1	131	..	1	1	..	1	..	1	133	
Notched flakes	26	39	..	..	..	65	..	..	..	..	..	..	..	65	
Flake-trimmings	11	19	..	..	..	30	1	1	2	..	..	..	..	32	
Cores	single-platform	87	172	1	1	1	262	..	..	1	5	..	6	268	
	multi-platform	14	46	..	..	..	60	..	..	..	1	..	1	61	
	round	..	3	..	..	..	3	..	..	..	..	..	..	3	
	prismatic	..	2	..	..	..	2	..	..	..	..	..	..	2	
Core-scrapers	5	4	..	..	..	9	..	..	..	..	2	..	2	11	
Side-scrapers (on cores)	..	2	..	..	..	2	..	..	..	..	..	..	..	2	
Picks	..	2	..	..	..	2	..	..	..	..	..	..	..	2	
Celts	..	2	..	..	..	2	..	..	..	..	..	..	..	2	
Angle-gravers	..	1	..	..	..	1	..	..	..	..	..	..	..	1	
Core-trimmings	63	62	1	..	1	127	..	..	..	..	19	1	20	147	
Knives	..	2	..	..	..	2	..	..	..	..	3	..	3	5	
Scrapers	end- semi-circular (on flakes)	..	1	..	..	..	1	..	..	..	12	..	12	13	
	do. do.	..	2	..	..	..	2	..	..	..	13	..	13	15	
	round	..	1	..	..	..	1	..	..	..	1	..	1	2	
compound	..	1	..	..	..	1	..	..	..	..	..	..	..	1	
Arrow-heads	..	2	..	..	..	2	..	..	..	..	..	..	..	2	
Totals of definable artifacts															
Miscellaneous waste (chips; sundry flake-, struck core-, and pebble-fragments)	641	1169	9	2	2	2	1825	11	12	23	8	154	1	163	2011
	321	985	..	2	4	1	1313	1	6	7	..	2	..	2	1322
Grand totals	962	2154	9	4	6	3	3138	12	18	30	8	156	1	165	3333

Summary: Artifacts 2011  
Waste 1322  
Specimens in collection 3333

Cretaceous beds on the sea floor between Arran and the Rhinns of Galloway. It is a question, therefore, whether one is always justified in thinking of imported flint in this part of Scotland when it certainly seems more reasonable to suppose that locally obtained material was used. Indeed, a flint supply at Ballantrae would in itself be an attraction to bands seeking a spot to settle.

Arran pitchstone, the presence of which at any mainland site deserves attention, is represented here by 4 specimens from the principal tract. The native chert, however, seems not to have found favour. Only 10 artifacts made in it have been picked up at the main site and one in the Garleffin area. The much inferior quartz appears in the form of 6 struck specimens from south-west of Greddock. Chalcedony, that excellent material for the manufacture of flaked and retouched tools, is represented by 4 objects, three coming from the terrace between the Downan Burn and Greddock, and one from the Garleffin-Laggan Burn stretch.

Of the definable shapes fashioned in flint, 46 per cent. from the whole area explored exhibit varying degrees of patination. Surface alteration of this sort is not a sure guide to age. Yet it is a striking fact that all the oldest-looking forms in the Edgar Collection are heavily patinated chalky-white and the ridges and edges of most are dulled.

#### THE INDUSTRIES.

1. To assess the implications of the Ballantrae site and its most significant implement-forms, it is necessary to bear in mind that the Late-Glacial and early Post-Glacial geological history of the coastal grounds of Carrick and Ulster is one and the same. It records a succession of contemporary changes in the relationship between the land and sea. In both regions these changes are visibly registered in analogous littoral features. Hence, it would be expected that excavations in the estuary of the Stinchar should reveal deposits equatable with those disclosed by the methodical investigations of sites in north-east Ireland. This is already indicated by the circumstances in which the most telling items in Edgar's collection have been found.

The results obtained by the Harvard Archæological Expedition to Ireland have proved illuminating.<sup>1</sup> They support some previous findings, solve many old problems, and provide bases for comparisons and correlations. Further, they have afforded the documents which permit us to include Campbeltown and, as I hope to show in due course, other centres of our earliest industries in the same cultural province as the coastal sites in Northern Ireland. Having these data we can assign to their place many of the Ballantrae specimens.

2. An ideal section in the early Post-Glacial raised beach in north-east

<sup>1</sup> Summarized by Hallam L. Movius, Jr., *The Irish Stone Age*, Cambridge, 1942, pp. 121-74.

Ireland reveals the following archæological sequence (in ascending order): (a) Mesolithic (Larnian), early in the lower deposits, and late in the upper; (b) Neolithic in the overlying humus or sand. The Early Larnian antedates the transgression of the Post-Glacial sea and may therefore be referred broadly to the later stages of the Boreal climatic phase. Appearing early in the succeeding Atlantic climatic phase before the maximum expansion of the sea, the Late Larnian seems to have endured until late in that period. Neolithic culture reached the region as Atlantic conditions were giving place to Sub-Boreal and the land had recovered almost to its present height in relation to the sea. The great majority of Early and Late Larnian relics are in secondary position. They were carried by sea action during the period of land-sinking from sites occupied along the foreshore and incorporated in the beach formation during the emergence that followed. The Neolithic remains denote settlement on top of the beach and are *in situ*.

Of course there exist local differences, as for example the absence of one or other horizon. Such is the case at Rough Island, Strangford Lough, Co. Down,<sup>1</sup> which provides standards for Ballantrae. Excavations at that Irish site prove that deposits containing Early Larnian industries are directly capped by humus rich in Neolithic products. Investigations there disclose also that agricultural operations have in places disturbed the underlying implementiferous bed and mixed its archæological contents with the characteristic artifacts of the topsoil.

3. The plough has revealed a similar state of affairs and archæological succession on the left bank of the lower Stinchar, as my examination of sections confirms. Overlying the beach formation of gravel and sand containing Mesolithic artifacts, the agricultural soil with flints in its lower part consists of sandy material mixed with hillwash brought to fertility by long cultivation.

On the score of their occurrence, physical condition, typology and workmanship it may be postulated that Edgar's series point to an early Mesolithic settlement followed long after by Neolithic.<sup>2</sup> This was followed by later immigrations, to one of which we probably owe the setting up of the Standing Stones of Garleffin.<sup>3</sup> The microliths and kindred forms indicate the early arrival and long persistence of specialized implements made to answer local needs.

The groups of larger artifacts which are assignable to Mesolithic industry are in the main indistinguishable from the Early Larnian assemblages of

<sup>1</sup> Hallam L. Movius, Jr., in *Journ. Roy. Soc. Ant. Ire.*, vol. lxx. (1940), pp. 111-42.

<sup>2</sup> While it cannot be shown at this juncture that the Late Larnian or its equivalent is present at Ballantrae, yet it is quite possible that shell-heaps I have been told existed near the mouth of the Stinchar were late Mesolithic in age like the kitchen-midden at Rough Island. [*Journ. Roy. Soc. Ant. Ire.*, vol. lxx. (1940), pp. 111-42.] One of the Ballantrae shell-mounds must have been a feature of sufficient prominence to have dictated the place-name "Shell Knowe" for a cluster of houses (John Smith, *Prehistoric Man in Ayrshire*, London, 1895, pp. 227-8).

<sup>3</sup> "The Gray Stanes o' Garleffan" (Smith, *ibid.*, pp. 222-3).



north-east Ireland and Campbeltown. Ballantrae, on the opposite shore of the Firth of Clyde, therefore, is yet another station in the south-west where is represented the earliest expression of culture certainly known to have reached Scotland.

It is the comprehensive sets of Neolithic facies, such as is typified in Antrim and Down, which make the Ballantrae site especially important to Scottish archæology. Since this complex includes neither pottery nor ground stone implements, it is held to antedate that of the cairn-building invaders with their full culture. It helps, therefore, to bridge a gap in our knowledge of the passage from the Mesolithic.

4. Flake-implements constitute the bulk of the tools used throughout the occupation represented by Edgar's collection. Cores, the residue from the fabrication of the basic flakes and blades, were pressed into service, but they fall rather into the category of accommodation-tools. Apart from these, there occur some implements improvised by trimming nodules or pieces of pebbles. A few well-defined shapes flaked in nodules are outstanding and belong only to the series that is linked with the littoral Neolithic of north-east Ireland.

5. Unless indicated otherwise, the specimens described in the following come from the main site.

(i) THE EARLY LARNIAN FACIES.

The presence of Early Larnian forms has been revealed by agricultural operations and by my examination of the beach material. A small group of typical specimens, therefore, has been drawn to show how closely these resemble the principal implements found stratified in the early Post-Glacial raised beach in north-east Ireland and Kintyre.

◇ *Flakes and Blades.*—Corticed and scarred flakes, good parallel-sided and leaf-shaped blades are characteristic and the most abundantly represented of the implements. So many bear the signs of use as knives or scrapers, e.g. Nos. 1-4, and but few those of retouch, as No. 5, that it is clear the plainest of material was the mainstay of the early settlers. The flakes and blades run from 1.5 cm. to 6 cm. in length and their width is generally proportionate. The character of the basic material is not lost in the utilized and more simply trimmed objects.

Great care was taken in removing the small blades from their parent cores. No. 6, an excellent instance, is a trimmed form typical of the Early Larnian. Its right edge is worn and its left steeply dressed from the bulbar face, the lower end of which retains the bulb of percussion. In these respects and appearance the implement reproduces Creswellian and even more remote ancestors. Other examples with blunted edges assignable to the early range of artifacts from Ballantrae are considered later (pp. 102-3).

Whether or not the specimen No. 7 was intended to arm a light shaft, as

were doubtless some of its companions, it has a greater claim to notice as a possible forerunner of a classic form. Chipping on the upper surface at the lower end, to reduce thickness, has given the piece a sort of asymmetrical tang. The left edge of the scarred, corticed, and patinated flake displays fine retouch which involves the flank and carries round the tip. It is noteworthy as a Scottish example belonging to a distinctive category of implements which ranged from the Early Larnian to the Neolithic in Antrim and Down. In its simple Mesolithic treatment it is a prototype of forms figured (Nos. 31-36) among our later series. With their Irish counterparts these foreshadow the Bann point.

*Scrapers.*—This class of tool is the best represented of our older retouched pieces. The commonest sort is that made in portions of thick corticed or primarily scarred flakes. The extent of the treatment varies, and in most the retouch is crude.

1. In the main the "thumb-nail" scraper of irregular outlines (Nos. 8-9) predominates. Rounder and steeper tools, *e.g.* No. 10, are possible reminders of the Azilian influences so often stressed as present in the Mesolithic industries of the Hiberno-Scottish province. The rare, shapely and finely retouched end-scrapers on flakes and blades (*e.g.* No. 11) stand out from the coarse tools and recall Upper Palæolithic forerunners.

2. No true single-edged side-scraper can be recorded. The characteristic long lateral convex working-edge appears here only in combination with another, whether in thin material (No. 12) or in thick (No. 13). These compound tools feature prominently in the early range from Ballantrae, as they do elsewhere<sup>1</sup> in comparable series.

3. Besides various forms with more or less convex working-edges, there occur several concave scrapers characteristic of Hiberno-Scottish Mesolithic industries. Some are plain with the working-edge at the side or end. They are usually made in convenient pieces of flint rather than in complete flakes. A specimen, No. 14, in a complete flake points surely to a remote ancestry in the Aurignacian *lame à coche* and its derivatives. Like so many side hollow-scrapers produced in the early Mesolithic industries of the Ulster and south-western Scottish littoral, our No. 15 is so made that the piece could have served also as a perforator. Its thick point is slightly injured by use.

4. Upper Palæolithic tradition survives strongly in other steep scrapers made in thick flakes or well-flaked cores. The treated flakes may consist of portions of pebbles retaining much of the cortex, as Nos. 16 and 17, or core-trimmings as No. 18. In the first example the face is vertical, in the second inclined. Both pieces are made in injured flints, obviously ice-borne. The third object is actually a compound tool. In plan it appears as an

<sup>1</sup> *E.g.* at Albyn Distillery, Campbeltown [W. J. McCallien and A. D. Lacaille in *Proc. Soc. Ant. Scot.*, vol. lxxv. (1940-41), pp. 73-5, and fig. 4, Nos. 38 and 39].

engrailed end-scraper, and, when set upon its side, as a narrow tool whose rounded working-edge has been achieved by most delicate short vertical fluting. It is easy to see in this trimming the Upper Palæolithic tradition manifest in Early Larnian industries.

*Picks.*—No. 19 is noteworthy because until analogous objects were identified in the early Mesolithic industry of the raised beach at Albyn Distillery, Campbeltown,<sup>1</sup> the type was unknown outside Ireland. It appears sporadically in Early Larnian contexts as the prototype of the "Larne pick". So common is this product in Late Larnian assemblages that it is regarded as the type-implement of the Irish Mesolithic which it survives. Our example is characteristically made in a plunging primary flake. At its pointed or bulbar end slight marginal retouch has been applied. The form recurs in somewhat more developed form in our later series (Nos. 53-54).

Despite arguments for an Iberian origin<sup>2</sup> it is more probable that the "Larne pick" was devised in the Irish part of the Hiberno-Scottish province.<sup>3</sup> Until lately this long-persisting tool-form was thought to be restricted to the equipment of settlers on the coast. Recently, however, it has been found inland near Coatbridge<sup>4</sup> in association with artifacts of a comprehensive industry thought to be later than Larnian, although Mesolithic in tradition. Since the Lanarkshire site lies on the shore of a loch, it seems that this sort of implement was made to answer a need common to early strand-loopers.

*Gravers.*—True gravers have not so far been recognized in the Early Larnian of north-east Ireland, but a few examples and waste spalls from their manufacture have been identified in the equivalent industries of Kintyre.<sup>5</sup> As perfect a specimen as yet found at any Scottish site can be advanced from Ballantrae, No. 20. It is of the plain kind (*bec-de-flûte*) made in a thick complete flake, with two graver-facets on the left backed against two graver-facets on the right. In condition this graver is in keeping with the other implements referred to the older series from the lower Stinchar glen. Typologically as well as technologically it accords with the Upper Palæolithic standards which form the bases of the Early Larnian.

*Cores and Core-Tools.*—That flint was readily obtainable at Ballantrae is indicated by the fact that the cores resulting from the flaking down of nodules are nearly all of the plain or single-platform variety. Around Campbeltown, on the other hand, flint was not easily got and the knappers were compelled to extract the utmost from it. Hence, in the early Mesolithic industries of Kintyre oddly shaped and multi-platform cores are more

<sup>1</sup> *Proc. Soc. Ant. Scot.*, vol. lxxv. (1940-41), pp. 80-1.

<sup>2</sup> C. Blake Whelan in *Journ. Roy. Anthr. Inst.*, vol. lx. (1930), pp. 169-84.

<sup>3</sup> H. L. Movius, Jr., in *Journ. Roy. Soc. Ant. Ire.*, vol. lxxvii. (1937), p. 196.

<sup>4</sup> "A Stone Age Site at Woodend Loch, near Coatbridge," report laid before the Glasgow Archaeological Society on April 22, 1944. (No. 24.)

<sup>5</sup> *Proc. Soc. Ant. Scot.*, vol. lxxv. (1940-41), pp. 82-4; H. Breuil in *ibid.*, vol. lvi. (1921-22), p. 263.

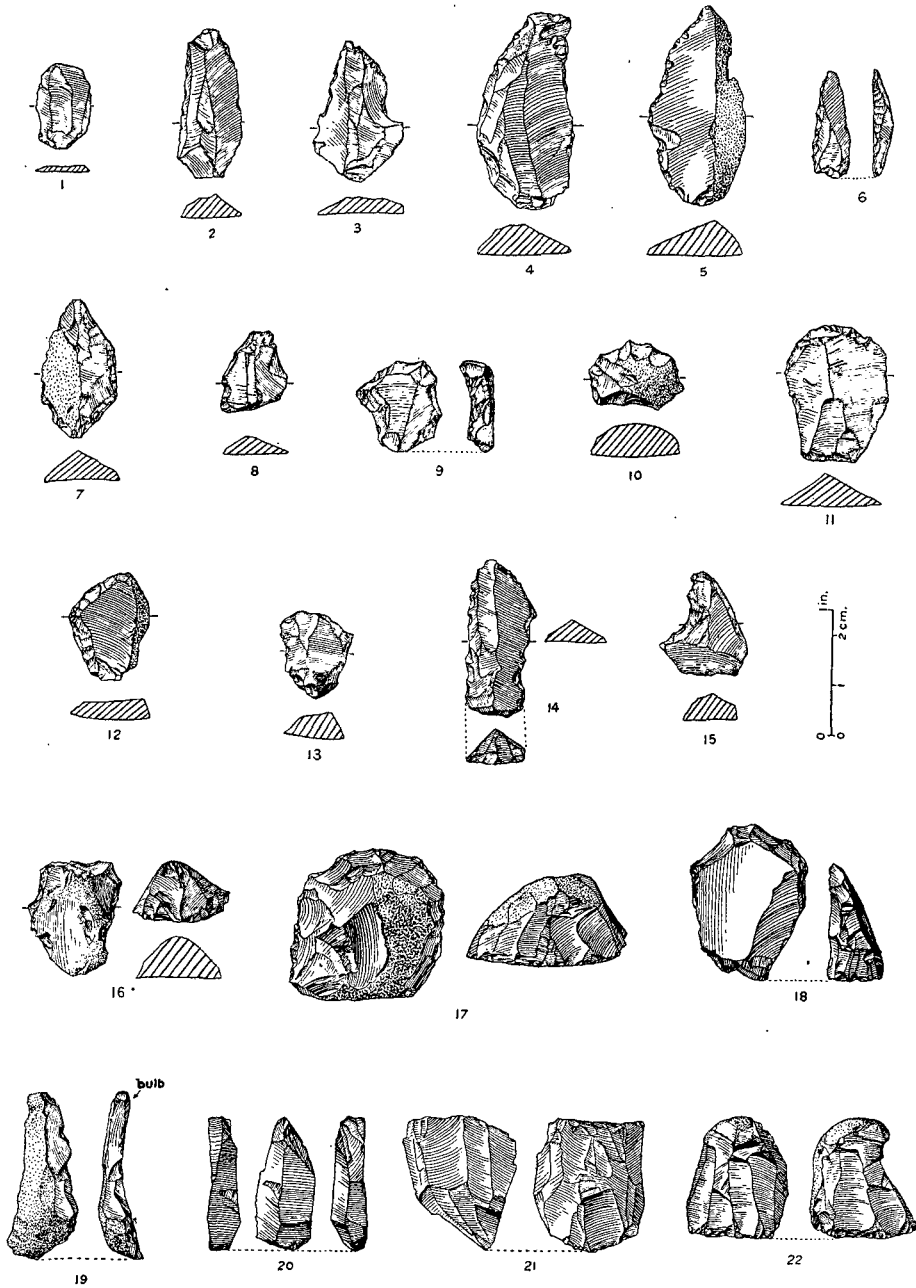


Fig. 2. Mesolithic (Early Larnian) flints from Ballantrae.

numerous than the simple kind. This dearth of flint probably explains why so many cores were used without any treatment or but the minimum of dressing. Most of these improvised tools, therefore, are atypical; but more definitive forms have been noted.

Some cores may have served as hatchets and wedges for splitting bone. Early Larnian examples from Kintyre have been commented on,<sup>1</sup> and the Ballantrae main site provides a counterpart in a heavily patinated specimen, No. 21. This single-platform core has been brought to a suitable edge by the skilful removal of tiny flakes from the top. Typical core-scrapers were made in single-platform pieces. This easily held shape naturally answered well for scraping or planing after the curvilinear edge had been retouched, *e.g.* No. 22. These objects further enhance that Upper Palæolithic aspect which so marks the earlier Mesolithic industries on the shores of the Scottish and Irish sides of the North Channel.

#### (ii) THE NEOLITHIC FACIES.

Many of Edgar's specimens which are classable with Irish Neolithic artifacts found in the same conditions are quite unaltered of surface. Some, however, appear as if bleached white, while numbers bear a greyish patination or exhibit a bluish-white incipient change. A few are ochreous, and several are stained as if with rust. All are unscathed and sharp. The large series includes reworked flints of the earlier industries, the later treatment cutting through the patination, *e.g.* Nos. 29, 44, 48, 57.

Apart from their physical condition, the artifacts assignable to Neolithic industry are distinguishable from the admixed elements of early Mesolithic facies. Since they are far more numerous, it is all the easier to see that they include a relatively greater number of secondarily worked objects and definitive forms. As might be expected, however, simple tools common in all developed industries, including the Larnian, feature in this series. Nor is it surprising that this comprises tool-forms devised by the exponents of the littoral Mesolithic culture.

For the origins and affinities of several other types which appear for the first time we are compelled to look much farther. In the groups considered in the foregoing to rank with the Early Larnian, the Upper Palæolithic aspect predominates. Could we illustrate a Late Larnian lot we should see therein the degeneration which denotes the passing of the ancient tradition. But the series before us marks a break with the past. Nevertheless, the absence of pottery, ground stone implements and other signs of revolutionary development point to the settlement of tool-makers whose domestic economy was little different from that of Mesolithic food-gatherers.

*Flakes and Blades.*—The settlers on top of the beach, whose most

<sup>1</sup> *Proc. Soc. Ant. Scot.*, vol. lvi. (1921-22), p. 265. This is discussed at greater length in *ibid.*, vol. lxxv. (1940-41), p. 76 and fn.

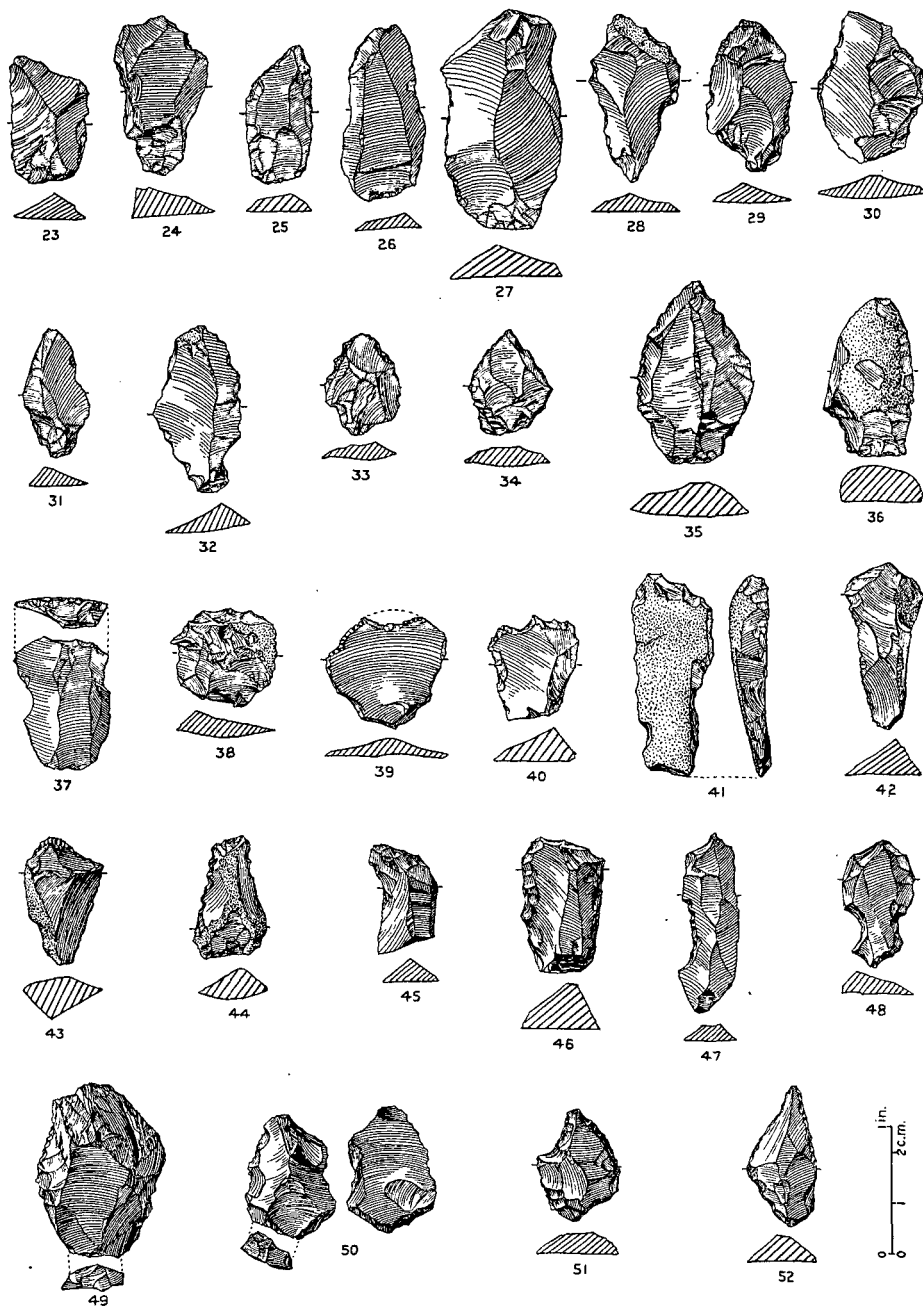


Fig. 3. Neolithic flints from Ballantrae.

distinctive tools are the counterparts of Irish Neolithic type-forms, knapped and used many more thick and wide flakes, blades, and pieces of stone than did the manufacturers of the artifacts of Early Larnian facies. Not only does this appear in plain, utilized or slightly retouched elementary tools for cutting or scraping; but also in well-defined implements. Shapes vary, but owing to the size of the raw material lengths range as in the other industries.

Nos. 23 and 24 are representative of plain, and Nos. 25-27 of utilized flakes and blades. Many similar pieces display retouch along the edges, most being worked from the bulbar face as Nos. 28 (Garleffin), 29 and 30, but some from the upper face as No. 50. Added interest is lent to No. 29 since this consists of a reworked heavily patinated specimen. Its late dressing along the right edge at the lower end bears a faint incipient patination which contrasts with the worked old porcellanous coating.

*Tanged Points.*—1. The thickness and width of many flakes have been reduced by the trimming of an edge at the butt-end. Thus several pieces are provided with an asymmetrical tang, *e.g.* Nos. 31, 32 (Garleffin) and 33. Having Irish counterparts to go upon, we may range such specimens with crucial objects in the series.

The treatment imparting a more pronounced tang to some flakes involves the basal edge of the upper surface as well as the lateral margins at the lower end, Nos. 34, 35, and 36 (Garleffin). Besides bearing these indications of retouch, a few examples also exhibit more extensive edge-trimming. How the dressing appears in the different finished artifacts is shown by the drawings. The most attractive and symmetrical example, No. 35, is made in a large flake, evidently selected and prepared by fine flaking at the lower end before it was detached from the core. When separated from this it was further trimmed at the butt and slightly retouched along the edges in its upper part. A tanged point from Ballymena bears the indications of identical technique.<sup>1</sup>

All these implements fall into the category to which the classic Bann points belong. Their prototypes, as has been mentioned above in reference to No. 7, are found in the Mesolithic industries on the Irish and Scottish shores of the cultural province which embraces the North Channel and the Firth of Clyde. Hence, the series Nos. 31-36 is of great significance, for it is the first from the mainland of Great Britain which compares with a group of characteristic forms of the Bann River culture of Northern Ireland.

A close parallel to a product of the Neolithic industry at Rough Island, Co. Down,<sup>2</sup> is provided by No. 36 which may presumably be ranged with the foregoing. Like the Irish specimen, ours is trimmed to a thick tang by working at the butt along the base and sides. But since the roundly pointed

<sup>1</sup> *The Sturge Collection (Britain)*, British Museum, 1931, No. 505.

<sup>2</sup> *Journ. Roy. Soc. Ant. Ire.*, vol. lxx. (1940), p. 131, and fig. 7, No. 62.

end of this implement, which is made in a corticed primary flake, is so thick, the example can hardly be regarded as a weapon-point. It is probably a scraper meant to be fixed into a haft.

2. Two points arise from an examination of these specimens: (a) the small size of the Ballantrae pieces; and (b) the fact that the Scottish objects are not quite so developed as the evolved Bann River artifacts. They are respectively accounted for by the raw material used at Ballantrae, and by the probability that our tanged and allied forms belong to an industry somewhat earlier than the full Bann River culture with its pottery and ground axes.<sup>1</sup> In the British Isles outside Ireland implements of this type were known until recently in the Isle of Man only.<sup>2</sup> Lately, however, I have recognized two poor examples in the Woodend Loch (Lanarkshire) industry,<sup>3</sup> which are more advanced than the simple Mesolithic prototypes.

*End-Scrapers.*—These implements, as in the Neolithic industries of north-east Ireland, make up the largest group of well-defined tools turned up from the humus overlying the raised beach. The commonest sort is that manufactured at the end of short thick flakes complete with bulb of percussion, Nos. 37–40. Square (No. 37), round (No. 38), horsé-shoe (No. 39) and engrailed (No. 40) working-edges appear. Usually the dressing is of the simplest and similar to that expended on our regional early Mesolithic scrapers. A few, however, are more finely executed on the end of longer flakes, as Nos. 37 and 41. Steep examples are also present, as No. 42, made at the end of a core-trimming. Similar material served for No. 43, a nosed scraper resembling a Neolithic example from Rough Island.<sup>4</sup> An exceptionally narrow oblique end-scraper is illustrated, No. 44, for its unusual working-end and because it is fashioned in a trimming from a nodule bearing the deeply patinated scars of earlier knapping.

*Side-Scrapers.*—The likelihood that the long edges of many flakes served as side-scrapers would at least partly explain the absence of treated versions of such tools in thin material. But there occur a few good thick specimens which resemble Neolithic examples from Antrim and Down. A light form, No. 45, is dressed along the convex right edge.

Variants, having the characteristic long working-edge in combination with others, are well represented. A core-trimming served for a good example, No. 46. This embodies a double side-scraper and a steep working-edge at the wider end.

*Hollow-Scrapers.*—Tools with concave working-edges are not uncommon. They belong to two distinct classes. Only that following the old tradition need concern us now. It comprises implements with one or more edge-retouched wide notches, as Nos. 47 and 48. The first is fashioned in a fine

<sup>1</sup> H. L. Movius, Jr., *Proc. Roy. Irish Acad.*, vol. xliii. (1936), pp. 17–40.

<sup>2</sup> J. G. D. Clark in *Proc. Prehist. Soc.*, 1935, pp. 74–7, and fig. 6, Nos. 1–5.

<sup>3</sup> Report on the Woodend Loch site, *cit. supra*, p. 90. (Nos. 25 and 26.)

<sup>4</sup> *Journ. Roy. Soc. Ant. Ire.*, vol. lxx. (1940), p. 131, and fig. 7, No. 63.



blade, and the second in a fairly thick flake, with ferruginous stains, of a much older industry. A close Neolithic parallel to No. 48 has been recorded from the humus overlying the early Post-Glacial raised beach at Glenarm, Co. Antrim.<sup>1</sup>

*Flakes with Faceted Butts.*—Another link with the Neolithic industries of Ulster is provided at Ballantrae by rather thick flakes with faceted butts. They recall Levalloisian products. Owing to the size of the raw material used in Carrick, however, our series boasts no such wide flakes as occur at Irish coastal sites.

Examples are afforded by Nos. 49 and 50. The first is of green chert, its shape and scars indicating removal from a well-flaked tortoise-core. In the second, a compound tool of flint, the original and bolder facets on the butt resemble those features in No. 50. They are slightly obscured by the finer retouch which was applied to give this specimen the additional property of a butt-end scraper. All these peculiarities parallel the pseudo-Levalloisian aspects which exist in the Neolithic industries on the Irish side of the North Channel, and which have been advanced with other evidences of Western European influences.<sup>2</sup> Artifacts treated in Levalloisian style occur at Woodend Loch.<sup>3</sup>

*Perforators.*—Hollowed implements with edges partly or entirely dressed and terminating in a retouched spur may be considered together with single-purpose instruments. These tools for piercing and reaming are but scantily represented by specimens which, as in the Neolithic industries of north-east Ireland, preserve the typology of the Hiberno-Scottish littoral Mesolithic.

No. 51 exemplifies a tool, the whole periphery of which has been dressed. It combines in the one short and thick flake the principal scraper forms and the perforator. The plain tapering perforator is perfectly represented by No. 52. This well-made implement is executed in an appropriately shaped flake, improved by fine retouch along all the edges and deprived of the bulb of percussion. It matches a Neolithic implement from Rough Island,<sup>4</sup> but is more elaborately treated.

*Picks.*—Nos. 53 and 54 (both from Garleffin) represent two survivals from the littoral Mesolithic in the shape of "Larne picks". Made in plunging flakes struck from cores, these objects are more extensively retouched and worn along the edges near the thick, narrow working (*i.e.* bulbar) end than the specimen No. 19 assigned above to the Early Larnian facies. Though small compared with most Irish standards, these tools from Ballantrae are in keeping with recorded Scottish implements of this kind. Especially do they resemble an example in the industry of the raised beach at Albyn Distillery, Campbeltown.<sup>5</sup>

<sup>1</sup> *Journ. Roy. Soc. Ant. Ire.*, vol. lxxvii. (1937), p. 200, and fig. 7, No. 40.

<sup>2</sup> C. Blake Whelan in *Proc. Roy. Irish Acad.*, vol. xlv. (1933), pp. 126-8.

<sup>3</sup> Woodend Loch report, *cit supra*, p. 90. (No. 34.)

<sup>4</sup> *Journ. Roy. Soc. Ant. Ire.*, vol. lxx. (1940), p. 132; and fig. 7, No. 71.

<sup>5</sup> *Proc. Soc. Ant. Scot.*, vol. lxxv. (1940-41), pp. 80-1, and fig. 6, No. 69.

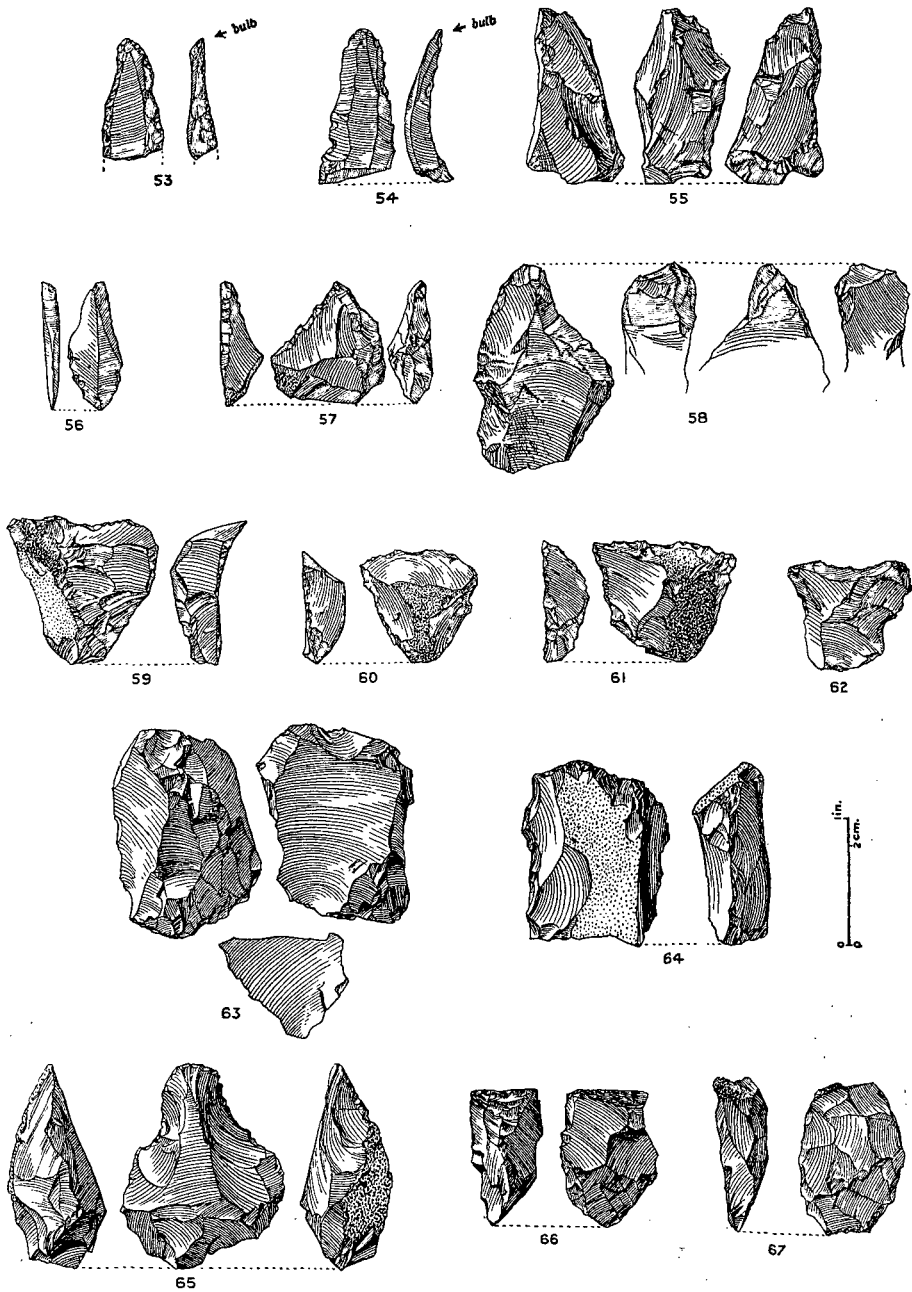


Fig. 4. Neolithic flints from Ballantrae.

The drawings show how these implements contrast with another pick, No. 55. Like a comparable Neolithic example from Glenarm, Co. Antrim,<sup>1</sup> the Ballantrae tool is made in an irregular core-trimming.

*Gravers.*—As in Irish Neolithic series, gravers occur in the similar groups from the lower Stinchar valley. The “ordinary” (*bec-de-flûte*) graver is typically represented by No. 56 on the bulbar end of a small flake. Its graver-facet on the left is backed against the convenient edge provided by the steep right flank.

An angle-graver, No. 57, is noteworthy. Consisting of a triangular flake struck in a deeply patinated flake-scarred flint, it has a narrow chisel-like end formed by the intersection of a graver-facet on the left backed against a trimming facet on the right. The graver-facet impairs the large sloping scar opposite the bulb of percussion. This scar and the appearance of the implement suggest that this tool is made on a discarded or miss-hit *tranchet* of the kind described later.

A thick spurred flake served for No. 58, which immediately recalls the Aurignacian *burin busqué*. Actually the tool owes its shape to the chance of flint fracture. As in many Upper Palæolithic instances, however, advantage has been taken of the fortuitous extension of the left side and the shouldering of the right to produce by skilful inverse faceting and edge-retouch what is in effect a version of the classic graver-form. Thus, as in a flat graver (*burin plan*), the nether surface of the beak on the left bears fine facets which intersect with facets on the vertical edge. The right margin is blunted, presumably to prevent injury to the user's fingers and to allow of the application of greater pressure.

Our No. 58 is so far without a parallel in Scotland, but objects like it, and belonging to the category of thick gravers, are known from an early horizon (Mesolithic) at Toome Bay on the northern shore of Lough Neagh.<sup>2</sup> An association is more apparent, however, with a much later site on the slopes of the Castlereagh Hills, Co. Down.<sup>3</sup> Thence comes a comprehensive group of tools having strong affinities with the late Tardenoisian (Neolithic) of south-western France. The Irish industry shows a trend to similar thick tools. Several counterparts of these can now be shown to have reached and spread in Scotland, no doubt from the south-western part of the country.

*Tranchets and Derivatives.*—Representative Neolithic series from Cushendun, Glenarm, and Rough Island include *tranchets* and cognate implements made on flakes. Such tools are among the outstanding innovations which reached north-east Ireland in Late Atlantic—Sub-Boreal times. Executed usually on thick, short and relatively wide flakes, they are characterized by a bezel which forms the working-edge, made by the removal of a transverse

<sup>1</sup> *Journ. Roy. Soc. Ant. Ire.*, vol. lxxvii. (1937), p. 202, and fig. 8, No. 51.

<sup>2</sup> C. Blake Whelan in *Proc. Roy. Irish Acad.*, xlv. (1938), pp. 128-9, and fig. 6, Nos. 6 and 7.

<sup>3</sup> *Ibid.*, pp. 133-5, and fig. 10.

flake, normally opposite the bulb of percussion. Due probably to regional specialization, these tools have a facies of their own, but they bear a generic resemblance to late Mesolithic and early Neolithic *tranchets* of Western Europe. Exactly the same types, similarly varying in surface change, are present in Edgar's collection.

1. Since all the *tranchets* on the end of flakes from Ballantrae are smaller than most Irish examples, we must consider ours to be chisels. Hence, the term "flake-axe" that is sometimes used for this sort of implement can hardly be applied to the typical objects illustrated here. One of these, No. 59, is still sharp; the edge of the other, No. 60, is slightly chipped by use.

Up till now but one comparable *tranchet* has been reported<sup>1</sup> from a Scottish site, namely Woodend Loch, Lanarkshire, where it appears in a comprehensive industry.

2. In Irish Neolithic industries a variant of the *tranchet* appears in the "fish-tail" scraper. Ballantrae has yielded identical specimens. The transverse bezel in the two tools figured is steeper than in the basic *tranchet* form (cf. Nos. 59 and 60). In No. 61 it is straight, in No. 62 concave. In both the retouch is fair. It has been applied also to the lateral edges of No. 61.

A prominent feature in our "fish-tail" scrapers, as in their Irish counterparts, lies in the widely separated angles of the expanded edge. Such are their convenience and dressing that these corners may be regarded as serviceable perforators and reamers. The characteristics of the expanded edge and the usefulness of its angles have been commented on by Comdt. E. Octobon.<sup>2</sup> He describes similar scrapers in an early Campignian industry which has also yielded *tranchets* on flakes at Champlat, Boujaucourt (Aisne).

*Cores and Core-Tools.*—The residual cores, which are assignable by their condition to the facies under review, call for little comment. Those with deep pits of percussion and pronounced flake-scars reflect the thick material which has been removed from them. In some, as No. 63, the lower rim and base testify to the preparation of the striking-platform, a feature in Irish Neolithic assemblages.<sup>3</sup> The signs of such treatment are to be distinguished from the edge-retouch in ordinary core-scrapers (as No. 22), of which none can with assurance be relegated to the present series. Nevertheless, in this part of the collection cores are the base of noteworthy tools. With these can be marshalled implements manufactured in nodules.

1. Technically, the side-scraper No. 64 is a core-tool, and may not, therefore, be grouped with the flake-implement No. 45. It is made in a

<sup>1</sup> Woodend Loch report, *cit supra*, p. 90. (No. 27.) I hope to show that this and cognate forms occur elsewhere in Scotland.

<sup>2</sup> *Bull. Soc. Préhist. Franç.*, vol. xxviii. (1931), pp. 172-84.

<sup>3</sup> As at Glenarm, *Journ. Roy. Soc. Ant. Ire.*, vol. lxxvii. (1937), p. 208, and fig. 11, No. 77.

broken tablet of flint, from the nether surface of which a flake has been detached. The patinated obverse owes its evenness to the accident of natural fracture. With the step-flaking displayed by its retouched edge this specimen closely resembles Neolithic wide scrapers from Cushendun, Co. Antrim,<sup>1</sup> and Rough Island, Co. Down.<sup>2</sup>

2. A tool flaked in an oval pebble, No. 65, introduces artifacts of a class as yet little known in Scotland. The natural shape of the raw material is retained in the finished implement. Bold working has produced a cutting-edge at the big end and a hollow on each side of the tapering extremity.

It is with the various post-Mesolithic thick tools with concave working-edges, including, as I think, the peculiar Y-shaped implements from the north of Ireland, that our No. 65 can be ranged. As such it can be linked with some of the heavier artifacts from Blake Whelan's Castlereagh site<sup>3</sup> which has yielded so many objects comparable with south-western French Tardenoisian macrolithic forms.

3. Nos. 66 and 67, chisel-like tools improvised in cores, have a *tranchet* bezel resulting from a transverse blow dealt at the side of the parent. Slight treatment of the scar has improved the edge without disguising its character. No. 67, finely flaked from the sides of its face, is the more shapely specimen. These two implements recall the celts present in the comparable industry at Rough Island.<sup>4</sup>

In view of what has been said of *tranchets* and cognate flake-implements, the tools provided with a similar edge but made in cores and other thick material must be considered separately. The celt-like objects, Nos. 66 and 67, from Ballantrae point to Forest Culture influences. These influences appear strongly in the Neolithic of north-east Ireland where they are already manifest in comprehensive Late Larnian assemblages.<sup>5</sup> They are glimpsed in the even earlier expression of Larnian culture at Albyn Distillery, Campbeltown,<sup>6</sup> and they are evident in the much later bone work of the Argyll shell-mounds and caves.<sup>7</sup>

### (iii) THE BRONZE AGE FACIES.

As already stated, Edgar's large collection is remarkably poor in artifacts assignable to Bronze Age lithic craftsmanship. These few late specimens come mainly from around the standing-stones in the stretch farthest up valley in the area scrutinized. The full possibilities that this fact suggests need not be discussed here. It may be, however, that a strand habitat was insufficient for the later settlers. Howbeit, since unmistakable Bronze Age

<sup>1</sup> *Proc. Roy. Irish Acad.*, vol. xlvi. (1940), p. 65, and fig. 19, No. 109.

<sup>2</sup> *Journ. Roy. Soc. Ant. Ire.*, vol. lxx. (1940), p. 131, and fig. 7, No. 63.

<sup>3</sup> *Proc. Roy. Irish Acad.*, xlv. (1938), pp. 133-5, and fig. 10.

<sup>4</sup> *Journ. Roy. Soc. Ant. Ire.*, vol. lxx. (1940), p. 132, and fig. 7, Nos. 74 and 75.

<sup>5</sup> Summarized by Movius, *The Irish Stone Age*, pp. 196-8.

<sup>6</sup> *Proc. Soc. Ant. Scot.*, vol. lxxv. (1940-41), p. 81, and fig. 6.

<sup>7</sup> V. Gordon Childe, *The Prehistory of Scotland*, 1935, pp. 16-19.

## STONE INDUSTRIES OF RAISED BEACH AT BALLANTRAE. 101

implements come from a terrain where relics of much older facies predominate, the opportunity is taken to show how Bronze Age technique contrasts with that evidenced in the artifacts referred to other industries. The differences can best be appreciated in the simplest types common to all the facies.

These most familiar of Scottish Bronze Age forms, with their close and running retouch, the roundish scraper, as No. 68, and the knife, as No. 69,

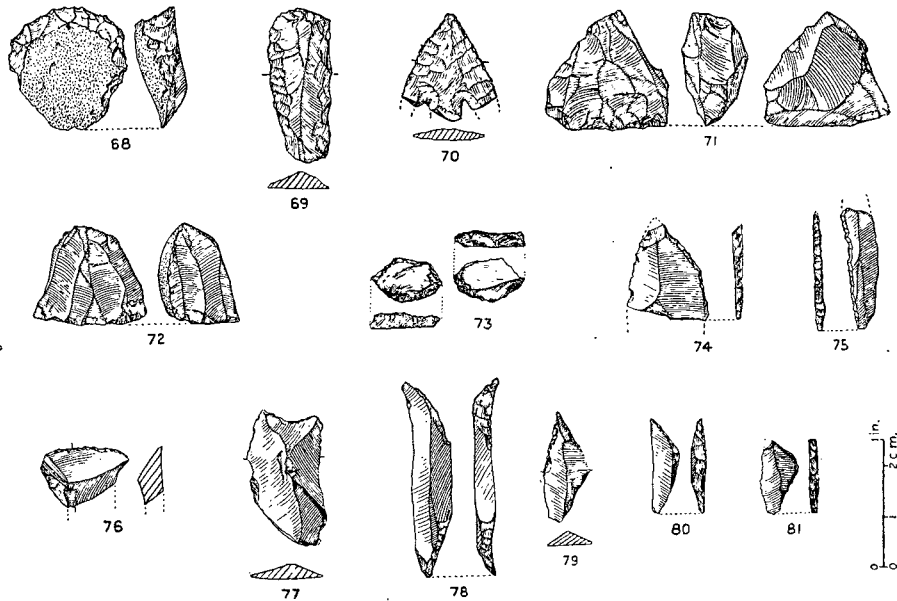


Fig. 5. Ballantrae: Nos. 68-71, Bronze Age flints; Nos. 72-81, Various microlithic forms.

are taken as our late standards. They may be compared with the scrapers and the worn and trimmed flakes and blades of the Mesolithic and Neolithic facies. A barbed and tanged arrow-head, No. 70, found by Miss Cullen, is also figured for comparison with the older flakes having an incipient or well-marked tang.

No. 71, although a rare form with us, is so treated and its condition such that it may be considered under the present heading. It is an angle-graver made in a thick triangular core-like piece of flint, and is simply formed by the backing of a facet on the left side against another on the right. The base has a scraper edge retouched against a bevelled scar on the reverse. The type is not fortuitous since it has counterparts at Ballantrae and elsewhere in Scotland. Analogous specimens of uncertain age have been found on the Mainland of Orkney,<sup>1</sup> and another has been noted at a Late Bronze

<sup>1</sup> A. D. Lacaille in *Proc. Soc. Ant. Scot.*, vol. lxxii. (1937-38), pp. 187-8, and fig. 2, Nos. 2 and 4.

Age site in Strathearn.<sup>1</sup> Since the thick triangle occurs at places so widely separated, and considering that it probably reached Scotland from the north of Ireland, it is of particular interest. It has been recorded as the base of different tools at Castlereagh, Co. Down,<sup>2</sup> where the form is thought to derive from the late Tardenoisian (Neolithic) of the West European littoral as represented at Ségur, Plassac (Charente-Inférieure).<sup>3</sup>

(iv) THE MICROLITHIC ELEMENT.

So impressed was Dr. Edgar by the microliths and objects he thought were cognate that he devoted his report<sup>4</sup> entirely to them, and called the site Tardenoisian. This term is inappropriate, for although the explored area is as rich in microliths as any known so far in Scotland, yet it has proved far more prolific in other artifacts. The present writer believes that the manufacture and trimming of implements in microlithic style was but one side in all the industries of the cultures represented in the Ballantrae collection. Some of the characteristically treated artifacts give rise to observations which serve to amplify Edgar's remarks.

On the strength of their narrow and shallow scars and faint hollows of percussion, many cores can safely be attributed to the microlithic side of the comprehensive industries. The essential features, which show well in the example No. 72, are in marked contrast to those evident in the cores from which more normal basic material was extracted (*cf.* Nos. 22 and 63).

That Tardenoisian technique was certainly favoured in the Stinchar estuary appears from the numerous implements and waste micro-burins resulting from the specialized method of cutting flint. Indeed, Ballantrae has yielded more micro-burins than any other Scottish site.<sup>5</sup> Naturally, butt-ends are commonest, but a few characteristically scarred flake-tips occur. Plain (*langue d'aspic*) examples, many miss-hits and blades notched in preparation are present, as are discarded bulbar ends, *e.g.* No. 73, removed from flakes by a process allied to micro-burin technique.<sup>6</sup>

1. It cannot be asserted that any of the by-products of microlith manufacture are referable to the earliest industrial facies represented at Ballantrae. Of course, many of the steeply dressed implements are made in the Upper Palæolithic manner and retain the swelling of percussion. Among them are objects assignable to the older group. As such they clearly bear the stamp of that Upper Palæolithic ancestry which shows so well in the Early

<sup>1</sup> *Proc. Soc. Ant. Scot.*, vol. lxxvii. (1942-43), p. 182, and fig. 5, No. 8.

<sup>2</sup> *Proc. Roy. Irish Acad.*, vol. xlii. (1938), p. 135, and fig. 10, Nos. 12, 20-23.

<sup>3</sup> E. Octobon in *Bull. Soc. Préhist. Franç.*, vol. xxix. (1932), p. 376 ff.

<sup>4</sup> *Trans. Glas. Arch. Soc.*, vol. ix, pt. iii. (1939), pp. 184-88.

<sup>5</sup> Examples have been figured by Edgar (*ibid.*, Nos. 11-15), and by me in *Proc. Soc. Ant. Scot.*, vol. lxxvi. (1941-42), fig. 3, Nos. 4, 9, 11, 12, 15.

<sup>6</sup> Ed. Vignard in *Compte Rendu du Congrès Préhistorique de France*, Xème Session, Nîmes-Avignon, 1931, pp. 92-103.

Larnian. Two examples are figured as typical, No. 74, an obliquely truncated flake blunted along the right edge, and No. 75, a narrow blade steeply dressed along the left edge. They immediately recall some of the early Mesolithic specimens from Campbeltown<sup>1</sup> and north-east Ireland.<sup>2</sup>

2. It would appear that the settlers on top of the beach in the Stinchar estuary, who produced tools similar to those of the Neolithic folk in north-east Ireland, also manufactured microliths. The artifacts pointing to this are white or exhibit varying degrees of patination and discoloration which match the surface changes in the larger implements. In this respect they do not differ from microliths and objects suggestive of Neolithic influences collected some years ago by Rev. Ian Muirhead at Geddens<sup>3</sup> near the Standing Stones of Garleffin.

The microliths which seem referable to Neolithic industry are not so developed in facies as some mentioned in a later paragraph. Rather do they resemble the microliths from Tweedside, Deeside and Woodend Loch.

Since so many of the microliths from Edgar's sites apparently belong to a Neolithic industry, it is interesting to find that the characteristic edge of two forms typical of the Ulster littoral Neolithic has been treated by delicate abrupt retouch. The decisive specimens are "fish-tail" scrapers, No. 76, broken in the lower part and having a slightly convex edge, and No. 77 a pronounced concave edge. The dressing expended upon them clearly differs from that of their companions, Nos. 59-61 and 62, and their Irish counterparts. No. 77 can be distinguished from the minutely trimmed Irish late concave end-scrapers or spokeshaves whose edge describes a considerable arc. Doubtless these advanced tools grew from Early Larnian prototypes.<sup>4</sup> Our Nos. 76 and 77, combining the regional *tranchet* technique and microlithic trimming, may mark a stage in this development.

No. 78 is an interesting form without any known Scottish counterpart. Its surface is almost unaltered but bears ferruginous stains, and is steeply and rather boldly trimmed on the right edge at the ends. This dressing has removed the bulb of percussion. In facies and workmanship the specimen accords with flake-implements abruptly retouched at the ends in the Rough Island Neolithic industry.<sup>5</sup>

3. Judging from the evidence accumulated in and outside Scotland, I believe that many microliths collected by Edgar around Ballantrae are the products of users of stone implements later than Neolithic. The specimens in point exhibit no more surface alteration than the objects which are assignable to Bronze Age workmanship. Like these advanced artifacts,

<sup>1</sup> *Proc. Soc. Ant. Scot.*, vol. lvi. (1921-22), p. 263, and fig. 1, No. 2; *ibid.*, vol. lxxv. (1940-41), pp. 70-2, and fig. 3, Nos. 26 and 27.

<sup>2</sup> Examples from Rough Island and Cushendun, *The Irish Stone Age*, p. 152, and fig. 23, Nos. 1-4.

<sup>3</sup> A. D. Lacaille in *Proc. Soc. Ant. Scot.*, vol. lxxiv. (1939-40), p. 8.

<sup>4</sup> *Proc. Soc. Ant. Scot.*, vol. lxxv. (1940-41), pp. 75-6.

<sup>5</sup> *Proc. Roy. Irish Acad.*, vol. xlv. (1938), pp. 124-5, and fig. 4, No. 12.



the microliths are fashioned in flint so good as to suggest that the raw material was selected.

The most developed microlith types are geometric rectilinear shapes, among which isosceles triangles, as No. 79, and forms approaching the trapeze, as Nos. 80 and 81.<sup>1</sup> Both are manufactured in the central portion of flakes which were cut by micro-burin technique. They are particularly significant, because up till now Shewalton Moor, on the same coast nearly 40 miles to the north, is the only Scottish site where comparable objects have been found. There the microlithic industry includes, among other late forms, bifacially worked arrow-heads and a feebly tanged specimen edge-retouched in microlithic style.<sup>2</sup> That a similar association exists at Ballantrae is all the more remarkable because it provides a long awaited link<sup>3</sup> with an important Scottish station.

#### CONCLUSIONS.

A.—After standing farther out than to-day, the coastal grounds on both sides of the North Channel and Firth of Clyde sank towards the end of the Boreal climatic phase. The sea then invaded the lower valley of the River Stinchar in Carrick. Its maximum transgression was probably attained early during the succeeding Atlantic climatic phase. The encroachments of the early Post-Glacial sea in the estuary of the Stinchar are registered by a raised beach which is most prominent seaward on the south side between Ballantrae Bridge and Downan Point.

B.—Some time before or early during the Post-Glacial (Littorina) marine transgression settlers occupied shore-sites on the south side of the Stinchar estuary. Their industrial relics were incorporated into the beach formation during the subsequent period of emergence. The implements recovered are mainly of flint, and belong to the Mesolithic facies which is represented by the Early Larnian of north-east Ireland and Kintyre. Thus, they demonstrate that Early Larnian culture had a place on the Carrick side of the North Channel. Moreover, they provide evidence of the earliest known human occupation of this part of Scotland. In this Mesolithic facies the Upper Palæolithic aspect predominates. It testifies to a Creswellian ancestry whose roots lie in the Aurignacian of the Continent.

C.—1. Stone artifacts of the same Neolithic facies which is represented at littoral sites in north-east Ireland occur in the agricultural soil overlying the raised beach deposits between Ballantrae Bridge and Downan Point. As in north-east Ireland they are *in situ*, and proclaim the introduction of a new culture into south-western Scotland about the time that the emergence

<sup>1</sup> It was not until I had examined Dr. Edgar's last finds that I was able to determine the presence of these advanced forms.

<sup>2</sup> A. D. Lacaille in *Proc. Soc. Ant. Scot.*, vol. lxiv. (1929-30), pp. 44-5, and fig. 2.

<sup>3</sup> Sir George Macdonald, *Prehistoric Scotland* (typescript of the initial chapters of an unfinished work), pp. 54-5.

was almost complete. This took place at the end of the Atlantic or the beginning of the Sub-Boreal climatic phase, about 2500 B.C. Hence, this facies from Ballantrae, which is stratigraphically and typologically comparable to that of the north-east Irish littoral Neolithic, would be coeval with the full English Neolithic.

2. The Neolithic industry of Ballantrae is distinguishable from the Mesolithic by the condition of its products and the abundance of its retouched forms. It includes simple types surviving from the Larnian and implements characteristic of the littoral Neolithic culture of north-east Ireland. Numbers of its ingredients, therefore, are new to Scottish archæology. The outstanding objects are the following: (a) Tanged points which, regarded in the same light as their Irish counterparts, foreshadow the classic Bann River implements. (b) Flake-tools with butts faceted in pseudo-Levalloisian style; (c) *Tranchets* and their derivatives made on flakes. These two classes of artifacts point to a peripheral extension of the Mesolithic heritage manifest in certain Campignian types in the Western European Neolithic. (d) Celt-like tools made in the Forest Culture lithic tradition which became marked in the later Mesolithic industries of north-east Ireland.

3. Like that of north-east Ireland, the littoral Neolithic industry of Ballantrae included neither pottery-making nor the grinding of stone tools. The domestic economy of its exponents, therefore, did not differ much from that of the Mesolithic strand-loopers. This is indicated also by the facts that the Neolithic folk occupied shore-sites and that their equipment as a whole was similar to their predecessors'. Hence, the simple culture represented in the deposit overlying the raised beach at Ballantrae may fittingly be called *epimesolithic*.

4. Since the Neolithic facies occurs at Ballantrae in a deposit overlying the Post-Glacial raised beach, it may well be that in point of age its components do not differ greatly from the bone and stone artifacts contained in some of the shell-mounds and middens resting upon, and in caves behind, the equivalent formation in Argyll.

D.—A few implements worked in characteristic Bronze Age style testify to a still later settlement at Ballantrae. The fact that they come from a small area relatively far from the sea and near a setting of standing-stones strongly suggests that their manufacturers' economy differed from that of the strand-loopers.

E.—Microliths are well represented at Ballantrae. Judging by typology and condition they must have been produced at all stages of the early Post-Glacial occupation. A few are assignable to the Mesolithic folk. The majority, however, would be referable to the Neolithic settlers. Those attributed to Bronze Age industry are of the most developed types which have already been recognized farther north on the Ayrshire coast.

F.—The artifact evidence points to the early Post-Glacial settlement of

Carrick by colonists from the south, most probably north-east Ireland. This appears in the large Mesolithic and Neolithic groups, and also in the small Bronze Age lot. Certain elements referable to the Neolithic, and Bronze Age industries, however, would have reached the district from other parts of the mainland of Britain. From Ballantrae the Irish types must have spread farther. Their introduction into Carrick belongs to the first chapter of the long human history which links Ireland and Scotland.