

BRITISH CAMPS WITH TIMBER-LACED RAMPARTS

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During the last two decades British camps which include in their defences a timber-laced rampart have been excavated and discussed to an extent previously unknown. The time would seem ripe therefore for a review of our knowledge of this form of rampart construction. It should be stated clearly at the outset that the mere fact that an earth and stone bank, or a stone wall or building, is timber-laced, is in itself no indication of the date of its construction or of the culture of its builders. Timber-laced constructions are known in many areas and are of very varying date, e.g. the vitrified rampart of Middle Neolithic date at Fort Harrouard,¹ the burnt rampart of Bronze Age Troy II,² the buildings at Mohenjodaro of the third to second millennia B.C.,³ and many ramparts in Central Europe and possibly this country which are ascribed to the Dark Ages.

This study of the British camps is a supplement to one undertaken for Sir Mortimer Wheeler on the *muri gallici* on the Continent.⁴ It is restricted to the camps in Great Britain to which an Early Iron Age date has been ascribed, and, within that group, more especially to those which appear to belong to the later phases of the Iron Age and which might perhaps be derived from the Continental *muri gallici*.

Exclusive of variant forms, there are two very distinctive types of Continental timber-laced ramparts which are relevant. These have been labelled the 'Preist type' and the 'Avaricum type'.

Preist type timber-laced ramparts. (Pl. VIA)⁵

The Hallstatt ramparts in which an earth and stone bank or a stone wall are built with a timber framework are well known. As a Continental prototype for this present series of British camps I have, however, chosen a camp which, while embodying the Hallstatt tradition, is of late date and therefore closer to the succeeding 'Avaricum type'. The fort at Preist, near Bitburg in the Rhineland, was excavated in 1938 by Professor Dehn.⁶ It is a promontory fort with a rampart across the isthmus and another which encircles the edge of the plateau. Both contain a timber-laced wall. The timber framework is of typical form. Inner and outer vertical posts are tied together with transverse timbers. The front and back of this framework is finished with stone revetting walls and the core filled in with earth and stones. The top of the wall,

¹ Hawkes, Myers and Stevens, *P. Hants. F.C. XI* (1930), 73; *B.S.P.F.* xxv, 368ff.

² Schliemann, *Ilois, Fouilles de 1871 a 1882*, 164.

³ Wheeler, *The Indus Civilization* (1953), Pls. VII and IX.

⁴ Publication forthcoming.

⁵ I am indebted to Dr. Bersu, Dr. Varley and

the Society of Antiquaries of Scotland for permission to reproduce Pl. VIA and B, and fig. 3. May I also express my gratitude to Sir Mortimer Wheeler, Professor Dehn, Professor Piggott, Mr. Graham, Mr. Hemp and Mr. Megaw for the help they gave me during the preparation of this paper.

⁶ For notes on this camp, see pp. 64-5.

which stood about two metres high, was finished with a flat stone platform and the upright posts of the front may have been tall enough to support a timber breastwork. The decay of the upright timbers left post-slits in the revetting walls. Contemporary pottery sherds belonged to a phase, possibly a late one, of the Hunsrück-Eifel culture which is equivalent to La Tène II in date. Dehn contrasted this type of timber framework with that found in the nailed *muri gallici* of France and Germany. In these the timbers not only penetrate the whole wall as a framework but form an important structural part of the wall. In the Preist type wall, although the timbers play a constructive role, the framework is not nearly so compact and the wall stands alone without its timber frame. The arrangement of the transverse beams is also different. In the Preist wall they cut it up into sections analagous to the bulkheads of a ship's hull and so decrease the danger of collapse as each stretch is made firm in itself. Dehn suggested that this was the native building technique and that the nailed *murus gallicus* was a later development built up and disseminated by the Celts in their *oppida* of La Tène III times.

*Avaricum-type timber-laced ramparts*¹

The form of timber framework in an 'Avaricum type' rampart is that described by Caesar at Avaricum² in which transverse and longitudinal timbers are laid in alternate layers and are bolted with iron nails at their points of intersection. No vertical timbers are known in the classic examples. The transverse timbers penetrate the outer revetting wall and may or may not penetrate the inner. Each course of the timber framework is isolated by earth and facing stones from the stages above and below. There is no continuous, over-all, facing wall; it was the intervals between the outer ends of the transverse timbers that were walled up, and the lines of the timber-heads were a special feature of the facade which, on decay, left beam-holes.

The conclusions reached from a detailed study of all the examples known in France, Belgium, Germany and Switzerland were:—

(i) These camps were usually univallate with walls which showed rectilinear tendencies. Ditches were not an important factor and often served to supply building material rather than an additional defence. Entrances were inturned, often with flanking walls of *murus gallicus* build. Bridges over these gateways and outer wooden towers had existed.

(ii) The centre of diffusion of this type is France, and the French distribution appears to be significant. It coincided with *Gallia Comata* and extended down to but did not cross the frontier into the *Provincia Romana*. It coincided therefore with the Caesarian battlefield of 58–51 B.C.

¹ For a reconstruction of this type, see that of Le Camp d'Arthus, Huelgoat, by Wheeler, *Arch.*

Journ. CVI (Supplement 1952), fig. 2, p. 73.
² *De Bello Gallico* vii, 23.

(iii) This special type of timber-laced rampart may well have been evolved as a suitable defence against a weapon new to the defenders of the camps—the Roman battering-ram—and against fire. Caesar described them as resistant to the ram and not easily burnt. It is a standardised variation of the Late Bronze Age or Hallstatt revetted and bonded rampart imposed on the Gauls by Roman methods of attack.

(iv) All available evidence on the date of construction of this series pointed to their being built in *Gallia Comata* as a defence against the Caesarian invasion of 58–51 B.C., and certainly none could be shown to have been in existence before 100 B.C. Outlying examples were of even later date in areas to which the Roman invasion did not penetrate until later in the 1st century B.C.

It is obvious, therefore, that Early Iron Age immigrants of Great Britain could arrive only with a tradition in the construction of timber-laced ramparts that owed its origin to a Hallstatt form which persisted until La Tène II times, at Preist at least, up to c. 58–51 B.C., but that only after that date could they have known of the newer Avaricum type method of building.

A table summarising the differences between these two types of timber-laced ramparts will be of use in considering the British series.

PREIST TYPE	AVARICUM TYPE
<i>Structure</i>	
Univallate contour banks.	Univallate banks often rectilinear.
Upright timbers leaving post-slits on the inner and outer facing walls.	No upright timbers.
Transverse timbers tied to the uprights.	Transverse timbers, tied to longitudinal beams, which leave beam-holes in the inner and outer facing walls.
No longitudinal timbers.	Longitudinal timbers.
Timber-framework mortised.	Timber-framework joined by iron nails.
Berms and ditches.	Ditches not an important feature.
<i>Dating</i>	
Hallstatt down to La Tène II.	La Tène III. Probably against the Caesarian invasion of 58–51 B.C.

THE BRITISH SERIES OF CAMPS WITH TIMBER-LACED RAMPARTS

In studying the British camps which have been ascribed to the Early Iron Age, and which have at least one timber-laced defence, it has been found convenient to divide them into the following groups:—

The camps of southern England.

The Scottish 'Abernethy complex' of the Tay estuary.

The Scottish vitrified forts.

The camps with timber-laced, vitrified or calcined ramparts situated between southern England and Scotland.

The Scottish camp of Burghead in Morayshire.

THE CAMPS OF SOUTHERN ENGLAND

In this area the camps which have timber-laced structures in their defences consist of those with a simple palisade defence and those with a timber-laced earth or earth and stone bank in which the type of timber-framework used can be related closely to Continental Hallstatt prototypes. Typical examples may be quoted at Maiden Castle, Dorset,¹ Hollingbury, Sussex,² and Bindon Hill, Dorset.³ In this area the use of a timber-framework seems to be confined to the constructions of the Iron Age A peoples. These Iron Age A camps have not been included in this study as they are of too early a date to be suspected of any influences derived from the French *muri gallici*. The Iron Age B and C peoples in southern England do not appear to have used a timber technique in their ramparts, either of Preist or Avaricum type. The hill-forts which are associated with these cultures here are the multivalate 'defence-in-depth' and 'slingstone warfare' forts of the Iron Age B peoples, and the reconstructed B ramparts with a crowning palisade of the Belgae or, in the case of Oldbury, Kent, with a typical flat-bottomed ditch. The Oldbury example is of especial interest in this context, as it was built under Belgic influence against the Roman invasion of A.D. 43 and embodied a building tradition which was discovered by Wheeler to have been used in north-west France against the Roman invasion there of 58-51 B.C.

DATA ON CAMPS WITH 'ABERNETHY TYPE' TIMBER-LACED RAMPARTS

The group of forts which were isolated by Childe as the 'Abernethy complex' consist of :—⁴

Angus.

Finavon Hill, near Aberlemno.

The Laws of Monifieth (or Hill of Laws), Drumsturdy, Monifieth.

Perthshire.

Castle Law, Abernethy.

Castle Law of Coltucher, Forgandenny.

Dun Mor, Sma' Glen, Glen Almond.

Midlothian.

Castle Law, Castle-Knowe, Glencorse.

¹ *Maiden Castle* (1943), 31-9.

² *Ant. Journ.*, xiii (1933), 162.

³ *Ibid.*, xxxii (1953), 1-13.

⁴ For details of each camp, see pp. 66-8.

DISTRIBUTION. (Fig. 1)

The group is centred on the east coast of Scotland in the vicinity of the Tay estuary and the Firth of Forth. It is possible that further excavation with modern technique would show that some of the Scottish vitrified forts belong to this group.



Fig. 1. Distribution in Scotland of camps with timber-laced ramparts

EXTENT OF EXCAVATION

The Laws of Monifieth was partially excavated by Neish in 1862-3 and Forgandenny was examined by Bell in 1892. Christison and Anderson excavated the Castle Law of Abernethy in 1898 and Childe excavated Finavon in 1933-4. Glencorse was examined by Childe in 1932-3 and by Piggott in 1948. Dun Mor is unexcavated.

AREA AND SUB-SOIL

The areas enclosed by the defences of these camps are :—

Finavon ...	... 475 ft. x 110 ft.	Outer bailey 80 ft. wide.
Monifieth ...	... 350 ft. x 140 ft.	
Dun Mor ...	... 150 ft. x 90 ft.	
Glencorse ...	... 297 ft. x 120 ft.	
Forgandenny ...	... 229 ft. x 65 ft.	
Abernethy ...	... 136 ft. x 51 ft.	

The sub-soil at Finavon was of conglomerate and at Glencorse of a till over reddish trachyte.

FORM OF THE CAMPS

(i) Univallate hill-forts

Finavon has a single defence which is rectilinear in character. The western end of the hill, originally separated from the main enceinte by a high wall, may have been a secondary addition. A lower terrace or outer bailey no longer survives. Dun Mor has a single stone wall sited with its inner edge on the edge of the plateau.

(ii) Multivallate hill-forts

Monifieth, Forgandenny, Abernethy and Glencorse have multiple defences. All four are oval in shape or roughly elliptical. Monifieth, Abernethy and Forgandenny have each two concentric ramparts surrounding the summit of the hill. There is a marked tendency for these ramparts to be built just below the crest of the hill so that the base of the outer revetting wall is lower than that of the inner, a method which economises in the quantity of building materials required. The fort at Monifieth is divided internally by a wall running from north to south and it has outworks on the east and north sides. At Abernethy the outer bank, though generally concentric with the inner, joins it at the southern end but is not tied in to it. Forgandenny has an outwork on the south side consisting of two ramparts facing each other with a ditch on either side and a scarp to the south. On the north side there is only a single rampart of loose boulders. Glencorse is an oval camp with three concentric ramparts. Piggott has suggested¹ that the inner rampart represents an early phase of the fort to which subsequent multiple bank and ditches have been added.

¹ *A.N.L.*, 2. 1 (1949), 10.

CONSTRUCTION OF THE DEFENCES

(i) Transverse timbers

The diagnostic feature of this group is the occurrence of beam-holes that once held transverse timbers on the face of the outer or inner or both revetting walls of the defence. All six camps in this group show this feature. Finavon had beam-sockets on the outer facing wall of the rampart. Both walls at Monifieth, exposed on both sides, show beam-sockets, presumably on the outer facing walls. The inner wall of Abernethy had a double row of rectangular beam-holes 10 ins.-12 ins. wide on its outer facing. Six to seven occurred in each length of twelve feet. The lower row was 2 ft.-3½ ft. above the base of the wall and the upper 2 ft. higher. The channels of the transverse beams ran into the core of the wall for a distance of 8 ft.-10 ft. but did not penetrate the inner facing wall. The outer facing of the outer wall had also a double row of beam-sockets in an excellent state of preservation which did not penetrate to the inner facing. The transverse beams in the outer wall were placed at a higher level than those of the inner, the lower row being 4 ft. 9 ins. above the base and the upper 2 ft. higher. At Forgardenny the outer and inner facings of the inner wall were said to show beam-sockets containing charcoal at irregular intervals, but the walls were not sectioned. Dun Mor is reported to show beam-sockets. The inner rampart of Glencorse showed traces of beams which were visible as stains in the clay of the bank and as channels in the stone work of the facing walls.

(ii) Longitudinal timbers

In this group longitudinal timbers have only been noted by Christison and Anderson at Castle Law, Abernethy, and their section shows two rows.

(iii) External and internal facing walls

At Abernethy the external facing of the inner wall of faced blocks was built with a considerable batter. The wall was 18 ft.-25 ft. wide and now stands 5 ft.-8 ft. high but must have been at least 10 ft. originally. The 18 ft. thick outer wall was also battered and had an inner facing 5 ft.-7 ft. high and an outer facing, of lower foundation, standing up to 10 ft. high. The 20 ft. thick walls of Finavon had built faces at least 12 ft. high internally and 16 ft. externally. The inner facing, built with an outward batter, still stands 8 ft.-10 ft. high and is of quarry-dressed sandstone slabs. The outer wall of Forgardenny was 15 ft. thick and stood 1 ft.-5 ft. high. The inner wall was 18 ft. thick and 2 ft.-6 ft. high. Both had outer and inner facing walls. Monifieth is said to have had walls at least 5 ft. higher than the existing ones. The inner rampart of Glencorse has inner and outer facing walls. Dun Mor would appear to have both inner and outer facing walls.

(iv) *Core of the rampart*

The core of the ramparts of Finavon contained vitrified material which extended downwards for 5 ft.-6 ft. Neither the sub-soil nor the facing walls were vitrified. The vitrification of both walls at Monifieth was intense. Abernethy walls had a core of stone debris and the Forgandenny walls a rubble core containing vitrified material. The inner rampart of Glencorse was mostly of clay and timbering with some stonework.

(v) *Ditches*

The only ditches mentioned are those connected with the southern outworks at Forgandenny. The ditch outside the inner rampart of Glencorse, Childe thought, might have served to produce material for the middle rampart rather than the inner, and therefore, on Piggott's suggestion,¹ belongs to a later phase of the fort's defences.

(vi) *Entrances*

One of the interesting characteristics of this group is the lack of entrances in two of the inner ramparts.² Neither the inner nor outer walls at Abernethy have any entrance, and the access to the camp must have been built over the wall or through a doorway at least three feet from the ground. There is no entrance through the inner wall at Forgandenny, but here an interior wall or ramp runs through the inside of the fort and joins the inner wall at its east end at a right angle, but is not tied in with it, and continues as far as the entrance through the outer wall. It rises at an inclined plane and may well have served as the entrance and egress of the enclosure. The eastern entrance through the outer wall was 10 ft. wide and had jambs and holes for a bar. Monifieth was reported, from superficial indications, to have had a principal entrance at the north-east and an additional entrance at the west. The eastern entrance of Glencorse was finished with a massive timber gateway. There was a 25 ft. wide causeway across the outer ditch and the entrance was 22 ft. wide where it passed through the rampart. It had two inner and two outer post-holes for gateposts which suggested that there had been a gate of barbican type. Supplementary entrances may exist on the west and south.

OTHER STRUCTURES

Huts or houses

A row of dwellings with fixed hearths was found under the north rampart of Finavon, whilst at Monifieth the north-east corner of the inner rampart formed the back wall of several huts. Here huts were found also on the west side between the outer and inner walls. The circular structure inside this fort may perhaps be an intrusive broch

¹ *A.N.L.*, 2.1 (1949), 10.

² The vitrified forts of Dunsinane (p. 83),

and Craig Phaidrick (p. 80), also appear to lack entrances through their inner walls.

and of later date than the defences ; it contained vitrified stones in its build derived probably from the debris of the fort's walls. At Abernethy only a rude paving of flat stone and a rock cistern were found ; at Forgandenny occupation debris only. The earth house at the east end of Glencorse has no connection with the original fort plan.

FINDS AND DATING EVIDENCE

(i) Pottery

Childe found plentiful ' coarse cooking pots ' at Finavon ; Abernethy produced four fragments of very coarse hand-made pottery from a large vessel or vessels and two pellets of baked clay resembling sling-stones ; the undescribed pottery from Forgandenny was said to be of different dates ; and Glencorse produced one sherd of native ware from the make-up of the inner wall.

(ii) Coins

The hoard of gold coins from Monifieth, which would equate with other finds from the Romano-British occupation of the interior of the circular structure, represents the only coin find.

(iii) Brooches

A La Tène Ic bronze brooch was found at Abernethy.

(iv) Querns

Querns of unspecified type occurred at Monifieth and three saddle querns and two small stone balls were found in the make-up of the inner rampart at Glencorse.

(v) Bronze objects

Abernethy produced a bronze spiral finger-ring. The bronze armet, buckle and enamelled pin from Monifieth were derived from the intrusive Roman area.

(vi) Iron objects

An iron ring was found at Finavon and an Early Iron Age ring-headed pin at Abernethy. Some of the iron objects from Monifieth belong to the Roman occupation, but the site has also produced an iron-headed pin.

(vii) Jet objects

Jet rings were found at Finavon, Abernethy and Forgandenny.

(viii) Miscellaneous objects

Worked flints were found at Finavon ; spindlewhorls at Finavon, Monifieth and Forgandenny, and a whetstone at Forgandenny. Stone lamps, a handle of deer-horn and two portions of vessels hollowed out of solid wood were found at Abernethy.

OPINIONS ON THE DATING OF THE CAMPS

When Childe excavated Finavon¹ he thought that whilst the finds gave no conclusive evidence for its date they were not incompatible with the view that it was erected by an early band of Celtic colonists from the Continent. He noted the iron ring-headed pin from Monifieth and showed that there was superficial evidence of secondary construction to account for the Roman finds from the site.² No opinion was expressed as to the date when Forgandenny had been built,³ but it was considered that a re-occupation of the site had taken place as secondary buildings of different workmanship were found and the pottery was said to point to different ages. The individual excavation reports on these sites did not therefore offer any clear conclusions, and it was due to Childe's later work that the culture of this series of camps was considered as a whole.

THE ABERNETHY COMPLEX

Childe suggested at first that Burghead (see pp. 93-4), Abernethy and Forgandenny marked the landings of small bands of invaders who had crossed the North Sea direct to the Moray Firth and the mouth of the Tay and were probably the earliest landings of the La Tène Celts in Scotland.⁴ The relics derived from the 'Gallic' and vitrified forts of Scotland were too few to allow of any distinction between their builders. They did not, indeed, provide any fresh clue for the origin of these invaders who had come direct to Caledonia across the North Sea, or even for an accurate estimate to be made of their contribution to the Scottish Iron Age as a whole. In addition to their peculiar methods of defensive architecture the invaders certainly introduced a fully developed iron industry, attested by the use of safety-pins and ring-headed pins, of bulbous spear-heads and finger-rings. They exploited the local deposits of lignite and may have created the fluted type of armlet and a curious type of thick ring. The pottery used was so coarse and soft that earlier excavators missed it altogether or rescued only insignificant fragments. But there were abundant sherds at Finavon, made from very coarse clay with large rock splinters in the paste and very imperfectly fired. The vessels were flat-bottomed, the rims simply rounded off and the walls decorated only with casual grooves. For finer vessels wood was doubtless employed. No Roman relics have been found in forts of this kind on the east coast, so that they must have been abandoned before Agricola conquered the country. Later⁵ Childe discussed the subject again in his classification of the Scottish Early Iron Age. The forts of the 'Abernethy complex' he described as 'Gallic Wall' forts, by which it was to be understood that they had a

¹ *P.S.A.S.*, lxxix (1934-5), 49-80.

² *Scotland before the Scots* (1946), 13-4.

³ *P.S.A.S.*, xxvii (1893), 14-22.

⁴ *Prehistory of Scotland* (1935), 195 and 236-7.

⁵ *Scotland before the Scots* (1946), 12-15 and 129-30.

rampart consisting of two parallel masonry faces laced together by transverse beams, the interspace being filled with rubble and timber. An improvement on this technique, probably developed in Gaul after 100 B.C., in which transverse and longitudinal beams were bolted together, was represented in Scotland only at Burghead. He regarded the vitrified forts and the 'Gallic Wall' forts as representing the same culture on the grounds that it had been shown that a vitrified rampart was just a 'Gallic Wall' which had been burnt, and because of the similarity of the finds. On their absolute dating he discussed the evidence afforded by the La Tène Ic brooches and iron-headed pins. Placing these monuments in his Stage VI of the Early Iron Age in Scotland, he suggested a tentative date of c. 100 B.C. as the most likely for their construction.

An alternative route whereby the Abernethy complex might have reached Scotland was next suggested¹ by Hawkes and Piggott, that from southern Britain by way of the Welsh Marches. The 'Gallic' forts were thought to reflect the Hallstatt-derived timbering of Iron Age A chalk fort-ramparts of Sussex and Wessex; whilst the Iron Age B feature, the La Tène I brooches, was one of those adopted from the B invaders in the A regions in the south. The distribution of the vitrified forts in south-west Scotland suggested a link with the Cheshire forts of Maiden Castle at Bickerton and the Welsh vitrified forts. The phase of the Yorkshire fort of Almondbury, of similar build, had 1st century A.D. material and was almost certainly burnt by the Romans, as perhaps were those in Scotland.

The late Sir Lindsay Scott, in his study of the aisled round-house culture of the Hebrides,² supported this suggestion of a western route. He felt that the unrest in Gaul from the mid-1st century B.C. due to Caesar's conquests, the Belgic expansion in southern England in the earlier part of the 1st century A.D., and the Claudian conquest, stimulated colonisation. Some of these colonists found the Inner Sound and S.E. Skye already closed by the tribe that had built the '*muris gallicus*' forts of Loch Alsh (presumably the vitrified sites of Eilean Donan, The Torr and The Bard's Castle) and settled in the emptier lands on either side of the Minch in the Outer Hebrides and Skye.

Piggott later restated his views on this problem.³ The first Iron Age culture that can be distinguished in Scotland did not seem, on the available evidence, to date much before 100 B.C. He related the timber and stonework construction of the Scottish forts to those of Iron Age A of southern England, of Hallstatt ancestry, in which, lacking stone, earth and rubble were used. The material culture had many features which related it to the A rather than the B group of Iron Age cultures (e.g. the early La Tène type brooches, the ring-headed pins and the bone bridle

¹ *A survey and policy of field research in the archaeology of Great Britain* (1948), 47 (Council for British Archaeology): Piggott, *A.N.L.*,

1.8 (1948), 9-10.

² *Proc. Prehist. Soc.*, xiv (1948), 114.

³ *British Prehistory* (1949), 176-8.

cheek-pieces). He thought a westerly landing in Scotland of English origin more explicable than a direct east-west invasion from the Continent. The Marnian invasions of the 3rd century B.C. might have stimulated movement out of the Wessex region northwards. If knowledge of the landings in Yorkshire had reached the south, this movement would not be along the Jurassic ridge but up the Welsh Marches and into Cheshire. Forts here showed Iron Age A techniques in their construction, including the timber-and-stone *muris gallicus*, and one at least, Old Oswestry, belonged to a relatively early phase of Iron Age A. This progress might well have been spread over a century or more, and then from the North Welsh or Cheshire coasts exploratory parties could have taken sail to land in Galloway and the Clyde mouth at the end of the 2nd century B.C., or indeed earlier.

Evidence in support of a derivation from southern England, and a chronological setting for some of the vitrified forts and those of the 'Abernethy complex', has now been provided by the results of excavations undertaken by Mrs. Piggott as part of a programme designed to study the Iron Age hill-forts of Scotland. Three forts in the Cheviots have been excavated—Hownam Rings,¹ Haythorpe Knowe² and Bonchester.³ At Hownam Rings and Haythorpe Knowe the initial defence consisted of a palisade enclosure. At Hownam Rings this was succeeded by a single stone wall defence, and at Bonchester a similar defence was the initial work on the site. Although these stone walls were not, in either case, timber-laced, their intimate connection with the forts of the Abernethy complex and some of the vitrified forts (e.g. Dunagoil) was shown by the similarity of the associated finds, more especially the La Tène Ic brooches, iron ring-headed pins, spiral finger and toe-rings and beehive querns. That La Tène Ic brooches occur in a late context had already been stressed by Wheeler and Childe, and Mrs. Piggott drew attention to a very late example from Oban which, in association with objects of Broch type and Samian was likely to be as late as the 2nd century A.D.⁴ There is at present too little evidence on the material equipment of the people who built the palisade enclosures to determine whether or no they were newcomers to Scotland, but it has been shown that these enclosures did not long outdate the single stone-walled forts. The dating of these latter depends on the associated finds which do not appear in North Britain until the 1st century A.D. or slightly earlier. Although the brooches and pins were in use in Wessex in the 1st century B.C., Mrs. Piggott shows that the evidence derived from the spiral finger and toe-rings is even more informative.⁵ At Maiden Castle, Dorchester, they were closely dated to c. 25 B.C. to A.D. 50. Their distribution is confined to two areas, south of the Wash-Severn line and in south and

¹ P.S.A.S., lxxii (1947-8), 193-225.

² P.S.A.S., lxxxiii (1948-9), 45 ff.

³ P.S.A.S., lxxxiv (1949-50), 113-137. Nor was the comparable wall of Wodan Law, Phase I

timber-laced.

⁴ P.S.A.S., xxix (1894-5), 282.

⁵ P.S.A.S., lxxxiv (1949-50), 181-2. Distribution map at fig. 12.

mid-Scotland only, which points to a direct connection between these areas. They have no ancestry in northern traditions. Summarising the present evidence she interprets it as individuals or families representing both the Iron Age A and B cultures of the south, and perhaps Belgic as well, arriving in the north having been displaced in the late 1st century B.C. or early 1st century A.D. Some travelled by land up the Welsh Marches and then by sea to West Scotland. Others may have sailed up the east coast, avoiding Brigantian territory, and settling to its north along the Tyne, Tweed and Tay. These newcomers arrive with southern fashions which they impose on a local population living in virtually a Middle Bronze Age tradition. As they were themselves of a mixed cultural ancestry, they did not invariably build timber-laced walls but used alternative techniques. When speed was required they built simple revetted walls, e.g. Hownam, Bonchester and Woden Law. The type of defence then required seems to have been covered by these stone walled forts with a single defence. These, however, were quickly outmoded, and multiple defences were introduced, whether by new buildings or by additions to existing forts was immaterial as long as defence in depth was achieved. It was these latter forts that were dismantled or abandoned under Roman authority in the late 1st century A.D., though some may have been redefended and occupied early in the 2nd century and later when the Roman frontier was moved southwards.

DATA ON THE SCOTTISH VITRIFIED FORTS¹

Excluding those sites which show vitrification that have already been discussed under the 'Abernethy type' group, vitrification has been found in ramparts or structures at sixty-one sites in Scotland (of these, two are unconfirmed and one a vitrified column which may only be the core of an experimental kiln). These sites are :—

Wigtownshire.

Dun o' May (or Doun of May), May, Parish of Mochrum.

The Stewartry of Kirkcudbright.

Trusty's Hill, Anwoth.

Mote o' Mark (or Mark Moat), Rockcliffe, Colvend.

Castle Gower, near Castle Douglas.

Ayrshire.

Dowhill, Girvan.

Kildoun, Maybole Parish.

Kemp Law, Dundonald, near Kilmarnock.

Auldhill, Portencross, West Kilbride Parish.

Knock Hill (or The Knock), Largs.

¹ For notes on each camp, see pp. 68-84.

County Bute.

- An Knap, near Corrie, Sannox, N.E. Arran.
- Dunagoil, S.W. Bute.
- Cumbræ, Great Cumbræ Island.
- Eilean Buidhe, Kyles of Bute.

Argyllshire.

- Carradale, Kintyre.
- Dun Skeig, West Loch Tarbet, Kintyre.
- Trudernish Point, Islay Island.
- Dun Troon, Loch Crinan.
- Caisteal Aoidhe, Ardmarnock, Loch Fyne, Cowal.
- Rahoy, Loch Teacuis.
- Caisteal na Sithe, Kilfinan Parish.
- Dun Beg, Dunstaffnage, Loch Etive.
- Dun Mac Uisneachan, Loch Etive, Connel.
- Eilean Port na Muirach, off Rhu Arisaig, Arisaig.
- Eilean na Ghoil, Arisaig.
- Lochan-an-Gour, Ardgour.

Ross and Cromarty.

- The Torr, River Shiel.
- Eilean Donan, Dornie, Kintail.
- The Bard's Castle, Bundalloch, Loch Long.
- Fort at Ardelve, Loch Long.
- Dun Lagaidh, south shore of Loch Broom.
- An Dun, Gairloch.
- Ord of Kessock, Beaully Firth.
- Knock Farril, Strathpeffer.

Inverness-shire.

- Eilean nan Gobhar, Arisaig.
- Ard Ghaunsgoik, Arisaig.
- Dun Deardail, Glen Nevis.
- Onich, Loch Leven.
- Torr Duin, Fort Augustus, Great Glen.
- Castle Urquhart, Loch Ness.
- Dun Dearduil, Inverfarigaig, Great Glen.
- Dun Fionn, Strathglass.
- Dun Mor, Lovat Bridge.
- Craig Phaidrick, near Inverness.
- Dun Daviot, Strath Nairn.

Sutherland.

- Dun Creich, near Bonarbridge, Dornach Firth.

Nairnshire.

- Castle Finlay, Rhigoul.
- Dunearn, Dulsie Bridge.
- Dun Evan (or Dun of Cawdor), Cawdor.

Morayshire.

Clunie Hill, Forres.

Doune of Relugas, Findhorn.

Banffshire.

Troupe Point.

Aberdeenshire.

Dunnideer, Inch.

Tap o' Noth (or Hill of Noath), Rhynie, Huntly.

Kincardineshire.

Finella's Castle (or Kincardine Castle), Balbegno.

Angus.

Dundee Law, Dundee.

Perthshire.

Dunsinane.

Barry Hill (or Barra Hill), Alyth.

Machany, Muthill Station, Blackford Parish.

East Lothian.

Harelaw, Long Yester, Lammermuirs.

Renfrewshire.

Fort in Craigmarloch Wood, Kilmalcolm.

Berwickshire.

The Deil's Dander, Milldown, St. Alb's.

DISTRIBUTION. (Fig. 1)

The distribution is mainly coastal and western. The forts occur along the coasts of Galloway, along the west coast, up the Great Glen and along the coasts of the Moray Firth. A few are found on the east coast and a small group more centrally in Perthshire.

EXTENT OF EXCAVATION

The first recorded exploration of a vitrified fort was that of Williams in 1777 at Knock Farril. Craig Phaidrick was explored by Sir George Mackenzie in 1826. It is reported that Lord Lovat trenched Dun Fionn in 1842-52 but the results of his work are not known. Nairne did some work at Dunsinane in 1854. Angus Smith dug at Dun Mac Uisneachan in 1873-4; Honeyman at Caisteal Aoidhe and Macdonald at Tap o' Noth in 1886. Ard Ghaunsgoik was excavated by Hamilton in 1880. These excavation reports yield little data on which to base any conclusions.

During the 20th century the sites excavated were:—Dun Troon (by Christison and Ross in 1904), Mote o' Mark (by Curle in 1913), Dunagoil (by Marshall in 1914 and 1919), An Knap (by Paton in 1927), Eilean Buidhe (by Harrison-Maxwell in 1936) and Rahoy (by Childe and Thorneycroft in 1936-7). Dunagoil and Rahoy have been more

extensively excavated than the others and provide the most reliable evidence. The remaining sites are virtually unexcavated.

AREA AND SUB-SOIL

These sites vary in size from small enclosures, e.g. Onich (41 ft. x 30 ft.) and Rahoy (40 ft. in diameter internally), which are only fortified farmsteads or rectangular houses grown into castles, to large hill-forts enclosing many acres. They are founded on a variety of rocks ranging through gneiss, basalt, mica schists, Old Red Sandstone Conglomerates, granites and various shales.

THE FORM OF THE CAMPS

(i) *Forts with a univallate vitrified defence*

Barry Hill, Knock Farril, Dun Deardail, The Bard's Castle, Dun Mac Uisneachan, Dun Skeig, Auldhill, Knock Hill and the Dun o' May are of this form. In general, the area enclosed is oval or pear-shaped. At Dun Deardail, Dun Skeig and Auldhill the defence is noticeably rectilinear. Knock Farril has unusual vitrified extensions at each end of a long oval enclosure. The univallate forts at Eilean nan Gobhar, Eilean Buidhe, Eilean na Ghoil, Eilean Port na Muirach and Eilean Donan are sited on small islands. At Caisteal na Sithe vitrification has not been proved, but the stones were so loosely coursed as to suggest that the wall had been timber-laced.

(ii) *Forts with a univallate defence and supplementary non-vitrified defences*

In this group can be counted the forts of Dunsinane, Tap o' Noth, Dunideer, Dun Mor, Dun Dearduil, Dun Lagaidh, An Knap, Kemp Law, Kildoun, Dowhill, Trusty's Hillock, Castle Gower and Lochan-an-Gour. The tendency for the vitrified defence to be rectilinear is again noticeable. In some cases the non-vitrified works have been thought or proved to be of different date. In others the supplementary defences are only at the entrances or defend outer baileys. They are not, as a group, examples of multivallate hill-forts with ramparts of the same type and date.

(iii) *Forts with bivallate vitrified defences*

Five of these forts may perhaps be so described; Craig Phaidrick, Torr Duin, Dun Evan, Dun Creich and the Ord of Kessock. Craig Phaidrick has inner and outer vitrified walls defending an oblong space with rounded corners and a third wall on the east and south. Although it lies farther north than the 'Abernethy' group of the Tay estuary, and beam-holes have not been observed, further examination might perhaps show that it belongs to that group. Torr Duin, Dun Evan and Dun Creich are unexcavated and are only doubtfully included in this category. Torr Duin has an inner wall with traces of vitrification enclosing an irregular oval area with a possible ditch and an outer wall,

except on the south-east and north-east, which is mainly of drystone build but is said to include traces of vitrification. Dun Evan has two ramparts defending an oval area, but the traces of vitrification seem to be slight and their location uncertain. At Dun Creich, the most northerly of the Scottish vitrified series, the outer rampart which encloses a circular area is only doubtfully vitrified, whilst the inner rampart which defends the highest point on the north is certainly vitrified. The Ord of Kessock has a main vitrified rampart enclosing an oval area and a platform on the west and south-west with double vitrified walls. Castle Finlay has outer and inner vitrified walls defending the summit, and outer baileys to the north and south defended possibly by a ditch.

(iv) *Promontory or headland forts with a univallate vitrified defence*

Troupe Point, Dun Daviot, Ard Ghaunsgoik, An Dun, Caisteal Aoidhe, Trudernish Point, Cumbrae, Dunagoil and the Mote o' Mark may be so described. Dunagoil has an extension of the camp to the east which has also a single vitrified bank.

(v) *Promontory or headland forts with a univallate vitrified defence and supplementary non-vitrified defences*

Carradale is of this type. The supplementary defences have not been proved to belong to the same constructional plan as the main work.

(vi) *Promontory or headland forts with multivallate vitrified defences*

No examples have been noted.

(vii) *Lowland forts with a univallate defence*

The fort at Machany occupies a low wooded ridge. It has a single vitrified wall which defends an oblong area. Dun Beg is a low mound of pentagonal form on nearly level ground.

(viii) *Vitrified farmstead*

The site at Rahoy is described by Childe as a farmstead. It is a small circular enclosure with a single vitrified wall on the summit of a conical hill. The timber-laced rampart had faced masonry internally and the central area had been paved. Childe believed that the construction had been covered with a roof of turves carried by rafters springing from the encircling rampart and supported at their inner ends by posts set round a hearth.

(ix) *Vitrified rectangular house*

The site at Onich is an oblong space with rounded corners surrounded by banked-up earth and stone banks and surmounted with a vitrified stone wall. It is unexcavated, but on its form Childe suggests that it must be a single rectangular house grown into a castle.

CONSTRUCTION OF THE DEFENCES

(i) Timbers

The type of timber-framework used in the walls or banks of this group has not been described.

(ii) Inner and outer revetting walls

These were noted in the vitrified defences at Dunagoil, Caisteal Aoidhe, Dun Mac Uisneachan, Dun Dearduil, Dun Troon and Eilean Buidhe. At Caisteal na Sithe and Eilean Buidhe it was noted that there were spaces between the stones in the outer revetting walls and at the latter a thin layer of charcoal underlay the burnt stone courses. At several of these forts it was seen that the wall was founded on water-worn boulders laid on the natural, e.g. Ard Ghaunsgoik, Dun Lagaidh, Caisteal Aoidhe and Carradale. Some of the walls were shown to be 5 ft.-6 ft. wide. One revetting wall only has been seen in many of the unexcavated sites, but the existence of a second has not been disproved.

(iii) The core of the rampart

Alternate layers of ash, charred wood and stones were found at Kemp Law with wood impressions. At the Mote o' Mark a capping of boulder clay was observed over a core said to be of structureless stones. At Dunagoil the core was thought to be of rubble or polished stones, brushwood and clay in alternate layers.

(iv) Entrances

Dunagoil had at least two entrances protected by massive timber gates held with large wooden bars. A rough pathway leading up to Lochan-an-Gour at a third of its way up the hill had traces of a gateway. There was a cut recess for a gatepost and a hole in the stone for the dook to which the gatepost had been fastened. Craig Phaidrick had an entrance through the outer defence but not the inner (cf. Forgandenny, p. 68, and Dunsinane, p. 83). At Harelaw the 11 ft. wide entrance through the outer defences was the only part of the site to show traces of vitrification and this may perhaps be due to the accidental burning of the gate. At Barry Hill the entrances at the north and south ends were joined by a 3 ft. 3 ins. wide passage which bisected the fort and was bounded with drystone walls. A paving of undressed flags was laid between this passage and the wall.

OTHER STRUCTURES

Practically the only structures contemporary with the vitrified defences noted as existing inside the forts of this group are the hut-sites and kitchen middens of Dunagoil and the habitations against the walls of Knock Farril. At Eilean Buidhe the stone paving lining a hollow in the interior contained vitrified material and was apparently of later date than the wall. Dun Skeig contains a ring fort of later date also

incorporating vitrified material, and Dun Mac Uisneachan a comparable intrusive oval structure. Dunsinane had two chambers and other structures which may or may not have been contemporary ; Dun Lagaidh an intrusive broch and Auldhill a secondary intrusive structure. Dun Creich and Dunnideer contain ruined castles.

FINDS AND DATING EVIDENCE

With so little excavation it is inevitable that the list of finds from these sites should be small. Only Dunagoil and Rahoy have provided any significant amount of material.

(i) *Pottery*

The pottery found at the Mote o' Mark was mainly of Early Christian date (8th-9th centuries A.D.) and belonged to a re-occupation of the site. Two sherds of Roman pottery were also found. Childe found no pottery at Rahoy and suggested that wooden vessels had been used there. The only contemporary pottery known is that from Dunagoil. The coarse badly-made pots were large, bucket-shaped, straight-sided and flat-bottomed. Everted round-edged rims were found, and it was suggested that here, too, wooden vessels may have been used. A stone vessel was found at Barry Hill and steatite or soapstone vessels at Dunagoil.

(ii) *Brooches*

Part of an iron La Tène I brooch was found at Dunagoil and part of a La Tène Ic brooch at Rahoy. The iron penannular brooch from Dun Mac Uisneachan may belong to the secondary occupation.

(iii) *Bronze objects*

Dunagoil had a bronze industry. A triangular crucible with adherent bronze, a clay mould for ferrules, a bronze ferrule and a pair of bronze tweezers were found there. Dunsinane produced a bronze spiral finger-ring from its vicinity.

(iv) *Iron objects*

The most interesting iron object found was a looped and socketed axe-head from Rahoy. There were traces of a bloomery site and furnace at Dunagoil as well as iron ring-headed pins. It was claimed that part of a tanged iron sword came from the wall of Dun Mac Uisneachan.

(v) *Querns*

Querns were of fairly frequent occurrence in these sites. Dun Troon, whose interior was completely exposed, produced thirty-six saddle querns, and saddle querns were found also at Rahoy. Querns are mentioned from Barry Hill, Dunsinane and Dun Mac Uisneachan, At Dunagoil, Mann stated that the saddle querns had been altered in an unsuccessful attempt to convert them to the rotary type.

(vi) Jet or lignite objects and steatite or soapstone objects

Dunagoil had a rich jet industry. Armlets, decorated with spiral lines, and spindlewhorls of this material occurred, and armlets, rings and dishes were carved from steatite. Jet was found at Dun Troon.

(vii) Worked bone objects

Animal bones and burnt bones were found in several of the sites, but only at Dunagoil was there a worked bone industry. There a plaque was decorated with the dot-and-circle motif and pierced bone cheek-pieces and a bone bodkin or netting needle were found.

(viii) Miscellaneous finds

Dun Troon had flints, six oval water-worn pebbles and whetstones. Dunagoil had pieces of haematite, stone spindlewhorls, whetstones, stone rubbers and daub with wattle-marks. Glass beads were also found.

OPINIONS ON THE DATING EVIDENCE

Childe¹ thought at first that on the whole the foundation of the forts in Eastern Caledonia, and even those on the west coast north of the Clyde, must go back beyond the beginning of our era to a date not far removed from that of the 'Gallic Wall' forts. Since vitrified forts were not then known in England, but were common in Celtic countries on the Continent as far north as Belgium, he thought it might be inferred that they were introduced by invaders who came direct across the North Sea. These would have settled first on the east coasts north of the Tay and thence spread west through the Great Glen and possibly also through the Tay or Tummel gaps and via Loch Awe. Arrived on the west coast they must have taken ship for Islay, Kintyre, Arran, Bute and eventually Galloway, Ireland and North Wales. Later he attributed Rahoy to the pre-Roman Iron Age because of the exclusive use of saddle-querns and on the evidence of the iron imitation of a bronze axe but, on the evidence of the La Tène Ic bronze brooch, he suggested, with all reserve, a date shortly after 200 B.C. On this evidence and that from Dun Troon and Dunagoil he felt that a date in the La Tène period was feasible for the Scottish vitrified forts north of the Clyde-Forth line. These relics suggested a cultural community between the 'Gallic Wall' forts, which he had grouped provisionally as the 'Abernethy complex', and the vitrified forts, and in any case the typological parallelism between the fibulae from Rahoy and Abernethy established the general contemporaneity of a vitrified fort with a 'Gallic-walled fort'.

Curle thought that the Mote o' Mark had only had a very brief occupation before Early Christian times. Mann considered that Dunagoil had been abandoned about the 2nd century B.C. and was not re-occupied. There was no Roman material.

¹ *The Prehistory of Scotland* (1935), 196-7. See also *The Abernethy Complex*, pp. 35-6.

DATA ON CAMPS WITH TIMBER-LACED, VITRIFIED OR CALCINED RAMPARTS SITUATED BETWEEN SOUTHERN ENGLAND AND SCOTLAND¹

There are number of camps which have either timber-laced ramparts, or ramparts which have been vitrified or calcined, that are situated in 'the gap' between the Preist type Iron Age A timber-laced rampart forts of southern England and the Scottish series of the 'Abernethy complex' and vitrified forts. If the assumption that these northern influences are derived from southern England is correct, these sites should mark our present knowledge of the routes whereby these influences spread. At present these sites are few; any assessment of these routes needs perhaps to be supplemented by accounts of camps whose defences are not of the type being studied in this particular context. The sites which belong in the present series are:—

ENGLAND

- Corley Camp, Burrow Hill, near Coventry, Warwickshire.
- Bower Walls Camp, opposite Clifton Hill, Long Ashton Parish, Somerset.
- Castle Hill, Almondbury, Yorkshire.
- Wincobank Camp, Ecclesfield, near Sheffield, Yorkshire.
- Maiden Castle, Bickerton, Cheshire.
- Castle Ditch, Eddisbury, Cheshire.

SCOTLAND

- The Camps, near Camptown, Roxburghshire.

WALES

- Ffridd Faldwyn, near Montgomery, Montgomeryshire.
- Caer Crwyini (or Caer Euni), near Corwen, Merionethshire.
- Cryniath in the Parish of Llandrillo, Merionethshire.

ISLE OF MAN

- Cronk Sumark (or Primrose Hill), Sulby, Lezayre.
- Fort at Cronkbourne Village, near Douglas.

IRELAND

- There are no certain examples of forts with timber-laced ramparts in Ireland.²

DISTRIBUTION. (Fig. 2)

The western distribution of these camps is along the line of Somerset, Warwickshire, the Welsh Marches, Cheshire, and the Isle of Man; the eastern by Yorkshire and Roxburghshire. The distribution pattern may lack significance as the camps with timber-laced ramparts described

¹ For details of each camp, see pp. 85-93.

² See p. 93. Since going to press this statement requires revision. Cf. *A.N.L.* 5.5 (1954), 87,

which suggests that Cathedral Hill, Downpatrick, may have had a Preist type timber-laced rampart.

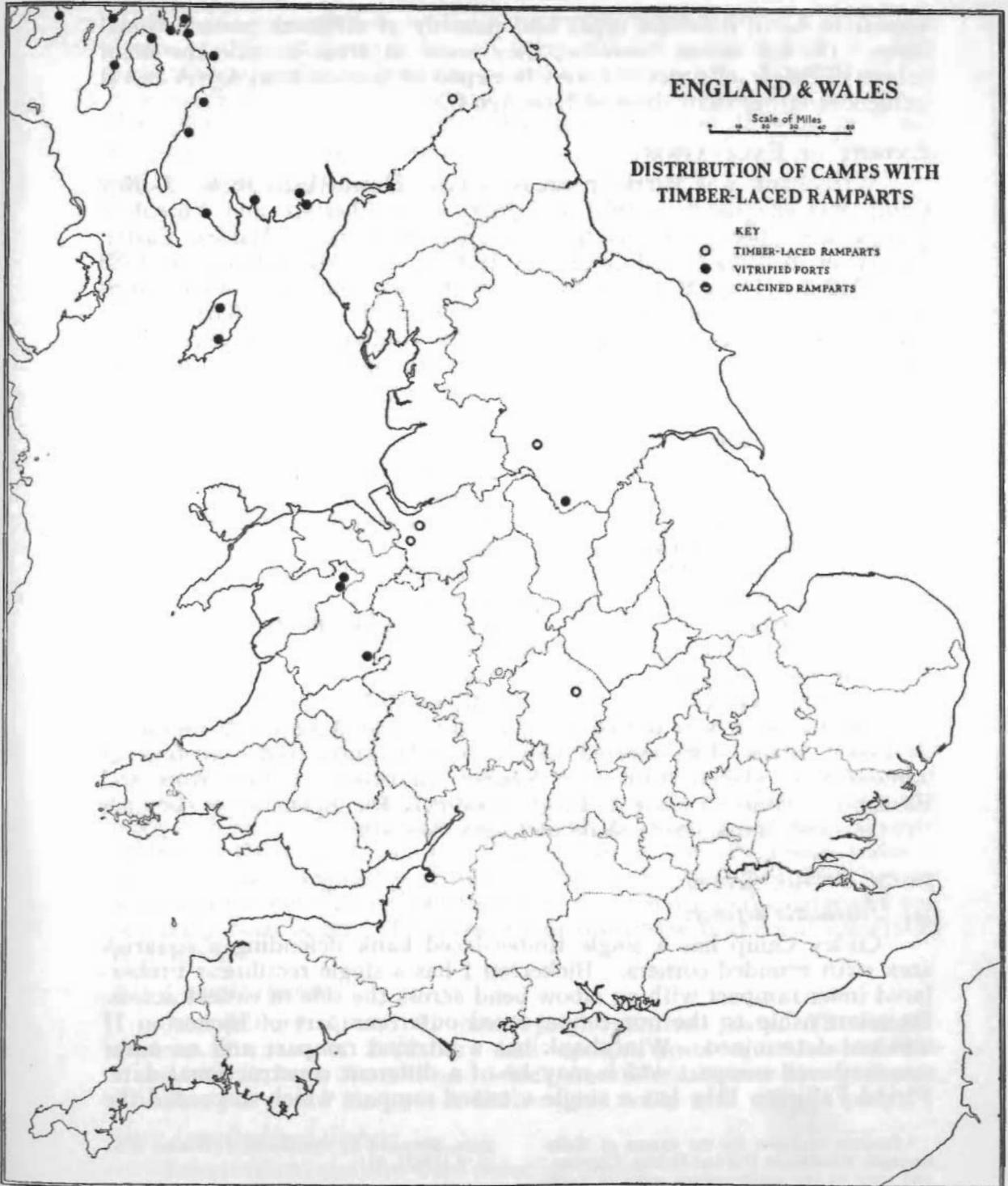


Fig. 2. Distribution of the camps discussed situated outside Scotland

appear to be of different types and possibly of different constructional dates. On the whole, however, they occur in areas outside the main sphere of Belgic influence and may be expected to show Iron Age A and B influences rather than those of Iron Age C.

EXTENT OF EXCAVATION

Wincobank was partially excavated by Howarth in 1899. Corley Camp was examined in 1923 and 1926. The Cheshire and Yorkshire Camps have been extensively excavated by Varley; Maiden Castle, Bickerton in 1934-5, Eddisbury in 1936-8, and Almondbury in 1939 and 1946-7. There is reason to believe that excavation of other camps in their vicinity would add further examples to the series.¹ The excavation of Edgerston is incomplete. Ffridd Faldwyn was excavated by O'Neil in 1937-9. Caer Crwyini, Cryniath and the Manx forts are unexcavated.

AREA AND SUB-SOIL

The areas enclosed by the timber-laced defences of these camps are :—

Corley Camp	...	...	c. 600 ft. x 600 ft.
Bower Walls Camp	...	...	7 acres.
Almondbury III	...	...	Not stated.
Wincobank	...	...	c. 2½ acres.
Bickerton I	...	...	1.38 acres inside the defences.
Eddisbury II	...	...	c. 11 acres.
Ffridd Faldwyn	...	...	c. 3 acres.
Caer Crwyini	...	...	930 ft. x 180 ft.

The sub-soils were of sandstone at Corley and Wincobank, limestone at Bower Walls, drift-covered Lower Coal Measures and sandstone at Almondbury, glacial drift over Keuper sandstone at Bickerton and Eddisbury, Wenlock shale at Ffridd Faldwyn, Denbighshire grit at Caer Crwyini and Manx slaty-shale at Cronk Sumark.

FORM OF THE CAMPS

(i) *Univallate defences*

Corley Camp has a single timber-laced bank defending a squarish area with rounded corners. Bickerton I has a single rectilinear timber-laced inner rampart with an elbow bend across the side of easiest access. Its relationship to the non-timber-laced outer rampart of Bickerton II was not determined. Wincobank has a vitrified rampart and an outer non-timbered rampart which may be of a different constructional date. Ffridd Faldwyn IIIB has a single vitrified rampart which succeeded the

¹ Possible examples are the camps of Kellsborough, Woodhouse Hill and Helsby, Cheshire; and some of the south-western series in York-

shire, discussed by Preston in *T. Hunter A.S.*, vi, 3 (1947), 91.

IIIA double palisade defence. Caer Crwyini appears to be a univallate camp, and Cronk Sumark has an inner vitrified rampart and an outer bank which does not on form appear to be contemporary. Almondbury III is a single timber-laced rampart reconstructed on the Almondbury II inner extension rampart. Both Almondbury I and II were of Preist type upright post construction.

(ii) *A multivallate reconstruction of a univallate fort*

Eddisbury II is a multivallate reconstruction of a univallate fort which was itself preceded by one with a palisade defence. For a discussion of the structure of these banks, see below pp. 61-2.

(iii) *Undetermined*

The form of the camps at Cryniath and Cronkbourn Village has not been determined. The relationship of the timber-laced rampart of Edgerston to the other banks is not certain, nor is that of the calcined camp of Bower Walls.

CONSTRUCTION OF THE DEFENCES. (Fig. 3)

(i) *Transverse timbers*

In none of these camps do the transverse timbers penetrate the outer facing wall forming beam-holes like those found in the camps of the Abernethy complex, nor do any have a nailed timber-framework. At Bickerton I the oak timbers were laid lengthways, crossways and diagonally. They stopped one course short of the outer facing wall. In the entrance they were 6 ins.-1 ft. apart. They ranged in size from tree-trunks to quite small twigs and were all charred or blackened. The carbonisation took place *in situ* and was due to a fire after the rampart had been built. The transverse timbers of Almondbury III were comparable. At Eddisbury's north-western entrance the transverse timbers were laid in puddled clay and ran out to abut against upright posts behind a stone facing. At Ffridd Faldwyn the vitrification had destroyed the evidence of the arrangement of the transverse timbers. At Corley the relationship of these timbers to the facing of the revetting walls was not determined, but they were 5 ins.-6 ins. in diameter and had originally been larger. The presence of transverse timbers at Edgerston is indefinite.

(ii) *Upright timbers*

Almondbury I and II had upright timber posts. The north-western entrance of Eddisbury had upright posts against which the transverse timbers abutted and which were behind outer facing stones. Eddisbury I guard rooms had timber-lined walls with upright posts.

(iii) *Longitudinal timbers*

Longitudinal timbers were noted at Corley.

(iv) External and internal facing walls

In Bickerton I the inner rampart, based on a level surface of glacial drift, was 12 ft. thick and 4 ft.-6 ft. high. Both the inner and outer facing walls were built of tightly wedged boulders of the local Triassic sandstone and the core was stone-capped. The inner facing wall was embedded in the sand and timber core. The outer facing wall on the north side of the entrance was 10° out of the vertical. The transverse

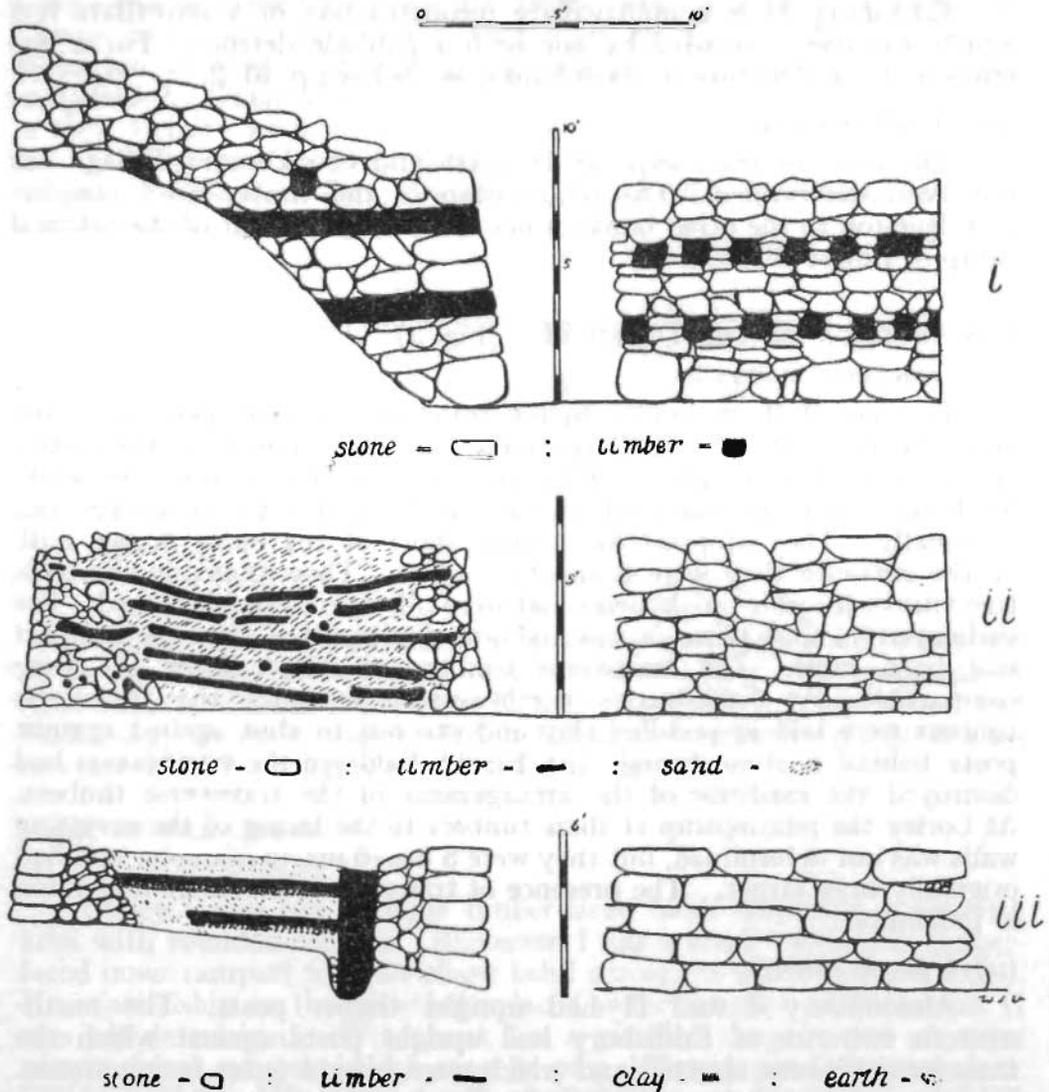


Fig. 3. Varley's diagrams of the timber-laced ramparts of (i) Abernethy, (ii) Bickerton, and (iii) Eddisbury

(Reproduced, by permission, from *L.A.A.A.* xxiii, 3-4, Fig. 2, opposite p. 108)

beams did not penetrate to the outer face but showed on the inner face, and the same arrangement occurred at Almondbury III. The south side of the entrance was well preserved and its associated rampart with internal and external facing walls was 17 ft. wide and stood 12 ft. high. In the Eddisbury entrance the vertical revetting posts were placed behind an outer stone revetment. The rampart of Almondbury III had inner and outer drystone revetting walls. Corley had a faced wall. At Ffridd Faldwyn III_B the rampart had a back portion of large stones and earth between rough revetting walls and in front an addition of timber-laced earth and stones on a timber foundation. The front revetment appears to have been cut away in the Period IV reconstruction of the fort, and whether it was of stone or timber could not be ascertained.

(iv) *Core of the rampart*

Bickerton I had a core of timber and sand, the timbers being stiffened by boulders. In its entrance the timbers and sand were laid in alternate layers and the core was 10 ft. wide and 8 ft. high. In the Eddisbury entrance oak beams were laid more or less horizontally in the core on puddled clay. The core of the Almondbury III rampart was of earth laced with timber which had been fired to the colour of brick in a deliberate attempt at destruction possibly after the revetting walls had been partially demolished. At Corley the core was of earth and stone laced with timber, and at Ffridd Faldwyn III_B it was burnt to a deep red colour. That of Wincobank was vitrified.

(v) *Ditches*

Ditches associated with these ramparts were little in evidence. That of Corley was not proved to be contemporary. At Almondbury III the ditch was found to have been dug first, and at Ffridd Faldwyn it was of blunt V-shaped form cut into the solid rock to an average depth of 6½ ft.

(vi) *Entrances*

At Bickerton I the entrance was inturned and had a 50 ft. long roadway 10 ft. wide narrowing to 8 ft. Exact analogies are quoted at Bredon Hill Camp and Fin Cop, Monsal Dale, Derbyshire. The road was unmetalled. The gate was 11 ft. wide and was slung between two stout posts recessed within the revetments of the ramparts. There was a timber guardhouse. The Eddisbury north-western entrance was of 'incipient inturn' form reinforced with upright and horizontal timbers. The vertical posts were set at 8 ft. intervals behind a narrow stone facing wall. There was an inner stone revetment but no guardhouse. Two gateposts were found. In the reconstruction of the south-eastern entrance of Eddisbury the passage-way and earlier timber guardhouses were lined with drystone walling and an additional guardhouse was built on the north side. At Corley no definite entrance was defined, but a pebble paved area was found. Ffridd Faldwyn III_B

entrance was inturned and enclosed a fairway leading to a single gate which may have had a bridge over it. There were no guardhouses. This south entrance had also an outwork of two banks and ditches which underlay the Periods IV-V defences and which were comparable to the outwork at the east gate of an Iron Age A phase of Maiden Castle, Dorset. Almondbury III had a rectangular inturned entrance.

OTHER STRUCTURES

Contemporary hearths were found on the periphery of the inner rampart of Eddisbury and at Almondbury III. Two enclosures inside Cronk Sumark may be of different date.

FINDS

(i) *Pottery*

There was one potsherd from the occupation floor associated with the inturned entrance of Bickerton I which was not datable within the Early Iron Age. Eddisbury produced from hearths contemporary with the extension rampart crude pottery of thick paste stiffened with large grits, some of which had out-turned rims and high shoulders with finger-nail decoration. Almondbury III produced contemporary quadrangular vessels which have south-western and perhaps north-eastern B associations.

Corley produced three sherds of Early Iron Age pottery too small to identify. Roman pottery sherds occurred at Wincobank above an earlier turf line in the ditch. Edgerston had 2nd century Samian with a coin of Trajan.

(ii) *Miscellaneous finds*

Loomweights and whetstones were found in the hearths of Eddisbury and worked flints in the interior of Corley Camp. Edgerston had saddle and rotary querns, fragments of lignite, glass bracelets and dress fasteners.

OPINIONS ON THE DATING EVIDENCE

The views expressed on the dating of these camps in the excavation reports were:—

(i) Chatwin dated Corley Camp as pre-Roman and of Early Iron Age date. Hawkes thought it might have been an Iron Age B site with an apparently slight occupation and was of late 1st century A.D. date. Seaby felt that a precise date was impossible but that it might have been constructed by the descendants of Iron Age A people in a late phase of that period and abandoned by mid-1st century A.D. It may perhaps have been re-occupied in the Dark Ages.

(ii) Almondbury II was dated to 56 B.C.—A.D. 43. Almondbury III was probably burnt at the date of the Roman conquest by Petialis Cerialis *c.* A.D. 71–74 when Venutius was defeated and the Brigantes

were subdued. The quadrangular pottery vessels and lids of Almond-bury III were not common, but Varley thought that they had a characteristic distribution and date. They were known at Glastonbury, Quiberon in Brittany, Broadstairs, Kent, and on the Lincolnshire and Essex coasts, and belonged to *c.* 56 B.C. to 43 A.D. The western parallels were of interest in that they agreed with the evidence of the Yorkshire horse-bits for contacts between north-eastern and south-western B areas along the Jurassic zone. The eastern contacts with Lincolnshire were interesting, as coin-finds showed that the Brigantes had contact with that area.

(iii) Preston suggested that on the evidence of the Roman pottery in the ditch, over a possible earlier turfline, Wincobank could not have been erected long before the Roman conquest, possibly during the 1st century A.D. The difference in the methods of construction of the two ramparts pointed to different phases in the fortification of the site.

(iv) Bickerton, Varley thought, might have been built a generation or so before the Roman conquest. Although there was no datable evidence from Bickerton II, it might have been an additional defence thrown up during the period of the Roman advance *c.* A.D. 50–75. There was no evidence of Roman slighting of the site though it fell into ruin before the Dark Ages.

(v) Eddisbury II was dated as *c.* 100 B.C.–A.D. 43, and represented an Iron Age B multivallate hill-fort influence but without culture spread. The defences were deliberately slighted in part at least by the Roman legionaries from Chester in the late 1st century A.D.

(vi) According to Childe, Edgerston was a second variety of 'Gallic Wall' in which the masonry was supported by a frame of uprights as well as transverse timbers which was not certainly as old as the type in which transverse and internal beams were bolted together.

(vii) On structure, O'Neil felt that Ffridd Faldwyn III_B belonged to the Iron Age A period, although to a relatively late phase of that period. The two or three structural periods of the later Outer Camp (all multivallate) belonged perhaps to Iron Age B times. In the earlier period the scantiness of habitation suggested that Ffridd Faldwyn was a camp of refuge. During the later phases associated huts showed that it became a hill-top town. The final refortification, which consisted of a repair of the multivallate ramparts of the outer camp, was doubtless the result of a sudden thrust due to the advance of the Roman conquerors either *c.* A.D. 30 or after some incident in the fighting of the next twenty-five years.

(viii) The remaining camps in the group are not dated.

Much has been written on the general spread of cultures between southern England and Scotland. Some of these views are summarised here under the three groupings of the forts of the Welsh Marches, the Yorkshire group and the Cheshire group.

THE WELSH MARCHES GROUP

Childe,¹ commenting on the distribution in the Welsh Marches of hill-forts with inturned entrances,² suggested that it indicated a spread or retreat from south-western England. But neither relics nor structural details supported this impression as 'culture has been left behind: warriors are on the march accompanied by such camp-followers as could tolerate an uncivilized existence'. The impetus may have been the pressure exercised by the invading Belgae or the Venetic refugees on the south-western hill-forts. At the same time raids by the Abernethy people from Scotland may have resulted in some permanent settlements in North Wales and even the Midlands, comparable to those effected by the broch-builders in the Scottish Lowlands. O'Neil³ looked for comparisons in structure rather than in relics, not only because the excavated camps rarely produced datable objects, but also because the spread of a method of fortification and of a culture yielding pottery styles or metal objects may not be conterminous. He looked for the prototypes of the camps of the Marches in Somerset, parts of Devon and Dorset, the southern area where they were most prevalent. As has been seen, for Ffridd Faldwyn IIIB he found an analogy at Maiden Castle, Dorset, in Late Iron Age A times. For the multivallate defences of Periods IV and V, which showed three pre-Roman structural phases, he found the Wessex dating of 56 B.C., for the initial dating of the arrival there of the Venetic refugees, somewhat short and made due allowance for the possible earlier arrival of this method of defence in the Welsh Marches, but concluded that more evidence was needed to determine the relationship of these camps to a possible spread of B peoples perhaps reflecting the troubles brought about by the expansion of the Belgae after their initial settlement in the south and south-east of England.

THE YORKSHIRE GROUP

Preston⁴ discussed the possibilities of Iron Age B influence on the Yorkshire forts as being due to either a spread from the south-west, the Parisii of the Yorkshire Wolds, or from Scotland. The Brigantes were in contact with the Parisii of East Yorkshire and, since they occupied both flanks of the Pennines, could also have been influenced from North Wales. Whatever the influences may have been, in their latest phase at least the Brigantian hill-forts were the product of a late period of the Iron Age, which began in West Yorkshire not very long before the Roman invasion. In south-west Yorkshire their location was consistent with their having formed part of a Brigantian frontier defence against the Roman invasion. The available evidence was insufficient to warrant

¹ *Prehistoric Communities of the British Isles* (1947), 255.

² Chitty, *Arch. Camb.*, xcii (1937), 132-5: Radford too notes the similarity of Border forts

to those of S.W. England, cf. *R.C.H.M., Hereford III* (1934), xiii.

³ *Arch. Camb.*, xcvi (1942-3), 1-57.

⁴ *T. Hunter A.S.*, vi, 3 (1947), 89-92 *passim*.

a decision as to whether they had :—(a) been in existence before A.D. 43 and marked the effective limit of Brigantian territory together with the actual frontier of the River Don ; (b) been thrown up during the period when the Romans were holding the Fosse Way as a frontier in anticipation of a further northward advance ; or (c) been built to guard the River Don when the Romans reached the south bank of the river, the Brigantes having acquiesced in regarding the river as the frontier.

THE CHESHIRE GROUP

Varley and Jackson showed that the Cheshire hill-forts were linked geographically with those of the Welsh Marches and were therefore open to the influence of the south-western B cultures.¹ They drew a distinction between a true culture spread and the spread of certain ideas derived from that culture. They thought that in Bickerton II and Eddisbury II this B influence was apparent but was unaccompanied by culture spread.²

In 1948 Varley considered the hill-forts of England as a whole in a paper on those of the Welsh Marches.³ Whilst much of his discussion concerns subjects which are outside the scope of this present study, some of his points are relevant. In very general terms his hypothesis was that from two primary areas of immigrant settlement, of different dates, there was a diffusion of influence or culture which elsewhere resulted in a hybridisation of hill-fort form. For the contour-works developed in Sussex and Wessex, he agreed with Hawkes in regarding them as due to the impact of freshly-landed Celtic peoples from areas with a La Tène culture, i.e. his first area of primary settlement. For his second area (or areas) of immigrant settlement, he agreed with Childe's original view that the Abernethy forts were citadels built by the invaders themselves rather than against them, but to them he adds further immigrant settlements such as Chun Castle and the cliff castles of North Cornwall. These invaders he thought came from the Atlantic coasts and not from across the North Sea, which explains the occurrence of 'Hallstatt-derived Gallic forts' scattered around the Atlantic coast. He writes :—'Inland, immigrant contributions to hill-fort architecture such as *murus gallicus* are not found in forts which wear the new look. On the contrary, they are found either in orthodox contour-works such as Eddisbury and Almondbury, or in copies of hybrids, one parent of which may well be the cliff castles, but the other, on the evidence from Bredon, is derived from the established Iron Age A tradition. Our inland examples are not, therefore, primary Gallic forts of the Abernethy type ; they are hybrids. As such, they must be later, and considerably later, than the primary examples'.

¹ *Prehistoric Cheshire* (1940), 58-76 *passim*. For a list and distribution map by Miss Lily F. Chitty, cf fig. 7 and Table III.

² It is interesting to note that a pile of sling-

stones was found inside the guardroom at Eddisbury II, cf. *op. cit.*, p. 74.

³ *Arch. J.*, cv (1948), 41-66. Distribution map at fig. 1.

However, in 1950 Varley was unhappy about the chronological problems involved.¹ He regarded the timber-laced entrance to Eddisbury II as a variant of a vitrified *muris gallicus* more or less identical with the forts of the Abernethy complex. But, whilst not disputing the early date attributed to the Abernethy series, he was then convinced that the timber-laced defences he had found at Bickerton I, Eddisbury II and Almondbury III were all standing at the time of the Roman conquest, and he was in difficulties over the question of reconciling the dates, but adhered to his hypothesis of a hybridisation of cultures at a date later than that of the original immigrations.²

THE 'AVARICUM TYPE' FORT AT BURGHEAD³

There is one fort in Great Britain which possesses a timber-laced rampart which is at present without parallel. At Burghead in Morayshire, Scotland, there is a headland fort which was excavated by the Elgin Scientific and Literary Society in 1851 and by Young in 1890-3. Across the promontory are three banks. The area defended is divided internally by a cross bank forming an upper camp of 520 ft. x 300 ft. and a lower camp of 850 ft. x 250 ft. Excavation showed that the innermost of the three isthmus ramparts contained a timber-laced stone wall which had a nailed timber-framework. The transverse timbers of this framework ran through the core of the wall and penetrated the inner facing wall but not the outer (Pl. VI B). Longitudinal hewn oak planks and logs were joined to them by iron bolts. The type of junction was not ascertained, but the transverse beams were c. 6 ins.-9 ins. square, and the planks 2 ins.-3 ins. thick and 10 ins.-1 ft. wide. Whether the logs were hewn or were round or square was not ascertainable. The outer facing wall was of imported dressed stones, stood 9 ft. 7 ins. high and was c. 3 ft. wide. The inner facing wall was 3 ft. 7 ins. wide at its foundation, stood 4 ft. high and rested on oak planks or logs laid on a stone platform. The core of the wall was of timber-laced stones and rubble and the whole was 24 ft. wide. The transverse beams were 9 ins. apart and their courses were set at 3 ft. high intervals. The whole was founded on a flat platform made of beach stones. The iron bolts were at least 8 ins. long, nearly 1 in. thick and had square heads. Young recognised this defence as being analagous with those of the French *muri gallici* with certain differences in detail. At Burghead:—

(a) The facing walls were two to three stones thick whereas the Gaulish ones were only one stone thick.

(b) The wall was founded on a stone platform and the transverse timbers were not laid directly on the ground.

(c) The use of planks for longitudinal timbers gave a coherence to the work which would enable it to settle into a more perfect stability.

¹ *T. Hist. of Lancs. and Cheshire*, cii (1950), 54-7.

² This drastic precis of Varley's detailed

discussions in these two papers fails to do justice to his work, for which I offer due apologies.

³ For notes on this camp see pp. 93-4.

(d) The stones of the outer facing wall were dressed.

The whole work he thought superior to that found in the French forts, but he did not find any evidence on which to suggest a date of construction. The 1890-3 excavations produced a melon bead and a bone hairpin; and during demolition of the defences in 1808 many coins, battle-axes and spearheads were said to have been found.

CONCLUSIONS

1. THE CAMPS WITH ABERNETHY TYPE TIMBER-LACED RAMPARTS

Childe's definition of a 'Gallic wall', as found in the Abernethy complex, is 'a rampart consisting of two parallel masonry faces laced together by transverse beams, the interspace being filled up with rubble and timber'. These transverse beams penetrate the outer revetting wall, and sometimes the inner, and on their decay leave beam-holes. These have been used as a diagnostic feature. Because of them there is a superficial resemblance to the walls of Avaricum type, and there has been a tendency to regard them as closely related to that type. But analysis of their structure shows that they are not as close to the Gallic prototype as they might be.

The six camps assigned to this group—Finavon, Monifieth, Abernethy, Forgandenny, Dun Mor and perhaps Glencorse—are all situated in eastern Scotland in the vicinity of the Firth of Tay and the Firth of Forth, and on distribution would appear to be the works of an immigrant people. The present distribution pattern may be deceptive as many of the forts of the Scottish vitrified series may be of comparable structure, and some forts which lack a timber-laced defence but have a single stone wall defence may be of contemporary date. They are linked by the similarity of finds contemporary with the defences.

STRUCTURE

Reference to the table on p. 28 shows that none of these six camps shows any of the structural features which are characteristic of the Continental Preist type series. On this score alone they would therefore appear to date at earliest to the second half of the 1st century B.C. But there are too many differences between their structure and those of the classic *muri gallici* to suggest that they are of contemporary date. The similarities and differences are as follows:—The box-like defence in which two revetting stone walls are joined with timbers with a filled-in core is universal in all types and is not diagnostic. It is the form of the fort and the type of timber-framework that shows the dominant influence. The Abernethy group resembles the Avaricum type defence in that:—

- (i) Some have a univallate rectilinear defence, e.g. Finavon and possibly Dun Mor.
- (ii) In none has upright timber posts been recorded.
- (iii) All had transverse beams which have left beam-holes on the

outer facing-wall, and at Abernethy and Forgandenny they are known also on the inner facing wall.

(iv) Longitudinal timbers were found at Abernethy and may perhaps exist in others of the group.

(v) The ditches are not important features.

The group differs from the Avaricum type in the following manner :—

(i) None has a nailed timber-framework.

(ii) Three of the group have bivallate timber-laced defences, i.e. Monifieth, Abernethy and Forgandenny. These are, however, in the nature of double-walled enclosures and do not resemble multivallate contour forts.

(iii) The typical inturned entrances are not found. Forgandenny had a timber gate in its outer wall and Glencorse a timber gate of barbican type, but both Abernethy and Forgandenny lacked any entrance through the inner walls and their interiors must have been approached by a ramp.

From the structural view-point these camps would appear to have been built by people who had either forgotten or abandoned any Hallstatt influences. The fact that their defences are atypical suggests that :—

(i) They lacked the means or wealth to build a proper nailed timber-framework.

(ii) The date at which they built was far enough removed from that of the prototype for devolution to have occurred.

(iii) Their defences were so designed in order to meet the type of attack expected. Speed and simplicity of structure were required, but defence-in-depth and anti-battering-ram structures were not needed. Some protection against fire was, however, achieved by using the transverse and longitudinal timber technique rather than the more easily burnt upright posts.

On these scores the forts of the Abernethy group appear to be erected by newcomers against the local population.

FINDS AND DATING

The scanty contemporary finds from these camps, La Tène Ic brooches, coarse native pottery, saddle querns, iron ring-headed pins, jet objects and bronze spiral finger-rings, have not heretofore suggested a very specific date within the Early Iron Age for their construction. On the whole the assembly has been thought to have an Iron Age A *facies*. But there is one important exception to this generalisation. Mrs. Piggott has now shown that the bronze spiral finger and toe-rings occur only in England south of a line drawn from the Wash to the Severn and in south and mid-Scotland, where they have no local ancestry. At Maiden Castle, Dorset, these were closely dated to c. 25 B.C.—A.D. 50, and, with the exception of one outlier, their distribution coincides with that of the south-western B cultures and the iron currency bars. They were used by both B and C peoples there.

Now the relationship of the forts of the Abernethy group to the Roman invasion of Scotland has not been ascertained. But again Mrs. Piggott has shown that forts in eastern Scotland, e.g. Bonchester, possess univallate non-timbered stone wall defences which have contemporary finds of the same type. The newcomers who built these forts arrived, she says, with southern fashions which they imposed on a local population living in virtually a Middle Bronze Age tradition. These newcomers were preceded by the first people of Iron Age culture to arrive in Scotland whose material equipment is still too insufficiently known to date with any certainty. But she has shown that these univallate stone walls were succeeded by multivallate defences designed to achieve defence-in-depth both on new sites and at the reconstructed univallate sites. It was these multivallate defences that were erected to withstand the Roman invasion. She suggests that individuals or families representing both the Iron Age A and B cultures of the south, and perhaps the Belgic as well, were displaced by foreign settlers in the south and west of England in the later 1st century B.C. and early A.D. Some may have found their way north by land up the Welsh Marches and thence by sea into the Solway area and the Argyllshire coast, while others may have sailed up the east coast to land north of Brigantian territory, in the areas of the Tyne, Tweed and Tay. Being of mixed cultural ancestry, it was hardly surprising that they did not always build timber-laced ramparts in their forts in Scotland, where alternative methods were used when a speedily-built single-walled enclosure was required.

Whilst it is true that the builders of the Scottish timber-laced forts possessed objects which have cultural affinities with those of the A and B cultures of the south of England, on the grounds of military architecture it is difficult to support this theory of direct migration from southern England or the south-west to Scotland. As has often been shown, culture and military architecture do not of necessity march together. As far as we know neither the B nor C peoples of southern England used a devolved Avaricum type technique in their ramparts at any date. If peoples from this area did arrive in Scotland during the first half of the 1st century A.D., why should they suddenly adopt a technique which was then only a sixty year or more ancestral memory? On the present evidence therefore the Abernethy group can only be dated to a vague period between *c.* 60 B.C. and the Agricola conquest of Scotland, and it represents immigrant groups arriving from an uncertain source.

2. THE SCOTTISH VITRIFIED FORTS

The sixty-one sites in Scotland at which vitrification has been found, over and above those included in the Abernethy group, are distributed mainly along the south-west and west coasts, but extend also up the Great Glen, along the coasts of the Moray Firth, on the

east coast and inland in Perthshire. Views on the causation of vitrification and calcination are summarised in an Appendix.¹ It is accepted here that a vitrified or calcined rampart is a timber-laced stone wall that has been burnt, and that the burning was accidental and destructive and not an intentional constructive process. Distribution maps based solely on the feature of vitrification show the areas in which timber-laced ramparts were used at all dates. It is only the excavated examples that are amenable to grouping on structure, but a large series such as this, with a distinctive distribution pattern, does suggest a connection with important events.

This point is important in reviewing the Scottish series. Their distribution has been used to tie in the forts of the Abernethy group to a western and Atlantic or Irish Sea route of derivation. There is much to commend this view, but caution is required in placing too great a reliance on it until more is known about these sites. Out of the series only six have been excavated during this century—Dun Troon, Mote o' Mark, Dunagoil, An Knap, Eilean Buidhe and Rahoy—and only the two last in recent years. Eight more were investigated in the 19th century—Knock Farril, Craig Phaidrick, Dun Fionn, Dunsinane, Dun Mac Uisneachan, Caisteal Aoidhe, Tap o' Noth and Ard Ghaunsgoik.

STRUCTURE

In none can the form of timber-framework be stated with certainty, although in the forts of Eilean Buidhe and Caisteal na Sithe the presence of beam-holes on the external facing walls has been suspected. The data on the entrances are few, but it is worth noting that Craig Phaidrick and Dunsinane lack entrances through their inner walls as do two of the forts of the Abernethy group. In form these forts vary greatly in type and size and some have been shown to possess more than one period of occupation.

FINDS AND DATING

The finds from some of these sites, however, do suggest that they were contemporary with, and have the same cultural affinities, as those of the Abernethy group. Only Dunagoil and Rahoy have as yet produced a significant amount of material, but finds from the whole series include La Tène Ic brooches, iron ring-headed pins, spiral bronze finger and toe-rings (perhaps seven of the twelve Scottish sites at which these are known), saddle and possibly rotary querns, jet objects and worked bone objects decorated with dot-and-circle patterns. Now that the picture of the Early Iron Age in Scotland is becoming clearer in the eastern areas, here surely, in the west, is the greatest need to diminish the present obscurity by fresh excavation.

¹ See pp. 94-101.

3. THE CAMPS WITH TIMBER-LACED, VITRIFIED OR CALCINED RAMPARTS SITUATED BETWEEN SOUTHERN ENGLAND AND SCOTLAND

It now remains to examine what evidence there is that builders of forts who used this technique spread by land routes from southern England to Scotland. Stretching the evidence to the utmost, only twelve sites can be quoted, but lack of excavation in the many forts of the Welsh Marches and elsewhere leaves a gap, and the evidence of forts with non-timbered defences would alter this picture considerably. The present examples may be conveniently discussed in relation to the eastern and western routes.

THE WESTERN ROUTE

The nine sites on the western route are Bower Walls, Somerset, Ffridd Faldwyn, Caer Crwyini and Cryniath in Wales, Bickerton and Eddisbury in Cheshire, and Cronk Sumark and Cronkbourne in the Isle of Man. Corley Camp, Warwickshire, may perhaps be related to the route from the south-west to the Wash. No sites are known at present in Ireland. Of these sites Ffridd Faldwyn, Corley, Bickerton and Eddisbury have been excavated. Of the calcined camp of Bower Walls and the vitrified forts of Caer Crwyini, Cryniath, Cronk Sumark and Cronkbourne, nothing is known of their structure or finds.

STRUCTURE

On structure the vitrified rampart and inturned entrance, with its supplementary hornwork, of Ffridd Faldwyn IIIB have been shown to be analagous to a Late Iron Age A phase of Maiden Castle, Dorset. It represents, therefore, an expansion of Iron Age A peoples, using a Hallstatt or Preist type timber technique with upright posts, rather than a stepping stone of people from southern England who in Scotland used a devolved Avaricum type technique. It is the later multivallate non-timbered defences of Ffridd Faldwyn IV-V that here represent the spread of a south-western B influence.

At Eddisbury the story is also complex. There are three pre-Roman Early Iron Age phases. The first is a simple palisade with no associated relics. The next, Eddisbury I, is a univallate contour defence with upright timber posts and stone revetting walls in the Preist type tradition and with an associated A culture. The last phase, Eddisbury II, Varley considered to have been standing at the time of the Roman invasion. It consists of a bivallate defence of an extended area with a north-western timber-laced entrance. The earlier south-eastern entrance and ramparts were lined with drystone walling in this phase. This period Varley described as one due to B influence but without cultural spread. With all due respect to his views, it is possible perhaps to suggest a slight modification of his interpretation, based on his sections and on similar successions of defences elsewhere. This is :—

1. The simple palisade defence.

2. Eddisbury IA. A univallate contour fort with a south-eastern Preist type timber-laced entrance with upright posts and with timber-laced guardrooms.

3. Eddisbury IB. A univallate extension of the fort to the north-west, which included a north-western timber-laced entrance in which the transverse timbers were tied to upright posts in the usual Preist type tradition. The hearths contemporary with this extension produced Iron Age A pottery.

4. Eddisbury II. A multivallate reconstruction of the whole in which all the timber-laced structures were lined with drystone walling *including the north-western entrance.*

If this interpretation is acceptable all the timber-laced structures at Eddisbury are of A type and origin and only the non-timbered multivallate reconstruction shows B influence. Eddisbury, therefore, like Ffridd Faldwyn, would not mark a 'stepping stone' on the western route of southern peoples emigrating to Scotland, there to build devolved Avaricum type ramparts, but is an A or AB expansion camp.

The succession of structures at Bickerton is simpler. In Bickerton I, an elbow-shaped univallate defence cuts off the promontory and was of a simple box-like form with inner and outer facing walls and a timber-laced core in which the transverse timbers penetrated the inner wall only. This phase has no datable cultural associations. It does perhaps qualify as a devolved Avaricum type defence. In Bickerton II an outer non-timbered rampart was added, although the exact succession was not proved. This phase could equate with the later multivallate reconstructions Mrs. Piggott noted in the Scottish series. Varley is convinced that the camp was standing in this form at the time of the arrival of the Romans.

Corley camp presents a different picture. Although it is insufficiently excavated to be precise, it does, in its univallate timber-framework, show devolved Avaricum technique.

FINDS AND DATING

Datable finds contemporary with Bickerton I or Corley do not exist.

THE EASTERN ROUTE

Only three camps with timber-laced ramparts are known in the eastern 'gap'; Almondbury and Wincobank in Yorkshire and Edgerston in Roxburghshire. The partial excavation of Wincobank and the lack of a final excavation report on Edgerston prevent their being used to arrive at any conclusions.

STRUCTURE

On structure Almondbury has produced important evidence in that there are here superimposed timber-laced ramparts. Almondbury I was a univallate fort with a Preist type rampart with upright timber posts.

Almondbury II was a univallate extension camp built in the same technique and with supplementary outworks. I prefer this description of the subordinate counterscarp bank and additional ditch and the elaboration of the entrance and its annexe to Varley's description of it as 'bivallate'. Almondbury III was a univallate devolved Avaricum type rampart superimposed on the main bank of the Almondbury II extension camp. It resembles closely Bickerton I.

FINDS

The finds from Almondbury are of equal importance. Though negligible for the first two periods, the pottery contemporary with Almondbury III includes those unusual quadrangular vessels with lids for which Varley has found analogies at Glastonbury, Quiberon in Brittany, Broadstairs, Kent, and on the Lincolnshire and Essex shores. This Yorkshire site does therefore suggest a link with the Abernethy group.

4. BURGHEAD. (Pl. VI B)

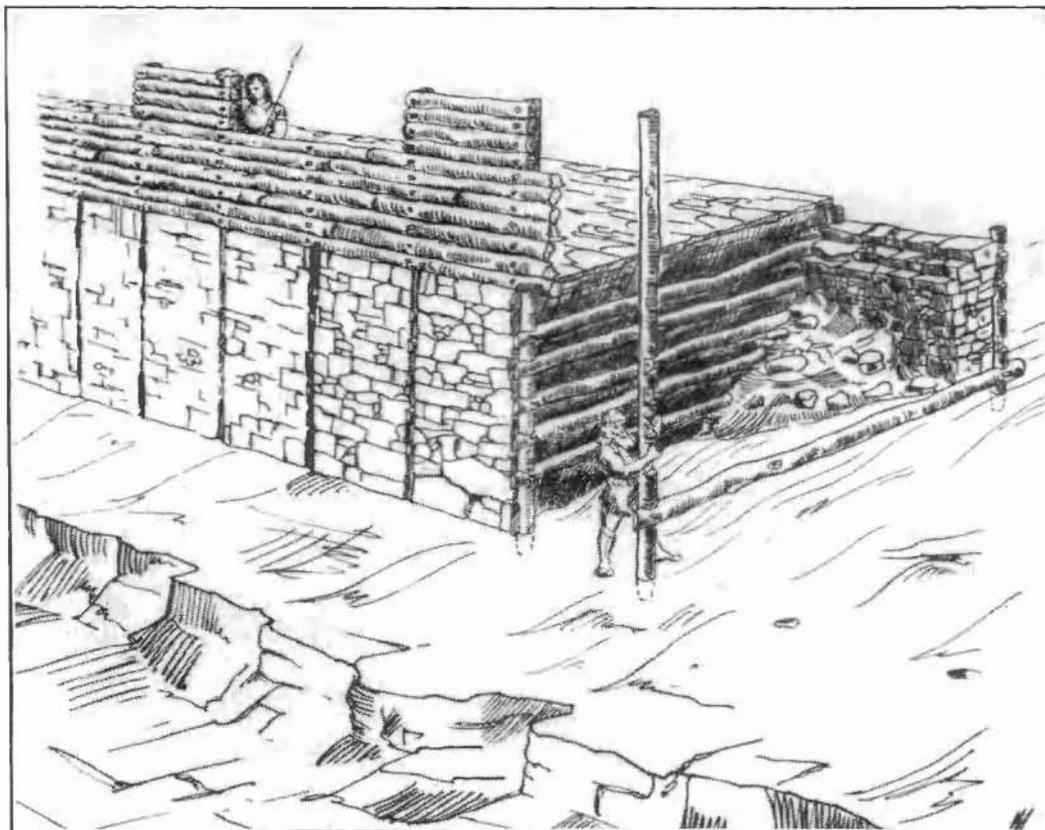
The fort at Burghead appears to be unique in Great Britain. Here, if anywhere, there is perhaps structural evidence for the arrival of a small group of emigrants direct from Gaul during the unrest there of 58-51 B.C. But it could also be argued that these peoples were an outlier of the Abernethy group, using an undeveloped Avaricum technique. However, the fact that the transverse timbers penetrate the inner and not the outer revetting wall shows that it could be related to the technique used at Bickerton I and Almondbury III. It could also be a late camp built to withstand the Agricola advance. Without any knowledge of the associated culture, or of the relationship of the timber-laced rampart to the other defences, all is speculation. The possible Roman finds from the site are not stratified. It is understood that there are still some parts of this important site which are not either destroyed or built over and which would surely repay modern excavation.

In conclusion therefore, it will be seen that the British series of camps with devolved Avaricum type ramparts is distributed, as far as we know at present, in eastern Scotland, with outliers at Almondbury III, and perhaps Bickerton I and Corley. For the remaining English, Welsh and Manx camps, and the Scottish vitrified series, the use of this type of timber-framework has yet to be proved. Although the builders of these camps have the same cultural affinities as the south-western B peoples, a direct derivation from southern England has not been proved on structural grounds as the technique is not known to exist there. Nor is the case for a 'land-bridge' between the two areas very convincing. On structure these camps can at present only be dated between c. 60 B.C. and the Roman conquest, and appear to be the works of immigrant refugees or small groups from an area that is still uncertain.

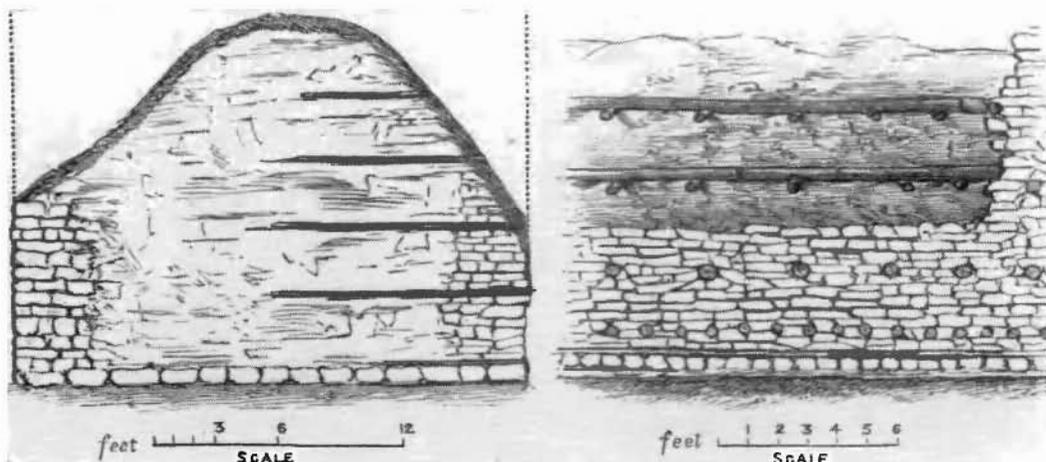
NOTES ON THE MIDDLE LA TÈNE FORT AT PREIST, GERMANY

PREIST, BITBURG, RHINE PROVINCE, GERMANY. (Pl. VIA)

The river Kyll is a tributary of the Moselle which joins it just above Trier. On both sides of its undulating valley are a series of prehistoric camps situated on the sandstone summits and promontories, one of which is the badly preserved fort of Preist near Bitburg. Up to 1939 these camps were undated and only Stone Age and Roman finds were reported from them. The fort at Preist was threatened with destruction from stone-quarrying, so in 1938 the *Ringwallforschungsunternehmens der Rheinprovinz* undertook excavation there. The fort occupies a promontory which projects into the Kyll valley and has two small stream-valleys on its flanks. The isthmus on the east side was partially cut off from the adjoining plain by a cross-bank, and a ruined rampart encircled the summit of the promontory along its edge. The area enclosed was oval in form with a length of 210 metres on its longest axis. The position of the original entrances could no longer be determined. That the ramparts had been ruined at an early date was attested by the finding of medieval sherds in the wall debris. An 8 m. stretch of the ruined cross-rampart was cleared down to the ground. Immediately under the humus there was found a wall, 4.30 m. wide, built from blocks of the local sandstone. Many of the courses of both the outer and inner faces were found to be well preserved; the outer face was disturbed, but the inner, owing to being protected by a bank behind it, was in good condition and stood almost 2 m. high. At regular intervals of 1.35 m.–1.55 m. post-slits for upright posts that had been joined together by cross-timbers were found on both the inner and outer faces. The post-holes for these upright posts showed in the ground and had a diameter of 0.18 m.–0.20 m. Those of the inner face were up to 0.25 m. deep, whilst those of the outer face only penetrated the ground for a few centimetres and were difficult to locate. In a limited stretch of the wall, on its top, flat sandstones were found placed horizontally which should represent the original upper surface of the wall. This was confirmed by measuring the height of the wall tumble in the outer ditch which was about equal to the height of the wall—2.30 m.–2.50 m. The channels for the transverse beams which joined the outer and inner upright posts were found in layers some 0.30 m.–0.45 m. apart. They had been covered with carefully packed stones. The measurements of the transverse beams, as deduced from the channels, were 0.16 m.–1.18 m.; a few were warped and one had contained a tree trunk lying obliquely. The three lowest transverse beam-courses were preserved in outline (+ 0.33 m.–0.48 m., + 0.76 m.–0.83 m. and + 1.15 m.–1.20 m. above the ground). A fourth beam-course was deduced from the evidence shown in the post-slits and a fifth course was believed to be demonstrable at 1.80 m. from the ground. Whether



A. Reconstruction by Dehn of the rampart of the La Tène II fort of Preist
(Reproduced, by permission, from 'Germania' 23 (1939), Abb. 2, p. 25)



B. Section and outer face of the rampart of Burghead, as excavated by Young
(Reproduced, by permission, from P.S.A.S. xxv, figs. 1-2, p. 437)

a sixth course, or the lower half of the flat-topped wall was added could not be ascertained, but it was considered improbable that there had been a sixth course. The wall-facings were built of loosely placed stones, the foundation stones of the outer face being of large sandstone blocks inserted a little way into the ground. The wall was filled with intermingled earth and stones. Although no evidence was available for the manner in which the transverse and upright beams had been joined, either mortise and tenon joints or dove-tailing may have been used. The latter method was shown in the reconstruction drawing of the wall. A berm, 3 m.-4 m. wide lay outside the outer face and beyond this a rock-cut ditch 4.50 m. wide and 1.60 m.-2.15 m. deep. The average measurement from the bottom of the ditch to the wall-top was 4.50 m. The pressure of the internal filling of the wall had, soon after its construction, caused the inner face to slope inwards. This had been counteracted by piling up behind it a ramp of clay and broken sandstone, and it is due to the presence of this ramp that the internal face has been so well preserved and that the original wall-top could be distinguished. A second section was cut through the upper protecting wall of the fort. Contrary to expectations this wall was also well preserved. It showed the same constructional features except that instead of the internal ramp a second drystone wall with post-slits had been built 1.10 m. inside the original face probably with the same end in view as the ramp. The evidence for dating the wall at Preist was small. Beaker sherds and stone implements, derived from an earlier occupation of the site, were found under the wall and in the lowest levels of its infilling. Charcoal, bones and sherds were obtained from the silt and wall-tumble in the ditch. The sherds belonged to a phase, possibly a late one, of the Hunsrück-Eifel culture,¹ and the excavators dated the construction of the wall to this period, one which is equivalent to Middle La Tène. Dehn comments on the differences between this wall and those of Manching, Tarodunum, the Ring of Otzenhausen and the *murus gallicus* at Avaricum as described by Caesar, all of which have a nailed timber-framework. He does not class the wall at Preist as a *murus gallicus*, as in the latter the balks must not only penetrate the whole wall as a framework but form also an important structural part of the wall, whilst in the former, although the balks certainly played a constructive role, the dove-tailing of the timber-framework is not nearly so compact and the wall stood alone without its timber-frame. The upright posts of the Preist type were also essential in anchoring the breastwork. The arrangement is described on pp. 26-7.

Steinhausen, *Ortskunde Trier-Mittendorf* (1932), Taf. 22.2 and 22, 3. Dehn, *Germania* 23 (1939), 23-6. Photographs of the wall at Taf. 1-2. Reconstruction at Abb. 2.

¹ For this see W. Kersten, *Marburger Studien* (1938), 118 ff.

NOTES ON THE CAMPS OF THE 'ABERNETHY COMPLEX'

Finavon Hill, near Aberlemno, Angus

This fort occupies the crest of the northernmost of the ridges of Traprock and Conglomerate that constitute Finavon Hill. It is in the Parish of Oathlaw, and lies above the South Esk near Aberlemno. The main citadel has a rampart with a circumference of some 333 yds. enclosing an area 475 ft. x 110 ft. On the north the ground slopes up continuously from the plain of the South Esk. On the south the descent from the ridge is precipitous, but the crest is separated from the precipices by a level platform or terrace c. 80 ft. wide and c. 10 ft. lower than the crest. This terrace formed an outer bailey, originally defended by a rampart of considerable magnitude, which no longer survives. The present western rampart stands on a hill, now separated from the main ridge by a ravine. Childe excavated this site in 1933-4. He showed that the whole western section may have been a secondary addition. The partition wall had been destroyed by a road built across the hill, probably when trees on it were felled. The main western rampart was also partly mutilated at the same time. Childe stated that the plan of the fort, with its straight walls, disregarded the contours of the hill. The vitrified forts of Craig Phaidrick, Knock Farril, Dun Mac Uisneachan, Dunagoil, Carradale and Tap o' Noth show a similar lay-out. The main wall was 20 ft. wide and had inner and outer facing-walls. The inner stood 8 ft.-10 ft. high and was built with a marked outward batter. The outer only survived in its massive foundation courses which rose perpendicularly. Sections through the rampart showed a bank composed of loose sandstone slabs mixed with products of their disintegration. Large blocks of vitrified stones were exposed at various levels on the outer slope and a few others projected through the turf inside. The vitrification was confined to the tops of the walls or extended only 5 ft.-6 ft. into the core. The sub-soil under the rampart showed no sign of the action of heat, nor were the facing-walls vitrified. There were gaps between many of the stones on the facing-walls. Masses of burnt wood were found inside the walls all round the fort. Charred trunks, lying on top of all other remains of occupation, but at the base of the debris from the rampart, suggested that they had fallen in from the tops of the walls. Childe described it as a fairly typical example of a fort in which the dressed stone facing-walls were tied together with timber-lacings. The interior of the fort had been regularly inhabited. There was a row of dwellings with hearths under the shelter of the north rampart. Pot-making, spinning and metal-working were carried on under the lee of the south wall, though no built fireplaces or other architectural remains were exposed on that side of the fort. The relics (chiefly coarse cooking-pots, an iron ring, flints, spindle-whorls and a thick 'jet' ring) gave no conclusive evidence for the date of the monument within the Early Iron Age, but they are not incompatible with the view that it was erected by an early band of Celtic colonists from the Continent. There were no Roman finds.

Williams : *R.H.N.S* (1777), 39-44.

Pennant : *A Tour in Scotland*, 1772, iii (1790), 165-6.

Jamieson : *Arch. Scot.*, ii, 1 (1818), 29-30.

Macculloch : *History of Scotland*, i (1824), 288. (Mention.)

Hibbert : *Arch. Scot.*, iv, 1 (1831), 181.

Jamieson : *T.R.S.L.*, ii (1834), 242-6.

Warden : *Angus or Forfarshire*, i (1824), 288. (Mention.)

Christison : *E.F.S.* (1898), 195. No. 38. *P.S.A.S.*, xxxiv (1899-1900), 98-100. Plan at fig. 50.

Childe : *P.S.A.S.*, lxxix (1934-5), 49-80. Air photograph and plan; *P.S.* (1935), 196; *S.S.* (1946), 87 and 135. No. 21. *Prehistoric Communities of the British Isles* (1947), 214. Plan at fig. 78.

The Laws of Monifieth, Hill of Laws, Drumsturdy, Monifieth, Angus.

About two miles north of the estuary of the River Tay, and near Drumsturdy, Monifieth, there is a collection of hills called 'laws' which form one of the terminations of the Sidlaw range. On the highest of these, 500 ft. above sea-level, fortifications exist. Hibbert mentioned them in 1825. Jamieson described the fort as consisting of two vitrified walls which surrounded the hill. The principal entrance was on the north-east and the circumference of the outer wall was 500 paces. Outer works existed at the east and north. The inner wall at its north-east corner formed the back wall of several houses. On the west side houses existed between the inner and outer walls. The fort was itself divided internally by a wall running from north to south, and the greater number of the houses inside the fort were to be seen in the western portion. He thought that there might have been an additional entrance on the west side. The vitrification of the walls he thought 'as perfect as that of the fort at Finhaven'. The *Statistical Account of Scotland* records that it was remembered locally that at an earlier date the walls had stood some 5 ft. higher, but had for long been subjected to quarrying operations before being planted with trees. It records also that about 1790

'Two workmen came upon the foundation of a building, at the bottom of the cone, and found a considerable treasure of gold coin. They concealed their prize, went to London and sold it as bullion. The circumstances afterwards came to light by the jealousy of one of the finders, who accused his comrade of cheating him, as he had received 'only L. 50 as his share of the booty, whereas he had on enquiry discovered that the moiety was far more valuable'. Of course it is not known that any of the coins were preserved'.

Neish published a rough plan of the site made in 1859 by Salmond, on which were marked the areas in which finds had been made. These included axes, bones, charred wheat and barley, querns, iron nails, a bronze armlet, other iron objects including a sword and an enamelled pin. Neish found it difficult to recognise the original plan described. In 1862-3 he excavated and found further walls

which confused him still more. His finds included a double-sided comb, a piece of lead, a stone whorl, an iron pin and a buckle, all from the pavement of the central circular building marked on Salmond's plan, the area that had previously produced the bronze armlet and an iron nail.

In 1946 Childe described the site as a fort showing beam-sockets in walls whose faces were exposed on both sides. The walls are vitrified and enclose an area of 350 ft. x 140 ft. There is superficial evidence of secondary construction to account for the Roman finds from the site. The central circular building, perhaps an intrusive broch, had been erected within the partially vitrified fort, and amongst its stones vitrified masses were to be seen. The iron pin from the site is a ring-headed pin of Early Iron Age type.

Hibbert : *Arch. Scot.*, iv 1 (1831), 181.

Jamieson : *T.R.S.L.*, ii (1834), 247-9.

Statistical Account of Scotland, xi (1845), 545-6.

Neish and Stuart : *P.S.A.S.*, iii (1857-60), 440-54. Plan at Pl. XXXIV.

Neish : *P.S.A.S.*, v (1862-4), 321-2.

Christison : *E.F.S.* (1898), 195. *P.S.A.S.*, xxxiv (1899-1900), 82-5. Plan of east end at fig. 39.

Childe : *S.S.* (1946), 13-4 and 135. No. 24.

Castle Law, Abernethy, Perthshire. (Fig. 3 (i))

The fort of Castle Law, on the south shore of the Tay estuary, occupies a terminal spur of the Ochils. It is c. $\frac{3}{4}$ miles from the village of Abernethy and is 700 ft. above sea-level. The site has strong natural defences : on the south, east and north there are steep rocky slopes, and only on the ridge to the west is the approach easy. Following earlier small scale excavations, Christison and Anderson excavated and discovered the tops of two walls of dry-stone masonry, the inner enclosing the top of the hill. The oval fort measured c. 180 ft. x 90 ft. The inner wall varied from 18 ft.-25 ft. in width and stood 5 ft.-8 ft. high at its west end, but on the south side it must have been at least 10 ft. high on its outer face if it was to be brought level with the top of the inner face. Here the foundation of the inner face is some 9 ft. higher than that of the outer. The wall was founded on solid rock. Outside it was of faced blocks, built with a considerable batter, which showed a double row of rectangular beam-holes 10 ins.-12 ins. wide, some six to seven occurring in each 12 ft. length. The lower row was 2 ft.-3 $\frac{1}{2}$ ft. above the base of the wall, and the upper row was 2 ft. higher. In one area the wall was taken down and it was shown that the beam-channels ran 8 ft.-10 ft. into its core. Two longitudinal channels were also found. Remains of wood were found in one channel only, but it was concluded that they had all held wooden beams which had decayed. The inner face of the wall was fairly well built, but it showed no beam-holes. The inner wall of the fort was traced all round but there was no sign of an entrance through it. The outer wall, although in general parallel or concentric with the inner, followed a more irregular course, and at its south end appeared to spring from the inner wall, but it was not bonded in with it. The outer wall was 18 ft. wide at its base and was built with a batter on both faces. The inner face still stood 5 ft.-7 ft. high, and the outer, because of its lower foundation on the slope, up to as much as 10 ft. A double row of beam-holes, in an excellent state of preservation, pierced the outer wall, but were placed at a higher level than those of the inner wall, the lower row being 4 ft. 9 ins. above the base and the upper 2 ft. higher. Again the beam-holes did not show on the inner face. Only stone debris was found in the space between the inner and outer walls. Outside the outer wall, however, there was an accumulation of layers which overtopped the wall.

The interior of the fort measured 136 ft. x 51 ft., but, other than some rude paving of flat stone, the only structural evidence found was a rock-cistern. An embankment which separated a small loch from a marsh lying to the west of the fort was also sectioned and was shown to be of earth with no masonry. There was an accumulation over the whole area of the fort of a layer, 1 ft.-2 ft. thick, consisting of earth mixed with small fragments of stone. It was difficult to account for this 'top-dressing' except by assuming that it was man-made. The walls at Abernethy were described as characteristic of Scottish forts built on a small summit in that they stand not at the very top but on the beginning of the descent, so that the outer face is on a lower level than the inner one. At Abernethy neither the inner nor outer defences showed any sign of an entrance. This compared with the findings at the neighbouring fort at Forgandenny, where the inner wall also had no entrance, although one exists in the outer defence. Access must therefore have been over the wall or through a doorway raised at least 3 ft. from the ground. The finds from Castle Law included a La Tène I bronze brooch, a bronze spiral finger-ring, stone lamps, a jet ring, a handle of deer-horn, much corroded iron objects, and two portions of vessels hollowed out of solid wood. Four fragments of very coarse hand-made pottery from a large vessel or vessels and two pellets of baked clay resembling sling-stones were also found.

Christison and Anderson : *P.S.A.S.*, xxxiii (1898-9), 13-33. Plans at figs. 2 and 3. Inner wall at Pl. I and figs. 4 and 6 ; outer wall at Pl. II and figs. 5 and 8.

Christison : *P.S.A.S.*, xxxiv (1899-1900), 76-9. Plans at figs. 34-5. Sketch of wall at fig. 36.

Dechelette : *Manuel* iv (1927 ed.), 498.

Childe : *P.S.* (1935), 194. Rampart at fig. 54 ; *S.S.* (1946), 135. No. 48.

Castle Law of Coltucher, Forgandenny, Perthshire

Castle Law, on the south side of the Tay estuary, is also on a spur of the Ochils, c. 2 miles south of the village of Forgandenny, and $2\frac{1}{4}$ miles south-west of the Bridge of Earn. The fort is 75 acres in area and measures 229 ft. x 65 ft. within the innermost of the defences. It is girt with two built stone walls and is of elliptical form, or very roughly rectangular with rounded corners. It was excavated by

Bell in 1892. The entrance was at the east, and the south side, being more exposed, had elaborate outworks. These consisted of two ramparts facing each other with a ditch on either side and an outer southern scarp. The single rampart on the north was of boulder-work put together loosely. The main wall is 876 ft. in circumference, 18 ft. wide, and stands 2 ft-6 ft. high. Inside a wall runs eastwards to meet the inner wall at a right angle, but it is not bonded in with it. It continues beyond it as far as the outer wall and entrances. This wall rises at an inclined plane and may perhaps have been used as a means of access to and egress from the inner area, as no other entrance or passage way has been discovered. The entrance through the outer defence, 10 ft. wide, was equipped with jambs and holes for a bar. Both defences have inner and outer facing-walls with a rubble core. Both walls show evidence of vitrification. At irregular intervals round the outside and inside of the inner defence beam-holes containing charcoal occur in the wall. No sections were cut through the defences, and the excavation report by Bell leaves open the question of whether or no these walls were timber-laced. The existence of longitudinal beams was not therefore proved. A trench in the interior produced much charcoal and some occupation debris. It was considered that there was evidence of two occupation periods, as secondary buildings of different workmanship were found, and the pottery was said to point to different ages. Other finds included part of a jet ring, a whorl and whetstones. No opinion was expressed on the possible date of construction.

Bell : *P.S.A.S.*, xxvii (1883), 14-22. Pl. I gives a rough plan.

Christison : *P.S.A.S.*, xxxiv (1899-1900), 74-6. Plan at fig. 32. Sketch of beam-holes at fig. 33.

Childe : *P.S.* (1935), 194 ; *S.S.* (1946), 135. No. 49.

Dun Mor, Sma' Glen, Glen Almond, Perthshire

This fort, in Central Scotland, some 6 miles NNE. of Crieff, is situated on the top of a hill 1,520 ft. above sea-level, which lies to the north side of Sma' Glen. According to Christison the site is precipitous except on the east where the approach is by a nearly level, but narrow, neck. The fairly level oval top is enclosed by a ruined stone wall sited with its inner side on the edge of the slope and its outer at a lower level. The interior of the camp measures 150 ft. x 90 ft. On the east accessible side there is a crescentic work, 300 ft. long, similar in appearance to the main work. Childe noted beam-sockets in the walls, both faces of which were exposed.

Christison : *P.S.A.S.*, xxxiv (1899-1900), 67-8.

Childe : *S.S.* (1946), 135. No. 27.

Castle Law, Castle-Knowe, Glencorse, Midlothian

The fort is on the summit of Castle-Knowe, a small hill c. 1,000 ft. above sea-level, and on the eastern slope of the Pentland Hills. It commands the pass through which the Glencorse Burn flows. The approach is steep on all sides except the north. The fort, oval in plan, was excavated by Childe in 1932. The knoll is of reddish trachyte which has been ground by ice and is covered with a reddish till. The defences consist of three concentric banks, the innermost enclosing an area of 297 ft. x 120 ft. Before excavation there were superficial indications of entrances on the west, south and north-east. During excavation an earth-house was discovered at the east end inside the outermost bank, but this was shown to have had nothing to do with the original plan of the camp. Childe dug two sections through the ramparts and examined the eastern entrance. He found that the inner defence was very denuded except in the vicinity of the eastern entrance. Here it had been finished with a massive timber gateway. In one place there was an irregular layer of boulders with black soil between them and a rough retaining wall. Outside this bank was a ditch. The middle rampart was the most imposing of the three. Its material might perhaps have been derived from the ditch outside the inner rampart. It was built of boulders and earth and may have had a timber revetment. An outer ditch defended the foot of the slope. The outermost bank was identified only on the northern side of the fort, and was of the same structure as the middle bank. At the eastern entrance there was a causeway 25 ft. wide across the outer ditch. The east gate was a gap in the inner rampart 22 ft. wide. Two outer and two inner main post-holes for the gateposts suggested that there had been a gate of barbican type. Piggott suggests that the inner rampart appears to represent an early phase of the fort to which subsequent multiple bank-and-ditch defences have been added. In 1948 he re-examined the inner rampart and found that it was a wall formed with some stonework and with outer and inner facing-walls of stone, but mainly of clay and timbering, traces of the beams being visible as stains in the clay and by channels in the stonework. Finds comprised a sherd of native pottery, three saddle querns, and two small stone balls, all in the wall make-up.

R.C.H.M., *Counties of Midlothian and Westlothian* (1929), 75. No. 102. Castle Law. Plan at fig. 103.

Childe : *P.S.A.S.*, lxxvii (1932-3), 362-88. Plan at fig. 1. Sections at fig. 2.

Piggott : *A.N.L.*, ii, 1 (1949), 10.

NOTES ON THE SCOTTISH VITRIFIED FORTS

Dun o' May (or Doon of May), May, Parish of Mochrum, Wigtownshire

The vitrified fort of the Dun o' May is situated on the summit of a rocky eminence of Silurian sandstone, about half a mile west of the farmhouse of May in the Parish of Mochrum. Around the edge of the rocky scarp of the hill is a single rampart which appears to be vitrified all round and down to its base. The facing stones of the wall have almost entirely disappeared, but at one point, where the lowest course was still apparent, the wall appears to be 10 ft. wide. The fort is elliptical in form,

with an enclosed area of *c.* 140 ft. x 100 ft. The entrance may have been at the west. There are no indications of outer defences, but on the north the wall encloses a small sheltered terrace. The site is unexcavated.

Christison : *E.F.S.* (1898), 196. No. 49. (Mention.)

R.C.H.M., County of Wigton (1912), 76. No. 187. Photograph at fig. 55.

Childe : *S.S.* (1946), 136. No. 58. (Mention.)

Trusty's Hill, Anwoth, The Stewartry of Kirkcudbright

Trusty's Hill at Anwoth, about a mile south-west of Gatehouse of Fleet, crowns a natural rock-hillock which rises some 150 ft. above the morasses from which it rises precipitously on the east and west. Its defences were first described by Coles and recently by Radford. Two ridges run up towards the rounded summit. These are crossed by small rock-cut ditches with slight inner banks, which lie at the foot of the steeper slopes. The oval top, 95 ft. x 45 ft., is enclosed in a much-destroyed rampart, now a grassy bank with a slight hollow on the inner side, which is said to be vitrified. The entrance is on the south-east, where a track can be followed up the ridge across one end of the outer bank and ditch, and in a hollow between two natural spurs and through a gap in the wall. The hollow, which is natural, has probably been scarped and improved. On the left side as one enters the rock face is exposed and has been used as a surface for the inscription of Pictish symbols. The site is unexcavated. Radford points out that if the outer banks and ditches are accepted as part of the original layout—and the balance of evidence points in this direction—Trusty's Hill resembles the nuclear forts recently described by Stevenson, and that his arguments in favour of a date in the earlier medieval period are reinforced by the occurrence of these Pictish symbols. Nothing in the layout of this site contradicts the proposed ascription, which may be provisionally accepted.

Macculloch : *History of Scotland*, i (1824), 288 and 296. (Mention.)

Hibbert : *Arch. Scot.*, iv, 1 (1831), 182.

Coles : *P.S.A.S.*, xxvii (1892-3), 171-4. Plan at fig. 63.

Christison : *E.F.S.* (1898), 196. No. 50. Plan at fig. 108.

R.C.H.M., The County of the Stewartry of Kirkcudbright (1914), 14. No. 13.

Childe : *S.S.* (1946), 136. No. 59.

Stevenson : *P.S.A.S.*, lxxxiii (1948-9), 186.

Radford : *Ant.*, xxvii (1953), 237-9. Pictish inscriptions at Pl. VI.

Mote o' Mark (or Mark Moat), Rockcliffe, Colvend, The Stewartry of Kirkcudbright

The Mote o' Mark is an oval fort situated on a small rocky eminence overlooking Rough Firth near Colvend, almost due north of Rough Island, and west of Grennan Hill and the hamlet of Rockcliffe. It was noted by Riddell in 1790. Coles later described it as an irregular pentagon, but failed to find any vitrification in the ramparts. Christison accepted these findings. The site was examined and partly excavated by Curle in 1913. He stated that the headland rose very abruptly from the foreshore, within a rocky escarpment *c.* 100 ft. high. On the landward side it attained an elevation of some 75 ft. which, except for the last 20 ft. or so, offered a comparatively easy gradient. The summit of the hill measured 206 ft. x 130 ft.—70 ft., and the flanks on the south or seaward side and on the east and west were much broken with out-cropping rock. All round the hill, and especially on the north side, lay masses of boulders to a depth of many feet, the ruins of a massive wall that had once encircled the summit. An entrance may have existed on the north or most accessible side. A broad low rampart was traced on the north and south sides, some 14 ft.—15 ft. at its widest point. This was sectioned and was found to consist of an external kerb of boulders and a core of structureless earth and stones with a boulder-capping. Inside the rampart some 3 ft. 6 ins. behind its outer face, was found a roughly built wall 1 ft. 6 ins wide and 3 ft. high at most, firmly coagulated with vitrified matter from top to bottom. No vitrification appeared in the rampart either in front of or in the rear of this wall, but the ground behind it was burnt red for about 1 ft. back. The stone used was mainly a grey granite. This structure was consistent in all six sections cut in both the north and south ramparts. Excavations inside the fort produced evidence of occupation and many finds, practically all of which were datable to the 8th or 9th centuries A.D., but two sherds of Roman pottery were found. Curle recognised that the fort had been occupied in at least two periods, but, although some worked flints were found, he thought that the absence of querns, hammer-stones and other relics of an Early Iron Age occupation indicated a very brief use of the site before Early Christian times. He noted that at one period a massive wall of dry-stone masonry had surrounded the whole fort and had not stood on the top of the existing rampart. He found bones in the make-up of this rampart which suggested that it had been thrown up from a site previously occupied. He suggested that when the 8th to 9th century occupiers took possession, they found round the summit a massive stone wall which, during five or six centuries of neglect, or from wilful destruction, was in a state of extreme ruin. This they cleared off, 'built and vitrified the retaining wall' and then threw their own rampart over it. He rejected the idea that the massive stone wall was built after and in front of the rampart, but did not suggest that the vitrified part was of an earlier date which was not cleared away but was simply reused *in situ*.

Riddell : *Arch.*, x (1792), 147-50.

Macculloch : *History of Scotland*, i (1824), 288. (Mention.)

Hibbert : *Arch. Scot.*, iv, 1 (1831), 182.

Coles : *P.S.A.S.*, xxvii (1893), 92-6. Plan at fig. 2.

Christison : *E.F.S.* (1898), 196. No. 51.

R.C.H.M., The County of the Stewartry of Kirkcudbright (1914), 71. No. 120.
 Curle : *P.S.A.S.*, xlviii (1913-4), 125-68. Plan at fig. 4 and photographs of ramparts at figs. 5-9, and the site at figs. 1-3.
 Childe : *P.S.* (1935), 196-7 ; *S.S.* (1946), 136. No. 60.

Castle Gower, near Castle Douglas, The Stewartry of Kirkcudbright

Castle Gower is on the summit of a rocky eminence of whinstone 476 ft. above sea-level, and commands the Glen of Yerrock. According to Coles' description the main rampart is vitrified on its north and east side, and encloses an oval area of 152 ft. x 56 ft. A possible outer bailey may exist at the north-west, and also an entrance.

Riddell : *Arch.*, x (1792), 148.
 Macculloch : *History of Scotland*, i (1824), 289. (Mention.)
 Hibbert : *Arch. Scot.*, iv, 1 (1831), 182.
 Coles : *P.S.A.S.*, xxvi (1891-2), 131-2. Sketch plan at fig. 44.
 Christison : *E.F.S.* (1898), 196. No. 52.
R.C.H.M., The County of the Stewartry of Kirkcudbright (1914), 60. No. 80.
 Childe : *S.S.* (1946), 136. No. 61.

Dowhill, Girvan, Ayrshire

In 1892 Christison described two forts called Dowhill, one $1\frac{1}{2}$ miles south-east of Girvan on a bold rocky height overlooking the Girvan plain and 518 ft. above sea-level; the other, $2\frac{1}{4}$ miles north of Girvan and 128 ft. above sea-level. He did not then find evidence of vitrification at either site, but in 1898 stated that a Captain Mould, R.E., had found vitrification at Dowhill in 1894. It has been assumed here, subject to verification, that the former site is that of the vitrified fort. It is a small circular fort some 50 ft. in diameter, unfortified on the north and south sides which are precipitous and inaccessible, but protected to the east and west by a curved wall which is about 30 ft. wide. A supplementary rampart appears to exist on the east side.

Christison : *P.S.A.S.*, xxvii (1892-3), 392-3 and 399. Plan at fig. 8 ; *E.F.S.* (1898), 196. No. 47.
 Childe : *S.S.* (1946), 136. No. 56.

Kildown, Maybole Parish, Ayrshire

This vitrified fort, on the south-east coast of the Clyde Firth, was described by Childe and Graham as occupying the east end of a basalt ridge over 600 ft. high. The vitrified rampart encloses an irregularly oval area of c. 150 ft. x 100 ft., partly taken up by a monument to Sir C. Fergusson of Kilkerran which construction has partly destroyed the defences. The neck to the west is defended by two rock-cut ditches with ramparts of broken stone on the east side of each. The vitrified rampart seems to lie inside and to the east of the innermost of these banks, and is partially separated therefrom by a series of discontinuous turf-covered hollows. As at Portencross (see below p. 70), the high banks and ditches defending the neck may belong to a later work than the vitrified rampart.

Christison : *E.F.S.* (1898), 196. No. 48.
 Childe and Graham : *P.S.A.S.*, lxxvii (1942-3), 39-40.
 Childe : *S.S.* (1946), 136. No. 55.

Kemp Law, Dundonald, near Kilmarnock, Ayrshire

Kemp Law is $\frac{3}{4}$ of a mile south-west of Dundonald Castle, close to Hallyard's Farm, and at the north-east end of a little wooded ridge which lies in the trough of a ravine which cuts through the Dundonald Hills. It is c. 350 ft. above sea-level. Christison described it as consisting of an apparently solid cairn-like mass of stones 8 ft.-9 ft. high and 50 ft.-60 ft. across. It is somewhat semi-circular in shape with a flat top 20 ft. in width. This is surrounded at an interval of 6 ft.-10 ft. by the remains of a massive wall of dry masonry, semi-circular in correspondence with the shape of the cairn. Both structures are based on a straight wall at the north end of the promontory, and this wall is prolonged for some distance at the edge to the west, and to the east to the extreme point of the ridge. Here it ends in a mass of ruins. There was no clear evidence that there was a southern transverse wall to complete the enclosure. Possible entrances may exist on the east and west. Only a few fragments of vitrified matter were found.

Christison : *P.S.A.S.*, xxvii (1892-3), 390-1. Plan at fig. 7. *E.F.S.* (1898), 196 and 268. No. 46.
 Plan at fig. 104.
 Childe : *S.S.* (1946), 136. No. 57.

Auldhill, Portencross, West Kilbride Parish, Ayrshire

Vitrified ramparts at this site, 3 miles west-north-west of West Kilbride, were described by Childe and Graham. At Portencross the sandstone Auldhill ridge, immediately behind the port and castle, ends in a peak, precipitous on the west, north and east. The west and east edges of the extremity are defended by a rectilinear vitrified rampart enclosing a level subrectangular space, over 100 ft. north and south by 50 ft. wide, the grass-grown ramparts not rising appreciably above the level of the interior. South of this space the ridge is crossed by two ditches with a low ridge between them, apparently of unquarried rock. To the south a higher ridge of rock forms the north boundary of a subrectangular

dun 45 ft. north and south by 27 ft. wide, defended on the west, south and south-east by a wall of coursed rubble masonry. This seems to belong to a secondary structure that may have truncated the earlier vitrified fort.

Keddie : *T. Glasgow A.S.*, i (1868), 250-1.

Christison : *E.F.S.* (1898), 196. No. 45.

Childe and Graham : *P.S.A.S.*, lxxvii (1942-3), 39.

Childe : *S.S.* (1946), 136. No. 54.

Knock Hill (or The Knock), Largs, Ayrshire

The existence of a fort on The Knock was recorded by Christison, but he did not note any vitrification. The site was examined by Childe and Graham who state that the summit of the hill, which rises just over 600 ft. above sea-level, is surrounded by a rampart enclosing a sub-oval area measuring about 165 ft. north to south by 95 ft. east to west where broadest. The rampart is stony and turf-covered, and nowhere stands more than 3 ft. above the interior. Outside the rampart, and from 6 ft.-8 ft. below its crest, a shallow rock-cut ditch appears at the south, north-west and northern ends. In this last sector the ditch is bordered by a low counter-scarp bank. On the north-east the outer defences have been destroyed by a modern access-road, while towards the west the ditch fades out into a terrace. The original entrance may have been on the south-east. Lumps of vitrified material which had fallen from the rampart were obtained from a recent disturbance at the south end of the fort.

Christison : *P.S.A.S.*, xxvii (1893), 398.

Childe and Graham : *P.S.A.S.*, lxxvii (1942-3), 38-9.

Childe : *S.S.* (1946), 136. No. 53.

An Knap, near Corrie, Sannox, NE. Arran, Co. Bute

The hill-fort of An Knap was described by Paton. It lies immediately above the Blue Rock, a sheer cliff which is a well-known landmark from the sea between the mouths of the Sannox Burn and the North Sannox Burn, and *c.* 1½ miles along the coast north of Corrie village on the east side of Arran. The fort has two lines of ramparts, each some 10 ft.-12 ft. wide, composed of turf-covered stones of varying size. The ramparts do not extend along the east side of the fort where the ground falls in steep slopes to the top of the precipice. The space enclosed is *c.* 210 ft. x 150 ft. Both ramparts are of the same character, a sloping 'step-up' of a few feet on the outside, with a higher level on the inside so that the inner faces are only faintly marked. They are not clearly traceable throughout their length. Paton opened a trench across the outer rampart at the south end of the fort. He found, at a depth of about 2 ft., on the top of the undisturbed red soil, a layer of 1 in.-4 ins. of black vegetable ash containing fragments of charred wood and, over that, mixed stones, much fired but not actually fused. This trench was continued through the inner rampart, but was not cut down as far as the red soil. Vitrified stones were found here. The line of the inner rampart was traced west and north from this point for short distances and showed an almost continuous line of vitrified stones forming a sort of backbone to the rampart, sometimes with a light soil covering and sometimes protruding. At the north end of the rampart there was a row of small granite boulders that may have formed part of a built wall. Wood ash was found at one point under the vitrified stones.

Paton : *P.S.A.S.*, lxii (1927-8), 240-1.

Childe : *S.S.* (1946), 135. No. 47.

Dunagoil, SW. Bute, Co. Bute

Hewison described the vitrified fort of Dunagoil as on the west coast of the Island of Bute, near its southern extremity. The promontory rises to some 100 ft. above sea-level and is crowned with a flat plateau. The north side is inaccessible, the west side sheer, but the south-east presents a more gradual slope. The entrance might, he thought, have been from the eastern corner which communicates with the little Bay of Dornach below it. The promontory was defended by a line of wall which had been vitrified and the fort contained habitation sites. The bow-shaped wall was 285 ft. long and averaged 6 ft. in width. The greatest height observed was 4 ft. It was built of local rock and a few gathered stones.

The fort was excavated in 1914 and 1919 by Marshall, and the finds were described by Mann. Marshall described Dunagoil as a peninsula now cut off from the mainland by a turf-dyke. The various hillocks are of igneous rock, but on the north towards Dunagoil Bay the rock is conglomerate. The vitrified fort is placed on a precipitous ridge, the highest point of a ridge of porphyritic trap. The slopes towards the east, or landwards side, are very steep, and there is a rocky slope on the west or seaward side which is very steep. On this side a vitrified wall is built on the edge of the rocky slope and extends for 300 ft. The vitrification is best seen at the extreme north-west corner, where part of the wall is still standing. Elsewhere it is ruined and its tumble lies on the slopes as far down as the sea beach. On the south the wall is interrupted by an 8 ft. gap filled with loose stones which suggested an entrance. In 1914 Marshall cut a trench inside the fort towards one end. He found a transverse wall of squared stones at the east similar to that seen on the west. It seemed to form an entrance which led to a cleft in the face of the hill not unlike the west path which led to Dunagoil Cave. Isolated lumps of vitrified material were built into this eastern work and suggested that it was a later addition. Mann published a worked bone industry with, in particular, a small quadrangular bone plaque with a serrated edge, pierced with small holes, which he suggested may have been of use in the comb-decoration

of pottery. Stone whetstones and rubbers were found and fourteen lignite objects, including armlets decorated with incised spiral lines. Glass beads, daub with wattle-marks, a bronze ferrule and a triangular crucible with adherent bronze were recovered. The pottery consisted of three badly-made fragments, two of which had rim forms with an everted rounded edge.

In 1919 the wall was found to be 12 ft. in width. First a small dry-stone wall was built at the inner and outer edges to the height of a few tiers. The interval was filled with rubble or land-gathered stones. Mann thought that brushwood had then been added and the whole sealed with clay. He favoured the idea of intentional vitrification, which he regarded as a purely Scottish invention. The fort was shown to have at least two entrances, protected apparently by massive timber doors held by large wooden bars. These, when not in use, lay in horizontal slots constructed in the interior of the wall. After an occupation of the fort for 'a considerable period' it was extended to the east. The wall here overlies the kitchen middens of the earlier occupants and was also vitrified. Mann concluded that the site had not been reoccupied after prehistoric times. No Roman material was found. The 1919 finds, mostly from habitation sites inside the wall, included soapstone or steatite which had been cut up to make beads, armlets, rings and dishes. It was imported from Innellan on the mainland. A rich lignite industry was found, some of the armlets showing a grooved spiral decoration. The pottery was hand-made and kiln-fired, but of inferior quality, and it was suggested that wooden vessels had been used. The pots were rather large, bucket-shaped, straight-sided and flat-bottomed. A bronze industry was found and clay moulds for casting ferrules and crucibles occurred. Iron may have been worked on the site, as traces of a furnace and bloomery were found. A rich worked bone industry included a whistle decorated with dot-and-circle pattern, a quadrangular bodkin or netting tool and pierced cheek-pieces. Iron ring-headed pins were found. In addition, there were spindle-whorls of stone and lignite, and saddle querns which had been altered in an unsuccessful attempt to convert them to rotary querns. The site produced also an iron La Tène I brooch. Finally, pieces of haematite were found, and a pair of bronze tweezers.

Childe, writing of this site, stresses the importance of the La Tène I brooch and the iron ring-headed pins for dating purposes. He gave the dimensions as 300 ft. x 75 ft.

Hibbert: *Arch. Scot.*, iv., 1 (1831), 182.

Hewison: *P.S.A.S.*, xxvii (1892-3), 289-92.

Christison: *E.F.S.* (1898), 193. No. 1.

Marshall: *T.B.N.H.S.* (1914-5), 42-9. Plan opposite p. 42.

Mann: *T.B.N.H.S.* (1914-5), 61-86. (For 1914 finds.)

Mann: *T.B.N.H.S.* (1925), 56-60. (For 1919 report and finds.)

Childe: *P.S.* (1935), 196.

Childe: *S.S.* (1946), 135. No. 46.

Cumbræ, Great Cumbræ Island, Co. Bute

The vitrified fort on Great Cumbræ Island lies at its north-eastern end opposite Largs on the mainland. An early description, by Keddie, seems to be the only one available. Cumbræ is formed of Old Red Sandstone with intrusive igneous rocks. The defences of the cliff-fort appear to be a wall following the edges of the cliff on the seaward side and a landward wall, the whole forming the sides of a parallelogram. The site is overgrown and unexcavated. Keddie quotes reports of local 'burrowers' that both sides of the rampart show signs of vitrification and that the interior is full of loose unburnt stones.

Keddie: *T. Glasgow A.S.*, i (1868), 238-9.

Christison: *E.F.S.* (1898), 196. No. 44.

Childe: *S.S.* (1946), 136. No. 52.

Eilean Buidhe, Kyles of Bute, Co. Bute

In September, 1822, James Smith was becalmed in the Kyles of Bute in his cutter and landed on the most northerly of the Burnt Islands, a small group of islands that stretch across the Kyle or narrow channel between Bute and Argyllshire. He noticed a turf-covered ridge which he thought might be a kelp-burning site, but on examining it he found it to be the remains of a vitrified fort. He described the island as of gneiss rock with about half an acre of vegetable soil on its summit. The fort was at the south and most elevated end of the island, and was not more than 10 ft.-15 ft. above high water mark. The walls formed a circle or irregular polygon with a diameter of 65 ft. He traced vitrification round the perimeter and thought that the walls, built entirely of gneiss, might have been 5 ft. wide originally. The situation of this fort disproved any theories which attributed vitrification to volcanoes or to the effect of beacon fires, and the vitrification must have taken place after the walls had been built.

According to Keddie the fort was some 18 ft.-20 ft. above sea-level. It was nearly circular and measured 62 ft. x 63 ft. The average width of the wall was 6 ft. The rocky basis of the island, he said, consisted exclusively of mica-schist. Mixed materials had been used to build the wall including sandstone, quartz and mica-slate. The vitrification was very intense.

Hewison mentioned four towers or breastworks situated at the cardinal points of the compass. He detected an entrance at the east-north-east where the defences were strongest, and commented that the vitrification was most obvious in the east half of the circle where the blast, confined within the Kyles, blew from the south-west and was the prevailing wind.

The account of the four towers attracted the interest of Harrison Maxwell. He redescribed the site, summarised the earlier evidence, and excavated and replanned it. His plan differs from that of

Hewison. He found a break of some 10 ft. in the defences at the north-north-east, and removed the turf and soil there for a stretch of 6 ft. and took his trench 35 ft. towards the centre of the fort. He found only a thin covering of turf over the native rock. He also cleared an 8 ft. strip outside the breach over a length of 20 ft. Here a large number of well-packed stones suggested a causeway, but they may have been derived from the wall tumble. He then stripped the wall westwards for 22 ft. No sign was found of Hewison's tower. The inner side of the wall was exposed over a length of 15 ft. on the north side and showed a foundation course of masonry over a thin layer of wood charcoal. No occupation debris was found. Investigation of other parts of the wall confirmed that its structure consisted of a core of vitrified stones, 4 ft.-5 ft. wide, flanked by inner and outer walls of dry-stone work 3 ft.-5 ft. wide. The vitrified part of the wall was not a solid mass, and at many places there were large spaces between the stones. A large area was stripped on the west side and this showed a rough stone paving, apparently constructed to fill up a hollow space in the rock floor of the fort. It contained a few pieces of vitrified rock which suggested that it had been laid after the vitrification had occurred. The site of Hewison's tower was examined thoroughly. A hollow space filled with loose soil was found, but it contained no relics. The site of a possible east-north-east entrance was also examined. The wall here was 3 ft. 2 ins. high and there was a breach in it 5 ft. wide. On excavation vitrified rock was found at a depth of 4 ft. which was continuous with the vitrified core on either side. A break at the north-north-east part of the wall was examined as an alternative entrance site. No continuous vitrification was found, and there may very well have been a narrow gateway some 3 ft. 3 ins. wide at this point.

Childe noted that the face of the wall had been exposed on both sides and gives the diameter of the fort as 55 ft.

Smith : *T.R.S.E.*, x (1826), 79-81. Sketch plan at Pl. IV.

Hibbert : *Arch. Scot.*, iv, 1 (1831), 182.

Marion : *Rev. Soc. Sav. des Dépts.*, iv (4e, ser.) (1866), 313. (Mention.)

Keddie : *T. Glasgow A.S.*, i (1868), 251.

Honeyman : *T. Glasgow A.S.*, ii (1883), 34.

Hewison : *P.S.A.S.*, xxvii (1892-3), 292-3. Plan at fig. 7.

Christison : *E.F.S.* (1898), 193. No. 2.

Maxwell : *T. Glasgow A.S.*, x (1941), 60-70. Hewison's plan at fig. 1. Revised plan at fig. 2.

Childe : *S.S.* (1946), 135. No. 45.

Carradale, Kintyre, Argyllshire

Carradale Fort is situated to the north-east of Carradale Bay, on the east coast of Kintyre, at the extreme point of a small promontory running from north to south which looks across Kilbrannan Sound towards Arran. Christison describes the end of the promontory as broad but, on the east side next the Bay, there is a narrow southwards projection from it on which stands the fort. From the narrow gravelly isthmus the ground rises pretty steeply to the flattish summit of the islet some 70 ft. above sea-level. Except towards the isthmus the sides of the islet are steep and rocky and are accessible from the sea only with difficulty. The total length of the top is c. 900 ft., the breadth from 100 ft.-200 ft. The fort occupies only the northern part towards the isthmus, but is nearly cut off from the level ground by the heads of two little clefts or ravines. The fort is a nearly regular oblong oval, measuring 190 ft. x 75 ft., and in addition to a main rampart a straight wall runs off at a right angle from the south for about 50 ft. to strengthen the defence of the western ravine. A curved rampart also runs concentrically with the main one and only a few feet from it, from the head of the western ravine to rejoin the main rampart about one third of the way up the west side. The main rampart nowhere comes up to the edge of the precipice. The entrance is at the south end of the east side. All visible parts of the main rampart, now overgrown, were vitrified. On the east side the vitrification could be seen to be continuous. The vitrified wall appeared to be c. 5 ft. wide, but was 8 ft. wide near the entrance. It rested on a foundation of small water-worn stones unaffected by fire. The straight wall at the south end was some 12 ft. thick and was not vitrified. The site is unexcavated.

Childe observed that the vitrified wall had faced masonry externally.

Macculloch : *History of Scotland*, i (1824), 288. (Mention.)

Hibbert : *Arch. Scot.*, iv, 1 (1831), 182.

Russell : *J.B.A.A.*, I (1894), 214.

Christison : *E.F.S.* (1898), 178-83 and 193. No. 4. Plan at fig. 67.

Childe : *S.S.* (1946), 135. No. 42.

Dun Skeig, West Loch Tarbet, Kintyre, Argyllshire

Dun Skeig, on the west coast of Kintyre, overlooking the entrance to West Loch Tarbet, was described by Honeyman. On the hill-top are the remains of a vitrified fort and of a ring-fort. The vitrified fort is a rectilinear enclosure 60 ft. x 40 ft. in area, surrounded by a wall formed of mica-slate, 6 ft.-8 ft. wide and vitrified throughout. Childe observed that the face of the rampart was exposed on one side and that the adjacent ring-fort included in its build vitrified material from the earlier fort.

Hibbert : *Arch. Scot.*, iv, 1 (1831), 182.

Honeyman : *T. Glasgow A.S.*, ii (1883), 30-2. (Paper read in 1868.)

Christison : *E.F.S.* (1898), 193. No. 6.

Childe : *S.S.* (1946), 135. No. 41.

Trudernish Point, Islay Island, Argyllshire

Childe reported the existence of a vitrified fort on Trudernish Point, near Claggain Bay, Islay Island. It occupies a rocky promontory about 30 ft. above the water's edge. The promontory is cut off by a strong wall. This is now a mass of rubble, in which some of the stones are partially fused, and some form typical vitrified agglomerations. Subsidiary walls of different construction, in castle style, are not strictly parallel to the vitrified rampart and may have been built on to it.
Childe : *P.S.A.S.*, lxi (1934-5), 82 ; *S.S.* (1946), 135. No. 43.

Dun Troon, Loch Crinan, Argyllshire

The vitrified fort of Dun Troon is situated at the head of the eastern of three bays on the north side of Loch Crinan, about 100 yards from the sea, on the flat summit of a narrow ridge that rises gradually from the margin of the bay to a height of *c.* 100 ft. It was excavated by Christison and Ross in 1904. The defences consist of a main work enclosing the summit, a wall surrounding an outer natural terrace which lies at a somewhat lower level, an extra wall on the north side and two extra walls on the south side. The main work consists of a single wall enclosing a nearly level oval area of 140 ft. x 90 ft. This wall had a rubble core and inner and outer walls of faced stones. The core and the inner face were partially vitrified but not the outer face. In general the vitrified material stood upon the natural rock, but in places it was superimposed on from 2 ft.-3 ft. of stone unaffected by heat. It was 8 ft. wide at its base, and it was calculated that about one sixth to one seventh of the whole had been vitrified. The wall surrounding the terrace which extends round the north, east and south sides of the main work (the west being defended by the precipice), and which increased the area of the camp to some 360 ft x 120 ft.-190 ft., was 6 ft. wide and had an outer stone casing. A few vitrified masses of material were found which it was believed were derived from it. The supplementary walls at the north and south showed no traces of vitrification. No entrance was traced with certainty, but a possible one may have existed at a point where the main wall comes nearest the cliff. The interior of the camp was excavated everywhere down to the rock, but no buildings, wells or cisterns were found. The finds included flint implements, a piece of coarse jet or lignite, six oval water-worn pebbles, whetstones and thirty-six saddle querns. Christison drew attention to the fact at Dun Troon there was a predominance of saddle querns compared with the neighbouring non-vitrified camps of Ardufiar and Druim An Druin, where they were all of rotary type, or from Dunadd, where only three out of fifty-three were of saddle type.

Christison : *E.F.S.* (1898), 193. No. 7.

Christison and Ross : *P.S.A.S.*, xxxix (1904-05), 273-85. Plan at fig. 9.

Childe : *S.S.* (1946), 135. No. 40.

Caisteal Aoidhe, Ardmarnock, Loch Fyne, Cowal, Argyllshire

The vitrified fort of Caisteal Aoidhe is on a small peninsula off Rhufressan (or Rudha Preasach), near Ardmarnock on Loch Fyne, and nearly opposite Tarbet. The site was examined by Honeyman. The peninsula is an island at high water. The fort is a circular enclosure 35 ft. x 40 ft., with a nearly semi-circular outwork at a lower level on the landward side of almost the same size. The total length within the walls was 72 ft. The walls of both the enclosures were vitrified, and there was no obvious entrance from the lower one into the upper circular one. The walls were 5 ft.-7 ft. wide and stood *c.* 5 ft. high, or even higher at one point near the mainland. Sections of the walls showed a wedge-shaped mass of vitrified material *c.* 6 ft. wide at the top and 4 ft. deep, resting on each side against dry-built rubble walls and founded on loose boulders.

Honeyman : *T. Glasgow A. S.*, i (n.s.) (1890), 340-2. Plan opposite p. 340. (Paper read 1886).

Christison : *E.F.S.* (1898), 171 and 193. No. 3.

Childe : *S.S.* (1946), 135. No. 44.

Rahoy, Loch Teacuis, Argyllshire

The vitrified site at Rahoy is on the top of a small conical hill that rises some 200 ft. above the level of Loch Teacuis. It stands opposite the narrowest point of the Loch and commands a view of its entrance from Loch Sunart on the north-west and the pass to Loch Aline on the south-east. The hill itself is formed by bands of the local psammitic schist lying on edge ; the conical shape is due to the wearing away of dolerite dykes which have been intruded into the schist at various angles or by lines of weakness caused by faults. The site was excavated in 1936-7 by Childe and Thorneycroft. The hill-top is surrounded with a timber-laced stone rampart nowhere less than 10 ft. wide, with faced masonry on the inside, which encloses a crater-like depression measuring *c.* 50 ft. from crest to crest, or *c.* 40 ft. in diameter internally. To secure a level floor projecting bosses of rock had to be quarried away, while hollows were filled loosely with lumps of rock and then covered over with timbers supporting a stamped earth floor. The central area was occupied by a pavement, some 14 ft. across, on the centre of which stood a rectangular hearth measuring 4½ ft. x 3½ ft. Beneath the floor, 10 ft. east of the hearth, was an irregular chamber 5 ft. x 3 ft.-5 ft., roofed 2 ft. above its rock bottom with stout paving stones. The structure had suffered from a severe conflagration in which the walls had been vitrified. Childe believed that the whole fortified area had been roofed over with turves carried on rafters which sprang from the rampart and which were supported at their inner ends by posts set round the hearth. Although the interior of the structure, described as a farmstead, was completely excavated, finds were not numerous. No pottery or bone objects were found, but wooden vessels may have been used and only burnt bones

survived in the soil conditions there. Otherwise the finds were saddle querns (broken), a looped and socketed iron axe-head,¹ and part of the bow and spring of a late version of a La Tene I bronze fibula. Its closest parallel was that from Castle Law, Abernethy, but outside Scotland better analogies were to be found in Switzerland rather than Britain.

Childe and Thorneycroft : *P.S.A.S.*, lxxii (1937-8), 23-43. Plan and sections at Pls. I and II.
Childe : *S.S.* (1946), 88-9 and 135. No. 34.

Caisteal na Sithe, Kilfinan Parish, Argyllshire

Childe and Graham described this site as a D-shaped enclosure, 260 ft. long, on the summit of a rocky ridge overhanging the tiny burn that flows into Allt Osda below the old Chapel of Kilbride. It is defended by a stone rampart, faced externally with flat slabs so loosely coursed as to suggest a combination of stone and timber work.

Childe and Graham : *P.S.A.S.*, lxxvii (1942-3), 42-3.

Dun Beg, Dunstaffnage, Loch Etive, Argyllshire

Christison described this fort as a low green mound, enclosing a small somewhat pentagonal space, situated on nearly level ground at the head of Dunstaffnage Bay and about 80 yards from high-water mark and elevated only a few yards above it. He quoted a statement by Angus Smith that according to local reports the fort was vitrified.

Christison : *P.S.A.S.*, xxiii (1888-9), 383-4. Small plan at fig. 10 ; *E.F.S.* (1898), 193. No. 9.
Childe : *S.S.* (1946), 135. No. 39.

Dun Mac Uisneachan, Loch Etive, Connel, Argyllshire

The vitrified fort of Dun Mac Uisneachan is situated on the shore of the Bay of Ardnamucknish at Bendaloch Station, rather more than two miles north of the mouth of Loch Etive. It is on the top of an oblong hill with steep or precipitous sides. The area enclosed by the defences is *c.* 750 ft. x 150 ft. It was described by Macculloch, but when Keddie re-examined it the ground-plan as described by Macculloch could not be traced. Keddie stated that the hill is not more than 150 ft. high and consists of mingled strata of limestone and schistose rock with the limestone predominating. The walls of the fort occupied the upper part of the hill and formed two parallelograms with a space between them. He found them 12 ft. wide and vitrified on the inner and outer faces and *c.* 1 ft. into the core. The local limestone and slate rocks had not been used to build the walls, but gneiss, granite, conglomerate and other rocks had been brought from neighbouring ridges, the conglomerate being predominant. The main work on this site is that of Dr. Angus Smith. He discourses on its identification as the Berigonium of Ptolemy and, on its name, with the wealth of associated legend of the Sons of Uisneach and Deidre of the Sorrows. In 1873-4 he excavated in the rampart and in areas inside the fort. The vitrified wall, 5 ft.-6 ft. high, surrounded both divisions of the fort. Its outer face was vitrified, the rubble core was without mortar, and at the west end an inner dry-built 9 ft. wide facing-wall was found. At one point wood impressions were observed. A possible entrance may exist on the south side. Rectangular buildings existed in the 'central living space'. To their east the walls had been rebuilt, in part at least, and vitrified material had been reused in their structure. The finds from the site included part of a tanged iron sword (from the wall itself), an iron penannular brooch, a quern, and a red and yellow enamelled bronze disc but no pottery.

Childe observed that there was superficial evidence of secondary constructions to account for the Roman finds from the site. The small oval enclosure, measuring only 135 ft. x 90 ft., which Smith called the 'central living space', seemed to be an intrusion in a larger and earlier work in which the vitrified material had been reused. The face of the rampart is now exposed on one side. Graham also considers this fort to be a work of more than one period.

Pennant : *Tour of Scotland*, 1769, ii (1790), 412.

Macculloch : *History of the Highlands*, i (1824), 288 and 283-6.

Hibbert : *Arch. Scot.*, iv, 1 (1831), 182.

Keddie : *T. Glasgow A. S.*, i (1868), 245-8.

Smith : *P.S.A.S.*, ix (1870-2), 83-7 and 396-418 ; *ibid.*, x (1872-4), 70-90 ; *ibid.*, xi (1874-6), 298-305 ;

ibid., xii (1876-8), 13-19. Plan at Pl. I ; *Loch Etive and the Sons of Uisneach* (1879).

Anderson : *S.P.T.* (1883), 277-9.

Christison : *P.S.A.S.*, xxiii (1888-9), 382 ; *E.F.S.* (1898), 193. No. 8.

Russell : *J.B.A.A.*, I (1894), 216-9.

Carmichael : *Deirdre* (1914, 2nd edition).

Déchelette : *Manuel*, iv (1927 ed.), 199.

Childe : *S.S.* (1946), 13, 15 and 135. No. 38.

Eilean Port na Muirach, off Rhu Arisaig, Arisaig, Argyllshire

Reported as a vitrified fort by M'Hardy and Childe, no description or plan of this fort has been traced.

M'Hardy : *P.S.A.S.*, xl (1905-6), 148 and fig. 3.

Childe : *S.S.* (1946), 135. No. 33.

¹ For a discussion of this type see Rainbow, *Arch. Journ.*, lxxxv (1928), 85 ff. This axe is the largest known example and, like six of the others, is asymmetrical.

Eilean na Ghoil, Arisaig, Argyllshire

M'Hardy reported finding vitrified remains on the island of Eilean na Ghoil, off the headland of Arisaig. There is on the island a fine example of a raised beach so common on the west of Scotland. On its top are the remains of a fort with sporadic vitrification.

M'Hardy : *P.S.A.S.*, xl (1905-6), 148 and fig. 3.

Lochan-an-Gour, Ardgour, Argyllshire

The fort of Lochan-an-Gour is on the rocky knoll of Torr-an-Duin in Glen Gour, on the western side of Loch Linnhe, near Ardgour, and opposite Onich, in Lochaber. The quartzite knoll rises over 100 ft. above the marshy or watery levels of the glen. Traces of roughly built walls appear at intervals all round its long oval summit and enclose an area of 250 ft. x 30 ft. The fort was examined and described by Reid. He showed that the walls were partially vitrified. They were built of imported water-worn stones and not the native quartzite. The eastern end of the fort, the most accessible, appeared to have had supplementary strengthening defences. A steep pathway leads to the top of the rock on this side, and about one-third of the way up there were traces of a gateway. On one side there was a cut recess for a gatepost and a hole chiselled in the stone for the dook to which the head of the post had been fastened. Childe observed that one side of the vitrified wall showed faced masonry.

Reid : *P.S.A.S.*, xliii (1908-9), 34-42. Plan at fig. 3.

Childe : *S.S.* (1946), 135. No. 35.

The Torr, River Shiel, Ross and Cromarty

This fort, near the mouth of the River Shiel where it flows into Loch Duich, is included in Christison's and Childe's lists of vitrified forts. No plan or description has been traced.

Christison : *E.F.S.* (1898), 193. No. 12.

Childe : *S.S.* (1948), 135. No. 30.

Eilean Donan, Dornie, Kintail, Ross and Cromarty

A vitrified fort on Eilean Donan, at the mouth of Loch Duich, is mentioned by Wallace and Childe. Wallace states that the island on which Castle Donan, Dornie, stands had been fortified by a vitrified wall on the landward side. Graham says that the island is occupied by the medieval castle which has been modernised and added to since Wallace described it. The chance of prehistoric remains having survived is therefore small, but the island, on a tidal site, is a suitable one as it commands the entry to both Loch Duich and Loch Long.

Wallace : *P.S.A.S.*, xxxi (1896-7), 87 ; *T.I.S.S.*, viii (1912-8), 109. (Mention.)

Childe : *S.S.* (1946), 135. No. 29.

Graham : from personal information.

The Bard's Castle, Bundaloch, Loch Long, Ross and Cromarty

Childe includes this site to the north of Bundaloch, on the north-east shore of Loch Long between the Glennan Burn and Loch Long, in his list of vitrified forts. Wallace stated that it stood on a rocky knoll, had an area of 33 ft. x 28 ft., and was of oval plan. No plan has been traced. Graham visited the site in 1949 and writes :—

'I formed the opinion that the fort may have been D-shaped, measuring *c.* 100 ft. x 40 ft., but too little is left for certainty. Wallace's dimensions seem impossibly small. The site is on a knoll on the edge of a slope falling abruptly to Loch Long, the ground being flattish to landward and then rising to a hillside. It is about 500 yards north of the north end of Bundaloch village'.

Wallace : *P.S.A.S.*, xxxi (1896-7), 87 ; *T.I.S.S.*, viii (1912-8), 107. (Mention.)

Childe : *S.S.* (1946), 135. No. 28.

Graham : from personal information.

Fort at Ardelve, Loch Long, Ross and Cromarty

In his note on the vitrified forts of Loch Alsh and Kintail Wallace states that one can be seen from the Bard's Castle, in the neighbourhood of Ardelve. No other references to this site have been traced.¹

Wallace : *P.S.A.S.*, xxxi (1896-7), 87.

Dun Lagaidh, South Shore of Loch Broom, Ross and Cromarty

Calder and Steer reported the existence of this site in 1947. On the southern shore of Loch Broom, at the narrows above Ullapool, are the ruins of a broch set within the enclosure of an earlier and more dilapidated vitrified fort. The fort covers an area of 310 ft. x 130 ft. on its axis, and had consisted of a massive stone-built rampart, 12 ft.-13 ft. wide, strengthened across the weaker end by an additional outer rampart and intervening ditch. Vitrified material was found in the oblong enclosure by Mrs. Gibb.

C.B.A. : *Arch. Bull* for 1947 (1950), 60.

Graham : *P.S.A.S.*, lxxxix (1946-7), 182.

¹ I am indebted to Mr. Angus Graham for calling my attention to this site and for the reference.

An Dun, Gairloch, Ross and Cromarty

About midway along a short rocky promontory which projects from the shore of Gairloch Bay, 1,200 yards south of the Gairloch Hotel, is a fort which occupies the whole habitable part of the ridge. It is defended to seaward by a natural fissure; on the landward side a ditch has been contrived with the help of another fissure. The wall is represented now only by a grass-covered rickle of stones. In plan the fort is irregular, conforming with the lie of the site. It measures 66 ft. x 62 ft. from crest to crest. There is a large lump of vitrified material by the doorway, but more is to be seen at one point on the enceinte.

Graham : *P.S.A.S.*, lxxxi (1946-7), 182; *ibid.*, lxxxiii (1947-8), 57; and from personal information.

Eilean nan Gobhar, Arisaig, Inverness-shire

In the West Highlands, between the headland north of Loch Moidart and Arisaig, there is a deep inlet of the sea. Near its termination it is divided by the promontory of Ardnish into the two inlets of Loch na Nuagh and Loch Ailort. At the entrance to Loch Ailort are two islands, one of which is Eilean nan Gobhar (or Eilean na Gour). Hamilton described two vitrified forts on this island which is bounded on all sides by precipitous gneiss rocks. The flat surface on the top is 120 ft. above sea-level, and the remains of the larger of the two forts, oblong in form, with a continuous rampart of vitrified wall 5 ft. wide, is on this surface. The area enclosed is 420 ft. in circumference and 175 ft. x 70 ft. in extent. At the eastern end there is a mass of wall *in situ* vitrified on both sides. The central depression is filled with vitrified boulders probably derived from the wall. The smaller fort is separated from the larger by a deep depression, then a wet morass, and is nearly parallel to it. It also stands on a flat surface, is 100 ft. in circumference, 75 ft. x 25 ft. in area, and is entirely surrounded by a wall.

Hamilton : *Arch. J.*, xxxvii (1880), 239-40. Plan at Pl. II.

Christison : *E.F.S.* (1898), 193. No. 16.

M'Hardy : *P.S.A.S.*, xl (1905-6), 148 and fig. 3.

Childe : *S.S.* (1946), 135. No. 31.

Ard Ghaunsgoik, Arisaig, Inverness-shire

At the point where Loch na Nuagh (cf. Eilean nan Gobhar) begins to narrow there is a small promontory connected with the mainland by a narrow strip of sand and grass, which evidently was once submerged at high tide. On the flat summit of this promontory are the ruins of the vitrified fort of Ard Ghaunsgoik (or Arka Unskel). Hamilton stated that the rocks of the promontory are of gneiss and rise on three sides almost perpendicularly for about 110 ft. above sea-level. The top is divided by a slight depression. On the larger area, which has precipitous sides to the sea, lies the larger part of the fort. It is somewhat oval in form, has a circumference of c. 200 ft., and has vitrified walls which could be traced all round the cliffs except for a gap on the eastern side. The interior was 50 ft. across. The wall stood from 5 ft.-7 ft. high and varied from 5 ft.-6 ft. in width. The gap at the east may have formed an entrance to both the larger and smaller forts. The smaller area is c. 100 ft. in circumference, and is 21 ft. x 24 ft. on its axis. Although the line of the wall could be traced round this smaller area, vitrification was only observed at a point opposite the eastern entrance. Excavation below the vitrified wall showed that it was based on a mass of large and small water-worn boulders, evidently brought up from the shore. This foundation was 3 ft. high and 5 ft. wide and was laid on the gneiss rock. The core of the wall for 1 ft.-1½ ft. was not burnt, except that some of the flat feldspatic stones of which it was composed were slightly agglutinated as they lay in courses.

Hamilton : *Arch. J.*, xxxvii (1880), 238-9. Plan at Pl. I.

Christison : *E.F.S.* (1898), 193. No. 15.

M'Hardy : *P.S.A.S.*, xl (1905-6), 148 and fig. 3.

Childe : *S.S.* (1946), 135. No. 32.

Dun Deardail, Glen Nevis, Inverness-shire

Dun Deardail, or Dundbhairghall, the Gleneves of Williams' list, was described by Christison. It occupies a magnificent position on the top of the col between Glen Nevis and the valley of the Kiachnish, three miles from Fort William, and surmounts the highest and most southerly of six little eminences. The fort is 1,127 ft. above sea-level and 1,000 ft. above the River Nevis. Somewhat pear-shaped in form, it has a single vallum enclosing an area of 180 ft. x 110 ft. The vitrified wall, 5 ft.-6 ft. wide, is not regularly curved, but consists of a number of fairly straight facets of varying length. It stands 6 ft.-7 ft. above the interior at each end but only 1 ft.-2 ft. on the flanks. A ruined entrance was found at the north-west corner, and the foundations of a wall 23 ft. long appear to have formed its southern side. The interior of the fort appeared to be divided into a smaller eastern and a larger western portion by a double or even treble wall running obliquely across it. Childe observed that faced masonry exists on both sides of the rampart.

Williams : *R.H.N.S.* (1777), 38.

Macculloch : *History of Scotland*, i (1824), 288. (Mentioned as Dunjardel.)

Hibbert : *Arch. Scot.*, iv, 1 (1831), 182.

Keddie : *T. Glasgow A. S.*, i (1868), 249.

Christison : *P.S.A.S.*, xxiii (1888-9), 371-4. Plan at fig. 1; *E.F.S.* (1898), 176-7 and 193. No. 14.

Plan at fig. 65. (Dun Bhairdghall.)

Childe : *S.S.* (1946), 135. No. 37.

Onich, Loch Leven, Inverness-shire

The small site at Loch Onich is 700 yards north of Onich Bay on the north side, and near the mouth of Loch Leven, and two miles north-west of Ballachulish. Christison described it as a strongly placed site, 555 ft. above sea-level, and of an oblong form with rounded corners measuring 41 ft. x 30 ft. internally. The defences on the flanks, which are naturally strong, seemed to have been formed by banking up the sides with earth and stones to a height of 8 ft.-10 ft., thus bringing them to the level of the interior, and then by building on the top a slight wall. The wall is vitrified. Childe, when discussing the rectilinear form of these forts, comments that the site at Onich ' must be a single rectangular house grown into a castle '.

Christison : *P.S.A.S.*, xxiii (1888-9), 374-5. Plan at fig. 2.

Childe : *S.S.* (1946), 89 and 135. No. 36.

Torr Duin, Fort Augustus, Great Glen, Inverness-shire

Torr Duin (or Tor Dun, Duntor or Tor-a-Ghoun) was first described by Pennant in 1769. He noticed that the wall was vitrified, and wrote :—

' Whether this was the antient site of some forge, or whether the stones which form this fortress had been collected from the strata of some Vulcano (for the vestiges of such are said to be found in the Highlands) I submit to further enquiry '.

Williams and Macculloch included the site in their lists of vitrified forts. It was later described by Wallace as on the spur of a hill, about three miles from Fort Augustus and above the River Oich. The hill is steep on all sides except the south-west. The fort is of an irregular oval form and is defended by an outer and an inner wall except on the south-east and north-east sides. A ditch may exist outside the inner wall. The inner wall is vitrified and traces of vitrification have been observed in the outer wall which is mainly of dry-stone build. Childe gives the area of the fort as 70 ft. x 30 ft. and notes that the face of the wall is exposed on one side.

Pennant : *Tour in Scotland*, 1769, i (1790), 222.

Williams : *R.H.N.S.* (1777), 38. (Mention.)

Macculloch : *History of Scotland*, i (1824), 288. (Mention.)

Wallace : *T.I.S.S.*, viii (1912-8), 106-7. Sketch plan at p. 107.

Hibbert : *Arch. Scot.*, iv, 1 (1831), 182.

Christison : *E.F.S.* (1898), 194. No. 17.

M'Hardy : *P.S.A.S.*, xl (1905-6), 150 and fig. 3.

Childe : *S.S.* (1946), 134. No. 9.

Castle Urquhart, Loch Ness, Inverness-shire

M'Hardy and Childe state that Castle Urquhart, in the Great Glen, occupies the site of a vitrified fort.

M'Hardy : *P.S.A.S.*, xl (1905-6), 149 and fig. 3.

Childe : *S.S.* (1946), 14 and 134. No. 8.

Dun Dearduil, Inverfarigaig, Great Glen, Inverness-shire

Dun Dearduil was described by Wallace as a fort on a conical hill, on the north side of the Pass of Inverfarigaig, some two miles north-east of the Falls of Foyers. It is rectangular in form with rounded corners, and measures 105 ft. x 81 ft. within the walls. It occupies the summit of the granite hill, is only accessible from the south, and appears to have a main rampart and possible outworks. Vitrification has been observed all round the walls.

Macculloch : *History of Scotland*, i (1824), 288. (Mention. Dun Jardel.)

Hibbert : *Arch. Scot.*, iv, I (1831), 194.

Christison : *E.F.S.* (1898), 194. (Dun Chairdeil.)

Wallace : *T.I.S.S.*, vi (1899-1906), 188-91. Sketch plan at p. 190; *ibid.*, viii (1912-8), 97-9. Repeats sketch plan at p. 99.

M'Hardy : *P.S.A.S.*, xl (1905-6), 150 and fig. 3. (Dun Jardel.)

Childe : *S.S.* (1946), 134. No. 7.

Dun Creich, near Bonarbridge, Dornoch Firth, Sutherland

The Dun of Creich is on the summit of a wooded hill on the north side of Dornoch Firth and about 3½ miles south-east of Bonarbridge. On the seaward side the hill is precipitous; its north and south sides are also steep. It is 370 ft. high, but is easily ascended from the westward along a narrow ridge which culminates in a rocky summit. Here a single wall encloses a circular area 260 ft. x 220 ft. The highest part, towards the north, is again defended by an inner rampart along the top of a rocky scarp, enclosing an area of 167 ft. x 96 ft. In the centre of the inner area are the ruins of a castle, said to be that built by Paul Mactire in the 13th century. The main outer rampart is highest towards the south where it stands some 4 ft. high and is 12 ft. wide at the base. The principal approach is up a steep slope from the north-east to an entrance at the seaward end of the fort. A lesser entrance may have existed at the south. At the west, or landward end, of the inner rampart, there is a mass of vitrified

wall, and at the high point on the south of the outer rampart a vitrified stone projects. The natural rock is a reddish micaceous schist.

Macculloch : *History of Scotland*, i (1824), 288.

Hibbert : *Arch. Scot.*, iv., 1 (1831), 182.

Christison : *E.F.S.* (1898), 195. No. 30.

R.C.H.M. : *County of Sutherland* (1911), 20. No. 54.

Childe : *S.S.* (1946), 134. No. 1.

Ord of Kessock, Beaully Firth, Ross and Cromarty

Ord Hill lies a little to the north-east of Kessock Ferry and is a continuation of the Old Red Sandstone and conglomerate ridge extending along the west side of the River Ness on which Nunearn and Craig Phaidrick are conspicuous points. On the top is a vitrified fort of oval form measuring c. 800 ft. x 150 ft. It commands a good view of the Moray Firth. The vitrified wall surrounds the hill, but the north and south sides being steep and rocky are only slightly defended. On the south side the cliffs descend to the Firth. The fort is only easily accessible from the west, and the west and south-west sides are defended with double vitrified walls enclosing a platform. The area inside is rough and rocky. Hibbert, Wallace and Marion have described this fort.

Hibbert : *Arch. Scot.*, iv, 1 (1831), 182 and 191-5.

Marion : *Rev. Soc. Sav. des Dépts.*, iv (4e sér.) (1866), 315-6 ; *M.S.A.F.*, xxxiii (iii, 4e. sér.) (1872), 14-7.

Christison : *E.F.S.* (1898), 196. No. 29.

Wallace : *T.I.S.S.*, viii (1912-8), 95. Sketch plan at p. 94.

Childe : *S.S.* (1946), 134. No. 5.

Knock Farril, Strathpeffer, Ross and Cromarty

The vitrified fort of Knock Farril, first described by Williams, is on the summit of a conical 900 ft. high hill on the south side of the valley of Strathpeffer, two miles west of Dingwall. The area enclosed in the main wall is c. 425 ft. x 125 ft.-80 ft. on its axis. Williams, about 1777, dug trenches down to the rock across the whole width of the fort slightly to the east of its centre, perhaps across the outworks at each end, and he tried also to cut through the solid vitrified wall. He thought that on the north side this wall had fallen outwards and that its ruins showed that it had stood 12 ft. high. The vitrification seemed to extend to parts of the walls of habitations which he found against the wall. The sub-soil was of 'plum pudding' rock.

Anderson redescribed the fort and observed its oval form. He thought that the entrance was on the isthmus, or south-west, side, that of easiest access, and that it was defended by a series of eight to ten cross walls which had gates through them.

A later description and better plan is that of Wallace. He described the fort as occupying a narrow detached ridge lying north-east and south-west, which formed part of the main Old Red Sandstone Conglomerate ridge between the Peffery and the Loch-Ousie valleys. The north-west and south-east sides of the ridge are very steep but the ascent at the ends of the ellipse is easier, especially on the south-west. The main defence is a long oval with rounded ends which narrows at the east end. There are outworks at both ends. That on the west consisted of a semi-circular wall 96 ft. long and 51 ft. in front of a second semi-circular wall. From this two parallel lines of vitrified wall (one longer than the other) run at right angles to join the main defence. At the east end another ridge of vitrified wall runs out for 174 ft. and averages c. 20 ft. in width. He found it difficult to explain these outworks which lacked parallels. There was no record of any finds from the site. He attributed the fort to a Celtic origin.

Williams : *R.H.N.S.* (1777), 5-30.

Anderson : *Arch.*, v. (1779), 256-7. Sketch plan at Pl. XXIII.

Macculloch : *History of Scotland*, i (1824), 288.

Hibbert : *Arch. Scot.*, iv, 1 (1831), 182.

Anderson : *S.P.T.* (1883), 276-7.

Russell : *J.B.A.A.* 1 (1894), 211-2. (Mention.)

Christison : *E.F.S.* (1898), 170-1 and 194. No. 28.

Wallace : *T.I.S.S.*, vi (1899-1906), 288-91. Plan opposite p. 290 ; *ibid.*, viii (1912-8), 100-2. Revised plan at p. 101.

Childe : *S.S.* (1946), 134. No. 2.

Dun Fionn, Strathglass, Inverness-shire

At Eilean Aigas, near Strathglass, there is a vitrified fort overlooking the Beaully River. Wallace stated that about 1842-52 Lord Lovat cut sections through it, but does not say what was found. He described it as an oval fort with a single wall which, up to the early 1900's, stood 1 ft.-5 ft. high, but no area was given. Hibbert quotes Mr. Fraser of Lovat as stating that the natural surface of the hill was of diluvian gravel, that the stones in the rampart were chiefly of sandstone, and that vitrified masses and charred wood were seen.

Macculloch : *History of Scotland*, i (1824), 288.

Hibbert : *Arch. Scot.*, iv, 1 (1831), 187-8.

Christison : *E.F.S.* (1898), 194. No. 20.

Wallace : *T.I.S.S.*, viii (1912-8), 103-5. Sketch plan at p. 104.

Childe : *S.S.* (1946), 134. No. 4.

Dun Mor, Lovat Bridge, Inverness-shire

Dun Mor is in the district of the Cabrich, near Kirkhill and $7\frac{1}{2}$ miles from Inverness. The fort stands on the most northerly of a series of rocky ridges and commands an extensive view. Wallace described it as an isolated gneiss hill with perpendicular sides on the north and south, nearly so on the west, but with a gradual slope on the east. A succession of terraces or platforms had all been carefully defended by walls, three of which are vitrified. The fortified part measures 205 ft. x 90 ft. (average). Supplementary walls exist on the west side in the vicinity of a natural pathway which leads to the top. Childe noted that the face of the rampart was exposed on one side.

Christison : *E.F.S.* (1898), 194. No. 22.

Wallace : *T.I.S.S.*, viii (1912-8), 95-7. Sketch Plan at p. 96.

Childe : *S.S.* (1946), 134. No. 3.

Craig Phaidrick, near Inverness, Inverness-shire

Craig Phaidrick was one of the first sites to be recognised as that of a vitrified fort. Williams described it as immediately above the house of Muirtown, 2 miles west of Inverness. He found ruins of two vitrified walls encircling the enclosed area and three walls at the entrance at the east end. The inner wall was strong and high, but he thought that the outer wall, then standing 4 ft.-5 ft. high, had always been lower. The rock was of 'plum pudding' stone with plenty of lime. His account of the site was supplemented by that of the engineer James Watt, who said that Craig Phaidrick was on the detached summit of a rocky hill of granite and granulated quartz. The flat summit, of oblong form, had a rampart some 4 ft. high round it which had rounded corners. There was a ditch and a counter-scarp bank. The banks were vitrified and in many places were adherent to the rock.

Pryce examined the walls in several places and thought them joined together with lava. Keddie stated that part of the site was laid bare by Telford, the engineer who built the Caledonian Canal. It was 435 ft. above the River Ness on the hill of Old Red Sandstone and Conglomerate. The inner wall of the fort was oval and the outer was a contour defence on the edge of the escarpment. The measurements inside the fort were 285 ft. x 90 ft. Marion visited the site when at Inverness and wrote of it as on a hill 540 ft. high which was isolated on three sides and which separated the valley of the River Ness from Loch Beaulay. The area inside was basin-shaped, rather like the crater of an extinct volcano. Sir George Mackenzie excavated inside the area in 1826 and found burnt wood and animal bones some of which were worked. He found that both walls were vitrified and thought that the outer had never been very high. They were made of granite and sandstone blocks of large dimensions. Triple banks existed at the east end. The site was covered by forest. Wallace, in a more recent description, stated that the entrance was at the west and that there was no entrance to the inner enclosure. The fort is on the summit of a rocky eminence 555 ft. high and is oblong in form with rounded corners. It measured 260 ft. x 95 ft. and both walls are vitrified. At the west end the two main walls are 45 ft. apart. A third wall exists on the south side, and at the east end there is a large mound of vitrified material some 40 ft. wide. The inner wall, though higher, is of the same width as the outer and may have had four bastion-like structures inside it near the corners. The fact that the outer wall has an entrance and not the inner was reminiscent of certain of the Gaulish forts.

Childe noted that the face of the rampart was exposed on one side, and he gives the internal dimensions as 250 ft. x 50 ft.

Williams : *R.H.N.S.* (1777), 31-5 and 75-9. Sketch plan at frontispiece.

Macculloch : *History of Scotland*, i (1824), 288 and 296.

Hibbert : *Arch. Scot.*, iv, 1 (1831), 182 and 188.

Pryce : *J.B.A.A.*, ii (1847), 276-7.

Marion : *Rev. Soc. Sav. des Dépts.*, iv (4e, sér.) (1866), 314-5.

Keddie : *T. Glasgow A. S.*, i (1868), 248.

Marion : *M.S.A.F.*, xxxiii (III, 4e. sér.) (1872), 10-4.

Daubree, *R.A.*, xliii (2e. sér.) (1881), 36-40.

Anderson : *S.P.T.* (1883), 277.

Russell : *J.B.A.A.*, 1 (1894), 212-4. (Mention.)

Christison : *E.F.S.* (1898), 171. No. 19.

M'Hardy : *P.S.A.S.*, xi (1905-6), 150 and fig. 3.

Wallace, *T.I.S.S.*, viii (1912-8), 90-3. Sketch plan at p. 91.

Childe, *S.S.* (1946), 134. No. 6.

Dun Daviot, Strath Nairn, Inverness-shire

Dun Daviot is on a hill which rises abruptly from the west bank of the River Nairn about six miles from Inverness. It is a promontory fort, approachable easily on the east and west sides only. The hill itself is a cone-shaped eminence, flattened on the apex, which rises from a smooth sandstone ridge to a height of c. 150 ft.-200 ft. The fortified area is c. 120 ft. x 60 ft., and is surrounded by a single wall of loose stones now standing only c. 2 ft. high.

Hibbert : *Arch. Scot.*, iv, 1 (1831), 182 and 198.

Christison : *E.F.S.* (1898), 194. No. 21.

Childe : *S.S.* (1946), 134. No. 10.

Castle Finlay, Rhigoul, Nairnshire

Castle Finlay is about 4 miles south-east of the town of Nairn and 2½ miles east of Calder. The fort is 300 ft. above sea-level and occupies the summit of a well-rounded knoll bounded at its base by two brooks c. 60 ft.-80 ft. below it. It is near the junction of deposits of gneiss and sandstone, both of which are partially concealed by a deep bed of alluvial gravel. The fortified oval summit of the hill, 105 ft. x 45 ft., is surrounded by a wall placed at the edge of the escarpment and by an inner wall. Both walls are vitrified in the greater part of their circumference and stand c. 2 ft. high. To the north and south lie projecting areas at a lower level which may also have been defended. The north and east sides of the fort may have an additional outlying ditch. No finds are recorded from the site.

Williams : *R.H.N.S.* (1777), 36-8.

Macculloch : *History of Scotland*, i (1824), 288.

Hibbert : *Arch. Scot.*, iv, 1 (1831), 181 and 196-7. Sketch plan at p. 197.

Christison : *E.F.S.* (1898), 194. No. 25.

Wallace : *T.I.S.S.*, viii (1912-8), 102-3. Sketch plan at p. 101.

Bain : *History of Nairnshire* (1928), 19-21.

Childe : *S.S.* (1946), 134. No. 13.

Dunearn, Dulsie Bridge, Nairnshire

For his description of Dunearn Wallace quotes from an early edition of Bain's *History of Nairnshire* which mentions a fort on an isolated hill on the south bank of the River Findhorn, 12 miles inland and within a mile of Dulsie Bridge. The site dominates the valley of the Findhorn (formerly the River Earn, whence the name). The hill is thickly wooded, but a level area of two acres had been cleared on the top for cropping. This disclosed masses of loose stones, including many vitrified stones, which were removed. Little now remains to be seen. Childe gives the area of the fort as 850 ft. x 100 ft.

Wallace : *T.I.S.S.*, viii (1912-8), 105-6.

Bain : *History of Nairnshire* (1928), 18-9.

Childe : *S.S.* (1946), 134. No. 12.

Dun Evan (or the Dun of Cawdor), Cawdor, Nairnshire

Six miles to the south of the Moray Firth and two miles south-west of the Castle of Cawdor, on the outskirts of the Highland Hills, stands the fort of Dun Evan. It is on a hill of conglomerate, granite and grey whinstone. The site was mentioned by Williams as that of a vitrified fort. The only entrance he found was at the east end and was an unvitified dry-stone work. The south side was inaccessible and the north side steep, but there was a large ditch half-way down the slope.

Hibbert found the evidence for vitrification of the defences slender. Wallace quoted Fraser-Tyler's account of the site as having two non-vitrified ramparts surrounding an oblong space with an entrance at the west. He felt that Williams had been prejudiced in favour of finding vitrification. In his own description he stated that the fort was 650 ft. above sea-level and of oval form 240 ft. x 99 ft. (average). Vitrification was difficult to detect, but partially burnt stones were found here and there. The walls were built of gneiss, porphyry and sandstone. Animal bones and an arrowhead had been found on the site. Childe gives the dimensions as 200 ft. x 75 ft., but when he examined it in 1943 he found no vitrification.

Williams : *R.H.N.S.* (1777), 36-7.

Woodhouselee : *T.R.S.E.* (1783).

Macculloch : *History of Scotland*, i (1831), 288.

Hibbert : *Arch. Scot.*, iv, 1 (1831), 182 and 197.

Christison : *E.F.S.* (1898), 194. No. 24.

Wallace : *T.I.S.S.*, viii (1912-8), 108-9. Sketch plan at p. 107.

Bain : *History of Nairnshire* (1928), 17-8.

Childe : *S.S.* (1946), 134. No. 11.

Clunie Hill, Forres, Morayshire

This site on the south coast of the Moray Firth is included in lists of vitrified forts, but no description or plan has been traced.

Hibbert : *Arch. Scot.*, iv, 1 (1831), 181.

Christison : *E.F.S.* (1898), 195. No. 33.

Childe : *S.S.* (1946), 134. No. 16.

Downe of Relugas, Findhorn, Morayshire

Although included in lists of vitrified forts no description or plan of this site has been found. Childe gives its dimensions as 170 ft. x 80 ft. Graham found its area c. 174 ft. x 100 ft., and states that a ruinous stone wall encircles the summit of the hill with large vitrified slabs in its lower courses.

Hibbert : *Arch. Scot.*, iv, 1 (1831), 181.

Christison : *E.F.S.* (1898), 195. No. 31.

Childe : *S.S.* (1946), 134. No. 14.

Graham : from personal information.

Troupe Point, Banffshire.

Troupe Point, on the south coast of the Moray Firth, is a headland fort cut off by a vitrified wall. The sub-soil is of conglomerate. No detailed description or plan has been traced.

Williams : *R.H.N.S.* (1777), 67-9.

Macculloch : *History of Scotland*, i (1824), 288.

Hibbert : *Arch. Scot.*, iv, 1 (1831), 181.

Christison : *E.F.S.* (1898), 195. No. 34.

Childe : *S.S.* (1946), 134. No. 17.

Dunnideer, Insh, Aberdeenshire

The hill of Dunnideer overlooks the farmlands of the Garioch from the west, being itself an outlier of higher-lying ground. It has a flat oval summit with the fort's defences on its edge. These surround a ruined castle which has, in part, been built of stones from the earlier defences. Macculloch described the fort as a parallelogram with one end nearly semi-circular. The walls stood 6 ft. high and may have been 8 ft. high originally. The hill itself is chiefly of grey granite, but stone blocks from the plain, which contain hornblende, may have been used in building the vitrified wall. Part way down the hill a second defence exists which consists of an unvitified dry-stone wall and a ditch.

Anderson : *Arch.*, vi (1782), 89-90. Sketch plans and views at Pls. IX and X.

Macculloch : *History of the Highlands*, i (1824), 289 and 291-2.

Hibbert : *Arch. Scot.*, iv, 1 (1831), 181.

Christison : *E.F.S.* (1898), 195. No. 36.

Childe : *S.S.* (1946), 135. No. 19.

Tap o' Noth (or Hill of Noath), Rhynie, Huntly, Aberdeenshire

The vitrified fort of Tap o' Noth, near the village of Rhynie, Huntly, was first mentioned by Anderson. Macculloch described it as on the highest point of a steep ridge *c.* 1,800 ft. above sea-level and 300 ft. above the surrounding ground. The enclosure is a long parallelogram, *c.* 270 ft. x 96 ft., with slightly rounded corners. A deficiency in the eastern wall suggested an entrance there opposite a pathway down the hill. As at Dunnideer (see above) a second rampart and ditch surrounded the hill at a lower level. The inner rampart was vitrified and, when seen by Macculloch, was not covered with turf but stood up black and stark. The walls stood *c.* 8 ft. high in places and might have stood 12 ft. high originally. Their width was estimated as *c.* 18 ft.-20 ft. Their upper parts were not vitrified.

Hibbert noted that the sub-soil was of gneiss and gave the dimensions of the fort as covering an area of 360 ft. x 150 ft. The entrance, which he placed at the south-east, had supplementary outworks. Stuart, writing of the inner rampart, commented on the large vitrified core, but this was questioned by Christison who thought that as there was no mention of any stones being removed to expose it, it must have been seen by the 'eye of faith'. Macdonald, in 1886, cut two trenches down to bed-rock, and caused Troup to make a plan of the site in which the defences were shaded to show the extent of their vitrification. Christison thought the fort, which measured 345 ft. x 126 ft., of an unusually large size. It was oblong in form with rounded corners. The proportion of fused stones in the rampart was comparatively small, a larger portion had been subjected to heat but had not fused, whilst a considerable part was untouched by fire. On excavation the rampart proved to be a pile of loose stones from top to bottom with no sign of building arrangement. The stones were small in size, even at the bottom. In the first section the base of the rampart was 20 ft. wide and it stood 12 ft. high. Here no vitrification was found. The second section was cut at a point where the surface indications of vitrification were most noticeable. It was found that it only extended downwards for a few feet from the top. Wherever vitrified masses were examined they contained loose stones unaffected by fire.

Childe observed that the face of the rampart was exposed on one side and gave the dimensions of the fort as 330 ft. x 130 ft. Graham writes :—

'This is an immensely impressive monument on account of the great height and steepness of the hill and also of the massive proportions of the vitrified matter at the west end. The outer rampart lies far down the hill, and the area that it encloses is consequently very large ; it is probably not an outer line of defence connected functionally with the work on the hill-top, but an enclosure of some kind'.

Anderson : *Arch.*, vi (1782), 95.

Macculloch : *History of Scotland*, i (1824), 289 and 293-4.

Hibbert : *Arch. Scot.*, iv, 1 (1831), 181 ; *ibid.*, iv, 2 (1833), 295-7. Sketch plan at Pl. XI.

Stuart : *P.S.A.S.*, viii (1868-70), 151.

Macdonald : *T. Huntly F. C.* (1886). Supplement, July (1887).

Christison : *E.F.S.* (1898), 174-5 and 195. No. 30. Plan at fig. 64.

Childe : *S.S.* (1946), 135. No. 18.

Graham : from personal information.

Finella's Castle (or Kincardine Castle), Balbegno, Kincardineshire

No description of this site has been found. Christison states that it is of stone and lime. Childe notes it as small.

Macculloch : *History of Scotland*, i (1824), 288. (Mention.)

Hibbert : *Arch. Scot.*, iv, 1 (1831), 181.

Christison : *E.F.S.* (1898), 195. No. 37.

Childe : *S.S.* (1946), 135. No. 20.

Dundee Law, Dundee, Angus

This site to the north-west of the town of Dundee is included in early lists of vitrified sites. It was described by Christison as a fort on a 572 ft. high eminence which has a nearly level top. The fort occupies most of the plateau and measures 260 ft. x 170 ft. The defences consist of straight banks enclosing a rectangular space which, on plan, have the appearance of a Roman fort. Christison thought that these defences were of earth, but noted some stones in a curved bank which lies to the north of the rectangular enclosure. Childe states that the face of the wall is exposed on one side of the rampart.

Macculloch : *History of Scotland*, i (1824), 288. (Mention.)

Hibbert : *Arch. Scot.*, iv, 1 (1831), 181.

Christison : *E.F.S.* (1898), 195. No. 40.

Christison : *P.S.A.S.*, xxxiv (1899-1900), 52-3. Plan at fig. 14.

Childe : *S.S.* (1946), 135. No. 25.

Dunsinane, East Perthshire

The site was first noticed by Sir John Sinclair in 1772 and was included in Williams' list. It has been described by Wise, Anderson and Christison, and the latter tried to interpret the results of the explorations made by Playfair about 1800 and by Nairne in 1854. The defence is an oval circumvallation crowning the summit of a conical hill c. 800 ft. high and 1,114 ft. above sea-level, which stands $7\frac{1}{2}$ miles north-east of Perth. The main rampart appears to have contained a wall of dry-stone build which may or may not be vitrified. Two and in places three outer banks probably exist now marked by terraces. The area enclosed is almost level. A possible entrance through the terraces appears to exist at the north-east, but it is claimed that the inner wall was traced all round in 1854 without an entrance being found (cf. Forgardenny, p. 68). Towards the south-east there were two intercommunicating chambers 20 ft. long, from 6 ft.-8 ft. wide and 3 ft. high. Their floors were paved with rough slabs and their walls were built of undressed stones which, c. 2 ft.-3 ft. above floor level, converged until the roof was spanned by flagstones laid across. Their walls contained vitrified stones. The floors were covered with ashes and occupation debris, and a quern and three human skeletons were found. Christison shows that these buildings were above ground and not underground as stated by Wise, and states that other buildings and a court appear to have been found. Brown reported that near the entrance to the main rampart a bronze spiral finger-ring of serpent design was found in 1857, but this seems to have been quickly lost. Chambers reported the finding of two round metal tablets resembling brass, one of which was inscribed with the legend :—'The scone of kingdom come until sylphs in air carry me again to Bethel'.

Williams : *R.H.N.S.* (1777), 51-4.

Chambers : *Picture of Scotland* (1828).

Hibbert : *Arch. Scot.*, iv, 1 (1831), 181.

Wise : *P.S.A.S.*, ii (1854-7), 93-9. Sketch plan at fig. 1.

Brown : *P.S.A.S.*, ix (1870-2), 378-80.

Anderson : *S.P.T.* (1883), 281-2. Fig. 251 reproduces Wise's sketch.

Christison : *E.F.S.* (1898), 196. No. 42.

Christison : *P.S.A.S.*, xxxiv (1899-1900), 85-91. Plans and profiles at figs. 40-4. Historical references p. 85.

Childe : *S.S.* (1946), 135. No. 23.

Barry Hill (or Barra Hill), Alyth, Perthshire

Barry Hill, a 676 ft. high peak of the Grampians of red sandstone conglomerate, is $1\frac{1}{2}$ miles north-east of the town of Alyth. The hill-fort on its top was described by Playfair. Oval in form it measured 180 ft. x 72 ft.-74 ft. The surrounding wall was 6 ft.-8 ft. high and 10 ft.-12 ft. wide at the top. It was built of granite and contained several pieces of vitrified stone. To the south and east, where the hill-slope was gentler, there was a 10 ft. wide ditch, c. 12 ft.-16 ft. below the wall. The north and west sides of the hill were steep and inaccessible. Wise stated that on the south-east there was an outfort on the brow of the hill some 200 yards distant from the upper fort, the intervening space being an artificial hollow. This outfort was destroyed during agricultural operations in 1854 and was then 105 ft. x 99 ft. with the long diameter lying in an east-south-east direction. It consisted of an outer wall whose packed-boulder foundation was several feet in height. On the outer side was a ditch. The main fort had entrances at the north and south which were joined by a passage 3 ft. 3 ins. wide, which for some distance from the north opening was bounded by a dry-stone wall on each side 2 ft. high and 2 $\frac{1}{2}$ ft. wide. This passage intersected the fort in its long diameter and joined the two entrances. The space between the outer wall and the passage was laid with undressed flags just below ground surface. The finds were bones, broken and worn querns and a stone vessel. Christison, quoting a report given

to Hibbert by Mackenzie, noted that it was probably only the lower part of the wall that was vitrified. Mackenzie observed that the stones of the wall were of the same red sandstone conglomerate as the rock of the hill. Childe noted vitrified blocks in the scree from the flanks of the main rampart.

Playfair : *Description of Scotland*, i (1819), 485-6.

Macculloch : *History of Scotland*, i (1824), 288. (Mention.)

Hibbert : *Arch. Scot.*, iv, 1 (1831), 181 and 184-6.

Wise : *P.S.A.S.*, ii (1854-7), 70-1.

Warden : *Angus or Forfarshire*, v (1885), 47. (Mention.)

Christison : *E.F.S.* (1898), 196. No. 41.

Christison : *P.S.A.S.*, xxxiv (1899-1900), 93-6. Plan at fig. 46.

Childe : *S.S.* (1946), 135. No. 22.

Machany, Muthill Station, Blackford Parish, Perthshire

The existence of a vitrified fort at Machany was recorded in 1943 by Childe and Graham. Just east of the road from Muthill Station to Auchterarder the cultivated land that slopes gently north to Machany Burn is interrupted by a very low ridge on which has been planted a small wood. They found that within the boundary of this wood there was the effaced and grass-grown remains of a stony rampart enclosing an oblong space *c.* 180 ft. east and west by 130 ft. north and south. The outer margin of the rampart on the south-east is marked by a discontinuous row of slabs on edge, some of which are tilted out of line. In the core behind this line of slabs large lumps of vitrified stone are exposed. The O.S. map marks a 'chapel' here of which nothing remains. It presumably occupied part of the site of a much older vitrified fort. They add that the existence of the latter is undoubted, and that the plan seems characteristic although the location is most unusual.

Childe and Graham : *P.S.A.S.*, lxxvii (1942-3), 38.

Childe : *S.S.* (1946), 135. No. 26.

Harelaw, Long Yester, Lammermuirs, East Lothian

The fort at Harelaw, *c.* 1½ miles south of Long Yester, is built round a rocky summit at the north-east end of Harelaw, a spur of the Lammermuirs, which runs in a north-east direction into the angle formed by the junction of the Harelaw Burn on the north and the small Soon Hope Burn on the south. The hill is 1,250 ft. above sea-level, and commands an uninterrupted view of the country lying between the hills and the Firth of Forth. It is steep on all sides except towards the south-south-west. The innermost defence is a stone wall enclosing an irregularly shaped area without any apparent entrance. It is considered doubtful whether this wall is as old as the outer defences. The outer defences encircle the summit except at the very steep north-east end. They consist of an inner stone rampart and two outer ramparts with ditches. A main entrance 11 ft. wide penetrates all the outer defences on the north-west, and there is another possible entrance towards the north-east. The site is unexcavated. Vitrification occurs only on each side of the gateway, and may perhaps be the accidental result of the burning down of a timber gate.¹

R.C.H.M. : *County of East Lothian* (1924), 149-50. No. 254. Harelaw. Plan at fig. 185.

Childe : *S.S.* (1946), 136. No. 51.

Fort in Craigmarnock Wood, Kilmaccolm, Renfrewshire

The existence of a site said to be vitrified has been reported in Craigmarnock Wood at Kilmaccolm, 6-7 miles south-west of Dumbarton. The report has not yet been confirmed.²

Unpublished.

The Deil's Dander, Milldown, St. Abb's, Berwickshire

The 'Deil's Dander' is a vitrified column which stands at the seaward end of the summit of a headland which runs out into a small bay at the mouth of the Milldown Burn, half a mile south of the village of St. Abb's. The mass is composed of alternate layers of vitrified materials and small broken stones in horizontal strata, the vitrified layers being 2 ins. thick and the stone 4 ins. The dimensions of the monument in 1915 were 20 ft. 5 ins. in circumference, 6 ft. in diameter and 5 ft. 4 ins. high. It is surrounded by a bank a few feet high which is 6 ft. distant on the seaward side, but lies close to it on the landward side and may indicate its original width. It was reported in 1899 that a story has been handed down which purported to explain its existence.

A former proprietor of the ground is said to have tried to prove that the greywacke stone of the district was limestone, and that the vitrified mass is the core which was left when his useless kiln was removed. Graham states that when he saw it a few years ago it was considerably reduced from the recorded height of 5 ft. 4 ins.

J.H.S. : *Scottish Antiquary*, xi (1897), 29 ; *ibid.*, xiii (1899), 46.

R.C.H.M. : *Inventory of Berwickshire* (1915, revised issue), 54. No. 96.

Graham : from personal information.

¹ I am indebted to Professor Piggott for this observation on the vitrification.

² From information supplied by Mr. David Collins.

NOTES ON CAMPS WITH TIMBER-LACED, VITRIFIED OR CALCINED RAMPARTS SITUATED BETWEEN SOUTHERN ENGLAND AND SCOTLAND

Corley Camp, near Coventry, Warwickshire

Corley Camp on Burrow Hill, 4 miles NNW. of Coventry, occupies almost the highest point of a sandstone ridge. The site was described by Chatwin after some excavation in 1923 and 1926. The camp is partially ploughed out, but the plan shows that it was approximately square with sides *c.* 600 ft. long and with rounded corners. The defence is a single bank and ditch. In 1923 a section was cut through the south-east bank, *c.* 120 ft. from the east corner. Here the soil was composed of disintegrated red sandstone rock which was difficult to differentiate from the natural sub-soil. The fragmentary remains of the rampart showed that it was an earth and stone bank which had been timber-laced. Some of the timber was identified as oak which was found to lie inside and parallel to the line of the bank. Externally, a rough-faced wall two to three courses high only, was found, and it showed traces of transverse timbers in addition to the longitudinal ones already noted. These timbers were 5 ins.-6 ins. in diameter, but must originally have been larger. Their exact relationship to the face of the wall was not ascertained. The bottom of the ditch was found over 12 ft. from the wall but its contemporaneity with it was not proved. No datable finds were recovered in this section or in other trenches cut through the defences in other areas. The faced wall and bank structure appeared to be consistent all round the camp. Sundry trial trenches in the interior produced worked flints. In 1926 the north-west side was explored for a possible entrance. Pebbled paving was found but no clearly defined entrance was identified. Halfway up the hillside and outside the defences hut-sites were uncovered, made in part at least of sandstone blocks. These produced more than 200 flint flakes, many showing secondary work. They must have been brought to the site as flint is not natural there. The pottery found was mostly medieval, but there were three small fragments of Early Iron Age pottery too small to be identified. The only other object described as possibly of prehistoric date was half a horse shoe from the pebbled area. There were no Roman finds.

The excavation was too incomplete to justify many conclusions, but in view of the type of earthwork, the flint and pottery finds, and the lack of Roman material, Chatwin classed the camp as pre-Roman and of Iron Age date. Hawkes was then inclined to regard it as an Iron Age B site, with an apparently slight occupation, and thought that a date in the 1st century B.C. seemed indicated for its use. He noted that the site constituted at that time the only approach then recorded in England to the *murus gallicus* of Continental forts. Recently Seaby has written that the paucity of finds makes the precise dating for this camp impossible, but suggests that it is likely to have been constructed by the descendants of an Iron Age A people in a late phase of that period and abandoned by the middle of the 1st century A.D., since Roman remains were virtually absent. There is more than a hint, however, that the site was reoccupied in the Dark Ages.

Gardner : *V.C.H. Warwickshire*, i (1904), 370-1. Plan at p. 371.

Chatwin : *T. Birm. A. S.*, lii (1930), 282-7. Plan and section at Pl. XXXVIII ; rampart photographs at Pls. XXXV-XXXVI.

Hawkes : *Ant.*, v (1931), 82-5. Plan at Pl. II.

Childe : *P.S.* (1935), 195. (Mention.)

Seaby : *A.N.L.*, ii, 6 (1949), 87.

Bower Walls Camp, opposite Clifton Hill, Long Ashton Parish, Somerset

In the vicinity of St. Vincent's Rock at Clifton the River Avon flows through high limestone rocks. Three multivallate camps of small size defended the summits of the precipices on the river banks. Clifton Camp on Clifton Hill is on the Gloucestershire side of the river, and Stokeleigh Camp and Bower Walls Camp are on the Somerset side. Clifton and Stokeleigh Camps have been excluded from this inventory, as the evidence that they included a timber-laced rampart among their defences is negative for the latter and too slender for the former. Bower Walls Camp, however, seems to merit inclusion as a possible, if somewhat doubtful, example of a camp with a calcined rampart.

The latest description of all three camps is that of Morgan who collected and reinvestigated the earlier evidence, made small excavations in the remnants of some of the ramparts and replanned Clifton and Stokeleigh Camps.

Bower Walls Camp (with the alternative names of Burwalls, Burgh Walls, Borough Walls or Bowre Walls) occupies the point above the River Avon where it is now crossed by the Clifton Suspension Bridge. On the north and east the precipice served as a natural defence. On the remaining three sides a somewhat triangular area of some seven acres was defended by three curved ramparts. These were destroyed in 1868 when villas were built. Morgan found traces of these ramparts on the precipitous slopes on the Nightingale Valley side opposite Northside House, and at the south-east in Mr. George Wills' garden. Earlier authorities differed on the position and number of entrances, and by 1904 the camp was too destroyed for this point to be checked. Seyer described the inner and outer ramparts as of large size and the middle one as lower, but crowned with a dry-stone wall. The inner rampart stood 18 ft. high above the inside of the camp and 22 ft. above the bottom of the ditch outside. Both Barrett and Scarth described the inner rampart as the one containing burnt limestone and charcoal, but Scarth's description and diagrammatic section are considered by Morgan as inconsistent with other evidence, both published or obtained from eye-witnesses at the time the bank was destroyed. Scarth thought that this inner rampart was formed of a compact mass of concrete which, when cut through, showed a core of solid

lime and burnt wood which was banked up on each side with stones and then coated with turf. Infiltration of rain-water had acted on the lime and had formed a solid core.

Christison, quoting Scarth, stated that it was the middle rampart that had a calcined core. It was in the form of a wall 9 ft. high and 2 ft.-3 ft. wide. The calcined core was banked up with loose limestone blocks covered with turf. The whole formed a broad-based vallum, 50 ft. wide at its base, with easy slopes. Morgan quotes two reports by eye-witnesses of the demolition. The first spoke of the occurrence of burnt timber well within a rampart at some distance from its surface which was patchy and irregular in distribution. The second stated that the burnt lime was never mortar but just clean lime intermingled with fragments of charcoal, and that the rampart was burnt in a patchy way rather like that of a vitrified fort he had seen in Scotland.

Morgan cut a section through part of the remaining rampart at its south-end. He found only a structure of earth and loose stones but no trace of calcination. His summary reads:—

'Of the three entrenchments overlooking the ancient ford of the Avon, the Clifton Camp was small and its defences comparatively weak. The Burwalls was larger and stronger, its ramparts being more massive and perhaps better bonded by burning some of the limestone to quicklime, while the low middle vallum carried a dry wall. The Stokeleigh Camp showed the more massive ramparts, the inner one crowned with a vertical wall of unknown height. . . .'

Barrett: *The History and Antiquities of the City of Bristol* (1789), 17. Sketch plan at Pl. II.

Manby: *Fugitive sketches of the history and natural beauties of Clifton, Hotwells and vicinity* (1802), 9 and 12-3. Plan.

Seyer: *Memoirs historical and topographical of Bristol and its neighbourhood*, i (1821), 62-4. Plan opposite p. 60.

Phelps: *The history and antiquities of Somersetshire*, i (1836), 96. Plan (probably based on that of Seyer) at Pl. III.

Atkinson and Scarth, *P. Som. A. S.*, xv (1868-9), 27-31. Diagrammatic sections. (Unreliable.)

Scarth: *Arch.* xlv (1873), 428-34. Plan at Pl. XVII.

Christison: *E.F.S.* (1898), 190.

Morgan: *P. Som. A. S.*, xvii (1902), 217-29; *P. Clifton A. C.*, v (1904), 8-24. Plans at Pls. II-III.

Castle Hill, Almondbury, near Huddersfield, Yorkshire

Castle Hill is a prehistoric and medieval site on the summit of a hill 900 ft. above O.D., with a sub-soil of drift-covered Lower Coal Measures and Sandstone. It was excavated by Varley in 1939, 1946 and 1947. Interim reports only on this work are available at the time of writing.

Almondbury I, the original camp, consisted of a univallate earthwork and ditch which bisected the summit of the hill and occupied the south-west end of its flat top. Very little of the rampart remains, but it was shown to be box-shaped and revetted back and front with dry-stone timbered walling enclosing an earthen core. The narrow, rock-cut, V-shaped ditch was separated from the bank by a berm. There was a single entrance of 'incipient inturn' type, with a rectangular guardroom inside the passageway which had a foundation of cobbles laid in puddled clay. No relics were found in association with this defence, but, by inference, it was regarded as belonging to the Early Iron Age.

In Almondbury II the original camp was extended to enclose the whole of the summit and supplementary outworks were added, the inner rampart being dominant, as it was sited on the very edge of the flat ground. The ditch of the original camp was blocked and the inner rampart of the extended camp was carried across it. The new defences consisted of an inner rampart, a V-shaped ditch, a counterscarp bank parallel and subordinate to the inner rampart and a second ditch carried right round the hill. The entrance was at the northern end. It was an overlapping entrance without guardrooms but further protected by a short length of a third bank, parallel and subordinate to the counterscarp. It was approached by a long deeply-sunk hollow way. The reconstruction was built in the same timber-laced style and with the same size of bank as that of Almondbury I. Almondbury II is analagous to the first reconstruction of Maiden Castle, Dorset.¹ A simple annex was added to the entrance of this phase at a later date.

In Almondbury III the inner rampart of the second camp was rebuilt in 'muris gallicis' style, a reconstruction interposed between the extension fort with annexe and a final multivallate fort. The core of this rampart was made of earth laced with timber, the whole being encased in dry-stone walls. Transverse timbers are shown to pierce the inner but not the outer facing-wall. In one area it was shown that the ditch had been dug first whilst the site of the rampart was in use as a living floor and after the rampart had been added. From this occupation floor, which is contemporary with the build of the timber-laced rampart, part of a quadrangular vessel together with its lid was recovered and the lid of a second similar vessel.

Five out of six sections cut through the inner rampart showed that it had been destroyed by fire in what was considered to be a deliberate attempt at destruction. Varley dated the bivallate fort of Almondbury II as c. 56 B.C. to A.D. 43. He suggested in the interim reports a wide and approximate date only for the burning of Almondbury III. That the site was occupied up to the time of the Roman conquest was shown by the discoveries in 1829 of Brigantian and Republican coins, and in 1939 of a small fragment of Arretine ware, and its defences were then likely to be intact. That the fire occurred considerably earlier than the Norman conquest was shown by the fact that the defences of that period

¹ Cf. *Maiden Castle, Dorset* (1943), 36 ff.

overlay a deposit of iron oxide which must have taken a long time to accumulate and which overlay the tumbled ruins of the burnt rampart. He considered that the most likely time for this destruction to have occurred, if it was deliberate, was at the Roman conquest. This was hardly likely until the date at which Venutius was defeated and the Brigantes were subdued which, according to Tacitus, was not until the time of Petilius Cerialis, A.D. 71-74.

Armitage and Montgomerie: *V.C.H., York*, ii (1912), 24. Plan.

Varley: *Report of the First Year's Excavations, 1939. Castle Hill, Almondbury, Excavation Committee's pamphlet*. Plan at pp. 6-7.

P.P.S., v (1939), 255.

Yorks. A. J., 35 (1940), 83. Note.

J.R.S., xxx (1940), 166.

Varley: *Arch. J.*, cv (1948), 46-8 and 60. Plans at fig. 2. Entrances at fig. 4. Sections at fig. 5.

Arch. Bull. for 1947 (1950), 39.

Wincobank Camp, Ecclesfield, near Sheffield, Yorkshire

Wincobank Camp, the largest of all the hill-forts of south-west Yorkshire, is on the summit of an isolated hill over 500 ft. above Ordnance Datum. It is near the village of Ecclesfield, 2½ miles north-east of the centre of Sheffield, and overlooks the Don valley from Sheffield to beyond Rotherham and dominates the route northwards through the Blackburn valley. The earliest description of the site seems to be that of Addy. In 1899 some excavation was undertaken by Howarth for the Sheffield Library and Museum Committee, and his notes were deposited at Weston Park Museum. Preston has published details from these notes. The fort covers an oval area of c. 2½ acres and measures 450 ft x 309 ft. It is surrounded by a double rampart with an intervening ditch, except on the north side, where the ground slopes more steeply, and there the outer bank and ditch are missing. Four openings were noted in the inner rampart on the north, south, east and west sides, but they were not excavated to ascertain whether or no they were original. The inner rampart rose 3 ft. from the interior and 9 ft. from the present bottom of the ditch. It was 18 ft. wide and was built of stone with a core of rubble and burnt sandstone. It had inner and outer walls of well-built faced masonry, the inner being of larger stones. The outer rampart, 3 ft. high, was of earth, and was probably thrown up from the ditch. The distance between the centres of the ramparts was 30 ft. Preston observed that Howarth's insistence on the presence of burnt stones and of charred wood in and about the walling of the inner rampart suggests that Wincobank was a vitrified fort, and that the collapse of the rampart into the ditch accounts for a so-called 'wall' which Howarth claims to have found there. No trace of occupation was found in the interior which was, however, only excavated at one point. A hearth, containing three pieces of unworked jet, was found in a mound outside the fort on the south. Roman pottery, probably of early 2nd century date, was found in the ditch above a possible earlier turf line. This suggests that the fort cannot have been erected long before the Roman conquest, possibly during the 1st century A.D. Preston also suggests that the difference in the methods of construction of the two ramparts points to their representing different phases in the fortification of the site.

Addy: *The Hall of Waltheof or the early condition and settlement of Hallamshire* (1893), 231-50.

Armitage and Montgomerie: *V.C.H., York*, ii (1912), 8 and 61. Plan at p. 9.

Howarth: *T. Lancs. and Ches. A. S.*, xxii (1904), 201-2. (Mention.)

Hawkes: *Ant.*, v (1931), 87-8.

Elgee: *Arch. of Yorkshire* (1933), 118.

Preston: *T. Hunter A. S.*, vi, 3 (1947), 85-7.

C.B.A.: A survey and policy of field research in the archaeology of Great Britain (1948), 51. (Mention.)

Preston: *A.N.L.*, ii, 5 (1949), 79. (Mention.)

Maiden Castle, Bickerton, Cheshire. (Fig. 3 (ii)).

The summits of the Triassic escarpments that separate the basin of the Weaver from that of the Dee are crowned by three hill-forts—Maiden Castle, Eddisbury and Kellsborough Castle.¹ Maiden Castle, the best preserved of the series, is a promontory fort on the highest part of Bickerton Hill, some three miles north of Malpas. On the west the camp is bounded by a steep escarpment, culminating in sheer crags 698 ft. above O.D. From this western edge the land falls away gently on all sides, forming a heath-covered plateau dipping eastward. The plateau is underlain by Keuper sandstone covered by 2 ft.-3 ft. of glacial drift. Its highest part is defended by two ramparts and a ditch which run in an elbow bend from a point on the north of the scarp to one on the south. Some forty yards from the north end of the inner rampart there is a single guarded entrance and opposite it a gap in the outer rampart. The camp covers an area of 2.97 acres of which 1.59 acres are taken up with the defence works. It was described and excavated by Varley in 1934-5.

Both the ramparts and the ditch were sectioned and the entrances examined. He found that the inner rampart, Bickerton I, had been erected on a level surface of the glacial drift. It consisted of

¹ Varley and Jackson state that the unexcavated camps of Kellsborough, Woodhouse Hill and Helsby in Cheshire conform to the same general plan as Eddisbury and Maiden

Castle, Bickerton, and may be of the same approximate date (cf. *Prehistoric Cheshire* (1940), 69).

an inner core of timber and sand, 12 ft. wide and 4 ft.-6 ft. high. The sand was a leached derivative of the glacial drift. The timber was laid in definite layers lengthways, crossways and diagonally, and ranged in size from considerable tree trunks to quite small twigs. The dominant species used was oak. All the timber presented a blackened, charred appearance. Around this inner core there was a capping of tightly wedged boulders, 9 ins.-1 ft. thick, widening on the outer and inner faces to form substantial retaining walls. The boulders used were large, the majority being of the local Triassic sandstone; many were water-worn, and though some were angular none showed definite signs of quarrying. The innermost boulders of the retaining walls were embedded in the sand and timber core which was also stiffened in places by piles of boulders. No datable objects were recovered from the inner rampart. The inturned entrance through it was defined by banks which swept round to converge on a roadway, 16 ft. wide at its mouth but narrowing to 8 ft., with an overall length of 50 ft.¹ The roadway was unmetalled, and towards its narrower end had been defended by a gate 11 ft. wide slung between two stout posts recessed within the revetments of the entrance ramparts. An occupation floor associated with the southern side of the rampart may have taken the place of a guard chamber; another similar floor may have existed on the northern side. The entrance ramparts consisted of a core of sand and carbonised timber arranged in alternate layers resting on the glacial drift. The core formed a parallelogram 10 ft. wide and 8 ft. high. The timber layers were from 6 ins.-1 ft. apart. On each side of the core were the remains of dry-stone walling. On the north side the revetment was 4 ft. thick at the base, stood 6-7 courses high, and now leans some ten degrees from the vertical. Its outside was faced, but on the inside there were large regular gaps into which the timber core ran out. On the south side there were 2-3 courses of built-stones making a revetment 2 ft.-3 ft. thick. The outer and inner revetments and core of the entrances and rampart were approximately 17 ft. thick and had been at least 12 ft. high.

The outer rampart, Bickerton II, had a composite structure which was quite different from that of the inner rampart. It consisted initially of a palisade set in a rectangular trench which, at some later date, was replaced by a wider rampart made up of sand thrown against a retaining wall. This rampart had also apparently possessed a timbered entrance defence which had been dismantled and replaced by a defenceless metalled causeway. No datable objects were recovered from the outer rampart. The ditch and some accompanying hollows were related to the outer rather than the inner rampart. There was no evidence that the site had been deliberately slighted in Roman times, though the defences fell into ruins before the Dark Ages.

In discussing these defences Varley observed that:—

(i) Although there were no exact parallels for the method of construction of the inner rampart it was tempting to suggest a possible derivation from the *murus gallicus* described by Caesar. The principle difference between the inner rampart at Maiden Castle, Bickerton, and the true *murus gallicus* is that in the former the timber does not run out into the stone-facing. Apart from that fact the parallelism is close.

(ii) This particular method of rampart construction is peculiarly appropriate to the material used. The layers of timber help to consolidate the sand, the stone-capping prevents erosion of the sand from above, while the heavy retaining walls resist any tendency towards lateral shifting of the sand. These considerations suggest that the inner rampart stands to-day much as when first constructed: it is probable that all the materials existed on the site when the rampart was first built.

(iii) The blackened, charred appearance of the timber in the inner rampart was a feature of considerable interest. It was actually carbonised. The unbroken character of the timber, from the longest tree-trunks to the minutest twigs, suggested that the carbonisation must have taken place *in situ*, as it would be virtually impossible to transport charred timber without breaking some of it. The carbonised wood was penetrated by non-carbonised roots of modern heath-plants which proved that the wood was charred some time ago. The hypothesis that the carbonisation was due to a fire after the rampart was built is more plausible than any other.

(iv) The initial form of the camp cannot be determined with any certainty. The difference in structure between the inner and outer ramparts may imply that they were constructed at different times; in which case it was impossible to say which was built first. The structural differences do not necessarily imply a difference in date—they may be related to a difference in function.

(v) The single potsherd from the occupation floor associated with the inturned inner rampart was undatable, but of a type not made after the advent of the Romans. Its paste resembled that of the indigenous pottery of the ultimate Bronze Age, but its association with a small piece of iron places it within the Early Iron Age.

Varley described the variants of constructional methods in timber-laced ramparts then known in Great Britain, e.g.:—

(a) The *murus gallicus* described by Caesar in which timber balks laid in layers are carried out to one face or both faces of the stone revetments, as at Burghead and Forgandenny and, more dubiously, at Corley.

(b) The Bickerton method, in which the timber balks are laid in layers but stop one course short of the face of the revetment.

¹ Varley quotes Bredon Hill Camp in its reconstructed form, and Fin Cop (unexcavated), overlooking Monsal Dale in Derbyshire, as being

exact counterparts of this entrance (cf. *Arch. J.*, cv (1948), 60).

(c) The Eddisbury method (see below), where timber balks, laid in puddled clay, run out to vertical revetting posts lying behind a narrow stone facing.¹

He concluded that as all other examples of timber work in the rampart core could be attributed to the pre-Roman Iron Age, it seemed probable that the inner rampart at Maiden Castle was built at that time—say a generation or so before the conquest. There was no direct evidence as to when the reconstruction of the outer rampart took place. Since its purpose was, presumably, to strengthen the defences, it may be suggested that it most probably took place during the period of the Roman advance, A.D. 50–75. There was no evidence for thinking that the defences at Maiden Castle were used after the Roman conquest or that the site was occupied after that time.

Ormerod : *History of the County Palatine and City of Chester* (Helsby's edition of 1882), ii, 584.

Varley : *L.A.A.A.*, xxii, 1–2 (1935), 97–110. Plans and sections at Pls. XV–XXII. *Ibid.*, xxiii, 3–4 (1936), 101–2. Plans and sections at Pls. XLIII–L.

Varley and Jackson : *Prehistoric Cheshire* (1940), 69. Plan at fig. 11, rampart section at fig. 12 and Pl. VIII.

Varley : *Arch. J.*, cv (1948), 60.

Castle Ditch, Eddisbury, Cheshire. (Fig. 3 (iii))

Eddisbury, the second of the series of camps in Cheshire, was excavated by Varley in 1936–8. Eddisbury Hill, some 10 miles east of Chester on the main Chester–Manchester road, is a small hill 500 ft. above O.D. which has a sub-soil of drift-covered Keuper sandstone. The site has produced evidence of various occupations ranging in date from the Middle Bronze Age to medieval times. Of these Varley assigns four events to the period of the Early Iron Age.

The first two events were the construction on the hill of a palisade defence and a small univallate hill-fort with a simple gap entrance and a timber-supported guardroom. This rampart was not timber-laced or stone-revetted, and Varley has dated it on existing information as c. 200–100 B.C.

The camp was extended to the west in pre-Roman times to enclose the whole extent of the flat plateau, now an area of eleven acres, with bivallate defences. Varley excavated an area on the northern side of this extension at its junction with the earlier camp, the western entrance of the extension camp, the eastern entrance common to both camps, and an area occupied by medieval buildings at the south-eastern end of the defences.

The inner rampart of the extension camp, to the east of an inturned western entrance, was founded on a thick levelling deposit of boulder clay which had been laid on the flattened native rock and which was itself sealed by a thin turf line. The rampart itself consisted of a stone-lined bottom and a sand core between internal and external revetted dry-stone walls, having an overall width of 19 ft., but which narrowed to 14 ft. 6 ins. to the west of the entrance. This rampart was sectioned also in the vicinity of its junction with that of the earlier camp on the northern side. Here it was based on an extensive flagstone pavement set in puddled clay and laid on the levelled native rock. All that was left here of the rampart itself was a superimposed clay layer. At the southern angle of the western inturned entrance there was a contemporary clay floor with five hearths. The objects found in and under these hearths form the contemporary dating evidence. They consisted of whetstones, hammer-stones, and a few sherds of pottery, including the rim and sides of a high-shouldered flat-rimmed cooking pot equivalent to that found in a similar context at Maiden Castle, Bickerton. Although in the Iron Age A2 tradition, Varley did not consider that this defence need have been built before c. A.D. 1–50, as it was still standing on the arrival of the Romans.

The inner ditch was an asymmetric ditch 23 ft. 6 ins. wide and 10 ft. deep, cut into the Keuper sandstone, and separated from the inner rampart by a gently sloping berm 5 ft. 9 ins. wide. Its spoon-shaped end was defined on the north by the rear wall of the inturned entrance. The outer rampart, sectioned in the vicinity of the junctions of the earlier and extension camps on the northern side, was based on a pavement of flagstones set in puddled clay laid directly on the surface of the native rock. All that remained of this rampart were two superimposed clay layers and an upper flagstone paving set in puddled clay (of lesser extent than the lower). This rampart was as wide as, or even wider than, the inner rampart. The outer ditch had been recut in a refortification of the site in the tenth century A.D.

Both the outer and inner ramparts were pierced on the west by a cobbled roadway 7 ft. 6 ins. wide, laid directly on the rock. The northern side of this entrance was flanked by an inturned bank which turned inwards from the outer rampart, whilst the southern side was flanked by an inturned bank which turned inwards only from the inner rampart. These banks consisted of an inner facing wall of quarry-dressed sandstone. They were supported behind the facing wall with upright oak posts placed at 8 ft. intervals. Horizontal oak balks abutted against these posts, separated by layers of puddled clay in a core which was limited internally by a dry-stone revetting wall. This rear wall rested on the native rock on the north side of the entrance and on the laid clay floor with the hearths on the south side. Both the timber and clay had been heavily fired. At the angle of inturn of the inner rampart on the south of the entrance a sleeper beam had been laid tangentially. The stone facing was robbed at this point. Nearly opposite the rear revetment wall of the inner rampart there was a double gate with a centre stop. Varley describes the structure of this inturned entrance as a 'vitrified *murus gallicus*'. It was standing at the time the Romans arrived.

¹ For his diagrams see *L.A.A.A.*, xxiii, 3–4 (1936), fig. 2, opposite p. 108.

The simple gap eastern entrance of the earlier camp, with its timber-supported guardroom, was reconstructed when the extension camp was built. Most of its post-holes were blocked, as the entrance passage was lined with dry-stone walling which was carried over them. The original guardroom was given a stone lining and a new stone-lined guardroom was added on the north side. There may have been a secondary gate, but a definite outer gate was found with a post *in situ* still containing an iron ferrule. The walling of the south guardroom was bonded into that of the inner rampart in a manner which suggested that they were contemporary. This room had a rock floor and possibly a wattle-and-daub superstructure. A heap of sling-stones was found at the mouth of the room. The north guardroom had a laid puddled clay floor on which was a black occupation debris level which contained a small sherd of Iron Age pottery equivalent to those found in the hearths at the western entrance.

There was abundant evidence to show that the camp had been slighted by the Romans. Both the ramparts had been levelled to within 1 ft-2 ft. of their foundations. The inner ditch had a deliberate infilling of stones and boulder clay which was sealed by a turf line. Roman material, more especially a tile like those in use at Roman Chester, was found in this boulder clay. Both guardrooms and the passage-way of the eastern entrance were filled with stones over which a turf line had grown. In addition the western entrance had been burnt. Varley dates this Roman slighting of the prehistoric defences to the late 1st century A.D.

Castle Ditch was then unoccupied for a period. Its later occupations from the 4th century A.D. onwards, and its refortification in the 10th century are outside the scope of this study, except to mention that the defences described above have superimposed ramparts of 10th-century date and a recutting of the outer ditch has destroyed the contemporary Iron Age evidence.

Omerod : *History of the County Palatine and City of Chester* (Helsby's ed. of 1882), Vol. ii, 3.

P.P.S. ii (1936), 219-20 ; *ibid.*, iii (1937), 447-8 ; *ibid.*, iv (1938), 321.

C.A.S. : *Report of the 44th Congress of the Research Committee for the year 1936* (1937), 18 ; *ibid.*, 45th *Report for 1937* (1938), 16-7 ; *ibid.*, 46th *Report for 1938* (1939), 15.

Varley and Jackson : *Prehistoric Cheshire* (1940), 64-9, and Pls. VIA-VIIb. Plans at figs. 8 and 10. Rampart sections at fig. 9.

Varley : *Arch. J.*, cv (1948), 46, 56, 60 and 63-4.

Varley : *T.H.S.L. and C.* 102 (1950), 1-68. Final excavation report. Plans, photographs and sections at Pls. 1-17 and figs. 1-14.

The Camps, near Camptown, Edgerston, Roxburghshire

The Camps was excavated by Mrs. Oliver at intervals between 1929 and 1938. The results reported up to 1939 were that the fort was defended by three ramparts and rock-cut ditches.¹ The inner rampart, 8½ ft. wide, is of masonry combined with timber uprights. One row of uprights followed the inner side of the inner face, while another stood in the thickness of the wall just behind the outer face, but no sockets for transverse beams had then been exposed. The middle rampart, 8 ft. wide, has two built masonry faces. Within the enceinte foundations of three hut-circles and traces of other constructions have been recognised. The finds included 2nd century Samian ware, a coin of Trajan, saddle and rotary querns, fragments of lignite and glass bracelets and dress-fasteners as at Traprain. Childe described this fort as a second variety of 'Gallic Wall' in which the masonry is supported by a frame of uprights as well as transverse tie-beams, and observed that it was not certainly as old as the type in which transverse and internal beams were bolted together.

P.P.S., iv (1938), 323-4.

C.A.S. (1939), 28.

Childe : *S.S.* (1946), 14.

Ffridd Faldwyn, near Montgomery, Montgomeryshire

The large and complex hill-fort of Ffridd Faldwyn is situated on the top of a rocky spur 700-830 ft. high at the northern extremity of a triangular mountain mass on the right bank of the River Severn, and about half a mile west of Montgomery. Attention was drawn to this site in 1932 when Gardner published a description and plan. The hill is steep-sided except to the south and south-east and on the north drops 550 ft. to the wide plain below. In this plain the important ford known as Rhyd Whiman crosses the Severn. In form the main hill-fort is pear-shaped with the pointed end towards the north. The site was excavated by O'Neil in 1937-9. He pointed out that before the multiplication of crossings of the Severn by means of bridges it presented a considerable barrier to intercourse between the peoples on either side, and that control of the fort was important at all stages in the history of the area. The hill-top which is crowned by Ffridd Faldwyn Camp is formed of Wenlock shale. Its fortifications were of two kinds. There was an inner enclosure of c. 3 acres, which was bounded by one or more banks and ditches, now of quite insignificant profile (The Inner Camp), and a much larger area of c. 11 acres (including the inner enclosure) which was surrounded by two or more large banks and ditches (The Outer Camp). The inner camp included the whole of the actual summit of the hill and its inner rampart was placed on its edge. It nowhere now stands more than 2 ft. high. This camp was surrounded by a ditch which, from surface indications, showed causeways opposite the entrances. To the west of the southern entrance there was a second bank and ditch. The defences of the outer camp were on a far

¹ Recent information from the *Royal Commission on Historical Monuments (Scotland)*

states that this is a multivallate fort succeeded by a fort with a single timber-laced rampart.

bigger scale. Its inner rampart, near the southern entrance, masks the view of the country to the south from the inner rampart of the inner camp, however high that rampart may have been originally. This fact alone suggests that the inner camp was the earlier of the two defences and that it was disused when the later camp was built.

Excavation produced evidence of occupation of the site in five different periods. With Periods I and II, which were of Neolithic and Bronze Age date, we are not here concerned. Period III was the first Early Iron Age occupation of the site. Its first manifestation seemed to be a camp defended by a double palisade without bank or ditch. This defence did not seem to have been pulled up but to have rotted and fallen into disuse. It thus appeared that there was some lapse of time, perhaps at least a generation, between this and the next stage of fortification. In this the rampart of the inner camp (Rampart I) was placed on the same line as the palisade and had a back portion of large stones and soil with rough retaining walls of stone at both sides, and a large addition in front of earth and stones. This addition lay on a timber foundation and was bound and laced with large timbers the vertical posts of which rested in large post-holes. They did not form a regular pattern and were absent in some parts of the excavated area. It is probable that they occurred more frequently near the entrance than elsewhere as greater strength was needed there, particularly at the angles of the inturned ramparts at the entrance. No trace was found of a revetting wall in front of this rampart, nor is it possible to recognise in the filling of the ditch (except perhaps in one area) any stones which may once have formed part of such a wall. It is possible that the cutting of a later ditch in the next period removed all traces of this revetment, whether it was of stone (which may perhaps have been reused in a succeeding rampart) or, as is more likely at this early period, of timber. O'Neil was convinced that the rampart could not have stood and was therefore not built without a revetment, and that the earlier palisade holes were sealed by that time and could not have formed part of the later defences. The ramparts of this Period III camp were inturned at the entrance to enclose a fairway leading to a single gate. It is probable that a bridge was placed over the actual gate. There is no evidence that there were guardhouses at the entrance. The ditch accompanying this rampart was of a blunt V-shape and was dug in the solid rock to an average depth of 6½ ft. To a very great extent its scarp and most of its berm were cut away during the building of the Period IV defences. The stones and soil, interlaced with timbers, which formed the greater part of the rampart were found to have been subjected in places to such heat that they had been burnt to a light red colour. At one point in the bank a piece of clinker was obtained and many more pieces of the same material were found scattered in the ditch in the general debris of the camp, or reused in the build of the later ramparts. Some specimens showed the impressions of burnt-out timbers, usually untrimmed smaller branches of trees. It was clear that this rampart belonged to the series termed vitrified. It seemed that the burning was not done deliberately in order to consolidate the rampart, but occurred accidentally or by design of an enemy. A forest fire was unlikely at Ffridd Faldwyn. The absence of fire at the back of the rampart showed that the fire could not have originated inside the camp. Accidents, save by coincidence, seem to be ruled out by the presence of vitrification in at least two widely separated points—the south and north entrances. It seemed probable, therefore, that it was the result of enemy action, designed to ruin the defences either during an attack or after a successful assault. It was unfortunate that no datable objects were found in association with the features of this period, and O'Neil thought that it would be unwise to assume any evidence of date or of the racial origin of the builders from the vitrification alone. Such a timber-laced construction was less likely to be the product of a particular racial inventiveness than of the natural features of the countryside, wherein trees abounded and stone suitable for building a revetment was uncommon. There were, however, certain other features which suggested a date. West of the south entrance there was a second ditch with traces of a second bank behind it, and also the well-preserved remains of a third bank with a part of its ditch beneath the later Periods IV and V ramparts. East of the entrance there were signs of a second bank and ditch under the later rampart. It is possible that one or both of the ramparts west of the entrance contained traces of vitrification similar in character to that of Rampart I. At first sight it would seem that these additional defences should be taken to imply that the builders of the camp were influenced by the military ideas of the Iron Age B people, even if they did not share in their material prosperity to the extent of using decorated pottery and other objects. It was, however, permissible to look upon these outer defences, which seem to have been quite short and to have been placed solely at the entrance on the vulnerable side of the camp, as a parallel to the outwork at the east end of Maiden Castle, Dorset. This was there added to an earlier simple gateway, but is nevertheless dated to a phase of the Iron Age A occupation. It is therefore probable, but not proved, that the whole of the defences of the Inner Camp belong to the Iron Age A, although to a relatively late stage of that period. The Period III camp was apparently destroyed by fire, but it was also possible that it was either in part at least deliberately dismantled or fell into decay. Certainly these defences were in an advanced state of decay when the later ditch of Period IV was cut.

Periods IV and V at Ffridd Faldwyn related almost exclusively to the Outer Camp and, as excavation here was incomplete, only tentative conclusions were possible. But one aspect of chronology could be discussed profitably as it relied as much on surface observation as upon the results of excavation. O'Neil found that the main rampart of the Outer Camp (Rampart III) was of two structural periods (Periods IV and V), exclusive of the earlier Period III phases below it. In addition, there were indications that this enlarged Rampart III and its concomitant outworks are a curtailment of an even larger defended area (the 'Annexe' outworks). If this is so, there were at least three structural periods in the Outer Camp all of which were apparently of pre-Roman date. In all these periods, therefore, the camp must be classed as multivallate, and so, on present views, as belonging to Iron Age B times. There

was no evidence at Ffridd Faldwyn for any use of the camp in Roman times, nor are there any certain traces of its reuse after the Roman evacuation of the area.

R.C.H.M., County of Montgomery (1911), 155-6. No. 802. The Ffridd or Ffridd Faldwyn. Plan at fig. 41.

Gardner : *Arch. Camb.*, lxxxvii (1932), 364-71. Plan at fig. 2 and profiles of ramparts and ditches.

Arch. Camb., xcvi (1940), 79-80. Preliminary note on excavation.

Ant. J., xx (1940), 122-3. *Ibid.*

O'Neil : *Arch. Camb.*, xcvi (1942-3), 1-57. Plan at fig. 2. Photograph of vitrified rampart at Pl. VIa ; rampart sections opposite pp. 24 and 30.

O'Neil : *Arch. Camb.*, xcvi (1944-5), 147.

Arch. Bull. for 1947 (1949), 53. (Mention.)

Caer Crwyini (or Caer Euni), near Corwen, Merionethshire

The fort at Caer Crwyini was described by Williams who summarised earlier references to the site and revised a plan made by Lloyd in 1851. The most direct road from Bala to Corwen passes through a small hamlet called Bethel. The camp is *c.* 1 mile to the north-west of this hamlet, and stands on a hill of Denbighshire grit. The site is known also as Caer Euni, Caerau-Crwyini, Kaer-Kyreini, Cerwyni and Caerwyni. It is a pear-shaped enclosure, broadest towards the south-east end, with an internal area of 930 ft. x 180 ft. It is surrounded by a rampart and 10 ft.-14 ft. deep ditch which is deficient on the south-east. Possible entrances may have existed at the south-west and north-east ends, or half-way along the north side. The rampart is partially vitrified, the vitrification being most obvious at the south-east end. Christison visited the site before 1898 and found a few pieces of vitrified matter. In the Royal Commission Report of 1921 vitrification *in situ* was doubted, but recent examination by Hemp has confirmed that this rampart is a vitrified one. The site has not been excavated.

Arch. Camb., vi (3rd series) (1860), 246. (Mention.)

Williams : *Arch. Camb.*, xii (4th series) (1881), 307-15. Plan opposite p. 309.

Christison : *E.F.S.* (1898), 176.

R.C.H.M. : County of Merioneth (1921), 66-7. No. 174. Caer Euni.

O'Neil : *Arch. Camb.*, xcvi (1942-3), 12. (Mention.)

C.B.A. : A Survey and policy of field research in the archaeology of Great Britain (1948), 47. (Mention.)

Cryniath, Parish of Llandrillo, Merionethshire

A second Welsh vitrified fort in the Parish of Llandrillo has been identified by Hemp from surface indications.

R.C.H.M. : County of Merioneth (1921), 87. No. 239. 'Camp'.

O'Neil : *Arch. Camb.*, xcvi (1942-3), 12. (Mention.)

C.B.A. : A survey and policy of field research in the archaeology of Great Britain (1948), 47. (Mention.)

Cronk Sumark (or Primrose Hill), Sulby, Lezayre, Isle of Man¹

Although a 'camp' on Cronk Sumark has long been marked on the survey maps it is only recently that it has been recognised as the site of a fort with a possible timber-laced rampart. The escarped 300 ft. high hill at the foot of Sulby Glen, some four miles from the sea, overlooks the flat northern plain of the Island. On a clear day the hills of County Antrim, the Mull of Galloway and Cumberland can be seen from the summit. On the north and west the sides of the hill are sheer or precipitous and require no artificial defences. The south side is steep but is defended, and the east side slopes down to the lower-lying ground and, being the easiest of access, carries the strongest defences. At the north-west corner the hill rises to a steep peak which on its south-western slope has been quarried for slate. The main defence appears to be the inner of two low banks which starts at the north-western corner and encircles the eastern and southern sides. The area fortified is *c.* 350 ft. across at its widest point. The outer and smaller bank starts close to the inner, but diverges from it and runs at first from north to south to cut off the promontory across its neck. On the south side a terraced road below the inner bank leads round the hill to the quarry and it may continue the line of the outer bank on this side. The site was visited by O'Neil and Bersu in 1947. Bersu supplied the Manx Museum with a preliminary description and sketch plan. Two small enclosures with levelled platforms exist in the north-western corner with a complex of ditches and a causeway between them. The inner bank was burnt and specimens of vitrified material were obtained from it. One of the enclosures also showed burnt slates. From the surface indications O'Neil and Bersu suggested that the occupation was of several periods, and that there may have been as many as four, but that in any case the inner and outer banks did not appear to be contemporary. The entrance may perhaps be on the south side. The site is unexcavated and unplanned in detail. Megaw recorded that the fortress had belonged perhaps to the Kings of Man in the Early Middle Ages, and that the modern farmhouse just below the ramparts on the east probably occupies the site of a medieval grange and a lost Cistercian monastery.

Cotton and Megaw : *Proc. of the Isle of Man Natural History and Antiquarian Society*, v, ii (1946-50), 189-94, with sketch plan.

¹ I am indebted to Mr. B. R. S. Megaw for drawing my attention to this site, and for

information on Mr. O'Neil's and Dr. Bersu's visit.

Fort at Cronkbourne Village, near Douglas, Isle of Man

Vitrified material has been obtained at this site. The monument had until recently been regarded as a motte, but may perhaps be a fort.

Megaw : from personal information. He discovered vitrification in 1950. Mr. O'Neil had already suggested that the monument was not a motte and might perhaps be an Iron Age fort.

The absence of vitrified forts in Ireland

The first alleged site in Ireland to be claimed as a vitrified fort was that on the top of Shanthamon Hill, 3 miles north-east of Cavan, noted by the Rev. Caesar Otway in 1817. In a letter to the Royal Irish Academy he claimed the discovery of a vitrified fort here. Noticing that the artificial grottoes in the gardens of the local houses were built of vitrified material, which was derived from the site on Shanthamon Hill, he thought it must be like those known in Scotland. The fort agreed in every way except that it was round instead of square, and he claimed that the defences were vitrified. The diameter was 102 ft. and the vitrification was most obvious on the north side.

The south-west side was precipitous and needed no defence. The natural rock was schistose. He visited the site in order to amplify his account, but was prevented by rain from seeing anything at all, and the demands made on his time as Parochial Parish Clerk, as well as the fact that he did not consider himself to be either an antiquary or a geologist, appear to have prevented his making any further effort.

Christison felt the evidence too slender to permit this site to be classed as a vitrified fort. He quotes from George T. Stokes' *Life of George Petrie* who claimed to have noticed four vitrified forts in Londonderry, but Stokes does not say what Petrie had said about them or whether he had seen them himself. Keddie refers to one in Donegal and one in Meath, but he neither describes them nor gives authorities for his statement. Christison pointed out that no mention of vitrified forts was made in Wakeman's *Handbook of Irish Archaeology* or in O'Curry's description of Irish forts in the introductory volume of *Manners and Customs of the Ancient Irish*. In recent times neither Mahr nor Ó Ríordain mention any sites as having timber-laced ramparts. Finally, Childe wrote in 1947 :—

'Not a single hill-fort of the types so nearly universal in Britain has as yet been recorded in Hibernia. No Gallic or vitrified walls, no ramparts revetted with timber, no inturned entrances have yet been described'¹

Otway : *T.R.I.A.*, xiii (1816-20), 123-7.

Keddie : *T. Glasgow A.S.*, i (1868), 241. (Paper read in 1862.)

Christison : *E.F.S.* (1898), 189-90.

Mahr : *P.P.S.*, iii (1937), 403-12.

Ó Ríordain : *P.P.S.*, xii (1946), 163-5.

Childe : *Prehistoric Communities of the British Isles* (1947, 2nd ed.), 257.

NOTES ON A SCOTTISH CAMP WITH AN 'AVARICUM TYPE' TIMBER-LACED RAMPART

Burghead, Morayshire. (Pl. VI B)

Burghead is a headland fort at the termination of a low undulating range of sandstone hills, on the south coast of the Moray Firth to the north-west of the Bay of Findhorn. Its defences consisted of triple ramparts drawn across the neck of the headland. The area within the inner rampart appears to have been divided by a cross rampart, between two natural plateaus, forming an upper camp 520 ft x 300 ft., and a lower camp 850 ft. x 250 ft. A strong wall is said to have existed round the three remaining sides of the promontory. From 1808 the proprietors of the site decided to fill up a small bay below the fort and then removed some 18 ft. in height of the north-west inner rampart over a wide stretch. The top surface of the upper camp was also demolished, and the cross ramparts were thrown into the fosse. At that time many coins, battle-axes and spearheads found were dispersed, and the larger stones from the banks were used to build harbour piers.

In 1861 the Elgin Literary and Scientific Society made a partial excavation in the inner rampart and showed that it was a stone wall laced with timber. Macdonald then refuted earlier attributions of the camp as Danish or Roman and suggested that it was of early British origin.

In 1890-93 Young excavated the few remaining portions of the inner ramparts. He found 400 ft. of the timber-laced wall at the extreme north-east end and uncovered a stretch of 70 ft. This defence he recognised as of nailed *muris gallicus* type, then without parallel in the British Isles. The outer facing-wall was of solidly built dressed stones standing 9 ft. 7 ins. high and c. 3 ft. wide on a foundation of rolled pebbles. The stones used were of freestone brought from a distance of 1-2 miles; the native Burghead freestone was not used. The inner facing-wall was 3 ft. 7 ins. wide at its foundation, stood 4 ft. high and rested on oak planks or logs laid on the beach. The core contained stones, wood and rubble, and the whole defence was 24 ft. wide. It was laced with transverse timbers which projected to the face of the inner revetting wall, penetrated the core for at least 12 ft., but did not reach or show on the outer revetting wall. These were joined across by hewn oak planks and logs rivetted together with iron bolts. It was not possible to tell whether they had been mortised, but the beams were some 6 ins.-9 ins. square, and the planks 2 ins.-3 ins. thick by 10 ins.-1 ft. wide. It could not be shown whether the logs were hewn or whether they were round or square. On the foundation beams of the inner facing-wall a row of boulder stones was laid; then another layer of oak extending several

¹ But see footnote on p. 46 on Cathedral Hill, Downpatrick.

feet into the wall. At one point in the inner facing-wall, which was filled in with flattish free-stone slabs, it was found that the transverse timbers of the lowest course were set 9 ins. apart, and the upper courses, at 3 ft. high intervals, were set 3 ft. apart. The boulder stones of the foundation had been fitted together in order to form a flat platform or beach on which to build the defence. Young estimated that the top of the central part of the rampart, then 7 ft.—8 ft above the top of the sea-facing wall, may have stood originally 20 ft. high. The length of the iron bolts could not be determined, but they were at least 8 ins. long, nearly 1 in. thick, and had had square heads.

In comparing this defence with Castagne's description of those of the French *muri gallici* then known at Murcens and L'Impèrnal, Young pointed out :—

(i) That the Burghead rampart had thicker and stronger facing-walls which were two or three stones thick whereas the Gaulish were usually only one stone thick.

(ii) That the Burghead rampart was causewayed in that it had a foundation course of boulders which added to its strength and stability. It was not laid on logs on the bare ground as in Caesar's description.

(iii) That the longitudinal timbers were planks and not logs laid between the rows of facing stones, which would give an amount of coherence to the work which the Gaulish walls seem to lack, and would enable the whole mass to settle down into a more perfect stability.

(iv) That the stones in the Gaulish walls were described as undressed. Those at Burghead were dressed.

He concluded that the Burghead rampart was a superior work to those of the French forts, but, allowing for the differences noted, was otherwise identical. He did not excavate the outer ramparts. He thought that there was nothing conclusive in the construction of the main rampart on which to suggest a building date, and suggested that the outer rampart and a remaining part of the cross bank were worthy of further investigation. Much of the area of the fort is now built over. Excluding the early demolitions, there have been few finds from the site. The 1890-93 excavations produced a melon bead and a bone hairpin, but not a single piece of pottery or any coins.

Pennant : *A Tour in Scotland*, 1769 (1790), 169.

Anderson : *Arch.*, v (1779), 262.

Roy : *The Military Antiquities of the Romans in Britain* (1793), 131-2. Plan at Pl. XXXIII.

Hibbert : *Arch. Scot.*, iv, 1 (1831), 181.

Macdonald : *P.S.A.S.*, iv (1860-2), 321-62. Pl. VIII reproduces Roy's plan and section ; Pl. IX gives the section of the Elgin Literary and Scientific Society.

Young : *P.S.A.S.*, xxv (1890-1), 435-47. Sections at figs. 1 and 2 ; *ibid.*, xxvii (1892-3), 86-91.

Christison : *E.F.S.* (1898), 254-5.

Dechelette : *Manuel*, iv (1927 ed.), 498.

Childe : *P.S.* (1935), 193 ; *S.S.* (1946), 134. No. 15.

APPENDIX

VIEWS ON THE CAUSES OF VITRIFICATION AND CALCINATION

The first recorded notice of a vitrified fort is that of Pennant in 1769.¹ He wrote :—

'Rode to the castle of Tor Doun, a rock two miles west of Fort Augustus : on the summit is an antient fortress. The face of the rock is a precipice ; above that is a ditch, and a little higher a terras supported by stones : on the top a small oval area, hollow in the middle : round this area for a depth of near twelve feet are a quantity of stones strongly cemented with almost vitrified matter, and in some places almost turned into black *scoria* : the stones are generally granite, mixed with a few grit stones of a kind not found nearer the place than 40 miles. Whether this was the antient site of some forge, or whether the stones which form this fortress² had been collected from the strata of some *Vulcano* (for the vestiges of such are said to be found in the Highlands) I submit to further enquiry'.

In 1777 Thomas West³ noticed that the double bank of Craig Phaidrick near Inverness was of a structure which compared with other Scottish sites and which, in company with other English naturalists, he believed to be due to the natural products of volcanic eruptions.

The discovery of vitrified forts is, however, usually attributed to the mining engineer John Williams⁴ who had probably investigated these sites before the publication of Pennant's notes. His account then seemed so incredible that at first no London publisher would publish it. He believed that the ancient inhabitants of Scotland, when making burnt sacrifices or when melting down bog-ore for iron, would have noticed that great heat fused together and vitrified stones (especially conglomerates) and earth. They had used this observation when building their defences, which he thought were achieved by the erection of two parallel earthen banks to form a sort of mould along the line of the intended defence, between which were piled a foundation of stones and fuel for fusion. After burning the earthen mould was raised and further material and more fuel was added until the required height was reached. The earthen banks were then removed leaving a vitrified wall. The forts noted by Williams as vitrified were Knock Farril, Craig Phaidrick, Torr Duin (Fort Augustus), Dun Dearduil (Gleneves), Castle

¹ *A Tour in Scotland*, 1769, i (1790), 222.

² 'I was informed that at *Arisaig* is an old castle of the same materials.'

³ *T.R.S.*, London (1777).

⁴ *R.H.N.S.* (1777), *passim*.

Finlay, Dun Evan, Finavon, Dunsinane, and Troupe Point. He thought therefore that they were only to be found in Scotland north of the Forth and only on conglomerate rock sites. His views received the support of the geologist Dr. Joseph Black, who pointed out that whinstone and granite could also be vitrified and that limestone was very fusible. Sandstone and conglomerate, if they contained a proportion of iron mixed in the sand and gravel of which they were composed, must have the same quality. With these rocks all available and a densely wooded land, it was easy to understand how the materials for the process were obtained.

Anderson¹ also believed that the iron ore content of the earth and rocks melted in the heat and served to cement together the stones used.

The Hon. Daines Barrington² later disagreed with the earlier views that vitrification was an intentional means of achieving a solid wall without the use of cement. Vitrified forts were all on high hills and were places of defence, but these hills were not necessarily well wooded. Walls were often vitrified on one side only, a point which did not contribute materially to their strength, and if only heated on one side the matter in fusion would all drop to the bottom. He thought that these walls had been built as drystone walls for folds, and that the vitrification was caused either by volcanoes or bloomeries or by lightning passing over them.

Riddell³ then supported the Williams' school of thought in regarding vitrification as due to human agency and, so inspired, explored Galloway for examples in that area.

At the turn of the 19th century Rallier⁴ published a French article on the Scottish vitrified forts, but put forward no new views on the cause of the vitrification.

During the third decade of this century Sir George Mackenzie propounded the theory that vitrified forts occupied heights suitable for siting beacon fires for signalling and that this had caused the fusion of the stones. Macculloch⁵ opposed this idea and reverted to Williams' views that the vitrification was intentional. He thought that their appearance showed that a long continued and intense heat had been applied, and that the effects could not have been obtained by the burning of a wall formed of stone and wood. Williams' hypothesis of a sort of earth furnace answered the requisite conditions. Its use was confirmed by a practice known in some parts of India where, according to a French engineer, M. Legoux de Flaix, houses of clay were burnt to a solid brick in this manner to prevent inundation effects. Dating these forts might be a hopeless task, but there appeared to be an oriental cast about the history of the art which led back to the Celtic tribes.

When James Smith⁶ discovered the vitrified fort of Eilean Buidhe in the Kyles of Bute, on an islet only c. 100 ft. above sea-level, he felt that the theory that these sites occupied sites suitable for, or were caused by, beacon fires, was untenable. Nor did the volcanic theory hold there as the vitrification could be shown to have occurred after the walls were built, but he did not feel that Macculloch's views on the intensity of heat required to fuse the stones meant that a single conflagration could not have produced these effects. The regularity of Eilean Buidhe led him to think that the vitrification could not have been due to any accidental cause, but that it was intended to serve as a cementing factor for walls made by inhabitants who were ignorant of cement itself, but had observed the usefulness of vitrification in an area where fuel was plentiful and fusible rocks occurred.

Hibbert⁷ reviewed these earlier theories. He dismissed volcanic eruptions and intentional vitrification as conjectures which were equally chimerical. A theory of Lord Woodhouselee that wooden ramparts fired by an assailing enemy might produce these results was, he thought, not established, but the probability was that such a cause could be responsible. Some vitrified sites occurred in places which formed ancient tribal places of rendezvous, or were used for beacon fires or sacrifices, and vitrification might have resulted from burnings on these occasions, but many comparable sites lacked any such vitrification. Nor was the phenomenon confined to fortified sites. The term vitrified fort was an error: it should be vitrified site.

Wilson⁸ believed that rocks if in contact with an alkali were fusible when subjected to great heat, and that vitrification was incidental and not a designed result. Although more than 70 years had passed since Williams wrote first of these forts, none had then been found south of the Tweed and he knew of only one outside Scotland, the Camp de Peran in Brittany. This suggested that they originated in customs peculiar to the early Caledonians. To date them would be folly, and even to assign them to a definite period would be difficult. Some might date back to the 'watch and ward' in the Scottish borders referred to in the Act of James II's Parliament in 1455, 'for bailes making', to warn the approach of the southern foe.

Prévost⁹ thought that vitrified forts occurred only in granite areas and required for their construction a compact mass without solution of continuity, the action of fire inside and outside the mass, and a base of free air for the hearths and circulation of the heat. In the Orne forts of France there

¹ *Arch.*, v (1779), 241-66. (Letter of 1777).

² *Arch.*, vi (1782), 100-3.

³ *Arch.*, x (1792), 147-50.

⁴ *Memoires de l'Academie celtique* iii (No. 9) (1809), 399 ff.

⁵ *History of the Highlands*, i (1824), 287-301.

⁶ *T.R.S.E.*, x (1826), 79-81.

⁷ *Arch. Scot.*, iv, 1 (1831), 160-201; *ibid.* iv, 2 (1833), 280-97.

⁸ *Prehistoric Annals of Scotland*, ii (1867), 92.

⁹ *Dissertation sur les forts vitrifiées, dont on trouve les ruines en Écosse, en France et en Allemagne* (1867). For this see Darcel, *Rev. des Soc. Sav. des Départements*, iv (4e. ser.) (1866), 284-8.

was a paste of fused bricks in a mould made of two parallel walls in stone and earth, the whole being covered with a suitable system of furnaces and of outlet vents. In Mayenne and Scotland the bricks were replaced by 'loaves' of earth and the stones glazed with fragments of sandstone. At Pérans the clay was grinded under beds of charcoal or wood. But all these were on granite. Lime-stone disintegrated under the action of heat to form lime. If there was no lime fire was used. He concluded that the vitrified forts were built by the Romans in granite country as there was no lime there for mortar. Geslin de Bourgogne had, however, attributed them to the Gauls or Celts.

de Montaignon¹ believed that the main purpose of vitrification was to obtain a homogeneous mass of material, and that vitrified forts were structures for communal use in wintry climates, in which wood, beaten earth and dry-stones were burnt together because frost prevented the making of cement and mortar.

Honeyman² considered vitrification to be intentional. The natives understood 'cold blast' and produced it with the aid of a powerful artificial blast. The walls were constructed of loose materials, bound together into a solid mass by being grouted with a liquid vitreous cement, composed chiefly of greenstone and other easily fusible materials. The process was effected *on* the wall and not on either side of it.

Stuart³ poured scorn on the idea that vitrification was due to volcanic agency. That it was due to occasional peat fires was also an inadequate explanation, and that it was due to enemy assault was not feasible. He considered vitrification the fusing of a central wall buttressed by external masses of stone on each side. This accounted for the partial vitrification found. Stuart made a useful contribution to the subject by publishing a translation of Dr. Fodisch's work on the vitrified forts in Bohemia which were compared with the Scottish series. He also corrected the idea that they occurred only north of the Forth. On the Bohemian evidence it might be inferred that the idea of strengthening walls by the application of fire was known there, but it did not appear that the efforts of the builders enabled them to do more than cement the foundation stones, or to link together large blocks of stone, and that in Bohemia they had not achieved the great extent of vitrification such as was known in the Scottish forts.

Marion⁴ thought that the theory that the fire was not an agent of construction but of destruction was fantastic and without solid foundation. An attribution to accidental causes was too simple. He quoted the work of Rallier, Pylaie, Merimée, Geslin, de Bourgogne, de Cessac and de Caumont on the vitrified forts of Mayenne, Orne and Côtes-du-Nord, but these writers had described the forts without discussing the causation of vitrification generally. Prevost, however, had rejected the theory of accidental combustion. Both Prevost and Geslin de Bourgogne considered vitrification as man-made and intentional, and Prevost dated the Scottish series to the time of Septimius Severus, the only Roman general who led his legions to the Moray Firth. Whilst Marion had no views to offer he thought it a matter of opinion whether the vitrification was intentional or accidental. Although the Scottish forts were defended places of refuge, their main purpose was for use as observation points where beacon fires could be lit to warn of an enemy's approach. He reserved his opinion on the question of their date. He thought that the Caledonians were ignorant of the art of masonry and quoted Bede to show that in A.D. 676 Benedict Biscop, Abbot of Wearmouth, Northumberland, when wishing to build a new monastery was obliged to send to Gaul for working masons. In A.D. 710 Nectan, King of the Picts, wrote to Ceolfrid, Benedict's successor, asking him to send architects. It was not certain that the Romans did penetrate to the Highlands of Scotland or, if they did, that they stayed long enough to build forts, and anyway the forts showed no characteristics of Roman work. This left it to the Scandinavians to be the authors of these monuments and they were probably built between the 7th and 9th or 10th centuries A.D. Daubrée⁵ analysed specimens of vitrified material from five French camps, one German and from Craig Phaidrick. He found that different kinds of rock had been used including granite, gneiss, quartzite and basalt. He thought that no flux had been used and that the builders were clever enough to understand the action of heat on these rocks and to produce minerals which in his day needed a laboratory technique to isolate. In both the Scottish and Continental series the vitrification seemed to have been produced by the same method. He found it difficult to believe that vitrification method had been invented independently in places so far apart, and the process must have been transported from one country to another. The vitrified forts, therefore, could serve to mark the stages of certain migrations.⁶

de la Noe⁷ quoted an attempt to produce vitrification made in 1782 by an officer of Dunquerque on a block of 40,000 bricks. The experiment was to demonstrate the practical usefulness of the procedure for the economic construction of battery platforms. Although bricks were used, whilst vitrified walls were usually of basalt, the effects would be the same, as it was only the intensity of the heat required that differed. As vitrified forts were only found in granite country, it might be only a particular method of building in areas where the builders were unable to import lime because it was unavailable or too costly. He saw nothing against the idea that the same builders might make dry-stone walls, mortared walls or *murus gallicus* forts, depending on the sub-soil of the site and at varying dates. The French

¹ *Rev. des Soc. Sav. des Départements*, iv (4e. ser.) (1866), 317-21.

² *T. Glasgow A. S.*, ii (1883), 29-43. (Paper read in 1868).

³ *P.S.A.S.*, viii (1868-70), 145-64.

⁴ *M.S.A.F.*, xxxiii (III, 4e. sér) (1872), 18-45.

⁵ *R.A.*, xli (2e. ser.) (1881), 18-28; *ibid.* xlii (2e. ser.) (1881), 36-40; *ibid.*, xliii (2e. ser.) (1882), 275-8.

⁶ Poirier supported this view, cf. *Bull. Soc. Arch. de Nantes*, xxii (1883), 172-5.

⁷ *P.F.A.* (1881), 385 ff.

sites seemed to be analogous to known early Gaulish sites, as Murcens, but the Scottish series, on their form and size, were fortified castles of the Middle Ages.

Hamilton,¹ when studying the vitrified forts of the west of Scotland, made a useful summary of earlier theories on vitrification but offered no new ideas.

Anderson² stated that vitrified forts did not differ in any essential point of their character from those that were not vitrified. The results of investigations up to that time (1883) were not sufficient to conclude that the vitrification was accomplished at the time of their construction. This could only be determined by further evidence furnished from a study of the structure of these walls.

Barthelemy³ showed in his work on the calcined forts of Lorraine, Charente and Creuse, that the processes of calcination and vitrification were identical. Because of this one was tempted to assign them to the same date, but the Puy de Gaudy and Peran had produced Gallo-Roman debris, whilst the other camps had produced earlier material. He reviewed the evidence from the best explored camps.⁴ Twenty vitrified forts were then known in Europe, distributed in Scotland, Germany, Sweden, Denmark and France (which had seven examples). Five calcined camps were known (all in France). No one in France at that time supported the theory that vitrification was due to the burning of wooden beams incorporated in the wall-build. The fusion was an intentional production. Nor was it due to cooking hearths placed alongside the ramparts or to incinerated burials. The alternate layers of stones and ashes showed that it was an intentional process for consolidating the ramparts by fusing together the materials. On their date he analysed the available French evidence. At Ceneret there was no proof of the occupation periods. At Voeuil finds attributable to the Bronze Age immediately preceded the building and burning of the rampart. At La Forasse there was no occupation later than the first Iron Age. The Puy de Gaudy had a succession of occupations from the prehistoric to Frankish. Here de Cessac had dated the vitrified wall as c. 6th to 8th centuries A.D. At Peran the double banks were not Gaulish because of the Roman brick found under the vitrification and the build must be post-conquest or a repair of the defences. At the Camp d'Affrique the culture and the tumuli in the vicinity were of Early Iron Age date. The vitrified islands known as the 'Briquetage de la Seille', in the valley of the Seille, between Marsal and Barthecourt (Lorraine), were made of pieces of baked clay arranged in platforms in the marshes of the Seille. The work was certainly pre-Roman as the Roman fortress of Marsal was built on one of these islands. The sherds from these islands were equivalent to those from the Camp d'Affrique and La Fourasse. The Briquetage, calcined camps and tumuli were all therefore of the same date.

Rupin⁵ believed that vitrification and calcination were intentional and not accidental. Whilst these camps might have been used as places of refuge, they were also probably used as signal stations. He supported the views of Lièvre, who examined the Camp de Voeuil, in dating them to a period between Neolithic times and the advent of the Romans.

Christison⁶ defined vitrification as 'the binding together of the stones by a vitreous material, produced by the action of heat'. Earlier descriptions which assumed that vitrification was continuous could only have been seen 'by the eye of faith' and not by actual observations. As to the position and amount of vitrification, he considered that only forts in which it was continuous along the walls or almost complete could be discussed. He believed that in the Scottish series the vitrification was from the top and only reached the bottom accidentally. If small in amount, it was accidental, but if more or less continuous, structural intention seemed undeniable. One of the most formidable objections to the idea of structural intention was to explain its purpose. He suggested that it was intended to provide a firm footing on the upper levels of the defence for the defenders on the top whilst the assailants had to stumble over the loose stones on the slope below. In the more completely vitrified walls the purpose may have been to achieve a perpendicular face. Knowledge of the distribution of the forts was too limited to justify any definite conclusions. In structure, the walls were made of small stones and probably had no built masonry, but this point was not sufficiently proved. Given the right kind of stones the process of vitrification was comparatively easy, and its position showed that it must have been effected from the top and sides in the more complete examples. On the question of calcination, he quoted Barthelemy's theory that it was intentional with the idea of forming a solid core which, being fixed to the ground, gave greater stability to the loose mass of earth and stones in the rampart. Whilst this might be so in the case of vitrified cores, Christison felt that mere calcination would not produce an adhesive material, and that unless the so-called calcined core was really a concrete or mortar it would be a source of weakness rather than of strength. Moreover, in one of the five examples quoted by Barthelemy the calcined core was not near the bottom but close below the surface of the inner slope of the rampart, and in another example in a wall of dry-built masonry. In the first instance the core could not serve to anchor the loose stones to the ground; and in the second, if the builders could make mortar and build a wall, why did they not use mortar to cement the stones? Descriptions of the French calcined camps were singularly unsatisfactory, as was the data available in Scotland, where only the walls of Knock Farril and Tap o' Noth had been sectioned, and no rampart had been shown to be vitrified all the way round. Further excavation was essential.

¹ *Arch. J.*, xxxvii (1880), 227-43.

² *Scotland in Pagan Times: The Iron Age* (1883), *passim*.

³ *A.F.A.S.* (20e. sess., Marseilles) (1891), i, 269.

⁴ *Mém. Soc. Arch. Lorraine*, xlii (3e. ser., xx) (1892), 266-300.

⁵ *Bull. Soc. Sci. Hist. et Arch. de la Corrèze*, xv (1893), 176-98.

⁶ *E.F.S.* (1898), *passim*.

Practically the only work done on the calcined camps of the Côte-d'Or is that of Drioton.¹ He examined, in a somewhat cursory manner, the ramparts of Étaules, Mont Afrique, Plombières-les-Dijon, Val-Suzon and Messigny, all in the vicinity of Dijon. He thought that the calcination varied in form from a compact core to a screen or armour-plating, or to scattered and occasional patches. The fact that he found ash and charcoal at the base and below the solid core, and that the top of the rampart was unburnt, convinced him that the calcination had occurred *in situ*. He quoted texts from Caesar and Frontin in which the use of fire was mentioned as a means of temporary defence to mask movement or to prevent an attack. Calcination might have resulted from such fires, but he did not regard this explanation as satisfactory, as the references were to measures designed to protect a river-crossing or a difficult retreat and were not to settled fortified sites.

M'Hardy² thought that the Scottish distribution indicated a Viking date for some of the forts. The seventeen he had seen were situated either near the coast, where it was deeply indented by the sea, or at inland points on the opening of a large valley or a group of valleys radiating from a common centre. He had samples of material analysed from Finavon, Tap o' Noth and Eilean-nan-Gobhar. He thought that the interdependence which could be observed in the groups lent some support to the view that they were used for signalling purposes. Other forts, not vitrified, may have served a similar purpose, but no effects remained as they were built of refractory materials. His arguments against vitrification being intentional were that if it was intended as a structural method it must have been a troublesome business to which resource was had only when ordinary building was impossible. But in a number of forts the vitrification was not carried up to the full height of the wall as it might easily have been. Nor was it continuous all round the defence, and if for structural purposes this would have been necessary. Sometimes the vitrification was most intense at points which did not need the strongest defence. At the wide entrance to the fort of Ard Ghaunsgoik, the point where the defences were the weakest, it was missing. It seemed unlikely, therefore, that vitrification was undertaken as a structural method. He tried to reconstruct a vitrified wall, but with poor results. He then tested the results of beacon fires. He found that a large amount of slag could be obtained from burning grass or straw, as, for example, when a stack was burnt. He examined a site at Hay Mount Farm, Kelso, where 57 stacks of grain and 8 of hay had caught fire. In the recently built stacks where the straw was strong and the hay had an open texture so that air was admitted, there was no slag at the bottom. In the older oat ricks there was some slag among the debris, but the largest amount of slag was found at the bottom of the closely packed ricks. As a high wind had been blowing at the time of the fire, only in the oldest stacks was the combustion at all slow. These fires, when nearly burned out, had been extinguished with water and otherwise, so some of the stones at the bottom may have escaped the full effect of the fire. Therefore he experimented with open fires on bases of selected stones laid in moorland sites. Burning old moorland hay on a 'saucer' of whinstones produced a little slag, but the results on the stones themselves were nil. Burning hay and bracken on a pile of stones produced a very intense heat and the stones were fractured and burnt but were not vitrified. He then burnt peat, brushwood, seaweed and grass on a stone-heap on the shore at Arisaig. The fire was kept up for 39 hours. Again the stones were not vitrified. He was satisfied therefore that a beacon fire, understood in the sense of an open burning mass, did not produce vitrification of stones lying in a heap below it. As this burning might have been too rapid he designed an experiment in which the supply of air was reduced. He built an enclosure 4 ft. x 4 ft., with a 3 ft. high wall. He filled the bottom with loose stones and covered them with peat and brushwood to the top of the wall and set this alight. When the fuel was half burned more wood was added and was covered with peat. As the fire burned down hay was added to check the draught. He achieved incipient fusion producing a sort of glaze over the top stones, but the remainder were only burnt. In further experiments he abandoned the practice of applying heat above the stones and placed his fuel below them. Finally, he tried a small fire of brushwood on the shingle, and when it was well alight he covered it with a thin layer of stone, and continued this layer technique, trying to check the consumption of fuel as far as possible, without letting the fire be altogether extinguished. He kept this up for 18 hours and succeeded in producing in the centre a small vitrified mass. He assumed, therefore, that vitrification was produced by a very slow process, not by fire in the open, but by a slow heat with a very limited supply of oxygen. The Scottish forts were in many cases simply signalling stations, occupied for considerable periods at a time. A smouldering fire would be kept which could be stirred up when needed. It served also for cooking purposes. Such a fire would in time produce a large amount of slag in a region where stone was easily viscous, while in other places there might be no trace of vitrification.

Beaupre,³ having studied calcined camps in the east of France, believed that calcination was an intentional process. The work of Drioton showed that it had occurred *in situ*, and that the burnt charcoal was at the bottom of the bank and not at the top, as it would be if the banks had been used as signal sites. de la Noe had noted that the charcoal occurred in layers in the calcined core, which suggested an intermingling of stones, wood and earth, characteristic of Gaulish fortification. There was no historic evidence in France to support a 'beacon-fires' theory, the actual evidence was in fact against it. Hearths, lighted in the mass of the bank itself, were designed to fuse the rocky material to achieve its cohesion and to assure the solidity of the whole.

¹ *Mem. Com. Ant. Côte-d'Or*, xiii (1895-1900), cxxxv-cxl.

² *P.S.A.S.*, xl (1905-06), 136-50.

³ *B.S.P.F.*, iii (1906), 114-22.

Autorde¹ believed that the vitrified blocks were produced elsewhere and were then taken to the site and incorporated in the ramparts. In 1864 a fire occurred at Limoges which lasted six days. Twenty three houses, many of them made with wood, had been burnt out. There was no vitrification. Vitrification was not produced *in situ*. Vitrified material came from hearths in which the use of bellows permitted the production of sufficient heat to fuse the granite. It came principally from furnaces used to make iron, either by treating the ore or by using old iron.

Dechelette² drew attention to the numerous controversies on the date and origin of the vitrified and calcined ramparts without any of the proposed solutions obtaining general agreement. They were only distinguished from ordinary dry-stone walls by the fact that, under the action of a fierce fire, they had been reduced in whole or in part to a compact and very hard conglomerate. According to whether the material used in these walls was of a crystalline or of a calcareous rock, the core was turned into a vitrified matrix or a sort of extremely compact lime mortar. The vitrification was usually confined to small cavities or alveoli filled with black ash and showed very characteristic wood imprints. In the same way the lime was mixed with charcoal and ash. Vitrified forts were known in Scotland, Germany and France (mostly in the Central Departements). One essential point was, he felt, beyond argument: these walls were fortification works. Most shut off the approach to a promontory, usually of restricted area. Some were further protected by a ditch. He thought the disagreement was partly accounted for by observations and theories having been applied to different cases. Sometimes there had been confusion between vitrified ramparts and remains of old hearths and industrial establishments or incineration tumuli, which had nothing to do with fortifications. It should not be overlooked, however, that in a re-built wall vitrified material from such sources might have been incorporated. As for true vitrified ramparts, that is defensive walls whose vitrification obviously came from a fire lighted on the site, he was not prepared to formulate a general theory without a more serious study of the French and Scottish sites having been made than was then available. He felt, however, that German archaeologists had established one fact. The walls in Silesia with a scorified core had been shown by Schuchhardt³ and Anthes to be simply ramparts of wooden timber-frames filled with stones, consumed accidentally or otherwise by fire. Schuchhardt stated that the vitrification came from the burning of a thick wood incorporated in the ramparts, the *muris gallicus* not appearing otherwise in Silesia. Schmidt,⁴ however, interpreted their origin differently. According to him their vitrification came from hearths lighted intentionally in stone huts, soon after their construction, with the idea of scorifying their walls to preserve them from dampness. Dechelette found this latter theory unacceptable. Dechelette thought that the section of the scorified wall of Stromberg supported the theory, proposed originally by Woodhouselee, that the fire was due to destructive causes. This rampart was built externally of large stones and internally of wood and basalt stones. The section showed that the top of the wooded part had collapsed during the fire, whilst the base, subjected to a less violent fire, was converted into a scorified core. This had been confirmed at other Silesian sites. Whereas in Caesar's time the most widely spread rampart among the Gaulish peoples was the *muris gallicus*, and several were incontestably of La Tène III date, it was possible that the method of construction might have been used much sooner. Dechelette reserved judgment as to whether this explanation could also be applied to the vitrified walls of France and Scotland, although Schuchhardt had affirmed that it could be so applied. Those studied by Dechelette, more especially Lourdan, near Roanne, had been built of a micro-granulitic porphyry, a rock which fused only at a temperature of above 1,000° Centigrade. A study of excavated sites would doubtless elucidate the problem and such a study did not exist. It was important to discover whether the vitrified walls in France and Scotland were of the *muris gallicus* type of construction. It was true that in France no one had observed iron bolts in the vitrified walls, but at Peran, for example, it had been stated that the beams which formed part of the construction were carbonised in position. The currents of air traversing the cavities which the ignition of timber-work would leave in the mass of a *muris gallicus* would fan the intensity of the fire and would set up the draught necessary to soften these crystalline rocks. This interpretation had the advantage of explaining how in several ramparts the vitrification was only partial and sporadic and was not continuous as it should be in the hypothesis of a combustion aiming at increasing the cohesion of the masonry by the agglutination of its elements. Dechelette thought that if the combustion of these ramparts was the result of intentional or accidental fires, the important problem was to date the first walls of Gallic type in stone and wood (which were known to be especially numerous in the La Tène III period) and to know how long this type of defence continued. There were, however, few precise indications of the date of the French vitrified forts. He quoted earlier views on their fate, adding that of de Mortillet, who attributed them to the English in the Hundred Years' War without dreaming that they were found over a much wider zone than that of the English incursions. On the calcined ramparts Dechelette noted that they occurred in Lorraine, Burgundy and Franch-Comte, and in Southern Germany. He observed that the finds from the Camp d'Affrique in Lorraine appeared to indicate that its principal occupation was of Hallstatt date, whereas those from Sainte-Geneviève were mostly La Tène III. As with the vitrified forts, it was necessary to obtain further reports on the calcined camps before it could be determined whether the combustion arose from a simple fire, accidental or otherwise, as presumed in Silesia, or whether there had been a

¹ C.P.F. (3e. sess., Autun) (1907), 721-50.

² *Manuel*, iii (1927 ed.), 192-201. (Bibliography).

³ *Zeitschrift für Ethnologie* (1909), 508;

Korrespondenz-Blatt für Anthropologie, Ethnologie und Urgeschichte (1910), 89.

⁴ *Korrespondenz-Blatt, etc.*, (1906), 90.

systematic use of a procedure designed to cause fusion of the materials. Dechelette concluded that on the knowledge available at the time he wrote, it would be premature to decide on the date or *modus operandi* of the vitrified forts and calcined camps.

Hawkes, Myres and Stevens¹ suggested that the phenomenon of destruction found in the earthen rampart of Saint Catharine's Hill, Winchester, seemed to invite comparison with the vitrified forts of western and central Europe and of Scotland, the stone ramparts of which had been subjected to so high a temperature that the internal material had been fused into a solid mass of vitrified rock. They thought it hard to understand how heat of such intensity could be produced. Both at Lourdon, at Stromberg and elsewhere, vitrified walls could be shown to have been of half-timbered construction as the *murus gallicus* described by Caesar at *Avaricum*, and constantly met with in the Celtic area of Europe in which the stonework was interlaced with a stout timber framing. The vitrification could be accounted for by the argument that if such a wall got really alight the timbers penetrating the stonework would, as they gradually burned out, create flues along which the heat would permeate the structure by a forced draught and would vitrify the stone as in a furnace. In addition to Dechelette's data, they quoted later evidence from l'Impèrnal, Lot, in which a vitrified rampart of Hallstatt date was found which differed materially from the stone and timber La Tène rampart which succeeded it.

Childe and Thorneycroft² applied the epithet 'vitrified' to those forts in Scotland or abroad that contained within their ramparts broken stones fused together to form a solid mass. The extent of such vitrification varied enormously from site to site. The most famous Scottish examples, perhaps not more than twenty in all, at least gave superficially the impression that a substantial wall of vitrified material once ran more or less continuously round the whole perimeter of the enclosure or at least extended over substantial strips. In others, on the contrary, it was necessary to hunt about to find even two or three stones fused together. Faced masonry walls had been found on one or other, or on both sides of these ramparts. Such faces were frequently so dilapidated and distorted that they were liable to be missed by old-fashioned methods of excavation. The vitrified masses were always heavily undercut. They did not always rest on bed-rock and there was generally a layer of loose stones on virgin soil below the vitrified masses. Rocks known to have been vitrified included Old Red Sandstone, and the Conglomerates of that series and other varieties of schist, all rocks that contain a relatively high proportion of minerals other than quartz. In the vitrified forts that had been scientifically excavated and adequately explored (Dun Troon, Finavon and Rahoy), a fierce conflagration within the fort was attested by traces on the sub-soil and by an astonishing number of carbonised logs lying under the debris of the ramparts. At Finavon the charred timbers lay upon and above the hearths and floors of houses built under the shelter of the north rampart: at Rahoy they lay upon the rock floor round hearth H2. The pieces of wood in question could not, therefore, have been burned in any vitrification process preparatory to the occupation of the fortified enclosure. Moreover, at Eilean Buidhe and at Rahoy charred material extended under the foundations of the walls. In the vitrified masses themselves they regarded it as especially significant that some stones had been completely fused and run in the molten state forming 'drops'; casts of pieces of timber were found frequently enclosed in the vitrified masses, and exactly similar casts had been reported in France;³ and more rarely small pieces of completely carbonised wood were enclosed in the vitrified masses. Schuchhardt's theory of vitrification, accepted by Déchelette, was subsequently supported by the masterly excavations of Bersu.⁴ These authors maintained that vitrification resulted from the combustion of the wood in a wall composed of stone and timber built in the manner of Caesar's *murus gallicus*, and illustrated in Scotland by the ramparts of Burghhead, Castlelaw, Abernethy and Castle Law, Forgandenny. This hypothesis not only offered an intrinsically plausible account of the construction of a vitrified rampart, it would also explain some of the specific phenomena noted above. Childe⁵ had drawn attention to a similarity between the relics recovered from the Gallic wall and vitrified forts in Scotland. At the same time the character of the brooches established the use of the Gallic wall technique as early as La Tène I in Scotland and *a fortiori* on the Continent too, since the Gallic walled forts at the mouth of the Tay obviously belong to an intrusive complex. This dating removed a difficulty felt by Dechelette, who noted that the Gallic walled forts of France were essentially La Tène III, while the vitrified forts seemed earlier. Incidentally the technique employed in these later examples seemed more advanced than that illustrated at Abernethy and Forgandenny where, for instance, the use of iron clamps for the timbers was not observed. It may be due to such technical improvements that Caesar was unable to set these walls on fire in La Tène III times. Childe and Thorneycroft, however, entertained doubts whether the combustion of such a wall would generate a temperature between 800°-1,100°, such as they had found necessary to melt the stones employed at Rahoy and Finavon. They accordingly designed experiments to test the theory.

(i) At Plean Colliery, Stirlingshire, a model Gallic wall, 12 ft. long by 6 ft. wide by 6 ft. high, was built of old fireclay bricks, timber pit-props and basalt rubble. Scrap timber and brushwood were heaped around and were set on fire. The whole of the timber was ablaze within half an hour. The outer walls collapsed. The core was vitrified and a thick layer of charred material covered the earth under the site of the wall.

¹ *P. Hants. F.C.*, xi (1930), 65.

² *P.S.A.S.*, lxxii (1937-38), 44-55.

³ From La Courbe, Puy-de-Gaudy, Chateau

Meignan, Camp de Pérans and Lourdan.

⁴ cf. *Der Breitenberg bei Striegau*.

⁵ *P.S.* (1935), 236.

(ii) A similar Gallic wall was built at Rahoy out of the stones that had actually been used in the ancient fort with logs and broken schist, and the experiment was repeated. When the fire had died out, both faces of the wall were standing, but the sagging and buckling due to the consumption of the tie-beams produced an effect strongly reminiscent of the prehistoric rampart itself. The rubble core had subsided to some extent, practically the whole of the timber built into the wall had been consumed and some wood ash had fused into the stones. On dismantling the wall vitrified masses were found in the core.

They submitted that their experiments had proved the following points :—

(i) The combustion of a Gallic wall will produce temperatures of the order requisite to fuse stones used in vitrified forts and will reproduce the outstanding phenomena of vitrification.

(ii) Under suitable conditions of wind such a wall could be set alight by an external fire ; for instance, a forest fire kindled by enemies against the rampart, or the conflagration of thatched wooden houses built against the rampart inside the fort.

(iii) The consumption of the tie-beams may involve the almost complete collapse of the faces, leaving a core of vitrified material standing more or less in the line of the wall, or it may leave the face distorted.

(iv) Only rocks containing a suitable mixture of minerals in addition to silica could be vitrified under the conditions envisaged ; for the range of temperature producible would be between 950°–1,200° Centigrade. Highly siliceous rocks such as Carboniferous Sandstones would not be fused ; while the more mixed Old Red Sandstones, formed from broken-down volcanic and metamorphic rocks, have yielded the vitrified ramparts of Finavon, Craig Phaidrick, Knock Farril, etc.

To this extent the hypothesis of French and German archaeologists that vitrification is in general the by-product of the destruction by fire of a *murus gallicus* seemed to be vindicated. Whether it be necessary to suppose that this process was deliberately imitated to produce the more or less vertical faces of vitrified material might be left as an open question.

Childe¹ wrote that as vitrification can easily be recognised by mere inspection, and has been persistently sought for during two centuries, the recorded examples afforded a welcome extension of the sites representative of his Stage VI of the Iron Age in Scotland. But if the core of the wall be not consolidated by fusion and the nature of the structure revealed by vitrified stones, the remains of a Gallic wall are hard to recognise. For such walls will collapse when the tie-beams decay, even if not burned, and only exceptionally, as at Abernethy and Monifieth, will the faces remain standing to a sufficient height to show the sockets for the tie-beams, and these could only be exposed by the removal of masses of stone fallen from the upper courses. Since vitrification depends on a conjuncture of geological, meteorological and historical conditions, many unvitrified Gallic forts may await discovery. An uncertain number of hill-forts, especially those that are defended by rectilinear ramparts such as are so characteristic of a number of vitrified forts, may really belong to this group.

Many hill-tops, originally defended by Gallic walls, have been occupied or reoccupied in Roman times, the Dark Ages, or still later. It would be premature to infer that this ingenious method of construction had been forgotten or abandoned in A.D. 80, and hence that every vitrified fort is necessarily anterior to that date.

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| <i>Ant.</i> | <i>Antiquity.</i> Gloucester. |
| <i>Ant. J.</i> | <i>Antiquaries Journal.</i> London. |
| <i>Arch.</i> | <i>Archaeologia.</i> London. |
| <i>Arch. Bull.</i> | <i>Archaeological Bulletin.</i> Council for British Archaeology. London. |
| <i>Arch. Camb.</i> | <i>Archaeologia Cambrensis.</i> |
| <i>Arch. of Yorkshire.</i> | <i>Yorkshire. County Archaeology Series.</i> Methuen : London. |
| <i>Arch. J.</i> | <i>Archaeological Journal.</i> Archaeological Institute of Great Britain and Ireland. |
| <i>Arch. Scot.</i> | <i>Archaeologica Scotica.</i> Edinburgh. |
| <i>B.S.P.F.</i> | <i>Bulletin de la Société Préhistorique de France.</i> Paris. |
| <i>Bull. Soc. Arch. de Nantes.</i> | <i>Bulletin de la Société Archéologique de Nantes et du Département de la Loire-Inférieure.</i> Nantes. |
| <i>C.A.S.</i> | <i>Congress of Archaeological Studies.</i> London. |
| <i>C.B.A.</i> | <i>Council for British Archaeology.</i> London. |
| <i>C.P.F.</i> | <i>Congrès Préhistorique de France.</i> Comptes rendus des congrès annuels de la Société Préhistorique de France. Paris. |
| <i>E.F.S.</i> | <i>Early Fortifications in Scotland.</i> See CHRISTISON* below. |
| <i>J.B.A.A.</i> | <i>Journal of the British Archaeological Association.</i> London. |
| <i>J.R.S.</i> | <i>Journal of Roman Studies.</i> London. |
| <i>L.A.A.A.</i> | <i>Annals of Archaeology and Anthropology.</i> Liverpool. |
| <i>Manuel.</i> | <i>Manuel d'archéologie préhistorique, celtique et gallo-romaine.</i> See DÉCHELETTE below. |

¹ S.S. (1946), 14–5.

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