DUMFRIESSHIRE AND GALLOWAY NATURAL HISTORY AND

ANTIQUARIAN SOCIETY

FOUNDED 20th NOVEMBER, 1862

TRANSACTIONS

AND

JOURNAL OF PROCEEDINGS

1962-63

THIRD SERIES, VOLUME XLI.

Editor
A. E. TRUCKELL, F.S.A.Scot.

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EDITORIAL

Contributions are invited on subjects relating to the Natural History, Antiquities, Archæology or Geology of South-West Scotland or the Solway Basin. Preference is always given to original work on local objects. Intending contributors should in the first instance apply to the Editor for "Instructions for Contributors."

Each contributor has seen a proof of his paper and neither the Editor nor the Society hold themselves responsible for the accuracy of scientific, historical or personal information.

Presentations and Exhibitions should be sent to the Hon. Secretary, and Exchanges to the Librarian, Ewart Library, Dumfries. Enquiries regarding purchase of transactions should also be made to the Librarian. New members are invited to purchase back numbers (see back cover).

Payment of subscriptions should be made to the Hon. Treasurer. The latter will be pleased to arrange Bonds of Covenant, which can materially increase the income of the Society without, generally, any additional cost to the member.

This volume is published with the assistance of a generous Carnegie Grant.

The Geological Collections In The Museum

A. McCracken, B.Sc.

The area covered by the collections in the museum is of considerable extent, being bounded on the north by the Southern Uplands Fault, on the south by the Solway Firth, on the east by the River Liddel and on the west by the Mull of Galloway. In an area of this size there are, of course, a huge variety of rocks, and the list given below, while recording the collections at present in the museum, contains only a small number of the rock-types to be found. In fact, these rocks must be regarded simply as a nucleus, around which a representative collection can be built. In particular, specimens from the western half of the area are scarce, and more would be welcome.

Generally speaking, the older rocks lie to the north of the area, the younger to the south. An exception to this rule exists in the Sanquhar-Kirkconnel district, where an outlier of Coal Measures strata occurs among Ordovician rocks. Most of the igneous rocks are intruded into older sediments. Most of the sedimentary rocks are comparatively unfossiliferous, though in a few exposures fossils are abundant. Among the most notable of these are the black shales at Dobb's Linn, near Moffat; the limestones at Arbigland; and the fish-beds at Glencartholm, near Canonbie. To compensate for the lack of fossils, however, the area is rich in minerals. Wanlockhead and Leadhills are the real treasure-house, of course, but colourful and interesting specimens can be discovered almost anywhere.

The area has its fair share of all types of igneous rocks, from the tuffs and basalts of the Birrenswark volcanic series to the massive plutons of granite and granodiorite found in Galloway. The latter are rich in minerals, but so far only that lying between Dalbeattie and New Abbey, with Criffel as its highest point, has been examined, and that only to a small extent. Here again any specimens collected would be most welcome.

All the rocks mentioned below are represented in the collections and may be seen at the museum.

SILURIAN ROCKS

Silurian rocks cover most of the area, but are mainly of the rock type known as greywacke, a coarse, thick-bedded sediment varying in texture from a mudstone to a grit, and usually much disturbed by folding and earth movement. The majority of the Silurian rocks have no fossils, or very few, but in some localities shales occur which contain large numbers of graptolites.

DOBB'S LINN, BIRKHILL

The black shales found at Dobb's Linn are famous for the work done on them by Lapworth, and the numbers and varieties of graptolites found in them are remarkable. At present, the museum's collection is fairly small, but even so it contains many types, including Monograptus, Diplograptus, Rastrites, Dicellograptus, Petalograptus, Glyptograptus, and Pleurograptus. In one or two places the graptolites seem to have been replaced by iron pyrites.

MILNHOLM. LANGHOLM

A small exposure in the side of the river terrace of the Esk yields very well-preserved specimens of monograptus in a fine-bedded mudstone. The same exposure has yielded the fragmentary remains of some orthocerid, and also a doubtful primitive fish, possibly an ostracoderm.

WHITA HILL, LANGHOLM

A small roadside quarry exposes Silurian sediments, mainly mudstones, which are much shattered by faulting. One bed, however, yields well-preserved monograptids.

WRAE HILL, LANGHOLM

A fairly coarse grit, grey-green in colour, contains the fragmentary remains of corals, crinoids and brachiopods.

Isolated specimens of Silurian rocks from Kirkcudbright and Moffat Dale show specimens of monograptus.

OLD RED SANDSTONE

Exposures of the Old Red Sandstone are uncommon in the area. Specimens from Skipper's Bridge, near Langholm, show the fine-grained, dark red sandstone, with some patches leached out to a pale green colour. At this exposure the Old Red is overlain unconformably with the Birrenswark Lavas.

CARBONIFEROUS

The Birrenswark Lavas, which form the base of the Carboniferous System in the area are described under Igneous Rocks.

CALCIFEROUS SANDSTONE SERIES

Rocks of this series are found in the rivers Esk and Tarras below Langholm. Near the junction of these rivers the rocks are well-exposed and take the form of fine-grained sandstones. Many of the beds contain numerous plant remains, and the bedding planes often show mica flakes. In one or two localities the surfaces of the beds show large numbers of salt pseudomorphs, of varying sizes, in relief.

GLENCARTHOLM VOLCANIC GROUP

Though this section should properly be included among the igneous rocks the highly fossiliferous shales which it includes make this a more suitable place.

A thick bed of tuff outcrops in the bed of the Esk just north of Glencartholm, and several specimens are kept in the museum. Above this tuff is a thin bed of black chert, some three feet thick. Lying on this chert is a highly fossiliferous shale. Among the collection of fossils from this site, the museum possesses several examples of a small fish, a type of Rhadinichthys, samples of shale containing large numbers of plant fossils (types of fern); numerous small brachiopods and lamellibranchs; and the fragmentary remains of small shrimp-like creatures, probably Crangopsis.

ARBIGLAND BAY

The shore of the Solway at Arbigland contains some excellent exposures of a highly fossiliferous limestone which forms the top of the Calciferous Sandstone in this area. The limestone has a distinctive orangey-red colour, and contains large numbers of well-preserved fossils. Most of these are corals (Lithostrotion is particularly numerous), but the small collection in the museum also includes brachiopods (Productids and Spiriferids), lamellibranchs, crinoids, and gastropods.

CARBONIFEROUS LIMESTONE

KELLHEAD

The quarry at Kellhead has yielded some very well-preserved fossils. The limestone itself is light pink in colour, and the fossils it contains include Productus giganteus, Nautilus, Orthoceras, Actinoceras, and Atrypa.

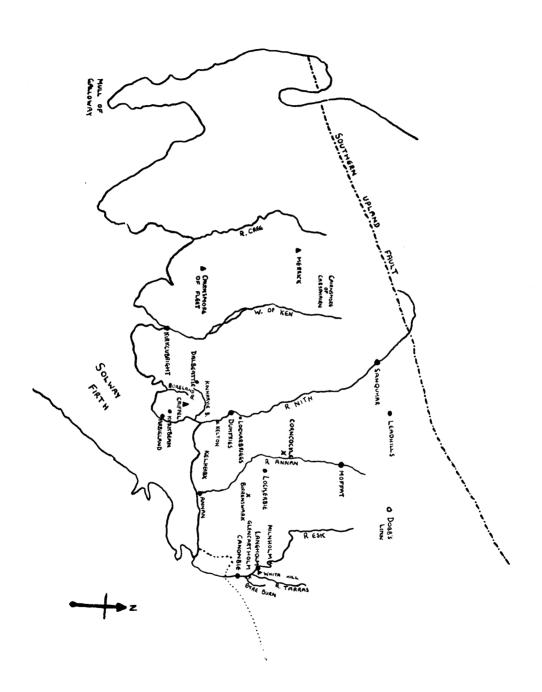
CLOSEBURN

The specimens from Closeburn include Pleurotomaria, as well as Orthoceras and Productus.

COAL MEASURES

SANQUHAR AND KIRKCONNEL

The fossils from this area are mainly of plants, and are included in the sandstones which are normally present between the coal seams. These sandstones are flecked with mica flakes. The plants are almost entirely Lepidodendron and Stigmaria. A specimen from one of the so-called "mussel-beds" shows a mass of lamellibranchs (possibly Carbonicola), which flourished at the time when the Coal Measures were being formed. Fossils found in the coal itself are rarer, but the collection includes a plant seed, a valve from Carbonicola, and a vertebra of some amphibian.



CANONBIE

Coal Measures strata are exposed in the Canonbie area, although mining has now stopped. The best exposures are found in the bed of the Byre Burn, and in the bed of the Esk at Byreburnfoot. The black shales in the Byre Burn contain fossils of Lepidodendron, while the sandstones between the shales contain Calamites. These sandstones usually contain a good deal of mica. At one point a bed of black shale contains a pocket of iron pyrites, some of it crystalline. At Gilnockie Bridge, the sandstones contain many ill-preserved plant fossils, including Lepidodendron and Calamites.

PERMO-TRIASSIC (NEW RED SANDSTONE)

The Permian and Triassic Systems are usually considered together, and given the name New Red Sandstone Rocks from these groups form the youngest in our area.

Permian sandstone occurs at Locharbriggs, where it has long been quarried and used throughout Scotland as a building stone.

The Permian sandstone at Corncockle Muir has yielded many examples of reptilian footprints, some of which are on display in the museum. In one or two places the sandstone shows the ferruginous nodules which are described in the list of minerals in the collection.

In the Nith basin, around Dumfries, are several exposures of a very coarse breccia. The best locality to study this is at Maidenbower Craigs. The pebbles which it contains are mainly igneous in origin, apparently of some basic intrusive material, but some sedimentary rocks are also represented, including some fossil-bearing limestones. This limestone is of Carboniferous age, the coral Lithostrotion being found in a few fragments. From Kelton Cove, one of the most southerly exposures of the breccia, a solitary coral (possibly Zaphrentis), has been recovered.

IGNEOUS ROCKS

The area is particularly rich in igneous rocks, and sites are widespread.

KIRKCONNEL AND SANQUHAR

Ordovician igneous rocks outcrop in this area. The specimens in the museum include:

Volcanic tuff.
Biotite andesitic lava.
Horneblende andesite.
Basalt.

THE GRANITES

The intense igneous activity which took place during Lower Old Red Sandstone times produced the massive granitic intrusions which are found in Galloway. Only the Criffel pluton has been represented so far in the museum's collections. The collection of rocks taken from the metamorphic aureole of the pluton by Miss H. Nisbet, is a valuable addition to the museum. This collection includes: Granodiorite, with a vein of aplite (Dalbeattie).

Granodiorite, with xenolith of altered sedimentary material (Dalbeattie).

Granodiorite, contaminated with altered sedimentary material (Kirkbean).

Hornfels (Kirkbean Burn).

Hornfels, with granitic vein (Kirkbean Glen and also Kirkgunzeon).

Schistose hornfels, with porphyroblastic felspar crystal (Kirkbean Burn).

Various specimens of contact rock from Kirkgunzeon are included in the collection, some showing granitic veins, and one with a growth of porphyroblastic felspar crystals, similar to that from Kirkbean.

The various burns flowing down from Criffel have cut into the granite, and have exposed a variety of interesting minerals, which are represented in the collection,

BORELAND BURN

The Boreland Burn has cut into a large pocket of amethyst, and both massive and crystalline specimens can be retrieved from the stream bed.

GLEN BURN

The Glen Burn exposes hæmatite and agate in the granite.

KINHARVIE BURN

The Kinharvie Burn at one point has cut through a huge fault plane. In the vicinity of this fault are numerous veins of clear mica in the granite. On the fault plane itself can be found morion (black quartz) and psilomelane. Agate has also been found nearby.

LANGHOLM

The Birrenswark Lavas outcrop on the hills above Langholm, and form the base of the Carboniferous System in this area. Specimens from Whita Hill include ropey lava, vesicular lava (some of the vesicules being filled with calcite and chalcedony) and pumice. From the Lavas exposed at Skipper's Bridge come specimens of the basalt veined with quartz which includes galena.

NOTES

The map which accompanies this list is simply a sketch map designed to show the approximate localities of the exposures which are mentioned, and it is not drawn to scale.

From the map it is obvious that by far the greater part of the collection comes from the Eastern part of the area. Any specimens from the Western section would be very welcome at the museum. Specimens are preferably taken from fresh exposures, and the locality of the

exposure noted. The actual size of the specimen depends on the rock type involved, but usually a piece about the size of a grapefruit is big enough.

In particular, samples from the granites around Cairnsmore of Fleet, Cairnsmore of Carsphairn, and Loch Dee would be invaluable. Almost certainly these plutons will include many of the rarer minerals, like the Criffel pluton. Another interesting, but up to now unrepresented, field of study, is the plane of the Southern Upland Fault, which could yield a very varied selection of rock types.

A Bryophyte Flora of Dumfriesshire and the Stewartry of Kirkcudbright

Part I.

South-West Scotland is rich in bryophytes but no comprehensive list of the species present has been published since those of James McAndrew over fifty years ago. A bryophyte flora of Wigtownshire appeared in 1956 (Trans.Brit.bryol.Soc.3.50-63). The present paper aims at providing a comparable picture for the counties of Dumfries and Kirkcudbright. It suffers from the paucity hitherto of collectors in the area. This is reflected throughout in an unevenness of treatment of the species and a subjective element in the assessment of frequency. Rich habitats such as ravines figure prominently while cultivated soil has been relatively neglected. It is hoped, however, that the list will supply a fresh starting point for further field work.

The nomenclature and order of the enumerated hepatics follows "An Annotated List of British Hepatics" (Trans.Brit.bryol.Soc.3.353-374) dated 16th July, 1958. Each name is succeeded by an estimate of its status in the vice-counties of Dumfries (v.c. 72) and Kirkcudbright (v.c. 73). Owing to the inadequacy of the data, four grades only are used, e.g. common, frequent, occasional, and rare. Except for rare species and some varieties, an attempt is made to indicate characteristic habitats in this region. The rest of the paper gives localities for the species along with the initials of the collector concerned. Where no initials follow, it is to be assumed that the station rests on my own authority and is in most cases supported by a specimen in my herbarium. The date is added to a first vice-county record if new since 1940. My own place-names are linked to the ten kilometre grid squares in an appendix. Records made on the Dumfries Field Meeting of the British Bryological Society in September 1961 are marked with an asterisk.* Old records of McAndrew and MacVicar are only used and then singly when no more recent evidence is available.

```
Anthoceros L. spp. Lowland. Occasional. Pioneer plants of moist retentive soil as in stubble fields and on banks.

—A. punctatus L.
               v.c. 72—cornfield near Maidenbower Craigs (1961). *J.A.P. and E.M.L. v.c. 73—previous records proved to be A. husnotii. Definite station
  needed.

A. husnotil Steph.
v.c. 72—near Georgetown (1943). A.D.B.
v.c. 73—damp sandy ground, Southerness (1949). E.C.W.
  -A. lævis L.
              v.c. 72—near Georgetown (1943). A.D.B.
—field near Maidenbower Craigs. *J.A.P.
v.c. 73—field below Nunland Hill (Easthill) (1961). *J.A.P.
 Reboulla hemisphærica (L.) Raddi. Occasional on dry, often basic, rock. v.c. 72—shaded rock, Maidenbower Craigs (1961). •J.A.P. v.c. 73—Grennan, Dalry, J.McA. —Kenmure Castle. J.McA. —Heughs of Laggan. E.C.W.
 Conocephalum conicum (L.) Dum. v.c. 72 and 73—common on moist shaded rocks, often covering large surfaces as at Lot's Wife.

Lunularia cruciata (L.) Dum. v.c. 72 and 73—common in gardens, as at Mainsriddle, rare elsewhere.
 mainstiddie, rare eisewhere.

Preissia quadrata (Scop.) Nees. Frequent on basic rock in subalpine ravines. v.c. 72—Glencrosh Burn.
v.c. 73—Grey Mare's Tail Burn (Talnotry).

Marchantia polymorpha L. var. polymorpha. Frequent in waste places often near habitations, sometimes over large area.
v.c. 72—abundant, Ballochan Linn.—Carron Water. *J.A.P.
v.c. 73—Craignair Quarries—plentiful on soft mud, Fellcroft Loch. var. aquatica.
 v.c. /3—tragnair Quarries—plentiful on soft mud, Felicroft Loch. var. aquatica.
v.c. 72—river bank, Water of Ae, Ae Bridgend (1961).

alluvial marsh, Glenkill Burn.—Penton Linns. *J.A.P.

Riccia L. spp. Pioneer plants of moist retentive soil of open habitats.
  -R. warnstorfil Limpr.
 v.c. 72—cornfield near Maidenbower Craigs (1961). *J.A.P.

—R. glauca L. v.c.s. 72 and 73—status uncertain as no recent record and S.M.M. states often confused with R. sorocarpa.
S.M.M. states often confused with R. sorocarpa.

-R. beyrichiana Hampe.
v.c. 73—Burnfoot Hill, New Galloway. J.McA.

-R. sorocarpa Bisch. Widespread and common.
v.c. 72—Locharbriggs Quarries—Corncockle Quarry.
v.c. 73—garden, Mainsriddle.

Riccardia multifida (L.) S. F. Gray. Frequent on wet rocks, especially basic, sometimes in other moist habitats.
v.c. 72—with Fossombronia pusilla in damp corner of rubbish dump,
Locharbriggs—Linns Knowe, Mosspeeble Burn. *J.A.P.
v.c. 73—dripping sandy conglomerate cliffs, Barlocco Bay—with Pellia fabbroniana, dripping rocks in burn, Bainloch Hill—Airdrie Hill.
*J.A.P.
-R. sinuata (Dicks.) Trev.
v.c. 72—dripping rocks
H.M.-R.
                                                                   rocks, disused limestone workings, Barjarg (1953).
-R. latifrons (Lindb.) Lindb.
            . latifrons (Lindb.) Lindb.
v.c.s. 72 and 73—status uncertain as no recent records traced. Given by S.M.M. as follows "v.c. 72 Gallow Hill, Moffat, J.McA. and v.c. 73—New Galloway, J.McA." But in B.B.S. Report 1933 page 140 concerning J.McA's. Bennan Hill (New Galloway) plant distributed note comment by H. H. Knight "This is Aneura multified as shown by the section of the frond and the unistratose margin of the branches."
-R. palmata (Hedw.) Carruth.
v.c.s, 72 and 73—rare, no recent records. S.M.M. gives — "v.c. 72
Gallow Hill, Moffat, on wood, cfr. J.McA. and v.c. 73 New
Galloway, on wood."
```

-R. pinguls (L.) S. F. Gray.
v.c.s. 72 and 73—frequent in wide range of wet habitats, especially
basic, in subalpine situations as v.c. 73 Grey Mare's Tail Burn (Talnotry). Pellia epiphylia (L.) Corda.
v.c.s. 72 and 73—common throughout in wide range of moist habitats. v.c.s. 72 and 73—common throughout in wide range of moist nabitats.

P. neeslana (Gottsche) Limpr.
v.c. 72—marshy slopes on Linns Knowe above Mosspeeble Burn (1961).

J.A.P.

Ae Bridgend, Water of Ae. *J.A.P.

Fabbroniana Raddi. Frequent in wet basic habitats, especially springs and in ravines.

v.c. 72—Upper Coomb Craig. *J.A.P. —Mosspeeble Burn. *A.R.P.
v.c. 73—Kirkbean Glen—Bainloch Hill—Orroland ravine.

Metzgeria furcata (L.) Dum.
v.c.s. 72 and 73—common on tree trunks, also frequent on shady rocks near coast and in ravines, generally rather dry situations.

—M. fruticulosa (Dicks.) Evans. v.c. 72—trunk of beech, Carron Water (1961). *J.A.P. and *A.J.E.S. v.c. 73—The Grove. —M. conjugata Lindb. Frequent on shaded rocks in subalpine ravines. v.c. 72—Muckle Cauldron Burn—Garrel Water—Upper Coomb Craig. •J.A.P. *J.A.P.

-Mosspeeble Burn. *E.M.L. —Ae Water, at Ae Bridgend. *E.M.L.

v.c. 73—Redbank Hill—Glen of Screel—Barbuie Burn.

-M. hamata Lindb. A rare Atlantic species.

v.c. 72—mixed with mosses on shaded cliffs, Grey Mare's Tail, Moffat

Water (1959). D.A.R.

v.c. 73—Ballingear Glen, New Galloway. J.McA.

-M. pubescens (Schrank) Raddi.

72 checked literature tracks. Percent Linus found by Checkes Scott. -M. pubescens (Schrank) Raddi.
v.c. 72—shaded limestone rocks, Penton Linns, found by Charles Scott over seventy years ago, still there in 1961.

Blasia pusilla L. Frequent on crumbling inorganic strata as damp sandy banks on burn sides.
v.c. 72—Arkleton Hill.
v.c. 73—Boreland of Southwick Burn—Kinharvie Burn.

Fossombronia Raddi spp. Frequent pioneers on moist retentive soil where not subject to desiccation, as on ditch sides.

-F. pusilla (L.) Dum.
v.c. 72—rubbish dump, Locharbriggs—Racks Moss. *J.W.F.
-field near Maidenbower Craigs. *J.A.P.
v.c. 73—field below Nunland Hill (Easthill). *J.A.P.

-F. wondraczekii (Corda) Dum.
v.c. 72—damp bank in disused limestone quarry, Caldronlee (1954).

H.M.-R.
-ditch side, Lochar Moss. H.M.-R.

—ditch side, Lochar Moss.
v.c. 73—damp bare soil by burn side, Mainsriddle (1955). H.M.-R.

—ditch side, Dalskairth Moss.

—field below Nunland Hill (Easthill). *J.A.P.

hella julacea (L.) Dum. Wet stony ground in the hills, often in large Anthelia julacea (L.) Dum. v.c. 72—rocks at the head of Loch Skene (1952). H.M.-R. Rare in Dumfries.—Nether Coomb Craig. *J.W.F. v.c. 73—frequent in Galloway Highlands—Milldown—Grey Mare's Tail Dumfries.—Nether Coomb Craig. *J.W.F.
v.c. 73—frequent in Galloway Highlands—Milldown—Grey Mare's Tail
(Talnotry).

Herberta hutchinslae (Gottsche) Evans. Rare Atlantic species of steep northfacing banks in the Galloway Highlands.
v.c. 73—Merrick (1951). H.M.-R.
Hygrobiella laxifolia (Hook.) Spr. Rare on wet rocks by burn sides.
v.c. 72—Crichope Linn. S.M.M.
v.c. 73—Corse Burn, Millfore.
Ptillidium ciliare (L.) Hampe. Frequent in wide range of habitats as
extremely tolerant as regards light, moisture and pH. Perhaps
generally in mixture and often in small quantity.
v.c. 72—Black's Hope—Corncockle Quarry—Well Hill Moffat.
— Wasspeeble Burn. *E.M.L.
v.c. 73—ahove Loch Dungeon—Criffel—Loch Cloak.
— Moorbrock Hill—New Abbe Quarry

Trichocolea tomentella (Ehr.) Dum. Occasional in sheltered subalpine
vavines, where constant moisture and diffuse light.
v.c. 73—Rangegill Burn, Rammerscales.
v.c. 73—Tannoch Burn—Cleugh Burn—Grev Mare's Tail (Cree)
— Troudale Burn—Black Bank Wood.

Blepharostoma trichophyllum (L.) Dum. Frequent on moist steep rocky
banks in ravines, often in mixture. Not seen on granite.

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v.c. 72—Mosspeeble Burn—Penton Linns. *J.A.P.
—Grey Mare's Tail. *E.M.L.
v.c. 73—Routin Brig—Kirkconnell Linns—Old Glenlee—.
—Garroch Burn.
     Bazzania trilobata (L.) Gray. Calcifuge, preferring shady banks with humus
    covered rocks,
v.c. 72—Penton Linns. *A.R.P. Rare in Dumfries.
v.c. 73—frequent. Criffel—Lotus Hill—Mabie Forest—.
—Bareness Wood—Glenhoul—Lowran Glen—Buck's Linn.
—B. tricrenata (Wahlbg.) Trev. Steep north-facing banks in the hills.
                      Rare.
v.c. 72—amongst blaeberry, Black's Hope (1958).
v.c. 73—mixed with Anastrepta, Merrick.
Rare.
v.c. 72—mongst blaeberry, Black's Hope (1958). D.A.R.
v.c. 73—mixed with Anastrepta, Merrick.

Lepidozia reptans (L.) Dum. Frequent in shady situations in ravines, often in small quantity on rotten wood, sometimes in large sheets if humus, moisture and shade coincide.
v.c. 72—Arkleton Burn—Rangegill Burn, Rammerscales—Ettrick Pen.
v.c. 73—Routin Brig—New Abbey Pow—Powmorin Burn.

—L. pearsonii Spr. Rare Atlantic species.
v.c. 72—dripping sandstone rocks, Arkleton Hill (1953). D.A.R.
v.c. 73—Black Craig. J.McA.

—L. setacea (Web.) Mitt. Frequent in peat mosses, sometimes on hills.
v.c. 72—Lochar Moss—Ettrick Pen.
v.c. 73—Kirkconnell Flow—Kinharvie Burn—Loch Dungeon. *J.A.P.
—L. trichoclados K. Müll. Occasional in Galloway Highlands.
v.c. 73—Garroch Loch. J.McA. —Loch Trool. S.M.M.

Calypogeia Raddi, corr. Corda spp. Except for C. arguta, plants very variable, recently revised and often critical. Oil bodies must be looked at and this was often omitted until recently. So all old records suspect. Following plants checked when fresh.

—C. neeslana (Mass. and Carest.) Loeske. var. neeslana.
v.c. 72—on peat on edge of track above Mosspeeble Burn (1961). *J.A.P.
—var. meylanli (Buch) Schuster.
v.c. 72—on sandstone rocks, Carron Water (1961). *J.A.P. and J.W.F.
—var. meylanli (Buch) Schuster.
v.c. 72—on sandstone rocks, Carron Water (1961). *J.A.P. and J.W.F.

—C. muelleriana (Schiffn.) K. Müll. Probably most of the plants recorded hitherto as C. trichomanis belong here, but as habitat little guide, repeat records advisable.
v.c. 72—Linns Knowe (oil bodies checked). *J.A.P.—Carron Water.
*J.A.P.
v.c. 73—Above Loch Dungeon. *J.A.P.—Airdrie Hill. *J.A.P.

—C. sphagnicola (Arn. and Pers.) Warnst and Loeske. Being small and creeping over Sphagnum in bogs, perhaps overlooked.
v.c. 73—Above Loch Dungeon (1961). *J.A.P.—Airdrie Hill. *J.A.P.

—C. sphagnicola (Arn. and Pers.) Warnst and Loeske. Being small and creeping over Sphagnum in bogs, perhaps overlooked.
v.c. 73—Silver Flowe, New Galloway (1963). E.L.B. and J.S.R.

                                                         -Barlocco Bay.
   Lophozia ventricosa (Dicks.) Dum. Now split into several varieties of which vars. ventricosa and silvicola (Buch) E. W. Jones occur in this area. Oil body characters supply the clearest difference, but these were not examined until recently. Both occur in varied habitats perhaps especially on moist shaded rocks with var. silvicola often with Sphagnum in bogs. However, insufficient material has been examined for distinct habitat preferences to be made out. Following records are based on specimens which had oil bodies examined while fresh.
    var. ventricosa.
                      v.c. 72—Mosspeeble Burn (1961). *J
*J.A.P.
—Upper Coomb Craig. *J.A.P.
                                                                                                                                                                                                       *J.A.P. et al. - Carron Water.
     var. silvicola.
                      v.c. 72—birch scrub in old brickworks, Locharbriggs (1961). *J.A.P. et al.
           v.c. 73—wet heath, below Airdrie Hill (1961). *J.A.P...

-L. alpestris (Schl.) Evans. Occasional in hills, often in mixture, typically
                      north-facing crags.
v.c. 72—Carrifran—Croglin Craig—Upper Coomb Craig. *J.A.
—Mosspeeble Burn. *E.M.L.—Grey Mare's Tail. *E.M.L.,
v.c. 73—above Loch Dungeon. *E.M.L.
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-L. excisa (Dicks) Dum. Occasional on varied mineral substrates.
v.c. 72—roadside bank between Sanquhar and Wanlockhead (1953).
A.C.C. and E.C.W.
—Corneockle Quarry—brickworks, Locharbriggs. *J.A.P.
v.c. 73—Garroch Wood. J.McA.

-L. incisa (Schrad.) Dum. Frequent in acid habitats, as on peat in hills.
v.c. 72—Grey Mare's Tail. *E.M.L.—Linns Knowe, Mosspeeble Burn.
*J.A.P.
v.c. 73—Criffel—Kinharvie Burn—Craig Moss—Merrick.
—Loch Dungeon. *J.A.P.

-L. bicrenata (Schmid.) Dum. Usually lowland on acid ground.
v.c. 72—on humus under Calluna, railway bank, Drumlanrig (1953).
A.C.C., H.M.-R. and E.C.W.
—Locharbriggs Quarry—Raking Gill. *E.F.W.
v.c. 73—Glen Burn—gravel pit, Bargrug—Redbank Hill.
—Rough Firth.
ravines, occasional.
v.c. 72—Mosspeeble Burn—Glencrosh Burn—Penton Linns. *J.A.P.
—Ae Water, at Ae Bridge. *E.M.L.
v.c. 73—Cleugh Burn—Craigy Linn.
—L. bantrlensis (Hook). Jörg. Occasional on wet basic rocks in ravines.
v.c. 72—rocks by stream between White Dod and Brown Hill, near
Wanlockhead (1953). A.C.C. and E.C.W.
—Mosspeeble Burn. *J.W.F.
—Mosspeeble Burn. J. w.r.
v.c. 73—Linkins Glen.

L. heterocolpos (Thed.) Buch. Rare, late invader of calcareous habitats.
v.c. 72—mossy calcareous sandstone rock, Mosspeeble Burn (1953).
H.M.-R. and E.C.W.

Barbilophozia fierkel (Web. and Mohr) Læske. Common subalpine species of rather dry rocks and banks.
v.c. 72—Mosspeeble Burn—Craignee—Corncockle Quarry.
v.c. 73—Clonyard, Southwick—Criffel—Airdrie Hill—Screel—Craigy Linn
Burn—New Abbey Quarry—Barbuie Burn—above Loch Dungeon.
v.c. 73—Clonyaru, South Parties Barbule Bull.

Burn—New Abbey Quarry—Barbule Bull.

B. atlantica (Kaal.) K. Müll. Rare, but perhaps sometimes overlooked.

v.c. 72—calciferous sandstone boulder near Mosspeeble Burn (1961).

A.R.P. and J.W.F.

B. attenuata (Mart.) Loeske. Frequent in acid habitats, especially rocks
                 and walls.
v.c. 72—Broadshaw Wat
Linns. *A.R.P.
v.c. /2—Broadshaw Water—Crairiepark ravine—Tanner's Linn—Penton Linns. *A.R.P.
v.c. 73—New Abbey Pow—Redbank Hill—Airdrie Hill.
—Back Burn, Southwick—Gibb's Hole Wood—Lowran Burn—Grey Mare's Tail (Cree)—above Loch Dungeon. *E.M.L.

-B. barbata (Schmid.) Loeske. Frequent in varied habitats.
v.c. 72—Langholm. P.E.
v.c. 73—Milyea—Redbank Hill—The Grove.

Tritomaria quinquedentata (Huds.) Buch. Frequent subalpine species, shady rocks.
v.c. 72—Mosspeehle. Burn Comittee.
*A.R.P.
v.c. 73—Earn's Craig, Criffel.

Anastrophyllum donlanum (Hook.) Steph. Rare Atlantic species.
v.c. 72—Loch Skene (spec. Herb. Royal Bot. Garden. Edin.? collector?
date)—further substantiation desirable.

Anastrepta orcadensis (Hook.) Schiffn. Rare plant of steep north-facing banks in the hills, usually in mixture.
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v.c. 72-Lowther Hills (1944). A.D.B. - Black Craig - Mosspeeble

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Burn.
v.c. 73—Merrick (1951). H.M
Gymnocolea inflata (Huds.) Dum.
                                                                                                                                        H.M.-R.
rocks.
v.c. 72—wet rocks, Craigmichen Scar.
v.c. 73—Criffel—Lotus Hill.
Solenostoma triste (Nees) K. Müll. Frequent on wet rocks in ravines.
v.c. 72—Mosspeeble Burn—Morton Wood—Penton Linns.
—limestone quarry, Blackwoodridge. *E.M.L. — Raking Gill.
**F M L.
**F M L.
**P M L.
                                                                                                                                                                  Frequent on wet peat, occasionally wet
  v.c. 73—Ortoland—Preston Mill Burn—White Top of Culreoch.
—Spoutv Dennans—Bombie Glen.
—S. atrovirens (Schl. ex Dum.) K. Müll., var. sphærocarpoidea (De Not.)
Massal. Rare.
 Massal. Rare.
v.c. 72—sand-covered stones in flood zone, Pen'on Linns (1961). H.M.-R.

—S. pumilum (With.) K. Müll. Frequent as spreading pioneer closely attached to wet rocks in ravines, sometimes in moist gravelly places.
v.c. 72—by roadside, Lochar Moss—Gatelawbridge.
v.c. 73—Orroland ravine—Tannoch Burn—Barlocco Burn—Bainloch Hill

—Kinharvie Burn—above Loch Dungeon. *E.M.L.

—S. cordifolium (Hook.) Steph. Occasional on rocks in hill burns, springs and marchy ground
                     and marshy ground.

v.c. 72—Black's Hope — Enterkin Burn — Glenkill Burn — Raking Gill.

*E.M.L.
*E.M.L.
v.c. 73—above Loch Dungeon. *E.M.L.

-S. sphærocarpum (Hook.) Steph. Rare, as early invader of damp rocky places near burns.
v.c. 72—Mosspeeble Burn.
v.c. 73—New Abbey (1943). A.D.B.

-Kinharvie Burn, and its tributary—Powmorin Burn.
-S. crenulatum (Sm.) Mitt. Frequent in wet gravelly places by road and burn sides.
burn sides.
v.c. 72—Rangegill Burn, Rammerscales—Birny Gill, Wamphray Water—
Mollin Burn—Arkleton Hill.
v.c. 73—Glaisters Burn — Dunmuck reservoir — Kinharvie Burn — Black
Bank Wood.
Plectocolea obovata (Nees) Mitt. Occasional on wet rocks in the hills.
v.c. 72—above Midlaw ravine—Moodlaw Loch.
v.c. 73—Cluden Water.
Physiling (Ivellor Motor)
                                      burn sides.
 -P. hyalina (Lyell ex. Hook.) Mitt. Frequent on Manageria in ravines.
v.c. 72—Pamphy Linns, Barr Burn—Glenkill Burn.
v.c. 73—Dunmuck reservoir—Glaisters Burn—Tannoch Burn—Boreland of Southwick Burn—Cleugh Burn—Collin Burn—Castramont Burn—Glen of Screel Burn—Linkins Glen.

-P. parolca (Schiffn.) Evans. Occasional on moist rocks in ravines.
v.c. 72—on bank beside stream, Linns Knowe, Mosspeeble Burn. *J.W.F.
-beside Carron Water. *J.W.F.
v.c. 73—Gilwhaum.
Nardia compressa (Hook.) S. F. Gray. Occasional, typically large masses
        -P. hyalina (Lyell ex. Hook.) Mitt. Frequent on moist crumbling sandrocks
v.c. 73—Gilwhaum.

Nardia compressa (Hook.) S. F. Gray. Occasional, typically large masses submerged in mountain torrents, favouring granite.
v.c. 73—Milyea. E.C.W.—Milldown—Kinharvie Burn.

—N. scalaris (Schrad.) S. F. Gray. A common calcifuge species, especially of moist gritty places, extending high in the hills.
v.c. 72—Cold Grain, Black's Hope—a high station.
v.c. 73—Dunmuck reservoir—Criffel—Glaisters Burn—Screel—New Abbey Quarry—Black Bank Wood.

—N. geoscyphus (De Not.) Lindb. Rare, perhaps overlooked.
v.c. 72—Sandy bank on Linns Knowe, Mosspeeble Burn (1961). *J.A.P. Jamesoniella autumnalis (De Cand.) Steph. Rare.
v.c. 73—Garroch Wood, New Galloway. J.McA. Recent records required.
required.

Warsupella adusta (Nees) Spr. Rare hill plant.
v.c. 72—rocks with earthy pockets at 1800 ft. by Glendyne Burn (1961).

H.M.-R.

—M. ustulata (Hüb.) Spr. Small, usually fertile, hill plant growing in little patches on rocks. Occasional, though perhaps overlooked.
v.c. 72—on shaded rocks in ravine, Nether Coomb Craig (1961). *J.W.F. v.c. 73—damp rock above Loch Dungeon (1961). *E.M.L., J.W.F. and E.F.W.

—M. funckli (Web. and Mohr) Dum. Subalpine in flat patches on moist sandy soil.
v.c. 72—damp sand covered boulder by River Nith, Enterkinfoot (1952).

H.M.-R.
                                                          required.
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v.c. 73—New Galloway. J.McA. Recent record required.

—M. alpina (Gottsche) Bernet. Locally frequent in Galloway Highlands.
v.c. 73—Milldown. E.C.W.

—M. emarginata (Ehr.) Dum. Locally frequent, subalpine on moist rocks, especially on Kirkcudbright granite hills.
v.c. 72—Corncockle Quarry—Mosspeeble Burn. *E.M.L.
v.c. 73—Black Craig—Criffel—Screel—Clawbelly roadside—Kirkconnell Linns—Kinharvie Burn—above Loch Dungeon. *E.M.L.

—M. aquatica (Schrad.) Schiffn. var. aquatica. Locally frequent, submerged in granite hill burns. -M. aquatica (Schrad.) Schiffn. var. aquatica. Locally frequent, submerged in granite hill burns.
v.c. 73—Criffel—Boreland of Southwick Burn—above Loch Dungeon.
*E.M.L. -var. pearsonii (Schiffn.) E. W. Jones. Critical variety recorded for v.c. -M. Spiacelata (Gies.) Dum. var. media (Gottsche) E. W. Jones.
v.c. 73—near Loch Trool (as M. joergensenii Schiffn.) S.M.M. Recent record required.

Gymnomitrion concinnatum (Lightf.) Corda. Occasional on soil and rocks above 1500 ft.
v.c. 72—Harfell Craig—Craigmichen Scar.
v.c. 73—Merrick—Moorbrock Hill.

-G. obtusum (Lindb.) Pears. Occasional on rocks in hills above 1500 ft., but down to 1100 ft. on Screel.
v.c. 72—rocks, Black Craig (1949). E.C.W.—Raven Craig.
v.c. 73—Milyea—Millfore—Criffel—Merrick—Screel.

-G. crenulatum Gottsche. Steep rock faces on the hills, occasional.
v.c. 73—Milyea—Millfore—Criffel—Merrick—Screel.

-G. crenulatum Gottsche. Steep rock faces on the hills, occasional.
v.c. 73—Wil'rea—Screel (down to 700 ft.).

Mylla taylori (Hook.) S. F. Gray. Occasional in wet peaty places in the hills with characteristic smell of freshly cut wood.
v.c. 72—rocky bank of Muckle Cauldron Burn (1953). H.M.-R.
—Lochar Moss. *E.M.L.
v.c. 73—Criffel—near Loch Dungeon. E.C.W.

-M. anomala (Hook.) S. F. Gray. Frequent in lowland peat mosses.
v.c. 72—Lochar Moss. *E.M.L.
v.c. 73—Kirkconnell Flow—Boreland of Southwick Hill.

Plagiochila asplenioides (L.) Dum. var. asplenioides. Common in varied, usually shaded habitats, disliking extreme acidity.
v.c. 73—Bombie Glen—Black Bank Wood.

-var. major Nees. Common, preferring shady banks.
v.c. 72—Mosspeeble Burn. *E.M.L.
v.c. 73—Cluden Water.

-P. spinulosa (Dicks.) Dum. Atlantic species with characteristic fragrance.
Frequent on moist shaded rocky banks in subalpine ravines.
v.c. 72—Crairiepark ravine — Garrel Water — Birny Gill — Wamphray
Water—Upper Coomb Craig. *J.A.P.
—Mosspeeble Burn. *E.M.L.
v.c. 73—Screel—Redbank Hill—Torrs Heughs—Kirkconnell Linns—Craigy
Linn—Lowran Glen.

-P. punctat Tayl. Atlantic species, occasional in west, on moist shaded rocky —M. Spiracelata (Gies.) Dum. var. medla (Gottsche) E. W. Jones. v.c. 73—near Loch Trool (as M. joergensenil Schiffn.) S.M.M. Recent rocks. v.c. 72—rocky banks of den, Glenjaan Burn, Dalwhat Water (1957).

H.M.-R.

-Nether Coomb Craig. *J.W.F.

v.c. 73—Bainloch Hill.

-P. tridenticulata Tayl. Rare, Atlantic species.

v.c. 73—crevices amongst blocks in ravine, Caldons Burn, Glen Trool (1962). D.A.R.

Lenhanden Hildstot. D.A.R. (1962). D.A.R.
 Lophocolea bidentata (L.) Dum. Usually found in sterile state and cannot be certainly distinguished then from L. cuspidata. Records therefore scanty but probably common lowland species of damp grass and walls in both v.c.s. 72 and 73.
 v.c. 73—The Grove, c.per. *E.F.W.
 L. cuspidata (Nees) Limpr. Common in varied damp situations in both v.c.s. 72 and 73. Typically fruiting on decaying logs. -L. heterophylla (Schrad.) Dum. Only occasional in v.c.s. 72 and 73 on decaying logs.
v.c. 72—Rammerscales—Penton Linns. *E.M.L.
v.c. 73—Kirkconnell Flow—Lot's Wife—Bombie Glen. —L. fragrans (Moris and De Not.) Moris and De Not. Rare Atlantic species in sheltered ravines, usually within a few miles of the sea. v.c. 72—Enterkin Burn (1952). H.M.-R.

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v.c. 73—Preston Mill Glen (1951). H.M.-R. —Portcheek ravine—Bombie Glen—Kirkbean Burn.

Chiloscyphus polyanthos (L.) Corda. var. polyanthos. Frequent on wet rocks in ravines.
v.c. 72—Kinnel Water, St. Ann's. *E.F.W.
v.c. 73—Cluden Water—dripping conglomerate cliff, Barlocco Bay.
—var. rlvularis (Schrad.) Nees.
v.c. 73—Rough Island. W. P. Hamilton, per S.M.M. Requires refinding.
                            pallescens (Ehrh.) Dum. Occasional in wet places, but much confused in the past with the var. fragilis (Roth) K. Müll. of C. polyanthos, so old records best avoided.
v.c. 72—among Juncus in wet flush by stream, Mosspeeble Burn (1961).
*R.E.L.
                                                                                     finding.
     -C. pallescens (Ehrh.) Dum.
v.c. 72—among Juncus in wet flush by stream, Mosspeeble Burn (1961).

*R.E.L.

—marsh in holm by Glenkill Burn.

—Penton Linns. *J.W.F.

v.c. 73—sallow branch at edge of Cluden Water (1961). *A.R.P.

Harpanthus flotovianus (Nees) Nees. An odd record from the Galloway Highlands never seen again.

v.c. 73—Glenlee Glen, New Galloway, among Ceph. connivens and Calypogeia trichomanis, alt. ca. 200 ft. (1889). J.McA. per S.M.M.

—H. scutatus (Web. and Mohr.) Spr. Rare, on sand rocks. In moist shady places.

v.c. 72—Carron Water—Tarras Water.

Saccogyna viticulosa (L.) Dum. Atlantic species, locally frequent in the west. Usually moist and shaded in ravines.

v.c. 72—very old records for Lochar Moss and near Langholm per S.M.M. Requires refinding.

v.c. 73—very elder—Hestan Island—Drum Burn—Red Bank Hill.

—Collin Burn—Black Bank Wood.

Cephaloziella pearsonil (Spr.) Douin. Rare in the Galloway Highlands, Atlantic, typically with parallel stems on vertical rock faces.

v.c. 73—White Laggan—Milldown.*

—C. rubella (Nees) Warnst. (including C. myriantha Lindb.). Probably frequent though insufficiently collected. Typically on raw humus. v.c. 72—Boyken Burn—sandstone blocks in long grass, Lochar Moss, near Collin.

—C. hampeana (Nees) Schiffn. Occasional on moist ground.

v.c. 72—wet clay from leadmine, Wanlockhead (1953). A.C.C. and E.C.W. brickworks, Locharbriggs. *J.A.P.—Penton Linns. *A.R.P.

v.c. 73—Meikle Milyea (1963). E.L.B. and J.S.R.

—C. starkei (Funck) Schiffn. Usually found sterile. Often in rather acid dry habitats, creeping in mixture on granite boulders or on tree-trunks in ravines.

v.c. 72—on tree by Scar Water, sterile.
  in ravines.

v.c. 72—on tree by Scar Water, sterile.

—bank above sandstone quarry, c. per. Morton Wood.

—Carron Water. *J.W.F.—Ironhirst Moss. *A.R.P.

v.c. 73—field below Nunland Hill. *E.M.L.

—barren gatherings as follows—rock face, Criffel—Bainloch Hill

—Airdrie Hill—Torrs Heughs—Craignair Quarry.

Cephalozia bleuspidata (L.) Dum. var. bleuspidata. A common calcifuge in varied moist habitats, favouring sand, peat and decaying logs.

v.c. 72—Tarras Water—Croglin Craig—Mollinburn—Corncockle Quarry

—Arkleton Hill.
                                                        in ravines.
 —Arkleton Hill.
v.c. 73—Preston Mill Glen—Tannoch Burn—Criffel—Glaisters—Loch Cloak—Boreland of Southwick Burn—Airdrie Hill.
—var. lammersiana (Hüb.) Breidler.
v.c. 72—Linns Knowe, Mosspeeble Burn*—Carron Water; both *J.A.P. v.c. 73—Black Craig. J. McA.
—C. loitlesberger! Schiffn. Rare, though perhaps overlooked.
v.c. 73—wet heath below Airdrie Hill (1961). *J.A.P.
—C. connivens (Dicks.) Spr. Frequent in peat mosses.
v.c. 72—Dockridding Wood, Comlongon.
—Linns Knowe, Mosspeeble Burn. *J.A.P.
v.c. 73—Kirkconnell Flow—Criffel—Loch Cloak—Airdrie Hill.
—C. media Lindb. Frequent in moist acid habitats, as in peat mosses and
                                                                                      Arkleton Hill.
Preston Mill

    C. media Lindb. Frequent in moist acid habitats, as in peat mosses and on decaying logs.
    v.c. 72—Hellshole Moss.
    v.c. 73—Kirkconnell Flow—Gibb's Hole Wood—The Grove. *J.W.F.

             -C. catenulata (Hüb.) Spr. Rare.
v.c. 72—c.per., in mixture with C. leucantha, damp shaded rocks Tarras
Water (1953). H.M.-R.
v.c. 73—record doubtful, needs refinding.
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—C. leucantha Spr. Occasional, but small and perhaps overlooked in mixture on peaty soil in the hills.
v.c. 72—Tarras Water.
v.c. 73—Garroch Wood. J.McA.
Cladopodiella fluitans (Nees) Buch. Rare, perhaps overlooked amongst Sphagnum in bogs.
v.c. 73—Barend Moss. J.McA.
Nowellia curvifolia (Dicks.) Mitt. Frequent on decaying, decorticated logs Nowellia curvifolia (Dicks.) Mitt. Frequent on decaying, decorticated logs in ravines.
v.c. 72—Rammerscales—Ae Water, at Ae Bridge. *E.M.L.
v.c. 73—Kirkbean Glen—Kirkconnell Flow—Gibb's Hole Wood—Lamagowan—Barbuie Burn.
Odontoschisma sphagni (Dicks.) Dum. Frequent in lowland peat mosses.
v.c. 72—Lochar Moss. *E.M.L.
v.c. 73—Loch Dungeon—Airdrie Hill—Boreland Hill.
Auchencairn Moss. E.C.W.

O. denudatum (Mart.) Dum. Frequent on moist bare peat. -O. denudatum (Mart.) Dum. Frequent on moist bare peat.
v.c. 72—Lochar Moss.
v.c. 73—Craig Moss—Boreland Hill.

Doulnia evata (Dicks.) Buch. Occasional on granite rocks.
v.c. 73—Bainloch Hill—Criffel—near Loch Dungeon. E.C.W.

Diplophyllum albicans (L.) Dum. Common everywhere in v.c.s. 72 and 73
in very varied habitats both wet and dry, often forming large nn very varied nabitats both wet and dry, often forming large sheets.

-D. obtusifolium (Hook.) Dum. Rare, perhaps overlooked.
v.c. 73—c. per., with Lophozia bicrenata, Diplophyllum albicans gravel pit, Bargrug (1955). H.M.-R.

Scapania curta (Mart.) Dum. Occasional, probably overlooked.
v.c. 72—Sanquhar Hill—Crichope Linn, both S.M.M.
v.c. 73—above Loch Dungeon. *J.A.P.

-S. irrigua (Nees) Dum. Occasional on wet ground.
v.c. 72—Loch Craig Head.
v.c. 73—Dunmuck reservoir.
S. umbrosa (Schrad.) Dum. Frequent on decaying logs, also on steeply sloping emergent rock faces in sheltered ravines.
v.c. 72—Mosspeeble Burn—Tarras Water—Morton Wood—Tanner's Linn—railway cutting near Enterkinfoot.
v.c. 73—Kinharvie Burn.
S. zequiloba (Schwagr.) Dum. Rare, on limestone. v.c. 73—Kinharvie Burn.

S. æquiloba (Schwægr.) Dum. Rare, on limestone.
v.c. 72—limestone rocks, Penton Linns (1961). *J.W.F.

S. aspera Bernet. Rare on limestone.
v.c. 72—limestone rocks, Penton Linns (1961). H.M.-R.

S. gracilis (Lindb.) Kaal. Atlantic species, frequent in the west on rocks.
v.c. 72—in mixture, Croglin Craig (1953), H.M.-R. —Tarras Water.
v.c. 73—Kenmure Holms—Criffel—Redbank Hill—Bareness Hill—above
Loch Dungeon. *E.M.L.

S. nemorosa (L.) Dum. var. nemorosa. Frequent in damp shady habitats
on rocks and banks.
v.c. 72—Mollinburn.
v.c. 73—New Abbey Pow—New Abbey Quarry—Glaisters Burn—Redbank
Hill—Wood of Cree—Lamagowan woods—above Loch Dungeon.
*E.M.L.

S. undulata (L.) Dum. Both vars. undulata and dentata are common plants
on wet rocks in burns throughout v.c.s. 72 and 73.

S. subalpina (Nees) Dum. Occasional on moist gravelly detritus in the
hills. hills.
v.c. 72—below Grey Mare's Tail. *E.F.W.
v.c. 73—Criffel. v.c. 73—Criffel.

—S. compacta (Roth) Dum. Frequent on rocks.
v.c. 72—Burnswark—Corncockle Quarry—Croglin Craig.
v.c. 73—Criffel—roadside, Clonyard—Bainloch Hill—Boreland of Southwick Burn—New Abbey Quarry. Radula complanata (L.) Dum. Dum. A frequent species in damp shaded situations sometimes on rocks and walls. on tree-trunks, sometimes on rocks and walls.
v.c. 72—Glenkill Burn.
v.c. 73—Lot's Wife—Glen of Screel—Cloak Loch — Garroch Burn — The Grove. -R. lindbergiana Gottsche. An occasional plant of subalpine ravines and rocks on the hills.
v.c. 72—above Loch Skene—Grey Mare's Tail.
-Raking Gill. *E.M.L.
v.c. 73—Knocknairling Burn. J.McA.

-R. aquilegia Tayl. ex Gottsche, Lindenb. and Nees. Rare Atlantic species.

Old Glenlee.

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Pleurozia purpurea (Lightf.) Lindb. Occasional Atlantic species of the Galloway Highlands.
v.c. 73—near Loch Dungeon—Kirriemore Hill—Tonderghie Burn.
Porella lævigata (Schrad.) Lindb. var. lævigata. Frequent in moist shady places in subalpine ravines, on rocks and tree-roots.
v.c. 72—Carrifran Burn—Dryfe Water—Euchan Water—Scar Water—Chanlockfoot—Crairiepark ravine—Croglin Craig—Wamphray Water—Tuppark Linn—Mote Knowe, Glenkill Burn—Selocth Burn—Penton Linn.
v.c. 73—Fleuchlarg ravine—Redbank Hill—Garroch Burn—Craigy Linn Burn—Bombie Glen—Lot's Wife. E.C.W.
—P. thuja (Dicks.) C. Jens. Rare.
v.c. 72—hillside rock, twenty miles from the sea, Craignee (1952).
                                                                                                                               H.M.-R.

    H.M.-R.
    v.c. 73—shaded rock surface on shore, Mullock Bay (1958). H.M.-R.
    P. platyphylla (L.) Lindb. Occasional in ravines, often atypical.
    v.c. 72—Cleugh ravine — Wamphray Water — Ballochan Linn — Penton Linns.
    v.c. 73—Spout Burn—Ravenshall—Bombie Glen.
    P. cordæana (Hüb.) Evans var. cordæana. Frequent in moist shaded situations in the subalpine region, typically on tree-roots on the banks of burns.

                                                                                     of burns.
    v.c. 72—Enterkin Burn—Croglin Craig—Craignee—Chanlockfoot—Crairie—park ravine—banks of River Nith—Glencrosh Burn—Ogle Linn—Laverhay Burn—Wamphray Water—Garrel Water—Glenkill Burn—Gateslack.

v.c. 73—Spout Burn—Balmangan Burn—Routin Brig—Bombie Glen—Back Burn, Southwick. E.C.W.

Marchesinia mackii (Hook.) Gray. Occasional Atlantic species, chiefly near
Marchesinia mackii (Hook.) Gray. Occasional Atlantic species, chiefly near the coast.
v.c. 72—shaded rocks, Maidenbower Craigs (1961). *J.A.P.
v.c. 73—porphyritic rocks, Lot's Wife (1949). H.M.-R.—Kirkdale Glen.
Lejeunea cavifolia (Ehrh.) Lindb. Frequent in subalpine glens, on rock faces.
Oil bodies must be checked, so only recent records follow.
v.c. 72—Black's Hope (1961).*—Penton Linns. *J.W.F.

-L. patens Lindb. Occasional in subalpine ravines.
v.c. 73—Cluden Water (1961). H.M.-R.

-L. patens Lindb. Occasional in subalpine ravines.
v.c. 72—Mosspeeble Burn (1951). H.M.-R.—checked for oil-bodies in same locality (1961). *J.A.P.
v.c. 73—Kirkconnell Linn (1951), checked for oil-bodies in same station (1963). H.M.-R.
—Bombie Glen (oil-bodies not checked).
—Old Glenlee (oil-bodies not checked).
—L. lamacerina Gottsche ex Steph. var. lamacerina. Frequent in subalpine ravines. Recent records only given as oil-bodies must be checked.
v.c. 72—Penton Linns (oil-bodies checked) (1961). *J.W.F.
—Mosspeeble Burn. *J.A.P.—Maidenbower Craigs. *J.A.P.
v.c. 73—Heughs of Laggan (oil-bodies checked) (1961). *J.A.P.

-var. azorlca (Steph.) Greig-Smith. v.c.s. 72 and 73 per P. Greig-Smith (Trans. Brit. bryol. Soc. 2, 469).

-L. ulicina (Tayl.) Tayl. On tree-trunks, occasional.
v.c. 72—with Metzgerla on young beech, Dardarroch Wood (1953). H.M.-R.
—Broadshaw Water — Glenkill Burn — Corncockle Muir — Wamphray Glen—Dryfe Water—Penton Linns.
v.c. 73—Dalskairth Woods — Hannayston Woods — Nunland Hill — The Grove—Kenmure Holms. E.C.W.
Drepanolejeunea hamatifolia (Hook.) Schiffn. Rare Atlantic species.
v.c. 73—rock in sheltered ravine, Old Glenlee (1953). H.M.-R.
Harpalejeunea ovata (Hook.) Schiffn. Rare Atlantic species.
v.c. 73—rock in sheltered ravine, Old Glenlee (1953). H.M.-R.
Cololejeunea calcarea (Lib.) Schiffn. Rare in sheltered ravines, usually in the spray of waterfalls. Typically directly on the rock in almost vertical stations.
v.c. 72—limestone rocks, Penton Linns (1952). H.M.-R.—Dob's Linn—
                                                                               the coast.
    stations.
v.c. 72—limestone rocks, Penton Linns (1952). H.M.-R.—Dob's Linn—
Laverhay Burn—Garrel Water—Cornal Burn.
v.c. 73—wet rocks, Routin Brig (1952). H.M.-R.—White Laggan—Kirk-
connell Linn.
—C. rosettlana (Massal.) Schiffn. Rare.
v.c. 72—damp shady rocks, Garrel Glen (1953). H.M.-R.
Aphanolejeunea microscopica (Tayl.) Evans. Rare Atlantic species.
v.c. 72—creeping over Metzgeria on sheltered vertical rocks, Kinnel Water
(1953). H.M.-R.
—Cornal Burn.
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v.c. /2—Gien 17001, with Lejeunea patens and Harpalejeunea ovata on rock. S.M.M.

Colura calyptrifolia (Hook.) Dum. Rare Atlantic species.
v.c. 73—vertical damp walls of ravine above White Laggan Linn (1959).
H.M.-R.

Jubula hutchinsiæ (Hook.) Dum. Rare Atlantic species, exulting in constant

y.c. 73—wet rocks of waterfall, Kirkbean Glen (1958). H.M.-R.
v.c. 73—wet rocks of waterfall, Kirkbean Glen (1958). H.M.-R.
Frullania tamarisci (L.) Dum. var. tamarisci. Common plant of rocks and

- v.c. 73—wet folks of trees.
 v.c. 73—Croglin Craig.
 v.c. 72—Croglin Craig.
 v.c. 73—Criffel—Hestan Island—Redbank Hill—New Abbey Pow—Barlocco Glen—Ravenshall Rocks—Lamagowan woods—Craigy Linn Burn—Mullock Bay.

 var. cornubica Carr.
 v.c. 73—closely coating damp shaded rock in inland ravine, Kirkconnell Linn (1963). H.M.-R.

 -F. germana Tayl. Rare Atlantic species.
 v.c. 72—shaded calcareous rocks, gully at c. 1250 ft. Glenwhargen Craig, Scar Water (1959). D.A.R.

 -F. microphylla (Gottsche) Pears. Rare Atlantic species, on rocks near sea.
 v.c. 73—steeply sloping rocks by sea, Ravenshall Rocks (1951). H.M.-R.
 —Castle Point, Rockcliffe—Lot's Wife.

 -F. fragilifolia Tayl. Occasional on rocks and trees.
 v.c. 72—rocks on hillside, Craignee (1952). H.M.-R.—Burnswark—Croglin Craig—Grey Mare's Tail.
 v.c. 73—New Abbey Pow—Redbank Hill—Kirkdale Glen—Almorness—Rough Firth—Abbey Burnfoot.

 -F. dilatata (L.) Dum. Common on trees, sometimes on rocks, never on ground.

 22—Deil's Dungeon (Euchan Water)—Barjarg.

ground.
v.c. 72—Deil's Dungeon (Euchan Water)—Barjarg.
v.c. 73—Hestan Island—Kirkconnell Flow—Almorness—The Grove—Boreland of Southwick Burn—rock, Mullock Bay.

H. MILNE-REDHEAD.

31st January, 1964.

Appendix

Ae Bridge End 35/08 Airdrie Hill 25/95 Almorness 25/85 Arkleton Burn 35/39 Arkleton Hill 35/49

Back Burn (Southwick) 25/95 Bainloch Hill (East) 25/95 Ballochan Linn 25/98 Balmangan Burn 25/74 Barbuie Burn 25/88 Bareness Hill 25/95 Barjarg limestone 25/89 Barlocco Burn 25/74 Barr Burn 26/70 Birny Gill (Wamphray) 36/10 Black Bank Wood 25/68 Black Craig (v.c. 72) 36/11 Black Craig (v.c. 73) 25/57 Black(s) Hope 36/11 Bombie Glen 25/75 Boreland of Southwick Burn 25/96 Boyken Burn 35/28 Broadshaw Water 35/09

Bucks Linn 25/67 Burnswark Hill 35/17

Caldronlee Quarry 35/27 Carrifran Burn 36/11 Carron Water 26/80 Castramont Burn 25/56 Chanlockfoot (Scar) 26/70 Clawbelly Hill 25/86 Cleuch ravine 25/88 Cleugh Burn 25/56 Cloak, Loch 25/85 Clonyard 25/95 Cluden Water 25/87 and 25/97 Cold Grain 36/11 Collin Burn 25/75 Cornal Burn 36/10 Corncockle Muir and Quarry 35/08 Craigmichen Scar 36/10 Craig Moss 25/96 Craignair Quarries 25/86 Craignee (Scar) 25/89 Craigs 25/97 Craigy Linn Burn 25/78

A BRYOPHYTE FLORA

Crairiepark ravine (Nith) 26/80 Cree, Wood of 25/37 Crichope Linn 25/99 Criffell 25/96 Croglin Craig (Shinnel) 25/79 Culreoch, White Top of 25/66

Dalskairth Moss 25/97 Dardarroch 25/88 Dob's Linn 36/11 Dockridding Wood 35/06 Dropping Craig 25/74 Drum Burn 25/96 Drumlanrig Tunnel 26/80 Dryfe Water 35/19 Dungeon, Loch 25/58 Dunmuck reservoir 25/95

Earn's Craig 25/96 Enterkin Burn 26/80 Ettrick Pen 36/20 Euchan Water 26/70

Fellcroft Loch 25/75 Fleuchlarg ravine 25/65

Garrel Water 35/09 Garroch Burn 25/50 Gatelawbridge 25/99 Gateslack 26/80 Gibb's Hole Wood 25/85 Gilwhaum 25/96 Glaisters Burn 25/86 Glen Burn 25/87 Glencrosh (Moniaive) 25/78 Glendyne Burn 26/81 Glenhoul 25/68 Glenjaan Burn (Dalwhat) 25/79 Glenkill Burn 35/09 Glenlee, Old 25/58 Glenstuart 35/16 Grey Mare's Tail (Cree) 25/37 Grey Mare's Tail (Moffat) 36/11 Grey Mare's Tail (Talnotry) 25/47 Grove, The 25/97

Hannayston Wood 25/58 Hartfell Craig 36/11 Hellshole Moss 35/08 Hestan Island 25/85

Ironhirst Moss 35/07

Ken, Loch 25/67 Kenmure Holms 25/67 Kinharvie Burn 25/96 Kinnel Water 35/09 Kirkbean Glen 25/95 Kirkconnell Flow 25/96 and 25/97 Screel, Hill 25/75

Kirkconnell Linns (Tarff) 25/66 Kirkdale Glen 25/55 Kirriemore Burn 25/38 Kirriemore Hill 25/38

Lamagowan 25/56 Laverhay Burn 35/19 Linkins Glen 25/75 Linns Knowe, Mosspeeble Burn 35/49 Locharbriggs 25/98 Lochar Moss 35/07 Lochcraig (Head) 36/11 Lot's Wife 25/95 Lotus Hill 25/96 Lowran Glen 25/67

Maidenbower Craigs 25/97 Mainsriddle 25/95 Merrick 25/48 Mid-Craig 25/97 Midlaw Burn 36/11 Milldown 25/58 Millfire 25/58 Millfore 25/47 Milyea 25/58 Mollin Burn 35/09 Moodlaw Loch 36/20 Moorbrock Hill 25/69 Morton Wood 25/89 Mosspeeble Burn 35/39 and 35/49 Mote Knowe (Glenkill) 35/09 Muckle Cauldron Burn 36/20

Nether Coomb Craig 36/11 New Abbey Pow 25/96 New Abbey Quarry 25/96 Nith, river (above Drumlanrig) 26/80 Nunland Hill (Easthill) 25/97

Ogle Linn 35/09 Orroland 25/74

Pamphy Linns (Euchan) 26/70 Penton Linns 35/47 Portcheek ravine 25/74 Preston Mill Burn 25/95

Racks Moss 35/07 Raking Gill 36/11 Rangegill Burn (Rammerscales) 35/07 Raven Craig 36/11 Ravenshall Rocks 25/55 Redbank Hill 25/95 Rough Firth 25/85 Routin Brig 25/87

Scar Water 25/89

Screel, Glen of 25/75 Selooth Burn 36/10 Silver Flowe 25/48 Skene, Loch 36/11 Spout Burn 25/65 Spouty Dennans 25/74

Tanner's Linn 35/09 Tannoch Burn 25/96 Tarras Water 35/48 Tonderghie Burn 25/47 and 25/57 Torrs Heughs 25/85 Trool, Glen 25/48 Trool, Loch 25/47 and 25/48 Tuppark Linn (Glenkill) 35/08

Wamphray Water 35/19 Well Hill (Moffat) 36/00 White Laggan 25/47

Abbreviations

A.C.C.—A. C. Crundwell.
A.D.B.—A. D. Banwell.
*A.J.E.S.—A. J. E. Smith.
*A.R.P.—A. R. Perry.
D.A.R.—Derek A. Ratcliffe.
E.C.W.—E. C. Wallace.
*E.F.W.—E. F. Warburg.
E.L.B.—E. L. Birse.
*E.M.L.—E. M. Lobley.
*H.M.-R.—H. Milne-Redhead.
*I.A.P.—J. A. Paton.

J.McA.—J. McAndrew.
J.S.R.—J. S. Robertson.
*J.W.F.—J. W. Fitzgerald.
P.E.—P. Ewing.
*R.E.L.—R. E. Longton.
S.M.M.—S. M. MacVicar.

alt. ca.—approximate altitude. c.fr.—with fruit. c.per.—with perianth. et al.—and others.

Published Sources of Records

- 1. The Distribution of Hepaticæ in Scotland—Symers M. MacVicar (Trans.Bot.Soc.Edin. 1910, 25 1-332).
- List of Mosses and Hepaticæ in Dumfriesshire and Kirkcudbrightshire—James McAndrew (Trans.D.&G.Nat.Hist.&Ant. Soc. 1890, 6 89-106).
- 3. Addenda and Corrigenda to above list—James McAndrew (Trans.D.&G.Nat.Hist.&Ant.Soc. 1905, 17 121-124).
- A Contribution to the Cryptogamic Botany of the Moffat District James McAndrew (Trans.D.&G.Nat.Hist.&Ant.Soc. 1893, 8 30-33).
- 5. Notes on the Hepaticæ and Mosses of the Three South-Western Counties of Scotland—James McAndrew (Trans.D.&G.Nat. Hist.&Ant.Soc. 1911, 23 306-309).
- 6. British Bryological Society Reports for 1933 and 1940-1943.
- 7. Trans.Brit.bryol,Soc. 1947-1963, 1-4, part 3.

(See especially annual section for New Vice-County Records, each record substantiated by voucher and subjected to scrutiny by appropriate referee of the British Bryological Society.)

ARTICLE 3

Some Effects of the Cold Winter of 1962-63 on the Flora and Fauna of the Solway Firth

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Introduction

The winter of 1962-63, with a long cold period lasting from November 1962 to March 1963, was the coldest since the severe winter of 1740 (Lamb 1963). A routine biological survey was continued throughout the period and it was possible to observe, at first hand, some of the effects of the cold weather on the fauna and flora of the Solway. Since the very cold weather could upset the biotic balance in the Solway, it was important to record its effects, as far as possible, especially with reference to current food chain investigations.

Place names and sampling stations referred to in the text are shown in Fig. 1.

Climatology and Hydrography

For much of the winter, the British Isles were affected by continental anticyclones and a cold easterly airstream persisted over the country. Throughout the period meteorological observations were made at Chapelcross and additional information for the Carlisle, Eskdalemuir and Mull of Galloway observation stations was extracted from the Meteorological Office, Daily Weather Records.

Although air temperature records have only an indirect relationship with the temperatures occurring on the surface of the shores, they have, in the absence of such ground temperature information, been used to show overall temperature trends for the period.

The cold period began in the second half of November 1962, when minimum air temperatures during the nights declined markedly. Minimum air temperatures were constantly low; minima below minus 10°C were only experienced occasionally, but temperatures between minus 4°C and minus 7°C were common. In January and February monthly mean minima for the area were 4C° below average. The lowest ground temperature, for the period, was minus 15°C recorded at Carlisle on 12th January. Ground frosts occurred most nights and air frosts were reported occasionally.

The tidal range in the Inner Solway area is approximately twenty-six feet and the ebbing tide exposes large areas of rocky and sandy shore, and banks together with their associated flora and fauna. During cold weather, these forms may be subject to considerable frost damage for much of the tidal cycle, especially at the time of neap tides.

During the cold period, water temperatures at the head of the Solway were very low, and on occasion sub-zero temperatures were noted. At Newbie on 19.2.63 the surface water temperature, at high water, was minus 0.18° C. The salinity was 26.74%. Sea water (salinity $35\%_{o}$) normally freezes at minus 1.91° C, but in estuaries where salinities are generally lower, the freezing point is closer to 0° C.

The freezing conditions during the period caused considerable ice formation in the shallow water areas and much of the shore was subjected to severe icing. The area to the east of the old Bowness to Seafield railway viaduct, and the Auchencairn Bay/River Urr complex, where an ice blanket over the shores persisted through the cold period, were particularly affected. By January, much of the area upstream of the viaduct was blocked by large ice floes. The area had the appearance of a polar waste, with large ice blocks, up to five or six feet in height, cast up on the shores. Conditions were probably similar to

those in 1875 and 1881 when the Solway viaduct was badly damaged by ice (Blake 1955). Conditions in Auchencairn Bay were also very bad, the ice having encroached over most of the upper half of the bay. At Craigbrex, on the Urr Water, much of the shore below the salt marsh was completely covered by a thick layer of ice.

During this period, precipitation fell as snow, which lay on the ground until the thaw in March. Despite the extremely cold weather, much of the sunshine, for the year May 1962 to April 1963, was recorded at this time. However, the heat effect of the sun was limited by its low elevation, the short days and the cold easterly air stream. Consequently, it had little effect in melting the snow and ice.

Boatwork was hampered by sheets of ice in the River Annan estuary, and by large pieces of free-floating ice, which made trawling hazardous in the Solway. To prevent damage to the wooden hull, two extra planks, three inches thick were attached at the waterline along both sides of the boat and projecting forward beyond the bows. These planks were replaced within two months, one having been cut in half lengthwise, by the action of the ice.

Possible Effects of Ice and Frost

Ice can cause great damage to littoral faunas, especially to sessile forms on rocky shores where its continual movement removes much of the epifauna and flora from the surface of rocks. Bottom dwellers can sometimes be trapped in ice and moved considerable distances from their original habitat and deposited in unfavourable situations where they die.

During severe frosts, much of the littoral fauna is exposed to the freezing conditions and although the animals can endure short periods of exposure, they may die if the cold is prolonged.

The two cold winter periods, 1927-29 and 1939-42, had catastrophic effects upon the *Macoma* community in the

Danish Waddensea (Smidt 1944). After the second cold period, the populations of *Macoma balthica* (L.), *Cardium edule L.* and *Scrobicularia plana* (da Costa), were almost wiped out. From the work of various observers on the English and Scandinavian coasts, Smidt concluded that the animals which suffered most were those of the rock epifauna and the *Macoma* community of the sandy shores.

Effects of the Cold on the Flora of the Solway Firth

Algæ

Since March 1962, monthly records have been kept of growth and reproduction in the four main seaweeds, viz., Pelvetia canaliculata Done. and Thur. Fucus spiralis L., Ascophyllum nodosum Le Jol and Fucus vesiculosus L., which occur on the rocks at many localities along the shores of the Solway. Fucus ceranoides L. and Fucus serratus L. were also examined where they occurred.

For much of the cold period, these seaweeds were covered by ice, in some places to a depth of one foot. Although this ice moved continuously, with the tide, mechanical damage was noted on one occasion only, at Cottage (see fig. 1) on 22.2.63 when the Fucus spiralis had an abraded appearance. During neap tides, when the seaweeds colonising the upper parts of the shore, i.e. Pelvetia canaliculata and Fucus spiralis, were not covered by ice, they were frozen solid and were extremely brittle.

The seaweeds recovered quickly with the arrival of warmer weather in March. However, the onset of reproduction in Ascophyllum nodosum and Fucus vesiculosus was retarded about a month compared with the winter 1963-64.

Spartina townsendii H. and J. Groves

The cord grass growing in Auchencairn Bay was covered by a thick layer of ice for most of the cold spell. Despite this, no damage was evident and during 1963-64

the clumps were larger and more numerous than ever. It seems probable that *Spartina* will eventually colonise the whole of the west shore and the head of the bay.

Effects of the Cold on the Fauna of the Solwav Firth

A preliminary account of the fauna was given by Perkins and Williams (1963) and Williams, Perkins and Hinde (1963). Based essentially on the salinity tolerance of the fauna, the Solway was divided by an imaginary line, now fixed between Dubmill Point and Southerness Point, into inner and outer areas.

The bottom fauna of the inner region belongs to the typical *Macoma balthica* community, concentrated mainly in the long flat shores and to a lesser extent on the banks, but distributed sparsely in the bottoms of the flood leads and channels. This community is continued along the English and Scottish shores into the outer area, although in the deeper waters of this area there exists a very varied fauna.

The motile epifauna of the outer area is very abundant, but relatively few species penetrate into the Inner Solway area.

Rocky shores, with their associated epifauna, occur at various localities along the Solway coastline.

Polychæta

No evidence is available with regard to the effects of the severe winter on the polychæte populations in the Solway. At no time during the winter months were dead worms observed. In 1963, *Arenicola marina* (L.), at least, appeared to be as numerous as ever.

Undoubtedly Arenicola may be affected by the cold, for Smidt (1951) quoted a Mr Christensen, who had observed, in the Danish Waddensea, that these worms were always buried deeper in the soil in winter than in summer. It is known that Arenicola can swim (Meek and Storrow, 1924) and it seems probable that it migrates to deeper

waters at times of excessive cold. The large numbers of whole worms found in the stomachs of plaice, flounder and roker caught in the Solway during normal times, supports the inference that *Arenicola* moves actively above the soil.

According to Smidt (1951), the worm diggers of the Danish Waddensea reported large numbers of dead Arenicola washed up on the shores and over the Waddens during the cold winter of 1946-47. By the following May (1947), the worm was at least as numerous as ever, the stocks in the inner area having been replenished by those from deeper water. Smidt (1944) had previously found that the cold weather at the beginning of 1942 had killed off many Arenicola in the inner part of the Waddens, although those at the extreme outer edge of the area were little affected.

How Lanice conchilega (Pallas), Pectinaria sp., Sabellaria alveolata (L.), Nephthys spp. and Nereis sp. fared in the Solway during the cold weather is not known. Danish workers have studied the effects of cold weather on various polychætes in the Waddensea. They found that Nereis diversicolor O. F. Müller was little affected, while those Nephthys hombergi Lamarck living at the extreme outer edge of the tidal area, could best survive cold winters.

Crustacea

Cirripedia. The barnacles encrusting the rocks along the Solway shores survived the cold very well. This is rather surprising because two of the barnacles are natives of warmer waters. Chthalamus stellatus (Poli) is a lusitanian form, while Elminius modestus Darwin, which has colonised most of the Firth, is a subtropical Australasian species. According to Mr Jim Butler of Kippford (personal communication), Elminius was as abundant as ever in 1963 and continued to cause considerable fouling on boats anchored in the River Urr. These barnacles, together with Balanus balanoides (L.) were present on all rocky

shores in 1963 and nowhere were there signs of mechanical depredation by ice during the previous winter.

Corophium volutator (Pallas). No information is available for the Solway in 1962-63. Perkins (unpublished) observed the formation of pack ice on the shores at Whitstable Bay, Kent, during the cold weather of February 1955. On 17.2.55, the temperature of sea water in the pack ice area was minus 1.5°C and elsewhere about plus 1.0°C. Later, on 2.3.55, he noted tremendous mortalities of Corophium volutator which were littered over the beach in their millions, together with polychætes and dorid molluscs.

Crangon vulgaris Fabricius. In the Solway, the brown shrimp migrates to deeper water in the winter and consequently escaped the rigorous conditions prevailing in the inner area during the cold weather.

Certain fishermen believed that the shrimp buried itself in the sand during cold weather. During February 1963, therefore, a short survey was carried out on the fishing stations using a shrimp dredge, with a spade attachment. Although this dredge cut deep into the bottom, no shrimps were caught, except for an occasional one at Ellison, North Workington Bank Buoy and Robin Rigg.

Despite the bad weather, the shrimping season in 1963 was good. Catches of one hundred quarts per day were made on some occasions, whereas in 1962, ninety quarts was considered to be an exceptional catch. This pattern of a good shrimping season following a bad winter is well known to the fishermen in the Solway. A possible explanation might be the death of the many predators of the shrimps, accompanied by a corresponding increase in its own food supply.

Carcinus mænas (L.). Some measure of the effects of the cold weather on the shore crab population has been possible from trawl data. Carcinus was extremely abundant in all trawls in the summer and autumn of 1962. A series of trawls for small fish, made at the end of October

1962, brought up large numbers of shore crabs. A quarter of the catch of trawls (half an hour duration), at Silloth and Ellison, contained thiry-two and twenty crabs respectively. In the cold spell the crabs disappeared. It has long been known that they migrate, Broekhuysen (1936) stated that in cold weather the females, especially, migrate to deeper water to save their eggs from the cold. Although some crabs returned in the spring, their numbers were considerably reduced and throughout the year very few were caught in the trawl.

That ice can cause immense damage among Carcinus populations was illustrated by Patterson (1907), who quoted a Mr Thacker of Breydon Water. "One sharp winter, the 'stock-ice' came up from below in big lumps and crabs (Carcinus mænas) came up in thousands frozen in and to it." He continued that during the following eeling season, fishermen were not bothered by shore crabs stealing their bait.

Portunus depurator (L.). The swimming crab was abundant in 1962, but lacking in the Solway in 1963.

Mollusca

Gastropoda

Patella spp. Many limpets succumbed in the long cold period. On 17.1.63 there were many dead and dying limpets scattered on the ground at Abbey Burnfoot and those still attached to the rocks, both here and elsewhere, were easily removed. Shore investigations during February 1963 showed the limpets to be in very poor condition, especially along the west side of Auchencairn Bay and at Rockcliffe. At Balcary Point, on 18.4.63, it was noted that the majority of limpets had fallen from their positions on the rocks and were dead on the ground.

The periwinkle, Littorina littorea (L.) survived the cold winter very well and large numbers were present throughout 1963 among the rocks and stones on many shores. Hydrobia ulvæ (Pennant) and Nucella lapillus (L.) also

survived well. However, the large catches of *Buccinum* undatum L. taken in trawls at Port Ling throughout the summer of 1962 were not repeated in 1963, when few whelks were caught.

Lamellibranchiata

The lamellibranch infauna of the intertidal zone was badly affected by the cold and considerable mortality occurred among the *Scrobicularia*, *Macoma* and *Cardium* populations.

Scrobicularia plana (da Costa). This lamellibranch, which inhabits muddy soils at the top of the shore in certain areas of the Solway, is very susceptible to the cold. A considerable mortality was reported by Smidt (1951) on a soft (muddy) Wadden at Nordby in the Danish Waddensea, where a large stock of Scrobicularia was wiped out in the 1946-47 winter.

In the Solway, mortalities were observed early in the cold spell. On the 20.12.62, large numbers of newly dead Scrobicularia were found at Seaside, Auchencairn Bay. In the spring and summer months of 1963, large numbers of freshly vacated valves were observed at Carsethorn, Glen Bay and Rough Firth. Previously, in the spring of 1962, large numbers of empty shells were found and a decline in populations was noted at Seaside and Rough Firth following the cold weather in December 1961.

Macoma balthica (L.). Many empty valves of Macoma were found with the dead Scrobicularia at Seaside on 20.12.62. In April 1963, large numbers of recently vacated shells were washed up on the shore at Carsethorn and in Auchencairn Bay. During a shore survey, along the English and Scottish shores of the Solway, in April and May 1963, it was noted that while many newly dead Macoma had not yet been washed out of the sand, large numbers had survived. They were, however, in such poor condition that the slightest pressure with the fingers caused considerable damage. At the time, it was concluded that they would

probably spawn and die. However, further observations made through the year proved this conclusion to be incorrect and great numbers of the larger *Macoma* did, in fact, survive.

Cardium edule (L.). Cockles, in the Solway, were badly affected by the cold and great numbers died. Throughout 1963 the area of the Balcary Bay cockle bed was outlined by the lighter colour of the uncountable numbers of dead shells. The cockle sampling station at Red Haven, Auchencairn Bay, which is at the upper limit of the cockle zone, was covered by ice for much of the cold period. In February, the ice was so thick that sampling was abandoned. Considerable damage was done, in this period, at the bed and it has not recovered. Balcary Bay cockle bed, situated in a sheltered position further down Auchencairn Bay, was more fortunate and escaped much of the ice. However, cockle deaths on this bed, due to cold, were increased by the predation of birds as cockles were the only available, and acceptable, source of food in the area. No attempt was made by the birds to eat mussels in a nearby bed.

Dead cockles were found at Rockcliffe, Rough Firth and along Auchencairn Bay on 18.1.63 and large numbers of recently vacated valves were observed at Southerness on 20.3.63 and again on 17.4.63. Cockles examined during the shore surveys in April and May were in poor condition, especially those at Rough Firth and Rockcliffe.

Mytilus edulis L. The mussel populations in the Solway were apparently little affected by the cold weather.

Other Lamellibranchs. Evidence regarding some of the lamellibranchs living in deeper water, viz. Mactra corallina (L.), Donax vittatus (da Costa), Tellina spp., Abra alba (W. Wood), and Nucula sulcata Bronn, is somewhat indirect. However, during the investigation of the food of fish in the Solway, in 1963, no Donax or Mactra and very few Tellina were found in the stomachs of the fish, whereas in 1962 considerable numbers of these lamellibranchs were

found in the stomachs of plaice, flounder, dab and roker. It is therefore concluded that these forms were depleted in the cold period.

Pharus legumen (L.) and Ensis siliqua (L.), in the outer area, suffered to some extent. Pharus, which must be at its northern limit in the Solway, and Ensis were washed up on the shores in fair numbers. At Airds Bay, Fleet Estuary, in March, dead Ensis and Pharus were abundant on the beach and the majority of shells showed recent growth. Two Ensis measured were 203 mm. and 197 mm. long, with recent growth increments of 15 mm. and 17 mm. respectively. Recently vacated shells of Pharus were found at Ross Bay on 1.5.63 and at Rockcliffe on 15.5.63.

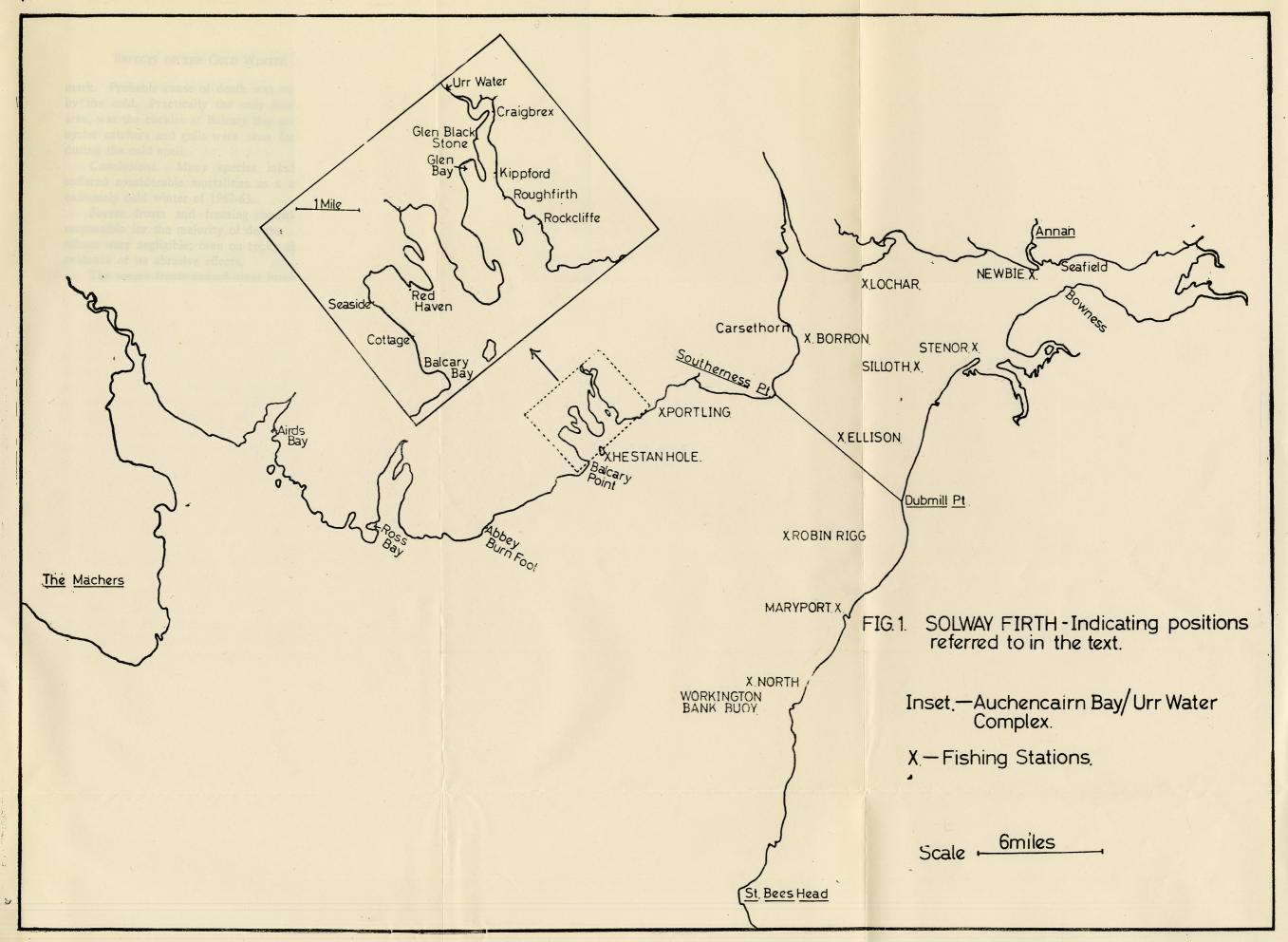
Fish. Simpson (1953) stated that during the cold winter of 1946-47, a tongue of cold water in the North Sea caused the death of many fish. The main mortalities were among cod, whiting and soles, while dabs, plaice and flounders suffered to a lesser degree. Also affected were skate, turbot and brill.

No fish deaths due to cold were recorded in the Solway. The commercial flatfish, i.e. flounder, plaice and dabs, migrate to deeper waters in the winter months. Lack of previous information makes it impossible to tell what effect the cold weather had on this winter migration.

Ammodytes tobianus L. (Lesser Sand Eel) and Agonus cataphractus L. (Pogge), which were caught in considerable quantities throughout 1962, were lacking in the trawls in 1963. The breeding season of these fish in the Solway corresponded with the long cold period and it is possible that many succumbed at this time.

According to Mr T. Willacy, a local fisherman, the trawling station at Hestan Hole is generally characterised, during the summer months, by a variety of fish species and he expressed considerable surprise at their paucity in the summer of 1963.

Birds. Throughout the winter, large numbers of dead birds, mainly oyster catchers, were observed along the tide



mark. Probable cause of death was starvation aggravated by the cold. Practically the only food available, in the area, was the cockles at Balcary Bay and large numbers of oyster catchers and gulls were seen feeding on this bed during the cold spell.

Conclusions. Many species inhabiting the Solway suffered considerable mortalities as a consequence of the extremely cold winter of 1962-63.

Severe frosts and freezing conditions were probably responsible for the majority of deaths. Deaths due to ice effects were negligible; even on rocky shores there was no evidence of its abrasive effects.

The severe frosts caused great losses among the fauna constituting the *Macoma* community of the shores. The lamellibranch mollusc populations were hard hit, but normally occur in such vast numbers that the deaths during the period had little effect on the population overall. However, *Scrobicularia* was locally very sparse in 1963. It is possible that the "thinning out" by the cold has been beneficial, killing off the weaker forms and providing space for a more vigorous population to develop.

Danish workers have shown that sessile species inhabiting the upper parts of the shore suffer more than the same species inhabiting deeper water areas. Repopulation of the denuded upper areas, after a severe winter, is by recruitment from the stock surviving in the deeper areas.

Some motile forms, because of their winter migratory behaviour, escaped the cold, e.g. shrimps and flatfish. However, for some reason, other motile forms, i.e. *Carcinus, Portunus, Agonus* and *Ammodytes* were affected to the extent that they were almost entirely absent from the Solway area during 1963.

Surprisingly, some of the warmer water species such as the barnacles *Elminius* and *Chthalamus* were little affected by the freezing conditions, while many endemic species suffered considerable mortalities. The only

southern species to succumb was *Pharus legumen*, which must be at its extreme northern limit in this area and is therefore extremely susceptible to temperature extremes.

Faunistic variations due to the cold can have a serious effect on the food chains in the Solway. Investigations have revealed that the food of round fish and larger carnivorous benthic invertebrates consists predominantly of Crustacea, the brown shrimp especially being preferred. The 1963 shrimping season revealed an abundance of shrimps in the estuary and there was, therefore, no shortage of food for the majority of these fish and bottom dwelling invertebrates.

The commercial flatfish feed principally on the lamellibranchs Cardium and Macoma. Although these forms died in large numbers sufficient remained to supply the food requirements of the flatfish throughout the summer of 1963. The absence of other lamellibranchs, viz. Tellina, Mactra and Donax, from the diet of flounders and plaice, in the Port Ling area during 1963, supports the inference that, in the case of flounders especially, a greater burden was placed on Macoma and Cardium as a food source. Polychæte worms constituted the main food of the plaice at this station, lamellibranchs being of secondary importance only. Consequently there would be very little increased predation on Macoma and Cardium by the plaice.

The relative paucity of Carcinus and Agonus in the Solway in 1963 was probably beneficial to the commercial fish species. Carcinus is a voracious consumer of many bottom dwellers which constitute the food of these fish, together with the young fish themselves. Agonus, too, is a voracious feeder, competing for food with small plaice and flounders.

In the Solway, sand eels, together with small clupeoids and gobies, form an important food group which is preyed upon by at least sixteen species of fish. The disappearance of sand eels in 1963 probably resulted in increased predation on the other two fish species.

In conclusion, the cold winter of 1962-63 caused considerable damage to the Solway fauna and many species suffered. However, in the light of more recent observations, it is apparent that the cold was not so severe as to cause prolonged devastation. The lamellibranch fauna of the shores was previously so abundant that it was able to sustain its population despite considerable losses during the winter. Even the disappearance of *Carcinus* is probably only temporary, for although adult crabs were lacking in numbers in the Solway throughout 1963, minute *Carcinus* were extremely abundant in 1964, especially among the mussel beds where they were afforded protection.

According to Mr T. Willacy (personal communication), while shrimping off Southerness in April, 1964, he trawled large numbers of very small Agonus cataphractus. They were so numerous as to make sorting difficult. This was the first occasion since 1962 that he had encountered Agonus in any quantity.

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Some Preliminary Notes on the Bottom Currents of the Solway Firth and North East Irish Sea

By E. J. PERKINS, B. R. H. WILLIAMS, and M. BAILEY, Research Laboratories, U.K.A.E.A., Chapelcross Works, Annan.

Introduction

A radio-active effluent may be broadly classified as "ionic," e.g. Sr⁹⁰, Cs¹³⁷, or as "radio-colloidal" or particulate, e.g. Ru¹⁰⁶, Ce^{141,144}, Zr⁹⁵, Nb⁹⁵. The former moving with and as the solvent water mass, while the latter, which is readily absorbed by silt particles, moves in the same way as the sediments. A knowledge of the bottom currents, particularly in estuaries where reaction currents develop, is clearly essential if the disposition and movement of the latter substances is to be properly understood.

While much information regarding silt transport by bottom currents can be obtained directly, and by exchange calculations using salinity techniques, it is often not easy to obtain a long term and overall picture. This is particularly true of the Solway with its vast expanses of sandbanks exposed by the retreating tide which rapidly transforms the shallows into "dry-land." Consequently, the more refined techniques of salinity and current measurement are difficult to apply and of doubtful validity when performed. One is, therefore, obliged to rely heavily upon techniques which involve the use of the Iroquois drogue and sea-surface and sea-bed drifters.

The sea-bed drifter employed in the Solway was that devised by P. M. J. Woodhead, M.A.F.F., Lowestoft Laboratory, and described by Woodhead and Lee (1960).

Initially, all the drifters released were tagged with a numbered tag; however, to prevent a total loss of information due to loss of the tag, a punch code was incorporated on the disc, and all later releases were marked by this method alone. Releases were normally made in batches of 25.

Certain difficulties were attendant upon releases in the Solway. Because of the extent to which the tide drains the area, releases have to be made by a boat leaving Annan on one high water and returning on that following; releases at or near high water, in the Inner Solway, and at or near low water in the Outer Solway, had therefore to be adhered to rigidly. At the same time, during the shrimp fishing season in the Inner Solway, releases had to be made during a Friday afternoon to prevent a very quick and to some extent undesirable recovery. Finally, although the stranding by an onshore wind in the early stages after release did in itself provide information of value, such results had to be excluded from the general picture.

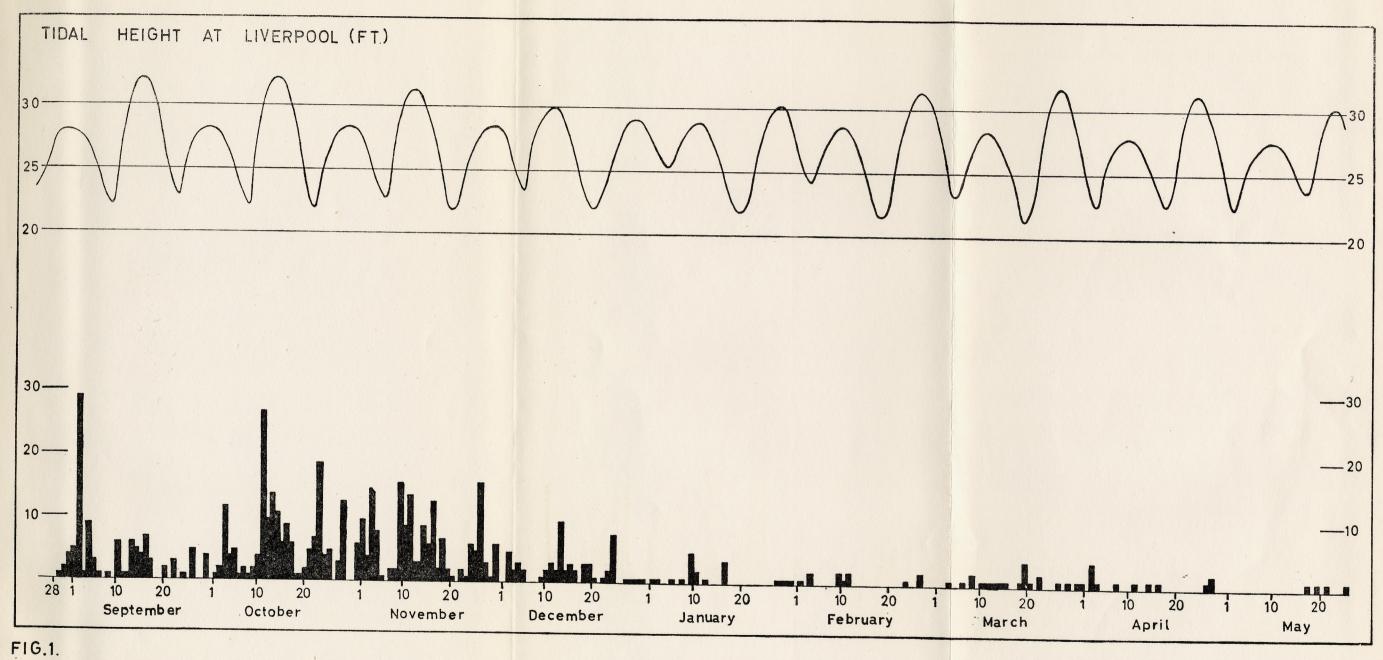
While it is not proposed to go into further detail here, drifters carrying one half of the normal weight were employed as sea-surface drifters in the Solway investigation. Results obtained were satisfactory and showed a general movement first to the Irish Sea and then through the North Channel to the Atlantic.

The present paper is a preliminary account of work to be reported in detail in a series of U.K.A.E.A. (Production Group) reports entitled "The Biology of the Solway Firth in Relation to the Movement and Accumulation of Radioactive Materials."

Results

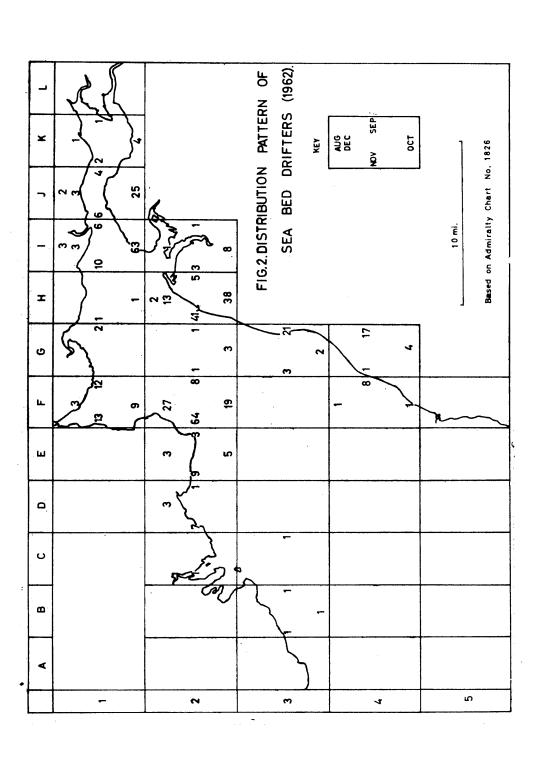
In 27 releases of sea-bed drifters, a gross recovery of 86.5% was obtained; in these releases losses of tags up to 25.9% occurred, and it is due to the clip code technique that the high percentage of useful returns has been made.

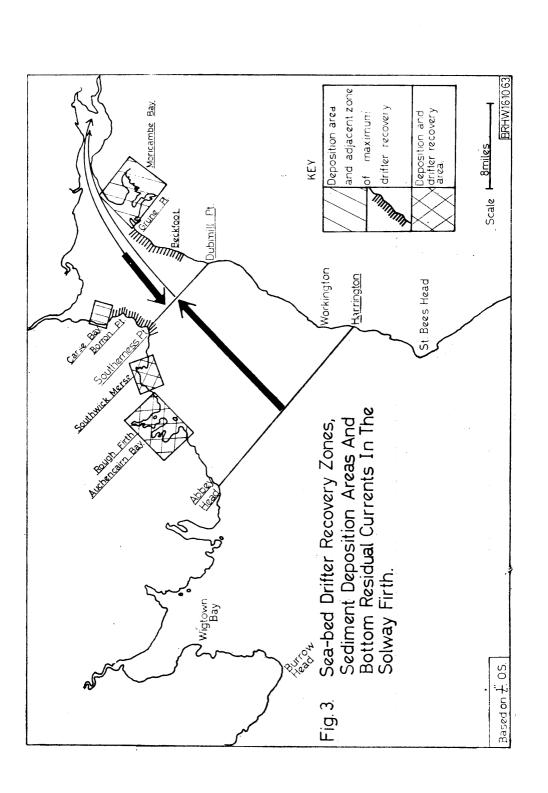
The occurrence of busy and slack weeks, apparently coinciding with spring and neap tides, led to a further examination of the returns. Analysis by the chi² test revealed that recovery at the week-end was greater than would be expected, when spring tides coincided with the



HISTOGRAM OF SEA BED DRIFTER RETURNS.

1962 RELEASES.





week-end; however, when spring tides occurred during the week, then returns showed the expected distribution. At the same time, when the gross returns were plotted as histograms and related to the tidal cycle, it became apparent that the returns showed a distribution which coincided approximately with the height of the tide (see Fig. 1).

Further analysis, with respect to the sites of drifter recovery and the time at which recovery was made, indicated that drifters tended to be recovered far up the Inner Solway at times of equinoctial tides. On the other hand, they tended to be recovered further down as the time of the winter and summer solstice approached (see Fig. 2).

Solway Firth releases may for convenience be regarded as being made within a line drawn from the Abbey Head to Harrington (near Workington). (See Fig. 3).

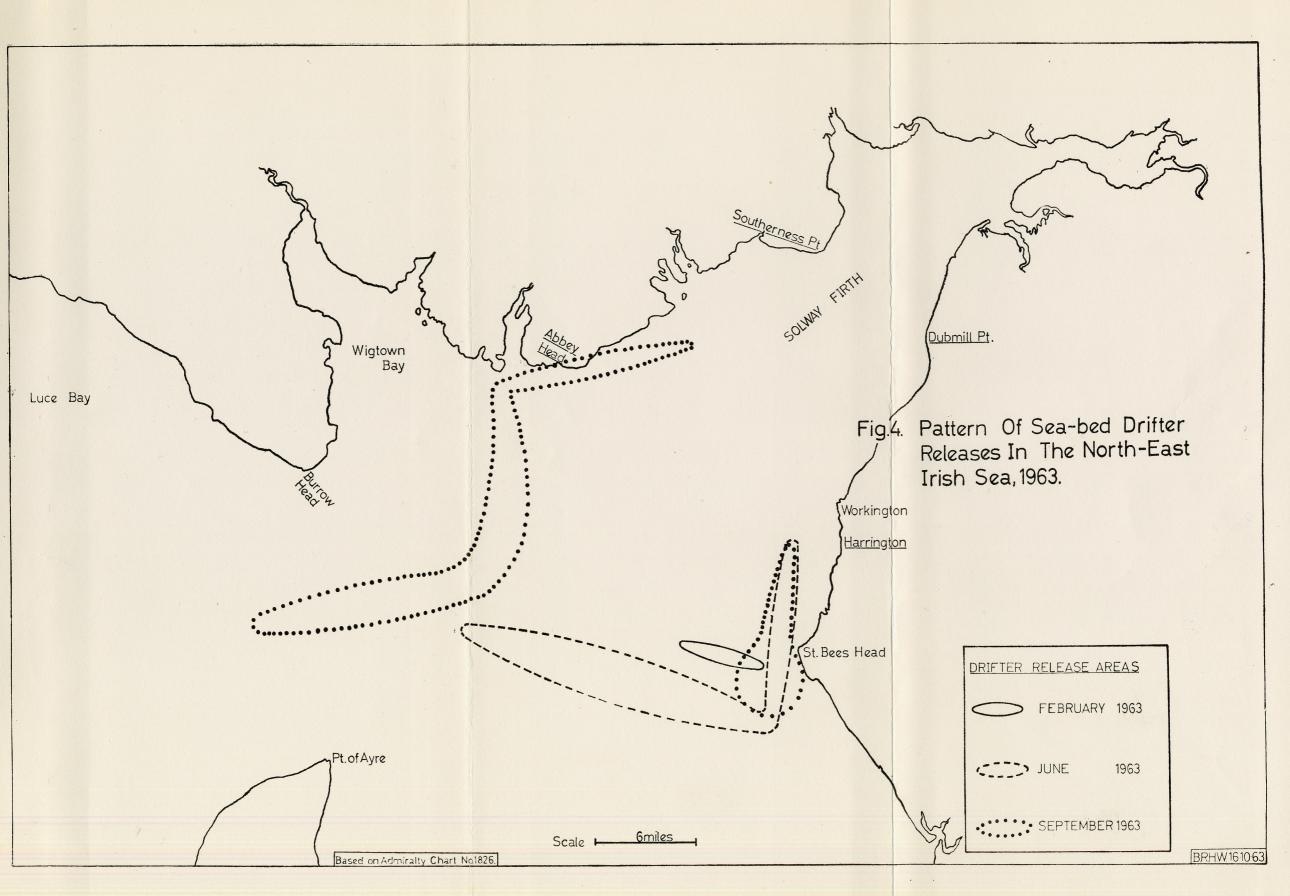
All releases made within this line and a line drawn from Southerness Point to Dubmill Point, moved upstream, and particularly at the time of the equinoxes tended to move rapidly to the head of the estuary. On the other hand, those drifters released to the north-east of the line drawn from Southerness Point to Dubmill Point, showed some upstream residual about the time of the equinoxes, but at other times tended to move downstream towards the line. Within this line, the channels drain almost completely by the time of low water; the ebb current will, therefore, more readily affect the bottom than in the deeper areas, particularly at the times of summer and winter solstice and overcome the effect of the stronger flood current, and produce a net seaward drift of the sea-bed drifters.

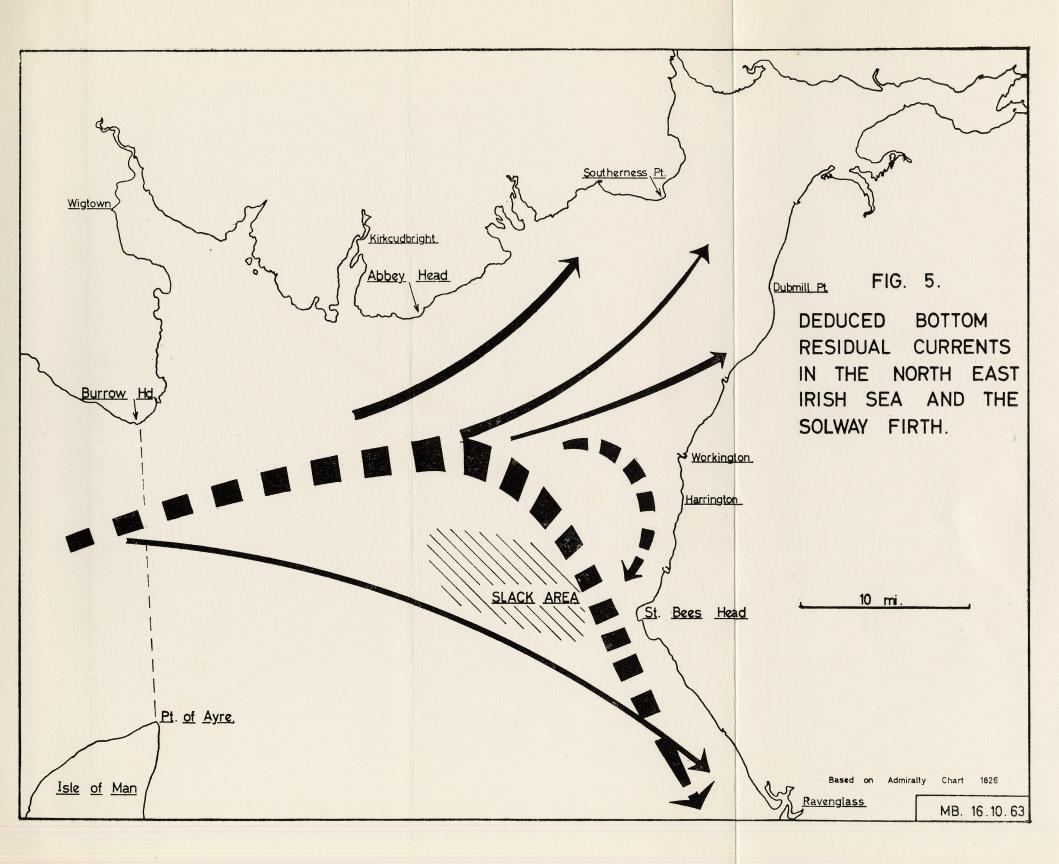
To sum up, the sea-bed drifters released in the Solway Firth show a tidal periodicity of return, and tend to penetrate the Inner Solway only at the time of the equinoxes; at other times, particularly the solstices, returns tend to decrease and to be made only within the Abbey Head to Harrington and Borron Point to Grune Point lines. Such a result agrees substantially with the arrival of sedi-

ment (silt) and the pattern of changes of radiation level, and it may be concluded that transport of sediment and sea-bed drifters is intermittent and dependent upon the height of the tide. At the present time, there is no evidence in favour of a hypothesis which postulates carriage due to reaction currents.

With regard to those sites at which recovery of seabed drifters occur, certain ones stand out as having been responsible for the recovery of a large proportion of the drifters. Of these sites, the shore between Southerness Point and Borron Point on the Scottish side, and Beckfoot and Grune Point on the English side, received 34.4% and 19.7% of the drifters recovered from the 1962 release. Returns from the 1963 releases are incomplete as vet. but these sites continue to be important. Returns have also been made in the Auchencairn Bay/Rough Firth complex and from Southwick Merse (see Fig. 3). It is significant that the Southerness Point to Borron Point and Beckfoot to Grune Point shores shelter the deposition areas in Carse Bay and Moricambe respectively; while the shores of the Auchencairn Bay/Rough Firth complex and Southwick Merse are sites of active deposition. It seems, therefore, that like the sediment, the sea-bed drifters tend to be preferentially deposited either in sites of active deposition. or on shores which shelter such sites. Unlike the sediment, however, its large size may preclude the sea-bed drifter from actually reaching the site of deposition, and its deposition may be regarded as indicating the proximity of deposition areas rather than the areas themselves. The presence of flood channel spurs which run towards Carse Bay and Moricambe no doubt play an important role in recovery in these areas: an effect like that at Spurn Point noted by Robinson (1963).

Releases in the Irish Sea were carried out in 1963, in three stages. The first off St. Bees Head in February, the second off St. Bees Head and to the north west to a point 54° 32'N 4° 9'W in June, and the third off St. Bees Head, and a release pattern starting at 54° 32'N 4° 27'W





(to the north west of the Isle of Man), turning at 54° 33'N 4° 8'W and again 1 mile south of the Little Ross Lighthouse and terminating 1 mile south-south-west of Hestan Island, in September.

The returns suggest that there is an area of slack water to the north west of St. Bees Head. Further out. however, a bottom residual current is present travelling in an approximately south-easterly direction (see Fig. 5). Releases, prior to that of September, suggest that it intermittent and its strength is apparently creased at the time of the equinoxes. The more extended pattern of releases made in September showed that the current is narrow and originates to the west of the Isle of Man, and unlike the earlier releases which reached a limit of recovery at Selker Point, returns have been made from as far south as Walney Is. So much stronger has this current been in the autumn of 1963 that it appears to have penetrated the Solway as far as Two Feet Bank where it turned south and then west towards South Workington Bank Buoy and St. Bees Head. In addition, it appears to have affected the pattern of recoveries within the Solway, and to some extent upset the tidal nature of the returns; these returns are, however, incomplete and a final analysis is awaited with interest.

It would appear from the sea-bed drifter results that the silt which enters the Solway and is finally deposited in the marshes, does so by means of a residual current which comes from the west of the line drawn from the Point of Ayre (I.O.M.) to the Burrow Head, and passes east along the Scottish coast; there is no evidence for the significant transport of silt by residual currents from St. Bees Head and the sea-bottom to the south. Such an inference confirms what is known of the sediment distribution in the Solway, and is consistent with the way in which silt is observed to arrive.

The origin of this bottom residual current is obscure, but it may be profitable at this stage to speculate upon its

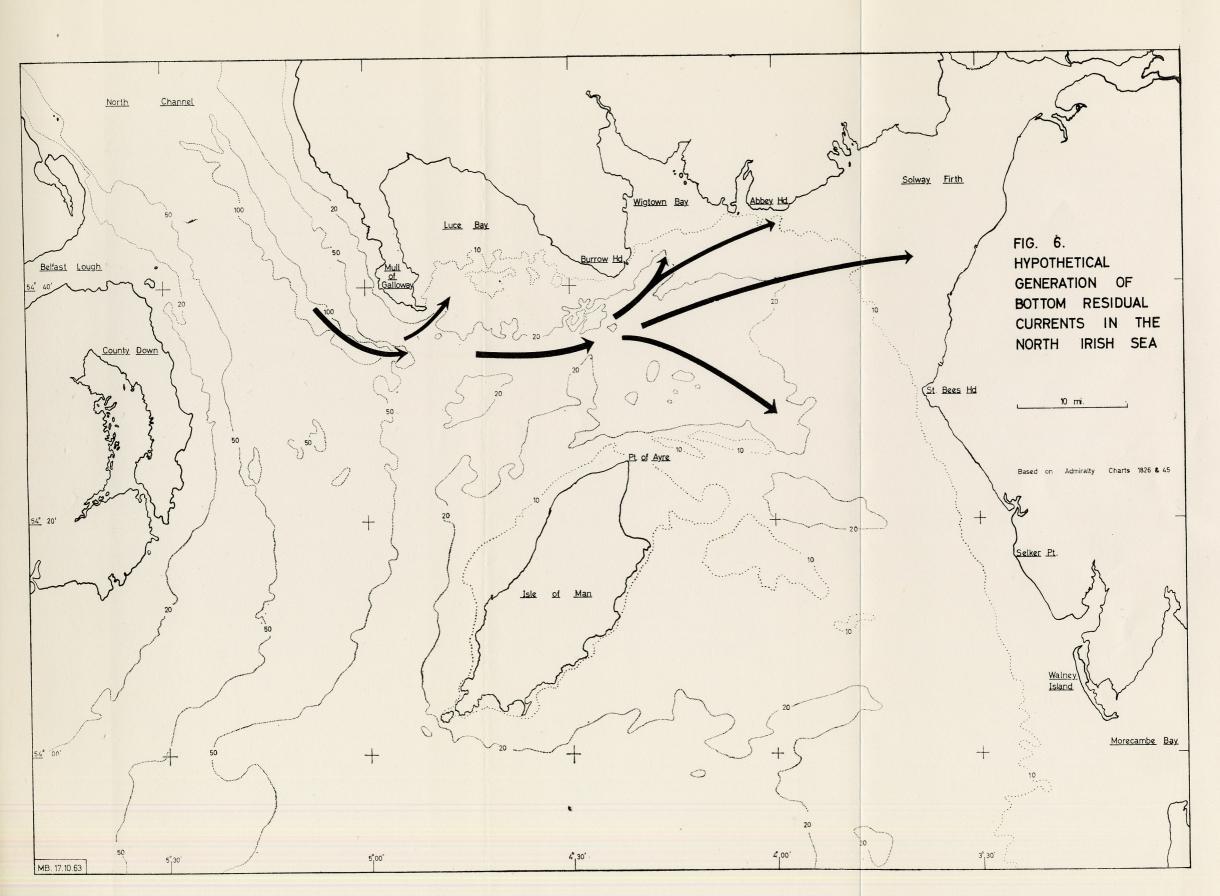
origin. The flood channels of the northernmost areas of the Irish Sea are shown in figure 6. It will be seen that to the east, the deduced currents bear a close relationship to the flood channel contours. Further examination of the flood channel contours to the west of the Burrow Head-Point of Ayre line would suggest that flood channel elements can be seen derived from the southern end of the North Channel; on this basis, it does not seem too wild to propose the hypothesis that, this current may originate in the North Channel. It may perhaps be affected by the vagaries of the Gulf Stream which are known to affect both the North Channel and Clyde Sea areas. If this is true, the origins of Solway silt remains an interesting question.

This paper was first presented at the sea-bed drifter meeting held at the Fisheries Laboratory, Lowestoft, 1st November, 1963.

Conclusions

- 1. There is an upstream residual current on the bed of the Solway which is apparently generated by an asymmetrical tidal wave. Significant transport apparently occurs only with the equinoctial tides when drifters are most readily recovered and silt is observed to be deposited.
- 2. In the north-eastern Irish Sea, there is a generally south-bound bottom residual current which originates to the west of a line drawn from the Burrow Head to the Point of Ayre (I.O.M.). It is intermittent in nature, and has a southern limit which is usually found at Selker Point, latterly recoveries have been made as far south as Walney Island.

The conclusion drawn from these north Irish Sea releases, is that the silt in the Solway enters chiefly on the Scottish side and is derived from some source to the west of the Isle of Man.



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Notes On Some Unusual Fishes Recently Recorded From Wigtownshire

By W. A. KING-WEBSTER

Marine Species

The Irish Sea is a natural trap for warm water species of fish, as they come in from the south with Gulf Stream water, and are held back by colder water in the North Channel. The Galloway Coast is therefore remarkably rich in records of rare species.

My salmon stake nets at Innerwell, being situated far down Wigtown Bay, are well placed to catch such wandering individuals. Before I took over the fishery in 1960, many unusual and interesting fishes had been recorded, perhaps the most recent being a specimen of a small, tropical tunny *Euthynnus alleteratus*. The following species have been taken during the four seasons 1960 to 1963. Thanks are due to the Fisheries Laboratory, Aberdeen, for some identifications.

Engraulis encrasicholus Linn. (Anchovy). A specimen was sent to the Fisheries Laboratory, Aberdeen, in May, 1961, and was the first they had had from the Solway for many years. A second was taken later in the same season.

Trachinotus glaucus (Glaucus or Derbio). One individual was taken in August, 1961. It has aroused some interest as, although the genus is widespread in tropical and sub-tropical seas, it appears to be only the third specimen recorded from British waters, the previous two having been from Cornwall. The fish is now in the Royal Scottish Museum, Edinburgh, and a photograph in the Burgh Museum, Dumfries.

Trygon or Dasyastis pastinaca (Stingray). Several have been taken at Innerwell during the four seasons, but it is a rather rare fish, about 60 having been recorded from British waters during the past 50 years. The formidable

barbed spines on its tail, which are capable of penetrating a sea boot, make it an unwelcome catch.

Myliobatis aquila Linn. (Eagle Ray). One individual was taken in 1962. It is a rare species in British waters, but not remarkably so. It has spines similar to those on the stingray, but they are situated so much nearer the base of the tail that it is hard to imagine how they are used. The fish has a grotesque, almost mammalian face, and long, bird-like wings, which give it a strikingly unfish-like appearance.

Auxis thazard (One of the small tunnys). One individual was taken in June, 1962. It was the first British record for a very long time, there being several in the distant past. It is now in the Royal Scottish Museum, and a photograph in the Burgh Museum, Dumfries.

Alopias vulpes Linn. (Thresher Shark). One 12 ft. specimen was taken during the 1963 season, and was the first recorded by Aberdeen for some years. This fish is remarkable in that the upper lobe of the tail fin is greatly prolonged, being rather longer than the rest of the animal. Its function is not known for certain, but it is said to be used for herding small fish together, so that they can more easily be caught.

Spondyliosoma cantharus (Old Wife). One specimen of this sea bream was taken in 1963. It is rare so far north.

Freshwater Species

Tinca tinca (Tench). A small population of this cyprinid is established in a pond by the roadside between Culscadden and Innerwell, near Garlieston. There is no record of who put them there, or when.

Recent Observations On Two Former Reports

In "The Marine and Freshwater Fishes of Wigtownshire" by J. G. Gordon of Corsemalzie, which appeared in the Society's transactions for 1919-20, the Common Carp

Cyprinus carpio was reported from Laggan Tarn, Fell of Carleton, and the Freshwater Bullhead Cottus gobio from the Drummullin Burn, Isle of Whithorn.

I was able to visit Laggan Tarn in the autumn of 1962, and to set a light gill-net for 24 hours or so. Nothing was caught, which is inconclusive, but I have it on reliable authority that the Tarn was full of small fish until not many years ago, which have since disappeared. What they were, what befell them, and whether any survive, it is impossible to say. My informant, who is a capable angler, is emphatic that they were not perch. It is unusual for Cyprinus carpio to runt, and Gordon reported them as having attained a great size there, so it is possible that the small species was some other introduced cyprinid.

I have twice visited the Drummullin Burn, but the water was both times too high for me to turn over stones, except near the edges. However, had there been freshwater bullheads there, I would have expected to have seen some. The report stated that they were common where the burn runs through the harbour. It is therefore possible that it was one of the three marine species of Cottus, or even Gobius minutus, the Sand Goby, that was observed. The last is common in brackish, tidal waters elsewhere round our coast.

The Archaeological Collection of the Society

By A. E. TRUCKELL, M.A., F.S.A.Scot., F.M.A.

From the foundation of the Dumfries and Galloway Natural History and Antiquarian Society in 1862 locally-found objects of archæological importance have been presented to or deposited with the Society. This process has considerably accelerated since 1947, and, as the practice of listing presentations and exhibits in the annual Transactions lapsed a good many years ago, it is felt that a summary catalogue of the archæological collection, followed by a brief mention of the acquisitions of the past year, would best make possible the resumption of this practice.

The summary which follows represents the collections as at November-December, 1963: it must be understood that all sections are growing rapidly. The collections are fully registered, catalogued and indexed, but for the sake of brevity the summary gives only approximate numbers of items in each group.

Though not strictly Archæology, we begin with the collection of Bos Primigenius and Red Deer bone and antler material from the early post-glacial peats of the Solway bed and inland Preston Merse, Lochrutton, Brow Well, the Urr and Cree estuaries for Red Deer material and Lockerbie for Bos Primigenius skulls and ribs and an ear bone. Beetle wing-cases from the peat at Redkirk Point, Powfoot shore, and Preston Merse have also been added to the collection recently. Domestic animals are represented by a large group from a pit on top of a hillock near Dinwoodie in Annandale and by mediæval horns and a polled skull from the peat beneath Broom's Road, Dumfries, plus small ox, pig and slender-legged sheep from the 4th-5th century site at Blacketlees.

There is also a good sample of oyster-shell from the large midden on top of the old shore-line above the raised beach in Stranzaer.

The coastal Mesolithic industry is now represented by over a thousand flints, pyramidal cores showing the burin notch and blades being well represented, and most specimens bearing a heavy white patina, from Terally, Balgown, Kirkmabreck, Shaddock, Blairbuy, Auchenmalg, Low Clone North, Low Clone South, Stairhaven, Kilfillan, Airlour, Pate's Port, and Broom Point, all in Wigtownshire, with smaller groups from Isle, Luce Sands, Low Balyett and Mull of Sinniness in the same county and a single pyramidal core from Torrs, Auchencairn, in Kirkcudbrightshire, all of these sites being on top of the old coastline above the Raised Beach.

The blue-grey chert industry of predominantly inland distribution is well represented by several hundred specimens from sites around Twiglees on Eskdalemuir, a splendid flint point (which could be a little later) and several chert and pitchstone cores from Redkirk Point at the head of the Solway, and chert blades and chips from Townfoot at the mouth of the Nith, these last two groups being from sites just behind the old coastline. Slightly patinated flint nodules and flakes which turn up in a garden on New Abbey Road, Dumfries, just behind the old coastline of Raised Beach days, and of which the Society has one example, may also be of this period, though garden flints are always suspect. The large collection of over 450 cores, blades and discoids of Arran pitchstone from the Luce sands is closely cognate in style with the inland blue-grey chert industry. A splendid flint blade, slightly patinated, comes from the top of the old coastline at Gretna.

The Neolithic is well represented. There are over a hundred pieces of Primary Neolithic pottery from Luce Sands, in two main fabrics, a thin sand-coloured ware with golden mica tempering, and a thicker black ware with white grits, the former having rounded rims and the latter usually

flattened polished rims: at least 28 pieces of rim are represented. There are nearly a hundred pieces of Secondary Neolithic pottery from the Sands, mainly richly decorated, and including several pieces of distinct Rinyo-Clacton affinities. From the Sands also come some three hundred Beaker fragments showing a considerable variety of ornament and shape. As for flints, the Sands are represented by several hundred scrapers, over a hundred large blades, a number of microlithic blades, borers, discoidal knives, saws, and tranchet and leaf arrowheads, besides hundreds of chips and flakes.

The collection of Neolithic polished stone axes covers the whole area—axes of Westmorland stone from East Preston, Maryland, the rock-shelter at Maidenbower Craigs, Kirklauchline, East Tinwald, a rough-out from Beckfoot, Durisdeer, Tynron, Sorbie Tower, Kelton Mains, Cowhill, Heithat (Corrie), Carruthers, Middlebie: Bellfield (Cowhill): Barvernochan; Closeburn: Lands, Birrens: and two from "Galloway": and axes of local or at least non-Westmorland stone from Newfield, Ecclefechan: Shaddock: Watcarrick: Tynron: Whithorn: Tinwald: Blairbuy (of Ronaldsway type): a tiny miniature axe or chisel "from Galloway" and two other normal-sized axes, one of a stone probably from central Scotland, both labelled "from Galloway."

Of probably Neolithic date are the small collections of flints from Blairbuy, Auchenmalg, Isle, Shaddock, Redkirk Point, Westside on Eskdalemuir, Holywood, the "Gaups" at Moniaive, and single pieces from Kilfillan (possibly a barb for a composite head), Shuttlefield, Ravenstone, Rockcliffe (Secondary Neolithic, from the Raised Beach), Newbridge, Creetown, Summerville, Terregles Street, Dumfries: Broomhouses: plus two large nodules of possibly East Anglian imported flint from Eskdalemuir and another from the Nith estuary. In material other than

flint there is a collection of jasper from the Luce Sands and a fine bone awl, also from the Sands.

Turning to the Bronze Age proper, there are the groups of urns from the Palmerston and Dinwoodiegreen urnfields, with pygmy vessels and reduced food vessel from the former, the complete pygmy vessel and fragment from the Whitestanes Moor funerary enclosure, the large richly ornamented Food Vessel from a short cist at Carlesgill near Langholm, the Pygmy vessel from the foot of one of the stones of Greystone Stone Circle, fragments of urn and a complete Pygmy Vessel from the Cairngill site, the reduced food vessel and fragments of urn from Maxwelltown Park, flints, clay luting and a fragment of thin bronze, possibly from a bifid razor, from Stroanfreggan Cairn, the complete Mainsriddle beaker burial, with cist, contracted skeleton, and fragments of richly ornamented beaker and bone ring of probably human bone, and pieces of urn from Holywood. There are flat bronze axes from Trohoughton, Drum, Steilston and Havfield, plus a poorly cast copper axe, and a beautifully made axe of Irish style, from a Newfield local collection and liable to have been found in the area. handsome winged axe comes from Cairnsmore and a socketed looped axe from Annan. A large dagger with centre rib comes from New Abbey as does a well-preserved leaf-sword: a small rapier with flat face comes from Tynron. The Canonbie limestone mould bears moulds for a circle and a bar, probably a mirror and handle. There are casts of the Greyfriars Hoard of Middle Bronze Age spears and the original axes.

Eight barbed tanged flint arrowheads come from the Luce Sands, one from Cowcorse, and one from Eskdalemuir: there are plano-convex knives from the Luce Sands (three), Eskdalemuir, and Locharbriggs. A handsome stone macehead comes from Lochmaben and another from Starrieheugh: a third macehead, rougher and with a marked hourglass perforation, comes from Holehouse, Canonbie. Nine

typical Bronze Age scrapers come from the Luce Sands and one from the Whitestanes Moor funerary site. A stone palette from Troston is probably of this period, as may be a small neat whetstone "from Galloway." Small polished hammers in ornamental stone come from Morrinton and from Castledykes, Dumfries, and a plainer stone hammer from Moniaive. A neat small Battle-Axe comes from Janefield Park, Troqueer, and another, rather worn, from the bank of the Nith opposite Crindau. There are four large axe-hammers from the grounds of the Crichton Royal Institute, Dumfries, and axe-hammers from Mote of Troqueer, Drummuir (Torthorwald), Dowalton, Locharbriggs, Troqueer, Portrack, Carruchan, Marchmount, Rockhall, Kirkmichael, Dunscore, "Galloway," two labelled "Dumfries District," Lochmaben, Glencairn (two), Troloss, Howgate Street (Dumfries), Cleuchbrae (two), and Barncleuch. A particularly large and perfectly finished axe-hammer from the Dumfries district has the two sinkings deliberately stopped a hairsbreadth short of making a perforation. A curious flat hammer or macehead comes from Canonbieit is in a different stone from the Canonbie macehead mentioned above.

It is probable that many of the over seventy "miscellaneous stone implements"—sinkers, smoothers, anvilstones, strike-a-lights, a punch, indented pebbles and so on —from local sites fall within the Bronze Age.

As most of the spectacular Iron Age finds in the area were made in the 18th and early 19th century and so are in the National Museum of Antiquities the Society's Iron Age collection is comparatively small. There is a La Tène sword with maker's stamp from the bed of the Lochar and a wooden shoulder-yoke from the same place: it seems likely that these were found at the same time as the Lochar Collar in the British Museum. A curious long-tanged blade from the bed of the Scaur Water at Penpont might be a La Tène dagger, although there is some doubt over

There are seven Melon Beads, complete or fragthis. mentary, from the Castle O'er area of Eskdalemuir, one from Glass Rigg, and one from the Roman fort at Milton. There are several small paste and jet beads and discs and part of a glass finger-ring from the Castle O'er area, as also a coarsely flaked flint blade, possibly from a lathe, and a bead in banded Antrim bauxite. There is a large whorl of Antrim bauxite from Rainton near Gatehouse: a harness-ring and three harness mounts of La Tène type from Birrens Roman Fort. From the Luce Sands come a bronze bead, needles and a thin bar and a pin, all of bronze, part of a brass ring, and 41 items of jet including beads, rings, bangles, toggles, and wasters. There are items of jet of probably Iron Age date also from Craigmuie, the Gaups at Moniaive, from the Nith bed at Dalscone, and from Elm Bank, Dumfries. A sinker from Blairbuy may be of this period. There are two melon bead fragments from the Roman forts of Raeburnfoot and Glenlochar. Of the twenty spindle-whorls of distinctively Iron Age type from the local sites in the collection, ten are from Castle O'er and district.

There are also worked timbers from Milton Crannog and a fine ard-beam, the only one so far recorded from Britain, from Whitereed Moss, Elsieshiels, plus three dugout canoes from the Lochmaben lochs.

A small carved stone handle, apparently of a whetstone, from Westside, Eskdalemuir, is classified for convenience's sake with the Iron Age material. There is a quern rubber from Lannhall, Tynron, and a rubber, a whetstone, and a slab of sandstone bearing plug-and-feather marks, from the Iron Age fort of Camp Hill, Trohoughton.

The Roman period is represented by a very large collection. There are the Minerva, Harimella, Viradecthis, Fortune and Neptune altars and the freestone head of an known goddess and the Afutianus Bassi tombstone, all from Birrens: the Roman anchor from Priestside: the

dolabra from Greyfriars, Dumfries, and a bush-clearing axe from Carzield: the lead sling-bullets from outside the gate of Burnswark Iron Age fort and whetstones from just outside the gate of the Burnswark Roman siege-fort.

Several thousand pieces of pottery plus many pieces of glass cups, bottles, and window-glass, gaming-pieces, a key, sandal-soles, a cosmetic stick, two spear-heads, a bronze jug-handle, a bronze ferrule and harness-stud, and many other items come from Birrens Fort. Over a thousand pieces of pottery, bronze figurines of Dionysius, Cupid and Priapus, a lead weight, a bronze steelyard-bob, a spearhead, quern-stones of sandstone and Niedermendig lava and similar items come from Carzield fort: over a hundred pieces of pottery, a knife blade and so on from Glenlochar: an iron rod and ring, probably from a swingletree, and pottery from Dalswinton fort: pottery from Milton fort: a considerable collection of pottery and three whetstones from Raeburnfoot fort: and four complete and three fragmentary quern-stones from the base of the oven in the Flavian read-post just North of Gatehouse. is also a flagstone from Birrens and a timber stake from the bottom of a W-profile ditch at Milton fort. are Roman coins from Birrens, Auldgirth, and Springkell.

Coming to the post-Roman period, there is the animal-bone food waste and the unfinished red-deer antler knife-handle from the deep ditch of the fourth-fifth century site at Blacketlees near Annan and crucible, Frankish "E" ware, other domestic pottery, and moulds from the 5th-7th century site at Mote of Mark on the Urr estuary. The simple chrismed pillar-stone from Ruthwell may be of the 6th century: the heavy, deeply-incised "Whitby" whorls from Kirkland, Dalton, from Lannhall, Tynron, and elsewhere are probably a little later: the fragment of a gold interlace bracteate from Tynron Doon is probably 7th century. There are two sceats, one of bronze and one of base silver, of Eanred of Northumbria from the Luce Sands.

A very fine Viking axe has the inadequate provenance "from a bog in the borders": it may be the one mentioned in connection with the probable ship-burial at Gretna: it dates to about 1000 A.D. A small domestic axe of the 10th-11th century comes from Capel Rig, which also yields a horse-shoe of the 11th-12th century.

An Anglian cross-arm from Hoddam is eighth century: a richly ornamented interlace-work wheel-cross head late eighth or early ninth century: a small standing wheel-cross ninth-tenth century, and part of a shaft of coarse ringplait late tenth or eleventh century. Apart from this Hoddam material there is the tenth century cross with dragon-head design from Glencairn, the Closeburn cross with interlace and animals, dating to the tenth century: the interlace-work grave-slab of the same century from Closeburn, the tenth century cross-head and shaft fragment from Durrisdeer with interlace and animal ornament: seven pieces of tenth-eleventh century interlace shaft and cross-arm from Old Kirkconnel, and two pieces of interlacework headstones of the 11th-12th century from Penpont. There is also the fluted pillar base dug up in Ruthwell church-vard about the same time as the chrismed pillarstone: the pillar base could well be 9th century and contemporary with the 9th century interlace-work stone lintel The circular stone rubber and three long at Ruthwell. pieces of utilised stone from the small more or less rectangular site which seems to adjoin the Deil's Dyke at Drumbuie just South of Kirkconnel may be late Dark Age in date also.

The ten late 12th century Romanesque grave-covers from Hoddam bridge the gap to the next period: there are two mediæval grave-covers from there also, one 14th and the other 15th century. There are two small grave-covers—partial or child burials—of the 13th century from the burial ground at Woodhead above Penpont. The Romanesque dragon in freestone from Holywood, the

bronze figurine of St. Norbert from Holywood in elongated Romanesque style, the two sandstone animal-head ornaments from Gretna Old Kirk, the head from the springing of an arch from Rockhallhead chapel site, and the elements of dog-tooth decoration from the Norman door at Closeburn, are probably all late 12th-early 13th century. The two fine flat slabs from Kirkstyle, Cummertrees, a chapel of the Knights of St. John, date to about 1350, as does the massive Pennersaughs grave-cover with Lorraine cross. The large quern-stone with ornamental cross from the Thornhill area may date to about this time. The dog-tooth ornament, stone recessed for a figurine, and handsome black-letter frieze, all from Torthorwald Church, date to around 1460: the inscribed church bell dated 1443 presented by William Carlyle of Torthorwald (named on the frieze) to Dumfries in that year is the earliest dated inscribed bell in Scotland. Another black-letter frieze, from Lincluden College, is 15th century also by its style. A broken whetstone bearing a cowled head from Lochar Moss near Collin is probably 12th-13th century. crannog in the centre of Lochrutton Loch has vielded several thousand pieces of mediæval pottery, mainly 13th century, to the Society's collection, as also a spear, a jet cross with IHC, an axe, a girl's shoe-sole, lead and stone spindle-whorls, a bronze ring, an ornamented sheet of lead, a pot foot, food waste and many other items, all from James Barbour's excavation of 1901-02. Keswick's week-end excavation at Holywood Abbey in 1922 yielded over 250 pieces of pottery plus painted glass. The early 20th century excavation at Kirkcudbright Castledykes is represented by a collection of fifty or sixty pieces of pottery: the 15th century pottery kiln at Blacketlees near Annan is well represented by pottery and wasters: the probable kiln site at Langlands, Dumfries, has some sixty pieces in the collection: the beach exposure at Redkirk Point has yielded a large collection of mainly imported pottery probably of the 13th century—some might be early

There is also pottery from Lochmaben 14th century. Castle, the promontory site opposite Lochrutton Crannog, Jarbruck Mote, Kirkpatrick, Cresswell, Dumfries, Greyfriars' Church, High Street, Church Street, and Castledykes Chapel sites in the same town, and Luce Sands. is a spear ferrule from Lochrutton Crannog site and one from Luce Sands. Lead rivets, sinkers, and a simple lead pilgrim cap-badge come from the beach at Redkirk Point. A collection of timber nails and a piece of pottery comes from the late mediæval kiln-site at Rue. There is a cannonball from Lochmaben Castle, a relic probably of the 1588 Siege, 13th and 14th century Papal bullæ come from Grevfriars', Dumfries, and St. Cuthbert's, Kirkcudbright, and there is a fine mediæval impression of the conventual seal The handsome brass seal-matrix of of Glenluce Abbev. Dumfries Burgh dates to about 1350: button-moulds from Whithorn and Glenzierhead date to about the same time and another button-mould from Whithorn to about 1500. There is a substantial collection of iron blooms from bloomery sites at Old Irvine, Livingstone, Solwaybank, East Preston, Polmaddy and Capel Rig. There is a substantial collection of Mediæval brass tripod pots, mainly from bogs or lake-beds (Lochend Loch, Lotus Loch, Lochmaben (2), Lochbank, Lockerbie), and two aquamaniles from Dumfries, plus skillets and a 13th-14th century brass mortar from Newabbey and Birrens respectively, and a tiny possetpot from "a bog in Galloway." There are 15th-16th century jugs from Kirkpatrick-Durham, a pottery tripod pot from near Motte of Urr, probably 13th century, and a 16th century pirlie-pig from Kirkcudbright. All of these are associated with coin hoards. The Society's mediæval coin collection is growing steadily and now numbers over a hundred coins covering the entire Middle Ages from David I. onwards on both the Scottish and English sides, with local finds and hoards very well represented—the Closeburn and Lochmaben hoards, the Caerlaverock find. Corra Castle, and so on. A group of 15th century shoesoles comes from the site of Kirkconnel Church, near New Abbey. A handsome Flemish brass mortar bearing the date 1590 turned up holding pokers beside the fire in a Closeburn cottage and seems to have been in the district since its original importation.

Finally, there is a considerable collection of local querns, knocking-troughs, water-troughs, of dates from the Middle Ages to the 19th century, and heraldic and other sculptured stone of the 15th, 16th and 17th centuries from Dumfries and surrounding area. There is a good collection of human skeletal material from the burial-ground of the Dumfries Greyfriars' and a child's skull from beneath the doorstep of the mediæval Old Southwick Kirk: this building is also represented by the arm of its 14th-15th century roof-cross.

Material which has been added to the collection during the last year includes the important body of patinated flint core-scrapers, blades, and waste from 15 Mesolithic sites in Wigtownshire-many hundred items-the Pygmy Vessel and scraper, from the Whitestanes Moor excavation, fine Neolithic and Bronze Age flint implements from the Luce Sands, the collection's first Mesolithic core from Kirkcudbrightshire - Torr, Auchencairn - more pitchstone implements from Luce Sands, two pieces of the blue-grey chert usually associated with inland sites from the Sands, flint, chert and pitchstone cores from Redkirk Point, blades in blue-grey chert from the old coastline below Glencaple at Townfoot, a slug-knife from Locharbriggs, a considerable amount of mediæval pottery from Langlands, Dumfries; mediæval pottery from Church Street and Greyfriars', both in Dumfries: a David II. Groat from a field adjacent to Caerlaverock Castle, groups of coins from the Closeburn and Lochmaben Hoards, a cannonball from Lochmaben Castle, presumably from the 1588 Siege, and the small group of flints from Westside, Eskdalemuir-to select only a few from over a thousand archæological items which

have come in over the year. The objects listed in the last paragraph are also mentioned in the principal list above and the substantial proportion they make up illustrates the healthy rate at which the collection is growing.

New Aspects of the Mesolithic Settlement of South-West Scotland

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

The Mesolithic collections in the Burgh Museum, Dumfries, have recently been augmented by flint material from seventeen sites, collected by Mr W. F. Cormack from 1962 to 1964.¹ These industries have opened up an entirely new aspect of the Mesolithic in south-west Scotland, when we consider that prior to their recognition there were only three important collections from sites in Kintyre and Ayrshire, and none from Galloway. In recent years these three collections have been the subject of considerable discussion, and their generally accepted interpretations seem now to be in need of some revision. The new industries provide a good opportunity for an evaluation of the Mesolithic in south-west Scotland, and I am grateful to Mr Cormack, and Mr Truckell of the Museum, for allowing me to work on this material.

The seventeen new sites are all in Wigtownshire, three lying on the western side of Luce Bay, nine on the eastern side, three around Burrowhead on the western side of Wigtown Bay, and one at the head of Loch Ryan (Map, fig. 1). To these we can add some few flints from the Luce Sands, which appear to be of Mesolithic type. It must be realised that this distribution is the result of intensive and careful search along certain areas of the coast in Wigtownshire only, and it appears that comparable results may ensue from similar work in Kirkcudbrightshire, where Mr Cormack has begun to find new Mesolithic sites. In general however flint, as raw material, seems to be less common in the raised beach in this more-easterly area.

¹ Some of these sites have already been briefly mentioned in these Transactions, A. E. Truckell, "The Mesolithic in Dumfries and Galloway: Recent Developments," Trans. Dumf. and Gall. Nat. Hist and Ant. Soc., 3rd ser., XL., 1963, 43.

The finds from these sites consist entirely of stone tools, almost all of flint, recovered from plough soil in fields lying inland from the raised beach. As none of the sites have been excavated, some mixture with later industries may have occurred, but for present purposes the consistent white or grey-white patina on most of the flints has been taken to indicate contemporaneity. From some of the sites have come flints with different patinations, brown or bluegrey, and these have been excluded from the present study. Flints showing only thermal fractures have also been rejected. The source of these flints is presumably in the beach deposits, where a sufficient quantity of small flint pebbles was available, some broken up by natural-mechanical or thermal means.

It is important for the dating of these industries to establish their relation with the raised beach, and I have drawn freely upon Mr Cormack's detailed notes for the following descriptions of the sites.

Luce Bay, West Side.

Terally NX 123409. A scatter of flints occurred along the upper edge of the old shore line about 50 ft. above sea level, with a concentration lying within a discoloured area of the field.

Balgown NX 118422. From this field there came a wide scatter of flints.

Kirkmabreck NX 106476. A number of flints were recovered from the top of the old coastline, above the raised beach.

Luce Bay, North Side.

Luce Sands NX 1355. A few white patinated flints were recovered in 1962. To these can be added a number of comparable flints in the Hunterian Museum collections. Other collections would undoubtedly contain similar material, and the finds discussed here are therefore only a sample of the whole.

Luce Bay, East Side.

Kilfillan NX 205541. A fairly wide scatter of flints occurred in this field.



Stairhaven NX 209540. To the north of the river lies an area of shells and flints, the centre of which is blackishgrey. A midden probably underlies the topsoil.

Stairhaven South. Some few flints have been recovered south of the main area.

Auchenmalg NX 233521-238518. Two fields have yielded a scatter of flints on or just below the 50 ft. contour. Below circa 35 ft. no flints have been observed.

Low Clone North NX 333453. A scatter of flints was recovered from the south side of a ravine cutting the raised beach deposits.

Low Clone South NX 334450. Flints occurred on the north side of another ravine, but south of the above site.

Airlour NX 344428. A scatter of flints was recovered from plough soil at about 50 ft. above sea level.

West Barsalloch (Pate's Port) NX 344422. Shells occur in this field, with a concentration of flints in an area about 15 ft. across lying on the edge of the raised beach. No flints were recovered from the lower levels.

Blairbuy NX 365411-361420. Several fields betwen Milton Hill and the "Wren's Egg" yielded a few flints.

Sinniness NX 228518. Only one flint was recovered from this location.

Wigtown Bay, West Side.

Morrach NX 473353. A few flints occurred in a field immediately inland of the raised beach.

Isle Farm NX 484370. Several flints were found near the edge of a cliff, about 100 ft. above sea-level.

Shaddock NX 476397-477394. A scatter of flints lay along the edge of the raised beach, with a darker area indicating a possible midden.

Loch Ryan.

Low Balyett NX 085615. A few flints were found inland from the raised beach.

A generalised section of the topography around the Luce Bay shore, running inland, shows a present day storm beach above high water mark, merging in some cases into the raised beach deposits covered now by a thin topsoil The material of the raised beach consists of water-worn and smoothed pebbles as well as eroded material from the inland edge of the former high sea mark. At this point, the inland side of the raised beach, there is a cliff varying in height from a few feet to over a hundred feet, which was cut or recut by the sea during the post-glacial transgression. All of these newly-discovered sites lie inland from the raised beach, none lie directly upon it,2 and many are sited near small ravines which cut through the cliff. This positioning may have been deliberate to ensure supplies of water, or to provide access down to the beach where flint was available.

Wright, in 1937, showed that traces of this so-called 25 ft. raised beach could be found in Scotland, east and northeast Ireland and north-west England.³ The beach is continuous for many miles in certain areas, and in western Scotland occurs as a rock terrace backed by cliffs. height of the beach or terrace varies from 40 ft. in Loch Linnhe, higher nearer the Central Highlands, to 8 ft. in Caithness, and is absent in the Orkneys.⁴ In the south, the zero isobase of the beach apparently passes through Co. Wicklow in eastern Ireland. The terrace in Ireland. upon which lies the actual beach deposits, is believed to have been cut during the Pleistocene,5 and McCallien suggested the same for Scotland in 1937.6 The post-glacial high sea then would coincidentally have assumed the previous level of terrace cutting. It is still uncertain if

W. B. Wright, The Quaternary Ice Age, 2nd ed., 1937.

J. Donner, "The Late- and Post-Glacial Raised Beaches in Scotland," Annales Academiae Scientiarum Fennicae, A III., 53. 1959, 5.

² It is important to emphasise this point, in view of the following discussion of chronology and stratigraphy Apparently none of the industries come from deposits overlying the raised beach, and the statement "from Shaddock or the raised beach" (ibid, 44) is misleading.

<sup>N. Stephens, "Some Observations on the 'Interglacial' Platform and the Early Post-Glacial Raised Beach on the East Coast of Ireland," P. Roy. Irish Acad., 58 B, 1956-7, 129.
W. J. M'Callien "Late Glacial and Early Post-Glacial Scotland," P.S.A.Scot., 1xxi., 1936-7, 197.</sup>

McCallien's thesis is correct, but one would assume that there should have been comparable events of this sort on both sides of the North Sea Channel. Yet over much of its area, the Scottish cliffs are fairly fresh and unweathered. The duration of the post-glacial highest sea level is estimated to be as much as 2000 years, during which time the Carse Clays of the Forth were laid down. In absolute time, the sea rise began perhaps as early as 5300 B.C. and was still near its maximum slightly before 3000 B.C., thereafter falling away gradually in relation to the land.

All the flint material recently collected by Mr Cormack comes from the top of the cliff, an area therefore unaffected by the sea since post-glacial times. The only clue then as to possible relationships with the raised beach below lies in presence of presumed midden material at certain of the sites. At Terally some flints came from a limited area of the field where discolouration suggested a midden. The same situation existed at Shaddock. Pate's Port the flints were concentrated in a circular area within a scatter of shells. The Stairhaven site also linked flints and many shells, with a blackish-grey area in the centre of the find. While we are as yet uncertain if these traces do actually represent middens, it would seem logical to assume that the flints belong to a time when the sea was at its maximum, or shortly after in a time when the (now raised) beach was still uninhabitable due to the proximity of the water. The occupation sites then would represent strand-loopers in the Mesolithic sense, camping near the water's edge but outside its storm range on the cliff-top.

Within the area of these new finds, only one site has yielded material directly associated with the raised beach. During the 1956 excavation of a long-cist cemetery at Terally, a small number of Mesolithic flints were recovered from the humus (9-12 ins.) and the "topmost zone of the

⁷ Donner, op. cit., fig. 5, on the partial basis of radiocarbon dates for Souleby Moss, Cumberland. P. Roy. Soc., B, 1957, 147. Antiquity, xxxiv., 1950, 112.

raised beach material."8 This site is much lower and nearer the sea than Mr Cormack's surface collections noted above from the same locality. The 1956 Terally flints could therefore represent a different, perhaps later, occupation of the area, at a time when the sea had so regressed in relation to the land that expanses of beach were made available to Mesolithic people.9

This site seems analogous to earlier finds at the Albyn Distillery, Campbeltown, for long considered as the principal station of the Early Mesolithic in Scotland.10 At this site, a 3 in. dark layer with flints was found resting upon a thick raised beach gravel and sand deposit; some flints occurred in the plough soil above this dark layer, and a few flints were discovered in the topmost part of the gravel and sand. The first point to be noticed is that most of the flints from Albyn are undamaged, with sharp and angular edges, and only a very few flints are Typologically there is no difference between the fresh and the small rolled series at Campbeltown. Yet in publishing this site, Lacaille claimed that the relics "distributed throughout the upper part of the raised beach deposits, but locally . . . concentrated . . . originate from shore occupation-sites dating back to the period of rising sea-level, and . . . were incorporated into the beach formation during the emergence.¹¹ It seems much more likely in view of the fresh nature of nearly all of the flints, and the stratigraphy of the deposits, that the occupation took

8 R. G. Livens, "Excavations at Terally, 1956," Trans. Dumf. and Gall. Nat. Hist. and Ant. Soc., 3rd ser., XXXV., 1956-7, 90.

1940-41, 55,

11 Ibid, 90-91.

⁹ Unfortunately the flints recovered from this excavation are not now traceable; of the 117 flints, only 10 are said to have been employed as tools. Of these, 3 appear to have been retouched into flake scrapers (2 round, 1 straight side), 2 have miscellaneous retouch, 1 blade shows utilisation traces, 1 small flake is said to be a burin (although the illustration suggests more of an awl with normal and reverse retouch on adjoining edges), 2 are cores and 1 is a corescraper. Livens, op. cit. 100, fig. 5.

10 W. J. M Callien and A. D. Lacaille, "The Campbeltown Raised Beach and its contained Stone Industry," P.S.A. Scot., LXXV.

place on the foreshore after the sea had reached its maximum height relative to the land, that some camping sites may have been exposed to further storm-beach covering, but that the major part of the occupation took place after the emergence of the land had begun, leaving the occupation debris untouched by waves or storms. The difference in absolute age between these views is considerable, for Lacaille dates the Campbeltown industries to the Late Boreal, and is supported by Movius¹² (although not without some hesitation), because he feels they were later incorporated into an Atlantic beach, while the view advanced above, and hinted at by Mitchell, ¹³ would place the industries much later, at earliest in Late Atlantic times.

Another major site, which must be considered as related to the Wigtownshire finds, is Ballantrae in Ayrshire.¹⁴ Again it is clear from the original report that the flint industry came "from . . . soil upturned by the plough on top of the early Post-Glacial deposits," a different stratigraphical position from "the beach formation of gravel and sand containing Mesolithic artifacts" mentioned later in the same report.¹⁵ Yet the surface collection contained Neolithic and later flints, partially separated only by patination, and it seems therefore more than probable that the entire industry is from the soil overlying the beach. The flints are hardly rolled at all, and those considered to be Mesolithic include round scrapers, two burins and two plunging flakes. Not separated by patination but considered to be Neolithic are side scrapers and straight or concave scrapers which could equally as well be included in the earlier group. A strong microlithic element is also present in the white-patinated collection. The industry is said to be analogous typologically with two other sites near

¹² H. L. Movius, Jr., "Curran Point, Larne, County Antrim: The Type Site of the Irish Mesolithic," P. Roy. Irish Acad., 56 C, 1953-4, 84.

¹⁵ G. F. Mitchell, "The 'Larnian' Culture: a Review," J.R.S.A.Irel.. 1xxix., 1949, 173-4.
14 A. D. Lacaille, "The Stone Industries associated with the Raised

¹⁴ A. D. Lacaille, "The Stone Industries associated with the Raised Beach at Ballantrae," P.S A.Scot., 1xxix., 1944-5, 81
15 Ibid, 37.

Campbeltown, called Dalaruan and Millknowe.¹⁶ represent on the face of it a different situation. Here the main implement-bearing deposit was incorporated between sand and gravel, showing, if we accept the stratigraphy, that the coastal camp-site had been overwhelmed for a short period by the waves. This, however, seems to point to the fact that the flints are contemporary with the beach

and that they must date by this beach. The occupation of these sites would therefore be prior to the settlement on

the beach at Albyn and Terally.

Typologically, the flints from Dalaruan-Millknowe and Ballantrae are said to be earlier than the industry from the Albyn Distillery. All, however, are classified as Early Larnian on the basis of comparable material from northeastern Ireland. As such they might therefore be assumed to be of equal antiquity as the Irish Early Larnian, which extends back to the early sixth millenium B.C. stratigraphically, all our Scottish sites cannot be earlier than the time of raised beach formation, and the Albyn Distillery industry in particular cannot be earlier than the maximum phase of sea advance or land submergence.

We should contrast the stratigraphical position of these Scottish sites with that of the Irish Early Larnian. The Early Larnian at Cushendun and Island Magee occurred stratigraphically below the raised beach gravels, 17 while derived industries of this facies were found in the beach gravels at Rough Island, County Down. 18 The later versions of the Larnian in Ireland occurred generally in the raised beach, sometimes at the base of these gravels (Cushendun, Glenarm, 19 Curran Point 20). It seems clear that the situations of these classic Larnian deposits in

¹⁶ A. D. Lacaille, "The Stone Age in Scotland," 1954, 140.
17 H. L. Movius, Jr., "An Early Post-Glacial Archeological Site at Cushendun, County Antrim," P. Roy. Irish Acad., 46 C, 1940, 1.
18 H. L. Movius, Jr., "Report on a Stone Age Excavation at Rough Island, Strangford Lough, County Down," J.R.S.A.Irel., lxx., 1940,

^{111.}

¹⁹ H. L. Movius, Jr., "A Stone Age Site at Glenarm, Co. Antrim," J.R.S.A. Irel., 1xvii., 1937, 181.

²⁰ H. L. Movius, Jr., op. cit., 1953.

Ireland are totally different from the Scottish sites. It is only because of the typological similarities between the Scottish and Irish industries that the two groups have been considered contemporary, and the stratigraphical differences not employed to override such conclusions.

Several of the later Irish sites have yielded material in contexts analogous to these Scottish finds. At Greenore. County Louth, flints recovered from plough soil on the raised beach were badly rolled,21 and may therefore date from a time when the sea was still rising and incorporating the flints into its beach, or at latest may belong to the time of maximum transgression, when storm waves might overwhelm the abandoned chipping or camping sites. midden at Sutton, County Dublin, was partially eroded by a high-storm sea, yet occupation continued afterwards.22 This site belongs therefore to the time of maximum sea. which occurred at the transition from Atlantic to Sub-Boreal times approximately 5000 years ago. A polished stone axe was found in the midden along with typical Late or Ultimate Larnian flints.

In summary, the previously published Scottish Larnian material, from Albyn, Ballantrae, Terally, cannot be dated earlier than a withdrawing high sea-level, not earlier than Late Atlantic times. The recent Wigtownshire finds cannot be directly dated in relation to the raised beach, but on the basis of probable midden material, and proximity to the upper margin of the high sea-level, they are believed to date from a time of maximum or near-maximum sea, thus prior to the Albyn groups, and in absolute terms within the brackets 5000-3500 B.C.

There are three groups of Mesolithic material that should be considered in an assessment of the typological position of the Wigtownshire finds. Of these, the so-called Tardenoisian of Eastern Scotland may be dismissed at

²¹ G. D. Liversage, "A Note on the Occurrence of Larnian Flints on the Leinster Coast," J.R.S.A.Irel., XCI., 1961, 109.
22 G. F. Mitchell, "An Early Kitchen-Midden at Sutton, Co. Dublin,"

J.R.S.A.Irel., 1xxxvi., 1956, 1.

once as having any direct or close relationship with the Galloway material. The differences in overall types, the Tardenois dominance in microlithic Mesolithic forms, all suggest little if any connection between these groups.²³ There remain the Larnian of North-eastern Ireland, and the Clyde shores, and the Obanian of Argyll, and here we meet difficulties in comparisons because of the absence of numerical analyses of industries from other sites. finds from Curran Point, Larne, are almost the only Irish Mesolithic industry which has been quantitively described²⁴ and the Scottish material is little better. The Ballantrae and Albyn Distillery collections have, it is true, been "counted" but the material from the former site includes some Neolithic and later flints which cannot be dismissed on the basis of patination. The Albyn Distillery collections have been re-examined, typed and measured, and I am grateful to Miss A. Robertson of the Hunterian Museum, Glasgow, for permission to carry out this In addition, the large industry from Risga one from Cnoc Sligeach, smaller both said to be typical Obanian sites, have been studied at the Hunterian Museum. Neither of these industries has been completely published yet.²⁵ typological study of the Wigtownshire finds has been designed to show the relation of the sites to one another, and the relation of the group as a whole to the Mesolithic of Scotland and Ireland. Table I. shows the numerical

23 Lacaille has outlined the differences, op. cit., 1954, 161; see PPS. XXI., 1955, 3, for more recent terminology.

24 It is evident that Movius considers that such rolled collections as come from the raised beach gravels are not worthy of numerical analysis, although certain suggestions have been included, based upon relative ordering of the flints by length, etc.

relative ordering of the flints by length, etc.

25 Lacaille, op. cit., 1954. 229 and 218. It must, however, be emphasised that our knowledge of the excavations on Risga is very incomplete. Although Lacaille states that the flint material shows "no signs whatever of disturbance by waves." the examination of the thousands of flint flakes demonstrates that there is in fact considerable variation, from fresh and unrolled to very well-rolled specimens. The latter are not at all uncommon. From this, and from some pencilled numbers and letters on some of the flints, one suspects that more than one occupation layer, if not site, is involved

analyses of the flints from the seventeen new sites, as well as from the Mote of Mark, Kirkcudbright. The first impressions of this Table must be of the rarity of specific tool forms made on flakes, and the variety of such flake Scrapers of various sorts are the predominant form, and include short end-of-blade or end-of-flake, side including straight-side and notched (fig. 2, 1 and 2), small round or thumbnail (9), nosed and keeled forms (3 and 4). Also present in this assemblage are a few burins (7 and 8), only well-represented at Auchenmalg, and rare backed blades (5 and 6). These forms, scrapers, burins and backed blades make up almost all the definite retouched flake tool-types from the industries, but in general there is also a relatively high proportion of flakes with miscellaneous areas of retouch along one or two sides. These could have served as scraping or cutting edges, and it should also be pointed out that the use of the term scrapers for the preceding forms is employed only as a convenient and standardised term in Mesolithic studies, while some of such flints could. of course, have been employed equally as well for cutting.²⁶ The second category of retouched tools consists of cores which have been trimmed into scrapers or burins, sometimes both tools on one core. The scraper retouch takes the form of either steep or shallow flaking along one slightly edge (fig. 3. 10). while the is defined by characteristic burin facets extending from the plain striking platform (10, 12 and 14). A number of spalls have been recognised in some of the industries.

A second group in Table I. is composed of utilised flakes, generally rather longer, larger flakes than normal which have been employed as knives or scrapers, with edges that are bruised and have had a number of minute flakes and chips knocked off during use. There is a high proportion of these utilised flakes at Auchenmalg, Shad-

²⁶ Microscopic examination of wear and utilisation traces on flints should enable us to produce functional classifications of tools rather than purely morphological ones. S. A. Semenow, "Perwobytnaja technika," Materialy i Issledovaniya po Arkheologii SSSR., 54, 1957.

dock, Kilfillan and Low Clone North compared with the total flakes as well as with the relatively low proportion of retouched flakes. Such utilised pieces are without a standard form and consist only of those flakes that were considered usable without the necessity for further retouch.

The remainder of the material consists of flakes without retouch or utilisation, and cores discarded without utilisation or preparation for scrapers or burins. of the cores are pyramidal or conical, with blade scars extending from one flat or concave platform down towards a somewhat pointed end. However, as the source of the flint lay in the beach pebbles, often traces of the cortex remain along one side of the core (fig. 3, 13). The saddle-shaped core, with opposed platforms, is present although not common, and the cylindrical or prismatic core is scarce probably because of the rarity of suitably large flint nodules. Almost all of these cores are worked out, having been reduced to such a small size that further flake or blade production was impractical. As stated, many have been further flaked to produce engraving or scraping edges, and the small bladelet scars on these core-tools show a skilful use of the punch technique. Other cores, often with large areas of cortex still remaining, have been more roughly flaked, with soft or hard direct percussion, and little care seems to have been taken to direct these blows in any particularly well-organised fashion. Some core-rejuvenation flakes are recognisable. Table I. also shows the total numbers of flakes and cores in the categories described, plain, utilised and retouched.

Table II. considers the industries from the standpoint of size; in this case the standard method of determination by length of flake has been used. Retouched, utilised and waste flakes have been considered separately.²⁷ While average lengths (in millimetres) have been calculated for all the industries, only those with a sufficient quantity of flakes will be discussed. Flake lengths are naturally

²⁷ No broken flakes or blades have been included.

controlled to a certain extent by the flint supply, and in this area the sole source of material lay in beach flint pebbles. There will probably be purely local variations in the size and quality of these flint pebbles so that few convincing comments can be made about any internal differences, but it might be pointed out that the three sites from the western shore of Luce Bay show a fairly consistent picture of longer flake production than in the other areas. The overall impression of Table II., however, must be the dominance of selection of the longest flakes for retouch into standard tool-forms, and the utilisation of the longer The figures for the Albyn of the remaining flakes. Distillery, and two Obanian industries have been included. and Albyn shows a different picture in that the length of utilised flakes is consistently greater than that of retouched flakes, a situation at least partly due to the higher proportion of flake scrapers at Albyn. In overall lengths, however, this assemblage does not differ greatly from the Wigtownshire industries. The Obanian industries again fall within this broad overall flake dimension, but at Risga retouched and utilised flakes are of equal lengths in a large sample.

Table III. shows the percentage of flakes and blades in the industries, a blade here being defined by a length at least twice the width of the flake, and in general having more or less parallel (longer) sides. The Table emphasises the rarity of blades overall in the industries. The figures for the Albyn Distillery show a consistent selection of blades for utilisation as tools, as well as a slightly higher percentage of retouched blades than occurs in the Wigtownshire industries. The utilised flints at Risga include a relatively high percentage of blades, but here the retouched forms also include a good proportion of blades unlike Albyn. The sample from Cnoc Sligeach is too small for valid comment, but included as a reference is the Curran Point Larnian of Ireland. Here the blade was in much

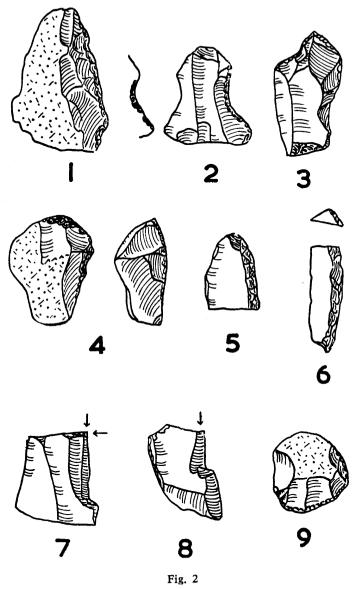
greater overall use than in Scotland,²⁸ although differences in quality of raw material between the areas might account for this marked difference. However, the basic variation between the Irish Larnian and the Scottish "Larnian" and Obanian should not be under-emphasised.

A further table has been prepared, not published here, showing the relative sizes of cores from all these sites. The three western Luce Bay industries possess cores of a larger form than has the group as a whole. There is little difference between these and the Albyn Distillery cores, but the Risgan flint cores are generally larger than either of these.

Table IV. is designed to show the percentage of retouched flints in the total assemblages, and the percentage of specific and standardised tools in the total retouched forms. Considerable variation exists in this pairing of proportions, Low Clone North for instance with high percentage of retouch but very low percentage of standard tool forms, and Auchenmalg with opposed percentages.

In general, however, we cannot be certain of the validity of the figure for retouched forms as a percentage of all flints, because of the fact that in no case do we have a complete industry, or certain representative sample, but only those aspects that have been brought to the surface and collected by Mr Cormack. The overall effect, however, of Table IV. must be that deliberate and standardised tool production was rare (only 22.6% of all retouched forms), with miscellaneous retouch on flakes and scraper or burin retouch on worked-out cores providing the major body of tools (77.4 %). The figures for the Albyn Distillery, and the Obanian at Risga and Cnoc Sligeach show great variations in this, with 71% of all retouched forms at Risga being standardised flake-tool forms, Albyn

²⁸ Note that Movius' classification of blades and flakes is less rigorous than the present one; the effect of this is to emphasise even more strongly the differences in blade-flake proportions between the Larnian and the Wigtownshire industries.



48.7% and Cnoc Sligeach 33.3%.²⁹ Both Albyn and the Obanian industries show overall a much greater percentage of defined flake forms than do the Wigtownshire collections.

Basically then the industries from the Wigtownshire sites consist mainly of tools made on flakes rather than on blades, utilised flakes and retouched cores, accompanied by normal wastage. How does this assemblage compare with known Early Mesolithic industries from Scotland and Ireland? It must be admitted that attempts to compare these industries are hampered by the lack of numerical analyses, but comparisons can be made in more general terms with the Larnian of Ireland and Scotland, and with the Obanian of Scotland. For this, I have drawn upon published work on the major Irish sites and have, through the kindness of the Hunterian Museum, been allowed to study both the Larnian of the Albyn Distillery and the Obanian of Risga and Cnoc Sligeach. The material from Albyn consists of nearly 1000 flints and several hundred quartz pieces, while Risga yielded over 1100 retouched flints and thousands of waste flakes and cores. The industry from Cnoc Sligeach has over 550 pieces. As nothing in the preliminary comparison of the Wigtownshire sites suggested any great variations, these have been combined in order to give a more acceptable quantity for comparative purposes. The result is seen in Table 5, where from a total of approximately 1900 pieces, 433 show retouch of one form or another, half on flakes and half on cores. The totals for the Albyn Distillery and Risga have been placed for comparison (as well as some indication of an Early Larnian at Cushendun, a Late Larnian at Curran Point, and an "ultimate" Larnian at Sutton), and percentages of total retouched forms calculated. First noticed is the much higher percentage of miscellaneous retouch in the Wig-

²⁹ The figure for the Late Larnian at Curran Point is impossible to determine, as miscellaneous retouch is not distinguished, nor are waste cores from core-scrapers or burins, but of 5515 flints, 753 are of specific flake-tool forms, so that the ratio of regular types to total retouched flints was probably relatively high on the basis of this rolled collection.

townshire retouched industries, 25.9% as compared with 11% for Albyn and 9.5% for Risga, and only 1% for Cnoc The scrapers show this comparative rarity of standardised forms, with a total of only 16% for Wigtownshire, contrasting with 38% and 35.4% for Albyn and Risga respectively. Of these, the proportions of round scrapers compares with Albyn but not Risga, and the high keeled scrapers are present equally in all three industries, as are the burins.³⁰ Hardly present in the Wigtownshire sites are a number of well-established forms, principally the Larne pick, and the proto-Bann point, characteristic of Irish Larnian industries, and specialised tool forms such as obliquely retouched blades, present at Albyn and Cnoc Sligeach, and flakes with sharpened retouch present in large numbers at both Obanian sites. The Risgan tanged point too is not seen in Galloway, nor are true "bipolar" forms. Enough perhaps has been said to illustrate the great differences between the industry from Risga, said to be a typical Obanian, and the Wigtownshire flints.

Risga and Cnoc Sligeach, both Obanian sites and practically the only ones with a large flint industry, show differences in relative percentage of tools, and several basic variations in tool forms. Side scrapers comprise 9.6% of all retouched forms at Risga, but are absent from Cnoc Sligeach. Round scrapers too are more common at Risga (16.6% to 1%). Burins are relatively numerous at both sites, but Cnoc Sligeach has 11% to Risga 6.7%. There are no backed blades from the Oronsay industry, while these made up 4.9% of retouched forms at Risga. The Risgan tanged point is not seen at Cnoc Sligeach, but sharpening retouch does occur in both industries, mainly bifacial in The Irish Larnian heavy chopper is present at Cnoc Sligeach, where the core-tool was the most common form, making up nearly two-thirds of the total retouched forms. At Risga such core-tools were in a lower proportion (19%). Basically then it would appear that Risga and

³⁰ Note that only two burins are accepted at Albyn, not 5 or 6 as published in P.S.A.Scot., 1xxv., 1940-1, 82, fig. 6, 73-78.

Cnoc Sligeach have sufficient divergencies to warrant a separate classification. Yet they both are believed to the "Obanian" on the basis of the antler and bone tools represented at both sites. While some resemblance between Risga and the Albyn Distillery are evident, it seems clear that the Albyn industry is closer typologically to the Wigtownshire sites than to the Obanian, principally in the south-west Scottish lack of tanged points, microlithic forms and sharpened flakes, and in the scarcity of backed blades. There are, however, several differences between the Wigtownshire sites and the Albyn Distillery, not so much in the type of tool as in their relative occurrence. Overall, the basic difference lies in the very high percentage of miscellaneous retouch and the corresponding rarity of standardised scrapers in Wigtownshire, compared with reversed totals at Albyn.

Important for inter-regional contacts is the presence at the Albyn Distillery of the microburin, and a quartz tranchet flake.³¹ The latter specimen has been claimed to show Maglemosean influence and the microburins probably illustrate some contact with inland microlithic-producing industries, but need not thereby demonstrate an early date for this so-called Tardenoisian. The flints from Ballantrae, generally allied with the Albyn collections, show comparable intrusions, if we can accept the arranging by patination adopted by Lacaille. The Mesolithic group here has the same patination as a number of microliths and microburins, as well as tranchet flakes and a fishtail scraper. Ballantrae is a surface collection and so we cannot be certain of its homogeneity, although Lacaille has distinguished later groups from the site.

So far, then, we can see that the Wigtownshire industries have some resemblances to the Albyn Distillery flints, although exhibiting some less developed features including a greater utilisation of flakes and a rather coarser aspect

³¹ M'Callien and Lacaille, op. cit., 1940-41, fig. 3, 29-30, and fig. 6, 70 (not 72 according to Movius, op. cit., 1953, 86).

of retouch resulting in the high proportion of irregularly-trimmed flakes. The Wigtownshire industries then, on purely typological grounds, might be considered to be earlier than the Campbeltown flints, which have been called Early Larnian. The difficulty of calling all this material Early Larnian can be shown by a brief examination of the Irish Mesolithic industries.

The Irish Mesolithic is divided into two main groups, an Early and a Late Larnian, and the distinguishing features of these have often been outlined. Briefly, by Movius' typology,³² the Early stage is characterised by a very high proportion of flakes and blades bearing little retouch but many showing signs of utilisation. These flakes vary from 3 to 10 cms, in length, averaging 6 cms,, and are therefore over twice as long as the average Wigtownshire flake. The inexhaustible supply of flint in County Antrim undoubtedly is the principal reason for this difference, the Wigtownshire Mesolithic folk being dependent upon flint pebbles from the beach. Early Larnian retouched flakes include a prototype of the "Bann" point, a pointed leaf-shaped flake with a wide platform, heavy bulb of percussion, with retouch along the edge or edges near the bulb, a form totally absent in the Wigtownshire flints. Backed blades are as rare in Irish Early Larnian contexts as they are in the Scottish group. Scrapers are a common Irish type, principally the small round or thumb scraper and the steep flake or core scraper. Side scrapers and end scrapers are very rare in Early Larnian contexts, although retouched notches occur on the side or end of a number of flakes. The Wigtownshire industries contain comparable quantities of round and keeled core scrapers, very few end scrapers, having number of but differ in a side and few true notched scrapers. The Irish coastal Early Larnian industries have no flake-burins,33 unlike their rare but persistent appearance in Scottish sites, but do possess

H. L. Movius, Jr., The Irish Stone Age, 1942, 148.
 Some are present at the inland Larnian station of Toome Bay, Movius, op. cit., 1953, 78.

rare plunging flakes (later called Larne picks), some awls, choppers and rostrate tools. Only slight traces of these are known in Wigtownshire. Small cores are common to both areas, as is the general impression of very small numbers of retouched forms. The classic Irish Early Larnian sites include Cushendun D and E, Island Magee D-G, and Rough Island B, the first two-named dated to Boreal or Boreal/Atlantic times, the last industry of the same age although incorporated into a raised beach of Atlantic age.

To summarise, differences between the Irish Early Larnian and the Wigtownshire material exist in overall size of flake, in the Irish presence of the proto-Bann point, notched scrapers, rare plunging flakes and rostrate tools, the Wigtownshire presence of side scrapers and burins. Common to both are overall scarcity of retouched forms, round scrapers, steep scrapers and awls. The Albyn Distillery industry is close in content to that of the other Scottish sites, with a high percentage of side scrapers, and the presence of backed blades and burins all divergent from the Irish Early Larnian. Clearly little that is diagnostic or characteristic links these Irish and Scottish industries.

Late Larnian industries from Ireland are generally marked by the appearance of massive flakes utilised as knives or scrapers, bearing very little deliberate retouch.³⁴ These flakes are thicker and coarser than those of the Early Larnian, and the few small blades of the latter have disappeared. There are no backed blades, but the slightly tanged proto-Bann points continue. Side scrapers are not common, but a few crude steep end scrapers occur, as do notched and surviving round scrapers. Awls on short pointed blades, often with reverse retouch, are also known from late Larnian contexts. Heavier equipment so characteristic of the Late Larnian includes choppers on massive flakes and cores, Larne picks averaging 6 cm. in

³⁴ Ibid., 188 Are these in fact tools, or merely flakes battered by wave-action?

length, and a few core axes. Typical Irish sites are Cushendun B, Glenarm B, Larne B and C, and Island Magee A and C, all these yielding their industries from the raised beach gravels, the flints being generally heavily rolled.

The Wigtownshire industries and the Late Larnian of Ireland are linked only by the persistent round scrapers, the presence of side scrapers, and by an overall rarity of standardised retouch. The Date Larnian lacks the Scottish burins and backed blades, but excludes Wigtownshire from its awls and Larne picks (one of each from Galloway), and choppers, its greater variety of very small notched or concave scrapers. The Albyn Distillery industry might be considered closer to the Irish Late Larnian than to the Early Larnian by virtue of its possession of the quartz "tranchet axe," and the two Larne picks, a form extremely rare in Early Larne contexts (only one reported from Cushendun) but common in Late Larnian assemblages.³⁵

Potentially the most important object in the entire Wigtownshire collections is a flint from Stairhaven (fig. 3, 11). This can be interpreted in two ways, either as a core with keeled platform, a type otherwise unknown in the collections so far, or more probably as an end of a flint axe The Stairhaven flint shows traces of the characteristic peripheral flaking on both main faces, although radial flaking has obscured this to a certain extent on one face. The flint has, subsequent to its detachment from the axe, been retouched into an angle-burin at one edge. A section of the preliminary main flake surface is also present on this broken flint, such as can be seen on some of the axes from the Curran deposits at Larne.³⁶ Without certain transverse axe-sharpening flakes, and without complete axes, we cannot be certain that the Stairhaven flint belongs to this group, but typologically it is certainly reminiscent of the heavy element in the Larnian. As such, it should belong beside the quartz bifacial tool

³⁵ Movius, op. cit., 1953, 63. 36 Ibid., fig. 14, 131; fig. 15, 136.

from the Albyn Distillery, 37 which is claimed to show the same "Baltic Forest Culture" influence in Scotland³⁸ as existed in Ireland.³⁹ Such Baltic contacts with the North Channel area have been recognised for some time, and Clark⁴⁰ has recently brought these together in his work on the Obanian. He points out that the most specific evidence for this contact is the mattock-head of antler, an Obanian form which has its closest analogues not in the Maglemosean but in the Danish Ertebolle culture and in later (Neolithic) cultures of adjoining areas. Such Baltic influences as the antler mattock-head should not be dated within the North Channel area any earlier than Late Atlantic times. Flake axes are a component of the Ertebolle culture, but a more immediate source for the North Channel area is in the developed Maglemosean industries of Britain, the spread of which is now known to extend well into the south⁴¹ and north-east of England,⁴² and equally as possible into the North Channel area.

Although the Wigtownshire and Albyn Distillery industries have important basic differences with both stages of Larnian development, all previous studies have classed the Scottish material as Early Larnian. And this is where Mitchell has considered the Rockmarshall, County Louth, midden material to belong.⁴³ Mitchell pointed out in 1949 that the Rockmarshall midden had been built up just after the maximum of the sea transgression, and so, along with the Albyn Distillery occupation layer on the raised beach, had to be very late in Atlantic times, in other words, that

³⁷ Lacaille, op. cit., 1954, fig. 54, 26.

³⁸ Ibid., 149; Movius, op. cit., 1953, 86.

³⁹ Movius, op. cit. 1953, 63.
40 J. G. D. Clark, 'Notes on the Obanian,' P.S.A.Scot., lxxxix.,

<sup>1955-6, 103-6.

41</sup> G. J. Wainwright, "Three microlithic industries from South-West England and their affinities," P.P.S., xxvi, 1960, 201; J. J. Wymer. "Excavations at the Maglemosean Sites, III. and V. at Thatcham, Berkshire, England," P.P.S., xxviii., 1962, 329.

42 C. T. Trechmann. "Mesolithic Flints from the submerged Forest at West Hardlepool," P.P.S., ii., 1936, 161.

⁴³ Mitchell, op. cit., 1949, 171.

typologically comparable flints (from Cushendun and Rockmarshall) were separated in time by the entire Atlantic period.

This work was followed in 1956 by Mitchell's report on the midden at Sutton, County Dublin,44 a midden which in part was overlain by a storm beach, but which continued to accumulate above this beach. Clearly the occupation here was contemporary with this maximum transgression of the sea. The industry recovered from the midden (see Table 5) contains a few blades, proto-Bann points and core scrapers, two round scrapers and many utilised flakes, all typical of the Early Larnian, as well as at least one polished stone axe. The Larnian at Dalkey Island also has Neolithic elements.44a These sites, too, then are separated from the true Early Larnian by as much as 2500 years, yet they show a reversion to smaller size flakes and tools. Mitchell's view that this reversion was due to the loss of the rich flint areas, and dependence upon local pebble flint, is criticised by Movius, who claims that large (Late) Larnian flakes have been recovered from areas in the raised beach in County Louth. Yet the important point, accepted by Movius, 45 is that the evidence for a small-size Ultimate Larnian is unshakeable, an Ultimate Larnian dated stratigraphically to the Late Atlantic-Early Sub-Boreal transition zone and which is typologically comparable to the earlier phase of the Larnian culture. Mitchell pointed out that by the small size of the tools, and the presence of the core-scraper, the Sutton industry was typologically Early Larnian and not Late Larnian. While the quantity of definable material from Sutton is too small to allow many valid comments to be made, surely of importance is the fact that in this Ultimate Larnian, which is stratigraphically comparable to the Albyn Distillery site, the only two

⁴⁴ Mitchell, op. cit., 1956, 1. 44a Iwo shell middens at Dulkey Island yielded Larman flints, limpetscoops, polished stone axes and remains of domesticated animals. A radiocarbon date for one of the middens is 3340 ± 170 B.C. (D38), Antiquity, xxxiv., 1960, 111.

⁴⁵ Movius, op. cit., 1953, 104-5.

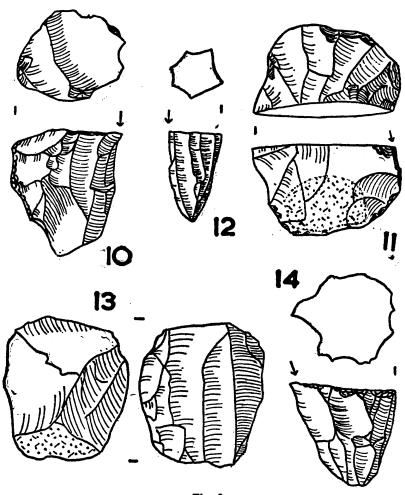


Fig. 3

flake-tool forms well represented (the proto-Bann flake and the plunging flake or Larne pick) are just those found only rarely in Scottish Mesolithic contexts (Albyn has two plunging flakes, Risga has one Bann-like flake and Wigtownshire has one plunging flake).

The earliest Larnian, at Toome Bay, is late Boreal in the pollen sequence (zone VIC) and circa 5725 B.C. by radio-carbon dating.46 The Late Larnian in the raised beaches in County Antrim must belong to a time anterior to the maximum transgression, thus in Atlantic time, while Sutton, Rockmarshall and the Albyn Distillery cannot, on stratigraphical grounds, be earlier than the maximum transgression, notwithstanding all typological argument. Mitchell and Jessen have recently reached agreement on the dating of this high sea,47 in the Atlantic/Sub-Boreal transition zone, where, in the north-west European sequence, the elm recedes from a high peak, and where, lying immediately above, traces of Neolithic forest clearance begin Recent dating of this transition zone, circa 3000 B.C., suggests that the Campbeltown Mesolithic folk occupied the foreshore at a time contemporary with the arrival of Neolithic peasants. The Wigtownshire sites, typologically related to the Albyn Distillery industry, are believed on present circumstantial evidence to represent an earlier settlement of south-western Scotland, but still. however, to belong to a time when the maximum submergence was imminent, thus possibly dating in absolute terms from circa 5000 to 3000 B.C.

In summary, it may be argued that the Albyn Distillery, Ballantrae and other industries previously called Early Larnian should not be so termed because of the chronological and regional connections that this implies. The Albyn Distillery industry is on the present evidence much more closely linked with the Wigtownshire than with the Irish sites, and the presence of an axe fragment

⁴⁶ G. F. Mitchell. "The Mesolithic Site at Toome Bay, Co. London 'erry," Ulster J. Arch., 18, 1955, 1.
47 Mitchell, op. eit., 1956, 21.

and two plunging flakes, if taken to show Larnian influence, should point more to the later Larnian than to the Early. If it is insisted that the Albyn industry be termed Larnian, this must be Ultimate Larnian on typology and stratigraphy,⁴⁸ but it is suggested that the two or three Larnian objects should be treated more as evidence of some slight contact between the areas than as representatives of Irish Mesolithic settlers.49

It seems premature to consider the origins of the Wigtownshire industries, but at least the Larnian of northeastern Ireland cannot be demonstrated to have played any particularly strong role in this. Until we obtain a full complement of material, especially bone and antler objects if such were present, we cannot determine a certain source for these Mesolithic groups. What does seem worth saving, however, is that the oft-postulated Upper Palæolithic ancestry of the North Channel Mesolithic⁵⁰ need not be necessarily correct. This is the view most often expressed, which claims that the Larnian generically resembles the final Creswellian, and thus represents a movement of Late Glacial or early Post-Glacial people of England to the north and west of the British Isles. Clark, however, has aptly stressed that while some microlithic industries of England, and eastern Scotland, may be descended from the Creswellian.⁵¹ some of the outstanding forms in material culture of the Larnian and the Obanian lie closer to continental Mesolithic material. He suggests that the flint tools of the Early Larnian (as of the Obanian) may be derived from a devolved Azilian industry. Mitchell.⁵² and formerly Movius,53 have previously accepted this Azilian idea, which was originally based on the Obanian-

⁴⁸ Mitchell, op. cit., 1949, 174.

⁴⁹ H. L. Movius, op. cit.. 1953, 110 (in different context) points out that "the presence of a single trait by no means establishes a genetic relationship between two cultures, even when the frequency occurrence of that trait is fairly high."

⁵⁰ Lacaille, op. cit., 1954, 124.

⁵¹ Clark, op. cit., 1955, 5.20; Proc. Preh. Soc., xxi., 1955, 3-20.
52 Mitchell, op. cit., 1949, 177.
55 Movius, op. cit., 1942, 207-8; compare with his later view, op. cit. 1953, 99.

Azilian harpoon-head analogues, but they both believed in a strong indigenous Creswellian element. Clark does not accept the latter as present in the Larnian or the Obanian, but until a full comparison of the late Creswellian, the Larnian and the Obanian is made we cannot be certain.

An indigenous (Upper Palæolithic) element is considered to lie behind the Welsh coastal Mesolithic industries, which also received an evolved Maglemosean (Horsham) contribution of the tranchet axe.⁵⁴ These industries have a pronounced microlithic aspect, with microburins, small round and short end scrapers, many bladelet cores, as well as stone "limpet-scoops." The differences with the Scottish material are great, but the bladelet cores of both areas suggest that perhaps once excavation has revealed complete assemblages in Wigtownshire, a stronger microlithic element than is now observed may be discovered, as yet escaping the plough. Wainwright considers that the Welsh industries belong to a "littoral community of the west coast of Britain."

While we can at present see little close relationship between the Larnian and the Wigtownshire material, it must not be forgotten that the typological comparisons made in this paper, which purport to show their dissimilarities, are based upon much rolled and derived material from Ireland, and surface collections from Scotland. The differences may therefore have been exaggerated. Both Clark and Mitchell⁵⁵ consider that the North Channel shores were unified in a single common cultural development in Mesolithic times, which took the form of the Early and later Larnian in Ireland, the Larnian and Obanian in Scotland. The Rockmarshall, Co. Louth, and the Obanian "limpet-scoops" demonstrate this common interest, and it might be argued that differences in raw material contributed to the divergencies in industrial technique and typology. As yet undemonstrated, both Larnian and

⁵⁴ G. J. Wainwright, "A Reinterpretation of the Microlithic Industries of Wales," Proc. Preh. Soc., xxix., 1963, 126.
55 G. F. Mitcheli, J. Co. Louth Arch. Soc., xii., 1949, 19.

Obanian, as well as the Wigtownshire industries, may also share antler and bone tools. The North Channel industries are more a unity within themselves than with the Welsh coastal Mesolithic, where a strong indigenous Upper Palæolithic occupation must have left its mark. In very broad and general terms then, one might consider that the industries on both sides of the North Channel were related in a common traditional form of existence which is preserved in flint work, rarely in bone and antler, and which originally consisted of a fusion of elements from varying sources. Such a fusion probably contained ideas from continental Mesolithic industries, from the locally developed Maglemosean of Southern Britain, and from the developed Upper Palæolithic industries of England and Wales.⁵⁶

Summary: The new material from Wigtownshire, although dated only by circumstantial evidence, appears to represent the earliest known inhabitants of the area. Typologically these industries seem to be allied to the Albyn Distillery material, and both very slightly to the later Larnian of Ireland. In neither case, however, can it be demonstrated that there was any close cultural connection between Ireland and Scotland in early Post-Glacial times. During the time under review, the coasts of Ireland and Scotland would be separated by even more water than divides to-day.⁵⁷ While the differences in raw material undoubtedly account for some industrial variation, the overall and basic differences in tool forms are so great that it seems better, on present evidence, to avoid describing the Scottish material in terms of the Irish Mesolithic. Connections there probably were, but these remain to be identified and described, and their directions established.

⁵⁶ Clark, op. cit., 1955-6, 102, Discovery and Excavation Scotland, 1959, 4; comment in S. Piggott (ed.), The Prehistoric Peoples of Scotland, 1962, 5.

⁵⁷ Movius, op. cit., 1953, 87, "traffic between the two regions became increasingly more hazardous as the result of continual deepening and widening of the North Channel by marine erosion and tidal scour."

It is suggested that these industries, representing as they do an important new element of the early settlement of south-western Scotland, should be for the present termed the south-west Scottish coastal Mesolithic, a descriptive name which does not presuppose any chronological or cultural links with other Mesolithic groups.

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Table II.

FLAKES — Lengths (mm.)

Site	Ret	Retouched		tilised	Waste		
	No.	No. Average		No. Average		Average	
Terally	18	38.3	33	33.4	131	26	
Balgown	7	31	10	28	59	32	
Kirkmabreck	9	28.3	6	24.2	20	23.2	
Luce Sands	8	27.2	2	32.5	14	24.5	
Kilfillan	29	26.5	47	23.3	75	17.9	
Stairhaven	31	27.6	41	24	170	19.4	
Stairhaven South			4	32.5	8	25	
Auchenmalg	27	27	47	25.3	139	20.3	
Low Clone North	21	26.7	30	22	42	20.3	
Low Clone South	10	29	17	22.6	69	19	
Airlour	2	35	7	36	22	21	
Pate's Port	17	30	13	27	34	24.7	
Blairbuy	8	26	3	40	8	19.5	
Morrach	5 -	25	3	28	2	17.5	
Shaddock	9	26.2	10	26	4	31	
Low Balyett		-	1	30	5	23	
Mote of Mark	6	22	. 8	26	9	22	
Albyn	45	27.5	64	30	480	23	
Risga	957	25.6	900	26	11,800	21	
Cnoc Sligeach	26	28.2	4	26	425	22	

Table III. FLAKE/BLADE PROPORTIONS

Site		Flakes			Blades		
			%		%		
Terally	1	69	92	15	8		
Balgown		57	80	14	20		
Kirkmabreck		34	97	. 1	3		
Luce Sands		12	5 0	12	50		
Kilfillan	1:	21	84	23	16		
Stairhaven	2	10	84	41	16		
Stairhaven South		9	70	4	30		
Auchenmalg	1	61	87	23	13		
Low Clone North		82	92	7	8		
Low Clone South		85	90	9	10		
Airlour		27	96	1	4		
Pate's Port		58	91	6	9		
Blairbuy		15	79	4	21		
Morrach		9 1	00		•		
Shaddock		20	87	3	13		
Low Balyett		5	83	1	17		
Mote of Mark	•	22	96	1	4		
Total	10	96 80	5.9	165	13.1		
Albyn—retouched utilised waste	·	10 85 35 59 32 96	91.5	7 15 24 41 20 4	8.5		
Risga—retouched utilised waste		77.6 75 90 } 88	3.4	198 22.4 225 c. 25 1150 c. 10	11.6		
Cnoc Sligeach—retutil was	ised	20 77 2 50 04 88	87.5	6 23 2 50 48 12	12.5		
Curran Point		est. <	7 0	est.	> 30		

Table IV. RETOUCH

					%
Site	Total	Retouched	% Retouch of Total	Specific Forms*	of Total Retouch
Terally	278	53	19.1	11	20.7
Balgown	108	24	22.2	5	20.8
Kirkmabreck	64	20	31.2	5	25
Luce Sands	31	12	38.7	3 -	25
Kilfillan	208	56	27	10	17.9
Stairhaven	338	54	16	16	29.7
Auchenmalg	284	54	15.5	20	37
Low Clone North	148	46	31	7	15.2
Low Clone South	130	24	18.5	6	25
Airlour	39	8	20.5	2	25
Pate's Port	108	38	35.2	4	10.5
Blairbuy	24	13	54	4	30.7
Shaddock	41	14	34.1	2	14.3
Low Balyett	8	1	12.5	0	0
Mote of Mark	40	7	17.5	1	14.3
Total	1849	424	22.9	96	22.6
Albyn	1234	117	9.5	57	48.7
Risga	14,083	1185	8.4	844	71.3
Cnoc Sligeach	581	96	16.5	32	33.3

^{*} Excluding all core tools, and flakes with miscellaneous retouch.

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	Sligeach	% 1	2.1 2.1 2.1 2.1	11.4 2.1 5.2 8.2	17.7 8.2 43.7
	Cnoc	No. 430 3	7 27 7	111 22 24 44	25 17 44 42
		% 9.5	4.9 1.7 1.7 1.7 1.0 1.3 1.3 1.3 1.3 1.3	6.7 4.9 4.9 11.4 0.1 0.1	6.7 0.8 11.7
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	** ;	ves Waste Utilised Misc. retouch	End Side Straight side and notched Round Nosed Keeled End-side With burin	Spalls Awis Backed Blades Backed Blades Coblique retouch Sharpened retouch Bipolar forms "Bann" point (proto) Tanged point Tanged point Farne pick Saw Heavy axe—chopper, rostrate Core rejuvenation flakes	s Waste Scraper Scraper—burin Burin
		Flakes Waş Util Mise	Scrapers End Side Straigh Round Nosed Keeled End-sic	Burins Spalls Awls Backed Blades Oblique retouch Sharpened retouch Bipolar forms "Bann" point Tanged point Larne pick Saw Heavy axe—cho Core rejuvenati	Cores Waste Scraper Scraper Burin

Excavation of a Chambered Cairn at Mid Gleniron Farm, Wigtownshire Interim Report

I. X. W. P. CORCORAN.

Introduction

During June, 1963, students from the Department of Archæology in the University of Glasgow began excavation, under the writer's direction, of the western of two long cairns at Mid Gleniron Farm (Mid Gleniron I.)1 The two cairns lie in the parish of New Luce, two and a half miles north of Luce Bay and east of the Water of Luce.2 Both cairns lie at 275 feet above Ordnance Datum. Nearby is a fine round cairn, about 55 feet in diameter and 9 feet high3 which may date to the Bronze Age although the possibility of its being a chambered cairn must be allowed. Unlike the two long cairns it appears to be undisturbed.

The two long cairns are among the most southwesterly group in Scotland and it is hoped to complete excavation of both. During 1963, however, it was possible only to examine part of the western cairn, Mid Gleniron I. Excavation was concentrated primarily on the northern structure, although limited excavation was begun elsewhere in the cairn. Before excavation the cairn presented an appearance little altered from that described in the Royal Commission's Inventory for Wigtownshire published in 1912.4 Orientation was approximately north-south and the total length appeared to be over 100 feet, the width at the northern end approximately 35 feet and at the southern end 27 feet. The western arc of a semi-circular facade was indicated by the upper parts of four orthostats and

¹ National Grid Reference: NX. (25), 1870, 6099, 6-inch sheet: Wigtown

XII., S.W. 2 Cf S. Piggott and T. G E. Powell, PSAS. LXXXIII. (1948-49), 105, fig. 1.

² RCAHM(Scotland), County of Wigtown (1912), 94 (no. 260).

⁴ Ibid., 94-6 (no. 261), fig. 63

south of this were traces of three megalithic structures. The northernmost appeared to open from the forecourt, although there was no trace of any structural link between the two. A second structure seemed to be a lateral chamber entered from the west and the third suggested a cist. The capstone shown in the Inventory's plan⁵ has been displaced to one side during the past 50 years and before excavation in 1963 more of the chamber structure had been revealed.

South of this the Inventory refers to "a depression across the cairn as if a roadway had been opened through it" and comparisons are made with similar depressions in long cairns in the north of Scotland.6 The southernmost part of the mound was considered by the writer to be at most a secondary structural addition to the cairn proper and excavation showed that the two parts of this apparently homogeneous long cairn were not structurally associated. During 1963, however, it was not possible to examine any part of the southern structure beyond the "depression."

Excavation—Northern Structure

Forecourt. Work began at the northern end of the cairn with two longitudinal cuttings which were subsequently extended to uncover the whole of the forecourt, the northwestern and the north-eastern limits of the cairn. Removal of turf and topsoil revealed the outer shell of the forecourt blocking, built of carefully laid small flat stones and delimited in the western sector by a line of large boulders. There was no evidence of a kerb of similar proportions in the eastern sector and further excavation showed that there had been much disturbance in this area.

When the smaller stones had been removed a blocking of larger, heavier flat slabs was seen to lie immediately in front of the portal area. The blocking appears to have been built in two stages. The first-stage blocking consisted

⁵ Ibid., fig. 65.6 Ibid., 96.

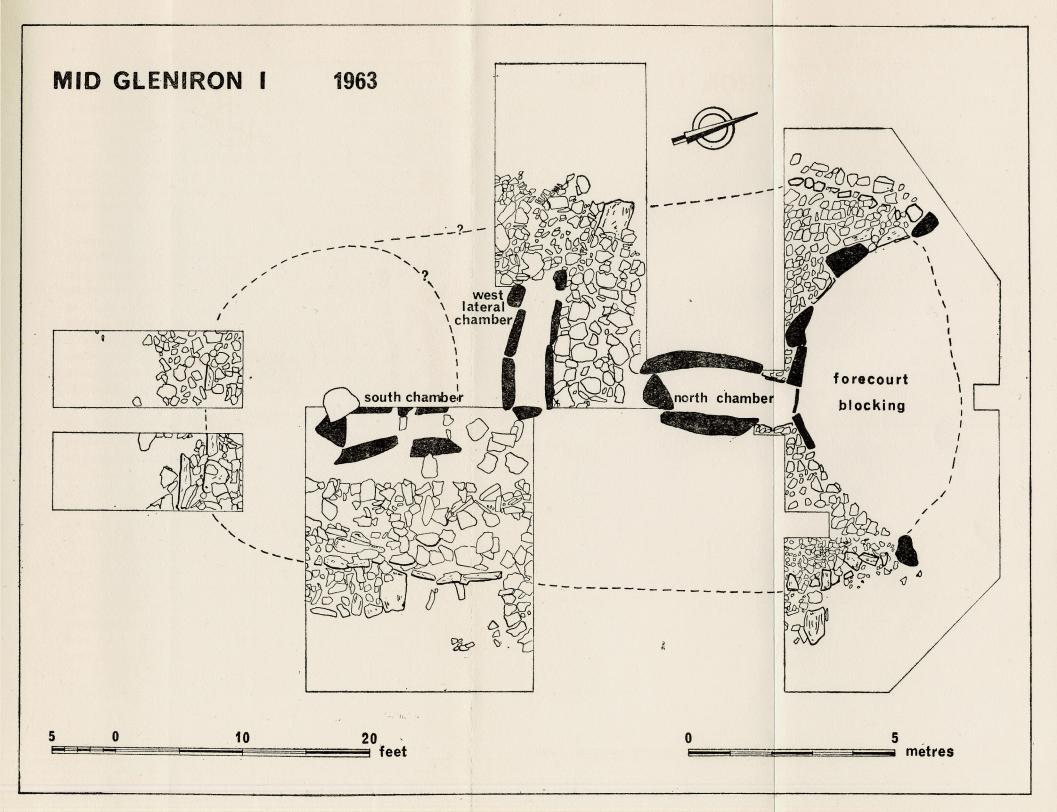


Fig. 1—General Plan and Limits of 1963 Excavation.

of heavy flat slabs, averaging 2 feet in width, carefully placed in the area immediately in front of the portals of the northern chamber. A second-stage blocking of smaller stones, averaging 9 inches in width, was laid over the former and was delimited by a kerb of boulders (fig. 2).

The western arc of the facade was carefully set out and built from three orthostats, averaging 3 feet 6 inches in height, and separated by dry-stone walling. The innermost stone of this arc was set contiguous to the flat, western portal stone. In the eastern sector disturbance had destroyed much of the facade. The eastern portal stone and the base of what may be regarded as the terminal orthostat remain in situ. A distinction could be made between the firm and undisturbed areas of cairn and forecourt blocking and the intervening disturbed area. There were no traces either of sockets or of dry-stone walling in the disturbed area, so that it is impossible to reconstruct the appearance of the eastern arc of the facade. It may have approximated fairly closely to the western, at least in regularity of plan.

Although there were many fragments of charcoal and two small patches suggestive of burning in situ on the old ground surface in the forecourt area, there were no heavy concentrations of charcoal. Three small hollows in the forecourt may have been associated with ritual activity. Beneath the first-stage blocking and immediately north of the portals was a curious arrangement of stones which appears to have been purposive and, again, its meaning should probably be sought in a ritual context. A lump of quartz, circular in shape, some 6 inches in diameter and roughly dome-shaped, lay on the longitudinal axis. It was surrounded by a semi-circular setting of small stones set into the old ground surface. The diameter of this setting was aligned on the two portal stones. Lying at an angle within, and partially overlapping, this complex was a slender stone, a little over 3 feet long and unlike the remainder of blocking material. Two similar stones were also found in the forecourt within the area covered by the

first-stage blocking. It is possible that these three pillarlike stones were originally set in the forecourt in the three sockets or small pits already mentioned.

Between the well matched portal stones there was a carefully set blocking of five thin slabs, arranged in the manner of dry-stone walling, and resting on a thin septal stone, some 12 inches high. The septal was not set into the sub-soil but was supported at the rear by roughly set, but structurally sound, walling (fig. 3).

Northern chamber. Before excavation the southern part of the northern chamber was visible and was built of two massive orthostats, each over 8 feet in length, and a solidly set end-stone against which the side-walls rested. It was anticipated that a second pair of shorter orthostats would have linked the inner with the rear of the portal stones. This was not so, for in place of orthostats there was drystone walling, rather roughly built on the eastern side, although showing signs of disturbance, but of more regular construction on the western. The floor of this area had been neatly paved.

The inner part of the chamber had been robbed to below the former ground surface and there was no evidence of paving. Large stones were found lying in this area, probably the result of disturbance. Structural instability inherent in the use of three heavy orthostats without a fourth for support was satisfactorily overcome by the insertion of a heavy bracing stone set between and near the northern limits of the side-walls and forming part of the paving. This corrected any tendency of the side-walls to slip inwards at this point.

The northern chamber, therefore, comprised an inner megalithic structure, 8 feet long and 4 feet 6 inches wide, and an outer section of dry-stone walling of approximately the same width and 2 feet 6 inches in length. Although roofing did not survive in situ, there was evidence of rudimentary corbelling in the outer part and it is possible that the roof in this section was built at approximately the

height of the portals, about 2 feet 6 inches above old ground level. Roofing over the megalithic structure could never have been built lower than 4 feet 6 inches, as shown by the surviving height of the side walls.

Cairn. Elsewhere in the northernmost cuttings the body of the cairn was examined. It is built of carefully set, but relatively small, stones. A rough kerb of small stones, in which short uprights were probably set at intervals, marks the limits of the cairn in this area. There is no frontal facade. The sides of the cairn terminated at the rear of the outermost orthostats of the facade, which in turn were linked by the kerb marking the outer limits of the second-stage blocking.

Southern Structure

Chamber. Because of damp infilling the southern chamber was not cleared to original floor level during 1963, but some preliminary indication of plan was obtained. It may be seen that its southern limits were closed by an end-stone almost as massive as that of the northern chamber and, therefore, not merely a closing slab. This implies that entrance was from the north, but further excavation is required in this area before a complete plan can be drawn.

The northern and southern chambers are set approximately on the same alignment, although the southern lies a little to the east of the northern. The chamber has been disturbed, probably within the present century. The capstone and the south-eastern orthostat have both been displaced.

Cairn. The body of the cairn between the eastern limits of the southern chamber and the edge of the cairn was examined. Although more work is necessary in this very disturbed area it is possible that the southern chamber was originally contained within its own cairn and subsequently incorporated into the long cairn which encloses all three megalithic structures. This implies that the southern

chamber and its enclosing cairn originally formed an independent structure, probably the first structure on the site. Until this has been confirmed by further excavation only approximate indications of the limits of the cairn may be shown on the plan (fig. 1). Very disturbed remains of cremated bone with sherds of a recently broken urn were found to the east of the southern chamber. They appear to have been thrown out of the chamber.

Two cuttings were made to the south of the southern chamber and showed that there was no structural connection across the so-called "depression." Remains of at least one line of a simple kerb could be traced, possibly of two. One perhaps belonged to the cairn originally surrounding the southern chamber only, and the other to the cairn which incorporated the final complex structure.

Western Structure

The western lateral chamber was found to be completely robbed. Although a preliminary examination was made of the area to the west of the megalithic structure no evidence was found of either a passage or any form of access from the side of the cairn. Interpretation and discussion of this part of the cairn must await complete excavation.

Discussion

It is premature to discuss in detail the results of a single season's work when more excavation is necessary. A few preliminary comments may perhaps be allowed.

In the first place Mid Gleniron was chosen for excavation because two chambered long cairns, each with a forecourt and each relatively well preserved, lay within 200 yards of each other and offered an opportunity of determining any relationship which might have existed between the two. Second, each cairn has more than one chamber and this offered the opportunity of testing the hypothesis that some such cairns may have been of more than one

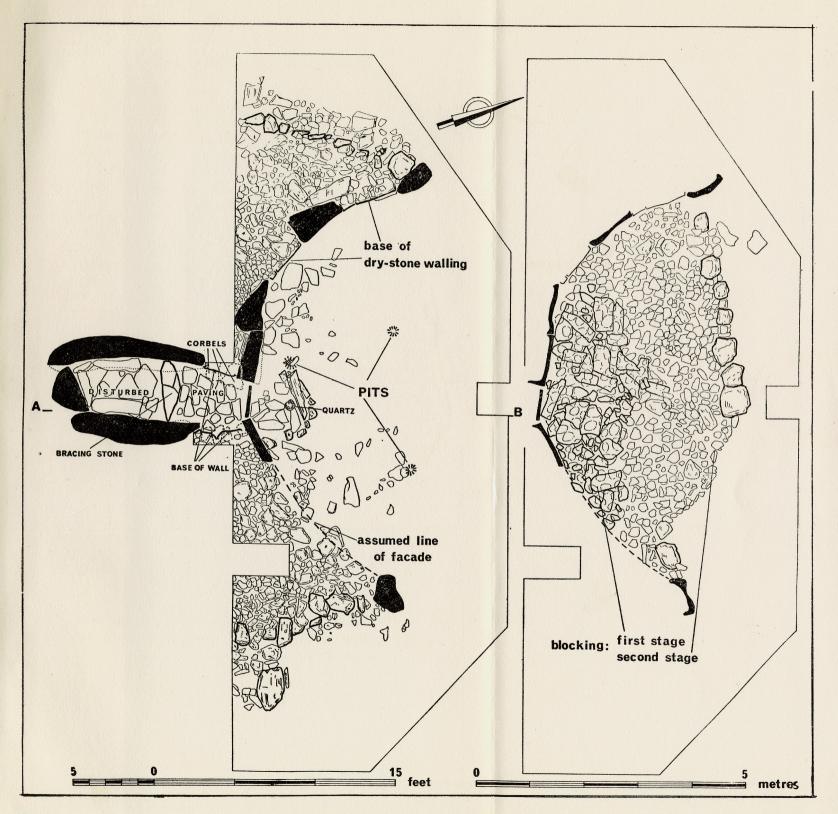


Fig. 2-Plan: Forecourt and North Chamber.

period of construction—that is, structural additions and alterations may have been made at some time subsequent to the construction and use of the original chamber and Evidence to support this hypothesis had already cairn. been acquired from recent excavation in Britain.7 Third, it seemed appropriate to attempt to establish the relationship between these two cairns in Wigtownshire and the two cairns at Cairnholy in the Stewartry which were excavated by Piggott and Powell in 1949.8 With the information gained from the four cairns it was hoped that more precision might be given to discussion of the relationship of Gallovidian cairns to the Clyde-Solway group as a whole. Furthermore—and this was a very strong factor in choosing Mid Gleniron—any relationship between the horned cairns of the north of Ireland and those of Galloway might best be revealed by the excavation of the two Gallovidian horned cairns which lie closest to Ireland. Finally, it was hoped to establish whether or not there was any relationship between the builders of the cairns and the users of Neolithic artifacts in the sands of Luce Bay.

The first season's work has shown that Mid Gleniron I. was a multi-period cairn. At first sight such evidence might appear to be of limited significance, perhaps to be discussed only within the context of structural detail, but the writer believes that this evidence has a more fundamental significance. One of the problems most difficult of solution in Hiberno-British megalithic studies at present is that of origins. It has to be frequently admitted that exact European parallels for cairns in Ireland and Britain cannot be found. From this it follows that some types of cairn with a plan restricted to these islands must have evolved here. It is difficult at present to demonstrate in detail how this happened, but evidence from such sites as Dyffryn Ardudwy in Merionethshire⁹ and Mid Gleniron I. appears to offer some evidence of that evolution.

E.g., Tulach an t-Sionnaich, Caithness (J. X. W. P. Corcoran, Arch. Newsletter, VII. (1962), 155-6). Dyffryn Ardudwy, Merionethshire (T. G. E. Pawell, Antiquity, XXXVII. (1963), 19-24.
 S. Piggott and T. G. E. Powell, PSAS., LXXXIII. (1948-49), 103-61.
 T. G. E. Powell, Antiquity, XXXVII. (1963), 19-24.

The sequence of construction at Mid Gleniron I. on present evidence suggests that the southern chamber, entered from the north and contained within its cairn of indeterminate, but probably oval, plan was the first structure on the site. After an unknown period of time the northern chamber was built with the rear of the latter pointing towards the entrance of the southern chamber, the two megalithic structures being 15 feet apart. not yet clear whether the northern chamber was contained within its own separate cairn or whether it was at this point that both structures were incorporated within the final long cairn. The sequence of construction is further complicated by the presence of the western lateral chamber. At present the relationship of this third megalithic structure to the others is unknown, but the possibility must be allowed of three periods of construction, each centred on a megalithic chamber. It is clear that the final form of Mid Gleniron I. was the result of more than one period of construction and that the long cairn and forecourt were not part of the original plan. It is, however, too early to apply this evidence to any discussion of Clyde-Solway cairns as a whole, although even these preliminary results are suggestive of the manner in which the long cairns of south-western Scotland may have evolved. The final form of such cairns were probably influenced by developments taking place further south in Britain.

Dry-stone walling was not used in the southern structure, which was a simple chamber set within a small and simply constructed cairn. This type of cairn resembles in a general way the Portal Dolmen which has an important distribution around the Irish Sea littoral. Excavation of the cairn at Dyffryn Ardudwy has shown that some Portal Dolmens may date to a relatively early phase of the Hiberno-British chambered tomb tradition. It is not impossible that future research will demonstrate an evolution within Britain and Ireland of chambered cairns of complex plan from a mixture of external influences acting on a simple dolmen-like structure.

The presence of dry-stone walling in the northern chamber and forecourt may represent the arrival in the Solway of one of these external influences. It is possible that this, together with the construction of the long cairn. derived from the Severn-Cotswold region by way of northwestern Wales. In the northern chamber at Mid Gleniron I. the outer part was built of dry-stone walling and roofed at a lower level, as is argued above, than that of the inner megalithic structure. This arrangement is similar to that of several lateral chambers of long cairns in the Severn-Cotswold region. The writer argues in a forthcoming study of the latter that this is a tradition derived from passage graves in which there is a structural distinction drawn between a megalithic chamber proper and a passage built of dry-stone walling. It is also possible that Severn-Cotswold traditions influenced the evolution of the facade of both Irish and Scottish horned cairns, although the megalithic component of these structures must have derived from a different source. The arrangement of the northern chamber and forecourt at Mid Gleniron is at present unique and further discussion of its position within the Scottish megalithic series cannot be attempted.

Until both cairns at Mid Gleniron have been excavated extended discussion of possible relationship with the two at Cairnholy must similarly be deferred. Superficially there appear to be resemblances in forecourt structure and blocking, but considerable differences in chamber structure. The facade at Cairnholy I. was built of orthostats and drystone walling, similar in concept to Mid Gleniron I., although the facade at Cairnholy must always have presented a contrast in its tall orthostats with the broader and squatter orthostats at Mid Gleniron. There was no drystone walling in the chambers at Cairnholy, and both their chamber structures are segmented, Cairnholy I. by tall septal slabs unrepresented at Mid Gleniron.

This is perhaps sufficient to demonstrate that even within the restricted area of Galloway there may have been differing megalithic traditions in the course of simultaneous

formation. Further field work and excavation in the region may allow this to be defined more accurately but even present evidence suggests dual development. One may have been based on traditions entering Luce Bay and travelling up the Water of Luce. The other may have made a landfall in Wigtown Bay and subsequently penetrated inland along the River Cree.

Again, it is premature to attempt any appreciation of the wider relationships between Mid Gleniron I. and the Clyde-Solway group as a whole, although some preliminary comment may be offered. For example, the long cairns of Arran with their flat frontal facades seem closer to Cairnholy I. than to Mid Gleniron I. In the south of Kintyre, however, the fine cairn on Blasthill resembles Mid Gleniron I. in the manner in which the kerb of the cairn joins the rear of the outermost orthostats of the facade and in the absence of a flat frontal facade. Such comparisons, however, take Mid Gleniron I. as a unit and future discussion will probably be more fruitfully based on a consideration of independent structural units within the cairn.

The writer has suggested that the concept of a Clyde-Carlingford Culture—that is a unified culture spread across the north of Ireland and south-western Scotland and embracing all horned and court cairns—is oversimplified.¹⁰ There are so many details of construction which differ. despite a certain superficial similarity, and the artifacts from each area also suggest different basic cultural traditions. It is inappropriate in the present context to pursue this argument, but the limited evidence which the excavation of Mid Gleniron I. has so far yielded suggests that the dichotomy of tradition between the horned cairns of the north of Ireland and those of Galloway is further Any connection that might have existed emphasised. between Ireland and south-western Scotland at this time probably affected the area to the north of Galloway and not Galloway itself.¹¹ The difficulties of the cross-channel

<sup>J. X. W. P. Corcoran. PPS., XXVI. (1960), 130-2.
Cf. distribution of Tievebulliagh and Rathlin axes in Scotland. (E. Ryrne, JRSAI., XCIII (1963), 195, fig. 2.)</sup>

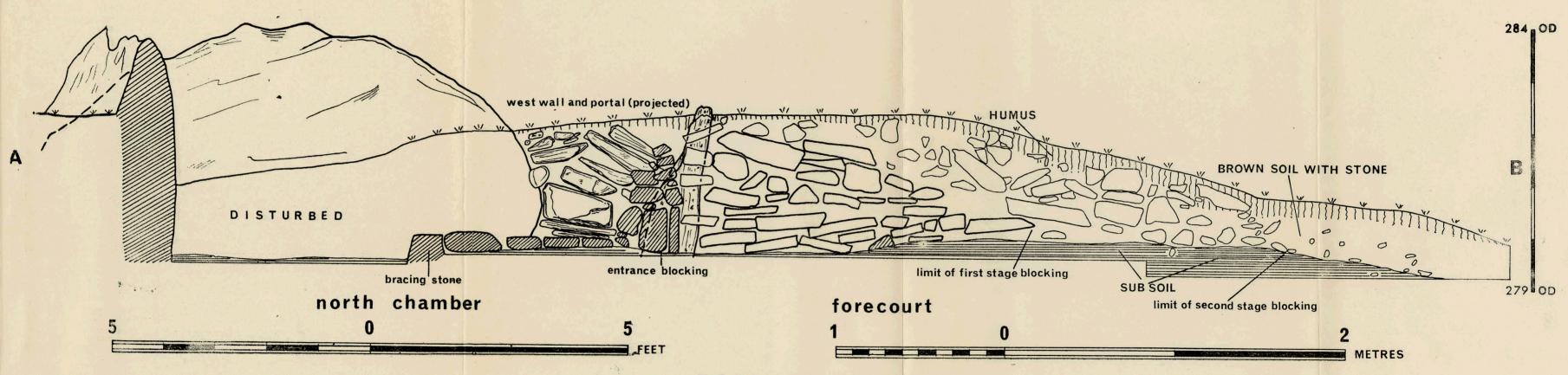


Fig. 3-Section: Forecourt and North Chamber.

crossing between Co. Antrim and Wigtownshire should not be underestimated.

Finds from the 1963 excavation will be discussed in the final report. The few that were recovered included small fragments of Western Neolithic pottery, rimdecorated sherds and Neolithic worked flints, all suggesting that the main use of the cairn was completed before the beginning of the local Early Bronze Age. Discussion of any relationship between the users of the cairn and the makers of Neolithic artifacts found in the sands of Luce Bay must await completion of excavation. Absence of adequate charcoal and of bone prevents any opportunity of acquiring a carbon-14 date for the site, and as far as Galloway is concerned absolute dates are lacking, although on present comparative evidence the main floruit of the Clyde-Solway cairns should date to the third millennium B.C. The recently published carbon-14 dates from the chambered cairn at Monamore in Arran, 12 3160 + 100 B.C. and 2240 +110 B.C., are significant in this context.

In conclusion, it may be seen that the limited excavation so far completed at Mid Gleniron I. has provided evidence which may prove of value to Scottish megalithic studies generally. It is possible that when both long cairns have been excavated additional evidence will be available to give precision to the various arguments outlined in this discussion.

Acknowledgments

The writer wishes to thank Stair Estates Ltd., Mr I. H. A. Mackay, F.R.I.C.S., Secretary and Factor, and Mr G. Milroy, tenant of Mid Gleniron Farm, for permission to excavate. Mr Milroy also gave much assistance during excavation.

The excavation took place between June 1st and 22nd, 1963, with the aid of a grant from the Court of the Univer-

¹² E W. MacKie, Discovery and Excavation, Scotland, 1963 (1964), 25. Antiquity, XXXVIII. (1964), 52-4.

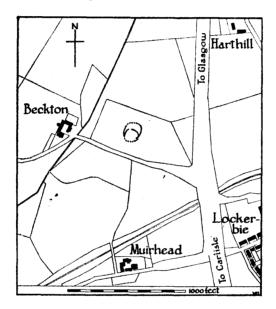
sity of Glasgow which the writer also wishes to acknowledge with thanks. The season's work described in this report was planned to give Honours students from the Department of Archæology in the University of Glasgow experience in the daily administration and conduct of an excavation. Accordingly, three students, Mr James Kay, Mr Alexander Morrison and Mr Kenneth Reid, were responsible for drawing all plans and sections in the field. From the latter the published plans in the present report are based.

Prehistoric Site At Beckton, Lockerbie

By W. F. CORMACK, F.S.A.Scot.

Summary

As a hillock in Annandale was being removed for bottoming for the new Glasgow-Carlisle road there was revealed a palisaded enclosure with which was associated Secondary Neolithic pottery.



General

The site was on a dry gravelly knoll (N.G. Ref. NY/130822) 235 feet above sea level on the farm of Beckton ‡ mile N.W. of Lockerbie in Dumfriesshire (See location map fig. 1). This hillock, which had been sold as bottoming for the Lockerbie By-Pass on the new Glasgow-Carlisle road, falls away steeply on the N.W. side some 70 feet to the rather marshy line of the Beckton burn which itself joins the River Annan 2 miles to the S.W. No sur-

face indications of the site existed prior to the road works commencing, but since the writer had recovered flints from the surface of several knolls in the vicinity and the hillock was rather similar to that on which the Neolithic/Bronze Age cremation cemetery at Kirkburn¹ was situated, some $\frac{1}{2}$ mile to the north, it was resolved to keep watch as the Contractors² removed the top soil.

One evening in May, 1962, the writer was informed by Dr A. B. Cameron of Lockerbie that the stripping of the top soil by scrapers had commenced and he hurried to the site to find that one or two pits in the subsoil had already appeared, and he picked up a sherd of prehistoric pottery. Next morning as further top soil was removed he noticed that these pits were situated in a palisaded enclosure, so the scrapers were diverted off the site until a plan could be prepared, but the size of the site, urgency of the contracting work and increasing dust as the subsoil dried out, rendered any form of controlled excavation impossible and within a few hours the site was totally destroyed.

The Observed Features

After the writer had been joined by Mr Robert J. Little and Miss A. E. Fullen, also members of this Society, pegs were positioned in a line through the centre of the site, and these were used as a base line to plan out a circular palisaded enclosure which was revealed by trenches in the subsoil some one foot wide and deep, dark in colour and packed with largish stones (see Plan, fig. 2). Where the line of the trench could not be observed on the surface, it was confirmed (or otherwise), by scraping up the soil by hand. There was no sign of a ditch outside the palisade or anything in the nature of a bank. It will be seen that the plan shows a circular enclosure about 150 feet diameter

¹ These Transactions, Vol. XL., p. 53.

² The writer is indebted to Mr Peter Benny, of Peter Benny, Ltd., Kettering, and Mr G. Edmond, Resident Engineer in charge, for forbearance and co-operation, also to Mr Matthew Aird, proprietor of Beckton. The contours are from a survey made and kindly loaned by Mr Richard Wood, of the staff of A. M. Carmichael, Ltd., Public Works Contractors.

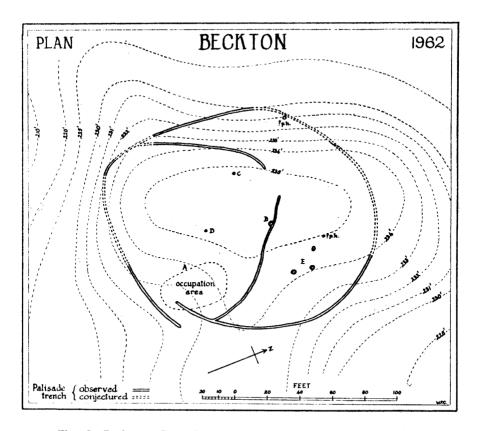


Fig. 2—Beckton: General Plan. Contours in feet above O.D. N.B.—Contours are at closer intervals above 230 feet to give greater detail on site itself.

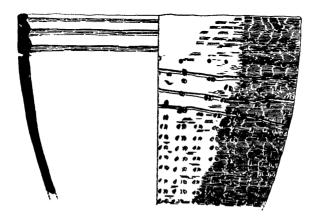


Fig. 3—Beckton Main Pot 1/5

with entrance on the south east, and subdivided into northern and southern portions.

The entrance consisted of a simple overlap of the trench ends—the width of the passage being 10 feet wide and the overlap a similar distance. An attempt was made to locate post holes for gates both at the entrance and in the gap in the division palisade but without success. On the northern side, and on a portion of the southern side, the line of the palisade trench was not located, probably due to heavier scraping which had occurred on the former side and to ploughing on the latter, it being situated on the edge of a fairly steep slope.

The southern portion showed signs of heavy occupation where indicated on the plan, the subsoil in this area being covered by black greasy soil, 6 or 9 ins. deep, filled with carbonised wood and blackened and splintered stones. Two sherds of pottery were picked up on the western side of this occupation area at point A. At point B a pit (2 ft. diam. x 1 ft. deep) had been dug against the division palisade trench. In this was a piece (perhaps a quarter of the whole) of the rim and body of a pot—called in these notes the main pot. To the writer and his assistants it seemed as if a broken pot had been tossed into an open storage(?) pit situated at the edge of the palisade. At point C was a slight depression with two more sherds of a third vessel and three flakes of flint. At point D was a slight pocket in the subsoil with traces of calcined bone.

On the other hand the northern portion of the enclosure contained few signs of occupation. At point E, however, was noticed a group of three pits, each 2 ft. diam. x 2 ft. deep and filled with soft grey black wood ash and fire-blackened and splintered stones. Two possible post holes are indicated on the plan.

The Pottery And Flints

The writer is indebted to Dr John X. W. P. Corcoran for the following description and interpretation of the main pot, also for the drawing.

1. Main Pot (fig. 3).

Sufficient sherds survived to reconstruct approximately one quarter of the pot. It has a black core of very fine sandy clay, with a backing of quartz and vegetable matter. The surface is also sandy and light-fawn in colour. There is evidence neither of burnishing nor of a slip, but faint striations visible under the microscope suggest that the outer surface was smoothed with grass. The clay was probably fired too rapidly.

The pot has a flat rim with an external rim diameter of 15 ins. and a maximum surviving height of $9\frac{1}{4}$ ins. The wall of the pot has a mean thickness of $\frac{1}{2}$ in. and curves inwards slightly so that the outer diameter at the lowest surviving point is $11\frac{1}{2}$ ins. The base has not survived, but may have been flat.

Approximately $2\frac{1}{2}$ ins. below and parallel with the rim on the outer surface there is a row of pits, which do not perforate the wall of the pot, spaced approximately $1\frac{1}{8}$ ins. apart. Below this are three very shallow grooves, probably made with a blunt ended wooden tool, approximately $\frac{1}{8}$ in. wide and with an average gap of $\frac{7}{8}$ in. between them. In places these grooves and their intervening voids are overlain by finger-and-thumb impressions which continue downwards in vertical lines as far as the pot survives. These lines are spaced apart at a mean distance of $\frac{7}{8}$ in. Immediately below the rim on the inner surface there are two prominent parallel rounded grooves, probably made with finger-tips, the clay displaced from the grooves forming rounded ridges.

Although it is not possible to offer precise parallels for this pot all features point to the Secondary Neolithic tradition.³ Paired finger-and-thumb pinchings are typical of both Mortlake and Fengate wares and rows of pits are common on Ebbsfleet ware, all three belonging to the Peterborough group.⁴ Pits are also known on Neolithic

pottery from Irish Sandhills sites.⁵ Both the shape of the pot and its internal and external grooves are foreign to these traditions, but are known on Rinvo-Clacton ware. perhaps more closely paralleled in the southern province than in the northern 6

- 2. Sherds from pt. A. Featureless wall(?) sherds \(\frac{1}{2}\) in. thick—smooth reddish brown outer face, black inner,
- 3. Sherds from pt. C. Featureless wall(?) sherds \(\frac{1}{2}\) in, thick—black both faces. rather corky in fabric.
- 4. Flints—3 characterless but apparently utilised flakes. Note: The finds are now in the Burgh Museum. Dumfries.

Conclusion

While there would appear no doubt that the pottery is Neolithic, some doubts may arise, owing to the nature of the "excavation" as to whether the pottery and enclosure are contemporary and truly associated. So far as the shape of the latter is concerned, structures having points in common with Beckton are generally regarded as Early Iron Age or late Bronze Age. For example, Shoulder Hill. Roxburghshire. has a similar palisade and entrance. vet these resemblances may be purely superficial. Furthermore there was no find at Beckton to indicate that there might have been two occupations of the site, and one cannot but be struck by the slightness of the "defences." Indeed the appearance was that of a stock enclosure rather than a fortified homestead. It is submitted therefore that there are prima facie reasonable grounds for regarding this site as a domestic one of a Secondary Neolithic people using a Rinyo-Clacton type of pottery — an assumption which can be tested from other sites in due course.

⁵ What appears to be a similar sherd in the Nat. Mus. of Antiq. of Scot. is from Archerfield, Gullane (P.S.A.S., XLII., p. 308 and illustration, p. 314), where it was associated with Beaker pottery— W.F.C.

⁴ Cf., S. Piggott, The West Kennet Long Barrow (1962), 33-4. 5 Cf. S. Piggott, Neolithic Cultures of the British Isles (1954), 317-20.

⁶ Ibia., 328-9, 338-42.
7 Royal Commission on Ancient Monuments — Inventory (Roxburgh), No. 670.

ARTICLE 10

Palisaded Enclosure at Harthill, Lockerbie

By W. F. CORMACK, F.S.A.Scot.

This note is to record a palisaded enclosure which was observed during, and partially destroyed by, the construction in 1962 of the Lockerbie By-pass at a point (Nat. Grid. Ref. NY132825) on the farm of Broomhouses, a few yards N.W. of the Harthill Depot of Dumfries County Council Roads Department.

Here a large cutting, some 200 feet wide, had to be made through a gravelly knoll. As the machines removed the topsoil certain trenches appeared (see fig 1) without any prior indications of their existence on the surface. On the south side a palisade trench packed with stones was traced for 140 feet running along the contour of the hill, with running parallel to it on the outside, and about 14 feet away, what appeared to be another, perhaps deeper, trench with a few large stones in it. These trenches ran into the west side of the cutting into ground unaffected by the road, so trial cuts were made by the writer and Mr Robert Little at points A. B and C to confirm the nature of these features. At A and B they were found to have sections as shown in fig. 2, from which it appears possible that the outermost trench was in fact a shallow ditch. Several large stones in the bottom might indicate packing stones for stakes. At cut B the "ditch" was found to be situated further from the palisade and at cut C it was not observed at all, although the cut was extended some 25 feet S.W. from the palisade trench. At B there were possible signs of a bank between the two trenches.

A portion of palisade trench was visible on the N. side during the roadworks at point D, where it was traced for 15 feet running into the west side of the cutting. A trial cut at this point located the trench but here there was no sign of a ditch or outer palisade. The hillside is

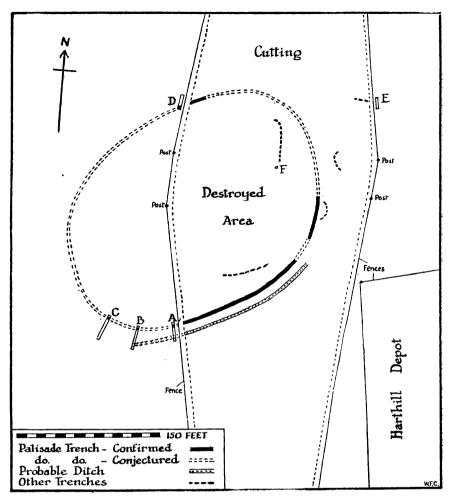


Fig. 1.—Harthill. General Plan showing confirmed and conjectured Palisades.

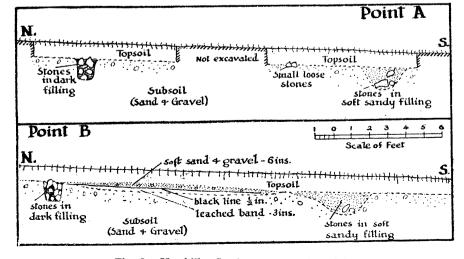


Fig. 2.—Harthill. Sections at cuts A and B.

very steep on this side. The dimensions and depth of this trench and the nature of the packing were as on the south side.

At point E a palisade trench seemed to run into the East side of the cutting, but a trial cut in the field at this point failed to disclose it. Five other lengths of palisade trench were observed during the roadworks one of which seemed to be part of the main enclosure but, as will be observed from the plan, two inside the main enclosure and two outside did not readily fall into any particular pattern and so may not be associated with it.

No entrance to the main enclosure was observed. Evidence of occupation in the form of pits and fire spots occurred outside the main enclosure on the east side. The only find was a handful of black slag (? tap slag) in a small pit at point F, also a flint flake, with cortex backing, evidently from a fairly large nodule, found when clearing away the topsoil from the cut at E. While details of the site and its date may be obscure, it seems clear that the main feature was an oval enclosure some 300 feet by 220 feet delimited by a palisade with probably, over part of the circumference at any rate, an outer ditch. As will be observed, about one-third still survives for future investigation.

The writer is indebted to Mr John Mackie, jnr., Broomhouses, for allowing the trial cuts to be made.

ARTICLE 11

McCULLOCH'S CASTLE, ARBIGLAND

(Map 1" Dumfries, Sheet 74, M.R. 996576)

By Major-General J. Scott-Elliot

The Site is in the Parish of Kirkbean and lies half a mile North East of Arbigland House and on the top of the sea cliff.

It was excavated during 1962 and 1963 by the Dumfries and Galloway Natural History and Antiquarian Society under the direction of the writer assisted by Dr Ian Rae.

During 1962 the western two-thirds of the interior was stripped, the west end of the rampart exposed, the cliff edge at the west end of the rampart was cleared. A cut across the ditch and over the rampart was made centrally in the site and the rampart was sectioned.

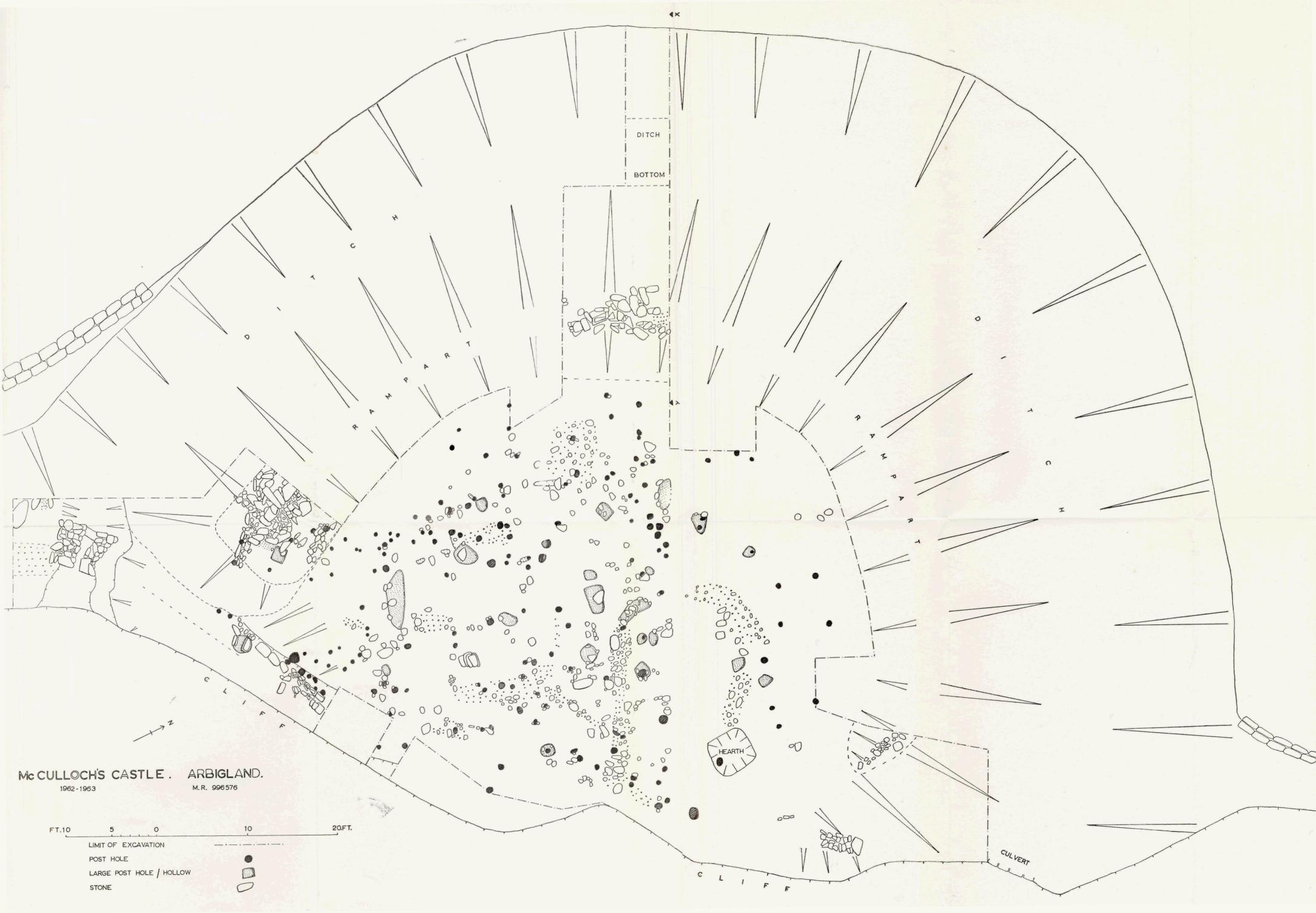
During 1963 the remaining third of the interior was stripped and the east end of the rampart and the east and west ends of the ditch were exposed.

General

The site is a roughly semi-circular ditched enclosure with its diameter formed by the top of the cliff and its circumference by a ditch with internal rampart. The radius of the semi-circle within the rampart is approximately 45 ft.

The ditch is open to the cliff at both ends and is about 34 ft. wide, with an average depth of 12 ft. It is "U" shaped but may have been "V" shaped originally. There is a modern culvert across each end of the ditch. These culverts have caused the silting of the ditch.

The clay built rampart is 4 ft. 6 ins. high at its midpoint and decreases in height as it approaches the cliff. It has a stone addition on top of later date than the original rampart.



There is evidence that a wooden palisade ran from the west end of the rampart eastwards along the cliff. This palisade probably covered the entrance and contained the gate.

The interior of the site is level but slopes gently towards the cliff edge. A large number of post holes of varying shapes and sizes were found but no easily recognisable structural shapes emerged.

A hearth which appears to be primary to the site was found close to the eastern end of the rampart. This contained dateable material which places the age of the site at pre Mid 2nd Century A.D. The first occupation of the site therefore probably falls in the first or second century A.D.

Other than in the hearth there was a complete absence of occupational debris, possibly accounted for by the proximity of the cliff or by gardening.

At the beginning of this century the site was used as an ornamental garden. A pathway ran along the top of the cliff and through the site and was used until comparatively recent times.

The origin of the name "McCulloch's Castle" is not known. The McCulloch family have owned property further west in Galloway for a long time and still do, but there is no record of the site having been part of their property. The family was also prominent on the English side in the Edwardian Wars.

The Ditch

The ditch was sectioned near the centre of the site. It was also cleared at the western end and partially cleared at the eastern end. In the centre cut, the width of the ditch from the lip at field level, to the top of the present rampart is 34 ft. 6 ins. Depth from field level to the bottom is 12 ft. 8 ins.

The ditch here is steep sided, largely rock cut, with flat bottom of 7 ft. 6 ins. width. Both sides of the ditch

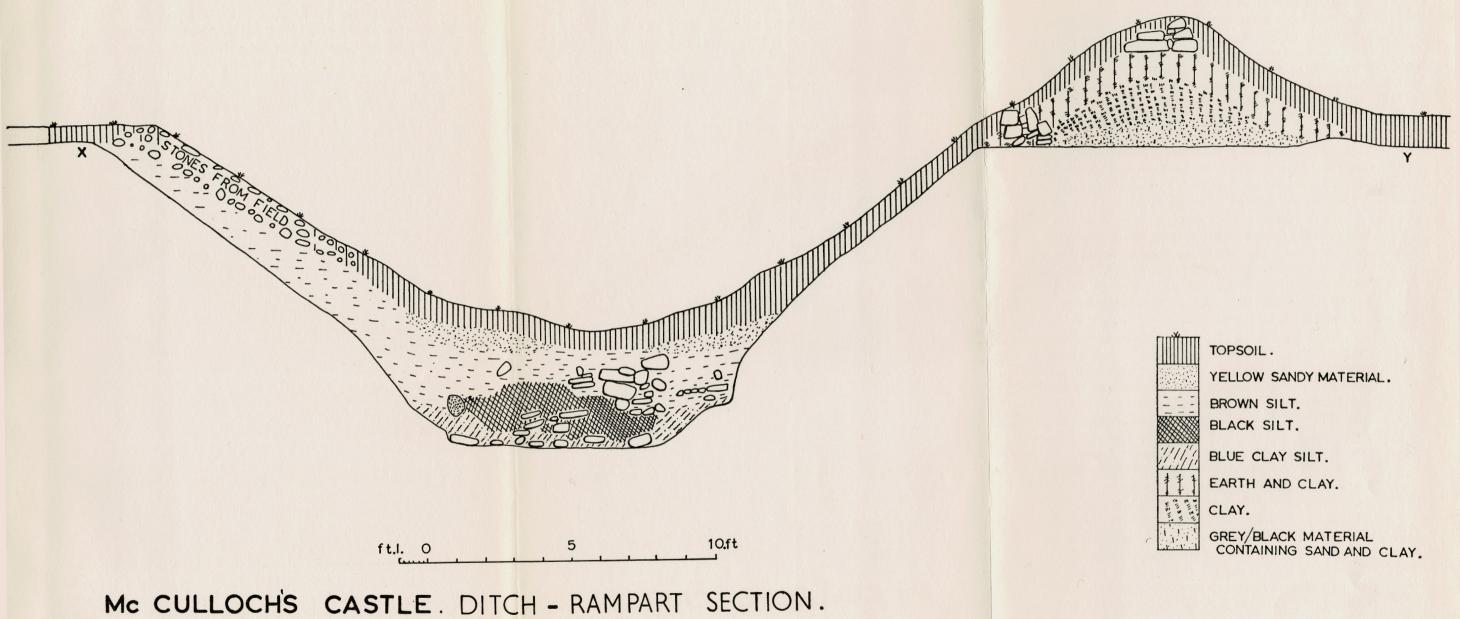
run down initially at an angle of 40° from the horizontal. For the lowest five feet of the slope the angle steepens on both sides to 50° .

At the bottom of the ditch were small grits, above that blue coloured clay. In the middle was a large area of rotted vegetation including sticks, grain ears and nuts. In this were a few sandstones of moderate size. Above this layer and towards the rampart side, were a large number of heavy stones, mostly sandstones, many shaped like those remaining at the top of the rampart. Some, however, were large and circular similar to smaller boulders found inside the site, which were whinstone and in some cases granite. There was no evidence of the ditch having been faced.

At the west and the east end, the ditch sides were cut away towards the bottom, as in the centre section. In each case, however, they were cut away more steeply. At both ends a culvert had been built over the lower part of ditch. These were two-piered, with a drain hole in the centre. They had been built later than the rockcut. To-day they are covered by ditch silt.

As the site is known to have existed in the Iron Age there may have been originally a "V" shaped ditch with open ends. This may have been changed to a flat bottomed ditch in the Dark or Middle ages, at which time the rampart could have been altered and the stonework added to the top. There is no dateable material to support this hypothesis. But in support, it is notable that, in the centre cut, the upper slopes of the ditch sides were at 40° and changed lower to 50°. Had the slopes continued at 40° the ditch would have been approximately "V" shaped. At both West and East ends the ditch would have been "V" shaped had the lower portions not been cut away.

It is probable that prior to the introduction of the culverts the ditch was clean through its whole length. The culverts were almost certainly added to allow entry for the cliff path in the 18th or 19th century and it is the silting up of the culverts which caused the silting up of



the ditch to its present depth. In support of this is the fact that the Royal Commission Report of 1914 shows a well in the Northern part of the ditch: to-day there is no visible sign of the well top and its exact location is not known.

The Rampart

The Rampart through most of its length, stands at present to about 4 ft. 6 ins. above the interior of the site. Both ends, in the last fifteen feet of length, slope down to nothing.

Where sectioned in the centre, the rampart is of clay and earth and stands on the natural rock. The toe is supported by a necklet of medium sized stones. The height to the top of the clay is 3 ft. 6 ins. and with stone addition it is 4 ft. 6 ins. Width of bottom is 13 ft. 6 ins., width at top is 2 ft. 6 ins.

The stonework on top shows indifferent work and appears to be of a later period. On top of the clay bank have been laid large flat stones on which others have been laid to make a breastwork 12 ins. to 15 ins. high. Little or no preparation of the top of the rampart appears to have been made to receive the stones.

The West end of the rampart is very different from the centre. The rampart platform is very noticeable and gives the impression that it was laid out for a different shaped and much larger structure than is there to-day. The rampart itself is considerably lower in height being, with the stonework, only some 3 ft. high. The stones are better laid and appear to form some backing to a palisade which took over here.

The Palisade runs to the cliff and continues for at least some way Eastwards. In the line of the Palisade there is one very large post hole, the largest on the site (24 ins. diameter by 26 ins. deep) which looks very like one to carry a gate post. There is a slightly smaller post hole about 5 ft. away which could have carried the other post. There were signs that this palisade had been burnt

as at several spots where posts had been, there was a quantity of wood ash.

The East end of the Rampart slopes down to the level of the interior of the site in its last fifteen feet of length. It also had indifferently laid stonework on it but little remains today. No sign of a palisade here was evident.

The Entry

In modern times entry to the site has been over culverts built into the ditch at both east and west ends.

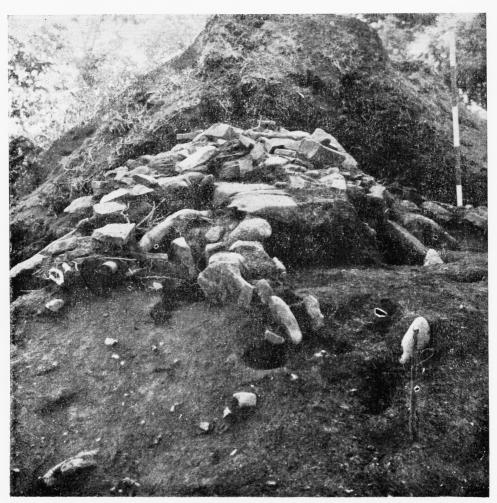
In its later period as an active site, entry was almost certainly over the west end of the ditch. There are signs of a cobbled track on the outer side of the ditch some three feet below the present surface. How the ditch was crossed is not known, but some simple form of wooden bridge would have sufficed. Thence the path up from the ditch, used at present, is likely to be the one used in the past. Where the path passes the end of the rampart are the post holes of the palisade and the very large post hole that may have held part of the gate. No evidence was found to suggest any other form of entry. Short of stripping the whole of the rampart it would not be possible to say if any part of it had been rebuilt. There is no indication of ancient entry over the eastern end of the ditch.

The Interior

The Interior is roughly semi circular and approximately 45 ft. radius with the sea cliff the diameter.

There is 12 ins. to 18 ins. of loam over the site. Below this is soft rock in parts: elsewhere is boulder clay. Near the cliff edge there are parts where the floor has been made up.

There are a large number of post holes and hollows which would seem to indicate a considerable period of occupation. Post holes can be divided into three main types—large hollows comparatively shallow up to 8 ins. deep and about 24 ins. across; medium sized post holes



West of Rampart end.



The Hearth partially emptied.



The Rampart at centre from inside.



Line of Palisade and large post-hole.

about 8 ins. across and deep; small sized about 5 ins. wide and 6 ins. deep.

There are areas of smooth clay which may have been flooring although signs of occupation surfaces were totally absent.

It may be that gardening is partially responsible for the absence of occupation surfaces and it may also be responsible for a few post holes or hollows. The reconstruction of the plan of any building or any succession of buildings, whether circular or rectangular, on the evidence of the post holes, would be highly conjectural.

The only fireplace or hearth was found close to the eastern end of the rampart, near to the cliff and outside the area of main building. It was approximately square 3 ft. across and 17 ins. deep. The contents consisted of finely burnt ash, bone—probably animal, carbonised wood, and a considerable number of stones, some quite large about $12 \times 9 \times 2\frac{1}{2}$ ins. The stones did not appear to have been built into any structural pattern. Many were placed on edge and were leaning at various angles.

Finds in the hearth comprised:

- (i) One piece of Samian pottery of the 2nd Century A.D. This was lying close to the bottom of the hearth. I am indebted to Miss Anne Robertson for the following comment: "Fragment of platter of Samian ware, from Dragendorff 18/31, with short side. Soft orange clay, Matt orange clay. Central Gaulish. Second Century A.D. probably Antonine period. Its presence in the site gives a terminus post quem of about the mid 2nd century A.D."
- (ii) One fragment of fairly soft red pottery possible of the Roman era.
- (iii) One piece of pottery, possibly coarse pottery of the Roman era.
- (iv) An iron bar approximately 5½ x 1½ x 1/5 ins. This was on the bottom of the hearth.
- (v) Three pieces of Hematite.
- (vi) A stone Palette 1.8 ins. long, width varying rom 1.6 ins. to 1.4 ins. Thickness 1/5 in. I am indebted to Mr R. B. K. Stevenson who identifies this as Native British of the Roman era.

- (vii) One piece flint.
- (viii) One Whetstone.
- (ix) One piece Jet 2 ins. x 2 in.

Acknowledgments

Our thanks are due to the proprietor, Major Blackett of Arbigland, for his interest and encouragement: to the Ministry of Public Buildings and Works for permission to excavate. To Mr R. W. Feachem and Mr Iain MacIvor for their help and advice. We are grateful also to all the other Archæologists who were so helpful when visiting the site.

To the staff and patients of the Crichton Royal we owe a great deal for their hard work on the site, as also we do to all other helpers who worked on the site from time to time.

Finally and not least to Mr A. E. Truckell of the Dumfries Museum for his ever ready help and advice both during the excavation and in the preparation of this report.

Excavations At Camp Hill, Trohoughton, Dumfries

By D. D. A. SIMPSON and Major-General J. SCOTT-ELLIOT

Circumstances Of Excavation

In 1960 Mr McKeachie, the owner of High Kelton farm, wished to plough down the ramparts and bring under cultivation part of the Camp Hill site. The Ministry of Works in conjunction with the Dumfries and Galloway Natural History and Antiquarian Society organised a rescue excavation to test the site, as nothing was known about it.

Work began under the supervision of the first writer and lasted from the 15th to the 26th of August, 1960. By the 26th it was evident that the site presented unusual and interesting features and it was therefore arranged that the Society should continue the work, which lasted that year until the 17th of September, 1960. In May and June, 1961, in March, 1962, and again in May and June, 1962, further work was carried out by the Society under the direction of the second writer with some financial assistance from the Ministry of Works.

The Site And Its Setting

The site lies at the top of a ridge which runs southwards from Dumfries, two and a half miles to the northwest (Plate 1). To the north the ground is fairly level for 200 feet and then falls gently; elsewhere it falls away sharply. At the east side there is a 15 ft. scarp. The site stands at about 300 ft. above sea level and commands a fine view in all directions, particularly over the Solway and Nithsdale. The tidal estuary of the Nith lies a mile away to the west.

The only features visible before excavation were two concentric ramparts separated by a medial ditch, horseshoe-

¹ Nat. Grid. Ref. MR/997727.

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shaped in plan, and ending in a scarp on the east side (Pate 1).2

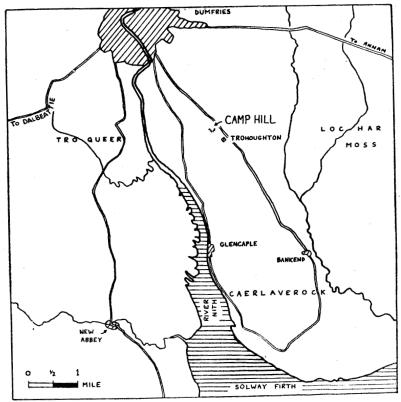
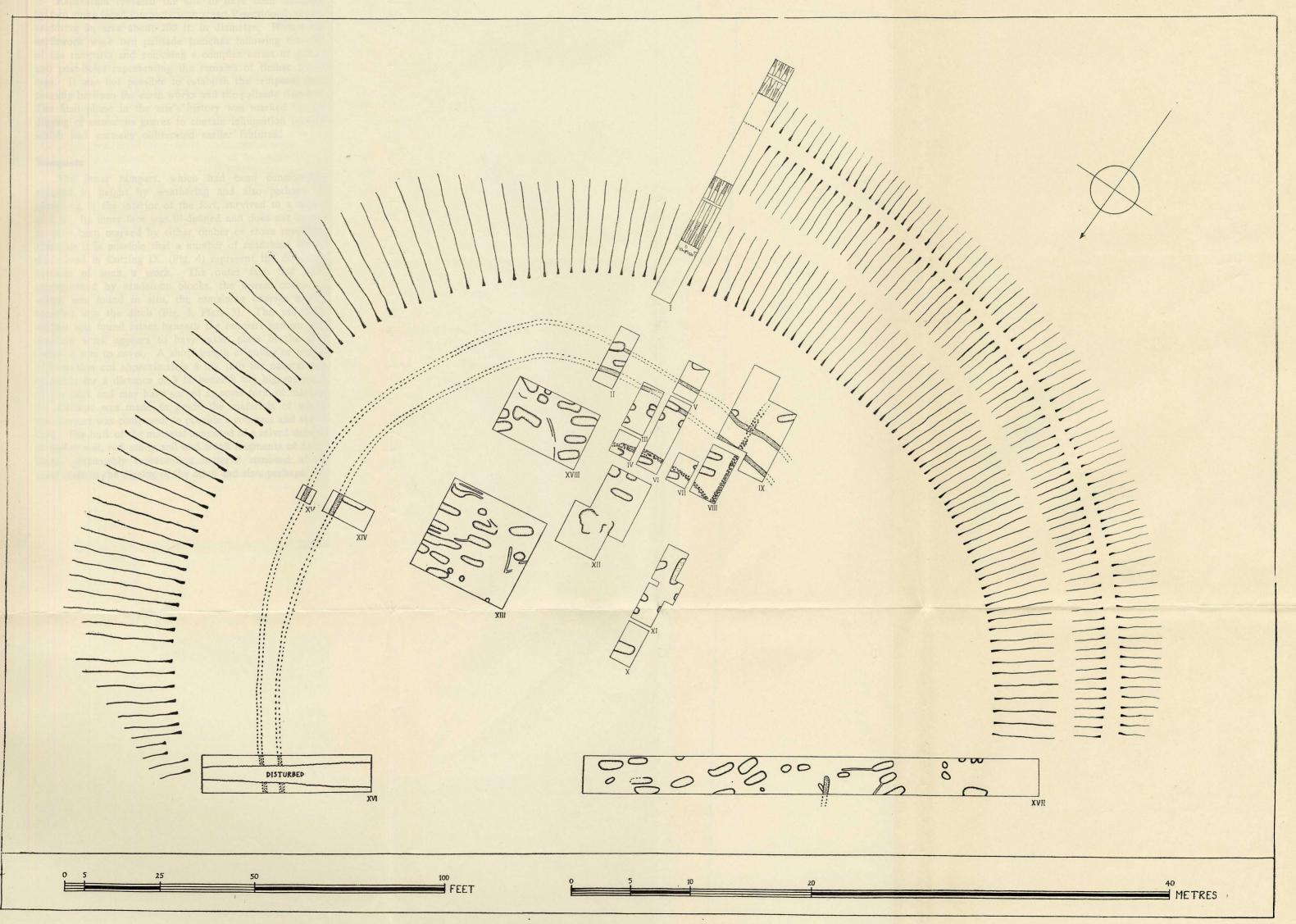


Fig. 1-Location of Site.

In the interior of the site there is humus to a depth of 9 ins.; thereunder is red/yellow earth varying in depth and having the appearance of cultivated soil although there is no evidence of ploughing in modern times. Below this level the undisturbed subsoil occurs at a depth of 12-17 ins. from the surface in the form of hard packed till or conglomerate rock. In the main ditches the usual sandstone of the district was exposed. The site is exceptionally well drained and even excavated pits held water for only a short time after rain.

² The surface features of the site are briefly described in R.C.A.M. Scotland, Dumtries, 1920. No. 130, p. 51,

CAMP HILL, TROHOUGHTON



Summary

Excavation revealed the site to have been defended by two stone faced ramparts with steep V-sectioned ditches enclosing an area about 200 ft. in diameter. Within the earthwork were two palisade trenches following the line of the ramparts and enclosing a complex series of gullies and post-holes representing the remains of timber buildings. It was not possible to establish the temporal relationship between the earth works and the palisade trenches. The final phase in the site's history was marked by the digging of numerous graves to contain inhumation burials, which had partially obliterated earlier features.

Ramparts

The inner rampart, which had been considerably reduced in height by weathering and also perhaps by ploughing in the interior of the fort, survived to a height of 4 ft. Its inner face was ill-defined and does not appear to have been marked by either timber or stone revetting, although it is possible that a number of sandstone blocks discovered in Cutting IX. (Fig. 4) represent the disturbed The outer face had been remains of such a work. strengthened by sandstone blocks, the lowest course of which was found in situ, the remaining courses having tumbled into the ditch (Fig. 3, Plate 3). The old land surface was found intact beneath the rampart and no preparatory work appears to have taken place in the area which it was to cover. A short length of gulley or trench of U-section cut approximately 6 ins. into the natural was traceable for a distance of 3 ft. beneath the highest point of the bank and may have served as some form of marker. No attempt was made to grade the materials of which the rampart was composed, to provide a compact and stable core. The bulk of the material consisted of a mixed deposit of humic soil, red sandy soil and small fragments of sandstone, presumably representing material removed at an early stage in the digging of the ditch and also, perhaps, soil scraped up from the interior of the fort. Above this layer and immediately underlying the modern turf were pockets of sandstone rubble derived from the deeper levels of the ditch. The large blocks of sandstone which must have been detached during the excavation of the ditch appear to have been reserved for the outer revetment wall.

The outer rampart presented broadly similar features. No trace was found of any form of revetment on the inner face although a single post hole, 6 ins. in diameter and 9 ins. deep, was found at the rear of the rampart. It was not possible to determine whether this post had penetrated into the material of the rampart or had been withdrawn before its construction. What may again have been the lowest course of an outer stone revetment was located, although the stones were noticeably smaller than those employed on the inner rampart and there was no indication from the fill of the outer ditch that there had in fact been other courses. The latter, if they ever existed, must have been removed before weathering or other agencies caused their collapse into the ditch; or the surviving row of stones might have served to mark the position of the outer edge of the rampart.

The major materials of the outer rampart again consist of a mixed core of red earth and sandstone fragments topped by rubble, but in this case, intervening between these two layers, was a deposit of turf. It was not possible to determine from the nature of the layer itself whether this represented turves stripped from the area of the ditch or the formation of a turf line marking the end of one phase in the rampart's history. In view of the extreme thinness of the layer between the turf line and the old land surface beneath the bank (5-9 ins.) the former interpretation is to be preferred.

Ditches

Both ditches present the same asymmetric V-shaped profile and narrow, flat bottom, with, in each case, a more steeply sloping outer face. Both are approximately 9 ft.

CAMP HILL, TROHOUGHTON: DEFENCES (CUTTING I)

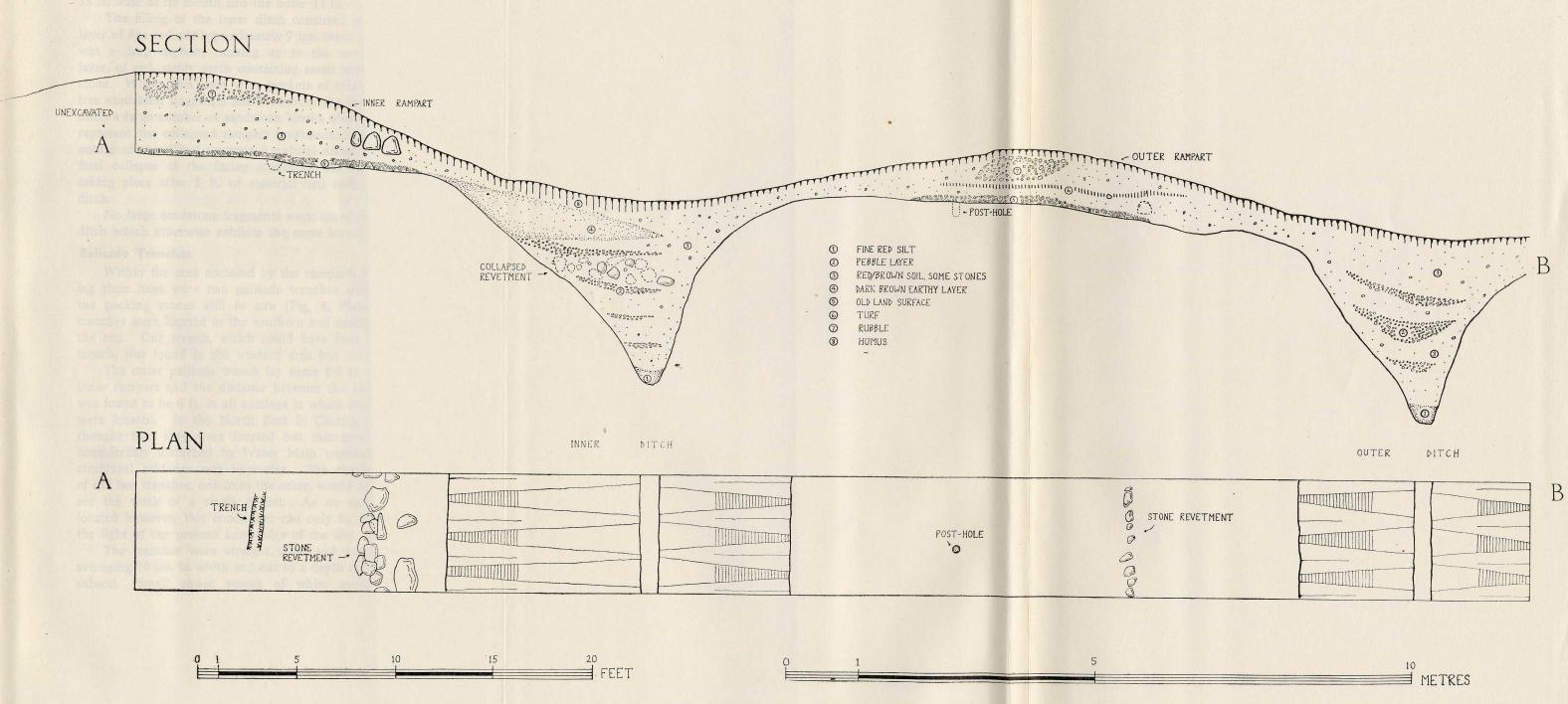


Fig. 3—Cutting I.: Rampart Section.

deep from the present ground level, the inner ditch being 15 ft. wide at its mouth and the outer 13 ft.

The filling of the inner ditch consisted of a primary layer of fine red silt approximately 7 ins. thick above which was a deep deposit, running up to the modern humus layer, of red, sandy earth containing small lumps of sandstone. Within this layer were pockets of relatively earthfree sandstone fragments and 5 ft. from the bottom of the ditch a large number of sandstone blocks which could only represent the collapsed rampart revetment (Plate 4). The nature of the filling suggests a natural accumulation, the final collapse of the facing stones of the rampart only taking place after 5 ft. of material had collected in the ditch.

No large sandstone fragments were found in the outer ditch which otherwise exhibits the same features.

Palisade Trenches

Within the area enclosed by the ramparts and following their lines were two palisade trenches with many of the packing stones still in situ (Fig. 4, Plate 8). The trenches were located in the southern and eastern areas of the site. One trench, which could have been a palisade trench, was found in the western area but not two.

The outer palisade trench lay some 8-9 ft. within the inner rampart and the distance between the two trenches was found to be 6 ft. in all cuttings in which these features were located. In the North East in Cutting XVI. it is thought that they were located but this area has been considerably disturbed by Water Main trenches and the structural evidence was imprecise. The regular spacing of the two trenches, one from the other, would suggest they are the work of a single period. As no entrance was located however, this conclusion can only be tentative in the light of our present knowledge of the site.

The trenches were straight sided and flat bottomed, averaging 10 ins. in width and cut to a depth of 1 ft. in the subsoil. Small chuek stones of whin, sandstone and

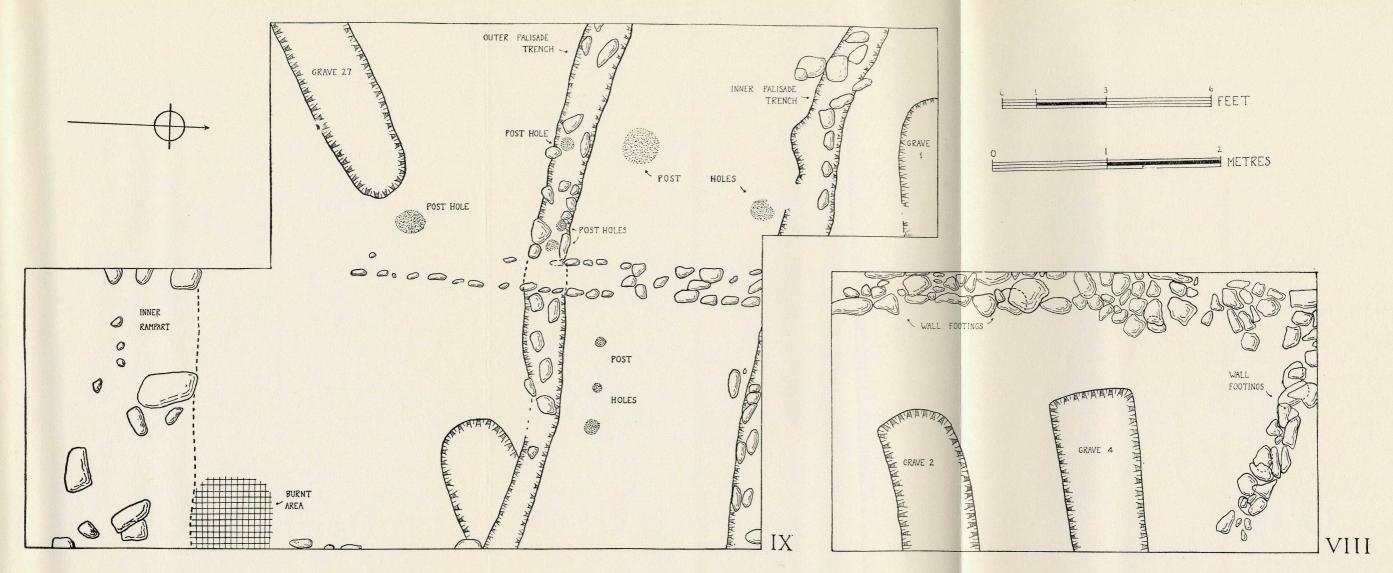
puddled rock had been used, with rammed clay, to secure the timber uprights in all stretches of the trenches examined except in Cutting XV. where the outer trench had been "made up" with large stone blocks (Plate 9). Individual posts were noted only in the outer trench in Cutting IX. Here three small post-holes were found having an average diameter of 5 ins.

It was not possible to establish the stratigraphical relationship between the palisade trenches and the encircling earthwork because of the distance between the two features. In other sites, where a sequence could be demonstrated the palisade structure has been shown to be the earlier work. The primacy of both outer palisade trenches over the graves (see below p. 131) was established in Cuttings II. and VI. (Fig. 2) where in each case the trench had been truncated by the digging of a grave through it. The palisades were similarly earlier than the stone wall running north-south across Cuttings VIII. and IX.

Walls

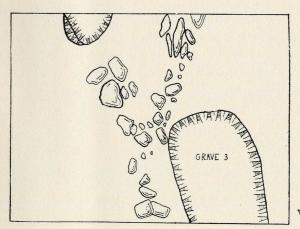
In Cuttings VIII. and IX. the footings of a roughly constructed stone wall, varying from $1-l\frac{1}{2}$ ft. in width, were found running north-south for a distance of 27 ft. and overlying the two palisade trenches (Fig. 4, Plate 8). The wall petered out before the inner face of the rampart was reached.

Apparently linked with this wall was a portion of a second wall revealed in Cuttings IV., VI.-VIII. (Figs. 2 and 4). This wall 1 ft. wide and of even more irregular construction, was in the form of an arc of a circle and appeared to abut on the north-south wall at the former's western end. Because of the nature of the two walls however the precise relationship between the two was impossible to determine. The eastern end of the arc does not appear to have extended far beyond the point at which it was revealed in Cutting IV. as it would otherwise have been located in Cutting XVIII.



CAMP HILL, TROHOUGHTON

CUTTINGS VII VIII AND IX



VII

In cuttings IV., VI.-VII. three graves were found aligned roughly parallel with and immediately adjacent to the inner edge of the curved wall. There was no indication of the collapse or slipping into the fill of the graves of any part of the wall, as might be expected if the graves were the earlier feature (Plate 7).

It was not possible from the stretches of these two walls revealed during the excavation to reach any clear understanding of their purpose.

Post-Holes And Shallow Trenches

A large number of post-holes were found ranging from 14-4 ins. in diameter and from 7-4 ins. deep. In addition there were a number of larger, rectangular holes of the order of 2 ft. 6 ins. by 2 ft. and 8 ins. deep. Post-holes were encountered in all cuttings but were particularly frequent in cuttings XIII. and XVII. (Plate 10) where shallow trenches were also encountered.

These trenches or gulleys, 6 ins. wide and 4-6 ins. deep, occurred in the form of arcs of a circle: the gulley in cutting XVIII. forming an arc of a circle 34 ft. in diameter and that on the western edge of Cutting XIII. of a circle 24 ft. in diameter. No packing stones were found in these trenches.

In the two cuttings which yielded large numbers of post-holes no clear house plans could be discerned although the general pattern of the post-holes suggested circular structures as did the gulleys, which might have served as drainage channels or supported close-set timber uprights.

In Cutting XIII. where seventy-eight post-holes of varying dimensions were found in an area of 28 square feet several individual structures and probably constructional phases would appear to be represented, although in only one case did post-holes coalesce (Fig. 5). In this same cutting and again in Cutting VI. a post-hole had been truncated by the later digging of a grave.

Graves

It is evident that in the latter stage of the fort's existence, after it had gone out of use as such, the interior was used as a cemetery, some sixty graves or portions of graves being revealed during the course of the work (Plate 11 and Fig 2). Of these, 12 graves or portions of graves were excavated.

The graves vary in size to some extent but average about 5 ft. 10 ins. in length and 2 ft. in width. They were cut into the subsoil to a depth of 17-23 in. One grave was only 8 in. deep but this may have been due to plough action.

All graves were rectangular in plan, frequently with carefully rounded corners and had vertical sides and flat bottoms. Orientation varied between E.-W. and N.E.-S.W. All were uniformly filled with fine stone-free earth in their upper levels which tended to give way to a more clayey deposit containing pebbles and larger stones at the base—the latter presumably the result of worm action. Slight unidentifiable shadowing was noticed at the bottom of two of the graves but in only one case were any human remains found. In Grave 55, Cutting XVII., the crowns of three human teeth were found at the west end. All the burials appear to have been unaccompanied.

There was an area about the centre of the fort where there appeared to be no graves but elsewhere they were found in all the cuttings. From their form and orientation it may be assumed that the graves belong to the Early Christian period.

Small Finds

Very few finds were made during the excavations and none provided close dating evidence.

(a) Small triangular flake of grey/brown flint 1 in. long, worked on both plane surfaces and having careful retouching along the edges. It appears to be part of a larger knife or dagger and from the character of the work-

CAMP HILL, TROHOUGHTON

CUTTING XIII

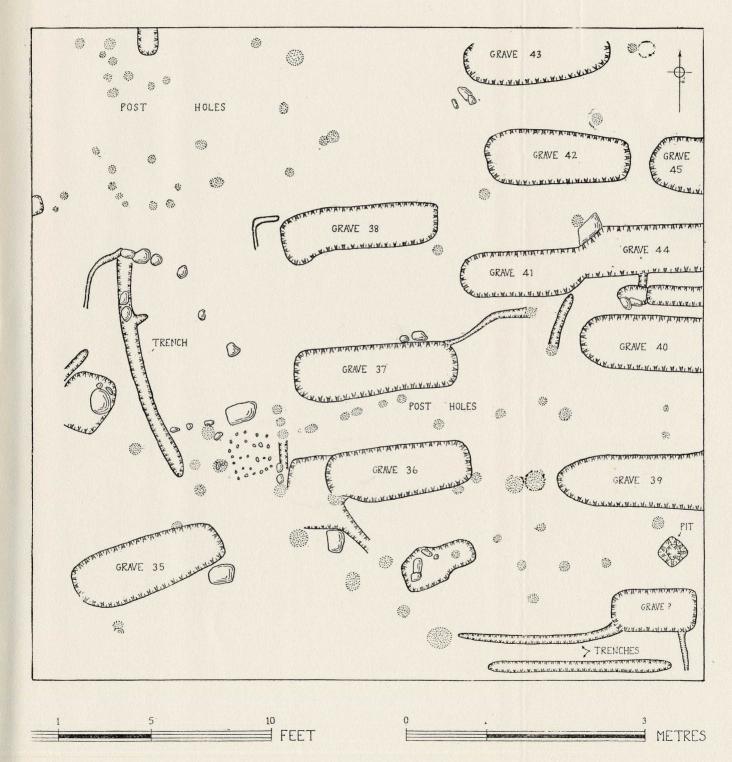


Fig. 5-Plan of Cutting XIII.

ing may be a Neolithic or Bronze Age artefact. Cutting IX. at a depth of 9 ins. in disturbed topsoil.

- (b) Upper half of a beehive-shaped rotary quern. Cutting XI. at a depth of 9 ins. in disturbed topsoil.
- (c) Sandstone whetstone or rubber of roughly rectangular form $8\frac{1}{2}$ ins. long, $3\frac{1}{4}$ ins. wide and $1\frac{3}{4}$ ins. thick. Cutting XI. at a depth of 15 ins.
- (d) Stone(?) rubber, $6\frac{1}{2}$ ins. long, 5 ins. broad and 3 ins. thick. Cutting IV. in topsoil at depth of 16 ins.

Discussion

In many respects the excavations have raised more problems than they have solved. The complexity and long use of the site are reflected in the diversity of structures revealed but little of their sequence or date. The inhumation cemetery was demonstrably the final phase in the history of the site but the relationship between earthworks and palisades and the timber structures they enclosed could not be determined—indeed the precise nature of the internal structures is still obscure.

Excavation and fieldwork in recent years have shown that settlements of round houses of varying forms enclosed by timber palisades are a feature of the pre-Roman Iron Age of the border counties⁵ and further examples are known from Dumfriesshire.⁴ Many of these palisaded settlements lie within a system of multiple ramparts and ditches which could be shown in some cases to be the later feature.⁵ One might reasonably infer a similar sequence at Camp Hill as it is unlikely that a palisade would be erected inside a pre-existing and larger earthwork: and it is possible too that work on the palisades was abandoned before their completion and the construction

& A.S., Lockerbie? in present issue.

5 e.g., Hownam Rings, Roxburgh: P.S.A.S., LXXXII., 1950, 193 ff.;
Huckhoe, Northunberland: Arch. Ael, XXXVII., 1959.

<sup>For a general discussion of this category of site see R.C.A.M. Scotland, Roxburgh, I., 1956, p. 19 ff, P.S.A.S., YCIII., 1962, p. 184 ff.
Feachem — D. & G. N.H & A.S., vol. XXXIII., p. 58, Morton Mains, Nihsdale; Potholm Hill, Ewesdale. Cormack—D. & G. N.H.</sup>

of the earthworks begun.6 Palisaded enclosures occur in both single7 and double8 forms although in the absence of a known entrance it is not possible to be certain of the category into which the Camp Hill site falls: but the evenness of the spacing might imply contemporaneity for the two trenches.

None of the sites of the class to which Camp Hill belongs have so far produced any precise dating evidence. It has been suggested that the earlier, palisade phase, was the work of Late Bronze Age groups9 while the earth works have been vaguely attributed to the last centuries B.C. and the first century A.D.¹⁰

Camp Hill contributes nothing to a chronological precision for the sequence and in view of its nature and conditions prevailing on the site it is unlikely that further work there would elucidate this problem although a number of the structural features might be clarified.

Acknowledgments

Our thanks are due to the two owners of the site, Mr McKeachey and Mr Maxwell, who were most co-operative and helpful throughout; to the Ministry of Works for financial assistance, to all advisers and to all who worked on the site, including staff and patients of the Crichton Royal Infirmary.

Addendum

At the time of going to press specialist reports of organic and inorganic samples taken during the excavations were not available but it is hoped to publish these, together with a commentary on their significance to the archæological problems of the site, in a later volume of these Transactions.

⁶ As appears to be the case at Yeavering Bell, Northumberland:

P.S.A.S., XCIII, 1952. p. 190, footnote 5,
Hownam Rigs, Roxburgh. Op. cit.
e.g., Hayhope Knowe, Roxburgh: P.S.A.S., LXXXIII., 1951, p. 45 ff.
F.S.A.S., LXXXIII., 1951, p. 63: see also Varley & Jackson, Prehistoric Cheshire, 1940.
10 P.S.A.S., LXXXII., 1950, p. 222.



Plate 1-Camp Hill, Trohoughton: General view.



Plate 2-Camp Hill, Trohoughton: South sector of earthworks before excavation,

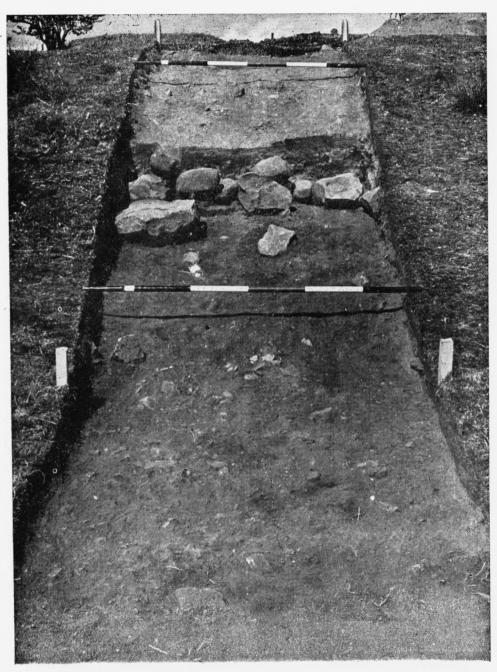


Plate 3-Cutting I.: Base of revertment of inner rampart in situ.

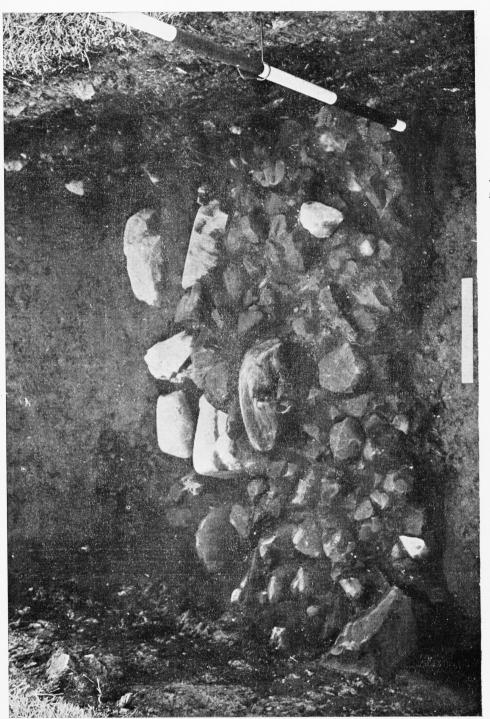


Plate 4--Cutting I.: Collapsed revetment in inner ditch,

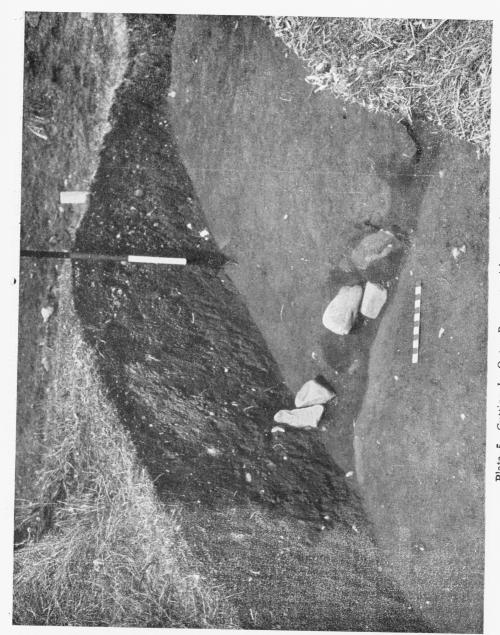


Plate 5-Cutting I.: Outer Rampart with stone footings.



Plate 6-Cutting I.: Outer ditch and stone footings of outer rampart,

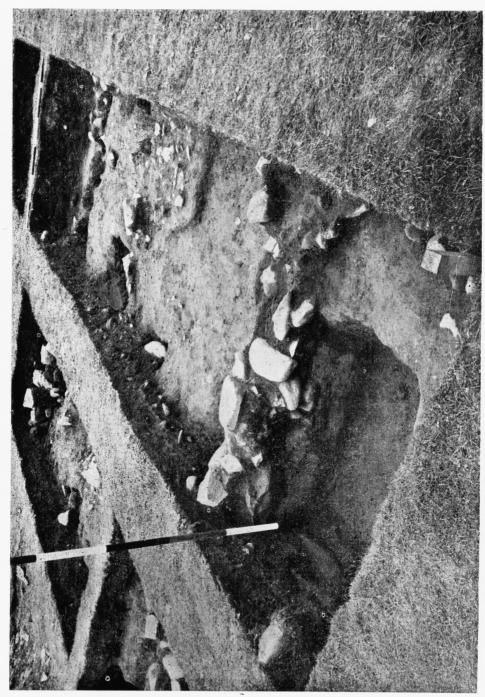


Plate 7- Cutting VI., from south: In foreground, Grave 9 and part of curved wall.



Plate 8-Cutting IX. from south-east: Palisade trenches overlain by wall footings.

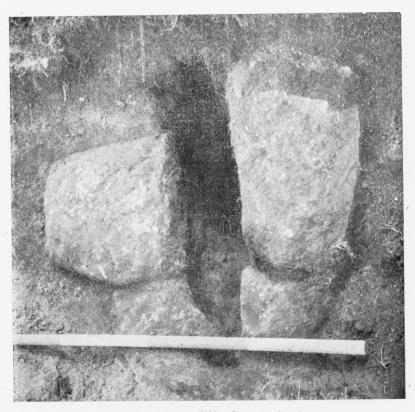


Plate 9-Cutting XV.: Outer palisade trench.



Plate 10-Cutting XIII. from south,



Plate 11-Looking west along north side of dyke.

Birrens 1962-3

By Miss Anne S. Robertson

The Committee of the Scottish Field School of Archæology welcomed an invitation to present for publication in the Transactions of the Dumfriesshire and Galloway Natural History and Antiquarian Society a short report on the contribution made to archæological knowledge by the first two seasons of the Training School established at Birrens by the Scottish Universities and the Scottish Regional Group, Council for British Archæology. It seemed particularly appropriate that such a report should appear in the Transactions of a Society whose previous volumes have recorded so much outstanding work on Roman sites in South-west Scotland, and not least at Birrens itself.

The Excavations of 1895

It is now a commonplace of the history of Romano-British research that Birrens was the first Roman fort-site in Scotland to be excavated—in 1895—just as it is now a matter for admiring wonderment that the early excavators at Birrens, working without comparative knowledge of fort-plans elsewhere, were able to interpret with so much understanding the remains of the buildings which they uncovered, thanks chiefly to the discerning eve and careful draughtsmanship of Mr James Barbour, architect, a member of the Dumfriesshire and Galloway Natural History and Antiquarian Society. Mr Barbour's beautiful plans have been praised over and over again by subsequent excavators and scholars, for example, by Sir George Macdonald, Professor Eric Birley and Professor Ian Richmond. Suffice it to add now that the recent excavations of 1962 and 1963 have inspired afresh feelings of astonished admiration for the accuracy of the observations and drawings made by our predecessors of almost 70 years ago. Many of the conclusions drawn in 1962 and 1963 simply re-ecno those of 1895, or modify them slightly in the light of new discoveries.

In 1895, "the general plan of conducting the excavations was first to make sections through the ramparts and trenches, in order to ascertain their precise structure; and secondly, by means of long exploratory cuttings in the interior, to find where the foundations of walls remained. and to trace them out." (PSAS, 1896, 92.) The defences were described by Dr David Christison, (PSAS, 1896, 93 ff.). On the north side there were six ditches, on the east and west sides at least two. The south side had been eroded by the Mein Water. The rampart, still well preserved on the north, east and west sides, was only examined in two long sections cut on the north side of the fort, in two short sections cut on the west side, and in four shorter cuttings at the north-east corner and on the east side. In some but not in all sections the rampart was found to have rested on a continuous stone base, at least 18 ft. wide. "Mr Barbour, after careful examination, concluded that layers of earth, clay, sods it may be, and brushwood had been used in the construction at least of the central part." However, "with regard to the rampart, it must be remembered that but a small part was opened." (PSAS, 1896, 101, 108.)

The north and west entrances were also investigated with somewhat confused results indicating that there had been a thoroughgoing reconstruction of the gate structures. There were no remains of the east gate (*PSAS*, 1896, 101 ff.).

The interior buildings were excavated, described and planned by Mr James Barbour. "The preparation of the plan was attended with some difficulty, owing to the denuded and disturbed state in which the remains were found. The walling had disappeared entirely at some places, and elsewhere it was not always easily distinguishable from debris. On the whole, however, the lines have

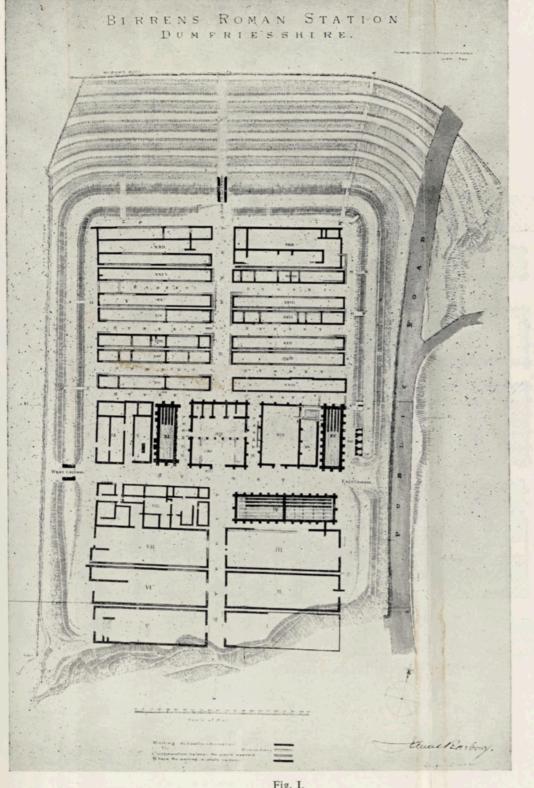


Fig. I.

After PSAS, 1896, Pl. 1, p. 96.

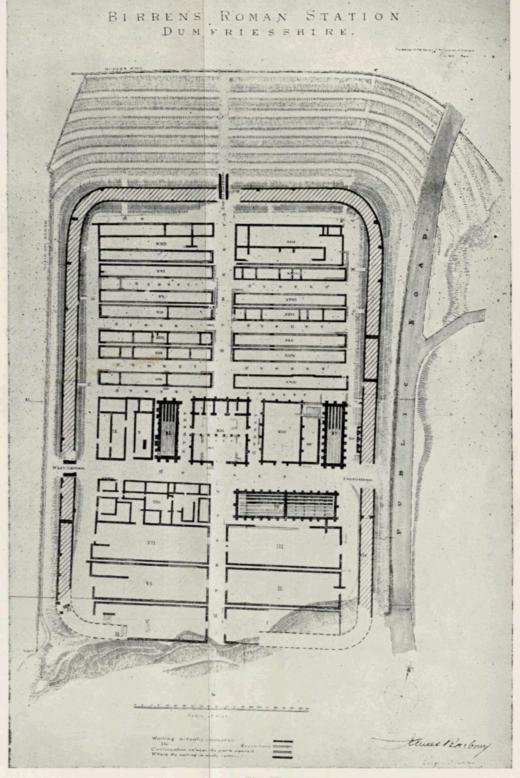
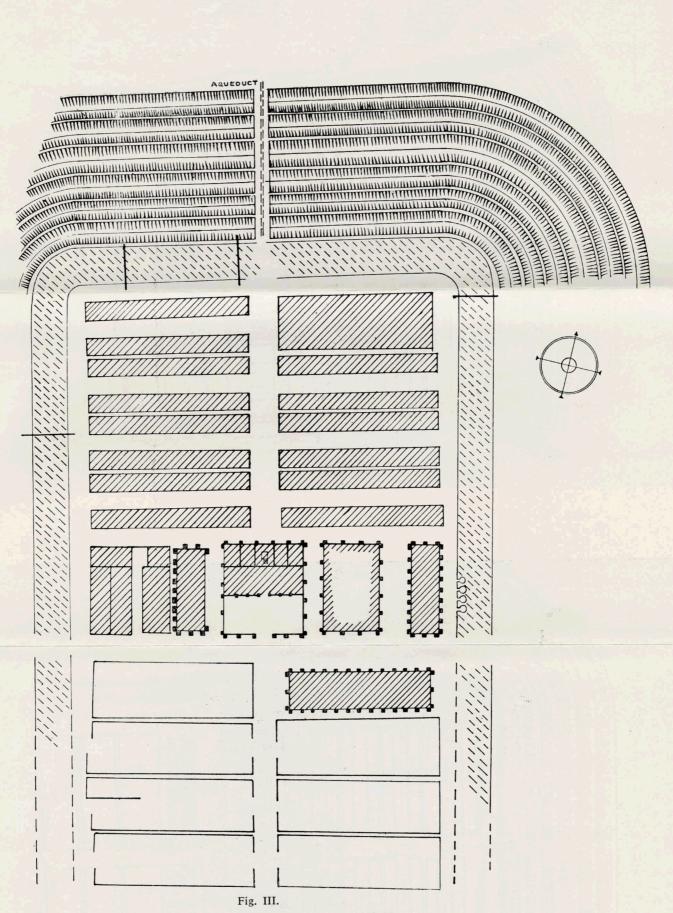


Fig. II.

The 1895 Plan, with, superimposed on it, the line of the rampart as established in 1962-3.



Birrens site plan, showing rampart-sections, 1936-7. (Block by permission of the Society of Antiquaries of Scotland)

been well ascertained; and while many division walls, as well as all the doors, windows, and other details, are wanting, the several buildings as to their outline have been traced almost to completeness, with the result that the general disposition of the station is fully displayed." (PSAS, 1896, 109). (Figs, I, II.)

Not only did James Barbour reveal in his plan what is now recognised as the standard layout of a Roman fort, with central block of administrative buildings, and barrack blocks (or stables?) in front and behind, but he even observed that the stone buildings were of at least two periods, which he named "primary" and "secondary." "Evidently the original buildings had been destroyed and razed. 'There shall not be left one stone upon another that shall not be thrown down' represents something like what appears to have happened over at least a great part of the area; and the place continued waste for a lengthened interval, until the earth accumulated and covered out of sight the underground footings, which escaped. When occupation again took place, the buildings were reared of new. A large proportion at least of the old foundations were left unsearched for and unused, and the new walls were run up, of inferior workmanship, upon the accumulated soil." (PSAS, 1896, 113-4.)

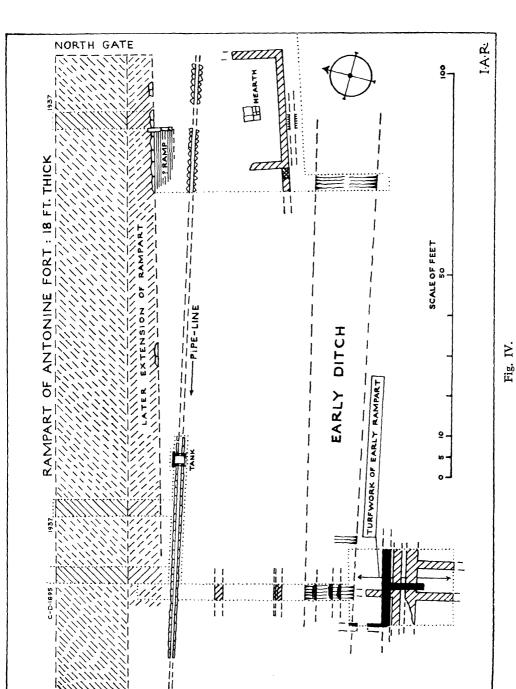
The inscribed and sculptured stones found at Birrens either previously or during the 1895 excavations were dealt with at length by Dr James Macdonald. "The evidence of the inscribed stones . . . throws almost no light on the length of time they held it (i.e. Birrens) . . . So far as we can judge from the lettering on the stones, all the more important of them belong to the second century." (PSAS, 1896, 167-8). The pottery and coins were also in agreement with a second century occupation of the fortsite.

The 1895 excavators did not of course believe they had exhausted the possibilities of the site. "But a small proportion of the ground had been opened in following

out the walls, and in our limited clearings in the interiors of a few buildings." (PSAS, 1896, 108). "If at any time excavations should be renewed, the excellent plan made by Mr Barbour will show exactly the parts that remain to the explored." (PSAS, 1896, 109).

Mr James Barbour and Dr James Macdonald gave a shorter account of the 1895 excavations in Birrens and its Antiquities (1897). One of the most memorable passages in it refers to the "annexe" on the west side of the fort, as recorded on a plan by William Roy in his Military Antiquities of the Romans in North Britain (1793). "The purpose served by this adjunct is not evident. It may, however, have been intended as a place of security for a certain number of non-combatants, whose presence contributed to the well-being of the Roman garrison. In the event of a hostile attack being made on them help was at hand." (p. 3).

In 1920, the Transactions of the Dumfriesshire Natural History and Antiquarian Society carried our knowledge of Birrens a stage further with the publication of a paper by Sir George Macdonald on The Romans in Dumfriesshire. In it Sir George discussed and confirmed the coin and pottery evidence for a second century occupation of the site, and pointed out that of the three Roman army units attested at Birrens by inscriptions-the Sixth Legion, the First Cohort Nervana Germanorum and the Second Cohort of Tungrians-the Second Cohort of Tungrians had rebuilt the fort in A.D. 158, and had probably been preceded as its garrison force by the First Cohort Nervana Germa-He also quoted the view of Mr James Curle "that among the fragments of Samian there were some to which Newstead offered no parallel. So far as he could judge, these fragments seemed to be from vessels which had been manufactured in the potteries of Eastern Gaul. and had probably been imported before the reign of Pius. That is, they belonged to the Hadrianic period." It seemed quite possible that there had been a Hadrianic occupation



Birrens. Early ditch found about 50 ft. south of north rampart, 1936-7. (Block by permission of the Society of Antiquaries of Scotland)

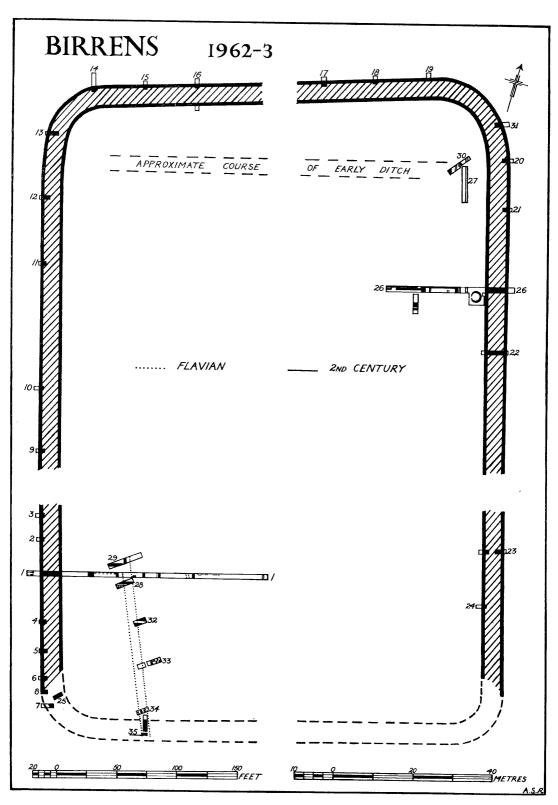
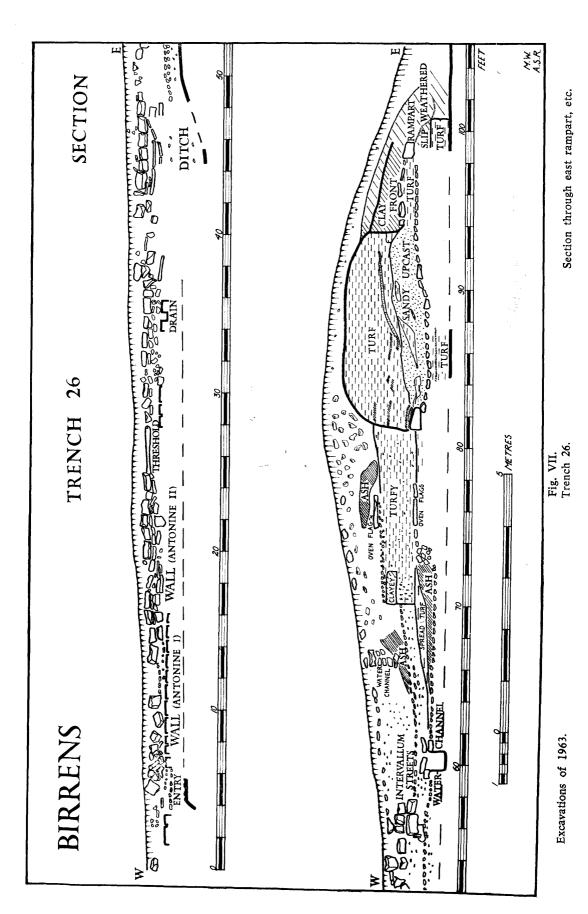


Fig. VI.

Excavations of 1962-3.

Trench plan.



of Birrens, only 8 miles north of Bowness-on-Solway, at the west end of Hadrian's Wall.

The Excavations of 1936-7

It was not until 1936 that further digging took place at Birrens, under the direction of Professor Eric Birley. Excavation was continued in 1937 by Professor Birley and Professor Ian Richmond. (PSAS, 1938, 275 ff.). One section was cut through the west rampart, two sections were cut through the north rampart, and one through the east rampart near the north-east corner. In his section through the west rampart Professor Birley noted for the first time the presence of laid turfwork, at least 11 ft. wide, under the continuous stone base of the visible rampart, and also observed that the visible rampart had been re-fronted with a new cheek set on an upper band of great stones. Three superincumbent intervallum streets behind the west rampart seemed likely to correspond with three rampart phases, the earliest represented by the laid turfwork under the stone base, the middle street being contemporary with the stone base, and the upper street being coeval with the re-fronting of the rampart.

Professor Richmond's sections, all cut in the northern extremity of the fort, found the visible rampart to be 19-20 ft. wide, but with the stone base present only under the front and rear of the rampart material. The front of the rampart had been re-furbished and a 10 ft. wide extension had been built on to the rear of the rampart, perhaps at the same time as the re-fronting had taken place. The extension partly covered one intervallum street. Another, upper, intervallum street was apparently contemporary with the extension.

There was no laid turfwork under the visible rampart in Professor Richmond's three sections, but about 50 ft. south of the visible north rampart there was discovered a filled-in ditch with spread turf on its south side. It seemed possible that this spread turf came from a ram-

part like the turf rampart whose remains were found under the continuous stone base in Professor Birley's section on the west side of the fort. (Figs. III, IV.)

Trenching in limited areas in the interior revealed at least two periods of stone buildings, and underneath them some post-holes cut into the subsoil. Professor Birley's careful examination of the pottery found in 1936-7, and previously, convinced him that besides material of Hadrianic to Antonine date, there were one or two possible Flavian potsherds, and a few fragments which might be assigned to the third and fourth centuries. With these later potsherds he associated repairs and alterations to floors and walling. Three of the Birrens inscriptions Professor Birley would also date to the third century.

In reconsidering the evidence from Birrens up to and including the excavations of 1936-7, Sir George Macdonald reiterated his conviction that its occupation had not been prolonged beyond the end of the second century. (PSAS, 1939, 254 ff.) He also gave the following summary of what he believed may have been the four phases in its history:

- "Period I, c. A.D. 80. Agricola's invasion; area of the fort unknown; timber used for some at least of the interior buildings.
- **Period II,** c. A.D. 120. Construction of Hadrian's Wall, with Birrens as an outlier; area of the fort uncertain, but smaller than at present; interior buildings of stone.
- Period III, c. A.D. 142. Construction of the Antonine Wall and reoccupation of the whole of Southern Scotland, with consequent enhancement of the importance of Birrens; fort enlarged to accommodate the First Cohort of Germans, which was milliaria equitata—that is, 1000 strong, with a mounted detachment.
- Period IV, c. A.D. 158. Revolt suppressed by Julius Verus; fort rebuilt on the same lines after a temporary abandonment, the First Cohort of Germans being relieved by the Second Cohort of Tungrians, which was likewise milliaria equitata." (p. 266).

In spite of his belief that there may have been a Hadrianic occupation at Birrens, Sir George rejected a Hadrianic inscription, with a rather suspect findspot, which had been assigned to the site by Thomas Pennant (PSAS, 1939, 255). Professor Birley has, however, recently sought to reinstate this inscription as a record of Hadrianic activity at Birrens.

Aerial Discoveries

In the last 25 years, aerial photography has added little to our knowledge of the visible fort at Birrens (which is under pasture) but greatly to our knowledge of adjacent Roman structures. In the field west of the fort, Dr St. Joseph has identified two triple-ditched enclosures, one inside the other, and neither exactly aligned with the visible fort. The outer, larger enclosure appears to be the "annexe" of Roy's plan.

In a field to the north, Dr St. Joseph has also observed a series of trenches which he has interpreted as a "mansio." To the south and east of the fort he has identified at least three temporary camps and what appears to be a small fortlet. (Journal of Roman Studies, 1951, 57 f.)

The Excavations of 1962

When excavation was once again resumed at Birrens in 1962, it was decided to cut a long trench (200 ft. long) from the hedge bounding the west side of the fort-site eastwards through the defences and across the interior as far as the central road connecting the north and south entrances, in order to try to relate the defences to their contemporary interior buildings. The trench was sited in the southern sector of the fort since the 1895 plan showed that little trenching had taken place there. (Figs. V, VI.)

The 1962 section (Trench 1) revealed first (at its west end) the inner slope of the innermost fort-ditch, and then at a distance of about 7 ft. east of it, a continuous 18 ft. wide stone base, bordered by neatly squared kerb-stones, with smaller unsquared stones between. Its appearance

immediately called to mind the stone base of the Antonine Wall (which was at least 14 ft. wide).

Over the rear 15 ft. of the Birrens stone base there was laid turf, with the lines of decayed vegetation still well preserved. Above the turf, the central part of the rampart superstructure was formed mainly of earth with some pebbles and turf.

At the front of the rampart there was a clay cheek, 4 ft. wide, set partly over laid turf above the 18 ft. wide stone base, but mainly over an upper band of great stones (unsquared) lying above the outer 3 ft. of the 18 ft. wide stone base. Between the upper band of great cobbles and the stone base there was a little laid turf.

It was clear from this section that, as Professor Birley noted in 1936, the west rampart superstructure over the 18 ft. wide stone base had been subsequently re-fronted, with a clay cheek set on an upper band of great stones. In the process of re-fronting, the earlier turf front had been cut away for the insertion of the upper band of great stones and the new clay front, but traces of the earlier rampart turf had been left clinging to its 18 ft. wide stone base.

Behind the 18 ft. wide stone base, and at a distance of 8 ft. from it, there was a closely cobbled intervallum street, at least 12 ft. wide. The 8 ft. space between street and rampart base was occupied by a spread of dark brown gravel and earth, with a very hard surface.

Immediately east of the closely cobbled intervallum street there was a beautifully constructed stone drain or eavesdrip, 8 ins. wide, edged and floored with squared stones. To the east of the eavesdrip there was part of a north-south wall, 3 ft. wide, with three courses of its outer squared facing-stones still standing. It had a clay and rubble core. It was obviously the outside wall of a building contemporary with the construction of the rampart which stood on the 18 ft. wide stone base. The floor of the building appeared to have been of hard-packed earth

and small stones, with possibly a spread of clay in places. There were signs of burning over the floor.

Over and to the east of the little eavesdrip and north-south wall, Trench 1 was packed with masonry debris, broken flooring slabs and rubble, which continued without interruption almost as far as the central road. The west edge of the road was in fact encountered at about 6 ft. from the east end of Trench 1, and partly under it there was found a stone drain almost 4 ft. deep and over 1 ft. wide, of the same fine construction as the eavesdrip and stone wall just behind the west rampart. The drain had a gravel bottom, and sides of squared stones, with five courses surviving. In it there was some Antonine pottery.

When the debris filling Trench 1 was carefully and patiently cleaned up and removed, for in the words of the 1895 excavators, walling "was not easily distinguishable from debris," there were revealed at least four other north-south walls, each 2 ft. wide, with faces rather roughly squared, and a core of small stones and earth. The return or end of a wall was also found projecting into the trench from the south side. It appeared that these four north-south walls were the cross walls of at least one long narrow building, one of whose east-west walls apparently lay just to the south of Trench 1. Two small areas opened up 2 ft. to the south of Trench 1 revealed a threshold giving access to the building in Trench I and a cobbled alley to the south of it.

The four rather rough north-south walls were clearly of a different, inferior build to the 3 ft. wide wall immediately behind the west rampart with its little eavesdrip, and to the deep stone drain lying partly under the central road. The building or buildings to which the four north-south walls belonged had stone-flagged floors, laid in some places over levelled-out debris from the building to which the 3 ft. wide wall had originally belonged. It is of course quite possible that the 3 ft. wide wall had con-

tinued in use as the outside wall of a building along with the later inferior walling.

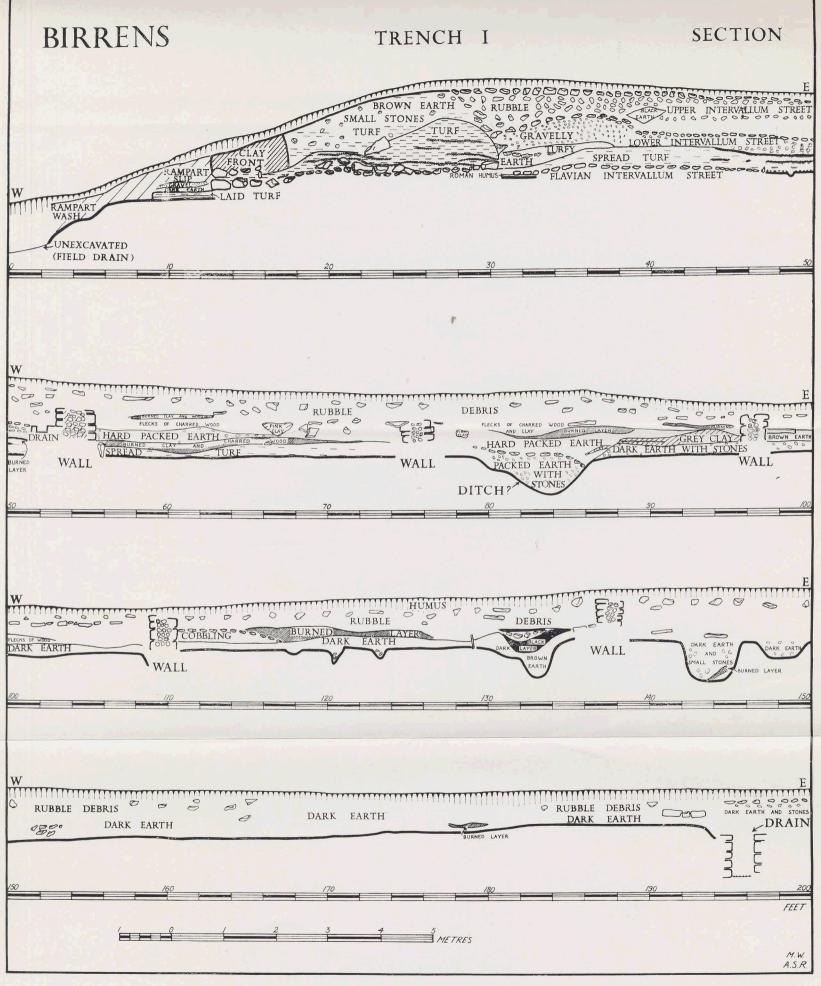
However that may be, two periods of stone building were represented in the 1962 Trench 1, just as they were recognised by the 1895 excavators. Moreover, an upper intervallum street, at least 12 ft. wide, and an apparent rubble extension to the back of the rampart (about 8 ft. wide), were found in Trench 1. These were presumably contemporary with the later of the two stone building periods (with the four rather ramshackle walls and the stone flooring slabs) and were probably also contemporary with the re-fronting of the 18 ft. wide rampart.

The pottery recovered in Trench 1 from the area of the stone building or buildings between the west rampart and the central road was all of second-century date, probably Antonine rather than Hadrianic. The latest pottery included several Samian and coarse ware vessels found smashed, but with most of their pieces lying together. These were not later than the Antonine period.

A feasible working hypothesis seemed to be that the rampart of the visible fort was constructed in the early Antonine period, with a stone base very like that of the Antonine Wall, and that to this early Antonine period belonged also the 3 ft. wide wall behind the rampart, the little eavesdrip and the great stone drain. Their fine workmanship suggested that they may have been of legionary construction.

Later in the Antonine period the rampart was refronted, a new intervallum street was laid down, and new stone buildings of less careful construction were run up. The re-building is probably to be connected with the inscribed slab set up in A.D. 158 by the Second Cohort of Tungrians.

After the remains of the stone buildings had been fully recorded, Trench 1 was cleared down to the subsoil, at least in the intervals between the north-south walls. The clearing revealed remains earlier than the two



second-century periods by now established. A little Flavian pottery, both Samian and coarse ware, was found almost on the subsoil, along with a number of pits, hollows and slots cut into the subsoil, and close behind the west rampart a row of post-holes, probably dug to hold the uprights of a timber barrack block.

West of the row of post-holes, and below the intervallum street belonging to the 18 ft. wide rampart in its original form, there was a layer of spread turf over 1 ft. thick, and below that again there was a still earlier intervallum street, about 16 ft. wide. Its very neatly laid small cobbles had been set directly on the subsoil. On the street lay a base of a hard fine red jar, possibly of Flavian date.

When traced westwards the lowest intervallum street was found to end a little way behind, and a little below the level of, the 18 ft. wide stone base of the visible rampart. The judicious lifting of some of the stones of the base revealed, below, a depth of almost 1 ft. of turf, laid directly on the subsoil. This continued under the stone base and projected for almost 4 ft. beyond its west kerb.

Clearly an early turf rampart set on the subsoil with no stone base had been demolished to make way for the 18 ft. wide second-century rampart. The spread turf of the early rampart had covered its own intervallum street. Such a sequence is very much in line with the evidence recovered by Professor Birley in 1936 in his section through the west rampart north of the entrance.

In the 1962 Trench 1 it was noted that the spread rampart turf had in fact even covered the western end of the row of post-holes cut into the subsoil. With these post-holes was associated a little Flavian pottery. Apparently the early turf rampart and the lowest intervallum street may have originated in the Flavian period.

Besides the Flavian period and the two second-century periods (probably both Antonine) apparently established, Trench 1 produced at the last moment in 1962 possible evidence for a still earlier structure. East of the row

of early post-holes (and partly under a second-century wall) there was found what appeared to be a ditch which had been deliberately filled with hard-packed earth and stones. This apparent ditch seemed to run not exactly at right angles across the trench, but rather from north-west to south-east. The possibility suggested itself that it might mark the east side of one of the two enclosures (or annexes?) in the field west of the fort-site. It was also observed that the eastern end of the row of early post-holes (that is just to the west of the apparent ditch) had been cut through some turfy-looking material, not unlike the turf of a rampart.

Since the section through the rampart in Trench 1 had shown the outer edge of the stone base to be extremely well-defined, it seemed likely that a series of short trenches cut into the outer face of the rampart on the surviving west, north and east sides might establish its exact line. Accordingly over twenty such short sections were cut.

These showed that the 18 ft. wide stone base was continuous along the west and east sides, and on parts of the north side. It was, however, only on the west side that a new clay front had been set most regularly on a hand of large stones over the outer 3-4 ft. of the 18 ft. wide stone base. In one section (Trench 5) the upper band of stones actually had incorporated in it a fragment of a quern-stone. As already noted by the 1895 excavators and by Professor Birley in 1936, the upper band of large stones was often set back a little from the outer kerb of the 18 ft. wide stone base, leaving a kind of scarcement, and there was almost always some turf clinging to the 18 ft. wide stone base below the upper stone band. In 1962, although there were noted distinct signs of a refacing of the north and west ramparts, the new front was not always supported on an upper band of great stones.

The laid turf of the early rampart was observed under the 18 ft. stone base along most of the west side of the visible fort, and in one complete rampart section cut on the east side (Trench 22), but there was no sign of it on the north side. This would be explicable if the early fort had not extended as far north as did its second-century successor. It seemed possible that its north rampart and ditch were represented by the filled-in ditch and spread turf discovered in the 1936-7 excavations about 50 ft. south of the north rampart of the second-century fort.

The Excavations of 1963

The 1963 excavations had as their aims the further examination of the apparent early ditch found in Trench 1, and an investigation of the connexions of the filled-in ditch and spread turf found in 1936-7, as well as the cutting of a long section through the east rampart and into the interior of the fort. Professor Birley had observed that stratification to a greater depth than elsewhere might be preserved behind the east rampart, so that here if anywhere evidence for any occupation of the fort-site later than the second century ought to have left its mark.

Trenching in the south-west sector of the fort established beyond doubt the existence of the apparent early ditch. A length of almost 150 ft. of the ditch was traced, from a point about 10 ft. north of Trench 1 southwards to the very edge of the southern scarp. (Fig. VI.)

The ditch was found to be 6-7 ft. wide, and roughly V-shaped, and its edges lay more than 4 ft. below the modern surface. After a little silting, the ditch had been levelled up, usually with small stones, over which there was a layer of burned clay and wood. Over that again there were parts of stone walls, or else the foundation courses, at least 2 ft. wide, of buildings. These foundation courses were formed of sandstone slabs of a distinctive appearance (the "primary" footings of the 1895 excavators). A destruction layer of burned clay marked the end of the occupation of these buildings, and contained Antonine pottery. Above were parts of walls of an in-

ferior quality, and the cobbling of contemporary lanes or alleyways. From the remains of these also there came Antonine pottery. This pottery actually included the fragments of an entire decorated Samian bowl (Drag. 37) probably by the Antonine potter Laxtucissa. The bowl had been broken in Roman times and the fragments had been gathered together and placed tidily one inside the other, as if for disposal in a rubbish receptacle.

The silting of the early ditch yielded a few potsherds including two fragments of "rustic" ware, badly worn, but of unequivocal Flavian date. These came from a section cut from west to east along the face of the southern scarp. Here the ditch had been levelled up with turf, overlaid by more courses of turf forming part of a rampart running from west to east along the edge of the present scarp.

The line of the early ditch was well inside the southwest sector of the visible fort and did not lie parallel to its western defences, but ran from north-west to southeast. Its line was therefore roughly parallel to the west side of the smaller of the two enclosures visible on air photographs in the field west of the fort-site. The stretch of early ditch on the fort-site was partly overlapped by remains of both the pre-Antonine and Antonine forts whose existence was established in 1962. In the trenching of 1963, indeed, the filled ditch was found to be covered by burned clay and wood, presumably the wreckage of timber buildings of the pre-Antonine fort, and by stone walling or foundations of two Antonine periods. enclosure to which the early ditch (with its "rustic" ware fragments) belonged seemed likely to have been an early Flavian (Agricolan?) enclosure.

No other ditch was found running parallel to the early ditch in the south-west sector of the visible fort, but it was remembered that just to the west of the ditch, in Trench 1, in 1962, turfy-looking material had been present. The east end of a row of post-holes belonging to the early

fort seemed in fact to have cut through this turfy-looking material. It may have been the remains of a rampart contemporary with the early Flavian ditch.

The presence of a turf rampart running along the face of the southern scarp came as something of a surprise. The 1895 plan shows stone buildings extending right to the edge of the scarp. The turf rampart was, however, undoubtedly present. A trench cut northwards from the edge of the scarp found laid turf preserved for a distance of at least 14 ft. and standing to a height of at least 3 ft. The width of the north, west and east ramparts was at least 18 ft.

It must be concluded that the 1895 excavators were mistaken in their (tentative) identification of their most southerly stone buildings. Probably they misinterpreted remains of cobbling, oven slabs, water-channels, etc., behind the south rampart as the debris of stone buildings. The replacement of the most southerly line of stone walling on the 1895 plan by the line of the south rampart does in fact leave a more symmetrical arrangement of the buildings in the southern sector of the fort—in pairs back to back. The most southerly area of cobbling shown on the 1895 plans must represent part of the intervallum street. (Figs. I, II.)

In the north-east sector of the visible fort, a north-south trench 30 ft. long (Trench 27) was cut on the presumed line of the filled-in ditch discovered by Professor Birley and Professor Richmond in 1936-7. Trench 27 was laid out on the line of the intervallum street behind the east rampart in the hope of locating the ditch without having to disturb stone buildings. In the event, however, Trench 27 revealed, running along the eastern 2 ft. of its width, a well-preserved water-channel with most of its cover slabs still intact. The sides were of roughly shaped stones, but there were no stones or flags on the bottom.

This water-channel was at a high level, and probably belonged to a late period in the occupation of the fort.

(Fig. VIII). Some Antonine pottery came from it, but no pottery that could be dated later than the second century.

The channel resembled the high-level aqueduct uncovered by Professor Richmond in 1937 behind the north rampart, which he thought might have contained a lead pipe or wooden conduit (PSAS, 1938, 306 ff.). A length of what must have been the same water-channel as that in Trench 27 was found by the 1895 excavators in two of their sections through the east rampart (PSAS, 1896, 100).

The length of water-channel in Trench 27 was not removed, but along the western 2 ft. of the width of the trench cobbling of at least two successive intervallum streets was taken up.

Another trench (Trench 30) was cut to the north of Trench 27 to try and locate the ditch. A ditch was in fact present, buried under fine stone walling and a neat stone drain or eavesdrip like that in Trench 1 (that is of Antonine 1 character), and under street cobbling.

From levelled-out debris above the Antonine 1 eavesdrip or drain there was recovered a small fragment of an inscribed slab bearing part of the name of the First Cohort Nervana Germanorum (Fig. X). The inscribed fragment and the accompanying debris were covered by an upper intervallum street which ran up to a stretch of the high-level water-channel exposed at the extreme east end of Trench 30.

The earliest occupation reached in Trenches 27 and 30 was represented by the ditch running some distance south of the north rampart of the visible Antonine fort. Above the ditch there was stone walling, and a little drain, of fine Antonine workmanship (the "primary" stonework of the 1895 excavators), and an intervallum street. Above this again there was debris including part of a slab of the First Cohort Nervana Germanorum, now placed stratigraphically in the Antonine 1 period, covered by a new intervallum street and a high-level water-channel, also

Antonine, and doubtless the work of the Second Cohort of Tungrians in A.D. 158.

The main section through the east rampart was cut about 150 ft. north of the east entrance (Trench 26). It was 105 ft. long, extending from just outside the rampart westwards into the fort. The visible rampart had been set on a continuous 18 ft. wide stone base, similar to that on the west side. The superstructure was made up of brown sandy material (probably upcast from the digging of a ditch) and laid turf (Fig. VII).

This rampart had later been re-fronted with a new clay face resting on an upper stone base over 5 ft. wide. Surprisingly, the upper stone base was not made up solely of rough, unsquared stones, but had a neat outer row of squared kerb-stones. The source of these kerb-stones became evident when the most easterly stones of the lower base were uncovered. The outermost surviving stones were small cobbles, bereft of their original border of squared kerb-stones. These must have been dislodged when the original face of the rampart was cut down to make way for the new front, and must have been re-laid to make a neat kerb for the upper base. This actually lay almost a foot above the continuous 18 ft. wide base.

As Professor Richmond observed in his section cut through the east rampart near the north-east corner "weathering had destroyed the original face of the front cheek, (but) the profile of the rearward cheek had been perfectly preserved by the addition of a mass of mixed earth, adding at least 10 ft. to the back of the rampart." (PSAS, 1938, 302.)

West of this, in Trench 26, there was a very neatly laid intervallum street, and still further west a beautifully built water-channel, over 1 ft. wide, with a great cover-slab still in position. Still further west again there were two small drains or eavesdrips, exactly like the Antonine 1 eavesdrip in Trench 1, and west of that again, a $2\frac{1}{2}$ ft. wide foundation course of sandstone slabs (the

"primary" footings of 1895 again). Trench 26 was in fact running along the outer (north) wall of an Antonine labuilding from its north-east corner westwards to an entrance at about 4-7 ft. east of the west end of the trench. The flooring of this building was apparently of small cobbles. Its south wall was found in Trench 26a, at a distance of about 10 ft. from its north wall in Trench 26.

Over the foundation course of sandstone slabs in Trench 26 there was much masonry debris and earth, above which had been laid a secondary wall of inferior workmanship (just as described by James Barbour; above, p. 137). The secondary walling projected about 1 ft. from the north side of Trench 26, and since the building to which it belonged had approached closer to the east rampart than its predecessor, its eastern end sealed over the two little Antonine 1 drains.

A threshold slab marked one entrance in the north side of the secondary building, and many broken flooring slabs testified to heavy wear and hard usage, possibly through the trampling of many hooves (as Sir George Macdonald suggested, in *PSAS*, 1939, 265). The south wall of the secondary building was found in Trench 26a, partly overlapping the earlier foundation of sandstone slabs. The upper building was therefore only 16 ft. wide, exactly as the 1895 excavators said (*PSAS*, 1896, 113). It may have been, as they also said, as much as 136 ft. long, but only 58 ft. of its length was uncovered in Trench 26.

In Trench 26a the south wall of this building was separated by a space only 2 ft. wide from the north wall of the next long building to the south. In the 2 ft. wide space there were many potsherds, all Antonine. All the pottery from the area of the two superimposed stone buildings in Trench 26 was Antonine.

East of the secondary building there was an upper intervallum street and the same high-level water-channel as was found in Trench 27. From the stretch of water-channel in Trench 26 a smaller channel had led water

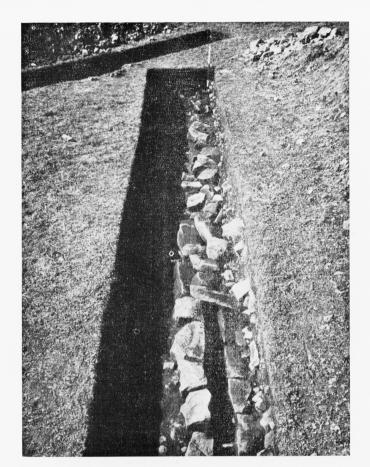


Fig. VIII.

Water-channel
behind
east rampart.
(Trench 27)

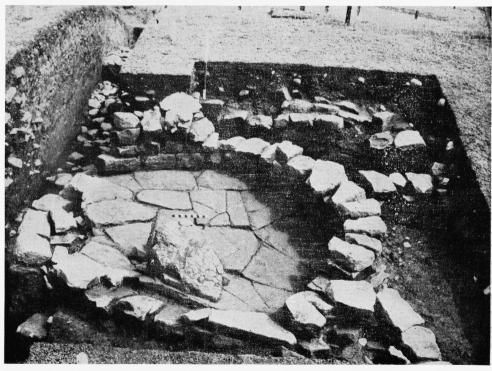


Fig. IX.

Oven behind east rampart (Trench 26).

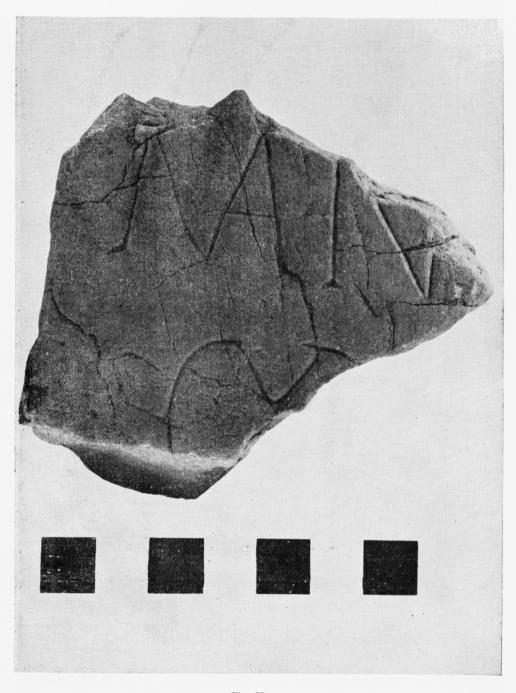


Fig. X.

Fragment of inscribed slab, with part of name of the First Cohort Nervana Germanorum (Scale in inches).

westwards into the secondary stone building. It was probably a stable.

At the end of the 1963 season some stones of the 18 ft. wide stone base in Trench 26 were taken up. Below there were layers of turf to a depth of over 1 ft. They must represent the remains of an early turf rampart similar to that found in Trench 22, and along the west side of the fort. The ruins of an early timber building were recognised in Trench 26a under the two superimposed Antonine stone buildings. It may even be that remains of an early oven and of an early intervallum street survived behind the 18 ft. wide stone base in Trench 26.

Since the early turf rampart had not appeared under the Antonine rampart on the north side of the fort, the possibility had suggested itself that the north rampart and ditch of the early fort were represented by the filled-in ditch and spread turf observed in the 1936-7 excavations about 50 ft. south of the visible north rampart. The 1936-7 ditch may have continued straight on to round the north-east corner of an early fort whose eastern turf rampart partly survived under the Antonine stone base in Trench 26.

The most complete structure uncovered in 1963 was a circular cooking oven, rather larger than the battery of four ovens (or corn-drying kilns?) found inside the east rampart opposite a granary in 1895. (PSAS, 1896, 101.) Part of the 1963 oven appeared in Trench 26, and an area was opened up to reveal the whole of it. It was over 8 ft. across, with a floor of neatly fitted flagstones, stone walls still standing about 2 ft. high, and part of the collapsed clay dome still lying on the floor (Fig. IX). The oven lay just under the modern turf, and was so well-preserved that it must surely have been one of the latest Roman structures in use on the fort-site. The pottery from it was all Samian and coarse ware (mainly black-burnished A) of the second half of the second century A.D. Neither

the 1962 nor the 1963 season produced any evidence for an occupation later than the second century.

Interim Summary of Results

Since the Training School at Birrens has three more seasons to run, a final account of the results must await their completion. Meanwhile, however, it may be said that four periods of occupation seem so far to have been established, as follows:

- Early Flavian (Agricolan?) enclosure, lying mainly in the field west of the fort-site, but with its east ditch (and rampart?) underlying the west side of the visible fort.
- 2. Early (Flavian?) fort, with a turf rampart, but no stone base, having its west, south and east sides on the same line as the ramparts of the visible fort, but with its north rampart lying some distance south of the visible north rampart.
- 3. Antonine 1 fort with a rampart set on a stone base, usually 18 ft. wide, and interior stone buildings, etc., of fine construction, possibly the work of the Sixth Legion. Garrisoned by the First Cohort Nervana Germanorum. The outer enclosure in the west field may have been an annexe to this fort.
- 4. Antonine 11 fort, re-built in A.D. 158 by the new garrison, the Second Cohort of Tungrians. Rampart re-faced and new stone buildings of inferior workmanship reared on the debris of the earlier buildings.

The problem of whether or not there was an occupation of Birrens later than the second century still remains outstanding. An exhaustive re-scrutiny of all the pottery found on the site, and excavation in the west field and on the adjacent Roman structures may throw light on this problem. Meanwhile, the exploration of certain limited areas on the fort-site itself may modify or amplify still further our knowledge of its history and occupation life.

It is a pleasure to record, at the end of the second season of the Training School, that the results here recorded owe much to the indispensable assistance and co-operation provided by many friends in Dumfriesshire, from Mr and Mrs James Mackie, the owners of the fort-

site, by whose kind permission excavation took place, to the President and other members of the Dumfriesshire and Galloway Natural History and Antiquarian Society, whose keen interest in the present work at Birrens is so fitting a sequel to the pioneering venture of James Barbour and his colleagues of 70 years ago.

ARTICLE 14

St. Ninian and Candida Casa: Literary Evidence from Ireland

By P. A. WILSON

In recent years a number of important contributions have been made to the elucidation of the Ninianic problem, by, for example, Levison, Anderson, Dr Douglas Simpson, Dr Ralegh Radford, Mrs Chadwick, Mr Wade-Evans, Père Grosjean, Mr MacQueen, and Mrs MacQueen.¹ Indeed it may be said that the evidence, so far as it derives from Scotland and England, has now been sifted with considerable thoroughness. The Irish evidence, on the other hand, though regarded as important by earlier writers, has not yet been re-examined as a source of possible information relating to Ninian and Candida Casa.² In this paper an attempt is made to fill that gap.

I will briefly review the nature of the problem. Our earliest evidence for St. Ninian and his work is found in a famous passage in Bede. I quote, with some abbreviation, Mr MacQueen's translation:³

"In the five hundred and sixty-fifth year of Our Lord's incarnation . . . there came into Britain from Ireland a priest

¹ See W. Levison in Antiquity, XIV. (1940), 230 ff.; A. O. Anderson: Ninian and the Southern Picts (1948); Dr W. Douglas Simpson: Celtic Church in Scotland (1935), St Ninian and the Origins of the Christian Church in Scotland (1940), and also in Transactions of the Plumfriesshire and Galtoway Natural History and Antiquarian Society (hereinafter abbreviated D. & G. Trans.), XXVII. (1950), 155 ff.; Dr C. A. Ralegh Radford in D. & G. Trans. XXVII. (1950), 85 ff., XXVIII. (1951), 96 ff. and XXXIV. (1957), 131 ff.; Mrs N. K. Chadwick in D. & G. Trans., XXVII. (1950), 9 ff.; Mr A. W. WadeEvans in D. & G. Trans., XXVIII. (1951), 79 ff.; Prõressor J. D. Mackie in D. & G. Trans., XXXII. (1953), 17 ff.; Père P. Grosjean in Analecta Bollandiana, 1.XXVI. (1958), 354 ff.; Mr John MacQueen: St Nynia (1961), 21 ff.
2 But see Mr MacQueen's recent article in Innes Review XIII. (1962)

² But see Mr MacQueen's recent article in Innes Review, XIII. (1962), 115 ff.

⁵ St Nynia (1961), 1; for an interesting recent study of Bede's Leclesiastical History as church propaganda, see Margaret Pepperdene in Celtica, IV. (1958), 253 ff.

and abbot . . . by name Columba, to preach the word of God to the provinces of the northern Picts, that is to say, to those which are separated from their southern regions by steep and rugged mountain ridges. For these southern Picts who dwell on this side of the same mountains had long before, as the story goes [ut perhibent], foresaken the error of idolatory and received the faith of truth when the word was preached to them by Nynia, a most reverend bishop and holy man of the nation of the Britons, who had been regularly instructed at Rome in the faith and mystery of the truth; whose episcopal see, distinguished by the name and church of St. Martin the bishop [cujus sedem episcopatus, sancti Martini episcopi nomine et ecclesia insignem], where he himself with many other saints rests in the body, the English nation (church?) has just now [jam nunc] begun to govern. The place, which belongs to the province of the Bernicians, is called in the vernacular At the White House, because he there built a church of stone in a manner to which the Britons were not accustomed."

This passage was on Bede's own admission written long after the events referred to. It seems to have been based, in part at least, on hearsay (ut perhibent). It has all the appearance of having been inserted in the text at a late stage of revision, like the more celebrated parenthetic passage dealing with the Angles, Jutes and Saxons.

Our next authority is the eighth century poem Miracula Ninie Episcopi.⁴ This cannot be said to add much by way of confirmation of Bede's account; but it gives us three spellings of the saint's name in the nominative case, Ninia, Niniau and Nyniau, whereas Bede gives only the ablative Ninia. Finally we have the twelfth century Vita Niniani of Ailred of Rievaulx,⁵ who tells us that the saint, on his way back from Rome, visited St. Martin at Tours, which would supply an approximate date for his mission, say 400 A.D., if it could be believed. Some modern scholars, following Levison, have pronounced such a visit unthinkable in face of the silence on such an important point alike of Bede and of the Miracula. Ailred's life is important in two other respects. It is our only

 ⁴ D. & G. Trans., XXXVIII (1961), 21 ff.
 ⁵ Transcribed and edited with Eng. trans. by A. P. Forbes in Historians of Scotland. V. (1874).

authority for the belief, since generally accepted, that Ninian's foundation was a famous monastic school; it is the earliest text in which we find the Latin spelling *Ninianus*, from whence derives the now standard English form of the name, *Ninian*.

While the written authorities tell us tantalizingly little about the saint and his mission, the success of the mission was generally thought, until recent years, to be amply attested by place-name evidence throughout the provinces of the Picts lying to the south and east of the Highland mountains from the Firth of Forth to the Shetlands. At the same time the fame of the monastic school founded by him was thought to be attested by numerous references in Irish hagiographical literature.

Modern scholarship, unfortunately, has shown the place-name evidence to be suspect. Watson has pointed out that "in the numerous commemorations of Ninian his name never appears in its native form; what appears is either the latinized form or a Gaelic derived therefrom through Scots vernacular." Whatever may have been the British form of the name, it certainly had no final n. "All this," Watson concludes, "points to a tradition broken and subsequently revived; and I have already suggested that the revival of the Ninian cult took place in the twelfth century, and that it was then revived for the purpose of lending a sanction in the eyes of the people to the changes introduced by David."

This conclusion has been vigorously assailed by the traditionalists, notably Dr Simpson. But it has not been seriously shaken, except perhaps in the matter of dating.

⁶ W. J. Watson: History of the Celtic Place-Names of Scotland (1926), 295 and 295; see also p. 170 on the name Killintringan. For a more recent discussion of the stages whereby Ninian became Ringan, &c., see Eric P. Hamp in Celtica, III. (1956), 290 ff. For a lucid and succinct statement of Watson's views on the Ninianic problem generally, see his "Notes on St Ninian" in the Evangelical Quarterly, V. (1933), 21 ff.

V. (1933), 21 ff.

7 W. D. Simpson. On certain Saints and Professor Watson (1928), 6 ff., and Celtic Church in Sectland (1935), 52 ff

Père Grosjean would, I think, date the beginning of the revival to the eighth century rather than the twelfth.8

The doubts cast by Watson upon the place-name evidence—and a fortiori the even graver doubts regarding Rede's testimony which seem to be entertained by Père Grosjean—make it all the more important to re-examine the Irish evidence to see if we can find there some corroboration of the traditional story. Before proceeding to our re-examination, however, it will be worth while to list the questions to which we should like to find an answer. I think we can distinguish three:

- (1) Do the Irish writers report any knowledge of a British saint who could be identified with Bede's Ninian?
- (2) Do these writers report any knowledge of an ecclesiastical establishment in south-western Scotland which could be identified with the Candida Casa of Bede and Ailred? If so, is it in some way "distinguished by the name and church of St. Martin the bishop"?
- (3) If the Irish notices, or some of them, appear on examination to relate to some other foundation which has been wrongly identified with Candida Casa, where was this other foundation?

Our main concern is, of course, with the first and second questions. But the third is relevant because of its bearing on the general credibility of the Irish evidence.

Skene was the first modern British writer to refer to the Irish evidence in its bearing on the Ninianic problem. He gives a list of Irish saints who are reported to have received their early training at a monastery in Britain referred to by a variety of names—Alba, Candida, Magnum Monasterium, Rosnat—all of which he equates with Ninian's foundation. The saints listed include some of the most famous names in the early Irish monastic church of the sixth century: St. Enda of Aran (obit not recorded, but said to have been tutor to St. Finnian of Clonard, who

⁸ Analecta Bollandiana, LXXVI. (1958), 361. 9 W. F. Skene: Celtic Scotland, II. (1887), 46 ff.

died of the great mortality in 549), St. Eugene of Ardstraw (d. 570), St. Finnian of Moville (d. 579), and St. Tigernach of Ciones (d. 549/50). St. Carbery of Coleraine (d. 560) is another, not mentioned by Skene. Skene also cites a curious legend which seems to connect St. Cairnech of Dulane (fl. 535) with a certain "House of Martin"; and finally he calls attention to the preface to an Irish hymn which records that "Mugint made this hymn in Futerna," during the time when the youthful Finnian of Moville was studying there.

When judged by the more sophisticated criteria of today, Skene's paragraphs immediately arouse suspicion. Futerna is an Irish rendering of the Anglian name of Whithorn, which cannot have been in use before the last quarter of the seventh century (a hundred years after the death of Finnian of Moville), and may be as late as the time of Bede, if the ecclesiastical "take-over" of Candida Casa by the Anglian church was more or less contemporary with the writing of the Ecclesiastical History. enjoyed a great reputation for wisdom in Ireland. can we be sure that the editor of the preface in the form in which we now have it has not substituted the place. name Futerna in this context for some other which he did not recognize, simply in order to bring Finnian of Moville and his companions into association with an institution rendered famous by Bede?

For an example of the extravagances into which Irish hagiographers were led in their eagerness to enhance the prestige of the saints whose lives they wrote, we need look no further than the lost Irish life of Ninian himself. Nothing is known of this life other than what we are told by archbishop Ussher in his Antiquitates, originally published in 1639. From Ussher we learn that in this work Ninian was made to end his life in Ireland, having been identified with a genuine Irish bishop whose name bears a superficial resemblance to that of Ninian with the hypocoristic mo (corresponding to the English "my" in 10 James Ussher: Whole Works, ed. C. R. Elrington (1847-64), VI., 209.

"my dear" or "my lord") prefixed. The name of the Irish bishop is generally spelt *Moenenn*; he was bishop of *Cluin Conaire*, now Cloncurry in the county Kildare. That the identification is impossible has been shown by Watson; the kernel of his argument being that *Moenenn*, genitive of *Moenu*, is accented on the first syllable, whereas if it were a hypocoristic combination it would be accented on the second.¹¹

What of the other authorities mentioned by Skene? These consist of the lives of Irish saints, together with the legend of St. Cairnech which falls into rather a different class. We will take the legend of St. Cairnech first. 12 In this text, an interpolation in the Irish version of Nennius' Historia Brittonum, a certain Sarran, king of Britain and father of Cairnech, is said to have died in the "house of Martin." There is nothing to indicate where the "house of Martin" was. By both Skene and Watson it has been identified with Candida Casa: but the identification is without corroboration. The text has never been subjected to a thorough critical examination such as might afford a clue to its date or provenance, and Sarran himself has never been identified. It cannot therefore, I suggest, in the present state of knowledge, be produced as evidence that Candida Casa was known in Ireland, independently of Bede's testimony, as the "house of Martin." There is no other Irish reference to a "house of Martin" which could relate to Candida Casa.

There remain to be considered the saint's lives. We here encounter the difficulty that the lives in question are all late and unreliable; it is probable that in the form in which they have come down to us none is earlier than the twelfth century. Are we then left to conclude that there is nothing in Irish literature before the time of Bede and

¹¹ Celtic Place-Names (1926), 284 and 518.
12 See W. F. Skene: Chronicles of the Picts, &c., Rolls Series (1867), 52 ff., and Nennius: Leabhar Breatnach, ed. J. H. Todd (1848), 179 ff.; for the Irish text, see Nennius: Lebor Bretnach, ed. A. G. van Hamel (1932), 40.

Ailred which might be construed as a reference to Ninian or Candida Casa? Not quite. Skene cites the life of St. Moninna, an abbess of the early sixth century (d. 517/19), who is said to have sent one of her monastic family, named Brignat, to be trained in the rules of monastic life at Rosnat in Britain.

Of this saint, whose original name was Darerca, there exist two different lives, one attributed to a certain Conchubranus and printed by Signor Mario Esposito,13 and the other, not attributed to any named author, and printed by de Smedt and de Bäcker from the Codex Salmanticensis.14 The relationship between the two has been carefully analysed by Dr Esposito.¹⁵ For our purpose all we need note is that the Salamanca life is nearer to the original, to which Conchubranus' life has added much extraneous material, including legends relating to a saint (almost certainly fabulous) supposed to have founded sundry churches in the south of Scotland, and others relating to an English saint named Modwenna and associated with Burton-on-Trent. Skene, Watson, and even Mr Mac-Queen, 16 seem to have been familiar only with Conchubranus, and to have found in the later "extraneous matter" evidence pointing to the identity of Rosnat and Candida Casa.

The facts, as Dr Esposito has clearly shown, are that both lives as they have come down to us are very late, but are based on an earlier document which embodies material put together in the saint's own monastery of Killeevy, at the foot of Slieve Gullion in the county Armagh, and that this earlier material, which includes the notice about Brignat and Rosnat, almost certainly dates from the first quarter of the 7th century. But in this earlier material there is no other reference to Britain save this, and there

¹³ Proceedings of the Royal Irish Academy, XXVIII. (1910), Sect. C, 202 ff.

¹⁴ C. de Smedt and J. de Bäcker: Acta Sanctorum Hiberniae ex Codice Salmantwensi (1888), cols. 165 ff.

¹⁵ English Historical Review, XXXV. (1920), 71 ff. 16 Iunes Review, XIII. (1962), 124 note.

is nothing whatever to connect Rosnat with St. Ninian's foundation at Candida Casa; all we are told about its location is that it was in Britain.

Let us pause at this point to consider exactly how much has been established. A writer of the first quarter of the seventh century, writing of events which occurred about a hundred years earlier, referred to a monastery in Britain which had been at that time famous as a centre of monastic training under the name of Rosnat, and not under any other name. Later writers, as we shall see, equated the place with Candida Casa, while Watson has argued that the name Rosnat, which he says is a diminutive of ross and signifies a "little cape," is in his opinion appropriate to the topography of Candida Casa. But whatever may be thought of this identification on other grounds, it must be stressed that our one and only early dateable authority lends it no support at all.

Before looking at the other lives, let us look again at the preface to the hymn of Mugint.¹⁸ In the form in which we have it, it is certainly late. But if we remove the placename Futerna, of which we have already spoken, and the personal name Mugint, of which more will be said later, we are left with certain Pictish personal names which have been examined by Mr MacQueen and look genuine, and a group of Irish personal names all but one of which is that of a recognizable individual whose floruit in sixth century Ireland is either known or can be reasonably inferred. The story, in brief, is that Finnian, Irish Finnen, afterwards of Moville (on Strangford Lough in the county Down), who died in 579, has gone to Mugint for instruction, along with others, two of whom, Rioc and Talmach, are mentioned The British (supposedly Pictish) princess by name. Drusticc, also being taught by Mugint, asks Finnian to

¹⁷ Celtic Place-Names (1926) 159. The etymology here proposed is indeed surprising, for it is Goedelic, not Brythonic; yet no one has been more insistent than Watson, as against some earlier writers, that the inhabitants of south-western Sootland, before the coming of the Angles, spoke a Brythonic, not a Goedelic, language.

18 See John MacQueen. St Nynia (1961), 36.

procure Rioc for her in marriage. Finnian sends Talmach to her disguised as Rioc, and by him she bears a son called Lonan. When Mugint hears of Finnian's part in the affair he is greatly enraged and plots his destruction, but by Divine intervention the plot is foiled.

While nothing further is known of Talmach, Rioc can be identified with Rioc or Mo-rioc of Inchbofin, an island in Lough Ree in the county Westmeath. He is com. memorated in the Martyrologies of Tallaght and Gorman on August 1, and was a contemporary of Aedh mac Bricc, of Killare, co. Westmeath, whose death is recorded in 589. Lonan, son of Talmach, is identified with Lonan of Treoit, now Trevet, co. Meath, whose obit is not recorded, but who is commemorated in the Martyrology of Gorman on November 1. On these identifications, which seem to be trustworthy, see Todd¹⁹ who considers the story to be authentic and true in its essentials. But we have still to locate the scene of the events recorded. All we can say as yet is that the Pictish personal names discussed by Mr MacQueen, and the copyist's Futerna, taken in conjunction, tell in favour of Candida Casa: but the identification must be regarded as provisional until some sort of corroboration is forthcoming.

To facilitate consideration of the saints' lives, to which we now turn, I have tabulated on the next page all the references, though not all the variant spellings, in the lives of Irish saints which might be taken to refer to Candida Casa, together with the reference in the preface to the hymn of Mugint, and (for purposes of comparison) a reference from Ricemarch' life of St. David of Menevia to a monastery in Wales which has no known connexion with Candida Casa.²⁰

J. H. Todd: Leabhar Invinn (1855), 108 ff.
 A number of these lives have been printed more than once. The most convenient texts to consult are as follows: for the preface to the hymn of Mugint, John MacQueen: St Nynia (1961), 36, with Eng. trans.; for St Fridian of Lucca, John Colgan: Acta Sanctorum Hiberniae (Louvain, 1645), 633 ff.; for St Winnin of Kilwinning, [Continued foot of next page

Vita, or other source	Name of "magister"	Name of monastery
Mugint	Mugint	Futerna
S. Fridian of Lucca	Mugentius	Candida
S. Winnin of Kilwinning	Nennio	Magnum monasterium
S. Enda of Aran, cap. vi.	Maucenus	Rosnat
do., cap. xx.	Monend	Rosnat
S. Eugene	Nennyo, qui Maucennus	
of Ardstraw, cap. 1	dicitur	Rostat
do., cap, 3	prefatus Maucennius	
S. Tigernach		
of Clones	Monennus	Rosnat or Alba
S. David of	Maucannus	(in Ricemarch'
Menevia		time) Monastery of the Deposit

The spellings in the above table are those which the modern editors of the several texts have printed as the "best." In the case of the life of S. Fridian of Lucca the spellings are those of Colgan. Adjectival forms have been replaced by nouns, and oblique cases by the nominative.

The references, omitting that last mentioned, fall into three classes. The first comprises the preface to the hymn of Mugint and the life of St. Fridian of Lucca. The placenames *Futerna* and *Candida*, almost certainly dating from the time of Bede or later, are clearly intended by the final

Carl Horstman: Nova Legenda Angliae (1901), I., 444 ff.; for St Enda of Aran, Charles Plummer Vitae Sanctorum Hiberniae (1910), II., 60 ff., for St Eugene of Ardstraw, C. de Smedt and J. de Bäcker: Acta Sanctorum Hiberniae ex Codice Salmanticensi (1888), cols. 915 ff.; for St Tigernach of Clones. Plummer: op. cit., II., 262 ff.; for St David of Menevia, A. W. Wade-Evans: Life of St David (1923), Eng. trans. with copious notes, and Vitae Sanctorum Britanniae (1944), 150 ff.. Latin text. For fuller bibliographical detail reference should be made to James F. Kenney; Sources for the Early History of Ireland (1929).

editor of both these texts to refer unambiguously to the place known to Bede's contemporaries as *Hwiterne* and *Candida Casa*. The second class comprises only the life of the saint generally believed to be St. Finnian of Moville, but here referred to as St. Winnin of Kilwinning. This refers unambiguously to a monastery whose name, *Magnum Monasterium*, is not found in any other life. The third class comprises the remainder, in all of which we find the place-name *Rosnat* (or some variant thereof), though in one instance *Rosnat* is also known as *Alba*; so there is an element of ambiguity here. There is also in two instances in this class ambiguity as to the personal name of the "magister" who presided over the monastery.

The point has already been made that in the only early reference to Rosnat there was nothing to show in what part of Britain it was located, and nothing to suggest that it was known by any alternative name besides the name Rosnat. This seems to me strong prima facie evidence that the Rosnat was not Candida Casa, and that it was not until long after the seventh century that attempts were made to equate the two. We will therefore leave the Rosnat group until the last.

We may begin with St. Fridian of Lucca. Skene, following Colgan, seems to have taken it for granted that St. Fridian of Lucca and the subject of the life of St. Winnin of Kilwinning were one and the same person, and were both to be identified with St. Finnian of Moville. But the two lives have practically nothing in common; so we will consider them separately.

The identification of St. Fridian of Lucca with St. Finnian of Moville is now generally regarded as impossible. Nevertheless the life of the former, as it has come down to us, seems to embody material taken from a life of the latter. We will consider how this is likely to have come about. Colgan has shown that the life as we have it must be later than 1170 because it refers to an invasion

21 See Kenney: op. cit., 184 ff. and 390 ff. See also John Hennig in Medreval Studies, XIII. (1951), 236 ff.

of Ireland by a king of England; but since it is derived. in one version at least, from the saint's own church at Lucca, it probably incorporates some material dating from rearer the saint's own time. It may be conjectured that this earlier material would have related in the main to the saint's life and miracles after he came to Italy; there would have been little about his early life beyond perhaps the statements that he was "sprung from the Hillernian island of Scotia" (no twelfth century writer would have applied the name Scotia to Ireland), and that he took the monastic vow in the monastery of Moville. This is the only reference to Moville in the life, and since the saint died in about 588, which would make him a younger contemporary of St. Finnian, the fact may well be as stated. It need occasion no surprise that when the earlier material was first put together in Lucca so little was known about the saint's early life. He must have settled in Italy about a generation earlier than his more illustrious compatriot. Columbanus. Jonas' life of Columbanus, written soon after his death in his own monastery of Bobbio in the Appennines, is very sparing of detail about the saint's early life in Ireland. In the case of St. Fridian, however, unlike that of St. Columbanus, it was evidently felt in a later and more antiquarian age that the omission should be remedied, and the life was accordingly embellished with material drawn from the legends of the saint who had made Moville famous.

The new antiquarian material which, on this hypothesis, was now added to the life for the first time contains only one item that is of interest to us in the present context. This is a report that the saint studied under Mugentius at Candida, and while there incurred, like Finnian in the preface to the hymn of Mugint, the enmity of his master, though for reasons different from those given in the Finnian story. In the latter Mugint holds Finnian responsible for the improper liaison between Talmach and the princess Drustice, of which Lonan was the offspring,

and lays a plot against Finnian, which, however, recoils upon his own head. In the life of St. Fridian, Mugentius' enmity is attributed to jealousy arising from the fact of Fridian's lectures being more popular than those of his master. It may be supposed that the antiquarian editor lifted the Mugint story, either from the preface to the hymn as we have it, or from a source common to both, but adapted it for his Italian audience by substituting a new and less scandalous account of the origin of Mugint's quarrel with his pupil.

If an explanation, along these general lines, of the crigin of the Irish material (or the bulk of it) incorporated in the life of St. Fridian is acceptable, one conclusion follows at once which is of importance for our inquiry. The life adds precisely nothing of evidential value regarding Ninian's foundation of Candida Casas to what we have already derived from the preface to the hymn of Mugint; and the latter may well be the nearer of the two to the original version of the story.

We will now turn to the life which I designate, to avoid ambiguity, as the life of St. Winnin of Kilwinning. This is the first of Skene's lives of St. Finnian of Moville. All the known versions of the life of St. Fridian of Lucca (Skene's second life) are of continental provenance. provenance of the life we are about to consider cannot be determined. Its immediate provenance is certainly not Irish; nor is there any surviving life of Irish provenance of St. Finnian of Moville, notwithstanding his great fame and celebrity among the founders of the Irish monastic The life as we have it is one of a collection assembled in the fourteenth century by the monk John of Tynemouth who travelled widely in Great Britain, but not in Ireland, collecting and copying manuscripts. His collection became the property of St. Albans Abbey. In 1516 the saints' lives in the collection were printed, from a text edited in the previous century by John Capgrave, and Capgrave's text was printed again in 1901.22

²² See Carl Horstman: Nova Legenda Angliae (1901), I., 444 ff.

The life purports to be the life of the most reverend bishop Finan, who is called in Welsh Winnin. The use of the term "Welsh" to denote the language of the Britons is very late, 23 except in an English-speaking milieu. Kenney formed the opinion that it was in Wales that John of Tynemouth found the life, but on what grounds he does not say. I suggest that the possibility cannot be excluded that the life, in more or less its present form, came from southern Scotland, in fact from Kilwinning.

Another late feature is the use of the term Scotia to denote Scotland; a life of St. Finnian of Moville, written in Ireland anywhere near his own time, would have referred to northern Britain as Alba, or just simply Brittania. But while it contains these obviously late features, it abounds in Irish topographical and historical allusions every one of which is reasonably compatible with what is known or believed from other sources regarding St. Finnian of Moville, d. 579. Yet Moville itself is nowhere mentioned. The saint is said to have been buried at Kilwinning in Ayrshire which takes its name from him. thus flatly contradicting our only surviving Irish authority on the point; the life of St. Comgall of Bangor states explicitly, though parenthetically, that St. Finnian's remains lay in his own monastery at Moville,24 and these two famous establishments were distant not more than five miles from one another. St. Winnin of Kilwinning is commemorated in the Scottish calendars on January 21. St. Finnian of Moville is commemorated in Irish calendars on two dates, February 11 and September 10. This diserepancy in feast days certainly tells against identification; but Capgrave whose arrangement was that of the calendar gave the life on September 10,25 which tells against the suggestion that John of Tynemouth found the life at Kilwinning.

²³ Ricemarch, writing about 1100 in what is now St David's, refers to the "Welsh" of his day as Brittones; see A. W. Wade-Evans: Vitae Sanctorum Britanniae (1944), 155.

²⁴ Charles Plummer: Vitae Sanctorum Hiberniae (1910), II., 13 25 See Horstman: op. cit., I., xiv.

The strongest ground for thinking that John of Tynemouth's life relates, or originally related, to the saint of Moville is that the saint's parentage and tribal affiliations as given by him are identical with those assigned to the Moville saint by Aengus the Culdee in the Genealogies of the saints in the Book of Lecan.26 Other reasons for believing that the life, though late in the form in which we have it, incorporates earlier materials and may be an authentic record of incidents in the life of St. Finnian of Moville, are the names of the ecclesiastics responsible for deciding upon his early training, namely Colman of Dromore, and Coelan (otherwise Caelan or Mochay) of Nendrum, and the names of certain princes with whom he is brought into contact after his return from Britain to Ireland, notably Tuathal Maelgarbh, king of Tara, c. 535-544, and his successor Dermot, son of Carvell, king of Tara, c. 544-565/70. He is also brought into contact with a certain Damenus rex, who looks like the Daimine, son of Cairpre Daim Argait, whose death is recorded in the Annals of Ulster in 565.

There is a brief reference to the Drusticc episode, one element of which at least is presented in a form that may well be original, though carefully disguised by subsequent editors in the other sources. When we read in the preface to the hymn of Mugint that Finnian sends Talmach to the princess disguised as Rioc, we are at a loss to think of any motive for this subterfuge. In the life now before us the amorous thoughts of the daughter of the king of Britain -her name is not mentioned-are directed towards Finnian himself, which would explain why he should be tempted to send one of his fellow pupils to her in disguise. and would also explain why Mugint's anger should have been directed against Finnian rather than any of the others. The Kilwinning life knows nothing of the later part of the story, and the names of Mugint, Rioc, Talmach and Lonan are not mentioned; the lady, after making improper

²⁶ See J. H. Todd: Leabhar Imuinn (1855), 99.

advances to Finnian in person, is struck dead, but is subsequently restored to life, and thereafter lives in sanctity as a virgin. Altogether the contrast here with the life of St. Fridian is noteworthy. The compiler of the latter seems to have known the Mugint story in a form not unlike that in which it appears in the preface to the hymn; in the life before us there is no evidence that the compiler knew the story in anything like that form.

Before turning to those passages in the life with which we are here primarily interested, namely those relating to the saint's training in Britain, I will summarize briefly my own conclusions, for what they are worth, about the life in general. There can be no doubt that there was a saint, probably of Irish origin, who has left his name at Kilwinning and Carwinning in Ayrshire. There can be no doubt that there was a saint, even more probably Irish in origin, who may or may not have been identical with the foregoing, who has left his name at a number of places in Wigtownshire and Kirkcudbrightshire.27 A notice in the life of St. Fintan of Dunblesc seems to imply that the library at Moville was largely destroyed and its contents scattered in a raid by the Northmen (apart from certain items which were miraculously preserved for the use of St. Fintan).²⁸ It could be therefore that, some time before the catastrophe, the church of Kilwinning became possessed of a genuine life of St. Finnian of Moville, whom they identified, rightly or wrongly, with their own St. Winnin. To this life a later editor tacked on a couple of sentences, including the tell-tale word Scotia to signify Scotland, not Ireland, about his death and burial; and the resulting amalgam became the official Kilwinning life of the Kilwinning saint.

The passages in the life with which we are principally concerned are those dealing with the saint's early life and

28 For the life see de Smedt and de Backer: Acta Sanctorum Hiberniae (1888), col. 227.

²⁷ Kirkgunzeon, Kilmacfadzean, Killimingan; see Mr MacQueen in Archivum Linguisticum. VIII. (1956), 135.

training. On this we are told that he was instructed for some years by a certain Colman, generally, and plausibly, identified with Colman, first bishop of Dromore, co. Down. Reeves gives 540 as the date of Colman's death.²⁹ This accords well enough with the tradition of his having founded the see over which Reeves himself was afterwards to preside; but I have failed to find any such date in the Annals.

Colman then sent Finnian to the "venerable old man" Coelan of Nendrum, a monastery situated on an island in Strongford Lough. Colman himself had been in his youth a pupil of this same Coelan of Nendrum. Coelan has generally been identified with Mochay, reputed founder of the monastery of Nendrum, who is commemorated to this day in the name of the island where the site of Nendrum may yet be seen, Island Mahee. But Mochay of Nendrum is said to have died in 497. This is fully compatible with his having been the teacher of Colman of Dromore, if we accept Reeves's obit for Colman of 540; but in the case of Finnian who was to live on until 579, it comes very near to being an anachronism. O'Hanlon³⁰ and following him H. C. Lawlor³¹ have argued that Coelan was the successor of Mochay at Nendrum. In default of independent corroboration, of which there is none in any early source. I doubt if this conjecture should be accepted; though it would of course get rid of the anachronism just referred In the event, Coelan excused himself, ostensibly on the ground that the boy would in time so greatly excel him in merit and in honour, in heaven and on earth. Perhaps in fact he felt that his age was too great for him to assume responsibility for the education of this talented youth. However that may be, as the venerable old man was speaking, ships were seen approaching the harbour of the island, coming from Britain and carrying the most holy

²⁹ William Reeves: Ecclesicatical Antiquities of Down, Connor and Dromore (1847), 138.

⁵⁰ John O'Hanlon: Laves of the Irish Saints (1875 &c.), VI., 776. 51 H. C. Lawlor: Monastery of Mochaoi of Nendrum (1925), 47.

bishop Nennio with his retinue. It was at once agreed by Colman and Coelan that the young Finnian should be committed to Nennio's care, and he sailed away with him, and at his see, which was called *Magnum Monasterium*, studied the institutions of monastic life, and became exceptionally proficient in the pages of holy scripture.

I have already remarked that Nendrum, like Moville, was situated on the shores of Strangford Lough. Like Moville therefore it was very close to the south west coast of Scotland; and while it is not stated in what part of Britain Nennio's see was located, a very strong case would have to be made to upset the obvious inference that its location was somewhere on the Scottish coast more or less opposite the Ards of Down.

If this conclusion is valid, there is one point which cannot be too strongly emphasized. Whatever may be said of the story, one thing is quite certain. Despite the numerous opportunities of editing and sub-editing to which this particular life has been exposed, none of the later transcribers has sought to identify Nennio with Ailred's Ninianus, or the Magnum Monasterium with Bede's Candida Casa. This affords a strong presumption that the notice goes back to before the time of Ailred, and probably before the time of Bede. It also affords a presumption that the provenance of the life (before its discovery by John of Tynemouth) was neither among the Irish, eager, as we have seen in the case of Moenenn of Cloncurry, to glorify their own saints by associating them in some way with Ninian or Candida Casa, nor in any English or Scottish house where Ninian was particularly remembered. Wales would satisfy this criterion; but so would Kilwinning which was in the medieval diocese of Glasgow, of which Kentigern was the reputed founder, not that of Galloway whose reputed founder was Ninian.

It is hardly necessary to point out that the *Nennio* of this life could not be a younger contemporary of St. Martin of Tours, who died about 397; but we will leave that aside

until we have considered the name Magnum Monasterium.

It is clear from the context that Magnum Monasterium is here a proper name and not a descriptive expression. It is equally clear that whether or not the place which the name denotes had any alternative names the compiler of the life thought it would be more easily reconized by this name than by any such alternative. Now there is no other case of a monastery known by a proper name similar to this except St. Martin's own foundation at Marmoutier on the opposite bank of the Loire from Tours. Marmoutier is generally said to derive from Majus Monasterium; but Auguste Lognon says it must be from Major Monasterium.³² The Bancor Vaur cited by Reeves³³ is not a true proper name; it is what we may call a semidescription, which serves to distinguish one of two places having the same proper name, Bangor, from the other.

A number of years ago the late Rev. Archibald Scott proposed the hypothesis that St. Ninian had transported to Whithorn the name of St. Martin's community at Marmoutier. He thought he saw a similar transfer of names to another Marmoutier near Saverne in Alsace. He went further and conjectured that the name Candida Casa. which he rendered "gleaming white hut," was the Latin equivalent of the Gaulish name, Locoteiacos, of St. Martin's earlier monastic establishment at the place now known as Ligugé, south of Piotiers. In these ingenious and attractive hypotheses he has been supported by Dr Douglas Simpson.34

Church in Scotland (1935), 51.

⁵² Auguste Lognon: Noms de lieu de la France (1920-29), 353. 33 In a note printed by Todd: Leabhar Imvinn (1855), 120. Reeves is mistaken in thinking that Cressy sought to identify Rosnat with Candida Casa What Cressy does say is that the great Monastery is candida Casa What Cressy does say is that the grout Monastery is to be identified with Candida Casa and the bishop called Nennion who he says flourished there about the year 20 was probably the successor of St Ninianus—a view with which I find myself in entire agreement. See R. F. S. Cressy: Church History of Britanny (Rouen, 1653), 240. It would thus appear that Lanigan was the first modern scholar to propose the identification of Rosnat with Candida Casa which he did in carefully carefully and the grant of the same and the same an Casa, which he did in carefully guarded language; see John Langan: Ecclesiastical History of Ireland (1822), I., 437.

44 A. B. Scott: St Ninkan (1916), 42 ff., and W. D. Simpson: Celtic

With the aid of these hypotheses Scott proposed a novel interpretation of Bede's statement that Ninian's episcopal see was "distinguished by the name and church of St. Martin the bishop." Previously it had always been supposed that what he meant was that Ninian had dedicated the church to St. Martin. Scott, here anticipating Père Grosjean, 55 poured ridicule on the idea that St. Ninian could, in the early fifth century, have "dedicated" a church to St. Martin. What Bede meant, according to Scott, was that Ninian had bestowed upon his new foundation two names associated with St. Martin, namely Magnum Monasterium and Candida Casa.

It is to be regretted that Scott did not inquire a little more closely into the plausibility of these hypotheses. The Marmoutier near Saverne does not represent a transfer of the name of Marmoutier on the Loire. It is the German Maurmünster, the monastery of St. Maurus.³⁶ Ligugé, it is virtually certain that this, as Mr MacQueen points out,37 is the "place of Lucoteius," Lucoteius being a personal name. This is the conclusion reached, perhaps independently of one another, by E. W. B. Nicholson, 38 Alfred Holder³⁹ and Gröhler.⁴⁰ But it would be wrong to allow these blunders to influence our judgment of Scott's hypothesis so far as it relates to the name Magnum Monasterium, and to that alone. This must be considered on its merits. For myself I think we are bound to conclude that in the case of the name Magnum Monasterium, as applied to a monastery, in Britain, presided over by Bishop Nennio. and located, in all probability, in a part of Britain not far from Strangford Lough, no explanation anything like as plausible as Scott's has so far been proposed, nor any explanation more plausible of the wording of Bede's state-

³⁵ Analecta Bollandiana, LXXVI. (1958), 357.

³⁶ Lognon: Noms de lieu de la France (1920-29), 354.

³⁷ St Nynia (1961), 91.

³⁸ Keltic Researches (1904), 145.

³⁹ Alt-Celtischer Sprachschatz, 2er band (1904), 303.

⁴⁰ Uber Ursprung und Bedeutung der Französischen Ortsnamen, ler teil (1913), 214. See also Lognon: op. cit., 76.

ment about the connexion between Candida Casa and St. Martin.

Now if this single reference in John of Tynemouth's life to a place called Magnum Monasterium stood alone, we might, despite the odd coincidence of the name Nennio and the echoes of Marmoutier, dismiss it as insufficient to supply anything like independent corroboration of the traditions relating to Ninian and Candida Casa as handed down to us by Bede and Ailred. We have confined our attention thus far to Irish sources alluded to by Skene. Skene said nothing about the early Irish Annals, in this context, or the early Irish Martyrologies. The Annals do not help us in our immediate quest; none of them contains any reference to a person of the name Nennio or a place of the name Magnum Monasterium. But it is otherwise with the Martyrologies.

The most recent discussion of the dating of the early Irish martyrologies is to be found in the introduction to Best and Lawlor's edition of the Martyrology of Tallaght,41 which supersedes the discussion in Kenney.⁴² The earliest of these is now considered to be Tallaght, which can be hardly later than the first decade of the ninth century. The Martyrology of Oengus, which was originally thought to be the earlier of these two, is now thought to be a virtually contemporary abridgement of it. Lastly we have the Martyrology of Gorman, thought to have been composed between 1166 and 1174. In Oengus and Gorman, which are metrical in form, the saint's name is frequently followed by some epithet or descriptive clause, the nature of which is more likely to be governed by metrical requirements than by the canons of historical accuracy; Tallaght, on the other hand, is a prose work.

In Gorman⁴³ we find on April 18, "Nennio to hallow us." The words "to hallow us" need be of no more than

⁴¹ R. I. Best and H. J. Lawlor: Martyrology of Tallaght (1931), ix. and xx. ff.

⁴² Sources for the Early History of Ireland (1929), 479 ff. 43 Whitley Stokes: Martyralogy of Gorman (1895).

metrical significance. There is nothing else to indicate who this Nennio may have been. Working backwards, we turn to Oengus⁴⁴ where, however, no corresponding entry on April 18 is to be found. In Tallaght, however, on this date, we find the entry, in Irish, Moninnsen o Manistir. The spelling Moninnsen is curious and Whitley Stokes offers the suggestion that Ninnsen in Tallaght may be a mistake for Ninnen, genitive of Ninnio.⁴⁵

We now turn to the word Manistir in the Tallaght notice. In the early literature of the Irish church the Latin word monasterium is of common occurence, but the Irish equivalent is notably rare in such a context as this. In the Annals, for example, it invariably refers to the celebrated foundation of St. Buite or Boece at Monasterboice in the county Louth. There is no record of any ecclesiastic of the name Nennio, or any name like it, associated with Monasterboice. No other conclusion, I suggest, is possible but that it is Nennio of the Magnum Monasterium whom we find here commemorated on April 18.

It will not have escaped the reader's attention that we seem to have arrived at a provisional conclusion of a highly paradoxical character. We have found evidence which points to the existence in the early sixth century of a monastery in south western Scotland presided over by a bishop whose name corresponds to that of Bed's Ninia in its original form, while the name of the monastery itself suggests that it may have been founded by a follower of St. Martin of Tours in the early fifth century and was deliberately named after St. Martin's famous establishment at Marmoutier.

Now it may be that the records and traditions which the Angles found on their arrival at Whithorn were scrappy and confused. It could be that the founder was a follower of St. Martin of Tours, but was not called Ninia; it could be that there had been a very holy bishop of the name of Ninia, but he was not the founder. But we are not

⁴⁴ Whitley Stokes: Felire Oengusso Celi De (1905).

⁴⁵ Gorman (1895), 387.

restricted to this hypothesis; we have not yet exhausted the testimony of the martyrologies. In Gorman on July 25 we have another Nennio, "Nennio the old," Nennio sen in Irish; while on the same date in Tallaght we have "Ninnio the aged," Ninnio sen in Irish.

I believe the unsophisticated reader will feel no special difficulty about the interpretation of these entries. Each of them is what we have already called, in another context, The compiler found it necessary to a semi-description. guard against the danger of the one Nennio being mistaken for the other. The better known of the two (because of his association with the celebrated St. Finnian of Moville) was "Nennio of the Monastery"; he was distinguished by the name of the establishment with which he was principally connected. The less well known could also be distinguished by the name of the establishment with which he was principally connected (as was indeed the almost invariable custom in the literature of the early Irish church); but if the two Nennios were both connected with the same establishment, this method of distinction would fail to distinguish, and recourse must be had to some alternative. Since we have some independent grounds for thinking that there may have been an earlier Nennio at "The Monastery," we may venture to conclude that the Nennio of July 25 was the predecessor of the Nennio of April 18 at "The Monastery," and that the Irish Nennio sen should accordingly be rendered in English "the older Nennio," the words " of the two" being understood.

If I seem to have laboured this point unduly, it is because the precise connotation of the word sen in these old Irish records has been the subject of lively controversy among scholars. Since I have seen fit to challenge the rendering by two (or three) different Irish scholars of two different Irish texts, it is right that the reader should be put on his guard. If he desires to pursue the topic further, he must be referred to the discussion by Dr Binchy of the meaning of the term Sen-Phátric.⁴⁶ I will do no more 46 Studia Hibernica, no. 2 (1962), 115 ff.

in this place than quote Dr Binchy's conclusion: "The real question at issue, however, is not what sen- means when used of a single saint in isolation, but rather what it means when two persons of the same name are either expressly or impliedly contrasted, which beyond all doubt applies in the case of Sen-Phatric . . . In this context sen- . . . means the older of the two and nothing else. Nor is this just a personal opinion: a far greater authority on Old Irish personal names, my friend Professor Michael O'Brien, authorises me to state that he fully shares it." 47

Thus I hold that Nennio sen means the earlier in date of two Nennios between whom there is some further connexion over and above mere identity of name. I further hold, though I cannot prove it, that this further connexion is to be sought in their common association with "The Monastery," the Magnum Monasterium. If this be granted, there is no difficulty in supposing that the older Nennio flourished at a time much nearer to that of St. Martin of Tours and of Marmoutier than his namesake who was responsible for the instruction of the saint, whether of Moville or of Kilwinning or of both, who forms the subject of John of Tynemouth's life.

There are two points which merit brief discussion here. First, we must note that St. Ninian is commemorated in the Scottish calendars on September 16. There is no reason why this should shake our confidence in identifying the Irish Nennio sen of July 25 with the original Ninian. If as Watson contended we have here a "tradition broken and subsequently revived," it is only to be expected that the original date of the saint's feast should be forgotten. The choice of the new date, however, raises a question. September 16 is the date in Ireland of St. Moenenn of Cloncurry. Was it chosen because St. Ninian had already become identified in Ireland with the saint of Cloncurry? Or was it chosen for some other reason, and afterwards

⁴⁷ Ibid., 124.

used in Ireland to support the identification? I know of no means of deciding this question.

Secondly, the reader may well ask whether one or both of the Nennios could not be identified with some other saint or saints of similar name to be found in the Irish records, such, to take one example, as St. Nannid of Inishmacsaint in lower Lough Erne in the county Fermanagh. To consider all such possible identifications, and the grounds for their rejection, would take up a great deal of space and would be out of place here; I can only say that an examination of a number of possible identifications yields none with any real plausibility. All the other persons of similar name in the early Irish records can be sufficiently accounted for without supposing any possible confusion with one or other of the Nennios. Indeed, so far as I have been able to discover, the name Nennio nowhere appears in the Irish records except in the contexts discussd, or to be discussed, in this paper.

If these hypotheses about the two Nennios are accepted, we shall have found answers to the first two of the questions listed on p. 159 above. To each we can return a qualified affirmative - qualified because of the hypothetical character of some of the evidence on which it is based—as follows: (1) In the person of "Nennio the old," commemorated on July 25, the Irish writers report knowledge of a British saint who can be plausibly identified with Bede's Ninian. (2) In the life of St. Winnin of Kilwinning, clearly a preponderantly Irish production, the compiler reports knowledge of an ecclesiastical establishment in Britain, probably not far from the coast of Down, which can be plausibly identified with the Candida Casa of Bede and Ailred, and which was distinguished by a name borne by no other such establishment save only that of St. Martin at Marmoutier.

I now turn to the third class of references tabulated on p. 165 above. A glance at the table is sufficient to show the extremely corrupt state of the texts in question.

None of these lives can help us to answer our first two questions unless Rosnat, etc., can be identified with Candida Casa, or Mugint, etc., with one of the two Nennios. I hope to show that any such identification would be most implausible; and this implies that we can expect to derive no positive information from these lives except in relation to the third and least important of our questions listed on p. 159. That being so I shall discuss them much more briefly than would be warranted if our interest were in the relations of the early Irish and British churches generally, rather than in the much narrower question of relations between the early Irish church and the British church of pre-Anglian Galloway.

Mr MacQueen has recently placed us very much in his debt by publishing an interesting and careful analysis of the life of St. Enda of Aran. 48 Early in the life we are told that the saint was sent by his sister St. Fanchea to be the humble disciple of Maucenus at the monastery of Rosnat in Britain. The portion of the life in which this notice appears is thought by Mr MacQueen to be derived from a lost life of St. Fanchea composed earlier than the ninth century in her monastery of Cella Ayne (which Plummer thought should be identified with the modern Kilanny in the County Louth). Now St. Fanchea is represented in the life as being on terms of familiar friendship with St. Darerca, who (if Plummer was right) would have been her neighbour not many miles to the north. Both of these ladies were contemporaries of the more famous St. Brigit, who presided over one of the most celebrated monastic establishments in Ireland, including monks as well as nuns, at Kildare. If Rosnat too was a "double" monastery, a point on which I know of no direct evidence, the facts just mentioned afford a strong presumption that the Rosnat to which St. Fanchea sent her brother Enda was identical with the Rosnat to which St. Darerca sent her maiden Brignat. Once again there is nothing to suggest that this Rosnat had any other name but Rosnat.

⁴⁸ Innes Review, XIII. (1962), 115 ff.

St. Enda is represented as proceeding from Rosnat to Rome before returning to Ireland. His sister pays him a visit while he is in Rome, travelling via Britain on the way. These visits may neither of them be historical; but it is fairly clear that the compiler thought of Rosnat as lying somewhere in between Ireland and Rome, which could hardly be said of Candida Casa.

In subsequent sections of the life, which are clearly much later than those which Mr MacOueen thinks were taken from a lost life of his sister, and which are of such a fabulous and even scandalous character that Colgan and the Bollandists refrained from printing them, the saint is represented as having pursued his studies at Rosnat under a master of the name of Monend. From this it seems a fair inference that Monend is a corruption of Maucenus. and not vice versa. These passages in the life, though late and largely fabulous, contain another item of information which may be of significance. The saint is represented as travelling to Rosnat and afterwards to Rome in the company of St. Ailbe of Emly. Now St. Ailbe, patron saint of Munster in Celtic times, has associations with the southwest of Wales, where his cult is attested by place-name evidence, and where tradition assigns to him the distinction of having baptised the infant David, later to be acclaimed as patron saint of all Wales.49

If the life of St. Enda affords some evidence that the master who presided over the monastery of Rosnat was rightly known as *Maucenus*, or something like it, additional evidence to the same effect is to be found in the life of St. Eugene of Ardstraw.⁵⁰ In this life we are told that the saint, along with the future St. Tigernach of Clones, was captured when a boy by British pirates and carried off to Britain, where the holy and wise *Nennyo*, *qui Maucennus dicitur*, accepted them both as pupils in his monastery of Rostat or Rostnat. If this stood by itself it

⁴⁹ A. W. Wade-Evans: Life of St David (1923), 7 and 77. 50 de Smedt and de Bäcker: Acta Sanctorum (1888), cols. 915 ff.

would of course give us no help at all; however a few paragraphs further on we read that the two saints returned to Ireland and founded monasteries there, at the behest of "the aforesaid" Maucennius; from which it seems a safe inference that the original text had Maucennus or Maucennius throughout, which a later scribe amended to Nennyo, etc., when he first came across it, but by a happy inadvertence left unamended in a later paragraph.

Let us now turn to Ricemarch' life of St. David.⁵¹ The life was written about the year 1100 in St. David's; but the testimony of the place-names of Cardiganshire and Pembrokeshire makes it quite certain that the proper names recorded in it are far more ancient and presumably go back to the saint's own time, for which no exact dates can be assigned, but which would be not far removed either way from the middle of the sixth century.⁵²

The life opens with a curious story relating how the saint's father was warned in a dream by an angelic voice that a son was to be born to him. The voice bade him deposit certain gifts at "the monastery of Maucannus," which thereafter became known on account of this incident as the Monastery of the Deposit. Ricemarch does not tell us by what name the monastery had been known previously to the incident, nor does he tell us whether Maucannus was still alive at the time.⁵³ On the name Maucannus and the identity of the person so named the reader must be referred to the notes in Mr Wade-Evans's Life of St. David and to the late Canon Doble's St. Mawgan

⁵¹ Latin text in A. W. Wade-Evans: Vitae Sanctorum Britanniae (1944), 150; English translation and copious notes in the same author's Life of St David (1923).

⁵² His death is recorded in the Annals of Inisfallen in 589.

⁵² His death is recorded in the Annais of Inistation in 589.
53 It is proper to add that in a Breton miracle play, of which the subject was St David's mother, St Nonn, and which was found in a MS of about 1400, the menastery is given the name of Pontir (Revue Celtique, VIII. (1887), 251). Sir John Edward Lloyd (History of Wales, 3 ed. (1939), 153) says of this work that the story is taken entirely from Ricemarch' life, save for some additions from Geoffrey of Monmouth. So far as the name Pontir is concerned, the eminent is the story of Wales in the story is the result of the story of Wales in the story is the superpose without in Picement, and the story is the superpose without in Picement and the story of Wales in the story is the superpose without in Picement and the story of Wales in the superpose without in Picement and the superpose without in Picement and the superpose without in Picement and the superpose without the superpose with the superpose with the superpose without the superpose with the historian of Wales is in error; it appears neither in Ricemarch, nor in Geoffrey of Monmouth, nor in Geraldis Cambrensis.

and authorities there cited.⁵⁴ For our purpose it is sufficient to note that there can be no reasonable doubt of the existence in the early history of the British church of an eminent ecclesiastic of this name who was active in the south west of Wales and whose activities may have extended to Cornwall and Brittany as well. granted, it seems more than merely probable that it was under this Maucannus that St. Enda, St. Eugene and St. Tighernach studied during their sojourn in the island of Britain.

It is important to emphasise that there is no evidence in any British source that there ever was anywhere in Britain a monastery of the name Rosnat. Colgan at one stage⁵⁵ sought to identify Rosnat with Vallis Rosina, the Latin name of the site where St. David established his monastery, and where the noble cathedral that bears his name stands to this day. This would be an exceedingly attractive hypothesis if there were any evidence that Vallis Rosina was known in the vernacular as Rhosnant, as might well be expected.⁵⁶ Unfortunately, however, Ricemarch states explicitly that the site was known to the Britons of his day as Hodnant.57

There is one rather dubious piece of evidence which is perhaps just worth mentioning in this context. In the Martyrology of Gorman on November 12 two virgins are commemorated under the names of Duthracht and Brig and they are said to have come from Chill Muine. Chill Muine is the Irish name of St. David's. So far as I know these two ladies are nowhere else referred to, unless it be that Brig is identical with that same member of St. Darerca's monastic establishment (variously named Brig, Briga and Brignat) who was sent to Rosnat for training. In that case it would afford a presumption that Rosnat was situated either at St. David's itself or somewhere in the neighbourhood.

⁵⁴ Gilbert Doble: St Mawgan (1936).

⁵⁵ John Colgan: Asta Sanctorum Hiberniae (Louvain, 1645), 2 56 Wade-Evans: Lite of St David (1923), 66 ff. 57 Wade-Evans: Vitae Sanctorum (1944), 155.

I will now summarise the conclusions that I draw from this part of our discussion. They are as follows: (1) Rosnat was somewhere in south-west Wales. (2) The names Mugint. Maucenus, etc., derive ultimately from the name Maucannus that we find in Ricemarch' life of St. David or some name closely resembling this. (3) The Irish saints who received their monastic training at Rosnat were taught by this Maucannus, or conceivably some other of the same name, in south-west Wales. (4) The cult of Ninian, which developed after the appearance of Bede's Ecclesiastical History and, more especially, of Ailred's life in the twelfth century, caused the later editors of old lives of Irish saints known to have received their religious training in Britain to identify Rosnat and Maucannus, names by then meaningless to them, with Candida Casa and Ninian (or Nennio) respectively.

None of this amounts to proof that Rosnat was not in northern Britain; but it should, I think, suffice to make us pause before claiming on behalf of the early Gallovidian church that she was the nursery of a numerous body of early Irish ecclesiastics. Only I suggest in the case of Finnian of Moville, Lonan of Treoit, and Mo-rioc of Inchbofin in Lough Ree, can such a claim be preferred with colourable plausibility.

ARTICLE 15

A Journie to Galloway in 1721¹

By Sir JOHN CLERK of Penicuik

Transcribed and Edited by W. A. J. PREVOST

Introduction

Sir John Clerk of Penicuik (1676-1755) had many interests in Dumfriesshire and Galloway. Family business, his work in connection with the Duke of Queensberry's affairs and especially his annual visits to Moffat to drink the mineral water were all a part of his life and about which he has much to say in his "Memoirs." Besides the "Memoirs" Sir John recorded for the benefit of his family several accounts of "trips" and "journies" to various parts of England and Scotland, of which this hitherto unpublished journal is one.

For the better understanding of what follows it should be noted that Sir John had married, in 1701, Lady Margaret Stuart, 1a the daughter of James, the third Earl of Galloway. and of Mary, the daughter of the second Earl of Queensberry. Lady Margaret was the sister of the fifth Earl of Galloway, who had succeeded to the earldom on the death of his brother in 1694, and as Sir John himself relates, the purpose of his expedition into Galloway was to visit his To his lasting grief Lady Margaret had brother-in-law. died in 1701 when giving birth to a son, and it was this son John² who was the baronet's companion mentioned in the journal.

⁻ Edinburgh Record Office. Clerk of Penicuik, Box 32/2101.

Appendix A.

1a G.E.C. "Complete Peerage" spells the name "Stewart." John Clerk and the editor of the "Memoirs" spell "Stuart." fifth Earl of Galloway signed his name "Steuart."

² John, who was then Sir John's heir, died in 1722, and was a great loss to his father "for he was not only a very singular lad for all manner of good qualities, but was the only child of his mother; he was tall, handsome, good natured, and well disposed."

I have made no alterations to the spelling except in one or two cases, as in "Gallouay," where I have modernised Sir John's use of "u" for "w." I have modernised the use of capitals and introduced my own punctuation.

The Journal

Having never pay'd a visite to the E. of Galloway and his family since Febr 1704 I resolved to go at this time and carry my eldest sone with me to see his Mother's friendes.

We took journie from Pennycook on the 27 of Agust 1721 in the afternoon and came to Daufington^{2a} that night. Here we took up our night's quarters and my cousin the Laird³ was so good natured as to go along with us next morning.

On the 28 we dinned at the Lead hills, had sorry accommodation either for our selves or horses. We found the Earl of Hopton's mines going on as formerly and several smelting houses erected since I was here last.

In the afternoon we left Wanlock Head on our right hand where the D. of Queensberrie has very good lead mines, and came to the pass at Entriken. This is a strait descent for 400 or 500 yards and will be very difficult in winter, yet at this seasone the green hills and small rivolets descending from them made the place not altogether disagreeable. A little from this pass we came in sight of Drumlanrig, the seat of the D. of Queensberrie which, with the woody grounds about it, made a very fine prospect.

Drumlanrig is a very large house built by way of a square but the architecture lookes very Gothick by reasone of its round stairs and turrets. The house in the mean time affoords no great conveniences for lodgers, being only a single house, one room entering through another, unless where a trance⁴ is taken off the breadeth of the floor to give secret passages as they found convenient. The principal

4 Trance, a passage.

²a Dolphinton.3 Andrew Brown of Dausington, cousin german of Sir John Clerk.

stair is of timber and a mear bable⁵ for its contrivance. There is a gallery here which runs along the front of the house, but it is too narou for its length. Some pavilions and lead statues make up the principal ornaments of this place. The house is pretty well furnished with good prints and there are abundance of family pictures by Sir Godfrey Kneller and some other good hands.

The gardens are by far the finest in this kingdom. They are excellently laid out in the newest fashion with parterrs, tarasses, sloping bancks, wildernesses, hedges, water werks etc., and the Duke keeps dayly at work a gardiner and 26 men to dress them.

At night we lodged in a very good house about a quarter of a mile off, which the Duke built for a tillesoul, as they are called. English people keep this house at the time and give very good entertainment.

In the morning of the 29 we continued our journie to the Old Clachan⁸ where we came about twelve a clock. By the way we saw a pleasant enough country and passed by the Kirks of Penpunt and Tindrim,⁹ a little village called Minehive belonging to Craigdaroch,¹⁰ as like ways we saw Craigdaroch's house, for instead of turning to our left at the last named village we went straight on and fell out of the road at this gentleman's house for a mile or two.

3 miles from the Old Clachan we came to a prodigious cairn of stones made of old by the Romans for a sepulchral monument as was their custome, and near to it a small cairn begun by the Stuarts about 7 years agoe by way of diversion. Here the road divides it self. That to the left

6 Parterre, a level space in a garden occupied by flower beds.

9 Penpont and Tynron.

⁵ A mere bauble.

⁷ Tilliesoul, a place to which a gentleman sends the servants and horses of his guests when he does not choose to entertain the former at his own expense.

⁸ Dalry.

¹⁰ Alexander Fergusson of Craigdarroch, who married Anne, daughter of Sir Robert Laurie, of Maxweltoun, M.P. for Dumfries Burghs, 1715-1722.

leads to New Galloway and that to the right to the Old Clachan.

Having dinned at the village we took horse again and passed the Water of Ken which was something swelled with rain that had fallen in the night. Beloue this foord is New Galloway, a Royal Burgh, and near to it the late Viscount of Kenmure's house. This house is now in the hands of the Commissioners of Enquiry for the publick. being forfeited by the Viscount's rebellion in 1715. The country is here very strait but the house of Kenmoor is finely situated on a rising ground in the midest of a fine wood and is watered by the forsaid water which forms a lake of about 3 or 400 vards in breadeth and several miles in length. It abounds with fresh water fish of all sorts, for I had occasion to know something about it when I was last in this country. There are likeways aboundance of water foul upon it and several boats for the pleasure and convenience of the people who live near it. The Viscount had here a pleasure boat of his owne making, for he was a great master in all sorts of handy crafts. He suffered death on Tower Hill in 1716 and his body lies buried at the little kirk near the Old Clachan where is the burial place of his family.

From the Water of Ken we passed on through wild grounds and bad way till we came to the new bridge on the Water of Dee. This water affoorded us some contemplations, for till of late it was frequently unpassable, and even when it was not in a flood the passage was very difficult by reasone of many sharp rocks that lay in the foord. Near to this place we saw on our right hand the Moss of Raploch, memorable for a great battle fought between K. Robert Bruce and the English. Bones, helmits, swords and dagers found here give evidence of it to this day, besides a constant tradition amongst the people.

¹¹ Now under the Clatteringshaws Reservoir, 5 miles west of New Galloway,

Our way after passing Ken grew worse and worse till we came to a hill called the Sadle Loup¹² where the way lay along a steap rock. The mountains hereabouts are wild beyond imagination so that scarse any thing in the Alpes exceeds them. They affoord very little pasturage except for goat and wild deer. However on any other occasion I cou'd have been pleased with them, for they affoorded plenty of game of all sorts, particularly Red foul and Heath foul.

After having passed with difficulty this ugly place we were saluted with 3 blasts of thunder that for their nearness astonished us and frightened our horses. These were followed next with such a deluge of rain that I doe not remember to have ever seen the like.

We continued our journie through the mountains in great distress till we came to Minie Gaff, a little village belonging mostly to the Laird of Dalgonar. On our right hand by the way about 2 miles from this village we saw the Garlies which is the antient seat of the family of the Stuarts of Galloway. It is situated in a wood and if it were not for the nighbourhood of the mountains it wou'd prove still a very advantageous habitation.

Galloway horse are bread in the moors of Minnigaff and about the rocky hills of Craignilda and Puldrabrig.¹⁸

13 Craignelder and Poultrybuic. This paragraph was written in the margin.

[&]quot;Ywo miles beneath this ford of Machinmoore there is another rivulet call'd Palnure, which empties itselfe into the river of Cree; it hath its rise in the hills of Monnygaffe; and four miles didtant from the town of Monnygaffe, it runs over a precipice betwixt two rocks, and is called there the Grey Mare's tail, which is just beside a great rock call'd Saddle Loup; at which, it being the roadway, horsemen must alight, for fear of falling off their horses, or rather least horse and man both fall, and never rise again." A. Symson. "A Large description of Galloway." Written in 1664 and published in 1825.

¹²a The New Statistical Account (1835) records that "in ancient times" the chief families of Dunscore included the Griersons of Lag, of Chapel and of Dalgoner. There were then, in 1835, no lines descendants of these families except James Grierson, Esq., of Dalgoner. It is possible that another James Grierson was "laird of Dalgonar" in 1721.

Near Minniegaff is the Water of Cree which we were oblidged to pass in a boat. On the other side is a village called Neu Toun Stuart which belongs to Castle Stuart, a cadet of the E. of Galloway's family. From this place we came to the Clary about 3 miles further where we designed to have stay'd for a day or two with My Lord Garlies¹⁴ who lives here, but finding that My Lady was very ill we continued our journie for 8 miles further to Brigadier Stuart's¹⁵ house at Sorbie. We chanced to come here about 10 in the evening at the same time that the Brigadier had alighted from his horse, for he had gone the length of the Clary to meet us. Here he heard we were to come in to the country that day. We rode this day about 38 miles in bad way for the most part.

On the 30th being Sunday we stayed at home with the Brigadier, his minister Mr Hadden¹⁶ being sick of a feaver.

On the 31 the Brigadier likeways detained us and my Lord Garlies came from the Clary and dined with us. This day having no other diversion we set our servants at work to remove some stones from an old cairn where we were told Roman sepulchral urns had been found. Here we did not work long till we fell upon one. It was made of a coarse sort of clay and had its mouth inverted upon a broad stone. Within were burnt bones and ashes with the head of a javelin of brass which I take to be no small curiosity, since hereby the ambition of the Romans is demonstrated, for except glory and fame nothing was to be got in this corner of the country. It does honour likeways to our forfathers in so far as they were held worthy

¹⁴ Alexander, Lord Garlies, eldest son of the fifth Earl of Galloway whom he succeeded in 1746. He married (1) Anne Keith, second daughter of William, ninth Earl Marischal. (2) In 1729, Catherine Cochrane, third and youngest daughter of John, fourth Earl of Dundonald.

¹⁵ Brigadier General John Stewart of Sorbie, where he died in April, 1748. He was brother to James, fifth Earl of Galloway, who had succeeded in 1694, and brother-in-law to Sir John Clerk. Sir John and the Brigadier were lifelong triends.

¹⁶ Archibald Hadden, presented to the vicarage of Sorbie, Kirkmadryne and Crugiiton in 1700.

to be conquered by so renowned a people, but of this I shall speak a little afterwards in my return homewards.

On the first of Agust I came to Glassertoun which is the seat of the E. of Galloway.¹⁷ He received us with much affection, especially his nephew my sone whom he had not seen for several years. I found the Earl's house much altered to the better since I was here, for he had built a large addition and had 7 or 8 good rooms for strangers besides what served his great family. I need not mark down any thing about My Lord's family, only I observed a very regular oeconemy in all things and at the same time more aboundance of all good things. His Ldp was married about 26 years ago to Lady Katharine Montgomerie, daughter to the present Earl of Eglintoun, 18 who has proven a verteous mother to her family. Their children are the Ld Garlies, married to Lady Ann Kieth, daughter to the E. of Marshall; Lady Margaret, Countess of Southesk, 19 a very beautifull young Lady living now in a state of widowity by reasone of the absence of her Lord who was forfeited in the Rebellion in 1715; Mr James who is a Livetennent of the Guards now in London;20 Lady Catherine; Lady Ann; Lady Euphemia;²¹ Mr William and Mr George,²² all now at the house of Glassertoun.

I found this country on my coming here prodigiously infected with a feaver which cut off aboundance of people in a few days. This made me very impatient to be gone and I believe my uneasiness brought a little tutch of the sickness upon me, for on Thursday the 3 I fell very feaverish and continued so for 3 days. I used nothing all this time but a vomite and fasted till it went off.

¹⁷ James, 11th Earl of Galloway, who died in February, 1745/46.

¹⁸ Catherine, daughter of Alexander, minth Earl of Eglinton.
19 Margaret who married James, ffth Earl of Southesk, who died in

²⁰ James, second son, who joined the 3 Regiment, now the Scots Guards. Afterwards became a Lt. General.

21 Euphemia, married Alexander Murray of Broughton. She died at

Cally in 1750. Both her sisters, Catherine and Anne, were unmarried, 22 George died when a student in Edinburgh.

I had occasion while I stayed here to see Whithern and several places near it. This is a little Royal Burgh, very famouse in the antiquities of this country. It is mentioned by Ptolemy and from the Greek name came to be called by the Saxons Whit Hern or White House. It gave title to a very antient Bishop who was called Episcopus Candida Casa. Here was likeways a priory large enugh as the ruines of it demonstrat. I observed upon the head of the street that leads to the church the Arms of Scotland covered with an open crown which proves the antiquity of the sculpture, and besides demonstrats that our crown was open and not that barr'd crown which we see now a days on the castle of Edin. King James the 1st used this barr'd crown as most of the princes of Europe did at that time. Some fancy that the barrs which we now see in our crown were added to the old one. I am of another opinion and belive that every man who understands werk will think our present crown all of a piece.

This toun of Whithern is very inconsiderable. It consists only of one street of about 300 yards in length. The houses are very coarse, low and thatched. It has a sea port about a mile off at the Isle of Whithern but its principal trade is drinking. The revenue or publick good of the burgh is about 16 lib Scots yearly. It is governed by a provost and baillies who are ordinarely such as the E. of Galloway pleases to appoint. Formerly it sent a member to the parliament of Scotland as all the Royal Burghs did, but now it is joyned with Wigtoun, New Galloway and Stranraw who choise a representative for the parliament of Great Britain, and in the election each of these tours has the casting vote by turns. I was representative for the Burgh of Whithern in the parliament of Scotland from the parliament in 1703 till the union of the Kingdoms in 1707, and by reasone of my place in that parliament I was chosen amongst others to represent the State of the Burghs of Scotland in the parliament of Great Britain held in the vear 1708.

For a description of Galloway what follows shall suffice. This shire is more properly called the shire of Wigtoun. for Galloway comprehends in it the Stuartry of Kirkcudbright. It beginns at the Water of Cree and takes in a large part of peninsula of about 40 miles in circumference or more. The country is generally plain except towards the northmost parts of it. The soil is warm but thin and brings all sorts of garden fruits to greater perfection than any county of Scotland. The surface of the ground is full of small rocks and in many places covered with whins, broom, fairns, etc. However, there is very good feeding for all sorts of cattle. Their grain is nigh bear and oats black and white. Barley they have none, nor for ordinary any pease. Their culture of grains seems a little odd, for their bear sets as they call them are never changed. That ground which I saw carrying bear has produced nothing else in the memory of man. There are very little improvements here in planting, for their industry runs only on inclosures for black cattle which indeed brings them in from England a great dale of profite. Their diks are of stone without mortar, very thinly built together. However they are such as answere sufficiently the end. I was persuading them to change their methode by making their inclosures less and banking up quick set hedges for warming their grounds and keeping their cattle from storms which are frequent from the west seas. They alledged against this that the thinness of their ground wou'd not alloue them to make hedges, but this seem'd of a piece with their obstinat persistence in the culture of their grains.

By these inclosures such as they are I had occasion to compute that they brought in ten thousand guineas to their country, for the price of their cattle is commonly payed in gold. Sometimes they drive them up to the English fairs and sometimes they sell them at home to English men who come down and pay them readie monie for what they carry off. By the bye, all this is not above a tenth of what Scotland gains from England at this time upon black cattle,

for I have good reasone to believe there is above 100,000 lib ster yearly payed us on that score. The inhabitants of Galloway are much lessened since the custome of inclosing their grounds took place, for there are certainly above 20,000 acres laid waste on that account. The principal rivers of this shire are Cree and Bladenoch which produce aboundance of salmon and trout. The sea here is very fertile in fish but the people are very lazy. Wigtoun is the principal toun of the shire but is not much better than Whithern. However it stands on a very agreable promontory near the sea and if it were in the hands of industrious men it would be much better than it is. Here is a sort of harbour for ships but the passage by reasone of sand bancks is very dangerous so that, like Whithern, drinking is the principal branch of trade.

Upon Munday the 7th I left Glassertoun and came to Sorbie. My Lord wou'd convey us this length and afterwards wou'd not part with us till he had passed the Water of Bledenoch. The Brigadier, his brother, went on with us to the Clary where we dined with my Ld Garlies and continued with him that night.

Next morning about 6 we took horse and passed the Water of Cree at the foord of Machrie Moor where we took our leave of Ld Garlies who wold convey us to the other side in our way to Bargalie. Machriemoor is a very pleasant little seat belonging to a gentleman of a small fortune.²³ Here we entered into the plains of Herren²⁴ belonging to a gentleman of this name. These plains are famouse for a battle fought between the Romans and Scots, and indeed seem to have been a very proper place for an incampment. Buchanan in his book in the life of Eugenius gives account of this battle. It was fought by Maximus

²³ Patrick Dunbar (Dumbar) of Machirmore, an elder of the Kirk. "The Session Book of Minnigaff, 1694-1750," transcribed and edited by Henry Paton, 1939.

²⁴ The Heron family of Kirouchtree or Kirroughtree. See M'Kerlie, "History of the Lands and Their Owners in Galloway," p. 498, and Symson, op. cit., p. 136.

the Legar in conjunction with the Picts.²⁵ Igitur cum Romanis conjuncti Scotorum agros popularentum primus eus conflictus fuit ad Cream Gallovidie . . . etc. heaps of stones give testimony of this battle.

From this place we came through a moor inclosed in most places to Bargaly. This is the seat of a gentleman of a small fortune.26 for I was told he had scarcely 500 ms a year, yet it shews what industry and frugality may doe. Here I saw a little conveniente house upon the bancks of a small rivolet, which wanted no embellishments that any house in Britain has, save only those things were not so Here are gardens, orchards, parterrs, done. orangeries, waterworks, fishponds, bagnios,²⁷ inclosures, arbures, wildernesses, woods, etc., with such a variety of fruit as I had not observed the like in any place of this country. He had grapes and fegs²⁸ of several sorts, 38 kinds of cherries, 40 of plumbs, near 80 kinds of aples and as many peers. He had likeways a fine collection of various sorts of shrubs and evergreens.

This little paradise stands at the foot of the largest and wildest hill in Galloway29 where there is scarcely any pasturage for goats, tho I was told that in some places of it there are very large deer.

The gentleman did us the favour to accompany us up the water to the Sadle Loup which we passed in our comming to this country. The hill on the south side of this pass is called Craig-nil-da and that on the north side is Puldrabuy.

We return'd backwards the same way we came and dinned at the Old Clachan.

²⁵ The plain called the "Green of Machirmore, where that famous battle, betwixt the Romans and Pick, confederates on one side, and the Scots on the other, was fought. Vide Buchan in Vita Eugenii

the Scots on the other, was fought. Vide Buchan in Vita Eugenii primi. A. Symson, op cit., p. 137.

26 Bargaly, owned by Andrew Heron. "Session Book of Minnigaff," op. cit., and A. Symson, op. cit., p. 142, which also contains an appendix, apparently written in the early part of the eighteenth century by Andrew Heron.

²⁷ Bagnios, hot houses.

²⁸ Figs.

²⁹ Cairnsmore of Fleet

In the afternoon we took the road to Drumlanrick and by the way met with a fouller who was hunting for heath foules. He told us the greatest sport of that kind was upon the road side on our right hand after we left the moors and had fallen down on the benty grounds.

We lay all night at the Drumlanrick Inn and were very well entertained as before.

In the morning we set out homewards and took the way by Disdeer,30 having a mind to see their new church and the Duke's burying place since they were finished. We were much surprised to see so fine a little church in so bad a village. Here is a fine steeple and the Duke has made several good rooms on the north end of the church for the accommodation of his family, but the burying place exceeds all. It consists of an isle handsomely vaulted above and floored with marble. In the middle of the floor stands a canopy of marble supported by 4 large pillars and under this a square stone which covers the entry to the vault where the corps are placed. At the end of the isle is the late Duke's tomb, handsomely cut by the famous Van Ost. 31 The Duke and Duchess lie here in marble. Behind them are some ornaments of Corinthian pillars, with 4 fine cupids in different actions. One mourns for the dead, another holds a torch and the 3d and 4th are in very becoming postures, holding in their hands (if I remember right) a scroll which has this inscription on it:

Hic

in eodem tumulo

Cum charissimoe conjugis cineribus
misci voluit suos

Jacobus Dux Queensberrie et Doverni

Qui

ad tot et tanta honoris
et negotiorum fastigia
Quoe nullus antea subditus
Attigit, evectus, Londini,
Fato cessit sexto die
Julii, Anno Christi Redemptoris.
1711.

³⁰ Durisdeer.

⁵¹ Jan or John Van Nost or Oost who was born at Malines and who in due course settled in England.

Upon the marble bench on which the statues of the Duke and Duchess are placed is this inscription . . .

(Here follows the Latin inscription to the Duchess for which see Appendix B.)

These inscriptions I was told were composed by the learned Doctor Pitcairn^{31a} which I very much doubt of, for he was a great humanist and many things here may be justly quarrelled, such as in the first inscription "misci" and "subditus," and in the 2d "dure varia" etc.

As for the contents of the 2d inscription there was no flattery in any thing. She was a very fine woman and one who without any stain was very usefull to her husband in his most critical affaires. I had the honour not only to be acquainted with her for a long time, but likeways to be much oblidged to her friendship. After I had vieued the tomb and taken the inscription I had the curiosity to cause open the vault belou and went doun, not without a meloncholly heart to pay my respects to the remains of the two persones to whom I was, next to my parents, most oblidged to.

The tomb was erected, or at least cut, for the Dutchess about the year 1710 while the Duke was alive, but he did not survive her above a year and was buried according to his wishes in this same vault.

From this place we went homewards by the way of the inn called the Ell-nand-foot, and indead I take it to be the best and shortest road from Drumlanrick to the Deveshaw.³²

At night we came to Daufingtoun and nixt day I and my sone came home to Pennycook.

Laus Deo.

³¹a Dr Archibald Pitcairn, born in Edinburgh in 1652 — died 1713, the celebrated wit poet, physician and writer of Latin lyrics.
32 Devonshaw, a hill on the right bank of the Clyde, opposite Roberton in Lanarkshire.

Appendix A

Sir John refers to this journey in his memoirs:

"On the 1 of Agust, being much importuned by the Earl of Galloway to visite him, and to bring my son, his nephew, with me, I accordingly set out, and lay at Daufington that night. As the master of the House was my Cousin German, I carried him with me. We lodged next night at a publick House near Drumlanrig, and next day, by way of Penpunt and the Auld Claughan, we came to Sorbie, the House of my Brother in Law, Colonel John Stuart, to whom we were very acceptable. From there we went next day to Glassertoun, the seat of the Earl of Galloway. We were all very well and most affectionatly used. I intended to have staid there only two or three days, but as I was threatened with a kind of Aguish distemper, I shortned my visite, and returned homewards by Clery, the seat of the Lord Garlies, eldest son of my Friend the Earl. We staid here one night, and returned home by the way we came."

Appendix B

The Latin inscription on the memorial to the Duchess of Queensberry is as follows:³³

P. M. [Piae Memoriae]

Mariae Ducissae Queensberiae et Doverni etc., Quae Paterna Stirpe, E. Burlingtonii Et Cumbriae, Materna vero, Sumerseti et Essexiae familiis praelustribus Oriunda, Generis Splendorem Morum suavitate temperavit, Animi Magnitudne auxit, Et Severiorem Virtutem Honestis Ingenii et formae Illecebris Jucundam reddidit et Benignam: Marito Amantissimo, dum Varia Rerum vice Exerceretur, In Secundis Decus, In Dubiis Stabilimen, In Asperis Solamen, Curarum Thalami et Consiliorum Sanctissimum Depossitum. Conjugi incomparabili Jacobus Dux Queensberiae et Doverni Ea Spe, et hoc unico Solatio, quod sub Eodem Marmore ubi hos caros deposuit Cineres Suos Depositurus sit Hoc Monumentum Extrui Jussit.

Obiit Londini Octo' 2, 1709.

I am indebted to Mr David West, Lecturer in Humanity at Edinburgh University, for the following translation:

P. M.

To the Sacred Memory

35 I am indebted to Mr J. W. Scott, minister of Durisdeer, for checking this transcription.

Of Mary Duchess of Queensberry and Dover, etc., who, on her father's side was descended from the illustrious families of Burlington and Cumberland, but on her mother's from those of Somerset and Essex, who tempered the brilliance of her descent with the sweetness of her character and enlarged it by her greatness of mind, who made her austerer Virtue attractive and aimiable by the pure charms of her intelligence and beauty.

To her adoring husband, while he was tossed by the changing of Fate, (she was) a glory in prosperity, in moments of doubt she was his support, in adversity his consolation, the sacred repository of his secret cares and plans.

To this incomparable wife James Duke of Queensberry and Dover has ordered that this memorial be erected with this hope and this one consolation that under this marble where he has laid these ashes, he is soon to lay his own.

Died London, October 2, 1709.

A translation of the Latin inscription on the memorial to the Duke of Queensberry is given by C. T. Ramage on page III. of his "Drumlanrig and the Douglases."

"In the same tomb, with the ashes of his most beloved wife, James, Duke of Queensberry and Dover, has desired his own to be mingled, [a man] who having arrived to such and so great a pinnacle of honour and high employments as no subject before had reached, yielded to fate at London, 6th July, in the year of Christ our Redeemer, 1711."

The Mineralogical Collection of the Dumfries Burgh Museum

By JAMES WILLIAMS

The mineral collection of the Museum was formed in the 1860's, and remained an active section until the end of the last century, when it became dormant, due to the decease of its more active supporters. Starting a few years ago field-work yielded many new specimens which necessitated a re-naming and a new display for the collection. This welcome activity gave birth to the present paper, the theme of which is a description of the numerous mineral specimens the Museum possesses from the three counties under its charge.

Though there are many mineral localities represented, it is perhaps better to start with the most well-known, i.e. Wanlockhead and Leadhills district. These specimens, mainly collected by Dr Gilchrist in the 1860's, are the oldest and form the nucleus of the whole collection.

Due to the large number of specimens from Wanlockhead, it has been felt advisable to divide the list into the sections given below, in order to facilitate their description:

- (i.) Primary minerals.
- (ii.) Primary accessory minerals.
- (iii.) Secondary accessory minerals.
- (iv.) Gangue minerals.

PRIMARY MINERALS

Galena-lead sulphide, PbS, was by far the most important mineral in the district, and up to the start of the present century the only lead ore worked. The normal ore, which occurs massive and coarse-grained in crystalline aggregates, is represented by one specimen coated with calcite and quartz. There are, however, specimens of the

fine-grained 'steel' ore, and also one specimen of 'granular' galena.

Several of the large specimens (probably from the New Glencrieff Vein) show galena crystallising as a combination of the cube and octohedron. A medium-sized specimen—3 x 4.5 x 5.5 cms.—shows to perfection the cubic system in galena. This last specimen—along with a few others—show a peculiar iridescent surface coating. On the whole the Wanlockhead* galena is free from admixture with other sulphides, but in some cases it is found in combination with antimony sulphide—when it approximates to Jamesonite. The galena is also combined with a certain amount of silver sulphide—the existence of this mineral is shown by 17 grams of the metal obtained by cupellation.

Zinc Blende or Sphalerite—zinc sulphide, ZnS, is an abundant constituent of the veins, but was not worked commercially until the present century. It usually occurs massive, in which state it is brown in colour, showing the usual resinous lustre, and often possessing a blue iridescence. Specimens are available, from cavities, which show the blende as jet-black crystals—'Black-jack'—up to 2.3 cms. in size.

PRIMARY ACCESSORY MINERALS

Chalcopyrites—copper iron sulphide, CuFeS₂, is widely distributed, but nowhere in workable deposits. It is often associated with blende and galena, but occurs mainly as a constituent of the brecciated vein material—'Vein Stuff'—which also contains calcite, quartz, dolomite and greywacke. Several of the specimens show a beautiful blue iridescence, and therefore, may tend to approximate to Bornite.

Pyrites—iron sulphide, FeS₂, occurs massive, and as crystals—often encrusting—showing the usual striated cubes.

From this point, the whole area of Wanlockhead and Leadhills shall be referred to as Wanlockhead.

Jamesonite—lead sulphantimonite, Pb₄FeSb₆S₁₄, often occurs with galena in the veins. The mineral is of a lead-grey colour, with a semi-fibrous appearance.

SECONDARY ACCESSORY MINERALS

Cerussite—lead carbonate, PbCO₃, is a common mineral in the area, and is represented by three specimens. One is small with radiating crystals (1 cm. across). The largest specimen is a pseudomorph, by incrustation, of galena.

Anglesite—lead sulphate, PbSO₄, is found in many of the veins—Belton grain and the Susanna veins being the best localities—as long, blade-shaped crystals. The mineral is represented by two specimens, both of which show the crystalline form well. The larger of the two specimens—in a matrix of calcite and dolomite shows the anglesite crystals possessing a waxy-yellow colour and slight resinous lustre.

Pyromorphite or Green Lead Ore — lead chlorophosphate, $3Pb_3P_2O_8.PbC1_2$, is a common mineral in the district. Almost all the specimens show the mineral in the botryoidal habit and in virtually every shade of green. Small specimens show green prismatic crystals encrusting quartz.

Vanadinite—lead chlorovanadate, 3Pb₃V₂O₈.PbCl₂., is a rare mineral in the district and is only found in the Belton Grain and Susanna veins. One specimen shows a pale-brown botryoidal mineral which exhibits a white interior when fractured. The only other specimen is an orange coloured crust of small prismatic crystals on quartz.

Mimetite—lead chloroarsenate, 3Pb₃As₂O₈.PbCl₂., the third member of the 'Pyromorphite Set' is only represented by a sub-variety—Campylite—which exists as waxy-yellow, barrel-shaped crystals.

Hæmatite—ferric oxide, Fe₂O₃, is often found in the oxidised tops of the veins. A specimen, from the Belton Grain Vein, shows small botryoidal masses on Dog Tooth

spar. There are also seven small water-worn pebbles of 'Earthy' Hæmatite. These are known locally as 'Keels,' and are held to be a sure sign of gold. In connection with this it is interesting to note that, at the end of the 1963 Summer Season the Museum received a visit from a New Zealand gentleman—gold-miner by profession—who declared that these pebbles bore the self-same message in his own distant homeland.

Gold. As Wanlockhead gold is already well known this mention is merely to record that the Museum possesses 0.2514 grams of the metal in the form of dark gold-yellow grains.

Limonite—hydrated ferric oxide, $2Fe_2O_3.3H_2O.$, is the most common oxidation product of iron pyrites, and is found in all the veins. One specimen exists showing limonite in association with hæmatite, galena and pyromorphite.

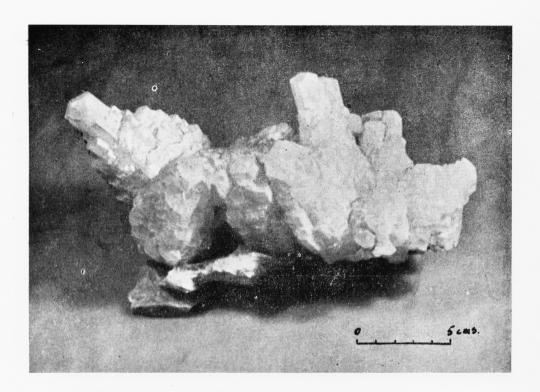
Hemimorphite—hydrated zinc silicate, $Zn_4Si_2O_7(OH)_2$. H_2O_7 , though usually found as crystals lining cavities, all the specimens displayed show the mineral mammillated, and yellowish-brown or sky-blue—except one, which exists as a delicate shade of powder-blue.

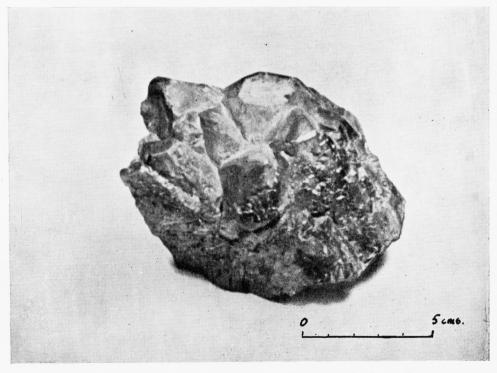
Willimite—zinc silicate, Zn₂SiO₄, exists as a palelemon incrustation—of small crystals—on a specimen of zinc blende and quartz.

Greenockite—cadmium sulphide, CdS., is shown as a pale-brown mineral on zinc blende. This specimen is almost completely covered by feathery growths of Goslarite—zinc sulphate, ZnSO₄.7H₂O.

Malachite—basic copper carbonate, CuCO₃.Cu(OH)₂., is found as an incrustation on chalcopyrites, or as small, transparent, green, crystals in quartz or calcite. Though Azurite—blue basic copper carbonate, 2CuCO₃.Cu(OH)₂., is not represented, many of the specimens show a colour intermediate between that of azurite and malachite.

Tenorite—copper oxide, CuO., exists in the district as a black powder. One large specimen shows the mineral

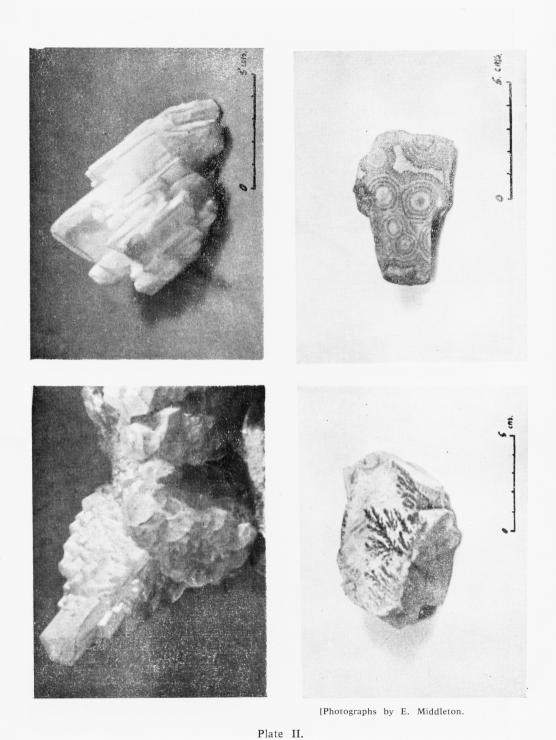




[Photographs by E. Middleton.

Plate I.—Wanlockhead area.

Top—Nailhead Spar. Bottom—Galena, showing the combination of the cube and octohedron.



Top left.—Detail from Plate I. (Wanlockhead). Top right—Barytes (Wanlockhead). Bottom left—Dendrites (Mabie). Bottom right—Ferruginous spherical concretions (River Nith, Dumfries).

as dull, black, semi-cubic, masses with a very thin superficial coating of malachite.

Chrysocolla—hydrated copper silicate, CuSiO₃.2H₂O., is represented by a fragile incrustation on a large specimen of chalcopyrites and tenorite. (Several other specimens show slight traces.)

Aurichalcite—a carbonate/hydroxide of copper and zinc (Zn,Cu)₅(OH)₆(CO₃)₂., exists as a pale-green to greenish-blue incrustation on some of the minerals but never constitutes a good example of the mineral.

Linarite — basic sulphate of lead and copper, PbCu(SO₄)(OH)₂., occurs in several of the specimens as radiating crystals showing the typical azure-blue colour. Caledonite—basic sulphate of lead and copper (green), (Pb,Cu)₂(SO₄)(OH)₂., is also represented. Several of the specimens show a colour intermediate between that of linarite and caledonite, and most probably constitute a complex of the two minerals. Both the minerals are shown in their familiar enamel-like form.

Psilomelane—hydrated oxide of manganese, is represented by a specimen in the botryoidal form, with an incrustation of Dialogite—manganese carbonate, MnCO₃., and a little pale green Rhodonite—manganese silicate, MnSiO₃. Dialogite is also shown massive, and red-brown in colour on a specimen of calcite.

Plumbocalcite—an intermediate compound between calcite and cerussite (Pb:Ca=1:8.5)—some Wanlockhead specimens have been recorded as containing up to 9.47% of lead carbonate. Two of the specimens are banded, and possess a fine, silky lustre. The remaining specimen shows some crystalline form but is rather lacking in lustre.

Hydrocerussite — hydrated carbonate of lead, Pb₃(OH)₂(CO₃)₂., is shown as scaly, white crystals. See plumbonacrite below.

Plumbonacrite is a variety of hydrocerussite which possesses a nacreous lustre. One example exists, showing the mineral with galena.

Leadhillite — a sulphato - carbonate of lead, PbSO₄.2PbCO₃.Pb(OH)₂., is found in all the veins, except the Belton Grain. Leadhillite is shown as a cream-yellow incrustation on barytes; and also as tabular crystals with a resinous lustre in association with Lanarkite—see below.

Susannite—a variety of Leadhillite—is also represented.

Lanarkite—an oxysulphate of lead, Pb₂(SO₄)O. (This was originally thought to be a carbonate/sulphate, but now the carbon dioxide of analysis is known to be due to carbonate admixture.) One specimen shows this rare mineral (only found in the Susanna Vein) in the massive form and greyish-white in colour.

GANGUE MINERALS

The gangue minerals mentioned below are all represented in the collection:

- (i.) Calcite.
- (ii.) Aragonite.
- (iii.) Dolomite.
- (iv.) Barytes.
- (v.) Witherite.
- (vi.) Gypsum.
- (vii.) Fluorspar.

The minerals i.-iv. are common constituents of the veins, whereas the remaining three are of rare occurrence.

Calcite—calcium carbonate, CaCO₃. (hexagonal crystal system), is found in a great variety of forms, and is represented by large examples of Nail Head Spar (up to 3.3 cms. across the crystals) and Dog Tooth Spar (crystal lengths up to 3.9 cms.) which usually has a slight incrustation of pyrites and chalcopyrites. Some of the Dog Tooth spar is known as a 'ghost' crystal inside the crystals of Nail Head spar—there is at least one specimen showing this phenomenon. Calcite is shown as a lustrous, silky material in the form of alternate white and light-brown

bandings. An unusual globular mass—4.5 cms. in diameter—is also shown.

Aragonite—calcium carbonate (orthorhombic), CaCO₃., is represented by a specimen showing narrow crystals (about 2.4 cms. in length) radiating from points. Also shown, is a specimen with small tufts of needle-like crystals which possess a pale, dirty-cream colour.

Dolomite — calcium magnesium carbonate, CaCO₈.MgCO₈., is shown as the typical curved crystals with a slight incrustation of pyrites. The colours of the specimens range from creamy-white to the normal pale pink shade. Several of the specimens show a pale-brown colouration which is brought about by exposure to the atmosphere.

Barytes—barium sulphate, BaSO₄., is a common mineral and is represented by several beautiful specimens of the 'Cockscomb' variety—crystal lengths of 10 cms. Some of the above-mentioned crystals have a coating of small pyrites crystals and also a little limonite staining. The mineral is also shown in the more normal crystalline form. For example—transparent crystals up to 2 cms. in length; Green translucent crystals up to 1.6 cms. in length. Very often the barytes (crystalline) is found associated with Nail Head spar.

Quartz—silicon dioxide, SiO₂., is a very common gangue mineral which is known in many different colours. The mineral is shown as large, clear, terminated crystals (5.4 cms. across the base), and also as the green and citron varieties.

Witherite—barium carbonate, BaCO₃., is one of the rarest minerals in Scotland, and Wanlockhead (New Glencrieff Vein—West Branch, 200 fathoms level) yielded the first authentic specimens, early in 1918. The mineral is represented by a thin sliver of a rather waxy-white material—there is no history attached to this specimen apart from the fact that it comes from Wanlockhead. In all probability it is from the New Glencrieff Vein, though other

localities have been discovered since the first specimens were brought to light.

Fluorspar—calcium fluoride, CaF₂., is a mineral which only just appears to have gained official recognition—see "Fluorspar" by the Geological survey on Mineral Resources, Vol. IV., 4th ed., p. 130—even though it is mentioned twice in the Transactions of this Society—see 1919, 3rd series, Vol. VI., p. 137, and 1927, 3rd series, Vol. XIII., p. 79—and in Heddle's 'Mineralogy of Scotland.' A specimen of small (crystal edge=1.5 cms.) pale-violet cubes on calcite is shown. This specimen has been attributed to Wanlockhead, but as all the previous references to the mineral give it as "large muddy-white cubes" its authenticity may well be doubtful.

Gypsum—calcium sulphate, CaSO₄.2H₂O., has been recorded from the district, and is shown as small granular crystals coating a sample of calcite and pyrites.

MINERAL SPECIMENS FROM LOCALITIES OTHER THAN WANLOCKHEAD AND LEADHILLS

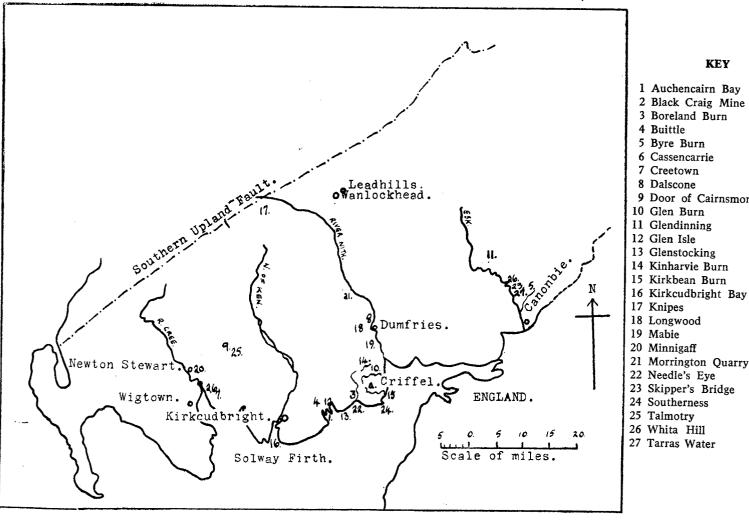
The remainder of the collection consists of small groups of minerals from many different localities. The description, which follows, has been given in the form of an alphabetical list. Locations and other relevant data has been given where possible.

Auchencairn Bay, Kirkcudbrightshire

Hæmatite is shown in large kidney-shaped ('Kidney ore') nodules which are characteristic of the mineral. One specimen is a velvety-black colour and embedded in a quartzite, whilst the other is completely free of any matrix and of a dull, reddish hue.

Black Craig Mine, 21 miles S.E. of Newton-Stewart

This mine is said to have been discovered by a soldier in 1763. The principal mineral was galena, but zinc blende and chalcopyrites also occurred in the presence of dolomite, calcite and barytes,



KEY

- 1 Auchencairn Bay
- 2 Black Craig Mine

- 6 Cassencarrie
- 7 Creetown
- 8 Dalscone
- 9 Door of Cairnsmore

- 12 Glen Isle
- 13 Glenstocking
- 14 Kinharvie Burn
- 15 Kirkbean Burn

- 18 Longwood
- 20 Minnigaff
- 21 Morrington Quarry
- 22 Needle's Eye
- 23 Skipper's Bridge 24 Southerness
- 25 Talmotry
- 26 Whita Hill
- 27 Tarras Water

Galena was—as mentioned above—the main ore worked and is represented by a large specimen showing two small veins of coarse-grained material running through a calcite/greywacke breccia.

Zinc Blende—is shown as a small vein—approximately 2 cms. across—of a dull brownish-black mineral passing through the breccia.

Dolomite is shown as white crystals, up to 1.5 cms. across, on a dolomite/greywacke breccia.

Barytes is shown as large, white, opaque crystals of the Cockscomb variety up to 9 cms. in length. This material is much more free from pyrites desposits on the crystal faces than that from Wanlockhead.

Boreland Burn, Southwick, Kirkcudbrightshire

This is a classic locality for amethyst, and the mineral is shown both crystalline—one large, clear specimen measures 5.8 cms. across the base—and massive. Much of the amethyst is overlain with terminated rock crystal, the surfaces of which are often coated with a fine layer of hæmatite. The amethyst colour is now thought to be due to colloidal iron and not manganese as originally believed. This theory is borne out in practice—all the specimens show the amethyst in intimate association with hæmatite.

Buittle, Kirkcudbrightshire

Amethyst occurs as small crystals, in veins through a porphyrite, bounded by a thin layer of hæmatite. Note the amethyst/hæmatite relationship.

The Byre Burn, Eskdale, Dumfriesshire

Slightly distorted crystals of *Iron pyrites* (crystal faces up to 0.8 cms. across) are shown from this area. The crystals show no striations, and are embedded in a matrix of white sandstone mixed with carbonaceous material.

Cassencarrie, Kirkcudbrightshire

Nickel bloom (green) — hydrated nickel arsenate, Ni₈As₂O₈8H₂O., and Cobalt bloom (pink)—hydrated cobalt

arsenate, Co₃As₂O_{8.8}H₂O., are both shown from this locality. These minerals are normally shown on Asbolite—black cobalt oxide with manganese.

Creetown, Kirkcudbrightshire

Three small specimens show a fine-grained incrustation of cobalt and nickel blooms on asbolite with a little *Smaltite*—cobalt arsenide, CoAs₂.

Nith bed at Dalscone, near Dumfries

Water-worn, *chert* pebbles from this location are shown in the following colours: black, bluey-black, bluegrey, chocolate-brown, yellow-brown, and cinnabar-red.

Also from this pebble bank—and others further upstream—there are many specimens of the unusual ferruginous spherical concretions, in a white standstone which often contains particles of mica. The rings measure up to 4 cms. in diameter, and are often selectively weathered where the ferruginous content is high.

Door of Cairnsmore, Kirkcudbright

A single specimen from this locality shows a brightly iridescent quartz which possesses a few terminated crystals. A little chalcopyrites is also present.

The Glen Burn, New Abbey, Kirkcudbrightshire

The burn occurs in granite which is cut by a large number of dykes. The material of the burn bed is relatively uninteresting mineralogically, and all the samples shown come from, or originally came from, the glacial drift. Amethyst—in shades of great variety—is usually shown as vein material with terminated crystals. Much of the amethyst is 'capped' with rock crystals. Much of the amethyst is 'capped' with rock crystal, and often shows 'ghost' crystals. The boundaries of these 'ghost' crystals are most often shown by a thin layer of hæmatite on the crystal faces. Hæmatite—mostly massive, but with a little of the specular variety, and some showing the botryoidal habit—was also recovered from the drift. This glacial material probably represents fragments from the more famous locality at Boreland of Southwick.

Glendinning or Louisa Mine, near Langholm, Dumfriesshire

The mine is situated about a mile up the Glenshanna Burn, and approximately twelve miles from Langholm. Although essentially worked for antimony the mine produced an equal or even greater amount of lead and zinc ores.

Stibnite—antimony trisulphide, Sb_2S_3 , is the main ore, and occurs as fine-grained, silvery-white crystals in a breccia of Silurian slate, calcite and quartz. Many of the specimens show a beautiful deep-blue iridescence. Zinc blende and Galena are both shown, but in small quantities.

The metal—antimony—is presumed to have been smelted at the mine itself, as many thick circular portions of slag [crucible bottoms(?)] have been found containing small quantities of the metal.

Glen Isle, near Palnackie, and opposite Kippford, Kirkcudbrightshire

One specimen of banded chert—grey on freshly fractured surfaces, and a light earthy-yellow on weathered material—in a metamorphosed mudstone.

The Second inlet W. of the monument to the "Elbe," on the land of Glenstocking, 5/6th of a mile E.S.E. of Colvend Church

Half-way down the eastern side of the inlet a small vein of calcite with dolomite yielded specimens of Bornite—iron copper sulphide of variable composition, and malachite. The western side, at the same level, yielded a small vein of hæmatite. Almost all the rocks contained a few dendrites.

Kinharvie Burn, 2 miles W. of New Abbey, Kirkcudbrightshire

This burn cuts through the granite and yielded the following specimens:

Black Quartz ('Morion') was found in a vein close to a well developed fault plane. Several of the crystals were found to be doubly terminated. Psilomelane and Manganite—hydrous manganese oxide, MnO(OH)., were both found in intimate association with the former mineral, and indeed the black colour may well be due to large concentrations

of these minerals. Specimens of Banded Agate, Brown Quartz, and Mica are also shown from this area.

Kirkbean Burn, Kirkcudbrightshire

Immediately above the old mill dam the vesicular lavas of the Birrenswark series are exposed. The vesicles—up to 2 cms. in diameter—contain creamy-white chalcedonic silica and dark green chlorite. Through this same lava exposure, a small—1.5 cms. across—vein of dull orange chalcedony—free from banding—is observable. A specimen, occurring as a stream-bed pebble, of what appears to be a mixture of Sard and Carnelian, is shown, under the low power microscope, to be not unlike an extremely dense, granular form of Moss Agate.

Kirkcudbright Bay

Molybdite — possibly a hydrated iron molybdate, Fe₂O₃.3MoO₃.8H₂O., is shown as a dull, straw-yellow incrustation on greywacke.

Hare Hill, The Knipes, near New Cumnock

This locality, though in Ayrshire, is considered here, because two of the Society's founder members had close connections with New Cumnock and the southern parts of Ayrshire. It is for that reason that these specimens are included in the Society's collection, though in actual fact the area is a continuation of the Nith valley, geologically speaking.

Stibnite—antimony trisulphide, Sb₂S₃., is shown as large—6 cms. long—longitudinally striated crystals of a dull lead-grey colour. This stibnite, in quartz, is often coated with bright sulphur-yellow Cervantite—antimony oxide, Sb₂O₄.

The Railway Cutting on the North side of the Longwood, Kirkcudbrightshire

Dendrites and talc are well shown on the Silurian shales.

Mabie. Kirkcudbrightshire

Two specimens are shown from this locality. One is a medium-sized specimen showing beautiful, black, fern-like *Dendrites*—iron or manganese oxides, on a pale-yellow background of micaceous metamorphosed sediment. Also shown, is a specimen of red granite, through which runs a narrow vein of quartz containing small platelets of graphite-like *pyrolusite*—manganese dioxide, MnO₂.

Minigaff, Kirkcudbrightshire

A piece of galena—massive—is shown covered by medium sized, slightly distorted crystals of Nailhead spar. The calcite is covered by minute crystals of iron and copper pyrites.

Morrington Ouarry, Irongray, Dumfriesshire

Quartz crystals are observed, elongated and terminated, up to 1.3 cms. in length.

Shoreline between the "Needle's Eye"—nearest Southwick—and "Lot's Wife"

About 200 yards west of the Needle's Eye a vein of quartz was observed and yielded the following material. The vein, through granite, contained massive—often botryoidal—hæmatite. Cavities in the quartz were often lined with minute crystals of 'specular' hæmatite. The quartz was mainly white in colour and massive. In places, usually at the contact of the hæmatite and quartz, an amethyst tinge was observed. Cracks in the quartz were often found to contain tiny scales of Chlorite.

Upon splitting the Silurian shales at a point about 30 yards east of the Needle's Eye, close to the contact with the granite, malachite, azurite and chalcopyrites were observed. From this same location, and at Craigneuk point, Sandyhills, bright-yellow limonite was found in small 'pockets.' The limonite was probably an oxidation product of iron pyrites as some of the latter mineral was detected during analysis.

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Skipper's Bridge, near Langholm, Dumfriesshire

A specimen of vein quartz—from the Birrenswark lavas—shows small crystalline deposits of galena.

The point below the old Lime Kiln and Ord. Surv. triangulation marker—just to the west of Southerness

A vein of *calcite*, pale-cream in colour, through the Lower Carboniferous Limestone, yielded flattened crystals of Nail Head spar.

"Sowie's Pot," a deep pool near the Skipper's Bridge, near Langholm, Dumfriesshire

Specimens show a *flint/agate* material—a little banding is shown—in the form of a vein, 4 cms. across, whose outer edges are coated with *limonite*.

Talnotry, Kirkcudbrightshire

One specimen shows *Pentlandite*—nickel iron sulphide, the formula often approximates to 2FeS.NiS., as a bronze-vellow mineral, tarnished on outer surfaces.

Tarras Water, River Esk, Dumfriesshire

The fine-grained—often micaceous—sandstones show pseudomorph after halite (rock salt). The 'crystals' measure up to 1.3 cms., and often show 'hopper faces.'

Whita Hill, near Langholm, Dumfriesshire

The Birrenswark lavas from this area are often highly vesicular (vesicles up to 3.5 cms. across) and these vesicles contain *chalcedonic silica* and *calcite*. In a few cases they contain a little *chlorite* and also a dull reddish-brown mineral. The latter mineral is shown in a specimen from the foreshore at *Powfoot*.

Unknown Localities

The undermentioned minerals, though known to be local, have no reference to locality (if there is a reference its authenticity is extremely dubious). If any reader knows of these specimens their help in identification would be much appreciated.

Marcasite—iron sulphide (white), FeS₂. Two specimens of this mineral are shown. Both occur on quartz and show a grey colour when weathered—this gives way to a bright, highly lustrous material when freshly fractured.

Chalcopyrites with Magnetite — triferric tetroxide, Fe₃O₄., is shown as a large specimen in which small crystals of both minerals are found in intimate association with one another. This specimen is magnetic.

A small specimen, labelled 'Kirkcudbright' shows Chalcopyrites finely dispersed, as small crystals, throughout a mass of quartz (on the whole massive, but a few terminated crystals can be observed).

Erythrite—cobalt bloom, is shown as a pale-pink incrustation on a much weathered sample of Smaltite—cobalt arsenide. CoAs₂.

Thus ends the present description which gives the collection as it stands on 31st December, 1963. Though the collection is extremely well balanced between the more well-known Wanlockhead/Leadhills area and the other mineral localities in Dumfriesshire and Galloway there is still much to be done (even to catch up on our Victorian predecessors) as can be seen from the map—the whole of Wigtownshire and most of Kirkcudbrightshire is a mere blank!

There is plenty of collecting to be done, and it is hoped that a few of our members in the above-mentioned area will take an interest in this rapidly expanding section of the Society's collection. But remember that unless the precise locality is known the specimen is useless.

PROCEEDINGS, 1963-64

11th October, 1963—The Annual General Meeting of the Society was held in the Ewart Library at 7.30 p.m., the President, Major-General Scott-Elliot was in the chair. The Minutes of the last A.G.M. were read and approved. The accounts of the Hon. Treasurer were adopted and the list of office-bearers recommended by the Council was confirmed. Fourteen adult members and two junior members were elected. Mr T. Huxley, Regional Officer of the South of Scotland for the Nature Conservancy, then addressed the meeting on the need for and uses of nature conservancy and he mentioned the many kinds of research and rehabilitation which are being carried out. His talk was accompanied by coloured slides.

25th October, 1963.—Mr Roy Ritchie of the Ancient Monuments Inspectorate of the Ministry of Works, gave a review of the recent excavations at Whithorn Priory, illustrated by some very fine slides. He spoke too of the difficult conditions of the excavation and of the modern equipment used which allows more complete excavation to take place.

8th November, 1963.—Mr Stanley Jeeves, warden of the Council for Nature Centre at Brantwood, gave a lecture, illustrated by especially fine film and slides, on The Changing Year. Mr Jeeves' theme was the one-ness of Nature and the need for man to minimise the effects he has had on the balance of nature.

22nd November, 1963.—The Scottish Oyster was the subject of the lecture by Mr R. G. B. Reid, of the Department of Zoology at Glasgow University. He made special reference to the Loch Ryan Fishery where he had discovered three healthy and growing beds. The possibilities of oyster fishing along the Solway, although limited are encouraging. The lecture was illustrated by slides.

27th November, 1963.—A joint meeting of the Society with the Scottish branch of the Institute of Physics with the Physical Society was held in Dumfries High School, Marchmount. Dr E. T. Hall of the University of Oxford Laboratory, carrying out research on the archæological uses of physics gave a talk on recent developments in this field, and mentioned in particular the Proton Magnetometer for locating kilns and pits by showing magnetic anomalies, spectographic x-rays, beta ray and other new methods of non-destructive analysis of museum archæological specimens.

6th December, 1963.—Roads and Routes in mediaeval Scotland were the subject of the lecture given by Professor Barrow of the Chair of Mediaeval History at Newcastle University. He talked of

the early Gough maps and how an almost complete picture of mediaeval roads in England had been built up from Charters. Professor Barrow then pointed out the various crossings to the North of Scotland. Working his way South, he discussed the bridges over the major rivers and the principal ferries and coast roads.

10th January, 1964.—A well-known local man, Mr Kenneth McArthur, gave a particularly interesting talk on his work among the roe deer in the South-West of Scotland. He illustrated his talk with maps and diagrams and generally gave a very comprehensive picture of the roe deer to-day especially in relation to forestry problems.

24th January, 1964.—Mr James Taylor, of Drumskeoch, gave a lecture entitled "Our Aquatic, Swamp, and Marsh Vegetation." He illustrated his talk with some fine slides, and followed the transition from the algae of the deep water through plants with roots and leaves underwater, but with flowers and specialised leaves on the surface of the water, to the reeds of the swamp proper. His slides covered the whole year and uncovered many strange details of the way of life of water dwelling plants.

7th February, 1964.—Miss Anne Robertson of the Hunterian Museum and Director of the Scottish Field School in Archæology gave a talk on the School's first two seasons at Birrens. Her paper in this edition of the Transactions covers the work done there during the last two seasons.

21st February, 1964.—Mr Rex Wailes, consultant to the Industrial Monuments Survey, gave a most interesting lecture on Industrial Archæology, illustrated by superb slides. This is a side of archæology in which work is only just beginning to be undertaken and a lot has to be done very quickly in order to preserve records of fast disappearing sites. Our own locality is rich in such sites.

6th March, 1964.—This meeting took the form of a Film Show. Four films were shown, viz.: Between the Tides, a Soviet film of the Uratu Civilisation, a film showing bird life on The Hirsel, and a film of Dumfries made by Mr Bernard Harris, a member of the Society.

Dumfriesshire and Galloway Natural History and Antiquarian Society.

Membership List, 1st March, 1964

Fellows of the Society under Rule 10 are indicated thus *

LIFE MEMBERS.

Balfour-Browne, Professor W. A. F., M.A., F.R.S.E.,	
Brocklehirst, Dumfries (President, 1949-50)	1941
Birley, Eric, M.B.E., M.A., F.S.A., F.S.A.Scot., Observa-	
tory House, Durham City	1935
Blackwell, Philip, F.B., LtCommander, R.N. (Ret.),	
The Ark, Warblington Road, Emsworth, Hants	1946
Borthwick, Major W. S., T.D., 54 Darrick Wood Road,	
Orpington, Kent	1943
Breay, Rev. J., The Vicarage, Shepreth, Cambridge	1950
Brown, J. Douglas, O.B.E., M.A., F.Z.S., Roberton,	
Borgue, Kirkcudbright	1946
Buccleuch and Queensberry, His Grace the Duke of, K.T.,	
P.C., G.C.V.O., Drumlanrig Castle, Thornhill, Dumfries	
Burnand, Miss K. E., F.Z.S.Scot., Brocklehirst, Dumfries	
(Ordinary Member, 1941)	1943
Carruthers, Dr. G. J. R., 4a Melville Street, Edinburgh, 3	
(Ordinary Member, 1909)	1914
*Cunningham, David, M.A., 42 Rae Street, Dumfries (Presi-	
dent, 1953-56)	1945
Cunningham-Jardine, Mrs, Jardine Hall, Lockerbie	
(Ordinary Member, 1926)	1943
Ferguson, Mrs J. A., Over Courance, by Lockerbie	1929
Gladstone, Miss I. O. J., c/o National Provincial Bank,	
Ltd., 61 Victoria Street, London, S.W.1 (Ordinary	
Member, 1938)	1943
Gladstone, John, Capenoch, Penpont, Dumfries	1935
Geddes, Nathan, Boghall, Buittle, Castle-Douglas	1955
Kennedy, Alexander, Ardvoulin, South Park Road, Ayr	
(Ordinary Member, 1934)	1943
Kennedy, Thomas H., Blackwood, Auldgirth, Dumfries	1946
Lockhart, John L., Suite 316, 1135, 18th Avenue S.W.,	
Calgary, Alberta, Canada	1948
M'Culloch, Walter, W.S., Ardwall, Gatehouse-of-Fleet	194R

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ford, Surrey ...

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Beattock

Park, Dumfries

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Armstrong, Col. Robert A., Brieryhill, Langholm ...

Baker, Mrs Margaret E., Well Cottage, Moffat ...

Balfour-Browne, Miss E. M. C., Goldielea, Dumfries

...

...

Barr, Mrs J. Glen, Southerly Ridge, Beattock

Bartlett, K. W. W., Barbure, Moniaive

Armstrong, William, Thirlmere, Edinburgh Road, Dum-

Banks, James, "Scarknowe," St. Anne's Road, Dumfries Barr, J. Glen, F.S.M.C., F.B.O.A., F.I.O., Southerly Ridge,

Bartholomew, George, A.R.I.B.A., Drumclair, Johnstone

Angus, Rev. J. A. K., Manse of Hoddam

Angus, Mrs, J. A. K., Manse of Hoddam

Armstrong, Mrs R. A. Brieryhill, Langholm

LIST OF MEMBERS.

Bartlett, Mrs K. W. W., Barbure, Moniaive	1964
Beaton, Mrs E., Clenries, Albert Road, Dumfries	1962
Beattie, Miss Isobel H. K., A.R.I.B.A., Thrush Wood,	
Mouswald, Dumfries	1947
Beattie, James, Mains of Westerkirk, Langholm	1960
Begg, Miss R. E., Crichton Royal, Dumfries	1952
Bell-Macdonald, A., Rammerscales, Lockerbie	1958
Beresford-Cooke, Miss K., Crichton Royal, Dumfries	1962
Biggar, Miss, Corbieton, Castle-Douglas	1947
Biggar, Miss E. I., Corbieton, Castle-Douglas	1947
Birkinshaw, Dr E., Cairnyard, Lochfoot, Dumfries	1958
Black, Miss Amy G. Burton Old Hall, Burton, Westmor-	
land	1946
Blackett, Major C. W. S., Arbigland, Kirkbean	1960
Blake, Brian, 97 Scotby Road, Carlisle	1953
Bone, Miss E., Stable Court, Castle-Douglas	1937
Boyes, Miss M., 34 Cardoness Street, Dumfries	1957
Brewis, Mrs F. D. D. M., Ardwell, Stranraer	
Brown, D. A. G., Shinnel, Moffat Road, Dumfries	1963
Brown, Miss E., Glencotho, Broughton, Biggar	1960
Brown, Mrs M. G., Caerlochan, Dumfries Road, Castle-	1000
Donales M. G., Caerlochan, Dumiries 100au, Cashe-	1946
Douglas	1940
	1000
Suffolk	1963
Buchanan, John, Sunnydene, Mainsriddle	1957
Byers, R., Munches Kennels, Dalbeattie	1951
Campbell, Alexander, Spindrift, Carsethorn, by Dumfries	1956
Campbell, Eoin, St. Nicolas, Ballplay Road, Moffat	1960
Campbell, Mrs E., St. Nicolas, Ballplay Road, Moffat	1960
Campbell, Mrs Margaret, Spindrift, Carsethorn, by Dum-	
fries	1956
Campbell, J. Keith, Low Arkland, Castle-Douglas	1959
Campbell, Mrs Keith, Low Arkland, Castle-Douglas	1953
Campbell, Miss Sheila, 57 Newall Terrace, Dumfries	1963
Cannon, D. V., The Glenkens, Strand Lane, Ashford, near	
Barnstaple, Devon	1949
Carlyle, Miss E. M. L., Templehill, Waterbeck, Lockerbie	1946
Carr, J. J., Lanka, St. Annes Road, Dumfries	1961
Carroll, Miss K. M., A.R.I.B.A., Meadowside, 14 Summer-	
gate Road, Annan	1961
Carruthers, Rev. A. Stanley, The Vicarage, Lower Shuck-	
burgh, Daventry, Northants	1954
Carruthers, Mrs M. E. M., 43 Castle Street, Dumfries	1946
Cessford, G. A., 10 Almond Court East, Barnton, Edin-	
burgh, 4	1956
Chamberlain, John, c/o 6 Gordon Street, Dumfries	1961
Charteria Mrs N Kirkland Bridge Tinwald	105

Dykes, T., Devorgilla, 9 Hecklegirth, Annan In Eckford, R. J. A., Summerhill, Grange Road, Moffat In Edwards, Frederick J., M.A., 113 Lockerbie Road, Dumfries In Egan, Geoffrey, Shinnel, Moffat Road, Dumfries In Fairbairn, Miss M. L., c/o Austin, Springfield, Hermitage Drive, Dumfries	.952 1964 1956 1953 1963 1952 1948 1953
Dykes, T., Devorgilla, 9 Hecklegirth, Annan In Eckford, R. J. A., Summerhill, Grange Road, Moffat It Edwards, Frederick J., M.A., 113 Lockerbie Road, Dumfries It Egan, Geoffrey, Shinnel, Moffat Road, Dumfries In Fairbairn, Miss M. L., c/o Austin, Springfield, Hermitage Drive, Dumfries In Farries, T. C. Craigshiels, Newall Terrace, Dumfries If Ferguson, Ronald, Woodlea House, High Bonnybridge,	1956 1953 1 963 1952 1 948
Edwards, Frederick J., M.A., 113 Lockerbie Road, Dumfries Egan, Geoffrey, Shinnel, Moffat Road, Dumfries If Fairbairn, Miss M. L., c/o Austin, Springfield, Hermitage Drive, Dumfries Farries, T. C. Craigshiels, Newall Terrace, Dumfries If Ferguson, Ronald, Woodlea House, High Bonnybridge,	1953 1963 1952 1948 1953
Egan, Geoffrey, Shinnel, Moffat Road, Dumfries If Fairbairn, Miss M. L., c/o Austin, Springfield, Hermitage Drive, Dumfries Farries, T. C. Craigshiels, Newall Terrace, Dumfries If Ferguson, Ronald, Woodlea House, High Bonnybridge,	1963 1952 1948 1953
Fairbairn, Miss M. L., c/o Austin, Springfield, Hermitage Drive, Dumfries Farries, T. C. Craigshiels, Newall Terrace, Dumfries Ferguson, Ronald, Woodlea House, High Bonnybridge,	1952 1 948 1953
Drive, Dumfries Farries, T. C. Craigshiels, Newall Terrace, Dumfries Ferguson, Ronald, Woodlea House, High Bonnybridge,	1948 1953
Farries, T. C. Craigshiels, Newall Terrace, Dumfries I Ferguson, Ronald, Woodlea House, High Bonnybridge,	1948 1953
Ferguson, Ronald, Woodlea House, High Bonnybridge,	1953
Ferguson, Ronald, Woodlea House, High Bonnybridge, Stirlingshire	
Stirlingshire	
Ferguson Dr William MA DA Dh D 112 Marsfeld	1062
reignson, Di william, with, D.A., Fil.D., 115 Mayneid	1062
	1202
Flett, David, A.I.A.A., A.R.I.A.S., Bardristane House,	
	1947
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	1957
Ford, Mrs D., C.A. Radio Station, Lowther Hill, Wanlock-	
head, Abington	1963
	1929
Forrest, J. H., Ashmount, Dalbeattie Road, Dumfries	1953
Forrest, Mrs J. H., Ashmount, Dalbeattie Road, Dumfries	1953
Fraser, Dr I., Westerlea, Roberts Crescent, Dumfries	1963
	1962
Fraser, Brigadier S., M.C., 20 Abercromby Road, Castle-	
Douglas	1947
Douglas	1963
	1961
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	1945
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	1955
	1957
Gillam, J. P., M.A., F.S.A., Bank House, Middle Street,	
	1953
Gillan, LtCol. Sir George V. B., K.C.I.E., Blackford,	
Haugh-of-Urr, Castle-Douglas	194 6
	1946
	1957
	1948
Graham, Mrs Fergus, Mossknowe, Kirkpatrick-Fleming,	
	1947
	1962
Greeves, LtCol. J. R., B.Sc., A.M.I.E.E., Altona, Strand-	1002
	1947
town, Belfast, 4	

Lauder, Miss A., Craigiebank, Moffat Road, Dumfries	1932
Laurence, D. W., St. Albans, New Abbey Road, Dumfries	1939
	1949
Leslie, Alan, B.Sc., 33 Canberra Road, Gretna Lightbody, Wing Commander T., O.B.E., J.P., 17 Charles	1030
	1963
Street, Annan	
Little, Robert J., East Hayrigg, Lockerbie	1961
Little, Robert J., East Hayrigg, Lockerbie Lord, Brian L., Castlehill, Kirkmahoe McAdam, Dr. William, Maryfield, Bankend Road, Dum-	1960
	105
fries	1952
McAdam, Mrs, Maryfield, Bankend Road, Dumfries	195
McBurnie, James G., Flat 3, 28 Crawford Street, London,	
W.1	1963
McCaig, Miss, 26 Royal Avenue, Stranraer	195
MacCartney, Dr A., M.B., Ch.B., F.S.A.Scot., 23 Crawfurd	
Road, Burnside, Rutherglen McClure, Miss J., Wellwood, New Galloway	1957
McClure, Miss J., Wellwood, New Galloway	1955
McConnel, F. W., Lettrick, Dunscore	1958
McConnel, J. C. I., Church House, Stour Provost, Gilling-	
ham, Dorset	1961
McCracken, Alex., 10 West Street, Langholm	1961
McCracken, Kenneth M., M.B., Ch.B., F.S.A.Scot., Ingle-	1001
stone Vales	1055
stone, Kelso	1955
McCullocn, Lady, 37 Fleet Street, Gatenouse, Castle-	
Douglas	
McCulloch, A. J., Ardwall, Gatehouse-of-Fleet	1963
MacDonald, J. A. B., 7 Langlands, Dumfries	1952
MacDonald, I. A., H.M.I.S., Clairmont, Dumfries Road,	
Lockerbie	1952
MacDonald, M. M., Oakdale, Glencaple Road, Dumfries	1960
Macdonald, N. H., Hazelwood, Laurieknowe, Dumfries	1952
Macdonald, Mrs N. H., Hazelwood, Laurieknowe, Dumfries	1952
McDowall, Miss P., Meadowpark, Kirkmahoe	1957
McElroy, James, 7 Carlingwark Street, Castle-Douglas	1957
McGhie, Miss Mary, Fairleigh, Dunmuir Road, Castle-	
Douglas	1957
MacGowan, W. G., 7 Albany Lane, Dumfries	1962
MacGowan, Mrs W. G., 7 Albany Lane, Dumfries	1963
McKerrow, Henry George, Whiterne, Albert Road, Dumfries	1953
McKie, Joseph, 44 Terregles Street, Dumfries	1954
McKinna, Miss Mary T., 10 Bank Street, Wigtown	1960
	1948
McKnight, Ian, 3 Langlands, Dumfries	1948
McKnight, Mrs I., 3 Langlands, Dumfries	1940
MacLaren, Duncan, Gordon Villa, Charnwood Road, Dum-	10.00
fries	1963
*McLean, Mrs M. D., Ewart Library, Dumfries, President,	
1959-1962	1946
MacLeod, I. F., Heston, Newton-Stewart	1963

Morton, Miss J. D., 35 George Street, Dumfries	1947
Murray, A., M.A., 33 Inverleith Gardens, Edinburgh, 4	1957
Murray, Col. G., Waterside House, Keir, Thornhill	1953
Murray, Capt. Keith R., Kirkland-of-Parton, Castle-Douglas	1950
	1953
Murray-Brown, G. A., Kinnelhook, Lockerbie	
Murray-Brown, Mrs, Kinnelhook, Lockerbie Murray-Usher, Mrs E. E., J.P., Cally, Murrayton,	1953
Murray-Usher, Mrs E. E., J.P., Cally, Murrayton,	
Gatehouse-of-Fleet	1946
Mushet, Andrew, M.A., Schoolhouse, Amisfield	1955
Newman, F. H., Auchenhay, Corsock	1959
Nielson, W. W., 33 Spen Road, West Park, Leeds, 16	1957
Nimmo, Mr Ian, M.R.C.V.S., 3 Moffat Road, Dumfries	19 6 0
Nimmo, Mrs I., 3 Moffat Road, Dumfries	
Park, Miss Dora, M.A., Gordon Villa, Annan Road, Dum-	
	1044
fries	1944
Dumfries	1944
Paulin, Mrs D. M., Drumrash, Parton	1950
Payne, Mrs, Milnhead, Kirkmahoe	1953
Pearson, Gordon, Blencathro, Rotchell Park, Dumíries	1960
Pearson, James, Bryeholm, Ardwall Road, Dumfries	1963
Pearson, Mrs James, Bryeholm, Ardwall Road, Dumfries	1963
Philip, Rev. D. Stuart, The Manse, Kirkmahoe	1962
Pigott, Lady, Closeburn Castle, Dumfries	1945
Prevost, W. A. J., 26 Coates Gardens, Edinburgh, 12	1946
Pullen, O. J., B.Sc., Highfield, Motherby, by Penrith	1934
Rae, Dr I. P. F., McCowan House, Crichton Royal,	
Dumfries	1962
Rae, Mrs J. O., Quaintways, Arnmannoch Road, Loch-	
rutton, Dumfries	1958
Readman, James, at Dunesslin, Dunscore	1946
Rees, Mrs Joan R., B.Sc., Ph.D., Department of Geography,	
Glasgow University	1961
Reid, Mrs R. C., Cleughbrae, Mouswald, Dumfries	1963
Robertson, Alex., M.A., Kenyon, Albert Road, Dumfries	1957
Robertson, Mrs M. A. K., Albany, Dumfries	1933
Robertson, Gordon S., Laneshaw, Edinburgh Road,	
Dumfries	1962
Robertson, James, O.B.E., Laneshaw, Edinburgh Road,	
Dumfries	1936
Robertson, James J., 27 Craiglea Drive, Edinburgh, 10	1962
Rodgers, Dr James B., Mountainhall, Bankend Road, Dum-	
fries	1952
Rodgers, Mrs Joyce, Mountainhall, Bankend Road, Dum-	
fries	1959
fries	1054
Rogers, Mrs, Elanoy, Victoria Avenue, Dumfries	1054
rogers, Mirs, Dianoy, victoria Avenue, Duniffles	TAO#

LIST OF MEMBERS.	227
Ross, Mrs E., Clifton, Rosemount Street, Dumfries	1962
Russell, Mrs E. W., Drumwalls, Gatehouse-of-Fleet	1946
Russell, H. M., Nara, Dalbeattie Road, Dumfries	1953
Russell, Mrs H. M., Nara, Dalbeattie Road, Dumfries	1954
Russell, I. R., M.A., F.S.A.Scot., Park House, Dumfries	1944
Sainty, D. L., M.A., LL.B., Waterside, Ringford	1956
Scott-Elliot, MajGen. J., Kirkconnel Lea, Glencaple	1957
Scott-Elliot, Mrs J., Kirkconnel Lea, Glencaple	1962
Shaw, R. Cunliffe, M.Sc., F.R.C.S., F.S.A., F.S.A.Scot.,	,
Overleigh House, East Cliff, Preston	1945
Simpson, A. J., The Academy, Lockerbie	1945
Simpson, Derek, Department of History, The University,	
Leicester	1963
Smail, Miss Isabel, 11 Erlington Avenue, Old Trafford,	
Manchester	1952
Smith, C. D., Laight, Bowling Green Road, Stranraer	1944
Smith, H. J., 4 Lovers' Walk, Dumfries	1962
Smith, Mrs H. J., 4 Lovers' Walk, Dumfries	1962
Stewart, James, Rowanbank, Victoria Road, Dumfries	1953
Stone, J. C., Trelill House, Trelill, Bodmin, Cornwall	1958
Straton-Ferrier, Mrs E. I., Bonshaw Tower, Kirtlebridge,	
by Lockerbie	1959
Sydserff, Peter, The Grove, Dumfries	1950
Tait. Dr A. C., Netherlea, Bankend Road, Dumfries	1960
Tallerman, Mrs, Myholm, Rotchell Park, Dumfries	1953
Taylor, James, M.A., B.Sc., Drumskeoch, Colvend, by Dal-	•
beattie	1933
Taylor, Mrs J., Drumskeoch, Colvend, by Dalbeattie	1961
Thomas, Charles, M.A., F.S.A., Dept. of Prehistoric Archae-	
ology, The University, Edinburgh	1961
Thomson, Miss Mary, 7 Carlingwark St., Castle-Douglas	1959
Todrick, Dr A., Windrush, Rotchell Park, Dumfries	1958
Truckell, A. E., F.S.A.Scot., 12 Summerville Avenue, Dum-	
fries	1947
Truckell, Mrs A. E., 12 Summerville Avenue, Dumfries	1958
Urquhart, James, M.A., 5 Braehead Terrace, Rosemount	
Street, Dumfries	1946
Vaughan, Mrs M., Broomside, Beattock	1962
Walker, Dr Mary, Croft-an-Righ, Wigtown	1960
Walker, Miss, Dryfeview, Lockerbie	1960
Walker, LieutCol. George G., D.L., Morrington, Dumfries	1926
Walker, R., Cairnvale, Morrinton, by Dumfries	1957
Walker, W. M., 17 India Street, Edinburgh, 3	1960
Walmsley, Miss A. G. P., 4 Albany, Dumfries	1951
Walmsley, T. H., 16 St John's Road, Annan	1954
77 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	1956
Watson, Miss Jessie, 57 Esplanade, Greenock	2000

Watson, Dr W. H., Carzield House, by Kirkton	1961
Waugh, W., March House, Beattock	1924
Weeks, Mr D. J., Querdon, Moss Road, Mabie, Dumfries	1960
Weeks, Mrs S. M., Querdon, Moss Road, Mabie, Dumfries	1960
Welsh, Adam, Greensleeves, Watery Lane, Weymouth,	
	1959
Dorset	
Durham	1961
Wilson, Allan, M.A., 24 West End Avenue, Pinner, Midd	196
Wilson, John, M.A., Kilcoole, Rae Street, Dumfries	1947
Wilson, Mrs J., Kilcoole, Rae Street, Dumfries	1957
Wilson, Paul A., Reform Club, Pall Mall, London, S.W.1.	1961
Wilson, Dr Wm. Douglas, 2 Ladyfield Cottages, Glencaple	1001
Road, Dumfries	1962
Wishart, Eric, 3 Catherine Street, Dumfries	1959
Wolffe, A., 31 Fleet Street, Gatehouse-of-Fleet	1959
Wolffe, Mrs A., 31 Fleet Street, Gatehouse-of-Fleet	1968
Younie, Mrs A., Well View, Moffat	1953
Young, Mrs M. W., Coppelia, Milehouse Crescent, Dumfries	1946
roung, Mrs M. W., Coppena, Milenouse Crescent, Dumries	1740
JUNIOR MEMBERS.	
Baker, Christopher, Well Cottage, Moffat	1961
Beaton, Miss L., Clenries, Albert Road, Dumfries	1962
Bell, R., Hillside, Rigg of Gretna	1963
Bell, R., Hillside, Rigg of Gretna Gibbs, Allan, Auchlewan, Landhead, Annan	1962
Hendry, Miss Linda, Lochanhead House, Dumfries	1963
Holden, Brian, 82 Miller Road, Lochside, Dumfries	1962
Holliday, Miss A., 42 Thorburn Crescent, Annan	1963
Lamont, John, Lochpark, Kirkpatrick-Durham	1958
Lamont, John, Lochpark, Kirkpatrick-Durham Lynn, Alistair, 17 Closehead Avenue, Annan	1964
McAdam, Miss Alison, "Maryfield," Bankend Road, Dum-	
fries	1960
McAdam, Miss Ellen, "Maryfield," Bankend Road, Dum-	
fries	1962
fries	1963
Miller, Malcolm B., Oakmere, South Street, Garlieston,	
	1963
Wigtownshire	1963
Robertson, Miss M. H., Aldworth, Annan Road, Dumfries	1962
Robinson, Miss Felicity, Balvaig, St Cuthbert's Avenue,	
Dumfries	1960
Ross, Colin, Clifton, Rosemount Street, Dumfries	1955
Scott John Glenkiln 16 Lockerbie Road Dumfries	1955
Scott, John, Glenkiln, 16 Lockerbie Road, Dumfries Vaughan, Miss, Broomside, Beattock	1962
Vaughan, Miss, Broomside, Beattock Watson, Miss Veronica, Carzield House, by Kirkton	1961
Whyte, Christopher, Granary Cottage, Gatehouse-of-Fleet	1959
Williams Ismos 9 Tanglands Dumfries	1969

Abdraced Chrychstoy Endrary, Abertaced	1000
Belfast Library and Society for Promoting Knowledge, per	
LieutCol. J. Greeves, Linen Hall Library, Belfast	1954
Birmingham University Library, Edmund Street, Birming-	
	1953
ham	
Cleveland, U.S.A. (per W. Heffner & Sons, Ltd.,	
2.4 Potter Cure Combridge)	1950
3-4 Petty Cury, Cambridge)	1900
Dumfriesshire Education Committee, County Buildings,	
Dumfries	1944
Edinburgh Public Libraries, George IV. Bridge, Edinburgh	1953
Glasgow Museums and Art Galleries, Kelvingrove, Glasgow,	
C.3	1955
Glasgow University Library, per Jackson & Co. (Book-	
sellers), 73 West George Street, Glasgow, C.2	1947
H.M. Ordnance Survey (Archaeological Office, 43 Rose	1041
11.M. Ordinance Survey (Archaeological Onice, 45 Rose	1050
Street, Edinburgh, 2	1958
Institute of Archæology, 31-34 Gordon Square, London,	
W.C.1	1953
Institute of Historical Research, University of London,	
Senate House, London, W.C.1	1961
Kentucky University Library, Lexington, Kentucky, U.S.A.	
(per James Thin & Co., 55 South Bridge, Edinburgh)	1961
Kirkcudbrightshire Education Committee, Education Offices,	1001
	1044
Castle-Douglas	1944
Sweden	1961
Mitchell Library, Hope Street, Glasgow	1925
New York Public Library, 5th Avenue and 42nd Street, New	
York City (B. F. Stevens & Brown, Ltd.), 77-79 Duke	
Street, Grosvenor Square, London, W.1	1938
Niedersachsische Staats-un Universtats Bibliothek, Prinzen-	1000
	1953
strasse 1, Gottingen, Germany	1900
Scottish Record Office, per H.M. Register House,	
Edinburgh	1955
Sheffield University Library, Sheffield, 10	1962
St. Andrews University Library, St Andrews	1950
Society of Antiquaries, Black Gate, Newcastle-upon-Tyne	1962
Society of Writers to H.M. Signet, The Signet Library,	
	1953
	1900
The Librarian, University Library, Queen Victoria Road,	10
Newcastle-on-Tyne	1953
The Librarian, University Library, South Bridge, Edin-	
burgh (per Jas. Thin & Co., 55 South Bridge, Edin-	
burgh, 1)	1955
	

The Library, U	niversity o	f Liverpoo	l, Liverp	ool, 3		1954
The Librarian,	University	of S. Wa	les, Cath	ays Park,	Cardi	Ħ
Trinity College	Library, I	yndoch P	lace. Glas	sgow, C.3		1953
Wigtownshire	Lducation	Committe	ee, Edu	cation Of	ffices.	
Stranraer						1943

List of Exchanges, 1964

Australian and New Zealand Association for the Advancement of Science, Science House, 157-161 Gloucester Street, Sydney.

Ashmolean Museum, Oxford.

Ayrshire Archæological and Natural History Society, Carnegie Public Library, Ayr.

Belfast: Belfast Naturalists' Field Club, The Museum College.

The Library of the Queen's University.

Belfast Natural History and Philosophical Society, Belfast.

Berwick-on-Tweed: Berwickshire Naturalists' Club, c/o Middle Ord, Berwick-on-Tweed.

Caermarthen: Hon. Sec., Caermarthen Antiq. Soc.

Cambridge: University Library.

Cardiff: Cardiff Naturalists' Society, National Museum of Wales, Cardiff.

Carlisle: Cumberland and Westmorland Antiquarian and Archeological Society. Tullie House, Carlisle.

Carlisle: Natural History Society, c/o City Museum, Tullie House, Carlisle.

The Council for Nature: Intelligence Unit, 41 Queen's Gate, London, S.W.7.

Durham: Durham and Northumberland Architectural and Architectural and Architectural Society, Prebends Gate, Durham.

Edinburgh: National Library of Scotland, Edinburgh, 1.

Botanical Society of Edinburgh, Royal Botanic Gardens, Edinburgh, 4.

Edinburgh Geological Society, Grant Institute of Geology, Kings Buildings, West Mains Road, Edinburgh, 9.

Society of Antiquaries of Scotland, Queen Street.

Essex: "The Essex Naturalist," c/o Passmore, Edwards Museum, Romford Road, London, E.15.

Glasgow: Andersonian Naturalists' Society, Technical College, George Street.

Archæological Society, 4 Clifton Street, Glasgow, C.3.

Geological Society, c/o Mitchell Library, North Street, Glasgow, C.3.

Halifax, Nova Scotia: Nova Scotian Institute of Science.

Hawick: The Hawick Archeological Society, Wilton Lodge, Hawick.

Holland: Rijksdienst Voor Het Oudheidkundig, Bodemonderzoek, Amersfoort, Kleine Haag 2, Nederland. Isle of Man: Natural History and Antiquarian Society, c/o Manx Museum, Douglas, Isle of Man.

London: British Association for the Advancement of Science, Burlington House.

Society of Antiquaries of London, Burlington House.

British Museum, Bloomsbury Square.

British Museum (Natural History), South Kensington.

Lund, Sweden: The University of Lund.

Oxford. Bodleian Library.

School of Scottish Studies, c/o Journals Dept., University Library, Old College, South Bridge, Edinburgh.

Florida State Museum, Florida.

Stockholm ö, Sweden: Biblioteket K. Vitterhetsakademien, Storgatan 41.

Toronto: The Royal Canadian Institute, 198 College Street, Toronto.

Torquay: Torquay Natural History Society, The Museum.

Ulster: Journal of Archæology, c/o 14 Sam Souci Park, Belfast, 9.

Upsala, Sweden: Universitets Biblioteket, Upsala.

U.S.A.-

American Museum of Natural History, Central Park West at 79th Street, N.Y., 24.

Chapplehill, N.C.: Elisha Mitchell Scientific Society.

Cambridge, 38 Mass.: Harvard College of Comparative Zoology. Chicago: Field Museum of Natural History.

Madison, Wis.: Wisconsin Academy of Sciences, Arts and

Letters.

New York: New York Academy of Sciences.

Philadelphia: Academy of Natural Sciences.

Rochester, N.Y.: Rochester Academy of Sciences.

Washington: Smithsonian Institute, U.S. National Museum.

United States Bureau of Ethnology.

United States Department of Agriculture Library.

United States Geological Survey—Librarian: Room 1033, General Services Administration Building, Washington 25, D.C., U.S.A.

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Glasgow: "The Glasgow Herald."

Edinburgh: "The Scotsman."

DUMFRIESSHIRE AND GALLOWAY NATURAL HISTORY AND ANTIQUARIAN SOCIETY Abstract of Accounts for year ended 31st March, 1964

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Subscriptions 1963 Publication 1963 Publication 1964 Publication 1964 Publication 1965 Publication 1964 Publication 1965 Publi		EXPENDITURE	Publication of Transactions— ### Printing ### 2340 0 ### Blocks and Off-prints (less recovered) 163 19 3 ### Issue Expenses ### 27 5 8	Printing, Adverts., Stationery, and Postages 253.1 4 11 Excursion Expenses 54.9 11 Bank Charges and Cheques 60.1 6 Lecturers: Expenses 2.3 0 Subscriptions paid 3.2 0 Other Sundries 7.13 9	Surplus	31/3/63 31/3/64 £0 10 0 180 0 0 155 8 9 628 17 2 527 11 6 547 19 6 100 12 10 138 0 0 £1589 2 6 £1523 14 8 £65 7 10	
INCOME "	REVENUE CASH ACCOUNT		£100 0 0 £349 5 0 £274 30 0 0 130 0 0 31	£0 0 0 57 6 3 50 55 £0 0 0 6 4 5 0 1 46 0 1	### ### ### ### ######################	RECONCILIATION OF ASSETS Position at	
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NOTES: (1) The decrease in assets is explained by the Operating deficiency per Revenue A/C £74 15s 1d plus the increased Broomholm payment £30 and the outstanding cheque 7s 6d minus the Investment Income £39 14s 9d.

(2) The increased cost of the Transactions represents the publication of the special Centenary Volume.

AUDITORS' CERTIFICATE.—We have examined the books and vouchers of the Society for the year ended 31st March, 1964, and we certify that the foregoing statements exhibit a true and correct view of the affairs of the Society as at 31st March, 1964.

C. A. McCULLOCH Hon. Auditors, S. G. TROUT 37/4/64

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Publications of the Society.

Transactions and Journal of Proceedings:-(a) 1862-3, 7s 6d; (b) 1863-4, out of print; (c) 1864-5, out of print; (d) 1865-6, out of print; (e) 1866-7, out of print; (f) 1867-8, out of print; New Series (1) 1876-8, out of print; (2) 1878-80, out of print; (3) 1880-3, out of print; (4) 1883-6, 5s; (5) 1886-7, 5s; (6) 1887-90, 7s 6d; (7) 1890-1, 3s; (8) 1891-2, out of print; (9) 1892-3, 7s 6d; (10) 1893-4, 7s 6d; (11) 1894-5, out of print; (12) 1895-6, 55; (13) 1896-7, 55; (14) 1897-8, 55; (15) 1898-9, 5s; (16) 1899-1900, 5s; (17, pts. 1 and 2) 1900-2, 3s 6d; (17, pt. 3), 1902-3, 2s 6d; (17, pt. 4), 1903-4. 2s 6d; (17, pt. 5), 1904-5, 5s; (18) 1905-6, 7s 6d; (19) 1906-7, 5s; (20) 1907-8, 5s; (21) 1908-9, 5s; (22) 1909-10, 5s; (23) 1910-11, 7s 6d; (24) 1911-12, 10s 6d; Third Series (i.) 1912-13, 10s 6d; (ii.) 1913-14, 7s 6d; (iii.) 1914-15, 7s 6d; (iv.) 1915-16, 5s; (v.) 1916-18, out of print; (vi.) 1918-19, 7s 6d; (vii.) 1919-20, 10s 6d; (viii.) 1320-21, 10s 6d; (ix.) 1921-22, 10s 6d; (x.) 1922-23, 10s 6d; (xi.) 1923-24, 10s 6d; (xii.) 1924-25, 10s 6d; (xiii.) 1925-26, 10s 6d; (xiv.) 1926-28, 21s; (xv.) 1928-29, 10s 6d; (xvi.) 1929-30, 10s 6d; (xvii.) 1930-31, 10s 6d; (xviii.) 1931-33, 21s; (xix.) 1933-35, 21s; (xx.) 1935-36, 10s 6d; (xxi.) 1936-38, 21s; (xxii.) 1938-40, 21s; (xxiii.) 1940-45, 21s; (xxiv.) 1945-46, 10s 6d; (xxv.) 1946-47, 10s 6d; (xxvi.) 1947-48, 21s; (xxvii.) 1948-49, 21s; (xxviii.) 1949-50, 21s; (xxix.) 1950-51, 21s; (xxx.) 1951-52, 21s; (xxxi.) 1952-53, 21s; (xxxii.) 1953-54, 21s; (xxxiii.) 1954-55, 21s; (xxxiv.) 1955-56, 21s.; (xxxv.) 1956-57, 21s.

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Birrens and its Antiquities, with an Account of Recent Excavations and their Results, by Dr. James Macdonald and Mr James Barbour, 1897, 38 6d.

Communion Tokens, with a Catalogue of those of Dumfriesshire, by the Rev. H. A. Whitelaw, 1911, 7s 6d, out of print.

History of the Dumfries Post Office, by J. M. Corrie, 1912,

The History of the Dumfries and Galloway Natural History and Antiquarian Society, by H. S. Gladstone, 1913, 3s 6d. The Ruthwell Cross, by W. G. Collingwood, profusely

illustrated, 1917, 3s 6d, out of print.

Records of the Western Marches, Vol. I., "Edgar's History of Dumfries, 1746," edited with illustrations and ten pedigree charts, by R C. Reid, 1916, 128 6d.

Records of the Western Marches, Vol. II., "The Bell Family in Dumfriesshire," by James Steuart, W.S., 78 6d.

Notes on the Birds of Dumfriesshire, by Hugh S. Gladstone, 1923, 108.

A Bibliography of the Parish of Annan, by Frank Miller, F.S.A. Scot., 7s 6d.

MRS M. D. McLean, Hon. Librarian, Ewart Library, Dumfries, will answer enquiries regarding the above, and may be able to supply numbers out of print.